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Dear reader,

The New Green Deal and the forthcoming Framework Programme, Horizon Europe, are setting new accents and increased emphasis on sustainability in European Road Transport Research & Innovation. The European transport industry, from its researchers, suppliers and manufacturers to its infrastructure and service providers, undertakes significant research and development [R&D] to help address societal and global challenges as well as ensuring European industrial competitiveness. Here, EARPA and its members have an important role to play: in defining and realising the future of road mobility. And, in continuous European spirit, EARPA maintains good collaboration across the English Channel.

With its independent position, between industry and government, the European Automotive Research Partners Association has a neutral standpoint from where it can advise the European Commission and recommend research that is most beneficial for society and the environment. Furthermore, EARPA works as part of the broad network: with the European Commission and with industry, for example through partnerships dedicated to sustainable road transport vehicles and systems [e.g. EGVI and 2Zero], connected and automated mobility, and vehicle development and manufacturing technologies; with the Technology Platforms, such as the European Road Transport Advisory Council [ERTRAC]; with colleagues from other associations [e.g. EUCAR, CLEPA or POLIS, just to name a few] and with other actors in the European research community.

In 2020 we are now in the last year of the Horizon 2020 research frame programme and we see the new programme, Horizon Europe, become increasingly mature. EARPA
members have been active in responding to calls for research and innovation: they are involved in multiple successfully running projects and in proposals for the open calls. Also, EARPA and its members have been helping to define the future research needs, reviewing and updating them continuously, and contributing to the definition of the next frame programme and the role of road transport for the coming decades.

Our forty-eight members work together in five Task Forces we call Foresight Groups. Three of them are specifically technology oriented; one focuses more on the application aspects of such technologies for transport systems, and one assists our members in all things related to European project management. In Collaborative Research Group meetings, EARPA members discuss forthcoming and open research calls, initiate proposals, and review the outcome of closed calls to take lessons learned.

In this guide we present each of the members of EARPA, we give a summary of their expertise and highlight their involvement in European projects. Each of the EARPA members has an active role to play: giving input to the creation of research programmes, creating proposals, helping perform successful and valuable projects, and in the widening of the network.

I trust you find this information helpful and would welcome the opportunity to meet you at our events!

Christof Eleftheriou
What is EARPA?

Founded in 2002, EARPA is the association of automotive R&D organisations. It brings together the most prominent independent R&D providers in the automotive sector throughout Europe. Its membership is ranging from large and small commercial organisations to national institutes and universities.

EARPA, as the platform of automotive researchers, aims at actively contributing to the European Research Area and the future EU research programmes. In this task, EARPA seeks a close cooperation with the automotive industry, the automotive suppliers, the oil industry as well as the European Institutions and the EU Member States.

EARPA members are strongly committed to cooperate closely with industrial automotive partners, universities and other research organisations on future R&D. Such a cooperation may vary from an exchange of ideas and knowledge in joint meetings to setting up networks and carrying out joint projects. The EU research programmes are of particular interest to EARPA members by means to achieve such cooperation.

EARPA members are committed to contribute to a common vision on future transport and the creation and implementation of a strategic research agendas. In this, they support the actions of ERTRAC – the European Research Transport Advisory Council – as well as other European Technology Platforms.

EARPA and its members, being well integrated in both national and European research structures, are in a position and willing to support a closer link between and coordination of national and European research programmes. EARPA as an independent platform is prepared to participate at European level in strategic consulting related to public interest and social matters regarding mobility, environment, energy and safety in the automotive domain.

EARPA promotes the awareness and understanding of the specific role and contribution of its members in the automotive sector and reinforce the high-tech character of the automotive industry and its potential for future innovation and new opportunities.
Organisation

EARPA is functioning thanks to its very active members through their annual contributions. The organisation is composed of three main bodies:

- The General Assembly governs the Association in which all members are participating.
- The Executive Board, elected by the General Assembly, is responsible for the management of the association. The Executive board tasks are to delegate plus initiate activities and carry-out the representative tasks.
- The EARPA Secretariat, managed by EARPA Secretary General, supports the Board, General Assembly, Foresight Groups and Collaborative Research Groups.

Core activities

The Foresight Groups and the Collaborative Research Groups are in the core of the activities within EARPA.

I. In the **Foresight Groups** (FGs), EARPA member experts are actively discussing pertinent research topics and cover the main automotive R&D areas in which EARPA members are active.

II. The **Collaborative Research Groups** (CRG’s) facilitate the discussions among EARPA members for drafting new proposals.
EARPA’s Foresight Groups

The Foresight groups (FGs) are focusing on answering specific needs identified by EARPA members (e.g. technical discussions, RTD needs, outlook, etc.) or the needs identified by the actual effort of EARPA in terms of influence & information (e.g. discussion on EU RTD Policy). Each FG has up to 6 technology experts.

Main objectives of the EARPA Foresight Groups:

1) Identifying and advocating EARPA priorities:
   • Technology road mapping with special focus on EARPA needs and working areas
   • Compilation and structuring of mid-/long-term RTD needs and outlook
   • Creation of EARPA roadmaps and position papers
   • Collection of input for EC research work programmes
   • Exchange of information and views with EC and related associations as well as other stakeholders

2) Scouting of future opportunities for EARPA members:
   • Sharing information on relevant developments within the group’s thematic scope among members [EU events, activities of corresponding working groups in other associations etc.]
   • Identification of particular funding programmes/opportunities on EC level [and joint MS-level] as input to the Collaborative Research Groups

Participants to those Foresight Groups are relevant experts coming from within EARPA members organisations. As EARPA member you are very welcome to join the FGs. You can join them directly via the EARPA intranet – Foresight Group – Details – [Subscribe for this Foresight Group]

Five thematic focus areas of the Foresight Groups:

1. Connectivity Automation Safety (CAS)
   With the ambition of contributing to a European road transport system without victims, FG CAS identifies and promotes R&I needs as well as future opportunities in the areas of automation, connectivity and safety for all road users.

   Speaker: Peter Urban (IKA)
   Secretary: Bastiaan Krosse (TNO)

2. Energy Powertrains and Electrification (EPE)
   Foresight Group EPE is supporting the continuous development and integration of clean and efficient electrified powertrains as well as powertrains working on alternative fuels with a holistic view on the EU energy system.

   Speaker: Jean-Marc Zaccardi (IFPEN)
   Secretary: Bernhard Brandstätter (Virtual Vehicle)
3. Integrated and Connected Product Development (ICPD)
Integrated and Connected Product Development – materials, manufacturing and design tools.

Speaker: Thilo Bein (Fraunhofer LBF / EMI / IWU)
Secretary: Bert Pluymers (KU Leuven)

4. Future Mobility for People and Goods (FMPG)
This group deals with the overall aspects, such as implementation and business models, of the mobility of people and goods in our future society, based on the technological developments in other EARPA groups.

Speaker: Monica Pla (Applus+ IDIADA)
Secretary: Magnus Granstrom (Chalmers)

5. Project Management (PM)
Expert group for European RTD project management, rules for participation, legal and financial issues.

Speaker: Elisabeth Doerr (AIT)
Secretary: Verena Wagenhofer (AVL)

EARPA’s Collaborative Research Groups (CRG)

The CRG’s are selected by the EAPRA Board prior to the Spring / Autumn Meetings according to the current Horizon Europe work programme and other applicable funding programmes. The CRG moderators are selected out of the technology experts assigned to the FGs. The information about the open calls, as per discussed within each CRG, are distributed by the moderator via the Secretariat.

Main objectives
- Reflection on submitted proposals
- Information on on-going proposals
- Discussion on coming calls and drafting of new proposals, appointing proposal champions, collecting partners’ interests

For more information please contact the Secretariat.
**User Guide**

This guide provides an overview of the EARPA members and can be used within the Association. It is based on the information provided by our members.

Per member, there is a fact sheet containing the type of organisation, location and a short summary of expertise and activities, including participation in EU projects and participation in Technology Platforms and other major European networks. At the end of this publication, you will find all necessary contact details. Per member, also the contact details are given.

**Membership**

EARPA today counts 48 members: have a look at the next pages for more information.

EARPA Membership is open to R&D providers, commercial and non-profit. Independence of the automotive industry and experience with EU projects is among the criteria for membership. Interested organisations may apply for membership.

Should you be interested to join EARPA, please do not hesitate to contact EARPA Secretariat.
Members & Locations

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## Avesta Battery & Energy Engineering (ABEE)

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<tbody>
<tr>
<td>Contact person:</td>
<td>Noshin Omar</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+32 486 99 74 51</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:Noshin.omar@abeegroup.com">Noshin.omar@abeegroup.com</a></td>
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<tr>
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<td>Website:</td>
<td><a href="http://www.abeegroup.com">www.abeegroup.com</a></td>
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**Short summary of expertise and activities**

Avesta Battery & Energy Engineering (ABEE) is a dynamic engineering company specialised in the field of battery processing, manufacturing, battery system design, prototyping, and recycling and in particular for advanced Li-ion and solid-state battery technology. ABEE is supporting the industry in development of tailored made solutions from battery materials to recycling for automotive and stationary applications through development of dedicated multiscale simulation tools and functions embedded in different platforms. In addition, ABEE has state of the art battery manufacturing infrastructures and battery system design platforms. In this regard, ABEE has state of the art electrode processing pilot line for advanced Li-ion, solid state batteries (oxide and sulfide) and innovative solutions for LiM coating. ABEE pilot line will be integrated within a unique dry room of 150m2 with dew point of -60°C. Further, ABEE has extensive knowledge and expertise in the field of artificial intelligence techniques, state estimations for batteries and process modeling.

**Participation in EU projects**

- **LONGRUN (H2020)**
  Heavy duty vehicles, environmental friendly fuels and powertrains
- **3BELIEVE (H2020)**
  Cobalt free li-ion batteries, thermal management, battery systems
- **COFBAT (H2020)**
  Cobalt free next generation li-ion battery, stationary applications, high voltage
- **LiPLANET (H2020)**
  Lithium battery pilot lines, round robin tests
- **SUBLIME (H2020)**
  Solid state batteries, processing, higher energy densities and long lifetime
**AIT Austrian Institute of Technology**

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<th>Organisation type:</th>
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<tr>
<td>Contact person:</td>
<td>Mr. Helmut Oberguggenberger</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+43 50550 6662</td>
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<tr>
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Short summary of expertise and activities

The AIT Austrian Institute of Technology takes a leading position in the Austrian and international innovation system and a key role in Europe as the RTO focusing on the key infrastructure topics of the future. With its eight Centers and around 1,300 employees, AIT enables innovation through its scientific-technological expertise, market experience, tight customer relationships and high-quality research infrastructure.

Mobility is a fundamental and indispensable core element of our society. One of the greatest challenges is the mobility of people and goods which has to meet three basic requirements – efficiency, safety and environmental sustainability. It is precisely these three factors that AIT has chosen as the main focus of the innovative research activities.

Center for Low-Emission Transport
The Center for Low Emission Transport develops innovations for efficient, intelligent and safe vehicle components. The focus is on two key technologies for sustainable transport and mobility: powertrain electrification and material-based lightweight design. In both areas, material development, semi-industrial processing technology and component design form the pillars for the integrated deployment of innovative vehicle system components. Research focus topics are battery technology development and management systems, power electronics integrated with electric machines, whole vehicle simulations, premium lightmetal alloys and sustainable processing, and functionally integrated lightweight components.

Center for Mobility Systems
At the Center for Mobility Systems, around 100 experts are developing holistic mobility solutions for the future based on the interrelation of passenger mobility, mobility of goods, and transport infrastructure. Efficiency, safety, ecological sustainability and the human factor are at the heart of the research and development efforts. Leveraging comprehensive system know-how, scientific excellence, market knowledge, and many years of international experience, AIT experts are using innovation to lead industry and society into the future of mobility.

Participation in EU projects
FITGEN – Fully Integrated E-axle Ready for Mass Market Third GENeration Electric Vehicles
SELFIE – Self-sustained and Smart Battery Thermal Management Solution for Battery Electric Vehicles
TRIcEPS – Tilt Rotor Integrated Air Intake and Engine Protection Systems
ICE-GENESIS – Creating the next generation of 3D simulation means for icing
QUIET – QUalifying and Implementing a user-centric designed and Efficient e-vehicle
LEVITATE – Shaping Europe’s driverless mobility future proactively
3beLiEVe – Delivering the 3b-generation of Li-ion cells for the xEV market of 2025 and beyond
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<tr>
<td><strong>Contact person:</strong></td>
<td>Mr. José Manuel Barrios</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+34 977 166 000</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:jmbarrios@idiada.com">jmbarrios@idiada.com</a></td>
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<td><strong>Location head office:</strong></td>
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Short summary of expertise and activities

Applus+ IDIADA, as a global partner to the automotive industry worldwide, supports clients in their product development activities by providing design, engineering, testing and homologation services to fit their needs. Applus+ IDIADA provides an extensive range of engineering and testing services in the fields of passive and active safety, powertrain, comfort, reliability, electronics and materials and processes. Applus+ IDIADA undertakes complete vehicle development projects applying tailor-made project management solutions based on the requirements of each project. Applus+ IDIADA’s expertise in both physical and virtual testing results in maximum efficiency in cost and time. Its engineering solutions are driven by the ongoing pursuit of excellence and research in the best technology. During 2019 two main facilities were opened to face the mobility challenge. A Connected and automated and ADAS dedicated track and a dynamic virtual simulator. A large team of more than 2,750 engineers and technical experts as well as an international network of 48 subsidiaries and branch offices in 24 countries ensure clients will be given fast and customized services.

Participation in EU projects

Project coordinator
SAFE-UP (proactive SAFety systems and tools for a constantly UPgrading road environment) – To proactively address the novel safety challenges of the future road mobility environment, through the development of tools and innovative safety methods GVI (Green Vehicle Index) – Development of a consumer programmed based on single index for rating energy efficiency and emissions of vehicles in the market HEADSTART (Harmonised European Solutions for testing automated road transport) – Definition of testing and validation procedures of Connected and Automated Driving functions UPSCALE (Upscaling Product development simulation capabilities exploiting Artificial Intelligence for electrified vehicles) – To apply AI-methods to reduce the development time and increase the performance of electric vehicles (EVs). Focused on vehicle aero/thermal- and crash modelling. PIONEERS (Protective Innovations of new equipment for enhanced rider safety) – Improve new safety solutions, restraints systems, personal protective equipment and definition of new testing protocols for power two wheelers DOMUS (Design OptiMisation for efficient electric vehicles based on a User-centric approach) – To define disruptive designs of electric vehicles, cabin solutions and comfort strategies to better optimize the energy of electric vehicles C-Mobile (Accelerating C-ITS Mobility Innovation and deployment in Europe) – Deployment of C-ITS services in eight European cities in an interoperable and large-scale context

Participants
COBRA, SHOW, LONGRUN, SOLUTIONS+, SUaaVE, eCharge4Drivers, PBNv2, ASSURED, AEROFLEX, HIFI Elements, SECURE IoT, ENSEMBLE, OSCCAR, ACHILES, SYS2WHEEL, ARCADE.
**AVL List GmbH**

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Short summary of expertise and activities

AVL is the world’s largest independent company for development, simulation and testing technology of powertrains for passenger cars, trucks as well as large engines.

Powertrain engineering AVL develops and improves all kinds of powertrain systems including hybrids, fuel cell and battery electric powertrains along with all subsystems and automated controls.

Engine instrumentation and test systems: The products of this business area comprise all the instruments and systems required for powertrain system and vehicle development & testing.

Advanced simulation technologies: The simulation software solutions of AVL are supporting all designs and optimizations of powertrain systems and cover all phases of the development process.

To support European automotive research collaborations, AVL is a member of various associations such as ERTRAC SIG, EGVIA, ARTEMISIA, EPOSS, and Hydrogen Europe. On national level, AVL participates in A3PS, ACStyria, AlpLab (Austria), FKG (Sweden), FVV, FVA, FAT, SafeTrans (Germany), AESIN, LCVP, NMI (UK), and Mov’eo (France).

Participation in EU projects

Since 1992 AVL has been active in more than 160 EC-funded RTD projects. In Horizon2020 AVL is coordinator of the following projects such as EVC1000 Electric Vehicle Components for 1000 km daily trips, VISION-xEV Virtual Component and System Integration for Efficient Electrified Vehicle Development, DiePeR Diesel Efficiency Improvement with Emission Reduction, IMPERIUM Powertrain Control for Economic and Clean Real Driving, OBELICS Optimization of Scalable Realtime Models and Functional of Scalable Realtime Models and Functional Testing for E-drive Concepts, IMAGE Innovative MAnufacturing routes for next Generation batteries in Europe, HIPERFORM High Performant Wide Band Gap Power Electronics for optimized, efficient and reliable electric Drivetrains.

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© colonel_design - Fotolia.com
Short summary of expertise and activities

CEA, the French Atomic Energy and Alternative Energy Commission, is a key player in research, development and innovation in four main areas:

- Defence and security
- Low carbon energies (nuclear and renewables energies)
- Technological research for industry
- Fundamental research in the physical sciences and life sciences.

CEA Tech is the technology research unit of CEA. It develops through its three institutes – Leti, Liten, List – a broad portfolio of technologies for ICTs, energy and healthcare.

The institutes of CEA Tech are conducting R&D to overcome the Transportation and mobility challenges with four major focuses: vehicle design, infrastructure, services and energy supplies.

CEA tech R&D activities, in the field of land transportation, include batteries and battery management systems for electric vehicles as well as software, sensors and other communicating objects that will equip future vehicles, and in particular driverless cars and transportation infrastructure.

Participation in EU projects

CEA Tech is involved in several initiatives at European level: ETP/JTI ARTEMIS specific group EICOSE for transportation application, ETP EPoSS specific automotive group, ERTICO, Hydrogen Europe and JTI-FCH. CEA Tech is also taking part in CleanSky2, Shift2Rail and the Innovation Communities of the EIT (EIT Digital, EIT Health, EIT Raw Materials, EIT Climate, EIT Inno-Energy, EIT Added Value Manufacturing which all include dimensions related to mobility).

Since the beginning of Horizon 2020 and with regards to challenges of industry and society for transportation and mobility, CEA Tech has been involved in more than 20 projects.

Projects in the area of infrastructure, Intelligent Traffic System (ITS) and safety: 5G CARMEN (connectivity), AUTOPILOT (automated mobility), BONVOYAGE (multimodal travel), Cloud-LSVA (ADAS), HIGHTS (cooperative localisation), IT2RAIL (rail), SAFE STRIP (infrastructure), SECREDAS (cybersecurity), TRACE (semiconductor), VI-DAS (ADAS).

Projects in the area of sustainable mobility: EBSF (bus), eCAIMAN (battery), ESPRIT (e-mobility), EVERLASTING (battery), GasOn (gas), i-HeCoBatt (battery), iModBatt (battery), ModulED (e-motor), OBELICS (e-drive), SPICY (battery).
Asociación Centro Tecnológico Ceit-IK4

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>RTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Ibon Ocaña</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+34 943 212800</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:iocana@ceit.es">iocana@ceit.es</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Donostia-San Sebastián, Spain</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>253</td>
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<tr>
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<tr>
<td>Website:</td>
<td><a href="http://www.ceit.es">www.ceit.es</a></td>
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Short summary of expertise and activities

Ceit-IK4 is a private multidisciplinary non-profit RTO closely connected to TECNUN, the School of Engineering of the University of Navarra (Spain). Its missions are to provide industry with services through the development of technical research projects and to promote the dissemination of knowledge through the training of young researchers and PhD students and scientific publications. Regarding our first mission, more than 100 research projects between TRL4 and TRL7 are carried out at Ceit-IK4 per year. Moreover, Ceit-IK4 has participated in 15 FP6 projects, 32 FP7 projects, 13 RFCS projects, 1 LIFE project and for the moment in 10 H2020 projects.

In terms of our second mission, in the last 5 years Ceit-IK4 has produced more than 30 PhD theses per year, published 100 papers in scientific journals, and participated in 80 international conferences. Since 1996, Ceit-IK4 has created 14 technology-based spin-offs, which currently employ more than 300 people. Four of these have been purchased by companies which are listed on NASDAQ, NYSE, the Madrid Stock Exchange and the Paris Stock Exchange. Ceit-IK4 has a staff of 253 employees and 51 PhD students, and an annual budget over 15.3 M€. In February 2016, Ceit-IK4 modified its internal structure in order to adapt to the industrial sector and market challenges, which require greater multidisciplinary capacity. This new structure organizes Ceit-IK4’s expertise and capacities in a way that allows the major challenges in industry to be addressed from a more advantageous position:

- Materials and Manufacturing Division at Ceit-IK4 offers solutions to transform industry challenges into value. The assets of the Division rely on an integrated structure based on the Industry 4.0 holistic approach.
- Transport and Energy Division is focused on four main areas; railway transportation, aircraft transportation and road transportation.
- Water&Health Division at CEIT-IK4 is funded in three main pillars (urban and industrial water control and monitoring systems, design, fabrication and testing of biomedical devices and biosensors).
- ICT division focuses its research in the design of monitoring devices and communications systems.

Additionally, Ceit-IK4 is member of the IK4 Alliance.

Participation in EU projects

Ceit-IK4 is involved in 20 H2020 projects: EUROFUSION-Euratom Programme, ERSAT-EAV, ALISE, ROLL2RAIL, EBSF_2, NANOTUN3D, I_HeERO, MOBNET, TEMGIR, E-TSIN, TR4EMACS, DREAM, C-MOBILE, FabSurfWar, NANOSTENCIL, PRoPART.

Ceit-IK4 coordinates 5 H2020 projects: NEOHIRE, LASER4SURF and AIOSAT, SIMFAL and SIA.

Moreover, Ceit-IK4 participates in three LIFE projects, LIFE ANADRY, LIFE MCUBO and LIFE VERTALIM, and one ECHORD++ instrument HOMEREHAB.

Finally, Ceit-IK4 also coordinates one CIP ECOINNOVATION project and has participated in 15 RFCS projects, having the role of coordinator in 2 of them: PACROLP-II and OPTIBOS.
**Center for Research and Technology Hellas - CERTH**

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>R&amp;D Institute</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mrs Eleni Papaioannou</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+30 2310 498193</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:helen@cperi.certh.gr">helen@cperi.certh.gr</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Thermi-Thessaloniki, Greece</td>
</tr>
<tr>
<td>Number of employees:</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.certh.gr">www.certh.gr</a></td>
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Short summary of expertise and activities

The Centre for Research and Technology-Hellas (CERTH) is one of the leading research centres in Greece. CERTH participates in EARPA with one laboratory (APTL, Aerosol and Particle Technology Laboratory) and two institutes (ITI, Information Technologies Institute, and HIT, Hellenic Institute of Transport).


HIT’s objective is the conduct and support of applied research activities in the field of transportation relating to the organisation, operation, planning and development of infrastructure, standardisation, economic analysis, management, vehicle technology, and impact assessment of transport services. Our expertise lies in the areas of (1) Road Safety (2) Urban Mobility (3) Logistics and (4) Electronic & Communication Systems.

ITI is one of the leading Institutions of Greece in the fields of Informatics, Telematics and Telecommunications, with long experience in numerous European and national R&D projects. We have introduced several innovations in areas related to 1) Road Safety 2) Materials, Design & Production 3) Methods and Tools for Virtual Development and Validation 4) Electronic & Communication Systems 5) Urban Mobility and 6) Logistics.

Participation in EU projects

SUREAL-23 – Understanding and measuring sub-23 nm particle emissions from direct injection engines including real driving conditions
eCAIMAN – Electrolyte, cathode and anode improvements for market-near next-generation lithium ion batteries
ARMOS – Advanced multifunctional reactors for green mobility and solar fuels
C-Mobile – Accelerating C-ITS mobility, innovation and deployment in Europe
TransAID – Transition areas for infrastructure-assisted driving
SAFE STRIP – Safe and green sensor technologies for self-explaining and forgiving road interactive applications
MOVESMART – Renewable mobility services in smart cities
SERIOT – Secure and safe internet of things
RESOLUTE – Resilience management guidelines and operationalization applied to urban transport environment
COMPOSITION – Ecosystem for collaborative manufacturing processes – intra- and inter-factory integration and automation
GOODROUTE – Dangerous goods transportation routing and monitoring
**Chalmers**

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<tr>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Magnus Granström</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+46 772 0000</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:Magnus.granstrom@chalmers.se">Magnus.granstrom@chalmers.se</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Göteborg, Sweden</td>
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<tr>
<td>Number of employees:</td>
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<td>Website:</td>
<td><a href="http://www.chalmers.se">www.chalmers.se</a></td>
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The electric bus 55 in Gothenburg is part of the project ElectriCity where Chalmers is one of the partners. Photo: Volvo Group.
Short summary of expertise and activities

Chalmers University of Technology has eight Areas of Advance, which brings together education, research and innovation. They are organised as strong, challenge-driven thematic platforms for strategy and long-term collaboration that hunt down specific challenges, often directly relevant for industry and society. The Areas of Advance also offer common access to cutting-edge research infrastructures as well as to several targeted centres. At the same time, our departments represent a continuous source of expertise.

Among Chalmers eight AoA the most relevant for EARPA are: Transport, Materials Science, Energy, and Information and Communication Technology.

In the transport area, the difficult task we face is to create the potential for sustainable, safe transport systems and, at the same time, increase effectiveness and efficiency. Future development cannot be conducted by a single industrial, public or academic actor. Mitigating climate impact and reducing risks in the transport sector are serious challenges that require collaboration between various stakeholders, including industry actors and the society as a whole. Addressing these challenges is an important part of reaching the Sustainable Development Goals set by the United Nations.

To address the problems we need to simultaneously address several levels in and perspectives on the transport system, taking into consideration the interaction of vehicles and vessels, networks of infrastructures and the demand and supply of transport and logistics services. We do this in the research areas identified within our profiles Sustainable vehicle technologies, Transport efficiency and customer adapted logistics and Traffic safety.

Sustainable Vehicle Technologies mainly conducts research and innovation within four areas:
• Electric and hybrid vehicles
• Vehicle concepts and design.
• Systems perspectives on vehicles
• Combustion engine research

The profile Transport Efficiency and Customer Adapted Logistics includes two highly interrelated areas, reflecting two main perspectives, where researchers meet to jointly develop multidisciplinary research, education and innovation. These areas are:
• Demand for transport and logistics
• Supply of transport and logistics

The profile area Traffic Safety targets high achievements in research, innovation and education within three areas:
• Field data collection and analysis
• Accident avoidance and automation
• Injury prevention.

Participation in EU projects

OSCCAR, VIRTUAL, HEADSTART, L3Pilot, AEOLIX/FENIX, UDRIVE, SafetyCube.
## CIDETEC

**Organisation type:** RTO  
**Contact person:** Germán Cabañero Sevillano  
**Phone number:** +34 943 309 022  
**Email:** gcabanero@cidetec.es  
**Location head office:** San Sebastián, Spain  
**Number of employees:** 180  
**Turnover before tax:** €13 Million  
**Website:** www.cidetec.es
**Short summary of expertise and activities**

CIDETEC is a private organization for applied research founded in 1997 that seeks to contribute value to companies by harnessing, generating and transferring technological knowledge. Located in the Donostia-San Sebastián (Spain), CIDETEC is comprised of three International Technological Reference Institutes in Energy Storage, Surface Engineering and Nanomedicine:

**CIDETEC Energy Storage**: Specialised in creating new battery technology and facilitating its transfer to industry. Our research activity covers from exploratory, low TRL new battery technologies and concepts up to high TRL product development for direct transference to the industry, near-ready for commercialization. Our Technological Offer comprises: 1) Battery Materials and Technologies, 2) (Pilot Plant) Battery Manufacturing; 3) Module and Pack Engineering, 4) Energy Storage Solutions, 5) Battery Testing and 6) Modelling & Simulation.

**CIDETEC Surface Engineering**: Focused on the development of surfaces and materials and their application methods on different type of substrates (metals, polymers and composites) throughout the entire value chain, mainly for automotive, aerospace and power generation sectors. This is possible through the application of different solutions, such as innovative high-performance and multifunctional coating systems (e.g. omniphobic and REACH compliant coatings) and break-through materials (e.g. reprocessable, recyclable and repairable resins and composites based on proprietary tech).

Both CIDETEC Institutes provide services and develop R&I projects for automotive companies using top-of-the-line equipment, including a pilot plant for integrated battery manufacture; equipment to synthesise, characterise and process polymers and advanced composites and 4.000 m2 laboratories and pilot plants completely equipped for surface study, characterisation and surface treatments.

**Participation in EU projects**

- **IModBatt** – Industrial Modular Battery Pack Concept for Automotive Applications
- **iHeCoBatt** – Intelligent Heating and Cooling solution for enhanced range EV Battery packs.
- **SAFEIMOVE** – Solid state Safe Lithium Metal technology towards Vehicle Electrification
- **COBRA** – CObalt-free Batteries for FutuRe Automotive Applications
- **DEFACTO** – Battery DESign and manuFACTuring Optimization through multiphysic modelling
- **LiPlanet** – Li-ION Cell Pilot Lines Network
- **HiFi Elements** – High Fidelity Electric Modelling and Testing
- **IMAGE** – Innovative Manufacturing Routes for Next-Generation Batteries in Europe
- **SPIDER** – High energy DEnsity batteries based on sulphur Rocksalt and silicon chemistries
- **Si-Drive** – Silicon Alloying Anodes for High Energy Density Batteries
- **E-MAGIC** – European Magnesium Interactive Battery Community
- **VIDICAT** – Versatile Ionomers for Divalent Calcium Batteries
- **BATTERY 2030+** – Community building and roadmapping for HP&S EES
- **ECOXY** – Bio-based epoxy 3R composites
- **INTEGRAL** – 2nd generation of thermoelectric generators into industrial reality
**CMT - Motores Térmicos**

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<th><strong>Organisation type:</strong></th>
<th>University</th>
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<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td>Mr. Jose M. Desantes</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+34 96 387 7650</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:xmarginl@mot.upv.es">xmarginl@mot.upv.es</a></td>
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<tr>
<td><strong>Location head office:</strong></td>
<td>Valencia, Spain</td>
</tr>
<tr>
<td><strong>Number of employees:</strong></td>
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<td><strong>Turnover before tax:</strong></td>
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<tr>
<td><strong>Website:</strong></td>
<td><a href="http://www.cmt.upv.es">www.cmt.upv.es</a></td>
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</tbody>
</table>
Short summary of expertise and activities

CMT - Motores Térmicos was founded in 1979 as the chair of Thermal Engines of the Universitat Politècnica de València and has evolved since to become a very dynamic and internationally well-known research institute that collaborates closely with the international automotive industry. Its main research activities are centred on the theoretical-experimental study of all the thermo-fluid dynamic processes in reciprocating internal combustion engines, with the aim of responding to specific demands of the automotive industry. Main concerns are nowadays dictated by environmental issues such as the reduction of specific fuel consumption and pollutants, as well as by the need to improve engine efficiency and reliability. Work is carried out to explore following aspects:

- Air management and turbocharging in engines.
- Injection-combustion processes and pollutant formation, especially in direct injection engines.
- Control of the noise generated by these processes.
- Thermal management in the engine.
- Engine control.

In addition, CMT also does research work for the maintenance of reciprocating internal combustion engines aimed at developing non-intrusive diagnosis techniques for predictive maintenance and at implementing integral maintenance systems for transport fleets.

CMT-Motores Térmicos has state-of-the-art experimental and computational equipment needed for these tasks, including 20 fully equipped engine test cells for single cylinder and real engines, 3 climatic chambers, including one with capabilities to simulate below zero temperatures (-30° C) and altitude conditions (up to 2800 m, 700 mbar) with enough space for a car, 3 turbo-group test benches for heavy-duty and automotive engines for the full characterisation of turbochargers, including in pulsating flow conditions, a versatile hot flow-high mass flow rig (up to 1000° C, 1 Kg/s and 5 bar) for diverse studies, and an anechoic chamber for measuring combustion and engine exhaust noise.

Participation in EU projects

CMT-Motores Termicos has successfully participated in 26 European projects, also as coordinator, including 6 projects in FP7 (Powerful, Cleaner-D, Cometnano, VECOM (ITN) as coordinator, ElecFilter (Cleansky) and Virtual Vehicle (COMET). Within H2020, the group is involved in 5 projects:

- REWARD – Improvement of Diesel engine efficiency and reduction of CO₂ emissions
- EAGLE – Develop a highly efficient gasoline engine adapted for future electrified powertrains
- DIEPER – Diesel efficiency improvement with particulates and emissions reduction
- VISION-xEV – Virtual Component and System Integration for Efficient Electrified Vehicle Development.
# Czech Technical University in Prague

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<tr>
<th><strong>Organisation type:</strong></th>
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<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td>Mr. Oldřich Vítek</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+420 224 352 507</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:oldrich.vitek@fs.cvut.cz">oldrich.vitek@fs.cvut.cz</a></td>
</tr>
<tr>
<td><strong>Location head office:</strong></td>
<td>Prague, Czech Republic</td>
</tr>
<tr>
<td><strong>Number of employees:</strong></td>
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<td><strong>Website:</strong></td>
<td><a href="http://www.cvut.cz">www.cvut.cz</a></td>
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</table>
Short summary of expertise and activities

The Centre of Vehicles for Sustainable Mobility has been established as a part of the Czech Technical University in Prague (CVUT). It links relevant research workers and postgraduate students of Faculties of Mechanical and Electrical Engineering of CVUT; moreover it has employed researchers from other universities and companies. The Centre provides research and development of spark ignition and diesel engines in the field of thermodynamics, aerodynamics, turbocharging, emissions, motor management, engine dynamics and structural strength applied to the design optimisation.

The Centre was successful in some simulation and experimental tasks concerning engine combustion of alternative fuels at limited pollution (especially using natural gas). Another large domain is optimization of turbocharging for large-bore engines, heavy – duty engines and engines for downsized-cars. It includes the recent technologies of variable turbine geometry with predictive algorithms of control and the use of pressure-wave superchargers. The use of combined simulation by computational fluid dynamics (CFD), 3-D (Star CD, Fluent, Fire) and specific 1-D methods of engine modelling (GT Power, GT Suite) and finite element method (FEM – like ABAQUS, EngDyn) together with multibody dynamics (Simpack, Adams, Madymo, PAM Crash) for these tasks is supported by commercial and in-house developed codes and by experiments using laser optical diagnostics. Results were applied, e.g., in Skoda Auto, a.s., and at some West-European and American manufacturers of cars and tractors. The Centre is an official partner of Gamma Technologies, Inc., the leader in specialized engine simulation software.

The Centre applies the results into turbocharger development in co-operation with the Czech manufacturers of turbochargers (PBS Turbo, Ltd., CZ Strakonice, a.s.) and turbo-compounded concepts of future engines (several projects of Czech Ministry of Trade and Industry).

Further it supplies the R&D results for vehicle transmission design and powertrain optimisation (mechanical, hydraulic, electrical ones), vehicle suspension design (including active Mechatronic Elements and their Control), body aerodynamics and passive safety issues. The Centre is active in engine/vehicle integrated control, especially for engine management (the project of Czech Ministry of Trade and Industry) and active/semiactive car or truck suspension (a German project) combined with ABS and other vehicle controls. The specialists of micro-eletronics are involved in rapid prototyping of control, hardware development, sensor development and CAN bus management/monitoring (Skoda Auto). The important part of research is an electric powertrain concept, useful for hybrid and fuel-cell powered vehicles.

Participation in EU projects

New projects: IMPERIUM, FUTURE RADAR, GasOn, REWARD

Finished projects: NICE, GREEN Heavy Duty Engine, InGAS, Roads2HyCOM, VECOM, POWERFUL, LESSCCV
### Eindhoven University of Technology (TU/e)

<table>
<thead>
<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Margriet van Schijndel-de Nooij</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+31 (0)6 538 463 79</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:m.v.schijndel@tue.nl">m.v.schijndel@tue.nl</a></td>
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<tr>
<td>Location head office:</td>
<td>Eindhoven, The Netherlands</td>
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<tr>
<td>Number of employees:</td>
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<td>Website:</td>
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Short summary of expertise and activities

Eindhoven University of Technology (TU/e) is a research-driven, design-oriented university of technology with a strong international focus. The university was founded in 1956, and has around 10,000 students and 3,000 staff. TU/e has defined strategic areas focusing on the societal challenges in Energy, Health and Smart Mobility, the latter representing cross-departmental about 200 researchers. TU/e has been ranked as the top Technical University in Europe, publishing almost 3000 articles and 40 patents annually. TU/e’s innovation in high tech systems is embedded in the strong industrial region of Brainport. More than six departments co-operate in high tech innovations in automotive systems, with strong research in the fields of vehicle dynamics, embedded automotive systems, hybrid and electrical power trains and components, combustion, automotive materials, batteries and automotive control, cloud based crowd-sourcing, electronics, traffic management, cyber-security, data science, human machine interaction, cross-modal urban mobility systems. Together, the departments offer a unique multi-disciplinary 3-year Bachelor program and a system-oriented 2-year Master of Science program Automotive Technology.

Participation in EU projects

Eindhoven University of Technology is involved in, amongst others, the following programs on Smart Mobility:
The FP7 i-GAME project is a research and demonstration project aiming at speeding up real-life implementation and interoperability of wireless communication based automated driving. To do this the project will arrange the second Grand Cooperative Driving Challenge – the GCDC 2016.

INLANE is a H2020 project (Galileo-2015-1) and proposes new generation, low-cost, lane-level, precise turn-by-turn navigation applications through the fusion of EGNSS and Computer Vision technology.

CLOUD-LSVA is a H2020 project (ICT-2015) and will create Big Data Technologies to address the open problem of a lack of software tools, and hardware platforms, to annotate petabyte scale video datasets.

I-CAVE is a STW Dutch national funded program consisting of 7 coherent projects and addresses current transportation challenges regarding throughput and safety with an integrated approach to automated and cooperative driving.

EMC2 is an ARTEMIS project on mixed-criticality systems for automotive. TU/e focuses on reliable control algorithms in automotive in EMC2.

The 3CCAR ECSEL project will provide highly integrated ECS Components for Complexity Control in thereby affordable electrified cars.

The ECOCHAMPS H2020 project (GV-4-2014), on Hybrid Light and Heavy Duty Vehicles addresses efficient, compact, low weight, robust and cost effective hybrid powertrains for both passenger and commercial vehicles with increased functionality, improved performance, comfort, safety and emissions below Euro 6 or VI, all proven under real driving conditions. It is conducted by 26 partners from industry (OEMs, EUCAR), suppliers (CLEPA), ESPs and universities (EARPA), including members of ERTRAC and EGVIA.

DITCM TU/e is one of the main partners in the DITCM test site, which is aimed at research into cooperative systems. DITCM test facilities extend from laboratories for simulations to the A270 public highway for large-scale testing.
**ESI Group**

**Organisation type:** R&D institute  
**Contact person:** Mr. Fouad El Khaldi  
**Phone number:** +33 1 53 65 14 14  
**Email:** fouad.el.khaldi@esi-group.com  
**Location head office:** Rungis, France  
**Number of employees:** 1200  
**Website:** www.esi-group.com
Short summary of expertise and activities

The Group’s offered solutions, resulting from 45 years of experience, bring technological empowerment for industry innovation efficiently and with confidence.

Paramount of ESI’s business model, Virtual Prototyping allows its global customers, in particular in automotive sector, to validate the vehicle design, and behavior of their product in different environments minimizing their risk, their costs and time to market, without sacrificing safety and quality. To reach these objectives.

ESI accompanies its customers in a journey towards Zero Tests, Zero Prototypes and Zero Downtime.

ESI strived to provide the best answer for the industries’ challenges and to keep its promises to boost agility and push innovation. Confining the physics of material in its DNA, ESI supports industries to validate the fabrication, assembly, and behavior of the product in different operational environments – early and throughout the whole product life.

The ability to experiment with real data and real physics at the same time gives engineers just the extra degree of freedom they need to design and to pre-certify the different vehicle variations virtually right the first time.

It is the freedom to displace physical tests and prototypes by virtually replicating product development, testing, and manufacturing with simulations. It’s Virtual Prototyping. A Virtual Prototype is based on multi-domain simulation models and captures ESI’s unique treasure of material physics. It is the freedom to assess the changes like ageing and behavior of a product at any stage and in any situation during its life. This is what the industry commonly refers to as Digital Twin. At ESI, we went the extra mile in creating a new virtual paradigm. Equipped with smart sensor data collected from real life operations, our Virtual Prototype becomes artificially intelligent to predict maintenance needs based on its current condition. We call this a Hybrid Twin™. Our customers use the Hybrid Twin™ to ensure a predictive assessment of real operational performance of their products in the targeted market environment and to improve next design and to upgrade the engineering knowledge.

2018 – Facts sheet
• Revenue 2018: €139.4M
• Number of Employees: 1200
• Operate in: 40 Countries
• Auto industry: over than 50%
• R&D investments: over than 33% of Licenses revenue
• R&D Center: 19 WW

Participation in EU projects

List of selected Projects – H2020 Automotive
OPTEMUS
OSCCAR
UPSCALE
DEFACTO
BOOST 4.0
IoTWIN
## Fundació EURECAT

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<tr>
<td>Contact person</td>
<td>Albert Riera – Fanny Breuil</td>
</tr>
<tr>
<td>Phone number</td>
<td>+34 9359 44700</td>
</tr>
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<td>Email</td>
<td><a href="mailto:albert.riera@eurecat.org">albert.riera@eurecat.org</a>; <a href="mailto:fanny.breuil@eurecat.org">fanny.breuil@eurecat.org</a></td>
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</table>
Short summary of expertise and activities

Eurecat is a leading, multi-sector technology centre active in industrial R&D, technical assistance and technology transfer, specialized in materials, industrial design, advanced manufacturing and industrial ICT, with a particular focus on innovative applications for the healthcare, transport, equipment, consumer and converting industries. EURECAT manages a turnover of 38M¤ and >500 professionals, is involved in >160 R&D projects and has a customer portfolio of >1.000 companies. Eurecat is specialized in materials, industrial design, advanced manufacturing, ICT and multimedia technologies with a particular focus on transport, mobility, logistics and automotive fields, such as:

- Advanced Manufacturing
- Materials, Lightweighting solutions
- Industry 4.0 approaches for smart, flexible and integrated manufacturing:
  - Powertrain systems and alternative fuels
  - Design and coordination of electromobility living labs
- Environmental and Energy Sustainability
- Safe, Connected and Autonomous mobility
- Cybersecurity of connected and autonomous vehicles
- Robotics and Automation

Participation in EU projects


**i-CUT** (Europe, RFCS. 2015-2018). Integrative cutting solutions to produce high performance automotive components with high-Mn steel sheet.

**STRUCTLIGHT** (Spain–2011-2015). Development of new structural components for automotive in thermoplastic matrix, with different types of non-metallic fibres, with 30% of weight reduction, while increasing vehicle safety levels and ensuring its recyclability.

**TRUSS BATTERY** (Spain – 2015). Electric and Hybrid Bus and Truck Smart Battery System Development of a modular energy storage system for hybrid, electric urban buses and trucks with enhanced life and improved performance.

**SUPERHUB** (FP7. 2011-2014). Sustainable and persuasive human mobility in future cities, aiming at providing an integrated toolkit able to stimulate citizens and goods transport companies to use alternative mobility resources.

**Mobility2.0** (FP7. 2012-2015). Co-operative ITS Systems for Enhanced Electric Vehicle Mobility, development and testing of an in-vehicle commuting assistant for FEV mobility, resulting in more reliable and energy-efficient electro-mobility.

**ICARUS** (FP7. 2012-2015). Development of unmanned search and rescue devices embedded in appropriate information architecture and integrated into existing infrastructures.

**Automotive Cybersecurity LABS** (private funding). Goal: Protect the future connected car (autonomous driving, communication between vehicles, communication with infrastructures, etc.) of the cybersecurity risks that emerge due to their connection to the network. (“security by design” in hardware and software for V2X).

**Road accidents** Use of BDA to infer correlations/causality in urban traffic accidents (private funding). Design and implementation of a specific technology stack that will enable the analysis of geolocalized data.
### FEV Europe GmbH

**Organisation type:** R&D company  
**Contact person:** Mr. Christof Schernus  
**Phone number:** +49 241 5689 6753  
**Email:** schernus@fev.com  
**Location head office:** Aachen, Germany  
**Number of employees:** Over 5800 (FEV Group)  
**Turnover before tax:** Over €550 m (FEV Group)  
**Website:** www.fev.com
Short summary of expertise and activities

FEV (Forschungsgesellschaft für Energietechnik und Verbrennungsmotoren) was founded in 1978 as a privately held company by Prof. Franz Pischinger who, at the time, headed the Institute for Applied Thermodynamics at the Technical University of Aachen. Since then, we have grown into an internationally-recognized leader in the design and development of internal combustion engines, conventional, electric, and alternative vehicle drive systems, energy technology, and a major supplier of advanced testing and instrumentation products and services to some of the world’s largest OEMs.

As vehicle propulsion systems continue to evolve, FEV’s service capabilities have expanded into the area of transmission and driveline development. The introduction of electric and hybrid electric propulsion systems, as well as the development of alternative fuels in transport, also provide opportunities for FEV to expand its service offering. FEV also provides services in the areas of vehicle development and integration as well as connected and automated driving.

With the acquisition of 51% stake of the automation and testing products manufacturer TrigTec in 2016, FEV complements the portfolio of its business unit “Software and Testing Solutions” with testing capabilities. By acquiring a majority interest of vehicle body system developer Imperia GmbH, we also expanded our expertise in the full vehicle development business segment. In 2017, we acquired the shares and business of etamax space GmbH. With this integration we gain important, additional expertise in the field of safety assessment for driving assistance systems, thus strengthening our Smart Vehicles engineering unit, expanding our area of activities beyond ground and waterborn mobility.

FEV, continued to push ahead with its global “smart vehicle” development efforts by establishing a global center of excellence (CoE) focusing on the interdisciplinary development of connectivity and the automation of future vehicle development. In addition to the integration of ADAS and AD, this will include infotainment and telematics systems as well as connected vehicle networking – meaning Car2X and Car2Cloud communication and the closely linked topic of cyber security.

Supporting its customers from more than 42 subsidiaries located on four continents with skilled research and development specialists, FEV has grown from its humble beginnings in 1978 to a global, highly-respected engineering services company serving multiple industries.

Participation in EU projects

ADVACO, ADVICE, ASSURED, AutoDrive, CEVOLVER, EAGLE, ECOCHAMPS, ECO Engine, FUNIT, FURORE, GasOn, GREEN, HI-CEPS, HIFI-ELEMENTS, ILIPT, IMPERIUM, InMar, IPSY, L3PILOT, LOTUS, Low aromatic threshold, NeDeNeF, NFCCPP, NICE, PaREGEN, POWERFUL, Pro Fuel, REDIFUEL, Roads2Hycom, SCOTT, SELFIE, ULYSSES, VCR

FEV is also member of: 5GAA, ASAM, AUTOSAR, CIMAC, EGVIA, ERTRAC, FISITA, FVA, FVV, HE, VDA
<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>R&amp;D institute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Th. Bein / Mr. Philipp Dahl / Mrs. Katja Haferburg</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+49 6151 705-463 / +49 761 2714-569 / +49 371 5397-1566</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:thilo.bein@lbf.fraunhofer.de">thilo.bein@lbf.fraunhofer.de</a> <a href="mailto:philipp.dahl@emi.fraunhofer.de">philipp.dahl@emi.fraunhofer.de</a> <a href="mailto:katja.haferburg@iwu.fraunhofer.de">katja.haferburg@iwu.fraunhofer.de</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Munich, Germany</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>500 / 315 / 610</td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

Fraunhofer LBF, EMI and IWU constitute competent and reliable research partners for complex questions of lightweight design, manufacturing, safety and reliability in the automotive sector.

The Fraunhofer Institute for Structural Durability and System Reliability LBF looks back on 75 years of experience in the field of structural durability and nowadays has expanded its expertise towards adaptronics, plastics and system reliability. With its overall competences customised solutions for safety relevant products are being developed, evaluated and realised by the LBF considering the full added value chain. The LBF provides versatile test facilities for structural durability, structural dynamics and acoustics including a newly open battery test center. Besides, the LBF performs research and provides engineering services on synthesis, processing, analysis and testing of functional and engineering plastics.

The Fraunhofer Ernst-Mach-Institute EMI analyses the physics of high-speed, transient processes in order to develop new approaches and cutting-edge solutions for applications in the automotive sector. Fraunhofer EMI has recognized expertise in mechanical characterization as well as numerical modelling and simulation of a wide spectrum of materials, components and structures under dynamic loadings. Its laboratories are equipped with full-vehicle and component crash test facilities, tomography lab and a battery test stand for destructive dynamic tests of electrical energy storage units. In addition, EMI conducts safety and reliability analyses, system design and verification for active vehicle safety and battery systems.

The Fraunhofer Institute for Machine Tools and Forming Technology IWU carries out research in the areas of energy and resource-efficient production processes and production systems, digital manufacturing, car bodies, assembly, lightweight design and smart materials. Among others, foams from various metal materials can be produced and used in sandwich lightweight applications. One focus of all research is also on ultra-short process chains incorporating the whole value chain which are optimized in test facilities including an acoustic lab, facilities for sheet and bulk metal forming, mechanical and thermal joining, micro and precision engineering, adaptronics and smart materials and more.

The Fraunhofer LBF is member of the EPoSS, EuMAT as well of ERTRAC SIG, EGVIA and ECTRI. The Fraunhofer IWU is a member of EFFRA/ Manufuture.

Participation in EU projects

ALLIANCE – Affordable lightweight design
NeoHire – Solutions to highly reduce the consumption of rare earths in permanent magnets
OPTEMUS – Holistic approach for optimised energy management and use in electric vehicles
EU-LIVE – Efficient urban light vehicles
JOIN-EM – Electromagnetic welding for dissimilar materials joining
FOCUS – Creating Clusters of Factories of the Future Projects
iMain – A novel decision support system for intelligent maintenance
**Ghent University**

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Jeroen De Maeyer</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+32 9 264 53 74</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:Jeroen.DeMaeyer@ugent.be">Jeroen.DeMaeyer@ugent.be</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Gent, Belgium</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>15000</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.ugent.be">www.ugent.be</a></td>
</tr>
</tbody>
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Short summary of expertise and activities

Ghent University attracts over 41,000 students. We are ranked 62nd in the Shanghai and 118th in the Times ranking. The university is one of the fastest growing European universities in terms of research capacity and productivity. Our research activities in automotive are spread over several research valorization clusters. In each of the clusters activities range from fundamental to applied research, strongly connected to regional and international stakeholders.

Smart Motion Products in automotive
The Machineries & Factories cluster (125FTE) works a.o. on smart motion products incl. drive trains for vehicle applications. Our activities include (i) innovative electrical machines and their power electronics implementing sensorless, fault-tolerant machine level control strategies; (ii) advanced cooling incl. 2-phase; (iii) convex mapping based control strategies for hybrid & full-electric drive trains; (iv) hybrid modelling approaches for digital twins; (v) elasto-hydraulic-lubrication modelling. www.ugent.be/m-f/en

Composites and AM
Composites at Ghent University is the industrial gateway to all composite and AM related research at Ghent University. We focus on 4 research lines (1) Simulation and testing of the mechanical behavior through a combined approach of instrumented experimental testing and numerical modelling; (2) Additive Manufacturing; (3) Monitoring and NDT of composite materials; (4) Processing and recycling of thermoplastics. We work very closely with a.o. Siemens Industry Software, Honda, Toyota, Mitsubishi Rayon in the SIM-M3 program (http://www.sim-flanders.be/research-program/m3). http://www.compositesconsortium.ugent.be/en/

Combustion engines

Metals
The Metals consortium develops solutions related to metal applications in three areas: (i) developing and making of metals; (ii) characterization (metallurgic, mechanic, tribologic, electromagnetic) and (iii) design, construction and exploitation of industrial constructions and machines offering optimal functionality and durability. Metals is targeting sectors wherein metals and/or metals in combination with other materials play an important role, including the automotive. https://www.ugent.be/metals/en

Participation in EU projects
We have been working in several large(r) projects both at a regional and European level. Exemplary projects are:
EMTECHNO
HSHE
FP7-3D Light Trans
H2020-EXTREME
H2020-MaX
Interreg 2Seas-QUALIFY
H2020-PolyCE
H2020-3DRepair
H2020-EIT RACE-TP
Horiba MIRA

<table>
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<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Nigel Skellern</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+44 2476355536</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:nigel.skellern@horiba-mira.com">nigel.skellern@horiba-mira.com</a></td>
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<tr>
<td>Location head office:</td>
<td>Nuneaton, United Kingdom</td>
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<tr>
<td>Number of employees:</td>
<td>490</td>
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<tr>
<td>Turnover before tax:</td>
<td>€60 Million</td>
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<td>Website:</td>
<td><a href="http://www.horiba-mira.com">www.horiba-mira.com</a></td>
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The photo shows a robot in the loop simulator which is used for developing and demonstrating co-operative driving algorithms.
Short summary of expertise and activities

Horiba MIRA is recognised as a leading independent automotive research, product engineering, testing, consultancy and certification organisation. Staffed with leading technical experts and programme managers and operating as a not for profit research organisation, innovation and creativity is at the very heart of Horiba MIRA’s operation and culture. Horiba MIRA also owns and operates over 30 major test facilities covering the following vehicle attribute areas:

- Aerodynamics
- Thermal Management
- Electrical & EMC
- Environmental
- Materials
- NVH
- Powertrain & Emissions
- HEV Battery Testing
- Proving Ground
- Ride & Handling
- Safety & Structures
- Intelligent Transport Systems (A major ITS proving ground, innovITS ADVANCE, is owned by innovITS and located at Horiba MIRA)

Our primary research interests cover the following technology areas:

Low carbon Vehicle Engineering
Emphasis on novel concepts and whole vehicle engineering challenges in developing Hybrid and Electric Vehicles.

Intelligent Transport Systems
Emphasis on safety related systems engineering, vehicle to vehicle and vehicle to infrastructure communications aspects of vehicle ITS systems.

Autonomous Engineering
Emphasis on sensor integration and autonomous vehicle control engineering. Whilst focussed mainly on defence applications we see opportunities for technology transfer to the automotive sector arising from this research.

Participation in EU projects

Horiba MIRA’s involvement within EU research stems back to FP4. Below is a summary of just some of the research projects we have contributed to:

Advanced Telematics for enhancing the safety and comfort of motorcycle riders (SAFERIDER), Train Interior Passive Safety for Europe (SAFEINTERIORS), Vehicle-to-vulnerable road user cooperative communication and sensing technologies to improve transport safety (WATCHOVER), Co-operative systems for road safety “Smart vehicles on smart roads (SAFESPOT), Electronic architecture and systems engineering for integrated safety systems (EASIS), Guidelines for electromagnetic compatibility modelling for automotive requirements (GEMCAR), Road and Air Safety Engineering (RAISE), Sensors and system Architecture for Vulnerable road Users protection (SAVE-UI), Improvement of Rollover Safety for Passenger Vehicles (ROLLOVER), Pooling Knowledge to Promote Rail Safety (TRAINSsafe), Proposed Reduction of car crash Injuries through improved SMart restraint development technologies (PRISM), Side Impact Dummy Biomechanics and Experimental Research (SIBER), Passive safety for Tramways for Europe (SAFETRAM).
IESTA (Institute for Advanced Energy Systems & Transport Applications)

<table>
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<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Dipl.-Ing. Dr.techn. Michael Nöst, MBA</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+43 664 6437320</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:michael.noest@iesta.at">michael.noest@iesta.at</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Graz, Austria</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.iesta.at">www.iesta.at</a></td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

IESTA is a non-university SME-sized research institute with a network of dedicated experts in the fields of: Smart Mobility, Automated Driving, Road Safety & Cybersecurity
• Alternative Propulsion Technologies
• Embedded Systems and IoT
• Energy Conversion and Energy Efficiency Analyses
• System Architecture and Requirements Management
• Cost Assessment Analyses

As such IESTA has participated in numerous cooperative R&D Projects on national and European level, as initiator, supporter and partner. IESTA is not only active in the field of road transport, but is also in the rail and aviation sectors. This allows the introduction of a strong inter-domain view and expertise and the related fruitful transfer of knowhow. IESTA experts have a proven record in basic and applied research, technology and innovation in industry, academia and public bodies, thus providing a comprehensive understanding of different stakeholders.

Participation in EU projects

IESTA has participated in numerous cooperative R&D Projects on national and European level.

EU proposal coordination / support of:
EU FP7 ITN 2011 „GRESIMO”
EU FP7 ITN 2013 „BATWOMAN”
EU ARTEMIS Call 2012 „CRYSTAL”
EU ARTEMIS Call 2013 „DEWI”
EU ECSEL R&I Action 2014 „TEAADS”

Proposal & project* coordination on national level of:
VECEPT* – All Purpose Cost Efficient Plug-In Electric Vehicle
eMPROVE* – Innovative solutions for the industrialization of EVs
eco2jet* - Evaluation and demonstration of an energy-efficient, cost-efficient and ecofriendly HVAC system using R744 based on the ÖBB railjet
KeyTech4EV – Key Technologies for Low-cost EV Platforms
GreenHVAC4Rail* – Heating ventilation and Air Conditioning
EV-CEA* – Electric Vehicle with Combustion Engine Assist
eWingDelcer* – Energy optimized delcer of a airplane wing
TWID* – Thermal Wing Ice Detector
PF-EC(H)EV – Poly Fuel Energy Conversion for Hybrid EVs
EN4MAX – Energy for maximum range
IRE* – Integrated Range Extender
EV-CEA – Electric Vehicle with Combustion Engine Assist
MAGNISCOPE – Magnificent Diagnosis Digital Scope
NG Mobility – Next Generation Mobility

H2020 GV03 R&I Action 2016 „ADVICE”
H2020 LC-GV-01-2018 „SYS2WHEEL”

H2020 GV03 R&I Action 2016 „ADVICE”
H2020 LC-GV-01-2018 „SYS2WHEEL”
**IFP Energies nouvelles (IFPEN)**

<table>
<thead>
<tr>
<th><strong>Organisation type:</strong></th>
<th>Public-sector R&amp;I body (RTO)</th>
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<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td>Mr. Gaetano de Paola</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+33 1 47 52 53 57</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:gaetano.de-paola@ifpen.fr">gaetano.de-paola@ifpen.fr</a></td>
</tr>
<tr>
<td><strong>Location head office:</strong></td>
<td>Rueil-Malmaison, France</td>
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<tr>
<td><strong>Number of employees:</strong></td>
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<td><strong>Website:</strong></td>
<td><a href="http://www.ifpenergiesnouvelles.fr">www.ifpenergiesnouvelles.fr</a></td>
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</tbody>
</table>
**Short summary of expertise and activities**

IFP Energies nouvelles (IFPEN) is a major research and training player in the fields of energy, transport and the environment. From research to industry, technological innovation is central to all its activities, structured around three strategic priorities: sustainable mobility, new energies and responsible oil and gas.

**Sustainable mobility**

To meet the triple challenge of boosting energy efficiency in road, off-road, maritime and air transport, improving the environmental performance of powertrains and diversifying energy sources, IFPEN works with industrial partners, major groups and SMEs to develop innovative technological and software solutions in order to optimize powertrain efficiency, develop vehicle electrification and reduce emissions.

Its research work relates to the improvement of powertrain performance, assessment and validation of alternative low-carbon fuels, electrified vehicles and connected vehicles. It also develops technologies and processes for the energy recovery and production of electricity for small mobile and stationary installations.

IFPEN, as regard its Transports Business Unit activity, has been part of the Carnot Institutes network since 2006, under the name of IFPEN Transports Energy Carnot Institute. Within a pooled and targeted action at the service of the automotive sector, IFPEN is also partner of Carnauto, inter Carnot project supported by the French National Research Agency aiming at improving R&D access to small industry actors.

**Participation in EU projects**

- **LONGRUN** – Development of efficient and environmental friendly LONG distance powertrain for heavy duty trucks and coaches
- **MODALIS²** – MODelling of Advanced LI Storage Systems
- **EU-LIVE** – Efficient Urban Light Vehicles
- **OPTEMUS** – Optimised Energy Management and Use
- **GasOn** – Gas-Only Internal Combustion Engines
- **Photofuel** – Biocatalytic solar fuels for sustainable mobility in Europe
- **REWARD** – Real World Advanced Technologies for Diesel Engines
- **ADVICE** – ADvancing user acceptance of general purpose hybridized Vehicles by Improved Cost and Efficiency
- **Eagle** – Efficient Additivated Gasoline Lean Engine
- **DiePeR** – Diesel efficiency improvement with Particulates and emission Reduction
- **Sureal-23** – Understanding, measuring and regulating sub-23 nm particle emissions from direct injection engines including real driving conditions
- **Upgrade** – Highly efficient particulate free gasoline engines
- **JETSCREEN** – JET Fuel SCREENing and Optimization
- **CEVOLVER** – Connected Electric Vehicle Optimized for Life, Value, Efficiency and Range
- **DEMOBASE** – DEsign and MOdelling for improved BAtery Safety and Efficiency
- **REFREEDRIVE** – Rare Earth Free e-Drives featuring low cost manufacturing
**IKA - Institute for Automotive Engineering - RWTH Aachen University**

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Prof. Dr. Peter Urban</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+49 241 80 25600</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:peter.urban@ika.rwth-aachen.de">peter.urban@ika.rwth-aachen.de</a></td>
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<tr>
<td>Location head office:</td>
<td>Aachen, Germany</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>350</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.ika.rwth-aachen.de">www.ika.rwth-aachen.de</a></td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

Institute for Automotive Engineering (ika) is part of RWTH Aachen University and is active in the field of applied automotive research. RWTH Aachen University is recognised as one of the leading universities world-wide in vehicle technology. The range of services offered by ika reaches from the idea up to the experimental testing of prototypes and production vehicles. ika’s activities are tailored to industrial demands and structured in six research areas: vehicle concepts & HMI, vehicle structures, vehicle dynamics & acoustics, energy management & drivetrains, vehicle intelligence & automated driving and traffic psychology & acceptance.

Public funding, industrial sponsoring as well as a great deal of personal effort on behalf of the institute’s staff are major factors to make the resources available, which are required in research and advanced development projects. ika’s equipment comprises:

- numerous testing facilities:
  - full-scale test tracks, a.o. with pavement for accelerated passage
  - highly dynamic driving simulator
  - crash-test facility, pedestrian protection test bench and drop towers
  - servo-hydraulic test benches for quasi-static loading and durability tests
  - semi-anechoic test chamber (class 1) with temperature range from -20 to +40 °C
  - explosion-proof battery test bench (1000 V/1000 A)
  - psycho-acoustic laboratory
  - tyre test benches incl. access to flat track
  - test bench for k&c and inertia parameter identification
  - dynamic driveline test benches

- cv-joints test rigs
- various test vehicles for automated driving
- access to Aldenhoven Testing Center (ATC)
- etc.

- latest commercial simulation software for:
  - traffic flow simulation
  - analyses of powertrain efficiency
  - crash analyses
  - multi-body simulation (chassis and dummy kinematics)
  - aerodynamics simulations
  - multidisciplinary numerical optimization
  - etc.

- mechanical, electric/electronics, and automobile workshops

This wide range of competencies and resources enables analysing and optimising the vehicle as a whole paying attention to the complex interactions between its individual subsystems.

Participation in EU projects

ActiveTest, AdaptIve, ADVICE, AIDER, ALLIANCE, APOLLO, APSN, ARCADE, AsPeCSS, AUTOFORE, CARTRE, CHAMELEON, CIVITAS-DYN@MO, CONVENIENT, COVER, CityMobil, DELIVER, DESERVE, DOMUS EAGAR, EASYBAT, ECOCHAMPS, ecoMOVE, ELEDRIIVE, ELMAS, ELVA, ENLIGHT, epsilon, EU-LIVE, euroFOT, eVALUE, ERANET, FCTESTNET, FLYTECH, FOTNet2, FOT-Net Data, FUERO, FUEVA, FURORE, FUTURE-RADAR, Friction, GAST, GOAL, HADRIAN, HEADSTART, HySYS, HyTRAN, IMPERIUM, INMOVE, Intersafe-2, JobVehElec, L3pilot, Matador, MeBeSafe, MID-MOD, ModulED, NEMO, OPTEMUS, OSCCAR, OSTLER, PreVENT, Protector, Roads2Hycom, ROTRANOMA, SafeEV, SAFER-LC, SAFIER, SARTRE, SCOUT, SUVA, SuperLightCar, TeleFOT, TRA Visions 2016, TRA Visions 2018, YEAR 2010
## INEGI - Institute of Science and Innovation in Mechanical and Industrial Engineering

<table>
<thead>
<tr>
<th><strong>Organisation type:</strong></th>
<th>Research and Technology Organization</th>
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</thead>
<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td>José Sampaio</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+35 1229578710</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
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<tr>
<td><strong>Location head office:</strong></td>
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<td><strong>Number of employees:</strong></td>
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<td><strong>Website:</strong></td>
<td><a href="http://www.inegi.pt">www.inegi.pt</a></td>
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*Lightweight Thermoplastic Composites to replace metal structural components*
Short summary of expertise and activities

INEGI is an Industry-oriented RTO with research on advanced materials and production technologies, experimental and applied mechanics, products and systems. More than 50% of a turnover of 8 million euros comes from R&I projects funded by the industry.

Core R&D linked to the automotive sector: **Advanced material systems.** New polymeric-systems/ fibre-reinforced polymer composites; multi-material multifunctional systems (includes laminates hybridization and modified polymer matrices for composites). **Metal casting.** Foundry processes for advanced alloys, e.g. nickel, titanium, copper, aluminium, magnesium and others. Low contamination and high filling casting for thin wall components and intricate geometries. **Advanced Models for Composites.** Non-linear analytic and numerical models for composite laminate design. Prediction of fatigue and damage tolerance in laminates. Optical NDT and Structural Health Monitoring. Structural monitoring and non-destructive inspection of composite structures mainly by: IR detection, DIC, Moiré, interferometric laser techniques. **Advanced Product Development.** New and flexible framework of Design for eXcellency (DfX), capable to simplify the multi-dimensional analysis of complex products and systems, such as transport vehicles. LCA/LCC Axle transmissions (differentials) for vehicle powertrain. Tribological research on Hertzian lubricated contacts; gear tribology (tribological behavior of low loss gears manufactured in non-metallic materials; micropitting damage models) and rolling bearing tribology. **Vibrations.** Numerical and experimental analysis of vibrations of structural elements in the linear and non-linear regimes. FE-based models with low number of degrees of freedom for vibration analysis. Dynamic stability and energy transfer between vibration modes.

**R&I projects with national manufacturers** (collective and service vehicles and components):
- **LATCH & LATCH II** - Hybrid concepts for structural car components, replacing steel by thermoplastic composites;
- **HYPERTURB** - Foundry Processes / Titanium Aluminide Turbines in Turbochargers;
- **BIOMON** - Towards long-life bio-lubricants using advanced design and monitoring tools;
- **EREBIODE** - Emission reduction from engines and transmissions substituting harmful additives in bio-lubricants by tribo-reactive materials;
- **ImpactBondDesign** - Design methodology for impact resistant bonded multi-material automotive structures.

**Participation in EU projects**

ENLIGHT, ECO-COMPASS, LAY2FORM, LEVEL-UP.
**Organisation type:** University  
**Contact person:** Dr. Eckhard Szimba  
**Phone number:** +49 (0)721 608 47689  
**Email:** szimba@kit.edu  
**Location head office:** Karlsruhe, Germany  
**Number of employees:** 9300  
**Turnover before tax:** €900 Million  
**Website:** www.kit.edu
Short summary of expertise and activities

The Karlsruhe Institute of Technology (KIT) was established by the merger of the Forschungszentrum Karlsruhe and the Universität Karlsruhe (TH) in 2009. KIT combines the tasks of a university of the state of Baden-Württemberg with those of a research center of the Helmholtz Association in the areas of research, teaching, and innovation.

Combining the traditions of a renowned technical university and a large-scale research institution, KIT contributes to the sustainable solution of the grand challenges that face the society, industry, and the environment. Engineering sciences, natural sciences, the humanities, and social sciences make up the scope of subjects covered by KIT. In high interdisciplinary interaction, KIT’s research covers the complete range from fundamental research to close-to-industry applied research and from small research partnerships to long-term large-scale research projects.

Research at KIT is organized along eight “KIT Centers”, which focus on challenges of fundamental importance to our society or on key issues resulting from the striving for knowledge. KIT’s Mobility Systems Center embraces a wide range of multidisciplinary competencies to develop solutions for tomorrow’s mobility. The KIT Center brings together about 800 engineers, natural scientists, economists and social scientists from more than 35 institutes, and covers the following research fields: automotive vehicle technology, vehicle concepts, vehicle design and production, infrastructure and transport, digitalisation of mobility, as well as mobility and society.

The KIT Mobility Systems Center provides both deep expertise in each specific research field, and – through its multidisciplinary concept – a sound basis to address current and future mobility challenges in a holistic systems perspective such as autonomous driving, seamless mobility, alternative drive systems and energy-efficient transport.

Participation in EU projects

**KTH Royal Institute of Technology**

**Organisation type:** University  
**Contact person:** Peter Göransson, Mikael Nybacka  
**Phone number:** +46 8 790 79 63, 46 70 240 46 71  
**Email:** pege@kth.se, mnybacka@kth.se  
**Location head office:** Stockholm, Sweden  
**Number of employees:** 5000  
**Website:** www.kth.se
Short summary of expertise and activities

KTH Royal Institute of Technology in Stockholm is Sweden’s largest technical research and learning institution and home to students, researchers and faculty from around the world dedicated to advancing knowledge. The wide spectrum of research at KTH demands variation in focus, approach and formation. We work to create an open atmosphere and break down traditional barriers between academic disciplines. Basic research is conducted in parallel with applied research, and the same is true of multidisciplinary work and specifically targeted work. Based on strong areas of research at KTH, six Research Platforms for multidisciplinary research have been created: Transport, Life Science, Materials, Digitalization, Energy, Industrial transformation. The KTH Transport Platform is one the focal points in the collaborations with KTH’s Strategic Partners with activities related to the transport field. KTH has formed Strategic partnerships with 11 companies, out of these 9 have a link to the Transport research area, see also KTH Strategic Partnering.

KTH Transport Platform

With the ongoing globalisation, a growing world population and an increasing urbanization, the transport of people and goods sees a tremendous growth worldwide. The challenges associated to the environment, natural resource utilization and space allocation are becoming more and more complex to solve. To reach this, we need to break with the disciplinary/thematic research paradigm and in joint collaborative efforts; involving industry, society and academia; formulate a new approach among others involving an increasing degree of multi-disciplinarity in research as well as education and training. The KTH Transport Platform is a vehicle for integration of transport related research from all of the Schools of KTH; individual researchers, multi-disciplinary oriented research centres as well as infrastructure in the form of laboratories etc. According to the latest mapping, more than 850 researchers at KTH are actively involved in transport related research. They are members of more than 40 research groups and 14 Centers of Excellence. The activities are managed through 5 thematic areas each contributing with a technology oriented vision: Holistic transport system, Innovative vehicle concepts, Policy and institutions, Transportation infrastructure, Transport in the Information Age. More about the KTH research activities in Transport may be found at KTH Transport platform.

Participation in EU projects

KTH has within Transport participated to a large number of EU projects, from FP4 through Horizon 2020. Examples of recent involvement are: EIT KIC Urban Mobility, LOWBRASYS, ECCENTRIC, METPEX, COMPANION, ENSEMBLE WISE-ACT, EVERSSAFE
Organisation type: University
Contact person: Mr. Wim Desmet
Mr. Bert Pluymers
Phone number: +32 16 32 24 80
+32 16 32 25 29
Email: wim.desmet@kuleuven.be
bert.pluymers@kuleuven.be
Location head office: Leuven, Belgium
Number of employees: 9848
Website: www.kuleuven.be
Short summary of expertise and activities

The KU Leuven (University of Leuven) was founded in 1425 and is one of the oldest universities in Europe and the largest one in Belgium. It has 40257 students and a staff of 9848, with 14 faculties covering all disciplines in humanities, life sciences, physical sciences & engineering. The mission of the university is threefold: education, research and service to community and industry. It is the explicit policy to transfer knowledge and experience gained in research to students in different levels of education.

The PMA division of the department of Mechanical Engineering performs research in production engineering, machine design and automation and has a staff of about 150 co-workers. The Noise and Vibration Research Group, which is part of PMA, is one of the world-leading research groups in noise and vibration engineering. This group counts 8 permanent staff members, 8 post-doctoral senior researchers and 59 pre-doctoral junior researchers.

The activities of the research group are clustered around 5 major research lines: (i) large bandwidth dynamics of lightweight systems, (ii) multibody dynamics, (iii) optimal parameter and state estimation/experimental identification, (iv) smart system dynamics and (v) robust optimal control. The group combines expert knowledge of dynamics and mechatronics into a renewed context of emerging themes, such as techniques that can be used in-situ and on-line and through the entire lifetime of (connected) mechatronic systems. The group holds two applications roadmaps: (i) the development of lightweight, compact acoustic resonant metamaterials with enhanced vibroacoustic behaviour and (ii) research on coupled state/parameter/input estimators with application in virtual sensing applications such as a mechanical stress camera.

Participation in EU projects

Throughout the years, the Noise and Vibration Research Group has been actively involved in many national and international research projects and thematic networks, relevant to vehicle engineering.

These include past and on-going European research projects (FP4, FP5, FP6, FP7 and H2020) such as ALIVE, ASANCA, ASANCA II, ANRAVA, BRAIN, CANTOR, DAFNOR, ECOSYSTEMS, ENLIGHT, ENOVNET, EMBOCON, ESTOMAD, FATYNAMICS, IDEAL-VENT, INMAR, MID-MOD, NOISELESS, PIANO, SALOMO, Science2Society, SEANET, SMARTACUS, SOQCRATES, TECABS and VAMP.

Next to these, KU Leuven is involved in Marie Sklodowska Curie training projects such as AETHER, EDSVS I and II, MADUSE, SIM-VIA2, VECOM, IMESCON, ANADE, FLOWAIRS, INTERACTIVE, SUPERPANELS, GRESIMO, MAREWINT, ITEAM, VIPER, SSeMID, Smart Structures CAE, EXPLICA, MID-FREQUENCY, TIRE-DYN, PAM, EMVeM, ANTARES and eLiQuiD, coordinating the latter eight projects.
Laboratory of Applied Thermodynamics (LAT) - Aristotle University Thessaloniki

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<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Zissis Samaras</td>
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<tr>
<td>Phone number:</td>
<td>+30 23 10 996014</td>
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<td>Email:</td>
<td><a href="mailto:zisis@auth.gr">zisis@auth.gr</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Thessaloniki, Greece</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>&gt; 4000</td>
</tr>
<tr>
<td>Website:</td>
<td>lat.eng.auth.gr</td>
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</tbody>
</table>
Short summary of expertise and activities

The activities of LAT mainly focus on basic and applied research in the area of emissions from internal combustion engines and the corresponding emission control technologies. Another research area concerns the study and development of systems for the utilization of renewable energy sources.

LAT’s research activities target the following areas:

- Energy efficiency evaluation of internal combustion engines and vehicles, with focus on combustion, fuels and additives, hybrid vehicles, study and development of racing vehicles.
- Exhaust aftertreatment technology, with emphasis on development, assessment and simulation of aftertreatment devices, measurement technology, on-board diagnostics and applied catalysis.
- Renewable energy sources, with focus on biofuels, fuel cells and biomass gasification.
- Emission inventories and projections related with road transport emissions, fleet evolution models, and policy assessment.

Participation in EU projects

LAT has been involved in the following EU projects:

**LEITAT Technological Center**

<table>
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<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Dr. Vincent Jamier</td>
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<td>Phone number:</td>
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<tr>
<td>Location head office:</td>
<td>Terrassa, Spain</td>
</tr>
<tr>
<td>Number of employees:</td>
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<tr>
<td>Turnover before tax:</td>
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<td>Website:</td>
<td>projects.leiat.org</td>
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</table>
Short summary of expertise and activities

LEITAT is a private technical institute with more than 110 years of experience in industrial innovation processes. We transform technological and scientific results into economic and competitive value for our clients and collaborating entities. Over 1500 customers benefit from our talent, creativity and strong commitment.

We bring knowledge and innovation to our customers through applied research and technical testing in the fields of chemistry, energy, environment, materials, engineering and life sciences. We rely upon our 240 highly skilled team members who deliver flexible solutions to face any industrial challenge.

Advanced Materials for vehicles

- Development of smart textiles and electronic integration
- Elaboration of green composites based on natural fibres
- Preparation of new polymers and biopolymers with advanced properties
- Development of new composites and nanocomposites of high performance and sustainable
- Development of paints, coatings and inks
- Materials for (post-lithium) batteries and supercapacitors
- Material testing: ageing, mechanical and fire resistance, certification
- Thermoelectric materials for cooling and heating.

Energy + Engineering for vehicles

- Advanced manufacturing including printed electronics, additive manufacturing, smart robotics, composites processing
- Enertronics including thermoelectrics, photonics and photovoltaics, energy storage and electrochemistry, fuel cell technologies
- Devices such as sensors, biosensors, microstrip components
- 3D printing of new component designs and multi-material approach, electrode design
- Hybrid systems combining supercap and post-lithium
- 2nd life battery integration, recycling processes
- Design of exhaust catalytic converters and antibacterial fuel tanks
- Wireless and autonomous micro sensing, harvesting and energy storage platform.

Participation in EU projects

PRESTIGE (H2020-NMBP-2017-two-stage) – Printed materials and interactive structures for innovative design of creative consumer products

EIROS (H2020-NMP-2015) – Erosion and Ice Resistant cOmposite for Severe operating conditions

TO-SYN-FUEL (H2020-LCE-2016-RES-IA) – Demonstration of the most promising advanced biofuel pathways

ALISE (H2020-NMP-GV-2014) – Advanced Lithium Sulfur battery fo Electrical vehicle develops a 500 Wh/Kg stable LiS cell capable of fulfilling the expectancies from European
Ludwig-Maximilians-Universität München

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<tr>
<th>Organisation type:</th>
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<tr>
<td>Contact person:</td>
<td>Prof. Dr. Steffen Peldschus</td>
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</tr>
<tr>
<td>Location head office:</td>
<td>München, Germany</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.uni-muenchen.de">www.uni-muenchen.de</a></td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

Founded, as Bavaria’s first university with a papal concession in 1472, the LMU has been known for decades for its excellent science. LMU Munich is the leading teaching and research university in Germany, ranking 1st in Germany in the latest Times Higher Education World University Ranking. LMU Munich is a large beneficiary of the German excellence initiative and has hosted more than 85 ERC grants. In FP7 LMU Munich participated in 21 Marie Curie Initial Training Networks and coordinated 4 of them. In Horizon 2020 LMU has already been awarded 21 European Training Networks, of which 3 are coordinated by LMU researchers/scientists. Finally, LMU Munich currently offers more than 35 structured doctoral programs in a broad range of disciplines.

The Institute of Legal Medicine is part of the medical faculty, its Biomechanics and Accident Analysis Group deals with the detailed investigation of traffic accidents, their analysis as well as biomechanical backgrounds and the simulation of injury mechanisms. The primary field of application is the safety of road users, but this is extending to all neighbouring scenarios such as falls and violence. Eleven scientists from Mechanical Engineering, Medicine, Physics, Computer Science, Ergonomics and Biology contribute to in-depth crash studies and injury analysis, data analysis using epidemiology methods and studies examining the impact of anthropometry variations on road user injury risks. The department has a pronounced expertise in investigation of possible impact scenarios and related injury mechanisms using numerical human body models and is able to analyse and evaluate potential hazards for all kinds of road users.

Participation in EU projects

**EU-Projects**

Running:
- **OSCCAR** (Future occupant safety for crashes in cars): Development of future advanced occupant protection systems using integrated approach
- **PIONEERS** (Protective innovations of new equipment for enhanced rider safety): To improve the performance of safety systems (Personal Protective Equipment and on-board systems), to develop better test and assessment methods for PTW users

Finished:
- **SENIORS** (Safety enhancing innovations for older road users): To improve the safe mobility of the elderly using an integrated approach
- **MOTORIST** (Motorcycle Rider Integrated safety; Marie-Curie-Actions): Safety systems
- **PISa** (Development and Implementation of reliable and fail-safe integrated safety systems)
- **MyMOSA** (Safety systems)
- **APROSYS** (Scientific and technology development of critical technologies improving passive safety for road users in all relevant accident types and accident severities)
**Loughborough University**

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<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Pete Thomas</td>
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<td>Phone number:</td>
<td>+44 1509 226931</td>
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</tr>
<tr>
<td>Location head office:</td>
<td>Loughborough, United Kingdom</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>4000</td>
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<tr>
<td>Website:</td>
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Short summary of expertise and activities

Transport and mobility, including automotive and aeronautical engineering, is a major area of research across the Loughborough University. The main focus of relevant research takes place in three main subject areas, road and vehicle safety, automotive and aeronautical engineering and intelligent mobility.

Road and Vehicle Safety
With the philosophy to focus on the questions of real-world safety, teams within the University have conducted in-depth crash investigations virtually continuously since 1982. Initially these investigations concentrated on the passive safety of cars and the in-depth data was used to support many EU vehicle safety developments including the EU Front (96/79/EC) and Side Impact (96/27/EC) Directives and the crash testing programme of EuroNCAP. More recently crash investigations have been extended to include the causes of accidents involving all types of vehicles [On-The-Spot Study, 1999 - 2010, Road Accident In-depth Study, 2012 - 2015]. The in-depth accident data has been used to support many of the vehicle development programmes of individual car manufacturers. The crash injury data and the procedures developed to support safety policy-making have been utilised in many Framework funded research projects.

Aeronautical and Automotive Engineering
Loughborough University is rare in that it combines both road vehicle and aircraft engineering in the Department Aeronautical and Automotive Engineering. With 35 Academics the Department is structured across the five areas of aerodynamics, control systems, engines and fuel cells, lightweight structures and vehicle refinement. The Department has a strategic co-operation with several large industrial groups including Rolls-Royce, Ford Motor Company, Jaguar Land Rover, Caterpillar, JCB, Lotus, Bentley amongst others.

Intelligent Mobility
Loughborough University has established a new cross-university activity that brings together the wide range of research conducted into intelligent mobility. The research falls into two main areas. The monitoring and evaluation cluster combines in-depth evaluation methods including Human-Machine-Interface evaluations and naturalistic driving behaviour analysis together with a large scale systems evaluation capability to measure the impact on mobility, congestion and the environment. The research within the Systems Engineering domain supports the development of integrated transport system architectures within a system of systems approach.

Participation in EU projects

**MOBI = The Mobility, Logistics and Automotive Technology Research Centre**

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<th><strong>Organisation type:</strong></th>
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<tr>
<td><strong>Contact person:</strong></td>
<td>Mr. Joeri Van Mierlo</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+32 2 629 28 04</td>
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<td><strong>Email:</strong></td>
<td><a href="mailto:Joeri.Van.Mierlo@vub.be">Joeri.Van.Mierlo@vub.be</a></td>
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<tr>
<td><strong>Location head office:</strong></td>
<td>Brussels, Belgium</td>
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<td><strong>Number of employees:</strong></td>
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<tr>
<td><strong>Website:</strong></td>
<td>mobi.research.vub.be</td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

The Mobility, Logistics and Automotive Technology Research Centre (MOBI) is nested at the Vrije Universiteit Brussel (VUB) and is leader in sustainable mobility and logistics. It develops electric and hybrid vehicles technologies, and evaluates new concepts in mobility and logistics on their sustainability. MOBI aims at a better and safer mobility of people and goods, to reduce congestion and environmental impacts in urban and inter-urban areas, and to improve operational efficiency. Its multidisciplinary team of more than 100 specialists enables a holistic approach.

MOBI’s research and main activities:

- Research on different aspects of urban mobility; travel behaviour analysis, mobility management, co-creation, travel time use, equity and stakeholder participation
- Sustainable Energy Communities connect renewable energy generation with advanced multi-energy storage and prosumers.

MOBI has an extended network of international academic, industrial and public authority contacts, and works closely together with different international scientific associations, including EARPA, AVERE, EGVIA, EPE, EERA, EMIRI, UITP, ECTRI, etc.

Participation in EU projects

ORCA, ASSURED, COLHD, ENSEMBLE, OBELICS, FUTURE-RADAR, ACHILLES, FITGEN, Automated Shuttle Service for Brussels Health Campus, HIPERFORM, CEVOLLER, DRIVE-2-THE-FUTURE, DIAS, SPACE, SHOW, CoFBAT, BATTERY 2030+, VISION-xEV, PANDA, SELFIE, UPSCALE, REDIFUEL, HiFi-ELEMENTS.
**Mondragon Unibertsitatea**

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<th><strong>Organisation type:</strong></th>
<th>University</th>
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<tr>
<td><strong>Contact person:</strong></td>
<td>Zigor Azpilgain</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+34 656 766 881</td>
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<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:zazpilgain@mondragon.edu">zazpilgain@mondragon.edu</a></td>
</tr>
<tr>
<td><strong>Location head office:</strong></td>
<td>Mondragon, Spain</td>
</tr>
<tr>
<td><strong>Number of employees:</strong></td>
<td>240</td>
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<td><strong>Turnover before tax:</strong></td>
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<tr>
<td><strong>Website:</strong></td>
<td><a href="http://www.mondragon.edu/en/home">www.mondragon.edu/en/home</a></td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

The Faculty of Engineering of Mondragon Unibertsitatea is a non-profit integral education cooperative, declared of public utility, whose main activities include education, research and technology transfer to companies and other public or private entities. One of its main characteristics is the close and permanent relationship with industry, enabling to outline the educational offer by adapting it to the needs of companies and organizations.

The participation of the professors at MGEP in research projects is one of the important focal points in its educational innovation process. The Research and Transfer activity of the faculty covers from fundamental applied research (in which are framed up the 130 doctoral theses running nowadays) to experimental development and innovation activities, also covering other industrial research activities. There are 16 research groups, grouped into 5 units: Mechanical behaviour and product design, Science, technology and transformation processes of materials, Design and industrial management processes, Embedded systems and information systems and Electric power.

Participation in EU projects

VENUS – Switched/Synchronous Reluctance Magnet-free Motors for Electric Vehicles
OPTIBODY – Optimized Structural components and add-ons to improve passive safety in new Electric Light Trucks and Vans (ELTVs)
DEWI – Dependable Embedded Wireless Infrastructure
EU-LIVE – Efficient Urban LIght VEhicles
OPTEMUS – Optimised Energy Management and Use
Hi-Fi Elements – High Fidelity Electric Modelling and Testing
WEEVIL – Ultralight and ultrasafe adaptable 3-wheeler
Organisation type: Public University
Contact person: Professor Magnus Langseth
Phone number: +47 930 37 002
Email: magnus.langseth@ntnu.no
Location head office: Trondheim, Norway
Number of employees: 6900
Turnover before tax: NOK €3.6 Billion
Website: www.ntnu.edu

High speed camera footage from a test in NTNU SIMLabís pendulum accelerator. An aluminium profile (a generic crash box geometry) is subjected to impact in order to study energy absorption.
Short summary of expertise and activities

NTNU is Norway’s largest university with 39 000 students, and has the main responsibility for higher education in technology in Norway. Hence, NTNU is the country’s premier institution for the education of engineers. Having a main profile within technology and natural sciences, NTNU still offer a wide range of programmes of professional study. Approximately 350 PhDs are annually obtaining their PhD degree at NTNU, external funding raise above 25% and we participate in more than 100 EU funded research project in the Horizon 2020 programme.

Areas of special interest for the automotive industry:
Structural Impact Laboratory, SiMLab, works with multi-scale testing, modelling, and simulation of materials and structures subjected to dynamic loading. SiMLab is host of the Centre for Advanced Structural Analysis, CASA. CASA is a Centre for research-based innovation and aims at developing validated computational tools for innovation together with and for partners in the oil and gas industry, the transportation industry, materials suppliers and in industry and public enterprises working with physical security. Even though these partners represent different business sectors, they have similar needs in advanced structural analysis because the underlying theories and formulations behind the different computer tools are the same. www.ntnu.edu/casa

Industrial Ecology Programme (IndEcol) has an extensive academic record of accomplishment in developments as well as applications of Life Cycle Assessments and other Circular Economy related frameworks (MFA, SFA, EIO etc.). The programme has significant experience and ongoing activities across multiple drivetrain and fuel technologies. This includes different battery and fuel cell technologies, as well as internal combustion engines, boreal bio-fuels and fossil as well as bio-based hydrogen routes. Our work also bridges aspects such as light weighting with the circular economy aspects of global material cycles. Our objective is to ensure that the environmental and resource characteristics of our options to transform the transport system are well understood. The programme has had multiple contributors to UN initiatives such as the IPCC, UNEP Resource Panel, and the UNEP/SETAC Life Cycle initiative

Dept. of Material Science and Engineering. Batteries (Mg-ion), fuel cell battery testing Materials synthesis and characterisation. See: http://www.mozees.no .The Physical Metallurgy group does research related to aluminium alloys in automotive industry
Manulab – Industry 4.0. Additive manufacturing and joining of dissimilar materials

Dept. of Mechanical and Industrial engineering offer innovation, design and production.

Dept. of Computer Science, Visual Computing, Visual Intelligence, Machine Learning, Deep Learning, AI, HPC and Embedded Computing related to autonomous driving and advanced driver assistance systems, i.e. sensor fusion and perception, mapping and localization.

Participation in EU projects

StaCast, R5-COP, REALISM, HYPACTOR, ALION
Ricardo

Organisation type: R&D company
Contact person: Mr. Simon Edwards
Phone number: +49 1761 9821 960
Email: simon.edwards@ricardo.com
Location head office: Shoreham-by-Sea, United Kingdom
Number of employees: 2700+
Turnover before tax: €400 Million
Website: www.ricardo.com
Ricardo is a global strategic, technical and environmental consultancy business with a value chain that includes the niche manufacture and assembly of high-performance products. Our 100 years of commitment to research and development empowers Ricardo’s team of over 2,700 professional engineers, consultants, scientists and support staff to deliver class-leading and innovative products and services for the benefit of our customers, which include the world's major transportation original equipment manufacturers and operators, supply chain organisations, energy companies, financial institutions and government agencies.

Whilst the head office and some engineering technical centre are in the UK, Ricardo has many offices around Europe (e.g. Denmark, Spain and Italy), through our environmental consulting business. In particular, we have larger engineering capabilities in the Netherlands, Germany and the Czech Republic.

Ricardo has been and is involved in many EC projects, for example:

- **SARTRE** – demonstrating mixed fleet vehicle platooning
- **CO2RE** – developing low fuel consumption truck engines
- **FOSTER-ROAD** and **FUTURE RADAR** – communicating future research requirements
- **ECOCHAMPS** – light and heavy duty hybrid vehicle technologies
- **REWARD** – efficient, low emission Diesel engine technologies
- **HDGAS** – gas fuelled engines and vehicles for commercial vehicles
- **RESOLVE** – innovative L-category vehicle solutions
- **GasOn** – light duty gas engine and vehicle technologies
- **IMPERIUM** – truck fuel economy improvements
- **PaREGEn** – light duty gasoline engine technologies
- **DownToTen** – particle measurement technologies
- **dieper** – light duty diesel engine technologies
- **THOMSON** – light duty hybrid powertrain technologies

Ricardo is also active in projects supported by the UK, Dutch and German governments.
**Rise Research Institutes of Sweden AB**

<table>
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<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Anders Johnson</td>
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<tr>
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<td>Mr. Fredrik Harrysson</td>
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<td>+46 10 516 69 63</td>
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<tr>
<td>Email:</td>
<td><a href="mailto:anders.johnson@sp.se">anders.johnson@sp.se</a></td>
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<tr>
<td>Website:</td>
<td><a href="http://www.ri.se">www.ri.se</a></td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

RISE is Sweden’s research institute and innovation partner. Through our international collaboration programmes with industry, academia and the public sector, we ensure the competitiveness of the Swedish business community on an international level and contribute to a sustainable society. Our 2,700 employees engage in and support all types of innovation processes. RISE is an independent, State-owned research institute, which offers unique expertise and over 100 testbeds and demonstration environments for future-proof technologies, products and services.

RISE develop and increase the use of our leading, dynamic environment for testing, demonstration and pilot production.

RISE support and encourage organizations – particularly small and medium-sized enterprises – to participate in EU research programmes and benefit from international collaborative research.

RISE offer within transport and mobility area:
- Challenge driven solutions
- Research and testing of everything from material technology, production technology and software to complete vehicles and simulation of logistic flows
- Analysis and longterm strategies for building expertise together with and in support of industry
- And a lot more...

Participation in EU projects

RISE (former SP) participates continuously in about 25-30 EU projects, in cooperation with partners from our extensive international network. As examples of ongoing European and national mobility and transport related projects we have:

Projects: SECREDAS, AMASS, eCAIMAN, PROPART, 14IND10 MET5G (Metrology for 5G Communications), Interreg (Ranging Mode for the Baltic Sea), RFMicrowave, MICEV, CELSIUS, BioFlex, EMPOWERING, RUGGEDISED, Metrology for sustainable hydrogen energy applications (2015-2019), Metrology for hydrogen vehicles (2017-2020), Metrology for biomethane (2017-2020), EMPOWER, CHOREvOL, INMOVE, MegaMaRt2, RAMSESS, Mata4Rail, HEADSTART, ARCC, Impact-2, Fr8Hub, In2Rail, RAMSSES, GoLNG

Other activities: Triple F - Swedish intitative: fossil-free freight transportation system, Fire suppression systems in engine compartments of buses and coaches
### Siemens Industry Software NV

**Organisation type:** R&D company  
**Contact person:** Mr. Stijn Donders  
**Phone number:** +32 16 384200  
**Email:** stijn.donders@siemens.com  
**Location head office:** Leuven, Belgium  
**Number of employees:** 1800  
Short summary of expertise and activities

Siemens Industry Software NV (SISW) is the Simulation and Test Solutions (STS) business segment of Siemens Digital Industries Software. STS includes former LMS International and TASS International. It helps manufacturers create and maintain a Digital Twin of their products. The Digital Twin mirrors the behaviour of the product in its actual state throughout the various phases of its lifecycle, from ideation to realisation and utilisation. By providing a holistic solution set, Siemens enables manufacturers to digitally tie all these lifecycle phases together, which presents several advantages, such as greater insight, reduced development time, improved efficiency, increased market agility and many more.

Within the Siemens Digital Industries Software offering, the Simcenter™ solutions portfolio bundles all tools that support performance engineering during product ideation and validation. This task becomes increasingly complex as a result of the continuous industry trend to combine mechanical products with ever more digital technologies and smart systems, and because of the introduction of new materials and manufacturing methods. To keep a competitive edge by delivering innovations on time, manufacturers require an effective and reliable development process that allows engineers to make design decisions quickly, yet methodically and targeted. The idea of using a Digital Twin, is that this should be capable of providing feedback based on accurate predictions, ideally in real time. Simcenter uniquely combines 1D system simulation, 3D computer-aided engineering (CAE) and test with data analytics and design exploration to help companies create a Digital Twin for performance engineering. With Simcenter, SISW aims at offering the most comprehensive possible and state-of-the-art solution set for this purpose, leveraging decades of experience gathered from market leading products such as NX™ CAE, LMS™ solutions and CD-adapco® solutions, and from more recent acquisitions of Mentor Graphics for electronics systems design and TASS International for autonomous driving (Prescan, Tyre) and integrated safety (Madymo).

SISW further demonstrates this ambition by continuously extending Simcenter with new technologies that make simulation even faster and more realistic, and in this way enlarge the scope of the Digital Twin. A Digital Twin created by Simcenter helps manufacturers predict performance across all attributes earlier and throughout the entire product lifecycle. By combining physics-based simulations with insights gained from data analytics, Simcenter helps to optimize design based on accurate predictions and deliver innovations faster and with greater confidence.

Participation in EU projects

H2020 Automotive projects: OBELICS, PAREGEN, DIEPER, EVERLASTING, MODULED, COLHD, ADVICE, OSCCAR, XILforEV, PANDA.
H2020 Energy projects: PUMP-HEAT, UPWARDS, INNTERESTING.
H2020 JTI Clean Sky2 Aerospace projects: AIRGREEN2, CASTLE, ELICA.
Marie Skłodowska-Curie projects: FiBreMoD, SmartAnswer, Acoutect, PBNv2, INTERACT, DyViRT, POLKA, VRACE, Eco-Drive, Zephyr.
ECSEL projects: AQUAS, I-MECH, COMP4DRONES, HiPERFORM.
ITEA3 project: EMPHYSIS.
SiEVA d.o.o.

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>R&amp;D company</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Milos Šturm</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+386 5 375 6617</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:milos.sturm@hidria.com">milos.sturm@hidria.com</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Šempeter pri Gorici, Slovenia</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>43</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.sieva.si">www.sieva.si</a></td>
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Short summary of expertise and activities

SiEVA d.o.o. is a research company whose name is an abbreviation in Slovene that stands for “Synergetic ecologic safe vehicle”. The research centre has been founded by nine Slovenian companies with an aim of providing research and development service in strategic fields of vehicle electrification and vehicle safety.

Fields of research of the SiEVA d.o.o. include:
• Additive manufacturing (metal 3D printing)
• Energy and environment – Internal combustion engine,
• Energy and environment – Vehicle electrification
• Safety and comfort
• Tools and technology.

SiEVA d.o.o. research centre competences:
• Competences in the field of products, including: rapid prototyping, tools with conformal cooling, modification and surface treating of non-ferrous metals, modification of sheet metal, surface steel product protection, sprinkling and stamping of thermosets and thermoplasts with inserts, remodeling of thermoplasts, metal and non-metal material bonding, different welding techniques (resistance welding, ultrasonic welding and laser welding), electro controller units, precise die casting technologies, etc.

• Competences in the field of development technologies, including: design for additive manufacturing, topology optimisation, virtual development, virtual assessment systems, process simulation, product and tool construction and modelling, prototype testing in real condition simulation, materials characterization, metrology, structural analysis, process optimization, and process automation, possible error and consequence analysis – FMEA, etc.

Participation in EU projects

EARPA Task Forces that are the most in line with research priorities of the SiEVA d.o.o. research centre are The Hybrid and Electric Systems & Components Task Force and Advanced Combustion Engines & Fuels Task Force.

SiEVA participated in two Horizon 2020 projects: FACTS4WORKERS (www.facts4workers.eu) – Worker-Centric Workplaces in Smart Factories and COMBILASER (www.combilaser.eu) – COMbination of non-contact, high speed monitoring and non-destructive techniques applicable to LASER Based Manufacturing through a self-learning system.

SiEVA’s founder companies have been recently involved in many R&D projects from the 7th FP funded from different EU funds. These projects, include among others active participation in ROMEO project, consortium CAPIRE and EUCAR and EUREKA project associations.
**Tecnalia**

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>R&amp;D company</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Joshue Manuel Pérez</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+34 607 227 482</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:joshue.perez@tecnalia.com">joshue.perez@tecnalia.com</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Derio, Spain</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>1400</td>
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<tr>
<td>Turnover before tax:</td>
<td>€110 Million</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.tecnalia.com">www.tecnalia.com</a></td>
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</tbody>
</table>
Short summary of expertise and activities

One of the most important traits of the Tecnalia Automotive unit is its deep-rooted specialisation, allowing us to tailor our collaborations with companies on the basis of our wide-ranging knowledge of their needs, the available technologies, their applications and the conditions needed to ensure that they are implanted efficiently. Tecnalia’s value proposal for the Automotive Sector is focused on the following technological lines:

**Structure, chassis and suspension**
- Hot stamping processes for lightweight metallic materials
- Composites: automation of manufacturing processes, process optimization and characterization of composite materials
- Casting
- New joining methods
- Functional part evaluation, specially related to safety

**Powertrain / Drivetrain**
- Lightweight components, energy and material efficient processes
- Advanced e-drives control

**Electronics**
- Development of advanced control functions for chassis and powertrain
- Dynamic modelling and simulation of complete vehicles
- Sensoring and communications for vehicle automation
- Advanced control of autonomous vehicles

Participation in EU projects

Tecnalia is involved or has been involved in the following EU projects: ECOCHAMPS, UNCOVER CPS, FLEXHYJOINT, 3CCAR, BEHICLE, EUNICE, SYRNEMO, E-LIGHT, CITYMOBIL2, EVOLUTION, FAST-IN-CHARGE, SARTRE, YBRIDIO, COSMO, SMARTCEM, POWER DRIVER, KNOW4CAR, ECOMOVE, AMITRAN, MOBINET, TAILOR TOOL, POLYBRIGHT, GPHS, STT, ELONHOTSTAMP
Technische Hochschule Ingolstadt

**Organisation type:** University

**Contact person:** Mr. Prof. Christian Facchi

**Phone number:** +49 841 9348 7410

**Email:** christian.facchi@thi.de

**Location head office:** Ingolstadt, Germany

**Number of employees:** 550

**Website:** www.thi.de

Outdoor and Indoor CARISSMA Test Facilities under weather conditions (Rain and Fog Simulation Tests)
Short summary of expertise and activities

The Technische Hochschule Ingolstadt (THI) is a medium sized University of Applied Sciences training currently about 5,500 students in about 40 technical and business science programs. Core competencies at THI hover around the fields of automotive, aerospace, renewable energies and business management. CARISSMA is the first research center of its kind at a German University of Applied Sciences.

CARISSMA - Automotive Safety Research and Test Center
Based on a 28 million budget has been designed as leading scientific center for vehicle safety in Germany. A unique feature of the CARISSMA facilities is the indoor test laboratory (crash and robot-controlled vehicle tests) where environment conditions such as weather, lightning or driving surface can be simulated. CARISSMA includes outdoor facilities for integrated safety systems, drop tower, Vehicle2X-Lab, safe energy storage lab, HiL lab, simulation cluster, driving simulator with hexapod movement platform and a pedestrian protection lab. To contribute to the social challenge of "Vision Zero", CARISSMA addresses Integrated Safety Systems that not only focus on conventional approaches of Active and Passive Safety but also provide a holistic global safety concept under its 4 main research areas:

1. Passive Safety
   - Crash Sensing
   - Environment Sensor-Based Detection of VRU and vehicles
   - Robust Object Tracking
   - Sensor Validation by Reproducible Environmental Influences
   - Innovative Safety Actuators and Smart Airbags

2. Integrated Safety
   - Collision Avoidance and Mitigation
   - Real and Virtual Test Drives
   - Machine Learning for Vehicle Safety Applications

3. Testsystems and Methods
   - Integrated safety functions
   - “Mixed-Reality”
   - Vehicle2X-Communication
   - Automated Driving
   - Sensor Simulation under Weather Conditions
   - Hardware-in-the-Loop (HIL)

4. Safe Electromobility
   - Battery systems
   - Vehicle operation
   - Battery Management Systems, testers, simulators and misuse testing

Engine and power train and Power electronics
Research focuses on the assembly of drives, shafts, axle drive, and engine analysis. The research work ranges from component analysis to the functional analysis of the whole aggregate. Power electronics research activities are focused on the development, simulation and optimization of innovative DC-DC and DC-AC converter topologies and multi-converter systems for automotive applications.

Participation in EU projects

LOCOBOT – LOw COst roBOT co-workers
RiFLE – Rail Freight and Logistics Development
AutoUniMo – Automotive Production Engineering Unified Perspective based on Data Mining Methods and Virtual Factory Model
AWARE – Applied NetWork on Automotive Research and Education
COBRA – CObolt-free Batteries for FutuRe Automotive Applications
SAFE-UP – proactive SAFety systems and tools for a constantly UPgrading road environment
### TNO (Netherlands Organization for Applied Scientific Research)

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>R&amp;D Organization</th>
</tr>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Martijn Stamm</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+31 88 866 57 34</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:secretaryhelmond@tno.nl">secretaryhelmond@tno.nl</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>The Hague, The Netherlands</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>2900</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.tno.nl">www.tno.nl</a></td>
</tr>
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</table>
Short summary of expertise and activities

TNO, the Netherlands Organisation for applied scientific research, was founded by law in 1932 to enable business and government to apply knowledge. TNO is the largest independent research organisation in the Netherlands working on innovations within nine societal focus areas. Within the focus area of Traffic & Transport, there are four dedicated expertise groups: ‘Powertrains’, ‘Integrated Vehicle Safety’, ‘Sustainable urban mobility and safety’ as well as ‘Sustainable Transport and Logistics’ who are working towards 2 roadmaps: ‘SMART Traffic and Transport’ and ‘SUSTAINABLE Traffic and Transport’.

FOCUS AREA TRAFFIC & TRANSPORT

In a changing world full of global challenges such as urbanisation, ageing, digitisation, automation and energy transition, our ambition is to boost the competitiveness of business and improve the well-being of society by increasing the safety, efficiency and sustainability of traffic and transport.

The major challenge is to manage the ever-increasing need for the movement of people and goods. We are therefore working on making urban areas easily accessible, liveable and sustainable to everyone. In our vision, mobility is available to everyone on demand and everyone can participate in traffic comfortably and safely with the least possible impact on our environment and climate.

In our work we use disruptive technologies such as ‘the internet of things’, AI, automated vehicles, self-organising logistics, new energy carriers and cooperative mobility.

Boundaries are shifting in the design, development and testing of tools, simulations and assessment methodologies.

Towards a smart and sustainable logistics and mobility system:

Our approach is based on the conviction that the people/end users, the vehicle/modality and the environment interact with each other constantly. In order to innovate in that ecosystem, smart communication solutions are needed. To make sustainable and smart traffic and transport possible, intelligence is needed in the logistics and mobility system. Efficiency and safety go hand in hand.

International Position:

It’s important to better understand the complexity of these systems, with all their dependencies and connections, in order to make them sustainable and future-proof. The Traffic and Transport Unit’s ambition is to strengthen our country’s international position with innovative solutions in the areas of mobility and logistics. Major projects that we carry out at European level and beyond as far as Japan contribute to this.

Participation in EU projects

TNO is an active partner in many European projects and contributes to key developments, standardization and regulations in automotive technology.

ARCADE, CITYLAB, FOX, USE-it, 3CCAR, SMART-RAIL, CORE, ASSUME, ORCA, CARTRE, LEAR, ENABLE-S3, AUTOPILOT, HIFI-ELEMENTS, ASSURED, AEROFLEX, C-MobilLe, MeBeSafe, L3Pilot, PRYSTINE, ENSEMBLE, SECREDAS
## Transportation Research Group - University of Southampton

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>University</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Dr. Ioannis Kaparias</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+44 23 8059 9577</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:i.kaparias@southampton.ac.uk">i.kaparias@southampton.ac.uk</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Southampton, United Kingdom</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>TRG: 43; University: 6000</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.trg.soton.ac.uk">www.trg.soton.ac.uk</a></td>
</tr>
</tbody>
</table>
The Transportation Research Group (TRG) is one of the UK’s longest established and leading centres for engineering-related transport teaching, research and enterprise. It was established at the University of Southampton in 1967 and is part of the Faculty of Engineering and the Environment, based at the university’s new Boldrewood Innovation Campus.

Research at TRG is interdisciplinary but with particular expertise in traffic engineering, transport economics and human factors. It adopts an integrated approach, covering both passenger and freight transport, and with a multimodal emphasish addressing not only road and rail, but also aerospace and maritime transport. There is a focus on emerging transport and communications technologies, with particular expertise in Intelligent Transport Systems. Overall, transport is viewed as a socio-technical system with the potential to deliver sustainable outcomes through both mitigation and adaptation.

TRG holds grants and contracts worth almost £10 million, funded by the European Commission, UK governmental bodies and industry. Facilities at the TRG include: (i) the Southampton University Driving Simulator; (ii) a fully instrumented vehicle; (iii) a well-equipped transport data analysis facility; and (iv) the Command Team Experimental Testbed submarine command room simulator. There are also excellent links with the surrounding local authorities and industrial stakeholders.

**Participation in EU projects**

TRG is involved or has been involved in the following recent EU projects (FP7 onwards):

- **FP7 SMARTFREIGHT** Smart freight transport in urban areas (2008-2011)
- **FP7 NICHES+** New and innovative concepts for helping European transport sustainability – towards implementation (2008-2011)
- **FP7 POINTER** Support Action for Evaluation and Monitoring of CIVITAS Plus (2008-2013)
- **FP7 NEARCTIS** Network of Excellence for Advanced Road Co-operative Traffic management in the Information Society (2008-2013)
- **FP7 GOAL** Growing Older, stAying mobile (2011-2013)
- **FP7 ALICIA** All Condition Operations and Innovative Cockpit Infrastructure (2009-2014)
- **FP7 STRAIGHTSOL** Strategies and measures for smarter urban freight solutions (2011-2014)
- **FP7 TIDE** Transport Innovation Deployment in Europe (2012-2015)
- **FP7 CityMobil2** Cities Demonstrating Cybernetic Mobility (2012-2016)
- **FP7 i-VISION** Immersive Semantics-based Virtual Environments for the Design and Validation of Human-Centred Aircraft Cockpits (2013-2016)
- **FP7 HFAuto** Human Factors of Highly Automated Driving (2013-2017)
- **H2020 CITYLAB** City Logistics in Living Laboratories (2015-2018)
# University of Modena and Reggio Emilia

<table>
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<tr>
<th>Organisation type:</th>
<th>University</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Prof. Stefano Fontanesi</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+39 059 2056114</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:stefano.fontanesi@unimore.it">stefano.fontanesi@unimore.it</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Modena, Italy</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>More than 1500</td>
</tr>
<tr>
<td>Turnover before tax:</td>
<td>€6.7 Million</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.unimore.it">www.unimore.it</a></td>
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</tbody>
</table>
Short summary of expertise and activities

Founded in 1176, the University of Modena and Reggio Emilia – UNIMORE is the third oldest University in the world, and has been ranked among the first ten Italian universities for quality of teaching and research since 2007. UNIMORE is a networked campus located in the towns of Modena and Reggio Emilia. It counts about 20000 students, including 3500 postgraduates. It has over 600 international exchange agreements and cooperation programs to encourage students and researcher to actively interact in a globalized world. Currently UNIMORE project portfolio comprises 24 funded projects under Horizon 2020, 50 running FP7 projects, plus several projects financed by the National Institute of Health (USA), ARTEMIS and ENIAC Joint Technology Initiatives, the Life+ Programme.

With regards to EARPA areas of expertise The Departments of Sciences and Methods for Engineering (DISMI) and the Department of Engineering Enzo Ferrari (DIEF) and the Department of Physics, Informatics and Mathematics (FIM) are involved mainly.

DIEF research fields cover mechanical, electronic and environmental engineering, but the flagship is the area of automotive engineering. Thermo-fluid dynamics of engines, structural design of vehicles and engine components, fluid-power systems, aerodynamics, NVH are the areas where outstanding expertise can be found.

DISMI deals with methodological and applied research, technology transfer and university education in various fields of engineering and basic sciences. Research and technology developed within DISMI covers industrial engineering and management, mechanics engineering, energy engineering and basic sciences applied to engineering.

FIM promotes teaching and research in the field of Physics, Computer Science and Mathematics. The main objective of the Department is the training and preparation of professionals in these three disciplines for business and research purposes.

Participation in EU projects

A brief non-exaustive list of UNIMORE involvement in EU project related to the research in the automotive sector:

- **AEOLIX** – Common communication and navigation platforms for pan-European logistics applications,
- **OPTITRUCK** – Powertrain control for heavy-duty vehicles with optimised emissions,
- **NEMO** – Electric vehicles’ enhanced performance and integration into the transport system and the grid,
- **USTIR** – User Driven Stimulation of Radical New technological Steps in Surface Transport,
- **CITYLOG** – Sustainability and efficiency of city logistics,
- **SAFEWAY2SCHOOL** – Integrated system for safe transportation of children,
- **USTAINABLE SURFACE TRANSPORT**,
- **ASSET Road**, **SAFERYDER**, **TELEFOT**
### University of Firenze

**Organisation type:** University  
**Contact person:** Mr. Niccolò Baldanzini  
**Phone number:** +39 055 2758749  
**Email:** niccolo.baldanzini@unifi.it  
**Location head office:** Firenze, Italy  
**Number of employees:** 3811  
**Turnover before tax:** €68 Million  
**Website:** www.unifi.it
Short summary of expertise and activities

The University of Firenze (UNIFI) joins EARPA via its Dept. of Industrial Engineering, which has a technical background spanning several competence areas:

**Road Safety**
UNIFI has a long lasting research tradition in the field of Powered Two-Wheelers safety, where it is one of the main experts worldwide. More recently it built up competences also in pedestrian and cyclist safety. Road safety research is focused both on vehicle and on personal protective equipment, with a cross cutting approach from primary to tertiary safety.

**Life Cycle Sustainability Assessment (LCSA)**
UNIFI has expertise on the environmental friendly design and assessment of products and technologies. The main research activities in the automotive field concern the LCSA (=LCA+LCC+Social_LCA) to compare and optimize the environmental, economic and social profile of alternative solutions; the analysis of End-of-Life Vehicles scenarios and the estimation of vehicles recyclability and recoverability according to EU regulations.

**Engine Design and Analysis**
Numerical and experimental approaches are applied to the thermo-fluid dynamic design of ICES and turbochargers, and to the development of innovative control strategies, with special emphasis on 2T, turbocharged and small direct injection engines. UNIFI has several experimental facilities, including static and dynamic test benches, flow bench and acoustic test bench for engine characterization, advanced measurements and noise analysis.

**Vehicle Design and Dynamics**
Core activity is the development of vehicle components and systems, with a special focus on handling, mechatronics systems, and hybrid powertrains. From the vehicle concept to system integration, UNIFI can provide complete CAD models, kinematic and dynamic analyses, FE validation up to full vehicle (with both numerical and experimental approaches). Methods range from virtual modelling to physical testing on ad hoc built test benches.

**Electric Mobility**
Building on vehicle design and dynamics competencies, specific expertise includes modelling and simulation of key components (battery, power converters, motors) and their integration in full vehicle models, naturalistic driving data acquisition, its statistical analysis and synthesis.

**Multidisciplinary Design Analysis and Optimization**
UNIFI has experience in the development and application of global sensitivity analysis, uncertainty quantification and multi-disciplinary design optimization methods. Industrial applications cover numerical analysis and optimization of mechanical structures w.r.t. complex multidisciplinary design requirements, such as for example: weight optimization of car body structures considering crashworthiness safety and Noise Vibration and Harshness (NVH) criteria.

**Participation in EU projects**
(FP7, H2020)
2BESAFE, ABRAM, ALLIANCE, ASTERICS, ENLIGHT, ESUM, GOAL, GRESIMO, IMPROVE, MEBESAFE, MID-MOD, MOTORIST, NEOHIRE, PIONEERS, PV-MOREDE, RASIF, RESOLVE, SAFE2WHEELER, SAFERIDER, SMART RRS, UNPLUGGED, VECOM.
University of Limerick

<table>
<thead>
<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Dr. Cathal Linnane</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+353 61 213309</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:Cathal.linnane@ul.ie">Cathal.linnane@ul.ie</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Limerick, Ireland</td>
</tr>
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<td>Number of employees:</td>
<td>1300</td>
</tr>
<tr>
<td>Website:</td>
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Laser-assisted tape placement (LATP) of carbon-fibre based thermoplastic composites using the LATP in the Irish Composites Centre (IComp), University of Limerick.
Short summary of expertise and activities

The University of Limerick (UL) with over 13,000 students and 1,300 staff is an energetic and enterprising institution with a proud record of innovation and excellence in education, research and scholarship. The dynamic, entrepreneurial and pioneering values which drive UL’s mission and strategy ensures that we capitalize on local, national and international engagement and connectivity. As one of Ireland’s “youngest” universities, UL is recognised for its pioneering initiatives, and focus on real world problems, which reinforces its reputation as a progressive and innovative institution.

Currently ICOMP has 22 industrial and academic members. Major areas of interest include adhesion and surface engineering, damage and repair of composites, processing of thermoplastic composites and liquid resin and infusion processes. ICOMP is involved in multiple national and international projects with heavy industry engagement.

Lero has a strong focus on Autonomous Systems and provides a focal point for development of this critical technology and is involved in the development of Connected and Autonomous Vehicles. Lero researchers are currently working directly with companies like Jaguar-Land-Rover, Valeo Vision Systems, Kostal, Intel and others.

One of Ireland’s largest business schools The Kemmy Business School (KBS) is located in UL. Automotive research in the KBS is focused around risk, risk compliance and risk transfer based on financial/insurance modelling.

Participation in EU projects

“Libre” New ways to produce Carbon Fibre Composites http://libre2020.eu
GREENLion manufacturing of greener and cheaper Li-Ion batteries for electric vehicle applications www.greenlionproject.eu
VIDAS The Vision inspired Driver Assistance System project
Cloud-LSVA The Cloud Large Scale Video Analysis Project for automatous vehicles
Dibanet Biofuel additives to Diesel engines
Fibreship [www.fibreship.eu] – composite materials for transport
## University of Ljubljana

<table>
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<tr>
<th>Organisation type:</th>
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<tbody>
<tr>
<td>Contact person:</td>
<td>Mr. Tomaž Katrašnik</td>
</tr>
<tr>
<td></td>
<td>Mr. Damijan Miljavec</td>
</tr>
<tr>
<td></td>
<td>Mr. Janko Slavič</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+386 1 4771305</td>
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<td>+386 1 4768281</td>
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<td>+386 1 4771226</td>
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<tr>
<td>Email:</td>
<td><a href="mailto:Tomaz.Katrasnik@fs.uni-lj.si">Tomaz.Katrasnik@fs.uni-lj.si</a></td>
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<tr>
<td></td>
<td><a href="mailto:Damijan.Miljavec@fe.uni-lj.si">Damijan.Miljavec@fe.uni-lj.si</a></td>
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<tr>
<td></td>
<td><a href="mailto:Janko.Slavic@fs.uni-lj.si">Janko.Slavic@fs.uni-lj.si</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Ljubljana, Slovenia</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>5700</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.uni-lj.si">www.uni-lj.si</a></td>
</tr>
</tbody>
</table>

*Experimental work on engine starter dynamics.*  
*Transferse flux machine for In-wheel application.*
Short summary of expertise and activities

The University of Ljubljana ranks among the biggest universities with more than 56,000 undergraduate and post-graduate students and approximately 6,000 employees. The Faculty of Electrical Engineering and the Faculty of Mechanical Engineering, being EARPA members, are research driven faculties. Research work at the Faculty of Electrical Engineering, which employs approximately 300 researchers, is divided in 9 major fields: electrical energy, mechatronics, electronics, microelectronics, bio-cybernetics and biomedicine, measuring systems, automation and cybernetics, robotics and telecommunications. Research work at the Faculty of Mechanical Engineering, which employs more than 300 researchers, is divided in 7 major fields: power and process engineering, design, engine mechanics and maintenance, production engineering, mechatronics, micromechanical systems, and automation.

Research activities associated with the EARPA’s Task Forces cover:

- **Hybrid Powertrains and Alternative Fuels:** Combustion, Alternative Fuels, Air Management and Supercharging, Thermal Management, Prototyping and Testing including PEMS.
- **EV Systems and Components:** Basic Research on E-machines, Detailed performance and degradation modelling of batteries and fuel cells, Prototyping and Development of Integrated Solutions, Development of Control strategies, Thermal Management of E-components, Testing and Diagnostics, Basic research on vibration&noise&vibration fatigue optimisation.

- **Methods and Tools for Virtual Development and Validation:** Development of predictive system level and detailed simulation models for ICEs, EMs, batteries, fuel cells, VTMS and thus of the complete conventional, hybrid and electric powertrains, virtual vibration fatigue, electromagnetic and magnetostrictive vibration excitation modelling/experiment, multi-domain and multi-physics dynamics (e.g. battery-starter-engine)
- **Noise, Vibration & Harshness:** acoustic testing, vibration fatigue and lightweight structures, vibroacoustic of electric motors, vibration transmission through bearings

Participation in EU projects

The University of Ljubljana is very active in international research and education programs. It cooperated in 117 FP6 and 110 FP7 projects (in several of them as coordinator), it also cooperates in many H2020 projects and in many other research, development and educational projects financed by European Union (TEMPUS, ERASMUS, ETN Marie Curie, Leonardo da Vinci, DAPHNE, SafelInternet, eLearning, eTEN, Lifelong Learning Program and many more). In the field of transport, the University of Ljubljana is involved in the following projects:

- Straightsol
- CIVITAS ELAN
- 2020 INTERFACE
- FluMaBack
- Asterics
- Obelics
- Drivemode
## University of West Bohemia

<table>
<thead>
<tr>
<th>Organisation type:</th>
<th>Public university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Assoc. Prof. Luděk Hynčík, Ph.D.</td>
</tr>
<tr>
<td>Phone number:</td>
<td>+420 377 63 4703</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:hyncik@ntc.zcu.cz">hyncik@ntc.zcu.cz</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Plzeň, Czech Republic</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>2195</td>
</tr>
<tr>
<td>Turnover before tax:</td>
<td>€95.4 Million</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.zcu.cz">www.zcu.cz</a></td>
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Short summary of expertise and activities

University of West Bohemia (UWB) is the only public institution of higher education based in the Pilsen Region. Currently, the University has nine faculties consisting of more than sixty departments and three institutes of higher education. More than 12,000 students studying at the university can choose from a wide range of undergraduate, postgraduate and doctoral study programs, the choice of form of study, i.e. a full-time, part-time or combined form, being a matter of course. University of West Bohemia is also an important centre of research and development, with massive investment to university development and construction activities on the university campus. The university campus is currently undergoing very dynamic changes. The newly constructed research centres definitely strengthened the links between the university and other institutions. This is also one of the reasons why scientists involved in various disciplines, as well as students win prestigious awards for their activities every year. The research and development activities are focused on obtaining knowledge of basic phenomena and observable facts, applied research directed towards a specific and practical goals and experimental development, which employs existing knowledge obtained through research or based on experience. Key expertise is in impact biomechanics and passive safety, vehicle design, development of mechanical parts of transport means, machining and forming machines, development and verification of machining and forming technologies, metal 3D printing, power electronics, drives and electrical, electronic and communication systems of vehicles.

The activities go in both experimental and numerical approaches. The research and development activities are based in the departments. There are, however, also interdepartmental and interfaculty teams which do work on projects closely related to the fields offered in the Ph.D. study programmes at the Faculties of Applied Sciences, Electrical Engineering and Mechanical Engineering. The University of West Bohemia has a significant position among universities in both the Czech Republic and Europe. This is documented by the ECTS Label (European Credit Transfer and Accumulation System designation) the university received in late 2012, which confirms that the study environment at the University of West Bohemia fully matches European standards. As a result, the university has officially entered the area of European tertiary education.

Participation in EU projects

- APSN – Advanced Passive Safety Network
- APROSYS – Advanced Protective Systems
- SIM – Safety In Motion
- ZeEUS – Zero Emission Urban Bus System
- MYMOSA – Motorcycle and Motorcyclist Safety
- MOTORIST – Motorcycle Rider Integrated Safety
- Safe2Wheelers – Scientific and technical innovations for safer PTW
University of Žilina

**Organisation type:** University

**Contact person:** Prof. Tatiana Kovacikova

**Phone number:** +45 22370457

**Email:** tatiana.kovacikova@uniza.sk

**Location head office:** Žilina, Slovakia

**Number of employees:** 1500

**Website:** www.erachair.uniza.sk

*Eyetracking glasses for capturing driver’s glance to monitor driver’s behaviour; they are used together with an electroencephalograph device, which measures brain activity of a driver.*
Short summary of expertise and activities

UNIZA was established in 1953 and its particularity originates from the specific scientific branches oriented towards transportation and communications including all transportation modes (road, railway, water, aerial, intermodal), transport services, transport corridors, transport and land civil engineering, mechanical and electrical engineering, security and safety, information and communication technologies, landscape protection and utilisation.

UNIZA has an excellent collaboration with the stakeholders of the Žilina region (municipalities, region, and mobility operators) as well. One of the examples was very successful project FP6 RIS ZIP “Žilina Innovation Policy” or the FP7 “Endurance” project that produced the SUMP for Žilina city.

UNIZA was granted a FP7 Pilot ERAdiate in 2014 that named ERAdiate “Enhancing Research and innovation dimension of the UNIZA in Intelligent Transport Systems”. ERAdiate, aims at unlocking and strengthening the research potential and promoting the Žilina region in the field of Intelligent Transport Systems (ITS).

Moreover, UNIZA has recently got the H2020 project MoTiV (Research and Innovation Action) which addresses emerging needs and perspectives on Value of Travel Time (VTT), a relevant research area particularly valuable to decision-makers, transportation planners, engineers, and economists in the context of projects aiming at enhancing transportation infrastructure.

UNIZA ITS related expertise and research areas are:
- Design of sensors and actuators for smart city applications
- Mathematical modelling and optimization
- Development of complex computer simulation tools to support transportation processes
- Machine learning, image processing
- Aerial mapping, GNSS
- Sustainable urban mobility, public transport systems, road traffic safety, telematic applications for transport
- Regional development of urban mobility
- Switched reluctance motors for electrical vehicles
- Sensing, control, automation
- Machine learning, image processing,
- Localization, GNSS, navigation, positioning
- Design related aspects of electromobility
- Transportation safety and effectiveness; Environmental Quality; Commercial Company Activities Efficiency Improvement
- Road traffic safety
- Mobile mapping of road infrastructure

Participation in EU projects

ERAdiate – Enhancing Research and innovAtion dimension of the University of Žilina in intelligent transport systems.
SIMMARC – Safety IMprovement Using Near Miss Analysis on Road Crossings:
SENSIBLE – SENSors and Intelligence in BuiLt Environment.
Alan Turing Institute: Lloyd’s Register Foundation programme to support data-centric engineering – Decentralised real-time electric vehicle charging: optimality, fairness and resilience.
MoTiV – Mobility and Time Value - Estimating Travel Time Value by accounting for the Value Proposition of Mobility.
EC DG MOVE - Call for tenders MOVE/ B4/2017-358 – Technical support related to sustainable urban mobility indicators.
**VEDECOM**

<table>
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<tr>
<th><strong>Organisation type:</strong></th>
<th>R&amp;D institute</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td>Mr. Fethi Ben Ouezdou</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>+33 663 106 483</td>
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<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:fethi.benouezdou@vedecom.fr">fethi.benouezdou@vedecom.fr</a></td>
</tr>
<tr>
<td><strong>Location head office:</strong></td>
<td>Versailles, France</td>
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<tr>
<td><strong>Number of employees:</strong></td>
<td>175</td>
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<tr>
<td><strong>Website:</strong></td>
<td><a href="http://www.vedecom.fr/">www.vedecom.fr/</a></td>
</tr>
</tbody>
</table>
Short summary of expertise and activities

VEDECOM responds to the challenges posed by the autonomous vehicle and mobility in the future. The aim of VEDECOM is to play an operational role in innovation, research and training applied to responsible modes of transport and mobility while generating business and creating jobs. It seeks to establish itself as a French technology and applied research institute achieving world-class excellence in its fields of research and activity, drawing on its multi-disciplinary expertise and experiments.

VEDECOM’s research activities are organised in three fields of research:

Vehicle electrification:
The challenge for vehicle electrification is to reduce considerably the energy consumption and emissions from current vehicles. Thus the Institute’s researchers are tasked with identifying and implementing the technological breakthroughs for new electric motors and power electronics.

Self-driving and connectivity:
This field addresses a different form of ground-breaking technology: automated modes of transport. The goal is to improve considerably the safety and the traffic conditions by introducing vehicles that offer new forms of mobility and make them appealing. This will require research into vehicle equipment and software, and also into acceptability from societal and regulatory viewpoints.

Shared energy and mobility, infrastructures and services:
The field of shared mobility and energy looks at how to share roads better, optimise parking spaces, innovate electric vehicle charging systems, develop digital mobility services (e.g. traffic forecasts, dynamic car-sharing or easier payments), and explores new uses within territories. The goal is to develop infrastructures and services that will overturn habits, create a modal shift and encourage users to pool private vehicles to rise to the environmental, economic and social/societal challenges for mobility in urban and semi-urban environments.

Each of these fields comprises a number of research projects covering different scientific and technological building bricks with the related demonstrators.

Participation in EU projects

VEDECOM is currently involved in several European projects:

ESPRIT – Easily diStributed Personal RapId Transit
Automate – Automation as accepted and trusted TeamMate to enhance traffic safety and efficiency
ADAS&me – Adaptive ADAS to support incapacitated drivers Mitigate Effectively risks through tailor made HMI under automation
CARTRE – Coordination of Automated Road Transport Deployment for Europe
AUTOPILOT – Automated driving Progressed by Internet Of Things
CoEXist – AV-Ready’ transport models and road infrastructure for the coexistence of automated and conventional vehicles
TRACE – Enabling Smart Mobility and Smart Infrastructure by Development of a Technology ReAdiness Process for Consumer Electronics
FABRIC – Feasibility analysis and development of on-road charging solutions for future electric vehicles
OPTICITIES – (finished)
## VIRTUAL VEHICLE Research GmbH

<table>
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<tr>
<th>Organisation type:</th>
<th>Research Center</th>
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</thead>
<tbody>
<tr>
<td>Contact person:</td>
<td>Dr. Aldo Ofenheimer</td>
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<tr>
<td>Phone number:</td>
<td>+43 316 873 9020</td>
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<tr>
<td>Email:</td>
<td><a href="mailto:aldo.ofenheimer@v2c2.at">aldo.ofenheimer@v2c2.at</a></td>
</tr>
<tr>
<td>Location head office:</td>
<td>Graz, Austria</td>
</tr>
<tr>
<td>Number of employees:</td>
<td>300</td>
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<td>Turnover before tax:</td>
<td>€22 Million</td>
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<td>Website:</td>
<td><a href="http://www.v2c2.at">www.v2c2.at</a></td>
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</table>
Short summary of expertise and activities

VIRTUAL VEHICLE is a leading international research and development center for the automotive and rail industries, located in Graz, Austria. The center focuses on the advanced virtualization of development. An essential element is the linking of numerical simulations and hardware testing which leads to a powerful HW-SW system design.

VIRTUAL VEHICLE’s international partner network consists of:
- 100+ international industrial partners (OEMs, Tier 1 & Tier 2 suppliers, software vendors)
- 40+ international scientific institutions

VIRTUAL VEHICLE is the largest COMET funded research center and is also active in 40+ EU-projects. Furthermore, VIRTUAL VEHICLE offers a broad portfolio of contract research for the vehicle development and provides test systems.

250+ researchers drive for the vehicle technologies of the future in following fields of expertise:

AUTOMATED DRIVING covers the development, validation, test, operation, and continuous self-diagnosis of fail operational automated driving architectures and ensures the coexistence of these highly automated vehicles with conventional vehicles on the road.

SAFETY & SECURITY gives rise to new demands for Automated driving, connected cars and the Internet of Things. The researchers at VIRTUAL VEHICLE are working on novel solutions to meet such challenges, particularly by taking into account both trustability and social acceptance in order to maximise market uptake.

EFFICIENCY & COMFORT: How do electrification, lightweight design or energy management affect the individual comfort perception in the car? To what extent do innovative technologies have influence on a vehicle’s energy consumption? Our experts are working on the answers to these and many more questions.

DIGITAL OPERATION – speed and timing are a competitive advantage in an increasingly real-time economy. VIRTUAL VEHICLE researches on the future big data use cases for connected transportation solutions.

EFFICIENT DEVELOPMENT covers predictive functional validation, digital twins and complete product life cycles. Key factors are traceability, agility, comprehensive view and partner integration.

ADVANCED TESTING & VALIDATION: VIRTUAL VEHICLE investigates in advanced functional validation methods and provides demonstrators and state-of-the-art and cutting-edge testing facilities for vehicles, engines, powertrains and their components.

Participation in EU projects

OSCCAR (coordinator), SYS2WHEEL (coordinator), HADRIAN (coordinator), furthermore participating in 5G-CARMEN, AUTODRIVE, OPTEMUS, DOMUS, HEADSTART, SYS2WHEEL, SELFIE, EVOLVE, UPSCALE and others.
Other useful links

European Bodies
- European Commission – general address http://ec.europa.eu/
- European Commission – DG Research and Innovation (RTD) http://ec.europa.eu/research/
- European Commission – DG Mobility and Transport (MOVE) http://ec.europa.eu/dgs/transport/

Stakeholders
- ACEA - European Automobile Manufacturers’ Association www.acea.be
- ALICE - Alliance for Logistics Innovation through Collaboration in Europe www.etp-logistics.eu
- ARTEMISIA - EU Industry Association for Embedded & Cyber-Physical Systems www.artemis.eu
- CLEPA - European Association of Automotive Suppliers www.clepa.eu
- CONCAWE - Oil companies’ European organisation www.concawe.eu
- EARTO - European Association representing Research and Technology www.earto.eu
- ECTRI - European Conference of Transport Research Institutes www.ectri.org
- ERF - European Union Road Federation www.erf.be
- ERTICO European public/private partnership for the implementation of Intelligent Transport Systems and Services www.ertico.com
- ERTRAC - European Road Transport Research Advisory Council www.ertrac.org
- EUCAR - European Council for Automotive R&D www.eucar.be
- ETSC - European Transport Safety Council www.etsc.eu
- FEHRL - Forum of European National Highway Research Laboratories www.fehrl.org
- FIA - Foundation for the Automobile and Society www.fia.com
- FISITA - International Federation of Automotive Engineering Societies www.fisita.com
- POLIS - European Cities and Regions Networking for Innovative Transport Solutions www.polisnetwork.eu
- UITP Europe - International Association of Public Transport www.uitp.org
Any questions?

Please contact us or visit our website at www.earpa.eu

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March 2020