

# E-VOLVE EV FOR LIFE, VALUE, EFFICIENCY



## NEWSLETTER 03/24

The year 2024 came with a rush and already, 2 months have passed. Along with the new year, we are very pleased to announce a few new E-VOLVE Cluster members that have joined which we will introduce in this newsletter as well as in the next issue.

Also, we have some great insights on the informal E-VOLVE Cluster meeting that happened at the RTR2024 conference along with all the information you need about our first cluster webinar.

We hope you enjoy this issue of the cluster newsletter and wish you a nice spring of 2024.

### WELCOME NEW MEMBERS

We are happy to announce that our cluster grew significantly over the last few months and the circle of active E-VOLVE cluster members has been extended with some very interesting projects. In this issue of our newsletter, we want to introduce three of them which we herewith welcome on behalf of all members to the cluster. We are looking forward to the future cooperation.

Don't forget to check out the next issue where we will present the other new members as well. So here is a short summary and introduction of the projects EFFEREST, VOLTCAR and Smart Corners.

#### EFFEREST



*EFFICIENT USER-CENTRIC ENERGY MANAGEMENT  
SYSTEMS FOR OPTIMIZED EVS*

Duration: 1.1.2024 – 31.12.2026

Coordinator: Virtual Vehicle Research GmbH

Consortium: 10 partners from 6 countries

EFFEREST aims to advance energy-efficient electric vehicle (EV) designs by novel use of data and matching enhanced user acceptance with efficient vehicle operation. Real fleet behavior knowledge will be used to make significant enhancements. Users will benefit from personalized data and the option to choose vehicle performance, encouraging energy savings during regular usage. The project involves 10 partners from industry and research, covering the entire EV value chain.



Ultimately, EFFEREST seeks to enhance Europe's competitiveness, strengthening industrial leadership in digital, enabling, and emerging technologies to make EVs more appealing to the global mass market.

The EFFEREST project, funded by the EU, represents a significant step forward in the journey for greener transportation solutions.

Follow the project  
EFFEREST



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## VOLTCAR



*DESIGN, MANUFACTURING, AND VALIDATION OF  
ECOCYCLE ELECTRIC TRACTION MOTOR*

Duration: 1.2.2023 – 31.1.2026

Coordinator: Teknologian Tutkimuskeskus VTT Oy

Consortium: 12 partners from 6 countries

To fight climate change, the transportation sector has been transitioning towards electric vehicles. Unfortunately, despite the benefits of such a move, the dependence of current electric traction motors on rare earth permanent magnet materials is costly and causes supply risk. The EU-funded VOLTCAR project will provide a revolutionary technology that allows for an impactful reduction of these materials while exceeding the state-of-art performance, cost and reliability requirements.



The renewed design methodology and resulting novel high-speed motor could offer improved sustainability, allowing for circular value chains, recycling and reduced use of rare resources. Moreover, it would improve the power density of the motors and the energy efficiency of the vehicles and finally offer improved durability and lower costs.

Follow the project  
VOLTCAR



## SmartCorners



*USER-CENTRED OPTIMAL DESIGN OF ELECTRIC  
VEHICLE WITH SMART E-CORNERS*

Duration: 1.1.2024 – 31.12.2026

Coordinator: AVL DiTEST GmbH

Consortium: 11 partners from 5 countries

In-wheel motors (IWMs) have become a mature technology that is well-suited for new user-centric electric vehicles (EVs). IWMs can be integrated in multi-functional and controllable modules consisting of the electric powertrain, friction brake and suspension/steering actuation. By combining several vehicle functionalities in a compact solution, the modules offer substantial opportunities to enhance the design and the operation of EVs. This is the starting point of the SmartCorners project. Using machine learning and AI, an adaptive multilayer control strategy will be implemented with historical and current data from the vehicle, its environment, and users, including relevant EV fleets.



This approach will pave the way toward software-defined vehicles, enabling rightsizing, holistic optimisation, innovative fault mitigation and actuator allocation strategies as well as more

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efficient, adaptive, predictive, and personalised system operation. SmartCorners will bring a so far un-explored authority level over:

- i) vehicle design, through skateboard-like chassis configurations;
- ii) energy management aspects, covering pre-conditioning and predictive thermal management during EV operation;
- iii) comfort and functional aspects, in terms of user-centric cabin thermal management, and pre-emptive vehicle body control; and
- iv) dismantling process and recycling of the vehicle.

The development and industrialization of the project outcomes will be accelerated by comprehensive and integrated simulation, design and validation methodologies to decrease development time and cost, and support the uptake of AI-based solutions. In conclusion, SmartCorners will provide a significant competitive advantage of the European industry and contribute to achieve key strategic orientations C and A of the EU Strategic Plan.

Follow the project  
SmartCorners



## CONFERENCES

### E-VOLVE Cluster @ RTR2024

We are looking back at the RTR 2024 which took place on 7<sup>th</sup> of February 2024 in Brussels. At the conference, the following E-VOLVE Cluster members were presented:

- Multi-Moby
- HighScape
- HiPE
- PowerDrive
- RHODaS

The conference, taking place on a yearly basis, is an excellent environment to discuss evolutions on road transport and to collaboratively exchange on current state-of-the-art and advancements beyond. This conference offers great insights into the world of road transport and EU-funded projects, while fostering networking opportunities.



Figure 1: Plenary discussion moderated by Joao Duarte and participated by Roland Uerlich, Eric Armengaud, Georg Stettinger

Collaboration and innovation are key to make a difference, as stated Eric Armengaud during the plenary discussion following his presentation:

*“One company, one university or one project alone will not make a cross-European difference. However, onboarding the community along the project outcomes and collaboratively working towards a common goal, will enable us to stay on top thus contributing to further increase the European competitiveness”.*



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Figure 2: from left: Roland Uerlich, Joao Duarte, Wilmar Martinez, Bernhard Brandstätter, Lucie Beaumel, Eric Armengaud, David Lumbreras and Jenni Pippuri-Makelainen

Joined by Joao Duarte, project officer of several cluster projects, the conference was also a great opportunity for a short and informal E-VOLVE Cluster projects at the conference:

cluster exchange between Bernhard Brandstätter representing HiPE, Wilmar Martinez representing PowerDrive, David Lumbreras representing RHODaS, Jenni Pippuri-Mäkeläinen representing VOLT CAR and Eric Armengaud representing EM-TECH and HighScape. We're happy, Lucie Beaumel from 2Zero was joining us, as well.

If you missed the conference, we can provide a [link here](#) for you to read about the event's highlights and outcomes, as well as a [link to watch](#) recordings of each session from the cluster members and beyond.

We would like to thank the RTR organizers for the hospitality, excellent organization on place as well as online and we are looking forward to the RTR 2025.



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## E-VOLVE CLUSTER WEBINAR

**E-VOLVE CLUSTER**

Electric Vehicle Optimized  
for Value, Efficiency and Life!

Funded by  
the European Union

**„Driving the Future: Unveiling Breakthroughs in Electric Vehicle Technologies - Insights from European Research and Innovation“**

Friday, March 15<sup>th</sup>  
10:00 - 12:00  
online

### Driving the Future

Under this motto the E-VOLVE Cluster is organising an online webinar about “Unveiling Breakthroughs in Electric Vehicle Technologies - Insights from European Research and Innovation“. The online event will take place on the 15<sup>th</sup> of March 2024, 10:00 – 12:00.

The event will give you insights into the latest breakthroughs in EV technology and understand the collaborative efforts that have been made to shape the industry. Also, you can explore real-world applications and success stories. Lastly, you can engage with experts during the interactive Q&A session.

The main topics addressed will be:

- Powertrain design and assessment
- Energy efficiency of vehicle sub-systems
- Passive and active safety of electric vehicle
- Simulation tools for the rapid assessment and development of electric vehicles

- Product life cycle assessment, materials combination, eco-design and other recyclability aspects

Find a more detailed list of webinar presentation topics on the next side of the newsletter.

So mark your calendars for Friday, 15<sup>th</sup> of March when starting from 10:00 the E-VOLVE Cluster webinar, initiated by Multi-Moby and with contributions from the E-VOLVE Cluster member projects is taking place. Secure your spot and **REGISTER HERE:**



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## Webinar Itinerary

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### Welcome & opening

#### Powertrain design and assessment / Energy efficiency of vehicle sub-systems

- **48V systems for automotive applications** Khadija El-Baraka, Valeo; Multi-Moby
- **Efficient Bidirectional On-Board Chargers** Hans Wouters, KULeuven; PowerDrive
- **Efficient Inverter Design with the latest power MOSFET Technology** Walter Faedo, DANA TM4; Multi-Moby
- **Li-ion and hybrid supercapacitor batteries and DC charging for lightweight electric vehicles** Eric Verhulst, Altreonic NV; Multi-Moby
- **Holistic and model predictive BEV thermal management** Osman Sumer, TOFAS; HighScape

#### Passive and active safety of electric vehicle / Simulation tools for the rapid assessment and development of electric vehicles

- **MultiMoby Vehicles structural design for Low Production cost and cyber secure electrical and electronics architecture** Pietro

Perlo and Marco Biasiotta, I-FEVS; Multi-Moby

- **Axle-Torque-Vectoring (ATV) control algorithm, tested on real vehicle** Gaetano Tavolo, USR; Multi-Moby
- **Pre-emptive traction control & ABS** Philip So, USR; Multi-Moby
- **Integral safety in urban electric vehicles** Marc Gouvernon, Valeo; Multi-Moby
- **Toolchain for vehicle-level simulation** Bo Wang, USR; EM-TECH, HighScape & HiPE

#### Product life cycle assessment, materials combination, eco-design and other recyclability aspects

- **Design, manufacturing and validation of ecocylce electric traction motor** Jenni Pippuri-Mäkeläinen, VTT; VOLTCAR
- **Life Cycle Assessment for ecodesign of MAXIMA EM** Lea D'amore, VUB; MAXIMA
- **LCA and LCC of e-drives for high-efficient and sustainable e-mobility** Antonella Accardo, POLITO; EM-TECH

### Q&A and closing



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## COMING UP



EARPA Spring Meeting 2024 Brussels, Belgium  
Including a presentation of the E-VOLVE Cluster  
by Medina Ćustić, Virtual Vehicle Research GmbH

March 05<sup>th</sup> – 06<sup>th</sup>, 2024



E-VOLVE Cluster webinar

MARCH 15<sup>th</sup>



Next Cluster Meeting

April 5<sup>th</sup> 2024



TRA – 10th Conference in Dublin  
Including an E-VOLVE paper presentation and a presentation  
of the -VOLVE Cluster during the  
Lunchtime session at the EC stand (April 15<sup>th</sup>, 12:30 – 14:00)

April 15<sup>th</sup>-18<sup>th</sup> 2024



SAE WCX, Detroit

April 16<sup>th</sup> – 18<sup>th</sup> 2024



Next Edition of the E-VOLVE Newsletter

June 2024



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Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the funding authority). Neither the European Union nor the funding authority can be held responsible for them.

