Project Portfolio

European Green Cars Initiative PPP

Calls 2010 - 2012

ERTRAC

EPoSS
European Technology Platform
on Smart Systems Integration

SMARTGRIDS

EIRAC
European Intermodal Research Advisory Council

European Green Cars Initiative

Preface

Aiming at economic recovery and the fight against climate change, the European Commission in response to the financial crisis of 2008 launched the European Green Cars Initiative, a Public-Private Partnership for research and development on zero emission, safe and efficient road vehicles and transportation. A total of 1 billion Euro was announced to be made available jointly by the European Union and the industry for collaborative research projects mainly in the field of electrification but also for developing novel solutions in long distance freight and logistics. At the side of the European Commission, the PPP European Green Cars Initiative has been implemented by the involved units of the Directorates General for Research, Information Society and Media, Mobility, Environment as well as Enterprise and Industry. The industry has been included via three European Technology Platforms, namely the European Road Transport Research Advisory Council (ERTRAC), the European Technology Platform on Smart Systems Integration (EPoSS), and the SmartGrids Platform.

Forming an Industrial Advisory Group, members of these platforms edited a roadmap, at first on electrification, and later complemented by the other two technology fields, long distance freight and logistics. Moreover, a multi-annual plan prioritizing the topics for implementation in calls for proposals for the 7th Framework Programme has been presented. Three rounds of calls have been launched so far. The first, published in summer 2009, was mainly focused on components and architectures of the electric powertrain, electrochemical storage applications and demonstration of electric mobility. The second call, launched in 2010, dealt with the specific energy management, stability and safety issues of the electric vehicle as well as with system integration and manufacturing of batteries, the optimization of the internal combustion engine and efficiency gains in logistics. Moreover, a dedicated budget was made available for supporting a joint call of public authorities at member states and regional level in the framework of an ERA-Net Plus. The third call, opened in summer 2011, covered lightweight materials, power electronics, safety and durability and transport system integration. The fourth and final call for proposals of the PPP European Green Cars Initiative will be published in summer 2012.

The brochure at hand is containing the portfolio of projects of the European Green Cars Initiative which have started already or are in the final stages of negotiation. It shows that the roadblocks of electric vehicle development, energy storage, electric motors, safety and reliability, vehicle system integration and the connection to the power grid are being addressed in a coherent and targeted manner by consortia representing major companies from the European vehicle manufacturing, automotive supply as well as the electrical engineering and electronics sectors. It also makes obvious the important share of optimizing conventional powertrains and logistics in the European Green Cars Initiative.

This document shall provide potential consortia of future projects with indications that may help to define their proposed work. At the same time, it shall help to compare the projects that have been implemented already with the recommendations made in the roadmaps in order to identify priorities for the next calls. The two Coordination Actions in support of the PPP European Green Cars Initiative, CAPIRE and ICT4FEV, will continue to serve the community with information, dissemination and opportunities for networking, giving feedback and seeking advice.

Table of Projects

Electrification

Research & Innovation Directorate-General (DG RTD)

FP7-SST-2010-RTD-1

FP7-SST-2011-RTD-1

FP7-SST-2012-RTD-1

FP7-2010-GC-ELECTROCHEMICAL-STORAGE

FP7-2011-GC-ELECTROCHEMICAL-STORAGE

FP7-2012-GC-MATERIALS

Information Society & Media Directorate-General (DG INFSO)

FP7-2010-ICT-GC

FP7-2011-ICT-GC

FP7-2012-ICT-GC

Transport & Mobility Directorate-General (DG MOVE)

FP7-TRANSPORT-2010-TREN-1

Heavy Duty Vehicles Based on Internal Combustion Engine

Research & Innovation Directorate-General (DG RTD)

FP7-SST-2011-RTD-1

Logistics & Co-Modality

Research & Innovation Directorate-General (DG RTD)

FP7-SST-2011-RTD-1

FP7-SST-2012-RTD-1

Related Projects

Joint Technology Initiatives (JTI)

ENIAC-2008-1

ENIAC-2010-1

ARTEMIS-2009-1

ARTEMIS-2010-1

AMELIE

Advanced Fluorinated Materials for High Safety, Energy and Calendar Life Lithium Ion Batteries

The focus of the project is on the development of fluorinated electrolyte/separator and binders in combination with active electrodes for high performing, safe and durable Li batteries.
The main deliverables of the project are the development of cell prototypes capacity > 10 A.h on which performance will be assessed towards objectives for EV and PHEV applications.
Capacity of cells will target more than 200 Wh/kg with improved life time: > 1000 cycles, High calendar life: > 10 years, cost and high recyclability / recovery / reuse will be a key focus as well.
The utilization of higher performing ‚inactive' organic materials (polymers and ionomers) will enable to reduce the amount of the same materials while increasing the energy and power densities of the battery, and consequently decreasing the cost per kWh of the final battery. In addition, the reuse of the components will contribute to the cost reduction of the battery. To this end a complete Life Cycle Analysis of the new battery components will be performed.
As the developments in this field are extremely interconnected, improved Lithium ion batteries for automotive sector can be manufactured only by the synergistic optimisation of all their components: active materials and binders for electrodes, gel polymers, lithium salts and solvents for the ionic conductors. Although innovative materials are a key lever of such improvements, the cell design will be essential for both improved performances and safety

Project Coordinator or Contact Person: Baert Thierry

Organisation: Solvay (Italy)

Website: http://amelie-green-car-project.fr/

Project Partners:

- Solvay (Italy)
- Recupyl (France)
- Temic Automotive Electric Motors (Germany)
- Kiev National University of Technologies and Design (Ukraine)
- ERAS Labo (France)
- CAE (France)
- Prayon (France)
- Volvo Technology (Sweden)
- Renault (France)
- Institut Polytechnique de Grenoble (France)
- Westfälische Wilhelms-Universität Münster (Germany)
- Universita di Bologna (Italy)

APPLES

Advanced, High Performance, Polymer Lithium Batteries for Electrochemical Storage

The project will develop an advanced, lithium ion battery for application in the sustainable vehicle market. The basic structure of the battery involves a lithium-metal (tin)-carbon, Sn-C, alloy anode, a lithium nickel manganese oxide, LiNi0.5Mn1.5O4, cathode and a ceramic-added, gel-type membrane electrolyte. The academic partners will address the optimization of the basic, electrochemical properties of the electrode and electrolyte materials, while the industrial partners will focus on determining the battery key aspects, such as: i) energy density under a large size capacity configuration, ii) safety by abuse test procedure protocols, iii) overall cost, iv) environmental sustainability and v) recycling process. It is expected that these combined efforts will lead to the industrial production of a battery having an energy density of the order of 300 Wh/kg, a cost much lower than batteries already on the market, improved environmental compatibility and highly reduced safety hazard.

Project Coordinator or Contact Person: Riccardo Carelli

Organisation: Consorzio Sapienza Innovazione (Italy)

Website: www.applesproject.eu

Project Partners:

- Consorzio Sapienza Innovazione (Italy)
- Chalmers Tekniska Högskola (Sweden)
- Chemetall (Germany)
- ENI (Italy)
- ETC Battery and FuelCells Sweden (Sweden)
- Hydro-Eco, Sapienza Università di Roma (Italy)
- SAES Getters (Italy)
- Stena Metall (Sweden)
- Zentrum für Sonnenenergie- und Wasserstoff-Forschung, Baden-Württemberg (Germany)

ASTERICS

Ageing and efficiency Simulation & TEsting under Real world conditions for Innovative electric vehicle Components and Systems

In terms of range, power, and energy efficiency the current generation of Full Electric Vehicles does not meet customer's expectations on a broad basis. It will require huge efforts in improving these concepts to get competitive vehicles that are reliable and have similar performance attributes as nowadays conventional vehicles. The improvement and optimization of current FEV concepts requires improvements in design, simulation and testing-methodologies and tools. In ASTERICS new generation FEVs will be optimized by means of advanced modelling tools, going from one-dimensional to three-dimensional approaches, empiric, statistic and mixed model. Complete vehicle optimizations for case studies will already be done in earliest project/concept phases with much higher quality then possible nowadays. Real time capabilities, advanced testing methodologies for accelerated ageing, online adaptive test procedures and models for ageing effects will complete this picture of virtual prototyping. The ASTERICS project aim is to explore the full potential of fully electric vehicle by means of:

- Developing advanced modelling and testing tools and methods that allow the investigations into influence of each constituent component and sub-system of new generation EV that may be critical from energy efficiency, performance or reliability point of view.
- Assessing the effect of different sub-system solutions in terms of energy efficiency and related increase of autonomy on different specific-life driving cycles that will take into account traffic constraints, road slope evolution, etc.
- Accelerating and adopting testing procedures, tools and systems to the needs of fast, autonomous and reliable testing integrated over the whole development process with the same quality as known from conventional vehicle, component, and sub-system testing.

The ASTERICS project will strongly contribute into a huge leap forward, improving modelling and testing tools and methods that will be the base for future developments of FEV through all Europe, contributing to the competitiveness in this sector in all its aspects: basic components, integrated components, sub-systems, algorithms, systems, and OEMs applications. The overall sector of vehicle manufacturing will have big benefits.

Project Coordinator or Contact Person: Horst Pflügl

Organisation: AVL List GmbH (Germany)

Website: www.asterics-project.eu

Project Partners:

- AVL List GmbH (Germany)
- Centro Ricerche FIAT SCPA (Italy)
- FH JOANNEUM GmbH (Austria)
- Gustav Klein GmbH & Co (Germany)
- LMS International NV (Belgium)
- LMS IMAGINE SA (Belgium)
- THIEN eDrives GmbH (Austria)
- Univerza v Ljubljani (Slovenia)
- Università degli Studi di Firenze (Italy)
- Volvo Technology AB (Sweden)

AUTOMICS

Pragmatic solution for parasitic-immune design of electronics ICs for automotive

Smart Power ICs are extensively used in automotive embedded systems due to their unique capabilities to merge low power and high voltage devices on the same chip, at competitive cost. In such devices, induced electrical coupling noise due to switching of the power stages when integrating such high voltage (HV) devices with low voltage (LV) functions, is a big issue. The lack for a model strategy that would enable the accurate simulation of the injection of minority carriers in the substrate as part of the HV model, as well as its propagation in the substrate is one of the main reasons for this critical situation. This picture motivates the project proposal where all these aspects are addressed to create a link between circuit design, modeling and implementation in innovative computer aided design tools. This concerns smart power IC's dedicated to automotive applications requiring co-integration of high voltage power stages with low voltage analog/digital blocks on the same chip, still being reliable when operating at high temperature.

Project Coordinator or Contact Person: Ramy Iskander

Organisation: Université Pierre et Marie Curie - LIP6 (France)

Website: www.automics.eu

Project Partners:

- Université Pierre et Marie Curie (France)
- Continental Automotive France SAS (France)
- Ecole Polytechnique Fédérale de Lausanne (Switzerland)
- austriamicrosystems (Austria)
- STMicroelectronics srl (Italy)
- Valeo (France)
- AdMOS (Germany)
- CNRS LAAS (France)

AUTOSUPERCAP

Development of High Energy/ High Density Supercapacitors for Automotive Applications

Supercapacitors are essential in electric vehicles for supplying power during acceleration and recovering braking energy. High power and sufficient energy density are required for both an effective power system but also to reduce weight. There are several issues to achieve a high performance/low weight power system that need to be addressed by various groups of scientists and engineers in an integrated framework. In this project, we have assembled a multidisciplinary Consortium of leading researchers, organisations, highly experienced industrialists, and highly active SMEs to tackle the problems. As a result, we are aiming at developing supercapacitors of both high power and high energy density at affordable levels by the automotive industry, and of higher sustainability than many current electrochemical storage devices.

Project Coordinator or Contact Person: Constantina Lekakou

Organisation: University of Surrey (United Kingdom)

Website: http://autosupercap.eps.surrey.ac.uk/

Project Partners:

- University of Surrey (United Kingdom)
- MAST Carbon International (United Kingdom)
- NCSR-Demokritos (Greece)
- Bayer Technology Services (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- IMCB-Consiglio Nazionale Delle Ricerche (Italy)
- Oerlikon Graziano (Italy)
- Karlsruhe Institute of Technology (Germany)
- AGM Batteries (United Kingdom)

AVTR

Optimal Electrical Powertrain via Adaptable Voltage and Transmission Ratio

AVTR addresses the development of a complete Electrical powertrain optimized as a whole of systems, targeting the largest market context (vehicles weighing less than 1000kg) and featuring Energy saving in pure urban drive up to 20% with respect to state of-the-art fixed transmission ratio and avoiding the use of Rare-Earth Permanent Magnet Motors

- fun-to-drive experience by adaptable transmission ratio allowing highest acceleration in all conditions,
- Overall cost reduction per a defined range through a reduced battery capacity
- Reduced cost of ownership and maintenance by a significant reduction of electro-mechanical stresses due to power/energy transients.

The ambitious objectives are obtained by integrating in a single, air cooled, compact module: power electronic and related control performing energy conversion, AC induction motor drive, variable rate mechanical transmission and differential.
Early demonstration of the technology will be made by preparing specific AVTRs to be installed on a FEV of new concepts for urban mobility and easily adaptable to the majority of the forthcoming (2015-2020) light electrical vehicles.

Impact is expected on:

1) Improved energy efficiency and extended driving range of the FEV
2) Reduced costs of the electronic components and the overall FEV at increased performance
3) Mitigated constrains for the user of the FEV versus the Internal Combustion Engine Vehicle
4) Significant improvement of FEV's safety, comfort, new information, and comfort services for FEV users
5) Strengthened global competitiveness of the European automobile, ICT for PWT
6) Market penetration of key components of FEVs

Project Coordinator or Contact Person: Giuseppe Catona
Marco Ottella

Organisation: BITRON S.p.A. (Italy)

Website: www.avtr.eu

Project Partners:

- ST Microelectronics (Italy)
- Technical University of Warsaw (Poland)
- Fraunhofer IISB (Germany)
- Oerlikon-Graziano (Italy)
- Polimodel (Italy)
- CISC Semiconductor (Austria)
- IFEVS (Italy)

CAPIRE

Coordination Action on PPP Implementation for Road-Transport Electrification

The Coordination Action CAPIRE prepares and supports the realization of a Public Private Partnership (PPP) sustaining and putting into practice the European Green Cars Initiative. Its activities focus on two major fields: a careful consideration of options for the aims, shape, and implementation paths a PPP, and the identification of technology roadblocks and the respective research needs within FP7. Major outcomes will be an appropriate and proven PPP implementation model and a dedicated roadmap based on an elaborated and deep analysis of R&D needs, respective milestones and supporting measures. The goal is to increase by a joint approach of the involved economic sectors and the public authorities the competitiveness of global European Automotive Industry in the domain of energy efficient, safe, non-polluting and CO_2-free vehicles. This strategy has to be based on the three technology pillars Passenger cars and LCV, Trucks and Buses and Logistics.

Project Coordinator or Contact Person: Emma Briec

Organisation: Renault (France)

Website: www.capire.eu

Project Partners:

- Renault (France)
- AVL LIST (Austria)
- CRF - Centro Ricerche Fiat (Italy)
- Volvo Technology (Sweden)
- VDI/VDE-IT (Germany)
- Robert Bosch (Germany)
- Valeo S.A. (France)
- IBERDROLA Distribucion Electrica (Spain)
- TfL - Transport for Lond(United Kingdom)
- Continental Teves (Germany)
- Hidira d.d. Podjetje za Ustanavljanje in Upravljanje Druzb (Slovenia)
- Procter & Gamble Eurocor (Belgium)
- TÜV Rheinland Consulting (Germany)
- SOLARIS Bus & Coach (Poland)

CASTOR

Car Multi-Propulsion Integrated Power Train

Future electrical propulsion concepts demand more efficiency and less complexity with great functionality, robustness and light weight, and the ability to operate in a wide ambient temperature range. CASTOR will explore architectural advantages of fully integrated power train electronics for distributed propulsion systems that enable future generations of electric vehicle (EV) and personal propulsion systems.

- Advancements in efficiency and safety will be achieved by implementing a multi-propulsion power train based on the synergic integration of the energy storage with the propulsion unit.
- The research will not only focus on the integration of the component functionalities but also adopt an holistic approach for thermal management.
- The research is aimed to achieve 10~20% energy saving, 25% cost reduction, 15~20% improvement in vehicle range, and increased safety and integrability against the current state-of-the art EV propulsion systems.

Project Coordinator or Contact Person: Reiner John

Organisation: Infineon (Germany)

Website: http://www.castor-project.eu/

Project Partners:

- Infineon (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- Volkswagen (Germany)
- SINTEF (Norway)
- FICOSA (Spain)
- University of Sheffield (United Kingdom)
- Magnomatics (United Kingdom)

CO^3

Collaborative Concepts for Comodality

CO^3 is a key priority project proposed by the European Intermodal Research Advisory Council (EIRAC). A recent study (Feb 2009) from the World Economic Forum estimates that the capacity utilization of European freight is currently as low as 43%. The EIRAC consensus is that we should set as a priority to increase to a more ambitious 70%. EIRAC believes a key strategy to achieve this objective is to stimulate and facilitate industrial collaboration in their systems of Distribution of Goods. CO^3 is a simple and very practical action that could have however a great impact by chain effect. We have chartered a small group of Lawyers, economists and Industry players, to sit down together and prepare a common European conceptual template for Collaborative Transport Agreements among shippers. Such template, fairly splits cost and benefits, protects participating SMEs, while preserving large industrial players economy of scale. The agreements should have clear and transparent termination-entry clauses to enable their evolution without unnecessary stress. In particular it facilitates scale building giving the participating parties easier access to Intermodal Transport solution.

Project Coordinator or Contact Person: Dirk 't Hooft

Organisation: Holland International Distribution Council (The Netherlands)

Project Partners:

- Holland International Distribution Council (Netherlands)
- Argus (The Netherlands)
- Kneppelhout & Korthals (The Netherlands)
- Dutch Institute for Advanced Logistics (The Netherlands)
- Heriot Watt University (United Kingdom)
- TRI-Vizor (Belgium)
- Procter & Gamble Eurocor (Belgium)
- Cranfield University (United Kingdom)
- Zaragoza Logistics Center (Spain)
- ELUPEG (United Kingdom)
- Instituto Tecnologico Del Embalaje (Spain)
- Wincanton (United Kingdom)
- Jan de Rijk Logistics (The Netherlands)
- Planung Transport Verkehr (Germany)
- Mines Paris Tech (France)
- Pastu Consult (Belgium)
- Giventis (The Netherlands)
- D'Appolonia (Italy)

COMCIS

Collaborative Information Services for Container Management

This project is about interoperability between existing e-freight systems. Shippers, beneficial cargo owners, LSPs as well as customs authorities will be offered information that will shorten lead times and increase reliability.
We will unlock valuable information that is available somewhere throughout the logistics chain: Data from container security devices, port communities, logistics network, terminal operators, etc.
Interoperability between systems is only useful if it leads to improved processes. COMCIS will therefore focus on better integration of customs processes, better interfaces between sea and hinterland, as well as better control on the hinterland part of the logistics chain which is often the largest cause of variability.
For communication between abovementioned e-freight systems, we will use the common framework that is being developed in a cooperation between European e-Freight projects as well as industry driven initiatives like LIM (Logistics Interoperability Model) of GS-1.
Demonstrations will take place in 3 business cases through ports of Antwerp and Rotterdam, involving DHL, MSC and ECT.

Project Coordinator or Contact Person: Frank Knoors

Organisation: Logit Systems (Belgium)

Project Partners:

- Logit Systems (Belgium)
- Zemblaz (Belgium)
- DHL Global Forwarding - DHL Management (Austria)
- MSC (Belgium)
- Cargo Community System (Belgium)
- Belgian Administration of Customs and Excises (Belgium)
- TNO (The Netherlands)
- ECT Participations (The Netherlands)
- BMT Group Limited (United Kingdom)
- Marlo AS (Norway)
- Inlecom Systems (United Kingdom)
- ILIM Institute of Logistics and Warehousing (Poland)
- Bluegreen Strategy (Italy)

CORE

CO_2 REduction for Long Distance Transport

The objective of the project is to demonstrate a substantial reduction of CO_2 emissions and fulfilling EuroVI emission legislation. By using novel technology and combine them in flexible engines with high level of precise control, performance advantages will be achieved with improved emissions and fuel consumption. The research will focus on efficient air management, combustion and control for the diesel engine, together with optimizing the powertrain layout utilizing electric hybridization, downsizing and alternative fuels.
Research to the aftertreatment system is included to further improve the powertrain efficiency. This will be combined improvements to the base engine friction for developing highly efficient drivelines for long distance transports.
CORE is divided into five sub-projects, three that will focus on different engine technologies. These activities are supported by two cross divisional projects where friction reduction and improvements to the NOx aftertreatment are studied. The project results will be assessed by vehicle simulations. The results will be evaluated for legislation test cycles and with real life drive cycles.

Project Coordinator or Contact Person: Johan Engstrom

Organisation: Volvo (Sweden)

Project Partners:

- Volvo (Sweden)
- CRF - Centro Ricerche Fiat (Italy)
- Chalmers University of Technology (Sweden)
- Daimler (Germany)
- Federal Mogul (Germany)
- Gottfried Wilhelm Leibniz Universität Hannover (Germany)
- Honeywell (Switzerland)
- IAV - Ingenieurgesellschaft Auto und Verkehr (Germany)
- Johnson Matthey (United Kingdom)
- Joint Research Centre - European Commission (Belgium)
- Metatron (Italy)
- Politecnico di Milano (Italy)
- Politecnico di Torino (Italy)
- Rhodia (France)
- Ricardo (United Kingdom)
- Umicore (Germany)

COSIVU

Compact, Smart and Reliable Drive Unit for Fully Electric Vehicles

The project 'COSIVU' aims at new system architectures for drive-train by developing a smart, compact and durable single-wheel drive unit with integrated electric motor, compact transmission, full SiC power electronics (switches and diodes), a novel control and health monitoring module with wireless communication, and an advanced ultra-compact cooling solution. The advances over the current state of the art can be summarized as follows:

- Decentralized drive-train system with one compact system package and wireless communication between drive units and central computer
- Development of next generation of highly integrated inverter modules based on novel SiC technology (1200V, 500A)
- Fail safe concepts for increased functional safety
- Closed hardware-in-the-loop technology to always guarantee optimal working conditions
- Innovative functional and health monitoring
- Improvement of durability and total driving range by factor 2
- COSIVU solution demonstrated and proofed in a test rig, and In-vehicle tests

Project Coordinator or Contact Person: Dag Andersson

Organisation: Swerea IVF AB (Sweden)

Website:

Project Partners:

- Swerea IVF AB (Sweden)
- Volvo Technology AB (Sweden)
- TranSiC AB TSC (Sweden)
- Hella Fahrzeugkomponenten GmbH (Germany)
- Sensitec GmbH (Germany)
- Elaphe d.o.o. (Slovenia)
- Berliner Nanotest und Design GmbH (Germany)
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V. (Germany)
- Technische Universität Chemnitz (Germany)

DELIVER

Design of Electric Light Vans for Environment-Impact Reduction

The DELIVER project concept aims to explore urban light duty vehicle concepts intended for larger scale production by executing a broad scope conceptual design study which will start by establishing initial design specifications and continue right through to the detailed realistic performance assessment of one prototyped vehicle concept.
DELIVER is pre-competitive, focusing on the rules of the design of ELDVs to be launched by 2020, and providing a platform for integrated design brought together into one holistic design by a team of experienced design engineers and design researchers of various backgrounds.
The project will build upon the progress made and foreseen in subsystems and main components that are to be integrated into the ELDV through networking with complementary R&D projects, as well as with the support of a multi stakeholder Advisory Board consisting of high level representatives of Europe's cities, large urban delivery fleet owners and others.

Project Coordinator or Contact Person: Micha Lesemann

Organisation: RWTH Aachen - IKA (Germany)

Website: http://www.deliver-project.org/

Project Partners:

- RWTH Aachen - IKA (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- Volkswagen (Germany)
- Liberty E-Tech (United Kingdom)
- Michelin (France)
- CEGASA (Spain)
- POLIS (Belgium)
- SP Technical Research Institute of Sweden (Sweden)
- HPL Prototypes (United Kingdom)

E³Car

Nanoelectronics for an Energy Efficient Electrical Car

Emissions from road vehicles have to be reduced substantially in the future. The ultimate goal of most car manufacturers is to get to a completely electric vehicle, protecting the environment from emissions and noise, with alternative on-board energy sources (solar) and connection to the grid. In this context the project is addressing the development of highly efficient electrical vehicles, the battery control, the high-voltage components (IGBTs, high-voltage FETs) and the architectures and subsystems for the electronics of electrical vehicles. The objectives of the project are:

- Development of nanoelectronics technologies, devices, circuits architectures and modules for electrical cars/vehicles and demonstration of these modules in a final systems.
- New design and concepts for power train, power conversion, power management and battery management.
- Achieve 35% energy saving, and increased integrability against the current state-of-the art EV power electronics systems.

Project Coordinator or Contact Person: Reiner John

Organisation: Infineon Technologies (Germany)

Website: www.e3car.eu

Project Partners:

- Infineon Technologies (Germany)
- ATMEL Automotive (Germany)
- austriamicrosystems (Austria)
- ON Semiconductor (Belgium)
- Robert Bosch (Germany)
- Stiftelsen Sintef (Norway)
- ElBil Norge (Norway)
- Think Global (Norway)
- CRF - Centro Ricerche Fiat (Italy)
- STMicroelectronics (Italy)
- Fraunhofer Gesellschaft (Germany)
- STMicroelectronics (France)
- Consejo Superior de Investigacioones Cientificas (Spain)
- Fundacion CiDETEC (Spain)
- Okmetic (Finland)
- VTI (Finland)
- VTT (Finland)
- Alcatel Thales III-V Lab (France)
- Audi (Germany)
- Tyndall National Institute (Ireland)
- IMA (Czech Republic)
- ATMEL France (France)
- CISC Semiconductor (Austria)
- Valeo (France)
- Consiglio Nazionale delle Ricerche (Italy)
- FH Joanneum (Austria)
- Technische Universität Wien (Austria)
- Siemens (Germany)
- Brno University of Technology (Czech Republic)
- CEA - LETI (France)
- Infineon (Austria)
- Philips Electronics Nederland (The Neterlands)
- Epyon (The Netherlands)

EASYBAT

Models and Generic Interfaces for EASY and Safe BATtery Integration and Swap in EV

EASY AND SAFE BATTERY SWITCH IN AN EV

EASYBAT's mission is to address battery integration challenges by defining new concepts for the smart insertion of batteries and by developing generic interfaces for electric vehicles. EASYBAT aims at enabling smooth batteries integration and swap. The EASYBAT integration system will be developed for fully electric vehicles. EASYBAT will develop (i) generic interfaces to improve interoperability between the battery and the vehicle on board-systems and (ii) new components for an easy & safe location and quick integration of the battery in the vehicle. (iii) At each stage of the project, the EASYBAT partners will assess the feasibility of the overall battery swapping concept considering costs, logistics, and environmental aspects. The EASYBAT system performance will be compared to alternative solutions for EVs.
EASYBAT will offer solutions enabling cost effective, environmental friendly switchable batteries and will contribute to unleashing the EVs potential for a wider use.

Project Coordinator or Contact Person: Chanan Gabay

Organisation: Better Place Labs Israel (Israel)

Website: www.easybat-project.eu

Project Partners:

- Better Place Labs Israel (Israel)
- KEMA Nederland (The Netherlands)
- Telnologisk Institut (Denmark)
- Technische Universität München (Germany)
- TÜV Rheinland Kraftfahrt (Germany)
- Continental Engineering Services (Germany)
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung (Germany)
- Ernst & Young (Israel)
- University of Haifa (Israel)
- RWTH Aachen (Germany)
- Renault (France)

eCo-FEV

efficient Cooperative infrastructure for Fully Electric Vehicles

eCo-FEV aims at fulfilling the specific targeted outcome f): Integration of the FEV in the cooperative transport infrastructure. It will develop an integrated IT e-mobility platform that enables the connection and information exchanges between multiple infrastructure systems that are relevant to the FEV such as road IT infrastructure, EV backend infrastructure and EV charging infrastructure. Over this platform, multiple advanced electric mobility services are able to be provided to FEV users to improve the energy management efficiency and usability of the FEV, e.g. in the context of Smart Cities.

Project Coordinator or Contact Person: Massimiliano Lenardi

Organisation: HITACHI Europe Ltd(France)

Website:

Project Partners:

- HITACHI Europe (United Kingdom)
- EICT (Germany)
- Renault (France)
- Centro Ricerche FIAT (Italy)
- Conseil General 38 (France)
- SITAF (Italy)
- ENERGRID (Italy)
- CEA (France)
- Politecnico di Torino (Italy)
- TU Berlin (Germany)
- Bluethink (Italy)
- FACIT (Germany)
- IERC (Germany)

ECOGEM

Cooperative Advanced Driver Assisted System for Green Cars

EcoGem claims that the success and user acceptability of Fully Electric Vehicles (FEVs) will predominantly depend on their electrical energy consumption rate and the corresponding degree of autonomy that they can offer. EcoGem aims at providing efficient ICT-based solutions to this great issue, by designing and developing a FEV-oriented highly-innovative Advanced Driver Assistance System (ADAS), equipped with suitable monitoring, learning, reasoning and management capabilities that will help increase the FEV's autonomy and energy efficiency. EcoGem will base its approach on rendering the FEV:
capable of reaching the desired destinations through the most energy efficient routes possible; fully aware of surrounding recharging points/stations while on move. To achieve its goals, EcoGem will develop novel techniques: on-going learning-based traffic prediction; optimised route planning; interactive and inter-operative traffic, fleet and recharging management via V2X communication.

Project Coordinator or Contact Person: Burak Onur

Organisation: Temsa Global (Turkey)

Website: www.ecogem.eu

Project Partners:

- Temsa Global (Turkey)
- Pininfarina (Italy)
- PTV Planung Transport Verkehr (Germany)
- Fundacion Tecnalia Research and Innovation (Spain)
- HI-IBERIA Ingenieria y Proyectos (Spain)
- University of Bradford (United Kingdom)
- Instytut Transportu Samochodowego – Motor Transport Institute (Poland)
- Institute of Communication and Computer Systems (Greece)
- COSMOTE Mobile Telecommunications (Greece)
- SOFTECO Sismat (Italy)
- NAVTEQ (The Netherlands)

ECOSHELL

Development of New Light High-Performance Environmentally Benign Composites Made of Bio-Materials and Bio-Resins for Electric Car Application

ECOSHELL is concerned with the development of optimal structural solutions for superlight electric vehicles (category L6 and L7e), decreasing its environmental footprint and using an innovative bio-composite material for the vehicle body. Traditionally this category of urban vehicles has been relatively expensive and lacking of sufficient security measures compared to a classic vehicle (category m1 n1), thus less attractive for popular use. However, a body car lighter than 100Kg can allow the electric vehicles to have acceptable performances at an affordable price, due to lower power of the engine and lower energy consummation. This project aims at handling the first two major draw backs (production cost and safety) while further improving the associated environmental advantages via the application of innovative biodegradable materials for the vehicle body.

Project Coordinator or Contact Person: Efrén Hernandez

Organisation: HLP Développement (France)

Website: www.ecoshell.eu

Project Partners:

- HLP Développement (France)
- CITI Technologies (France)
- Cranfield University (United Kingdom)
- VTT (Finland)
- Fraunhofer Institut für Chemische Technologie (Germany)
- Université Henri Poincaré - ENSTIB 1 (France)
- MAHYTEC (France)
- CSIC (Spain)
- CADLM (France)
- GRM Consulting (United Kingdom)

e-DASH

Electricity Demand and Supply Harmonization for EVs

The sustainable integration of FEVs requires an intelligent charging system for the real-time exchange of charge related data between EVs and the grid in order to allow the management of: high-current fast-charging for large numbers of EVs brand-independently, price-adaptive charging/reverse-charging at optimum price, the real-time grid balancing according to spatial and temporal needs and capacities, influenced by the demand and the supply side, remote load charging process control. It is the objective of e-DASH to develop those ICT and processes that are needed to achieve the real-time integration of "FEVs" in the European Electricity Grid (optimum electricity price, effective load balancing in the grid). e-DASH will provide the necessary intelligent charging system, which is able to balance locally and temporarily in almost real-time the electricity demand of large numbers of EVs (fast charging) and instable regenerative energy supply.

Project Coordinator or Contact Person: Gloria Pellischek

Organisation: ERPC (Germany)

Project Partners:

- ERPC (Germany)
- Eurisco APS (Denmark)
- Broadbit Slovakia SRO (Slovakia)
- Endesa Ingeniera SL (Spain)
- RWE Effizienz GmbH (Germany)
- Renault (France)
- Knowledge Inside (France)
- CEA (France)
- ERPC (Germany)
- Technische Universität Dortmund (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- Institut für angewandte Systemtechnik Bremen GmbH (Germany)
- ATOS Origin Sociedad Anonima Espanola (Spain)
- Tiralog (France)
- Volkswagen (Germany)

EFUTURE

Safe and Efficient Electrical Vehicle

The idea of intelligent vehicles that cope with safety requirements and adapt their energy needs is a long-term strategy. eFuture wants to prepare the next generation of electric vehicle by creating a platform which minimises its energy needs while dynamically balancing safety and energy efficiency needs. Special interest is drawn to the influence of this strategy on the driver by acceptance investigations.
Optimising each component separately is not enough, an overall concept which looks at the interactions between the components is mandatory. The strategies to control the actuators will be integrated for safety issues, comfort driving and energy efficiency. ADAS functions will be re-worked and decision units will manage the transition between modes for safety and energy optimisation which also requires a strategy set for the priorities in terms of energy needs during requests collision.

Project Coordinator or Contact Person: Pascal Dégardins

Organisation: Intedis (Germany)

Website: www.efuture-eu.org

Project Partners:

- Intedis (Germany)
- Tata Motors European technical Centre (United Kingdom)
- MILJØBIL GRENLAND (Norway)
- Hella KGaA Hueck (Germany)
- Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (France)
- Würzburger Institut für Verkehrswissenschaften (Germany)

eLCAr
E-Mobility Life Cycle Assessment Recommendations

The eLCAr project aims at supporting the process of assessing the environmental impact of electric vehicles. In order to do so a set of guidelines derived from the ILCD Handbook and adapted to the specific requirements of the projects of the European Green Cars Initiative is designed. This set of guidelines will be benchmarked according to a set of criteria such as applicability, practicability and ease of use and disseminated in an up to date fashion relying on interactive and online training materials. The guidelines will answer questions of how to treat ambiguities in the analysis of all aspects of electric mobility. They also provide a coherent benchmark framework enabling an ecological comparison of electric vehicles with other technological such as bio-fuel propelled cars and hydrogen based mobility. The project work plan reflects the broad range of topics such as battery and electric component production, typical vehicle utilization and driving cycles, interaction between electricity storage, power generation and grid services, end of life and recycling.

Project Coordinator or Contact Person: Sebastian Winter

Organisation: RWTH Aachen University (Germany)

Website: http://www.elcar-project.eu/

Project Partners:

- RWTH Aachen University (Germany)
- Ifu Hamburg (Germany)
- TU Braunschweig (Germany)
- EMPA (Switzerland)

ELECTROGRAPH
Graphene-based Electrodes for Application in Supercapacitors

Supercapacitors are considered one of the newest innovations in the field of electrical energy storage. In hybrid electric vehicle, supercapacitors can be coupled with fuel cells or batteries to deliver high power needed during acceleration as well as to recover the available energy during regenerative braking.
The ElectroGraph project follows a technology driven approach. The ElectroGraph will use an integrated approach in development of both electrode materials as well as the electrolyte solutions as required for optimising the overall performance of supercapacitors. The combination of graphene and graphene-based material as electrode materials, and use of room temperature ionic liquids (RTILs) as electrolyte is the target of development. At the end of the project the performance of those materials is to be demonstrated in the functional model of supercapacitor.

Project Coordinator or Contact Person: Urszula Kosidlo

Organisation: Fraunhofer IPA (Germany)

Website: www.electrograph.eu

Project Partners:

- Fraunhofer IPA (Germany)
- Danubia NanoTech (Slovakia)
- Institute of Occupational Medicine (United Kingdom)
- Trinity College Dublin (Ireland)
- CRF - Centro Ricerche Fiat (Italy)
- Instituto Nacional del Carbon - Consejo Superior de Investigaciones Científicas (Spain)
- The University of Nottingham (United Kingdom)
- The Université Paris Diderot – Paris 7 (France)
- Maxwell Technologies (Switzerland)
- The University of Exeter (United Kingdom)

ELIBAMA

European Li-Ion Battery Advanced Manufacturing for electric Vehicles

The global objective of ELIBAMA is to accelerate the creation of a strong European automotive battery industry structured around industrial companies already committed to mass production of Li-ion batteries for EV's. The project will exploit eco-design to guarantee gains in cost reduction and environment-friendliness across the whole battery production chain. Specifically, the project focuses on electrode production, electrolyte manufacturing, fast and homogenous cell filling, cell design and assembly. Moreover, the project will develop technologies to improve downstream quality and yield. This includes clean manufacturing, online high resolution monitoring and inspection, and non-destructive testing of Li-ion cells. The project will also study recycling and refurbishing of end-of-life Li-ion batteries in order to maximize their use and minimize their environmental impact. All these technical improvements will be closely monitored and validated by a consistent life cycle analysis.

Project Coordinator or Contact Person: Jérôme Perrin

Organisation: Renault (France)

Website: http://elibama.eu/

Project Partners:

- Renault (France)
- CEA - LITEN (France)
- Daimler (Germany)
- Entegris (France)
- EDI-VEOLIA (France)
- Fraunhofer (Germany)
- IN-CORE (France)
- Ingecal (France)
- Krönert (Germany)
- PE-International (Germany)
- Prayon (Belgium)
- Rhodia (France)
- Saft (France)
- Snam (France)
- Solvay - Solexis (Italy)
- Umicore (Belgium)
- University of NewCastle (United Kingdom)

E-LIGHT

Advanced Structural Light-Weight Architectures for Electric Vehicles

The automotive industry has not yet decided which the optimum architecture solution for electric vehicles is; this and the fact that requirements and constraints deriving from an electrical powertrain are much less stringent in several areas make necessary to study new solutions specifically designed for the particularities of electric vehicles. Therefore E-LIGHT proposal aims at exploring all the aspects and requirements for optimal electric vehicle architectures.
These particularities will be studied in E-Light project, focussing on: Modularity of components; Ergonomic designs; Innovative safety concepts; and Better aerodynamic performance and lesser weight which will decrease the overall power consumption and consequently will increase the range.
The main objective of E-Light project is to develop an innovative multi-material modular architecture specifically designed for electric vehicles, achieving optimal light weight and crashworthy performances while ensuring ergonomic on board.

Project Coordinator or Contact Person: Luis de Prada

Organisation: CIDAUT (Spain)

Website: www.elight-project.eu

Project Partners:

- CIDAUT (Spain)
- Tecnalia (Spain)
- University of Sheffield (United Kingdom)
- EAST-4D (Germany)
- Ricardo (United Kingdom)
- Pininfarina (Italy)
- Pôle Véhicule du Futur (France)

ELVA

Advanced Electric Vehicle Architectures

While the first mass-produced electric vehicles are currently arriving on European roads, most of them are models originally intended to be driven by a combustion engine. In the next two and a half years the ELVA partners will develop architectures for electric vehicles particularly designed for electric drive. The core objective is to fully exploit the new freedom in design given by the electrification of the vehicle.
In the first project phase a better understanding of the customer requirements for electric vehicles is developed together with a detailed overview of technologies for electric vehicle drives available from 2020. On this basis, main concepts for battery-driven city cars will be developed in a creative phase. Three of these concepts will be chosen, designed in detail and afterwards analysed and evaluated with regard to several key requirements.

Project Coordinator or Contact Person: Micha Lesemann

Organisation: RWTH Aachen - IKA (Germany)

Website: www.elva-project.eu

Project Partners:

- RWTH Aachen - IKA (Germany)
- Continental Automotive (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- IDIADA Automotive Technology (Spain)
- Renault (France)
- SAFER (France)
- Volkswagen (Germany)

ELVIRE

ELectric Vehicle communication to Infrastructure, Road services and Electricity supply

For E.V.s, the development of an interactive electric energy ICT & Service interface between the vehicle and its electricity infrastructure is of utmost importance, next to creating effective business models. The rationale of this project is to contribute significantly to neutralize the driver's "range anxiety" and encourage the customers to embark the fully electric road transport. Therefore the objective of ELVIRE is to develop an on-board electric energy communication & service platform for realistic use-cases including the relevant external communication and services. Great emphasis is placed on the openness of the Electricity-service platform granting access to multiple players maintaining the customer's choice. ELVIRE will become crucial to future electric road transport by closing the gap between vehicle technology and the off-board E-ICT and service environment. ELVIRE will have strong impact by strengthening competitiveness, energy efficiency and reduce emissions and improve by promoting electrification.

Project Coordinator or Contact Person: Hannes Lüttringhaus

Organisation: Continental Automotive (Germany)

Website: www.elvire-project.org

Project Partners:

- Continental Automotive (Germany)
- Better Place Labs Israel (Israel)
- SAP (Germany)
- ENDESA (Spain)
- Volkswagen (Germany)
- ERPC (Germany)
- Lindholmen Science Park (Sweden)
- Institut für Angewandte Systemtechnik Bremen (Germany)
- CEA (France)
- Erasmushogeschool Brussel (Belgium)
- Renault (France)

EMERALD

Energy ManagEment and RechArging for efficient eLectric car Driving

EMERALD focuses on energy use optimisation and on the seamless integration of the FEV into the transport and energy infrastructure, the goal being to assist the FEV in becoming a successful commercial product.
To this end, EMERALD innovates a range of advanced ICT solutions, each one seamlessly integrated with the others, including:

- Dynamic energy-driven management of FEV auxiliaries, tightly integrated with consumption prediction functionality, enabling pre-emptive energy conservation measures.
- Energy-efficient long-range route planning and optimisation, enabling extension of FEV's driving range and automatic scheduling of recharging stops en route.
- Performance-centric machine learning for consumption prediction, introducing optimisation and cooperative training of machine learning functions targeted for energy consumption and traffic prediction based on experience.
- Driver profiling functionalities, through monitoring of acceleration/braking patterns, for the enhancement of route consumption prediction functionality.
- V2G traffic and consumption data synchronisation, as a new cooperative information-sharing scheme.
- User-centric charge and discharge management, enabling automatically-generated, optimal for the user, charge and discharge schedules, accessible both on-board and on his mobile phone.

EMERALD will also introduce: Enhanced FEV-related power demand prediction and power flow management support, taking advantage of consumption patterns as shared in a cooperative manner by the FEVs themselves as well as from FEVs' recharging bookings; cooperative FEV fleet management, though holistic and dynamic; multi-parameter; fleet control optimisation, taking into account energy and recharging limitations; FEV-specific driver training for energy efficiency.

Project Coordinator or Contact Person: Marco Boero

Organisation: Softeco Sismat Srl (Italy)

Website: www.emerald-project.eu

Project Partners:

- Softeco Sismat Srl (Italy)
- PININFARINA S.p.A. (Italy)
- TEMSA Global S.A. (Turkey)
- PTV Planung Transport Verkehr AG (Germany)
- TECNALIA Research & Innovation (Spain)
- HI-IBERIA Ingenieria Y Proyectos SL (Spain)
- Instytut Transportu Samochodowego – Motor Transport Institute (Poland)
- Institute of Communication and Computer Systems (Greece)
- COSMOTE Mobile Telecommunications SA (Greece)
- MICRO-VETT S.p.A. MCV (Italy)
- Nissan Motor Iberica S.A. (Spain)
- Public Power Corporation S.A. (Greece)

EM-SAFETY

EM safety and Hazards Mitigation by proper EV design

The project aims at increasing the public confidence in the safety regarding electromagnetic fields (EMF) in the fully electric vehicles (FEV).
Public expectations to move towards the electrification of road transport are driven by a multitude of factors and concerns including: climate change, primary energy dependence and public health as well as cost and scarcity of raw materials.
On the other hand, there is widespread public concern regarding the possible adverse effects of electromagnetic fields (EMF). Thus, there is a need to avoid the spread of panic or unjustified fears that would delay the enormous and crucial economic and environmental benefits that the FEV can provide when deployed on a large scale.
The project includes, therefore, a study of existing EM-fields in electric vehicles under certain driving conditions as well as simulation work based on these measurements. These inputs are used for minimizing EMF in electric cars as well as for studies of their effect.

Project Coordinator or Contact Person: Andreas Vogl

Organisation: SINTEF (Norway)

Website: www.sintef.no/Projectweb/EM-Safety

Project Partners:

- SINTEF (Norway)
- Prysmian Limited (Italy)
- CRF - Centro Ricerche Fiat (Italy)
- Gottfried Wilhelm Leibniz Universität Hannover (Germany)
- MIRA (United Kingdom)
- Foundation of Turin University and San Giovanni Battista Hospital (Italy)
- CEA - LETI (France)
- Istituto PM (Italy)
- University of Technology Braunschweig (Germany)
- TAMAG Iberica (Spain)

Enhanced WISETRIP

Enhancing Intermodality of Content, Personalised Information and Functionality of WISETRIP Network of Journey Planning Engines

WISETRIP FP7 Project created an innovative multi-modal trip planner for international travellers able to give personalized information under different scenarios sourced from variant planners. Enhanced WISETRIP project aims to add possibilities for planning, booking and travelling multimodal journeys adapted to all user needs, multiple trip criteria, environmental impact and personal preferences. To manage unexpected scenarios, it will realise integration of real-time data sources and information on extraordinary conditions (strikes, disasters, bad weather) and employ decision management mechanism that will be considered for traveller alerting and trip redesign. It advances the state-of-the-art towards efficient and green planning of multimodal trips, through its unique mixture of features, which include criteria that form the basis of variant trip strategies and govern selection process at all trip phases. Criteria include CO_2 footprint, E&D preferences, other user-specific options.

Project Coordinator or Contact Person: Vassilis Spitadakis

Organisation: Hellenic Telecommunications & Telematics Applications Company (Greece)

Project Partners:

- Hellenic Telecommunications & Telematics Applications Company (Greece)
- AUEB-RC/TRANSLOG (Greece)
- ETRA (Spain)
- TNO (Norway)
- The University Court of the University of Aberdeen (United Kingdom)
- Nextant (Italy)
- Telespazio (Italy)
- Niias (Russia)
- Beijing Transportation Research Centre (China)
- POLIS (Belgium)
- Empresa Municipal de Transportes de Madrid (Spain)
- RJ (Brazil)
- Tomtom International (The Netherlands)
- Reisinformatiegroep (The Netherlands)

ESTRELIA

Energy Storage With Lowered Cost and Improved Safety and Reliability for Electrical Vehicles

ESTRELIA will provide building blocks with enhanced reliability and safety at lowered costs for smart energy storage in FEVs. This is accomplished by a modular approach with ultracapacitor power packs with higher energy density and new BMS ICs. The BMS IC concept will for the first time provide a flexible active cell balancing chip set also suited for the high accuracy required for Li-Ion batteries. This enables higher efficiency by lower energy loss and improved long term reliability at lower electronic component costs for Li-Ion energy packs. New safety gas sensors and flame detection sensors will provide general safety functions for all hazardous events in a FEV. The development of new innovative actuators as low cost power antifuse together with the new energy management HW (BMS IC) and SW will enable dynamic reconfigurable topologies for the energy storage unit, thus still enabling the functionality of the FEV despite single failing cells.

Project Coordinator or Contact Person: Ewald Wachmann

Organisation: austriamicrosystems (Austria)

Website: www.estrelia.eu

Project Partners:

- austriamicrosystems (Austria)
- Valeo Electrical Systems (France)
- Fraunhofer Gesellschaft IISB (Germany)
- Corning (France)
- Austrian Battery Research Laboratory (Austria)
- Applied Sensors (Germany)
- CEA - LETI (France)
- Active Technologies (Italy)
- E4V (France)

EUROLIION

High Energy Density Li-ion Cells for Traction

The research described in this proposal aims to develop a new Li-ion cell for traction purposes with the following characteristics:

- High energy density of at least 200 Wh/kg
- Low costs i.e., a maximum of 150 Euro/kWh
- Improved safety

Although the Li-ion cell appears to be the most appropriate technology to meet these goals, considerable research and development is required. For example, the much-used LiFePO4 cells cannot reach the energy density criterion, and in addition, LiFePO4 is patented, which hampers worldwide commercialization. Many other materials are either too expensive or do not meet current safety, environmental standards (e.g., cobalt in LiCoO2). Thus, we propose a shift from carbon to the much higher capacity silicon-based anodes, and from cobalt-based to iron and/or manganese/nickel-based cathodes, and to use novel electrolyte salts. Eco-design and recycling are inherent parts of the project.

Project Coordinator or Contact Person: Erik M. Kelder

Organisation: Technische Universiteit Delft (The Netherlands)

Website: www.euroliion.eu

Project Partners:

- Technische Universiteit Delft (The Netherlands)
- Centre National de la Recherche Scientifique (France)
- Uppsala Universitet (Sweden)
- Kemijski Institut (Slovenia)
- University of Cambridge (United Kingdom)
- Politechnika Warszawaska (Poland)
- Volvo Technology (Sweden)
- Renault (France)
- Spijkstaal Elektro B.V. (The Netherlands)
- GAIA Akkumulatorenwerke (Germany)
- Commissariat a l' Energie Atomique (France)
- Zentrum für Sonnenenergie- und Wasserstoffforschung, Baden-Württemberg (Germany)
- Österreichisches Forschungs- und Prüfzentrum Arsenal (Austria)

eVADER

Electric Vehicle Alert for Detection and Emergency Response

eVADER will investigate the interior and exterior sound scape of electric vehicle for safe operation, considering driver's feedback, feasible pedestrian reactions, driver and pedestrian warning systems and pedestrian safety. The project will also analyse innovative methods to improve the acoustic detectability of electric vehicles in urban scenarios. The project will define solutions to warn vulnerable users of a nearby moving vehicle while providing means for heightening the awareness of drivers in critical situations. Some of the most important areas covered are:

- Optimum warning signals definition to induce correct driver reaction for safe operation
- Adaptation of the warning signals to the real in-service vibro-acoustic environment as well as real urban and exterior noise
- Optimum warning signals definition for pedestrians in close-to-accident situations
- Integration of the generation of acoustic warning signals with in-vehicle intelligent systems data

Use of in-vehicle complementary information to improve characteristics of the warning signal, depending on real close-to accident scenario.

Project Coordinator or Contact Person: Juan J. García

Organisation: IDIADA Automotive Technology (Spain)

Project Partners:

- IDIADA Automotive Technology (Spain)
- Technische Universität Darmstadt (Germany)
- LMS-International (Belgium)
- Österreichisches Forschungs- und Prüfzentrum Arsenal (Austria)
- TNO - Netherlands Organisation for Applied Scientific Research (The Netherlands)
- Institut National des Sciences Appliquees de Lyon (France)
- Nissan Motor Manufacturing (United Kingdom)
- Renault (France)
- PSA (France)
- Continental Automotive (France)
- European Blind Union (France)

E-VECTOORC

Electric Vehicle Control of Individual Wheel Torque for On- and Off-Road Conditions

The E-VECTOORC project brings together 11 complementary partners from industrial and research backgrounds to address the individual control of the electric motor torques of fully electric vehicles to enhance safety, comfort and fun-to-drive in both on- and off-road driving conditions. The key objectives of the research are:

- Development and demonstration of yaw rate and sideslip angle control algorithms based on the combination of front / rear and left / right torque vectoring to improve overall vehicle dynamic performance.
- Development and demonstration of novel strategies for the modulation of the torque output of the individual electric motors to enhance brake energy recuperation, Anti-lock Brake function and Traction Control function. The benefits of these strategies include reductions in: i) vehicle energy consumption, ii) stopping distance, and iii) acceleration times.

Project Coordinator or Contact Person: Aldo Sorniotti

Organisation: University of Surrey (United Kingdom)

Website: www.e-vectoorc.eu

Project Partners:

- University of Surrey (United Kingdom)
- Technische Universität Ilmenau (Germany)
- Jaguar Cars / Land Rover (United Kingdom)
- Flanders' Drive CVBA-SO (Belgium)
- Inverto (Belgium)
- Fundacion CIDAUT (Spain)
- Instituto Tecnologico de Aragon (Spain)
- Skoda Auto (Czech Republic)
- Kompetenzzentrum - Das virtuelle Fahrzeug Forschungsgesellschaft (Austria)
- TRW Automotive -Lucas Varity (Germany)

Evolution

Evolution

Hybrid-EVs and Full-EVs on the market are products where the Internal-Combustion-Engine (ICE) is supplemented by an electric-motor (HEV) or replaced by an all-electric power-train (FEV). Both approaches do not address lightweight or modularity inheriting the same disadvantages as conventional ICEV - Electrification of mobility must face a conceptual rEVOLUTION! This project breaks the paradigm of current Body-in-White (BiW) by delegating the whole structural function to a novel BiW archetype made up of a Multifunctional-Rolling-Chassis (MRC) enabled by a new generation of highly-hybridized structural components and complemented by a non-structural upper-body. This MRC will be the common basis for a family of user friendly vehicles differing by changing only the upper-body according to the customer demand. Advanced materials will enable the development of novel super-lightweight hybrid components complying with safety standards and recycling constraints, and enable the design of the innovative MRC for FEV leading to a further weight reduction of 40% over that achieved using the current state of the art in the SuperLIGHT-CAR project. The EVolution goal is to demonstrate the sustainable production of a 600 kg weight FEV by the end of 2015. To this end EVolution addresses the whole vehicle by prototyping, assembling, and disassembling, the most representative components (MRC, crash cross-beam, crash box, suspension sub-frame, side-door, A-pillar, and a multifunctional-hard-top) made from raw polymers and aluminum alloys commonly used in the automotive industry, to ensure compliance with EC Directive 2000/53/EC 'End-of life vehicle' which imposes stringent requirements on the disposal and recycling of motor vehicles. Guaranteeing the safety and regulatory compliance, with a weight saving of 50%, each component chosen will prove, mutatis mutandis, the revolutionary potential of the EV solution in all components employed today in current high volume production.

Project Coordinator or Contact Person: Jesper deClaville Christiansen
Lone Varn Johannsen

Organisation: Aalborg University (Denmark)

Website:

Project Partners:

- Aalborg Universitet (Denmark)
- PININFARINA S.p.A. (Italy)
- Fundacion Tecnalia Research & Innovation, Tecnalia (Spain)
- Institutul National De Cercetare Dezvoltare Pentruchimie Si Petrochimie - Icechim Bucuresti (Romania)
- Association Pour La Recherche Et Le Developpement Des Methodes Et Processus Industriels – ARMINES (France)
- Teknologisk Institut (Denmark)
- Latvijas Valsts Koksnes Kimijas Instituts (Latvia)
- Universidad De Valladolid (Spain)
- Technische Universitat Berlin (Germany)
- Universita Di Pisa (Italy)
- University Of Patras (Greece)
- Centro Ricerche Fiat Scpa (Italy)
- Euro Master Srl (Italy)
- The University Of Sheffield (United Kingdom)
- Centre De Recherche En Aeronautique Asbl – Cenaero (Belgium)
- RITOLS (Latvia)
- ABN Pipe Systems SL (Spain)
- Fundacion CIDAUT (Spain)
- Pohltec Metalfoam GmbH (Germany)
- Dow Europe GmbH (Switzerland)
- Innovazione Automotive E Metalmeccanica SCRL (Italy)
- KGR S.p.A. (Italy)
- FPK Lightweight Technologies S. Coop (Spain)
- Dantec Dynamics GmbH (Germany)
- Pole Vehicule Du Futur (France)

FastInCharge

Innovative fast inductive charging solution for electric vehicles

The overall objective of FastInCharge is to foster the democratisation of electric vehicles in the urban environment by developing an easier and more comfortable charging solution which will enable to ease the EV use by the large public and facilitate their implementation in the urban grid. FastInCharge's intention is to develop a cost-effective modular infrastructure offering a global solution for EV charging. Its success will boost research in the direction of dynamic charging solutions.
The concept of FastInCharge is to create a highly performing inductive solution which will enable a 40 kW power transfer to the vehicles in two charging operational situations: one stationary and one on-route. The inductive technology developed will be integrated into one electric car (secondary charging block) and two charging stations, one stationary and one on-route (primary charging block). The full functional chain will be carefully scrutinized in order to ensure an optimal, safe, and sustainable solution: battery charging, EV performance and safety, EV range, communication EV/station, connection station to the grid, grid management, and energy supply, intelligent coordinated systems.

Project Coordinator or Contact Person: David Mignan

Organisation: Douaisienne de Basse Tension (France)

Website:

Project Partners:

- Douaisienne de Basse Tension (France)
- Technical University – Gabrovo (Bulgaria)
- Automotive Cluster - West Slovakia (Slovakia)
- Batz (Spain)
- Municipality of Douai (France)
- Euroquality (France)
- Institute of Communications and Computer Systems (Greece)
- Tecnalia (Spain)
- Centro Ricerche Fiat (Italy)

FUEREX

Multifuel Range Extender with High Efficiency and Ultra-Low Emissions

Worldwide, there is a strong trend towards highly efficient, low (preferably zero) emission vehicles, i.e. electrical vehicles. In order to facilitate the transition from conventional fuel-driven vehicles towards electrically driven vehicles, there is a short(er) term need for advanced plug-in hybrids and electrical vehicles with range extenders. For this purpose, highly efficient, compact, clean and low cost engines are required. Such engines are to provide battery charging over longer trips and/or in areas where electric recharge infrastructure is not (yet) available. Moreover, these engines should be able to significantly improve over future Euro 6 standards for noxious emissions. FUEREX covers all of the above mentioned aspects with the focus on the application in battery electric vehicles with range extenders capable of using regular fuels as well as bio fuels.

Project Coordinator or Contact Person: Theodor Sams

Organisation: AVL List (Austria)

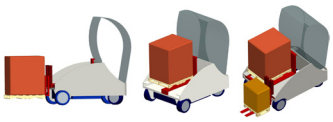
Website: www.fuerex.eu

Project Partners:

- AVL List (Austria)
- Uniresearch (The Netherlands)
- AVL-SCHRICK (Germany)
- ALTRA (Italy)
- CRF - Centro Ricerche Fiat (Italy)
- Chalmers University of Technology (Sweden)
- Robert Bosch (Germany)
- Volvo Personvagnar (Sweden)

FURBOT

Freight Urban RoBOTic vehicle



The project proposes novel concept architectures of light-duty, full-electrical vehicles for efficient sustainable urban freight transport and will develop a FURBOT vehicle prototype. The main paradigms are: energy efficiency, sustainability, mobility dexterity, modularity, intelligent automated driving and freight handling robotization. The design approach will integrate the knowledge of advanced technologies in the field of efficient electric power supply and drive trains, in wheel motors, lightweight high strength materials, frame structures, perceptual systems, new robotic tools for freights manipulation and intelligent controls. The payload is considered packaged in freights boxes or ISO pallets. FURBOT can be used in a fleet offering a new sustainable, evolvable urban freight transport system. The system will be modelled and a simulator developed.

Project Coordinator or Contact Person: Rezia Molfino

Organisation: DIMEC - Università di Genova (Italy)

Project Partners:

- DIMEC - Università di Genova (Italy)
- Bremach Industrie (Italy)
- Persico (Italy)
- Mazel Ingenieros, Sociedad Anonima (Spain)
- ZTS Vyskumno-Vyvojovy Ustav Kosice (Slovakia)
- Transportes Colectivos do Barreiro (Portugal)
- Universita di Pisa (Italy)
- Institut National de Recherche en Informatique et en Automatique (France)

GREENLION

Advanced manufacturing processes for Low Cost Greener Li-Ion batteries

GREENLION focuses on the manufacturing of greener and cheaper Li-Ion batteries for electric vehicles via the use of water soluble, fluorine-free, high thermally stable binders with the following 6 key objectives:

- development of new active and inactive battery materials viable for water processing (green chemistry)
- innovative processes (coating from aqueous slurries) leading to reduced electrode production cost and avoid environmental pollution
- development of new assembly procedures (including laser cutting and high temperature pre-treatment) capable of substantially reducing the time and the cost of cell fabrication
- lighter battery modules with air cooling and easier disassembly through eco-designed bonding techniques
- development of an automated module and battery pack assembly line for increased production output and reduced cost
- waste reduction, which, by making use of the water solubility of the binder, allows the extensive recovery of the active and inactive battery materials

Project Coordinator or Contact Person: Oscar Miguel Crespo

Organisation: Fundacion Cidetec (Spain)

Website: http://www.greenlionproject.eu/homepage

Project Partners:

- Fundacion Cidetec (Spain)
- Westfälische Wilhelms-Universität Münster (Germany)
- Polytype Converting (Switzerland)
- Kemet Electronics Italia SRL (Italy)
- Politecnico di Milano (Italy)
- Agenzia nazionale per le nuove (Italy)
- Tecnologie L'Energia lo Sviluppo Economico Sostenibile Celaya, Emperanza y Galdos Internacional (Spain)
- University of Limerick (Ireland)
- Solvay Fluor (Germany)
- Timcal (Switzerland)
- Mondragon Assembly (France)
- Östereichisches Forschungs- und Prüfzentrum Arsenal (Austria)
- RESCOLL (France)
- Tecnicas Reunidas (Spain)
- Centro Tecnico de Seat (Spain)
- VOLKSWAGEN (Germany)

Green eMotion

Green eMotion

42 partners from industry, the energy sector, electric vehicles manufacturers, municipalities as well as universities and research institutions have joined forces in the Green eMotion project. The aim is to develop and to demonstrate a commonly accepted framework to enable mass deployment of electromobility in Europe.
Green eMotion will connect ongoing regional and national electromobility initiatives leveraging on the results and comparing the different technology approaches. A virtual marketplace will be created to enable the different actors to interact and to allow for new high value transportation services as well as EV-user convenience in billing. In addition, the Green eMotion project will demonstrate the integration of electromobility into electrical networks and contribute to the improvement and development of new and existing standards for electromobility interfaces. The elaborated technological solutions will be demonstrated in some of the participating demonstration regions.

Project Coordinator or Contact Person: Norbert Vierheilig

Organisation: Siemens (Germany)

Website: www.greenemotion-project.eu

Project Partners:

- Siemens (Germany)
- Alstom (Germany)
- better place (Germany)
- Robert Bosch (Germany)
- IBM (Germany)
- SAP (Germany)
- Danskenergy (Denmark)
- edf (France)
- Endesa (Spain)
- Enel (Italy)
- ecars (Belgium)
- eurelectric (Belgium)
- IBERDROLA (Spain)
- PPC (Greece)
- RWE (Germany)
- BMW (Germany)
- Daimler (Germany)
- Micro-Vett (Italy)
- Nissan (Japan)
- Renault (France)
- Ajuntament de Barcelona (Spain)
- beBerlin (Germany)
- Bright Green Island Bornholm (Denmark)
- City of Copenhagen (Denmark)
- City of Cork (Ireland)
- Codema (Ireland)
- Ayuntamiento de Malaga (Spain)
- Malmö stad (Sweden)
- Roma Capitale (Italy)
- Cartif (Spain)
- Centro di Recerca per il Trasporto e la Logistica (Italy)
- Cidaut (Spain)
- DTU (Denmark)
- ECN (The Netherlands)
- Imperial College London (United Kingdom)
- IREC (Spain)
- RSE (Spain)
- Trinity College Dublin (Ireland)
- Tecnalia (Spain)
- Danish Technological Institute (Denmark)
- fka (Germany)
- TÜV Nord (Germany)

HELIOS

High Energy Lithium-IOn Storage Solutions

A large consortium including six car manufacturers, laboratories and test institutes, one recycler and two battery manufacturers will combine their efforts to understand the causes behind the battery cells aging and safety behavior. The study is performed on large High Energy cells for Electric Vehicles, PHEV and Hybrid Heavy Duty trucks applications.
The objectives of the HELIOS project are to:

- evaluate the performances on representative large cell formats (~40Ah cells) using 4 different positive electrodes (NCA, LMO blend, LFP & NMC) / graphite anode.
- Propose updated safety and life test procedures for high energy battery cells used in European context
- Have the cells samples analysed "post-mortem" before and after ageing tests to identify for each technology the aging and safety mechanisms.
- Estimate the recyclability & perfome the cost evaluation on the cells and then on the whole battery pack.

Project Coordinator or Contact Person: Frédérique del Corso

Organisation: Renault (France)

Website: www.helios-eu.org

Project Partners:

- Renault (France)
- OPEL (Germany)
- PSA (France)
- Volvo (Sweden)
- Ford (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- CNRS (France)
- Uppsala University (Sweden)
- RWTH Aachen (Germany)
- Umicore (Belgium)
- INERIS (France)
- ZSW (Germany)
- edf (France)
- JCHAR (Germany)
- Arsenal (AIT) (Austria)
- CEA (France)
- ENEA (Italy)
- SAFT (France)

HEMIS

Electrical powertrain HEalth Monitoring for Increased Safety of FEVs

The advent of Fully Electric Vehicle (FEV) in mass production presents new challenges to automotive manufacturers due to the immaturity of the new building blocks, which can reduce their safety and reliability. Among these blocks is the electric powertrain (electric traction motor and power electronics motor control). HEMIS project has two objectives. The first one is to design a Prognostic Health Monitoring System able to provide a failsafe state regarding the electric powertrain and the emitted electromagnetic field. It will also predict the remaining useful life of the equipment, thus enabling enhanced maintenance and reduction of costs. The second objective is to assess electromagnetic compatibility issues and the impact of electromagnetic fields (including low frequency emissions) on human health. Based on this research, electric cars manufacturers will be provided with design and testing guidelines regarding the emitted electromagnetic fields. Testing guidelines are also expected to be incorporated as a part of emissions standards.

Project Coordinator or Contact Person: Ainhoa Galarza

Organisation: CEIT (Spain)

Website: http://www.hemis-eu.org/

Project Partners:

- CEIT (Spain)
- York EMC Services (United Kingdom)
- IDIADA Automotive Technology (Spain)
- VTT (Findland)
- Politecnico di Milano (Italy)
- MIRA (United Kingdom)
- JEMA Energy (Spain)

Hi-Wi

Materials and Drives for High & Wide Efficiency Electric Powertrains

At present, motors for FEV (Fully Electric Vehicle) and HEV (Hybrid Electric Vehicle) applications develop their highest efficiency of around 93~95% within a speed range of typically 1/4 to 1/3 of the maximum rotating speed, and at an ideal torque, whereas in real usage - in the majority of driving cycles - the motor operates at a wider range of speeds and at partial load (low torque) resulting in much lower efficiency. HI-WI will address the mismatch between the region of HIGH efficiency and the WIDE region of frequent operation with advances in the design and manufacture of motors. HI-WI will couple its novel design approach to breakthroughs in materials and manufacturing, winning size, weight, and cost savings. The three-year HI-WI project will deliver prototyping and demonstration of innovative motors; new approaches to the holistic design of motors nano-scale materials advances to create magnets with reduced rare-earth content; micro/nano-scale manufacturing advances to create permanent magnets and integrated assemblies.

Project Coordinator or Contact Person: William O'Neill

Organisation: Centre for Industrial Photonics University of Cambridge (United Kingdom)

Website: www.hiwi-eu.org

Project Partners:

- Centre for Industrial Photonics University of Cambridge (United Kingdom)
- University of Sheffield (United Kingdom)
- Istituto P.M. (Italy)
- CRF - Centro Ricerche Fiat (Italy)
- STMicroelectronics (Italy)
- CEDRAT (France)
- Siemens (Germany)

HUBWAYS

coHerent measures and environmental interventions to debottleneck hUBs of the multimodal netWork fAvoured bY Seamless flow of goods

HUBWAYS provides models and capabilities for cooperation and communication between multimodal terminal network stakeholders, amplifying, thus, their joint capabilities. It also establishes Common Value Added Services which, combined with existing services, facilitate end-to-end co-modal, low-CO2 transport solutions that maximise utilisation of terminal and logistics resources and transform multimodal terminals into Green Hubs. These are, a multimodal terminal eco-efficiency calculator which provides the missing carbon footprint information in multimodal terminal networks; integrated competitive services for managing improvements in eco-efficiency; and a Measuring and Benchmarking System to provide the means for long term monitoring of greening activities. Terminal Owners and Operators, Freight Forwarders, and Shippers who organize their own transport operations are project stakeholders and the direct target audience for HUBWAYS results.
HUBWAYS demonstrations will take place across several representative operating scenarios in four Business Cases through terminals in Italy, Sweden, Slovenia and Belgium. By allowing the industry stakeholders to drive HUBWAYS, the output solutions will address the real needs of this sector in a cost-effective way. Cooperation with existing research projects will enable evaluation of the approach in the overall context of co-modal transport and will provide data for measuring the actual impact.

Project Coordinator or Contact Person: Mary Vayou

Organisation: BMT Group Ltd (United Kingdom)

Website:

Project Partners:

- BMT Group Ltd (United Kingdom)
- Consorzio IB Innovation (Italy)
- KOMBICONSULT GmbH (Germany)
- HaCon Ingenieurgesellschaft mbH (Germany)
- INLECOM Ltd (United Kingdom)
- MARLO a.s. (Norway)
- Deutsche GVZ-Gesellschaft mbH (Germany)
- SINTEF (Norway)
- UIRR (Belgium)
- Jernhusen AB (Sweden)
- Adria kombi d.o.o. (Slovenia)
- Lindholmen Science Park (Sweden)
- PE International (Germany)
- Interferryboats NV (Belgium)

ICE

Magneto-Caloric Refrigeration for Efficient Electric Air Conditionning

ICE is focused on the development of a new air conditioning and heat pump system based on the Magneto Caloric heat pump and a on the redesign of the cabin air conditioning.
A IVECO ALTRA Electric bus has been selected as demonstrator vehicle: it is a challenging application, is commercially available and is in use. The project major contents are
Efficient electric Magneto Caloric heat pump (COP > 5 in cooling mode) using high efficiency magnetic materials, smart design and high performance heat exchangers.
Redesign of the thermal power distribution: a coolant loop distributes locally the thermal power
Microclimate control system based on thermal comfort and able to control the system considering the occupants' number.
Sustainable Cost:
The project results will be validated installing the system on an electrical bus and testing it also with road tests.
The project includes also a dissemination and exploitation activity to promote the application of the ICE on passenger cars and other vehicles.

Project Coordinator or Contact Person: Carloandrea Malvicino

Organisation: CRF - Centro Ricerche Fiat (Italy)

Website: www.ice-mac-ev.eu

Project Partners:

- CRF - Centro Ricerche Fiat (Italy)
- COOLTECH Applications (France)
- Behr France (France)
- Universidad Politecnica de Valencia (Spain)
- Institut National des Sciences Appliquées, Strasbourg (France)
- ALTRA (Italy)

ICT4FEV

Information and Communication Technologies for the Full Electric Vehicle

The coordination action ICT4FEV addresses enabling technologies of full electric vehicles (FEV). The focus of the initiative is set on ICT which open new technology paths towards energy efficiency, functionality and usability and are complementary to future advances in performance of battery cell technology. To fight climate change, cut emissions and secure energy supply, transport based on FEVs will soon be strongly demanded by public and private stakeholders worldwide.

ICT4FEV is building a R&D community, creating a European roadmap and recommending standards, regulations, business cases and R&D priorities for the FEV. In its core consortium it therefore brings together for the first time major industrial partners to start a dialogue on a common understanding about impact, R&D priorities, infrastructure needs and requirements. Opportunities of technology transfer are taken into account and foresighted recommendations will be made.

Project Coordinator or Contact Person: Gereon Meyer

Organisation: VDI/VDE-IT (Germany)

Website: www.ict4fev.eu

Project Partners:

- VDI/VDE-IT (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- Siemens (Germany)
- NXP (The Netherlands)
- EADS (France)
- AVL List (Austria)

ID4EV

Intelligent Dynamics for Fully Electric Vehicles

The objective of the ID4EV project is to develop brake and chassis systems for the needs of fully electric vehicles. Optimization on vehicle level will be done with a new approach of a network system as well as new HMI concepts.
Electrified auxiliaries like brake and chassis systems will lead to new possibilities for vehicle control resulting from an enhanced cooperative interaction between mechatronical systems. The aim is to provide best-practice safe electrified brake and chassis systems which meet the high quality and safety standards of the European automotive industry and will consequently lead to a high user/customer acceptance.
To reach the safety targets and to provide solutions to the market in the immediate future, existing systems will be adapted to the special requirements of fully electric vehicles. The project will concentrate on topics of energy efficiency, safety and interconnection between the vehicle chassis, the optimized drive train/ safety systems and the driver.

Project Coordinator or Contact Person: Patrick Spall

Organisation: Continental Engineering Services (Germany)

Website: www.id4ev.eu

Project Partners:

- Continental Engineering Services (Germany)
- ZF Friedrichshafen (Germany)
- Renault (France)
- fka (Germany)
- Applus IDIADA (Spain)
- TNO (The Netherlands)
- Chalmers University of Technology (Sweden)
- ICOOR (Italy)

IoE
Internet of Energy for Electric Mobility

The objective of IoE is to develop hardware, software and middleware for seamless, secure connectivity and interoperability achieved by connecting the Internet with the energy grids. The application of the IoE will be the infrastructure for the electric mobility. The underlying architecture is of distributed Embedded Systems (ESs), combining power electronics, integrated circuits, sensors, processing units, storage technologies, algorithms, and software. Reference designs and ESs architectures for high efficiency innovative smart network systems will be addressed with regard to requirements of compatibility, networking, security, robustness, diagnosis, maintenance, integrated resource management, and selforganization. The future smart grid will converge with the Internet based on standard interfaces, and a physical infrastructure to support electric mobility and the efficient distribution of power and information.

Project Coordinator or Contact Person: Ovidiu Vermesan

Organisation: Sintef (Norway)

Website: www.artemis-ioe.eu

Project Partners:

- Sintef (Norway)
- Infineon (Germany)
- Siemens (Germany)
- RWE (Germany)
- Lantiq (Luxembourg)
- Technische Unversität Braunschweig (Germany)
- Centrosolar (Germany)
- PUREMobility (Norway)
- Think (Norway)
- STMicroelectronics (Italy)
- CRF - Centro Ricerche Fiat (Italy)
- Enel (Italy)
- Universita di Bologna (Spain)
- NXP Semiconductors (The Netherlands)
- Technolution (The Netherlands)
- QinetiQ (United Kingdom)
- University of Sheffield (United Kingdom)
- Birmingham City Council (United Kingdom)
- Royal Holloway University of London (United Kingdom)
- GreenPower (Spain)
- Indra (Spain)
- Tecnalia (Spain)
- Aicia (Spain)
- Acciona (Spain)
- Lantiq (Austria)
- Cellstrom (Austria)
- CISC (Austria)
- Technikon (Germany)
- Triphase (Belgium)
- Etemele (Finland)
- Nokia Siemens Networks (Finland)
- Zentrum für Sonnenenergie- und Wasserstoff-Forschung, Baden-Württemberg (Germany)

JobVehElec

Raising Awareness of Job Opportunities in Vehicle Electrification

The shifting into an electric road transport paradigm will require new dimensions to the traditional skills and capabilities of road transport engineers and technicians. The transition requires not only new approaches to vehicle manufacture and development, but also to road transport education. To ensure that young people (age 15-18) respond to the important and attractive opportunities arising in the transition, JobVehElec will perform Coordination and Support Actions designed for the purposes of:

- Evaluating and demonstrating job creation in the electrification sector;
- Encouraging young persons to seek jobs in electrification of road transport; and
- Arranging communication and stimulation campaigns such as;
- Web Portal linking to social media,
- Road Show visiting high schools,
- Concept Competition and
- Summer School.

The partner universities are supported by an Advisory Board of ten industry actors and by the regional networks of the universities.

Project Coordinator or Contact Person: Mia Björkil

Organisation: Chalmers Industriteknik (Sweden)

Project Partners:

- Chalmers Industriteknik (Sweden)
- Chalmers University of Technology (Sweden)
- ARMINES, École des Mines de Paris (France)
- Karlsruhe Institute of Technology (Germany)
- Politecnico di Torino (Italy)
- RWTH Aachen (Germany)

LABOHR

Lithium-Air Batteries with split Oxygen Harvesting and Redox processes

LABOHR aims to develop Ultra High-Energy battery systems for automotive applications. LABOHR has 5 key objectives: (i) development of a green and safe electrolyte chemistry based on non-volatile, non-flammable ionic liquids; (ii) use of novel nanostructured high capacity anodes in combination with ionic liquid-based electrolytes; (iii) use of novel 3-D nanostructured O2 cathodes making use of IL-based O2 carriers/electrolytes with the goal to understand and improve the electrode and electrolyte properties and thus their interactions; (iv) development of an innovative device capable of harvesting dry O2 from air; and (v) construction of fully integrated rechargeable lithium-Air cells with optimized electrodes, electrolytes, O2-harvesting system and other ancillaries. LABOHR aims to overcome the energy limitation for the application of the present Li-ion technology in electric vehicles with the goal to perform frontier research and breakthrough work to position Europe as a leader in the developing field of high energy, environmentally benign and safe batteries.

Project Coordinator or Contact Person: Stefano Passerini

Organisation: Universität Münster (Germany)

Website: http://labohr.eu/

Project Partners:

- Universität Münster (Germany)
- AVL (Austria)
- CSIC (Spain)
- Tel Aviv University (Israel)
- SAES (Italy)
- Kiev National University of Technology and Design (Ukraine)
- University of Bologna (Italy)
- University of Southampton (United Kingdom)
- Chemetall (Germany)
- Volkswagen (Germany)
- ERS (Germany)

LIBRALATO

Libralato Engine Prototype

The Libralato rotary engine is a potential breakthrough technology, an eco-engine for the 21st century, with a new thermodynamic cycle and very different mechanical dynamics than is the case with conventional internal combustion engines. The project will investigate the design potential of the Libralato engine through an iterative cycle of simulation and modeling, prototype construction and test bed evaluation. The main claims made about the Libralato engine are:

1. Only 4 principal moving parts: leading rotor, following rotor, sliding connecting vane, rotating exhaust port - dynamically balanced with exceptionally low vibration.
2. New Libralato thermodynamic cycle based on gas exchange between three chamber interfaces.
3. Predicted 9% absolute efficiency increase (30% CO2 reduction relative to 30% efficient gasoline engine and 22% reduction relative to 40% efficient diesel engine).
4. Predicted 4% thermal efficiency increase due to asymmetrical compression and expansion volumes.
5. Predicted 5% mechanical efficiency increase due to rotary design - torque transferred directly to output shaft.
6. Predicted to exceed Euro 6 emission standards due to longer and more complete combustion phase, homogeneous type fuel air mixing, complete scavenge of residual exhaust gas and lower demand on after treatment.
7. Predicted 50% size and weight reduction due to rotary design (similar to Wankel).
8. Predicted 30% reduction in cost due to: reduced mass, elination of con-rods, crankshafts, valve trains, camshafts etc and reduced manufacturing tolerances.
9. Predicted 50% reduction in noise due to rotary design and low velocity exhaust gas.

The consortium comprises 2 academic partners and 6 industrial partners plus an Industrial Advisory Group (Deutz AG, SMTC UK, JCB, Mahindra and BAE Systems) providing a balance of research expertise, SME business innovation skills and commercial exploitation capability.

Project Coordinator or Contact Person: Dr. Raymond Kent

Organisation: Loughborough University (United Kingdom)

Project Partners:

- Loughborough University (United Kingdom)
- Dolomiti CAD (Italy)
- ATARD (Turkey)
- Libralato Holdings (United Kingdom)
- CRITT M2A (France)
- Bucharest University (Romania)
- Infineon Technologies (Germany)
- The Engine Consultancy (United Kingdom)

MAENAD

Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles

Fully Electrical Vehicles pose new challenges to the engineering of the electrical and embedded systems. Systems will have more authority, share common resources, and rely less on mechanical backups. Complex power management and optimization algorithms are needed. To succeed in meeting these challenges, appropriate engineering support is required.
The objective of MAENAD is to:

- Assist the safety process defined in the ISO 26262 automotive safety standard
- Provide effective prediction of quality attributes (dependability and performance)
- Provide tool support for the automated exploration of design spaces (dependability, performance and cost optimization)

MAENAD technology is based on the AUTOSAR-compliant EAST-ADL architecture description language.

Project Coordinator or Contact Person: Henrik Lönn

Organisation: Volvo Technology (Sweden)

Website: www.maenad.eu

Project Partners:

- Volvo Technology (Sweden)
- CRF - Centro Ricerche Fiat (Italy)
- Continental (Germany)
- Delphi/Mecel (Sweden)
- 4S Group (Italy)
- MetaCase (Finland)
- Pulse-AR (France)
- Systemite (Sweden)
- CEA - LIST (France)
- KTH Stockholm (Sweden)
- TU Berlin (Germany)
- University of Hull (United Kingdom)

Mobility2.0

Co-operative ITS Systems for Enhanced Electric Vehicle Mobility

Mobility2.0 will develop and test an in-vehicle commuting assistant for FEV mobility, resulting in more reliable and energy-efficient electro-mobility. In order to achieve a maximum impact, Mobility2.0 takes an integrated approach of addressing the main bottlenecks of urban FEV mobility: 'range anxiety' related to the limited FEV range, scarcity of parking spaces with public recharging spots, and the congestion of urban roads. Our integrated approach means the application developed by Mobility2.0 will utilise co-operative systems to simultaneously consider these bottlenecks, so that such an optimisation can be achieved which still guarantees reliable transportation for each FEV owner. Mobility2.0 will focus on assisting the daily urban commute, which represents the bulk of urban mobility.
In this context, the FEV-specific guidance aspect includes the integrated reservation of a suitable FEV recharging spot, while also prioritising FEVs with low battery levels for the reservation, and making optimal use of the available public transportation along the journey. While the at least partial modal shift will result in very significant energy savings - in direct proportion to the reduced driving mileage - it can be achieved seamlessly only via an integrated co-operative process, which enables efficiency gains without sacrificing the FEV driver's comfort. The project will focus on the specification and standardisation of the messaging interface for the co-operative commuting assistant, and shall validate this co-operative application end-to-end at two test sites. In addition, the generic technology aspects of integrating FEVs into transport infrastructure will be developed by enabling plugged-in FEVs to act as 5.9 GHz road-side units, maintaining infrastructure connectivity via the V2G interface.

Project Coordinator or Contact Person: Andras Kovacs

Organisation: BroadBit (Slovakia)

Website: www.mobility2.eu

Project Partners:

- BroadBit Slovakia (Slovakia)
- ETRA (Spain)
- Fundació Privada Barcelona Digital Centre Tecnològic (Spain)
- ICCS (Greece)
- Municipality of Reggio-Emilia (Italy)
- LaRA Joint Research Unit / Armines (France)
- University of Twente (Netherlands)
- Privé (Italy)
- NEC Europe Ltd (United Kingdom)

MODULUSHCA

Modular Logistics Units in Shared Co-modal Networks

The objective of MODULUSHCA is to achieve the first genuine contribution to the development of interconnected logistics at the European level, in close coordination with North American partners and the international Physical Internet Initiative. The goal of the project is to enable operating with developed iso-modular logistics units of sizes adequate for real modal and co-modal flows of fast-moving consumer goods (FMCG), providing a basis for an interconnected logistics system for 2030.
MODULUSHCA integrates five interrelated working fields: (1) developing a vision addressing the user needs for interconnected logistics in the FMCG domain, (2) the development of a set of exchangeable (ISO) modular logistics units providing a building block of smaller units, (3) establishing digital interconnectivity of the units, (4) development of an interconnected logistics operations platform leading to a significant reduction in costs and CO2 emissions that will be (5) demonstrated in two implementation pilots for interconnected solutions.
MODULUSHCA will establish a robust and replicable methodology to develop and evaluate solutions for interconnected logistics looking at other elements of the supply chain. Two implementation pilots will be executed integrating key MODULUSHCA developments in significantly different supply chains: (1) a closed pilot evaluating the benefits on a inter-site supply chain addressing handling and transportation of iso-modular logistics units within one company, and (2) an open network pilot will evaluate the impact of iso-modular logistics units in cross docking and transhipment processes.
MODULUSHCA efforts will lead to the development of a road map towards a fully interconnected logistics system in 2030. The road map will address the changes and necessary steps to change the logistics system gradually, exploiting progresses in digital, physical and operational interconnectivity, building on current players, assets, and infrastructures.

Project Coordinator or Contact Person: Marcel Huschebeck

Organisation: PTV Planung Transport Verkehr AG (Germany)

Website:

Project Partners:

- PTV Planung Transport Verkehr AG (Germany)
- Procter & Gamble (Belgium)
- Association pour la Recherche et le Développement des Méthodes et Processus Industriels (France)
- École Polytechnique Fédérale de Lausanne (Switzerland)
- CIRRELT (Canada)
- Berlin University of Technology (Germany)
- Kirsen Global Security GmbH (Germany)
- Italian Post (Italy)
- CHEP (United Kingdom)
- Incept (United Kingdom)
- ITENE (Spain)
- Poznan Institute of Logistics and Warehousing (Poland)
- Jan De Rijk (Netherlands)
- SY-KON INTERNATIONAL Ltd. (United Kingdom)
- MEWARE (Italy)
- Technical University of Graz (Austria)

MOTORBRAIN

Nanoelectronics for electric vehicle intelligent failsafe powertrain

The overall objective is to develop sustainable drive train technologies and control concepts/platforms for inherently safe electric vehicle powertrains. Target activities include:

- Development of an intrinsic fail safe and fault tolerant highly efficient propulsion system based on electrical motor, novel power electronic packaging and advanced control systems.
- Development of fail safe and fault tolerant components and electronic (sub-) systems as a cross functional priority, which applies to all existing car electronics, and to all technologies to be developed in the above mentioned topics.
- Power and high voltage electronics and smart miniaturized systems for electrical cars.

Project Coordinator or Contact Person: Reiner John

Organisation: Infineon (Germany)

Website: http://www.motorbrain.eu/

Project Partners:

- Infineon (Germany)
- Arcotronics Industries (Italy)
- AVL List (Austria)
- CRF - Centro Ricerche Fiat (Italy)
- Technische Universität Dresden (Germany)
- STMicroelectronics (The Netherlands)
- Volkswagen (Germany)
- E3DC Energy Storage (Germany)
- Greenpower (Germany)
- FH Joanneum (Austria)
- ZF Friedrichshafen (Germany)
- Egston (Austria)
- Höganäs (Sweden)
- HS Amberg-Weiden (Germany)
- OFFIS (Germany)
- Instituto P.M. (Italy)
- NXP Semiconductors (The Netherlands)
- Universidad de Sevillia (Spain)
- Siemens (Germany)
- Politechnico di Torino (Italy)
- Robox (Italy)
- Seuffer (Germany)
- Austrian Institute of Technology (Austria)
- QinetiQ (United Kingdom)
- University of Sheffield (United Kingdom)

NECOBAUT

New Concept of Metal-Air Battery for Automotive Application based on Advanced Nanomaterials

The aim of NECOBAUT Project is to develop a new concept of battery for automotive based on a new metal/air technology that overcomes the energy density limitation of the Li-ion battery used at present for Electrical Vehicles. Some metal/air cells were developed in the past, but did not give the demanded requirements for commercial use. Two decades of improvements in materials for electrodes, electrolytes and batteries and mainly in nanomaterials were helpful for developing a battery that should fulfill the requirements of the car industry. The technology that is developed in the project addresses mainly the design and manufacturing of both electrodes of the battery: the negative electrode composed by the selected metal, and the air cathode with the catalyst supported on a carbonaceous material. Air is necessary for running the battery and allows having a very light battery, which is essential for the automotive industry. Another important advantage is the low cost of the materials used for manufacturing the battery: the selected metal, carbon support electrode and potassium hydroxide as electrolyte. All these materials are recyclable. A proof-of-concept metal/air cell is manufactured and tested in the project. In addition, the battery concept is validated for automotive application.
The consortium is composed of 8 partners (3 IND, 2 Universities and 3 RTD) covering the complete value chain: battery manufacturer, nanomaterials development (i.e.; nanocatalys, additives and support materials such as carbon), modeling and simulation for cells and batteries design, scaling-up, safety and risks studies for batteries.

Project Coordinator or Contact Person: Alberto García

Organisation: TECNALIA (Spain)

Website:

Project Partners:

- TECNALIA (Spain)
- University of Southampton (United Kingdom)
- ITAE / CNR (Italy)
- The University of Warwick (United Kingdom)
- INERIS (France)
- Técnicas Reunidas (Spain)
- TIMCAL (Switzerland)
- SAFT Baterías (Spain)

NoWaste

Engine Waste Heat Recovery and Re-Use

The re-use of the waste heat (60% of the combustion energy) could allow to increase in overall vehicle energy of up to the 15%, this benefit could be higher in case of hybrid powertrain where generated electric energy could be used when more convenient. NoWaste aims to demonstrate the feasibility of such a system based on thermodynamic cycle (e.g. Rankine).
The Project key points are:

- definition of a reference mission
- selection of the most appropriate architecture
- heat rejection system minimizing the cooling drag and the impact on the front-end
- heat exchangers development to maximize the heat recuperation efficiency
- integration with the exhaust system
- validation of the developed system at first on a test rig and then on vehicle demonstrator based on a hybrid powertrain
- system benefit evaluation to various heavy duty powertrains thanks to a model approach
  Target Performance:
- Fuel Economy: > -12%
- Cost (for the OEM): < 4500 Euro/system
- Weight: < 150 kg

Project Coordinator or Contact Person: Carloandrea Malvicino

Organisation: CRF - Centro Ricerche Fiat (Italy)

Project Partners:

- CRF - Centro Ricerche Fiat (Italy)
- Volvo Technology Corporation (Sweden)
- AVL List (Austria)
- Faurecia (France)
- Dell'Orto (Italy)
- University of Liège (Belgium)

ODIN

Optimized electric Drivetrain by INtegration

This project aims to develop a compact, efficient, highly integrated electro-mechanical powertrain, production optimized to deliver key cost reduction goals. The partners will focus on optimizing the integrated unit for an entry power level of a typical urban vehicle. In parallel they will assess scalability potential to meet the performance criteria of other platforms. Innovative simulation and optimization software tools will be used early in the concept phase to assess optimal design variations, the output of which will be a key input into determining how difficult they will be to scale between differing vehicle and system sizes. Built up of prototypes and implementation in a demo car is planned.

Project Coordinator or Contact Person: Martin Braun

Organisation: Robert Bosch GmbH (Germany)

Website:

Project Partners:

- GKN Driveline (France)
- Fuchs Petrolub AG (Germany)
- FUNDACION CIE I+D+i (Spain)
- ROMAX TECHNOLOGY LIMITED (United Kingdom)
- RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN (Germany)
- RENAULT s.a.s. represented by GIE REGIENOV (France)

OPERA4FEV

Operating Energy Rack for Full Electric Vehicle

The OPERA4FEV project aims to develop thermoplastic battery racks on two functional demonstrators: one for a large scale vehicle from FIAT and one for a niche car, the F-City from FAM, that will integrate electrical, hydraulic connections and component housing in a thermoplastic approach.
OPERA4FEV will pay particular attention to evaluate the effects of the rack characteristics regarding vehicle crash safety, and will focus on the potential risks for the vehicle and its occupants.
The main issues relative to OPERA4FEV are the integration of cells into the thermoplastic rack; an easier mounting and fast connections of cells; the reduction of assembly time and the improvement of dismantling; 25% cost, 50% number and 30% weight reduction on components (cells excluded); the eco-design and easier end of life based on LCA, the plastics parts design to improve thermal regulation, the use of recycled polymers, a concept proposal adaptable to automotive industry and evaluated with an representative tools and assembly line.

Project Coordinator or Contact Person: Erwan Le Floch

Organisation: CMECACORP - MECAPLAST Group (France and Monaco)

Website: http://www.opera4fev.eu/

Project Partners:

- CMECACORP - MECAPLAST Group (France and Monaco)
- CRF - Centro Ricerche Fiat (Italy)
- CETHIL (France)
- Vrije Universiteit Brussel (Belgium)
- EVE System (France)
- FAM Automobiles (France)
- Olesa (Portugal)
- Grupo Repol (Spain)

OpEneR

Optimal Energy Consumption and Recovery Based on System Network

The major criticism in customer surveys on Fully Electric Vehicles (FEV) is the strongly limited driving range compared to vehicles with a conventional internal combustion engine. The OpEneR project addresses this so called „range anxiety“ and aims to unlock the FEV market by increasing the driving range. The approach is not the enhancement of battery technologies, but the development of an intelligent energy management and recovery system. This system will provide advanced driver support based on a networked architecture comprising battery, e-machine, regenerative braking, satellite navigation, dashboard displays and predictive cooperative information. An advanced vehicle stability controller and environmental sensing guarantee the safety of the driver. OpEneR brings a new integrated approach where all available and emerging information is used to generate safe and efficient predictions. The project results will be demonstrated in two fully operational FEV in real world conditions.

Project Coordinator or Contact Person: Kosmas Knödler

Organisation: Robert Bosch (Germany)

Website: www.fp7-opener.eu

Project Partners:

- Robert Bosch (Germany)
- PSA (France)
- Robert Bosch Car Multimedia (Germany)
- AVL List (Austria)
- CTAG - Fundacion para la Promocion de Innovacion, Investigacion y Desarrollo Tecnologico en la Industria de Automocion de Galicia (Spain)
- FZI - Forschungszentrum Informatik an der Universität Karlsruhe (Germany)

OPTIBODY

Optimized Structural Components and Add-Ons to Improve Passive Safety in New Electric Light Trucks and Vans (ELTVs)

OPTIBODY, is a new concept of modular structural architecture for electric light trucks or vans (ELTVs) that will focus on the improvement of passive safety in order to help to reduce the number of fatalities and severe injuries. This new structural concept is composed of a chassis; a cabin improving current levels of EVs' comfort, occupant protection and ergonomics; and a number of add-ons bringing specific self protection in case of impacts or rollover, and providing partner protection (crash compatibility) while interacting with other vehicles or vulnerable users. Each module can be individually optimized. OPTIBODY, together with the less restrictive distribution of internal components of EVs (with less architectural constraints than conventional ones) will represent a unique opportunity to implement innovative solutions for passive safety in ELTVs. OPTIBODY, as a module-based design, has also important results in terms of repairability.

Project Coordinator or Contact Person: Juan J. Alba López

Organisation: University of Zaragoza (Spain)

Website: http://optibody.unizar.es

Project Partners:

- University of Zaragoza (Spain)
- Politecnico di Torino (Italy)
- PIMOT - Automotive Industry Institute (Poland)
- IDIADA Automotive Technology (Spain)
- CENTRO ZARAGOZA - Instituto de Investigacion Sobre Reparacion de Vehiculos (Spain)
- Mondragon Automocion (Spain)
- AMZ - KUTNO (Poland)
- Italdesign Giugiaro (Italy)
- BELLA Zaklad Kompozytow (Poland)
- SSAB (Sweden)

OPTIMORE

Optimised Modular Range Extender for every day customer usage

The OptiMoRE project takes on the challenge to develop and optimise the concept of the fully-integrated, range-extended, electrified light duty vehicle. Three different RE concepts will be developed and demonstrated to serve the niches from city vehicles, medium sized passenger cars up to light commercial vehicles. OptiMoRE is based upon the following major elements:

1. Definition of real-world driving conditions (driving cycles and comfort requirements) as a baseline for further optimisation and EV assessment
2. Optimisation of components and the whole RE system regarding emission, fuel consumption, cost, weight and exhaust gas after-treatment
3. Modular setup of an EV concept to fulfil a wide range of customer expectations
4. Advanced control strategies as a key for cost reduction and system optimisation
5. Functional and Electrical safety analysis and concept development to define necessary measures to fulfil and implement the ISO 26262 standard
6. Build-up and optimisation of three technology demonstrator vehicles covering EV aspects for delivery trucks, all-purpose vehicles and city cars

Project Coordinator or Contact Person: Theodor Sams

Organisation: AVL-List GmbH (Germany)

Website:

Project Partners:

- AVL-List GmbH (Germany)
- Chalmers tekniska hoegskola AB (Sweden)
- Centro Ricerche FIAT SCPA (Italy)
- IVECO SPA (Italy)
- AVL-Schrick (Germany)
- Uniresearch BV (Netherlands)
- VOLVO Personvagnar AB (Sweden)
- Getrag International GmbH

OSTLER

Optimised Storage Integration for the Electric Car

The OSTLER project will take a modular approach to integrating energy storage into EVs. The benefits will be that purpose-built EVs can readily be designed around their energy store and, crucially from a market attractiveness point of view, will give manufacturers the flexibility to offer model variants of an EV (or a plug-in hybrid vehicle) based on green attributes, specifically zero-emission range, rather than speed or acceleration as might be the case with conventional vehicles. The concept responds to the challenge of reconciling utility with pushing down the base level of CO_2 emissions.
In more detail, the showroom choice could be between three versions of a gasoline-electric hybrid car: one with a 10 km range in EV mode and having a 20 kg battery pack, another with 20 km range and a 40 kg battery and yet another with 50 km range and 100 kg of battery. The customer would knowingly be compromising luggage and passenger space to achieve his or her target range. The manufacturer drawing upon OSTLER's smart integration and modular approach will be able to mitigate the penalties of the compromise.

Project Coordinator or Contact Person: Gabrielle Cross

Organisation: MIRA (United Kingdom)

Website: http://www.mira.co.uk/research/ostler

Project Partners:

- MIRA (United Kingdom)
- Autoliv (Sweden)
- CRF - Centro Ricerche Fiat (Italy)
- Ficosa (Spain)
- Cracow University (Poland)
- Magneti Marelli (Italy)
- Valence (United States)
- ZF-fka (Germany)

PICAV

Personal Intelligent City Accessible Vehicle System

The project concerns a new Vehicle (PICAV) and a new transport system that integrates a fleet of PICAV units. The transport system ensures accessibility for everybody and is designed for weak mobility people. Ergonomics, comfort, stability, assisted driving, eco-sustainability, parking and mobility dexterity are the main drivers of PICAV design. The electrical vehicle presents new frame-suspensions, new seat, new efficient power supply.
The PICAV transport system provides an efficient service to citizen within urban traffic restricted areas where usual public transport services cannot operate because of the width and slope of the infrastructures, uneven pavements and the interactions with high pedestrian flows. This transport system is on-demand and is based on the car-sharing concept.The single units are networked and can communicate each other, with city infrastructure, public transport on the surrounding area and emergency services allowing high level of inter-modal integration.

Project Coordinator or Contact Person: Rezia Molfino

Organisation: DIMEC - Università di Genova (Italy)

Website: www.picav.eu

Project Partners:

- DIMEC - Università di Genova (Italy)
- INRIA (France)
- UCL (United Kingdom)
- Università di Pisa (Italy)
- Serviços Municipalizados de Transportes Colectivos do Barreiro (Portugal)
- ZTS VVÚ KOŠICE (Slovakia)
- Mazel Ingenieros (Spain)

P-MOB

Integrated Enabling Technologies for Efficient Electrical Personal Mobility

The P-MOB project is aiming at breaking the link between the growth in transport capacity and increased fatalities, congestion and pollution. It addresses the integration of smart systems enabling efficient fully electrical personal mobility. The project focuses on the reduction of system complexity concentrating on the essentials, advanced systems integration including solar cells, e-motor and magnetic torque control of the wheel, power-energy management, distributed pack of accumulators, technologies to sell-buy electricity by adaptable vehicle to grid connections.

Project Coordinator or Contact Person: Andrea Pipino

Organisation: CRF (Italy)

Website: http://eeepro.shef.ac.uk/p-mob

Project Partners:

- CRF (Italy)
- Siemens (Germany)
- University of Sheffield (United Kingdom)
- Magnomatics (United Kingdom)
- Integrare (Italy)
- Mazel (Spain)
- Polimodel (Italy)

POLLUX

Process Oriented Electronic Control Unit for Electric Vehicles Developed on a Multi-System Real-Time Embedded Platform

Pollux is aiming to reduce the development time and cost of the complex, high-reliability mechatronic systems needed for the mass deployment of electric vehicles through the creation of a reference architecture for distributed embedded systems, including real-time middleware and multi-core hardware. This to enable the flexible, and evolvable and networked interoperation of systems (sensors, actuators, batteries, converters, ECUs,…) plus the deployment of advanced vehicle and powertrain management algorithms and strategies

Project Coordinator or Contact Person: Ovidiu Vermesan

Organisation: SINTEF - Stiftelsen SINTEF (Norway)

Website: www.artemis-pollux.eu

Project Partners:

- SINTEF - Stiftelsen SINTEF (Norway)
- STMicroelectronics (Italy)
- NXP SEMICONDUCTORS (The Netherlands)
- austriamicrosystems (Austria)
- ON Semiconductor (Belgium)
- CRF - Centro Ricerche Fiat (Italy)
- City Motion (Norway)
- ZEM (Norway)
- Austria Institute of Technology (Austria)
- CEA - LETI (France)
- Continental (France)
- Infineon Austria (Austria)
- CISC Semiconductor (Austria)
- Consejo Superior de Investigaciones Científicas (Spain)
- Integra (Italy)
- Università di Pisa (Italy)
- PSA (France)
- AVL (Austria)
- QinetiQ (United Kingdom)
- Kompetenzzentrum - Das Virtuelle Fahrzeug Forschungsgesellschaft(Austria)
- University of Sheffield (United Kingdom)
- Institut Mikroelektronickych Aplikaci (Czech republic)
- Politecnico di Torino (Italy)
- Asociacion de Investigacion y Cooperacion Industrial de Andalucia (Spain)
- GreenPower (Spain)
- Ficosa (Spain)
- Triphase (Belgium)
- Brno University of Technology (Czech Republic)
- NXP Semiconductors Germany (Germany)
- AVL Software and Functions (Germany)
- FH Joanneum (Austria)
- TTTech Computertechnik (Austria)
- Duracar Holding (The Netherlands)
- Österreichisches Forschungs- und Prüfzentrum Arsenal (Austria)
- Infineon (United Kingdom)
- Universidad Autonoma de Barcelona (Spain)

POWERFUL
POWERtrain for Future Light-duty Vehicles

The Project aims to develop new powertrain concepts able to give a substantial contribution to the achievement of a 50% CO_2 reduction (based on 2005 figures) for passenger cars and light-duty vehicles for the new vehicle fleet in 2020. In particular, the research target on spark ignited (SI) engines powered vehicles is to achieve 40% lower CO_2 emissions with respect to the 2005 values and 20% lower CO_2 emission than the 2005 level for compression ignition (CI) engine powered vehicles.
The objective includes also the target of near-zero emission levels (better than EURO 6) maintained during the useful life of the engines and keeping into account real life emissions, in line with the intention to amend the test procedures in emission legislation in view of real life emissions.
Transversal supporting activities will be integrated for evaluating and assessing: advanced simulation methodologies for powertrain integration, advanced approaches for friction reduction (design solutions, coatings and surface treatments, lubricants), PEMS methodologies for real world emission analysis.

Project Coordinator or Contact Person: Pascal Tribotté

Organisation: Renault (France)

Website: www.powerful-eu.org

Project Partners:

- Renault (France)
- Volkswagen (Germany)
- AVL List (Austria)
- FEV (Germany)
- IFPEN (France)
- LMM (France)
- UPVLC (Spain)
- JBRC (Czech Republic)
- ECOCAT (Finland)
- RWTH Aachen - VKA (Germany)
- PUT-ISSIT (Poland)
- MM-PWT (Italy)
- UNIGE (Italy)
- TEKNIKER (Spain)
- TUL (Poland)
- JRC (Belgium)
- CRF - Centro Ricerche Fiat SCPA (Italy)
- Delphi (France)

PowerUp

Specification, Implementation, Field Trial, and Standardisation of the Vehicle-2-Grid Interface

PowerUp will develop the Vehicle-2-Grid (V2G) interface technology, involving a full development cycle of physical/link-layer specification, charging control protocol design, prototyping, conformance testing, field trials, and standardisation. Its results will ensure that FEVs smoothly integrate into emerging smart-grid networks. V2G technology will be developed in liaison with the ongoing related ISO/IEC standardisation, existing smart-metering standards and ETSI ITS standards will be extended as needed. On the grid side, smart meters will be enhanced for V2G capability and V2G-specific demand-balancing control algorithms will be researched. The specification phase will synthesise requirements of vehicle manufacturers and utility operators. The produced V2G adapter prototypes will undergo conformance testing and field trials. The validated PowerUp results will be contributed into standardisation, completing the overall R&D cycle.
PowerUp impact will facilitate reaching FEVs' full potential economic and environmental benefits.

Project Coordinator or Contact Person: Andras Kovacs

Organisation: BroadBit (Slovakia)

Website: www.power-up.org

Project Partners:

- BroadBit (Slovakia)
- CRF - Centro Ricerche Fiat (Italy)
- Corinex (Slovakia)
- DENSO (Germany)
- ETSI (France)
- ICCS (Greece)
- Itron (France)
- Systema (Greece)
- Technolution (The Netherlands)
- Volvo Technology (Sweden)
- Public Power Corporation of Greece (Greece)

SafeEV

Safe Small Electric Vehicles through Advanced Simulation Methodologies

In the next 20 years the number of small and light-weight fully electric vehicles will substantially increase especially in urban areas. These Small Electric Vehicles (SEVs) show distinctive design differences compared to the traditional car (e.g. no bonnets, vertical windscreens, outstanding wheels). Thus the consequences of impacts of SEVs with vulnerable road users (VRU) and other (heavier) vehicles will be different from traditional collisions. These fundamental changes are not adequately addressed by current vehicle safety evaluation methods and regulations. VRU protection, compatibility with heavier opponents and the introduction of active safety systems have to be appropriately taken into account in order to avoid any SEV over-engineering (e.g. heavy or complex vehicle body) by applying current regulations and substantially impair the SEVs (environmental) efficiency.
Therefore, the project SafeEV aims are based on future accident scenarios to define advanced test scenarios and evaluation criteria for VRU, occupant safety and compatibility of SEVs. Moreover, industrial applicable methods for virtual testing of these scenarios and criteria (e.g. a method for active occupant safety assessment) will be developed. These methods are applied in order to derive protection systems for enhanced VRU and occupant safety for SEVs. The evaluation of one developed hardware system will be used to demonstrate the potential and applicability of these new methods. Dedicated best practice guidelines for VRU and occupant safety evaluation of SEVs will ensure a sustainable impact for industry and regulative organisations beyond the project duration. With the new evaluation methods developed, vehicle safety for SEV on urban roads in the next decade will be adequately addressed resulting in less fatalities and injuries without compromising vehicle efficiency. Moreover, cost-efficient development of SEVs will be made possible by the new virtual testing methodologies developed.

Project Coordinator or Contact Person: Andreas Teibinger

Organisation: Kompetenzzentrum - Das Virtuelle Fahrzeug Forschungsgesellschaft mbH (Germany)

Website:

Project Partners:

- Kompetenzzentrum - Das Virtuelle Fahrzeug Forschungsgesellschaft mbH (Germany)
- Volkswagen Aktiengesellschaft (Germany)
- Daimler AG (Germany)
- Centro Ricerche Fiat S.C.p.A. (Italy)
- Pininfarina S.P.A. (Italy)
- Chalmers University of Technology (Sweden)
- Université de Strasbourg 8France)
- RWTH Aachen University (Germany)
- Graz University of Technology (Austria)
- Robert Bosch GmbH (Germany)

SmartBatt

Smart and Safe Integration of Batteries in Electric Vehicles

The objective of SmartBatt is to develop and proof an innovative, multifunctional, light and safe concept of an energy storage system which is integrated in the pure electric car's structure. The main challenges of this smart integration are the combination of lightweight design with a high safety level against all kinds of hazards, the optimization of functions and the intelligent design of interfaces to various on-board systems.
The expertise of all partners comprises complete vehicle competence, electrics, electronics, batteries, lightweight design, engineering, materials, testing and validation.
The consortium consists of four industrial (incl. two SMEs) and five research partners from five European countries. The exploitation is not limited to the partners but results will be distributed on different ways e.g. project website, papers or trainings as well as face-to-face workshops and meetings with OEMs.

Project Coordinator or Contact Person: Elisabeth Dörr

Organisation: Österreichisches Forschungs- und Prüfzentrum Arsenal (Austria)

Website: www.smartbatt.eu

Project Partners:

- Österreichisches Forschungs- und Prüfzentrum Arsenal (Austria)
- LKR Leichtmetallkompetenzzentrum Ranshofen (Austria)
- Axeon Technologies (United Kingdom)
- Fraunhofer Gesellschaft zur Förderung der angewandten Forschung E.V. (Germany)
- Impact Design Europe (Poland)
- Ricardo UK limited (United Kingdom)
- SP Sveriges Tekniska Forskningsinstitut (Sweden)
- Technische Universität Graz (Austria)
- Volkswagen (Germany)

Smart EV-VC

Smart Electric Vehicle Value Chains

The objectives of sustainable road mobility, i.e. energy efficiency, climate protection, and zero emissions, imply a paradigm shift in the concept of the automobile regarding its architecture, design, materials, and propulsion technology. The fully electric vehicle (FEV) is widely considered the most suitable option for the 'green' car of the future, even though it is still facing a multitude of challenges in terms of product maturity

In order to maintain its role as the world's largest producer of cars, Europe has to anticipate these challenges of a move towards the FEV and adapt its automotive value chain to them in due time. The proposed Coordination Action Smart EV-VC will develop, recommend and initiate a multitude of tangible measures for this purpose, including the definition of common goals in terms of unique selling points of the FEV "made in Europe", the compilation of a European roadmap, the promotion of novel links in the European FEV value chain by e.g. developing harmonized curricula for education and training, initiating standards, and drafting concepts for shared facilities as well as giving advice for the inclusion of small and medium sized enterprises (SME).

Based on initial FEV related technology roadmap activities by members of the European Technology Platforms EPoSS, ERTRAC, and SmartGrids in the Public-Private Partnership European Green Cars Initiative, and sustaining the work carried out previously within projects funded under the umbrella of this initiative, the Smart EV-VC project will compile a dedicated implementation agenda in preparation of Horizon 2020, also aiming at coherences and complementarities between EU and members states programmes, and at establishing contacts at an international level beyond Europe. It will cover strategic research, development and innovation for the FEV "made in Europe" with a particular focus on ICT and smart systems as key enabling technologies.

Within its core consortium Smart EV-VC will therefore bring together major industrial partners from all involved sectors along the value chain around a dialogue on a common understanding about impact, R&D priorities, infrastructure needs and framework requirements. To broaden the view of its work, the project will also involve about 20 other organizations as associated partners.

Project Coordinator or Contact Person: Gereon Meyer

Organisation: VDI/VDE Innovation + Technik GmbH (Germany)

Website:

Project Partners:

- VDI/VDE Innovation + Technik GmbH (Germany)
- Centro Ricerche Fiat (Italy)
- Renault (France)
- Robert Bosch GmbH (Germany)
- Siemens AG (Germany)
- ST Microelectronics (France)
- AVL List GmbH (Austria)
- Vrije Universiteit Brussels (Belgium)
- Sernauto (Spain)
- Interactive Electric Vehicles (Italy)

SMART-LIC

Smart and Compact Battery Management System Module for Integration into Lithium-Ion Cell for Fully Electric Vehicles

‚Smart-LIC' addresses the development of a Battery Management System concept aiming at:

- Lower system complexity by a radical reduction of wiring and connectors cause of- EMF emissions and major source of malfunctions
- Higher efficiency of the battery packs because of the local control
- Increased overall reliability such that failures would be determined by battery cells rather than by electronics and wiring connectors
- Increased flexibility of the overall energy-power routing such to assure that all cells could perform at their maximum rating independently from the rating of the others
- Radical overall cost reduction of the overall BMS because of reduced cabling and connectors as well as simplification of the electronics
- Increased precision in determining the states of charge, of health, and of function of the individual cells and of the entire battery by applying a new cell / battery model based on electrochemical impedance spectroscopy (EIS)
- Reduced maintenance of the battery packs assured by the monitoring of the single cell (macro cell) with the possibility to switch it off from the rest of the pack
- Reduced cost of ownership for the end user due a significant increase in battery lifetime caused by the improved management on cell level

Project Coordinator or Contact Person: Jochen Langheim

Organisation: STMicroelectronics (France)

Project Partners:

- STMicroelectronics (France)
- STMicroelectronics (Germany)
- Berliner Nanotest und Design (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- Fraunhofer Gesellschaft für Förderung der Angewandten Forschung (Germany)
- Technische Universität Chemnitz (Germany)
- Kemet Electronics (Italy)
- Micro-Vett SPA (Italy)
- Continental Temic Microelectronic (Germany)

SMARTOP

Self powered vehicle roof for on-board comfort and energy saving

The electrical loads of present automobiles are related to multimedia, heating, ventilation, and air conditioning (HVAC), body electronics (power windows and heated backlight) and lighting (exterior and interior) and their consumption is above 3 kW.
On a FEV electrical auxiliaries are supplied by the batteries pack resulting in increased mass installed to guarantee reasonable covered ranges from 50 to 100 km; the power consumption of any kind of auxiliary contributes to reduce this range and to decrease the battery lifetime.
The concept addressed by SMARTOP is to develop an autonomous smart roof integrating solar cells , energy storage systems and auxiliaries as thermoelectric climatic control, electrochromic glazing, courtesy and LEDs lighting able to increase comfort and fuel economy for both FEV and ICE vehicles. SMARTOP addresses the needs of vehicle electrification integrating on board power hungry devices and matching the comfort and safety customer expectations.

Project Coordinator or Contact Person: Mauro Brignone

Organisation: CRF - Centro Ricerche Fiat (Italy)

Website: www.smartop.eu

Project Partners:

- CRF - Centro Ricerche Fiat (Italy)
- Trinity College Dublin (Ireland)
- ADETEL group (France)
- SolarPrint (Ireland)
- Imperial College London (United Kingdom)
- Infineon (Germany)
- University College Dublin (Ireland)
- Webasto (Italy)

SMARTV2G

Smart Vehicle to Grid Interface

Concept and Project Objectives:
In a context of an obliged continuous optimisation of the energy consumption rates in developed societies, embedded systems and solutions can perform a significant role in the transition process towards a Sustainable Urban Life concept in European countries. One of the main and most promising technological areas that are expected to be able to contribute in a most relevant way to that overall target is the one constituted by the electric vehicles.
In order to be able to reach the mentioned objective, the following specific objectives have been defined:

- Develop a V2G system made up of a smart grid of charging stations, where vehicles are allowed to carry out the charging/discharging operations.
- Define control systems architecture.
- Develop technical communication and information processing between EV and charging stations.
- Define specification of communication standards and interfaces/information processing standards.
- Ensure security in charging stations and identification.
- Test and validate the developed technology and systems.
- Disseminate project results and ensure scalability and compatibility.

Project Coordinator or Contact Person: Sixto Santonja

Organisation: Instituto Tecnológico de la Energía (Spain)

Website: http://www.smartv2g.eu/

Project Partners:

- Instituto Tecnológico de la Energía (Spain)
- Fraunhofer ESK (Germay)
- ETREL (Slowenia)
- CIT Development (Spain)
- Sapienza Universita di Roma (Italy)
- Technomar (Germany)
- Elektro Ljubljiana (Slowenia)

SOMABAT

Development of novel SOlid MAterials for high power Li polymer BATteries. Recyclability of components.

SOMABAT aims to develop more environmentally friendly, safer and better performing high power Li polymer battery by the development of novel breakthrough recyclable solid materials to be used as anode, cathode and solid polymer electrolyte, new alternatives to recycle the different components of the battery and cycle life analysis. This challenge will be achieved by using new low-cost synthesis and processing methods in which it is possible to tailor the different properties of the materials. An assessment and test of the potential recyclability and revalorisation of the battery components developed and life cycle assessment of the cell will allow the development of a more environmental friendly Li polymer battery in which a 50 % weight of the battery will be recyclable and a reduction of the final cost of the battery up to 150 €/KWh. The consortium has made up with experts in the field and complementary in terms of R&D expertise and geographic distribution.

Project Coordinator or Contact Person: Mayte Gil–Agustí

Organisation: Asociación Instituto Tecnológico de la Energía (Spain)

Website: www.somabat.eu

Project Partners:

- Asociación Instituto Tecnológico de la Energía (Spain)
- Université de Liège (Belgium)
- Kompetenzzentrum – Das virtuelle Fahrzeug Forschungsgesellschaft (Austria)
- Kiev National University of Technologies and Design (Ukraine)
- Institute of Chemistry Timisoara of Romanian Academy (Romania)
- CleanCarb (Luxemburg)
- Consejo Superior de Investigaciones Científicas (Spain)
- Recupyl (France)
- Accurec (Germany)
- Lithium Balance (Denmark)
- Cegasa Internacional (Spain)
- Umicore (Belgium)
- Atos Origin Sociedad Anónima Española (Spain)

STABLE

STable high-capacity lithium-Air Batteries with Long cycle life for Electric cars

An electric car is considered as the most promising technical solution for automotive industries in 21st century since the use of electric energy not only slows down the petrol consumption but also contribute to reduce the CO^2 emission and toxic air pollutants. Due to its good performance, Li-air batteries have attracted worldwide attentions as an ideal alternative, because their outstanding energy density is extremely high compared to other rechargeable batteries.
In this project, a multidisciplinary work team in materials synthesis and characterization, cell assembly and test will cooperate to perform a joint research to deliver a Li-air battery cell for EVs with high capacity and long cycle life in laboratory scale.
The main objective of this project focuses on innovations of battery anode, cathode, electrolyte materials and technologies, as well as an assembly of batteries cells which are crucial on battery performance, cost and environmental impact.

Project Coordinator or Contact Person: Qiuping Chen

Organisation: Politecnico di Torino (Italy)

Website:

Project Partners:

- POLITECNICO DI TORINO (Italy)
- ACONDICIONAMIENTO TARRASENSE ASSOCIACION (Spain)
- L'UREDERRA, FUNDACION PARA EL DESARROLLO TECNOLOGICO YSOCIAL (Spain)
- SWEAR IVF AB (Sweden)
- UNIVERSITY COLLEGE CORK, NATIONAL UNIVERSITY OF IRELAND,CORK (Ireland)
- SAKARYA UNIVERSITESI (Turkey)
- CELAYA,EMPARANZA Y GALDOS INTERNACIONAL, S.A. (Spain)
- ELAPHE, PODJETJE ZA RAZVOJ IN PRODAJO ELEKTRICNIH VOZIL TER ENERGIJSKIH VIROV D.O.O (Slovenia)

STRAIGHTSOL

STRAtegies and measures for smarter urban freIGHT SOLutions

Urban areas represent particular challenges for freight transport, both in terms of logistical performance and environmental impact. Past measures suffer from a lack of systematic evaluation and assessment of short and long term effects. There is thus a clear need for a comprehensive approach to urban freight solutions, particularly linking urban to interurban freight movements. The objectives of STRAIGHTSOL are to: 1) Develop a new impact assessment framework for measures applied to urban-interurban freight transport interfaces. 2) Support a set of innovative field demonstrations showcasing improved urban-interurban freight operations in Europe. 3) Apply the impact assessment framework to the live demonstrations and develop specific recommendations for future freight policies and measures. The demonstrations represent cutting edge initiatives from leading stakeholders like DHL, Kuehne+Nagel and TNT, and cover Brussels, Barcelona, Thessaloniki, Utrecht, Lisbon, Oslo and England.

Project Coordinator or Contact Person: Jardar Andersen

Organisation: Transportokonomisk Institutt (Norway)

Website: http://www.straightsol.eu/

Project Partners:

- Transportokonomisk Institutt (Norway)
- Vrije Universiteit Brussel (Belgium)
- CERTH (Greece)
- University of Southampton (United Kingdom)
- Instituto Superior Tecnico (Portugal)
- Centre d'Innovació del Transport (Spain)
- TNO (The Netherlands)
- Univerza v Ljubljani (Slovenia)
- KUEHNE+NAGEL (Greece)
- Oxfam (United Kingdom)
- DHL Exel Supply Chain (Spain)
- Ajuntament de l'Hospitalet de Llobregat (Spain)
- EMEL (Portugal)
- TNT Express Worldwide (The Netherlands)
- GS1 - The Global Language of Business (Norway)

SuperLIB

Smart Battery Control System Based on a Charge-equalization Circuit for an Advanced Dual-Cell Battery for Electric Vehicles

SuperLIB focuses on smart control system solutions for batteries. To enhance the overall performance, the battery consists of HP and HE cells. This combination together with a smart control strategy and a highly integrated package significantly improves the lifetime, the reliability and the cost/performance ratio of the battery. The electronic architecture required for the connection of the HP and HE cells enables an efficient management of the current and charge distribution. The architecture will include electronic circuits for charge equalization and DC-DC converters utilizing advanced techniques of zero-current and zero-voltage switching. Safety and control system relevant temperature sensors will be developed for an improved thermal management, thus a potential thermal runaway of a single battery cell can be avoided through early detection of local overheating. In addition this will increase the accuracy of the battery state estimation, which allows the utilization of a wide range of the battery state-of-charge. Thus, the battery can be smaller and cheaper with still providing the required usable energy content and power performance.

Project Coordinator or Contact Person: Volker Hennige

Organisation: AVL List (Austria)

Website: http://www.superlib.eu/

Project Partners:

- AVL List (Austria)
- Robert Bosch (Germany)
- CRF - Centro Ricerche Fiat (Italy)
- European Batteries Oy (Finland)
- Fraunhofer Gesellschaft (Germany)
- IFP Energies Nouvelles (France)
- Valeo Equipments Electriques Moteur (France)
- Volvo Technology (Sweden)
- Vrije Universiteit Brussel (Belgium)
- K&S Projektmanagement (Germany)

TelliSys

Intelligent Transport System for Innovative Intermodal Freight Transport

The trend towards increasing transport demand - prerequisite for economic growth - is still challenging the European transport system. On the other hand Europe aims to reduce emissions dramatically. A crucial measure achieving this ambitious aim is to lower transport emissions by increasing the share of inherently more resource-friendly modes of transport.
The “Intelligent Transport System for Innovative Intermodal Freight Transport” (TelliSys) will actively promote the EU’s objective of optimizing the performance of intermodal logistic chains and will provide smooth and cooperative interactions between different modes of transport.
Scientific aim is to develop an intelligent transport system that is applicable for road (in line with Directive 96/53/EC), rail, short sea and inland shipping, which consists of a modular set of volume-optimised and traceable MegaSwapBoxes (MSB), an adapted tractor, and a trailer for the road transport. Ideas and contributions from the consortium together with the advice of outstanding key players of the transport business guarantee the holistic approach and market acceptance of the project outcomes. TelliSys is the follow-up of the successful TelliBox project and the now modular MSB will be based on the unique selling propositions like stackability, three openable sides, three meters loading height, trimodality, pallet wide and cargo security. In addition, the new developed tractor will provide an extra low fifth wheel height (low deck) designed for volume-optimised road transport and the adapted trailer will be flexible to transport conventional loading units as well as the new MSBs.
Within TelliSys, an interdisciplinary European consortium of experts in the field of freight forwarding, manufacturing and science will deliver concepts, prototypes and a proof of concepts via extensive test runs. A complementary bundle of scientific evaluation methods, profitability calculations and risk mitigation actions will guarantee the project success.

Project Coordinator or Contact Person: Sabina Jeschke
Max Klingender

Organisation: RWTH Aachen University (Germany)

Website:

Project Partners:

- RWTH Aachen University (Germany)
- Wecon GmbH (Germany)
- Wesob Sp.z.o.o. (Poland)
- European Intermodal Association (Belgium)
- DAF Trucks N.V. (Netherlands)

UNPLUGGED

Wireless charging for Electric Vehicles

The UNPLUGGED project aims to investigate how the use of inductive charging of Electric Vehicles (EV) in urban environments improves the convenience and sustainability of car-based mobility. In particular, it will be investigated how smart inductive charging infrastructure can facilitate full EV integration in the urban road systems while improving customer acceptance and perceived practicality. UNPLUGGED will achieve these goals by examining in detail the technical feasibility, practical issues, interoperability, user perception and socio-economic impacts of inductive charging. As one special variant, inductive en-route charging will be investigated thoroughly. As part of the project, two smart inductive charging systems will be built, taking into consideration requirements from OEMs, energy utilities and end users. The systems will be innovative and will go beyond the current state of the art in terms of high power transfer, allowing for smart communication between the vehicle and the grid, as well as being in line with the latest inductive charging standards and considering interoperability. These innovative inductive charging systems designed and built as part of the project will then be tested and assessed in order to understand their potential impacts on urban mobility and the acceptance of e-mobility. Application in an en-route charging scenario in particular will be examined for different vehicle types, ranging from cars to buses. It is anticipated that UNPLUGGED will provide clear evidence on and demonstrate whether the use of smart inductive charging infrastructure can overcome some of the perceived barriers for e-mobility, such as range and size of on-board energy storage, and practical difficulties associated with installing traditional charging post infrastructure. UNPLUGGED will also include a feasibility study and economic model for dynamic en-route inductive charging. This technology is currently less mature than static en-route charging, however, it has the potential to provide larger improvements to the range and cost of EVs.

Project Coordinator or Contact Person: Stefano Persi

Organisation: ENIDE (Spain)

Website: www.i-mobilitynetwork.com/enide

Project Partners:

- Forschungsgesellschaft Kraftfahrwesen mbH Aachen (Germany)
- Centro Ricerche Fiat (Italy)
- Università degli Studi di Firenze (Italy)
- Volvo Technology Corp (Sweden)
- Continental Automotive (Germany)
- Hella (Germany)
- Vrije Universiteit Brussel (Belgium)
- IDIADA Automotive Technology (Spain)
- Transport Research Laboratory (United Kingdom)
- Commissariat-à-l'Energie-Atomique (France)
- Endesa (Spain)
- Enel Distribuzione (Italy)
- FUNDACION CIRCE (Sapin)
- Politecnico di Torino (Italy)
- Transport for London (United Kingdom)
- BAE Systems (United Kingdom)

V-FEATHER

InnoVative Flexible Electric Transport

The V-FEATHER project presents a complete electric vehicle architecture vision on how urban light duty vehicles will be designed, built and run in the near future. This project is led by industrial partners with emphasis on energy efficiency, commercial viability, life cycle design and development of new technologies for LDVs steered by leading research institutes.

The vehicle is built around an active adaptive structural architecture (ADAPTecture) that replaces the out-dated "platform" concept with a modular building block concept. Active vehicle dynamics are incorporated through controlled structures and active suspension modules. A High-level control architecture controls the complete system the vehicle dynamics, active safety, energy requirements and driver interaction.

The specifications of these modular LDV are based on a radical new Deposit, Rapid Recharge and Recollect (D3R) system for last mile delivery tracking. A complete prototype vehicle will be developed during the project.

Project Coordinator or Contact Person: Aazir Khan

Organisation: Ayton Willow (United Kingdom)

Project Partners:

- Ayton Willow (United Kingdom)
- Cranfield University (United Kingdom)
- Tuk Tuk Factory (The Netherlands)
- DENSO Automotive (Germany)
- Cleancarb (Luxemburg)
- Technische Universität Hamburg Harburg (Germany)
- Kings College London (United Kingdom)
- CRP Henri Tudor (Luxemburg)
- Timoney Technology (Ireland)

WIDE-MOB

Building Blocks Concepts for Efficient and Safe Multiuse Urban Electrical Vehicles

WIDE-MOB addresses the design and development of EV's basic building blocks, including:

- optimised aerodynamic bodies with embedded synthetic micro-jets that radically reduce the drag Lightweight and low cost bodies designed for high safety under both frontal and lateral crash
- Application of EMC-EMR and low frequency electromagnetic field (EMF) design concepts based on "prudent avoidance practices" for field mitigation on occupants
- Solar panels distributed on both horizontal and vertical surfaces with adaptive electronic for a higher range of operation and minimal needs of infrastructures

Project Coordinator or Contact Person: Andrea Pipino

Organisation: CRF - Centro Ricerche Fiat (Italy)

Website: http://eeepro.shef.ac.uk/wide-mob

Project Partners:

- CRF - Centro Ricerche Fiat (Italy)
- University of Sheffield (United Kingdom)
- STMicroelectronics (Italy)
- IFP Energies Nouvelles (France)
- DuPont (Switzerland)
- Polimodel (Italy)
- Warsaw University of Technology (Poland)

WINN

European Platform Driving KnoWledge to INNovations in Freight Logistics

European Platform Driving KnoWledge to INNovation in Freight Logistics, WINN, is a step forward to increase collaboration and consensus building of the different stakeholders dealing with sustainability in the freight transport logistics and intermodality. Sustainability is a major challenge for the sector. New policies, regulatory measures and financial mechanisms will be required to ensure the implementation of new technologies and business processes that enable the European sector to reach sustainability and competitiveness targets.

WINN project will establish a broad collaboration framework built upon main stakeholders operating at European level (CO-Tree, EIRAC heritage) and national triple helix networks that include public bodies, companies, and excellence research centres in logistics operating in different countries in Europe.

WINN will focus on sustainability, efficiency, and competitiveness of intermodal freight transport allowing economic growth. Some key approaches to reach these goals are:

1. Reducing the indicator (Ton*Km) of the goods physically transported for a given economic growth, for example optimizing the complete supply chains (engineering, manufacturing and distribution processes).
2. Modal shift solutions to "greener" modes (rail, maritime and inland waterways) and choosing the most sustainable combination of transport modes for long distance transport including optimised freight corridors.
3. Increasing load factors and choosing the most efficient routes avoiding congestion through collaboration.
4. Applying a seamless logistics chain that operates without failures, breaches, and redundant operations, minimizing the operations required, leveraging information flows to reduce failures and bureaucracy.
5. Efficient interfaces in the transport system and innovative information and communication services for the optimised use of co-modal freight transport management making co-modal transport operation as easy as door to door trucking.

Strategic objective of WINN:

- Build a collaboration framework between already established networks in freight logistics operating in different areas and in different geographical levels.

Operational objectives of WINN:

- Develop a supporting framework for innovation implementation in sustainable freight logistics at European and National levels.
- Establish joint network assessment of policies, regulatory measures, financial mechanisms and socioeconomic aspects to broaden logistics market and benefit innovation penetration.
- Disseminate and exploitation support for project results and outcomes.

Project Coordinator or Contact Person: Fernando Liesa

Organisation: Centro Nacional de Competencia en Logística Integral (Spain)

Website:

Project Partners:

- Centro Nacional de Competencia en Logística Integral - CNC-LOGISTICA (Spain)
- Dutch Institute for Advanced Logistics (Netherlands)
- European Earth Friendly Logistics Association (Belgium)
- Instytut Logistyki i Magazynowania - ILiM (Poland)
- Enide Solutions, SL - ENIDE (Spain)
- Bluegreen Strategy srl - BLUEGREEN (Italy)

Imprint

Websites

Directorate General for Communications Networks, Content and Technology (DG CONNECT)
http://cordis.europa.eu/fp7/ict/micro-nanosystems/ict-for-green-cars_en.html
www.ec.europa.eu/esafety

Research & Innovation Directorate-General (DG RTD)
http://ec.europa.eu/research/transport/road/index_en.htm

Mobility & Transport Directorate-General (DG MOVE)
http://ec.europa.eu/transport/sustainable/index_en.htm

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European Green Cars Initiative
www.green-cars-initiative.eu

CAPIRE
www.capire.eu

ICT4FEV
www.ict4fev.eu

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