



Introduction to Horizon H2020 project - CEVOLVER

www.cevolver.eu



General information



- Project full title Connected Electric Vehicle Optimised for Life, Value, Efficiency and Range
- Coordinator FEV Europe GmbH
- Consortium 10 partners from 6 European countries
- Call LC-GV-01-2018
- Budget / Funding 5M€
- Contract Horizon 2020, GA no 824295

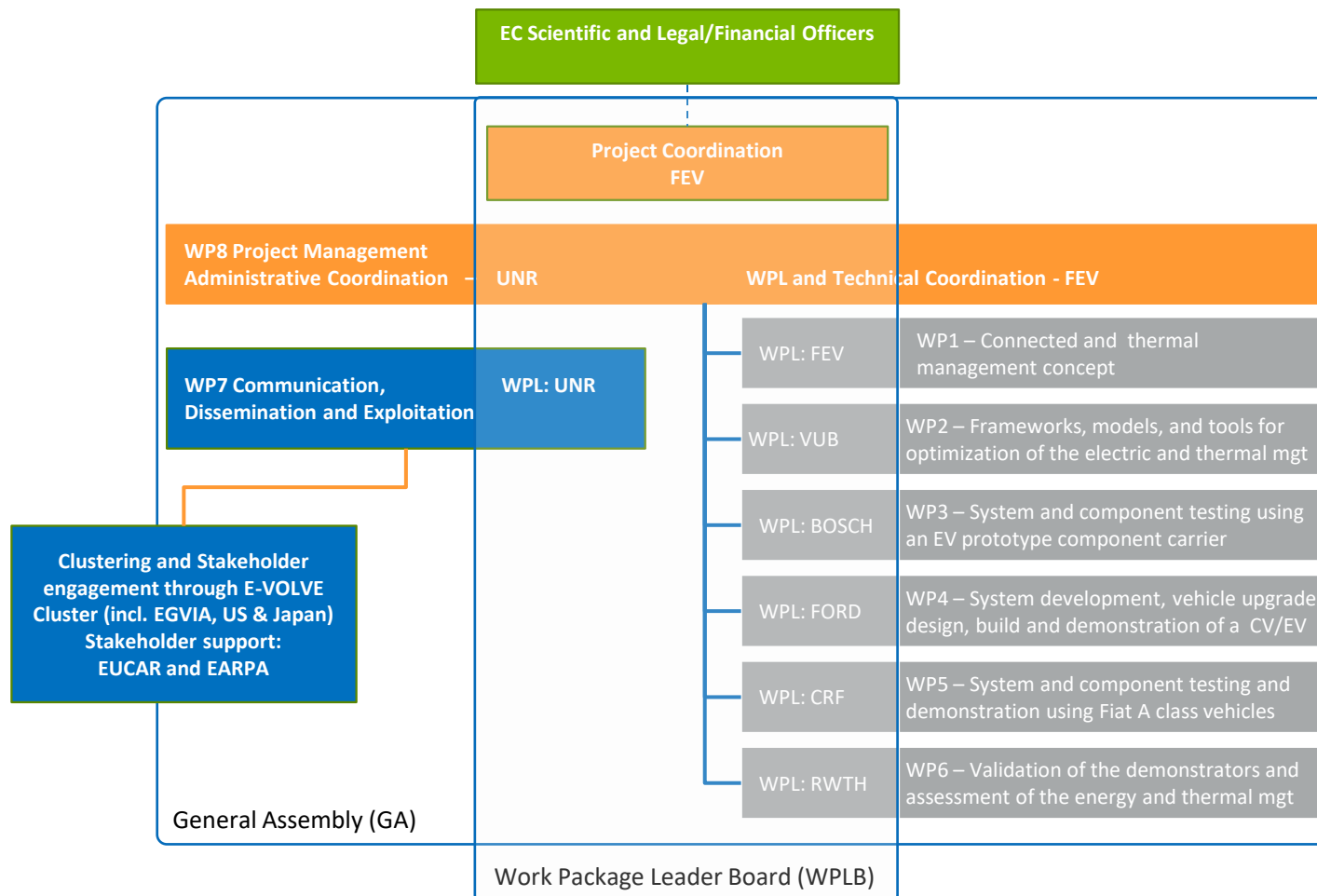
Project Consortium



BOSCH
Invented for life



Workstructure



The Project Vision



CEVOLVER takes a user-centric approach for optimising the development and operation of electric vehicles

The project exploits the opportunities of novel connected functions in combination with right-sized components



The Project Objectives



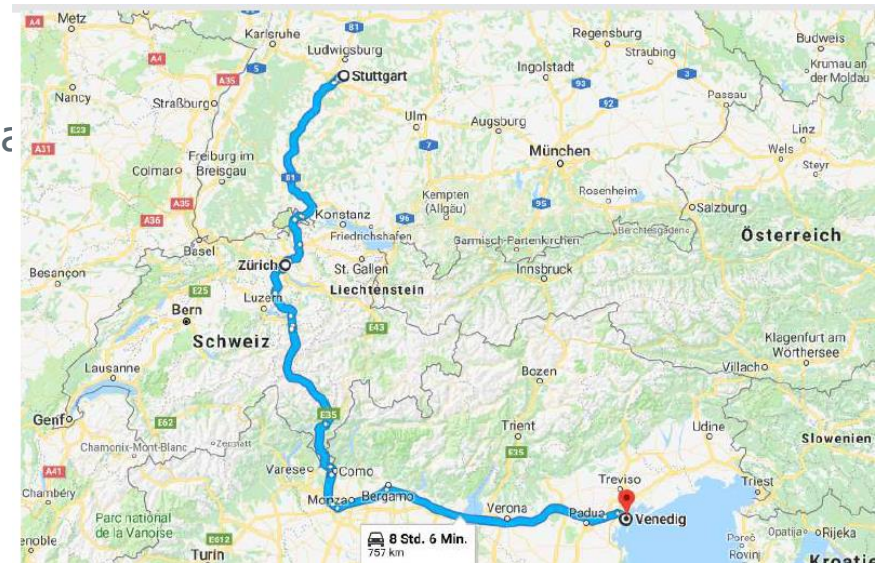
- Ensure a leap forward in user's confidence, functionalities and energy efficiency of future Evs
- Ensure the affordability of future electric vehicles by a user centric development approach
- Validation of advanced components and systems, novel connected control strategies and functionalities
- Assessment of the impact of the technical advancements of CEVOLVER and their applicability in different EV types and vehicle classes

The Challenge on Long Distance



- An example – Trip from Stuttgart to Venice
- Fictive long trip
 - 700 km distance
 - 7 h 38 min by car at 91.7 km/h a + 15 minutes bio-stop = 7:53 h

- Battery electric vehicle
 - ≥ 90 kWh battery size
 - 32 min. charging time (1.5C) for 5% to 80% SOC at 150kW charging station
 - One stop for charging



- Question: Are big batteries crucial for long distance trips?

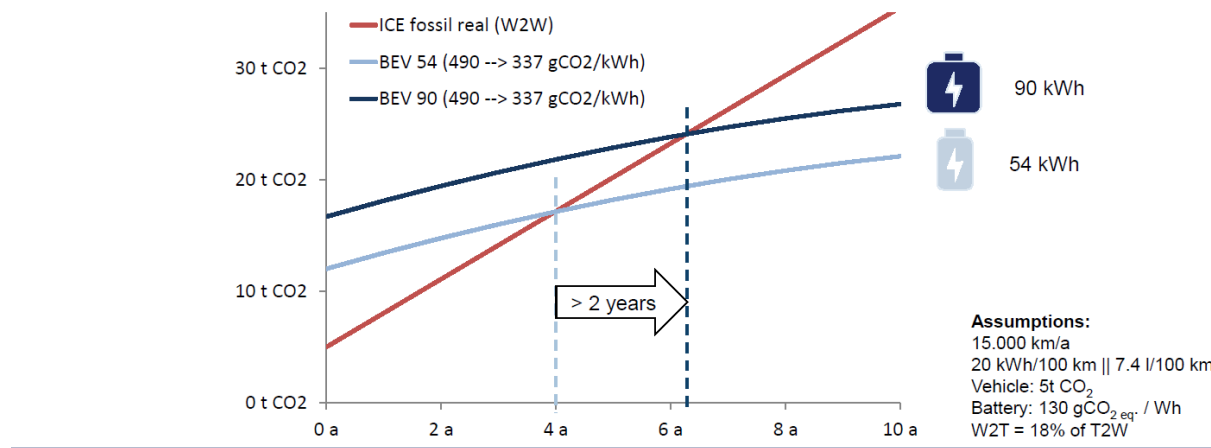


Remember the question!

The Challenge on CO₂ Footprint



- Why is the question 'Are big batteries mandatory for long distance trips' relevant?
 - Life cycle assessment CO₂ Footprint
 - Estimation is roughly 40% reduction in cost and weight and improvement acceleration



- A smaller battery is beneficial for climate change

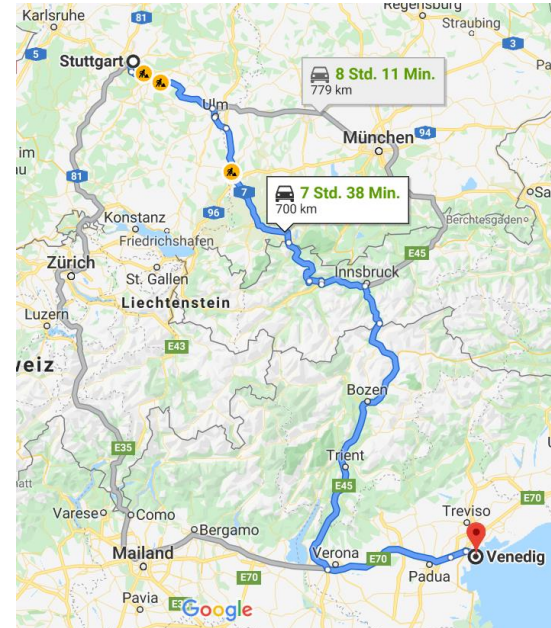
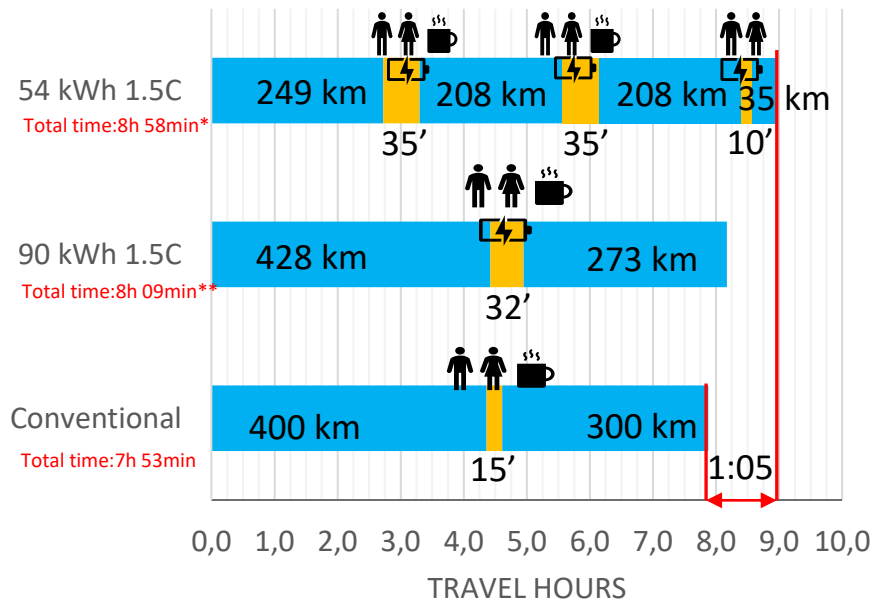
↑ ↑ ↑ ↑
Remember the goal!

The Challenge on Travel Time



add. 1h 05min travel time → significant handicap for a BEV concept with smaller Battery
A smaller battery alone make the BEV less competitive.

Stuttgart – Venice (700 km)



Source: Google Maps

***54kWh Assumptions:**
Av. Speed: 91.7 km/h
Power cons.: 0.195 kWh/km
SOC₀=100%
SOC_{end}=10%
Charging 10%-85%
Handling time: 5' /charge

****90kWh Assumptions:**
Av. Speed: 91.7 km/h
Power cons.: 0.2 kWh/km
SOC₀=100%
SOC_{end}=10%
Charging 10%-85%
Handling time: 5' /charge

****Conventional Vehicle Assumptions:**
Av. Speed: 91.7 km/h
First break after 400 km or 4 h 22 min, resp.
15 min "bio-stop"

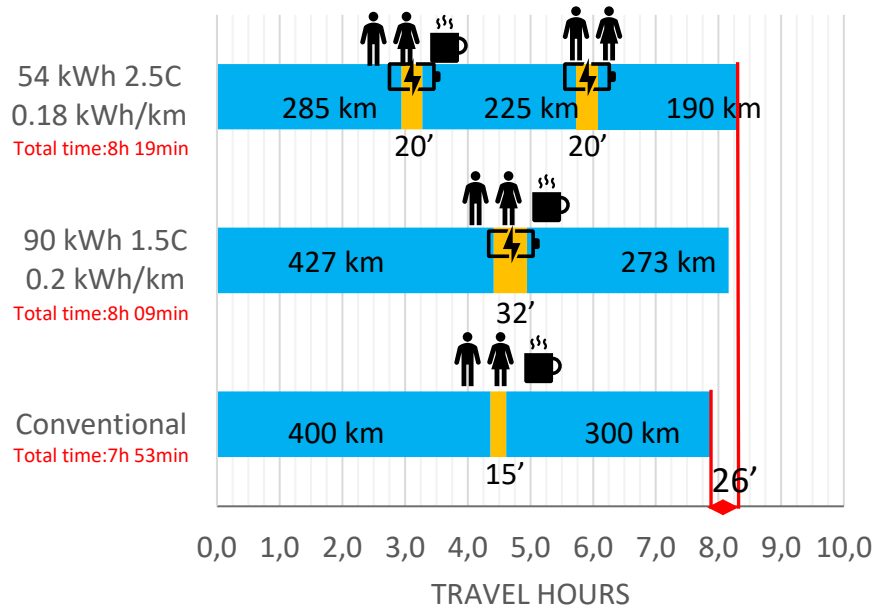
CEVOLVER improvements are needed!

How will CEVOLVER help?

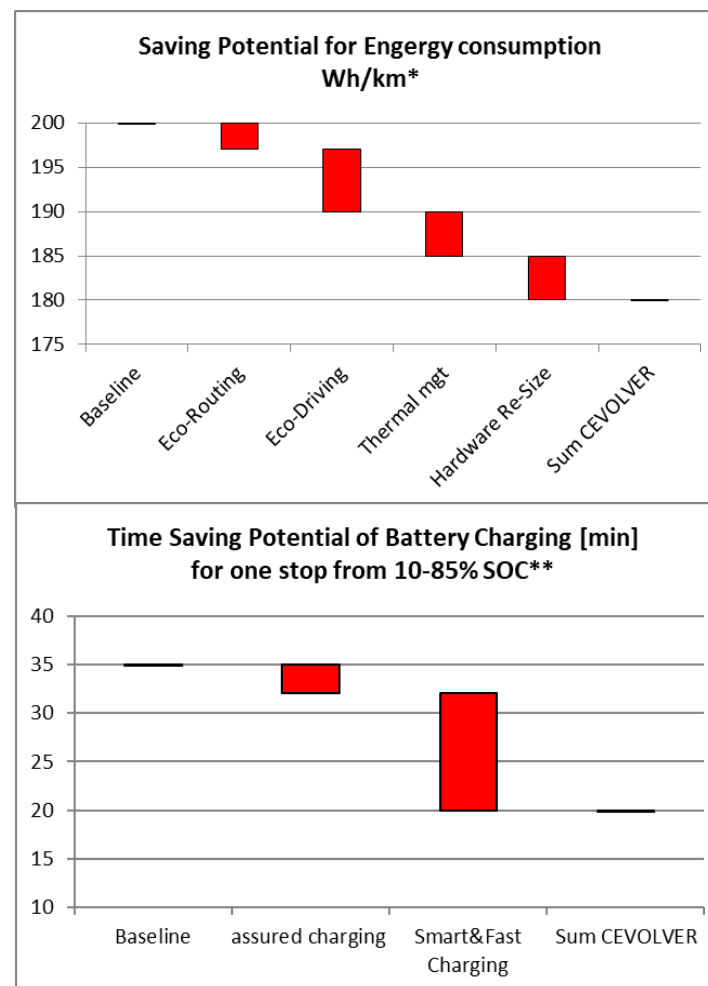


Only add. 26 min travel time → Our BEV concept becomes competitive to a conventional vehicle

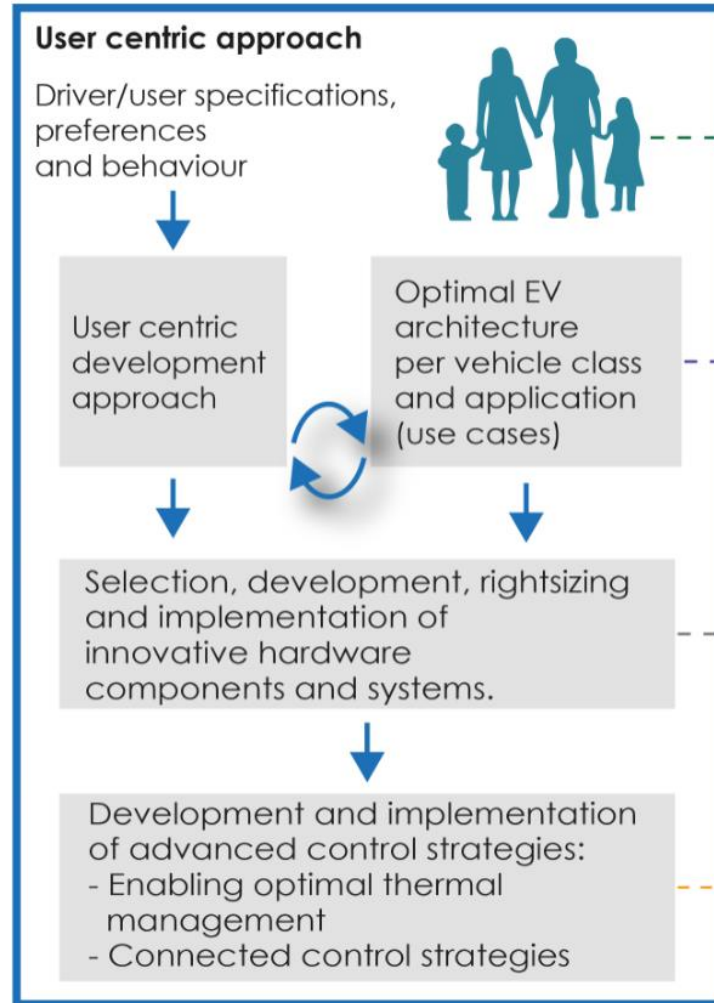
Stuttgart – Venice (700 km)



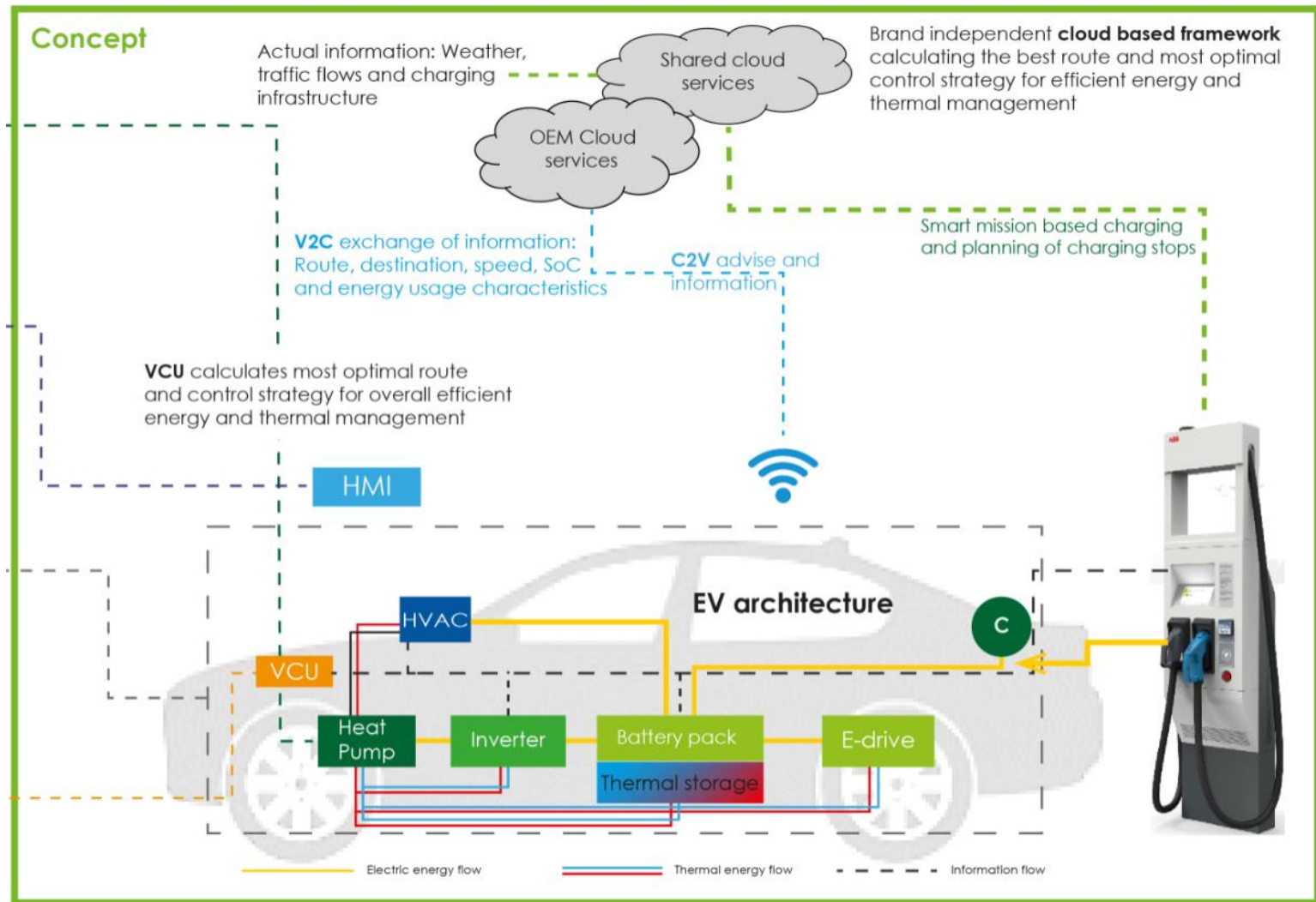
- Reduction of energy consumption (eco routing, eco driving & thermal mgt.)*
- Small battery with using the benefits of smart & fast charging + assured charging station**



The Approach



The Concept



The Targeted Results

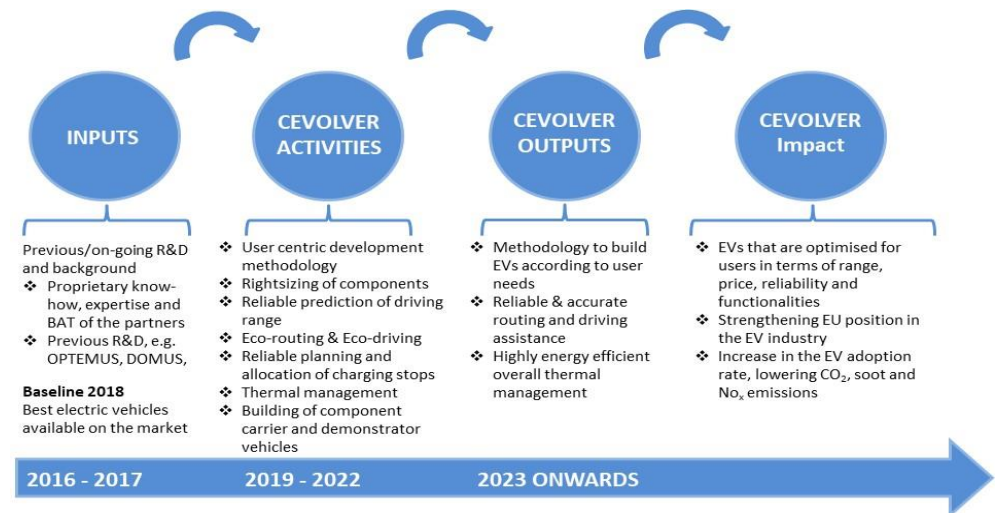


- The ability to create battery electric vehicles that are usable for comfortable long day trips whilst the installed battery is dimensioned for affordability
- User centric, use case and big data based approach for developing the optimal architecture for each application
- New thermal components and systems
- Components and systems for other H2020 projects and external suppliers evaluated (most optimal solution)
- Several novel functionalities
 - Reliable range prediction (97% accurate)
 - Eco-routing (5-15% savings in energy consumption)
 - Eco-driving (10-40% savings in energy consumption)
 - Smart Fast charging
 - Assured charging

The Expected Impact



- Significant advancement of e-powertrain technology, e-motors, power electronics, charging system with high impact on overall powertrain efficiency
- Affordability of the developed components and subsystems improved by demonstrating a minimum of 20% cost reduction in mass production and user friendliness in terms of reach and charging procedures
- Development of new concepts for affordable EVs which enable long duration trips with not more than 60-90 minutes additional travel time and without additional degradation impact on the EV power train
- Overall efficiency increase



The Cluster



- CEVOLVER Project is linked to E-VOLVE virtual cluster
 - 6 independent R&D projects on EVs



GA No. 824244



GA No. 824311



GA No. 824290



GA No. 824335



GA No. 824295



GA No. 824250

<https://www.h2020-evolvecluster.eu/>

The Outlook



For more information



- [Website: www.cevolver.eu](http://www.cevolver.eu)

- Here you can find the results gained during the project and interesting events

A screenshot of the CEVOLVER website. The header features the CEVOLVER logo on the left, a "NEWSLETTER" button, and a search bar. Below the header is a navigation menu with links for "Project", "Results", "Partners", "News", and "Events". The "Results" section is active. The main content area is titled "Results" and contains the text "Results within the CEVOLVER project". It explains that results are divided into 8 categories and that most reports are confidential. A list of 9 categories is provided. Below this, the "Published Results" section lists three items: 1. Setting the scene for a connected energy and thermal management concept, 2. Frameworks, methodologies, models and tools for optimisation of the electric and thermal management and assessment of connected EVs, and 7. Communication, dissemination, and preparative exploitation activities. Each item has a brief description of the report.

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End of presentation

WWW.CEVOLVER.EU

Industry



Research partners



Service

