



ZEFES Project Introduction

Zero Emission, flexible vehicle platforms with modular powertrains serving the long-haul Freight EcoSystem

Coordinated by Vrije Universiteit Brussel (VUB)

Prof. dr. Omar Hegazy

www.zefes.eu



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Vision and Story



- 🚛 Europe commits itself to be CO₂ neutral by 2050
- 🚛 Long haul freight transport needs to be transformed to reach this goal
- 🚛 Zero Emission Heavy Duty Vehicles are key to achieve the set-out targets
 - 🚛 Battery Electric Vehicles (BEVs)
 - 🚛 Fuel Cell Electric Vehicles (FCEVs)
- 🚛 ZEFES will contribute to make Europe the leading example for a carbon-neutral transport system



Current Challenges BEV/FCEV

-  BEVs and FCEVs have a limited range
-  Available payload is affected (e.g. by the weight of the batteries)
-  Lack of available energy infrastructure (charging points and hydrogen filling stations)
-  Higher costs due to energy prices and low-scale production



Incorporation into daily fleet operations is affected by all of the above



Ambition to take zero-emission long-haul goods transport in Europe to the next level



2

Creating a **pathway** for long-haul BEVs and FCEVs to become more affordable, reliable and more energy efficient

4

Develop technologies which can deliver **promised benefits** to operate in complex transport supply chains.

1

Execute **real-world demonstrations** of long-haul BEVs and FCEVs across Europe.

3




Mapping of flexible and abundant charging/refuelling points. Demonstrate **novel charging concepts**.

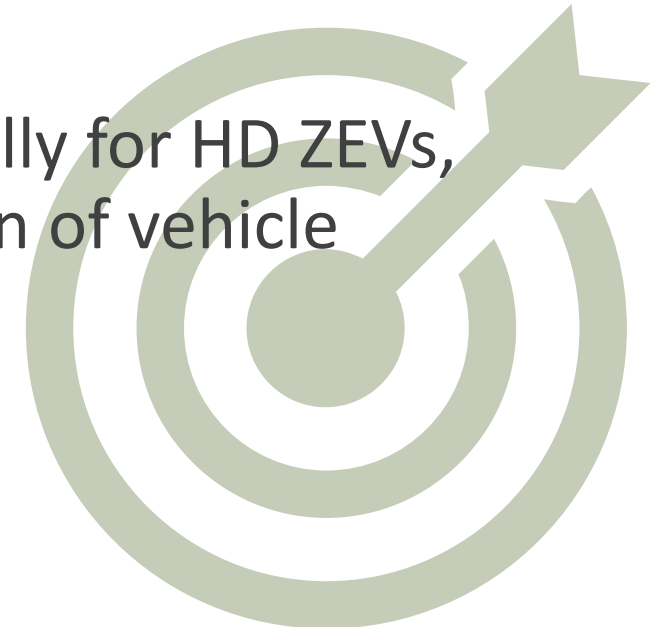
5

Create **Digital Twin with** novel tools for **fleet management** to support the long-haul BEVs and FCEVs vehicles in the logistics supply chains.

Objectives






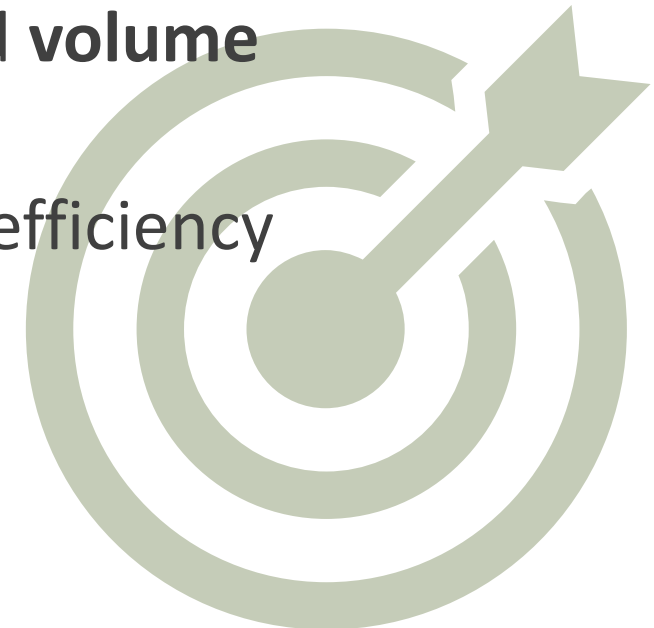
-  Improve **modular** Heavy Duty (HD) Battery Electric Vehicles (BEVs) and Fuel Cell Electric Vehicles (FCEVs)
-  Demonstrate an interoperable **Megawatt Charging System (MCS)** and the location deployment strategy for **hydrogen refuelling stations (HRS)**
-  Provide **digital and fleet management tools** specifically for HD ZEVs, fleet integration with remote operational optimisation of vehicle performance



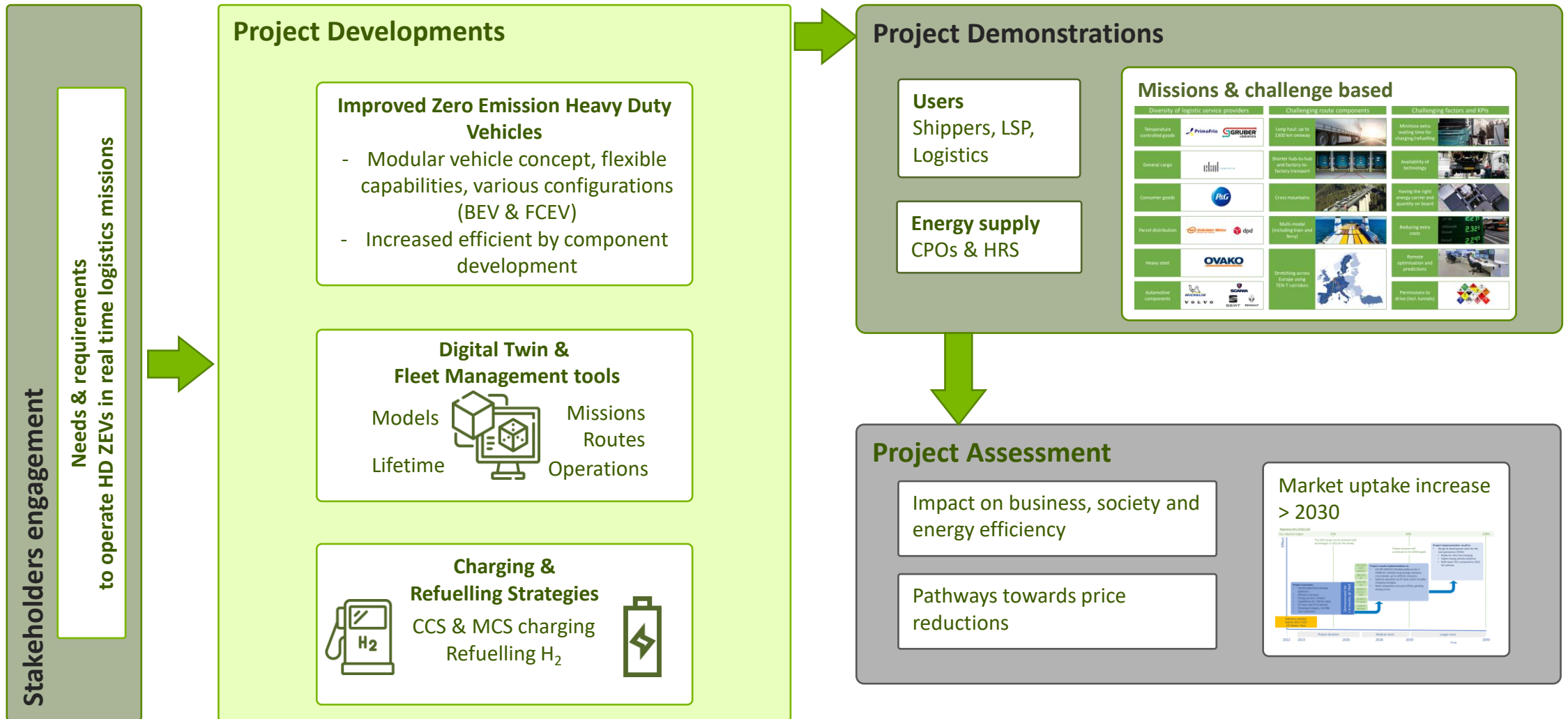
Objectives










-  Demonstrate missions on national and **cross-border, TEN-T corridors**, fulfilling the requirements for range and payload, and comparing the deployability of BEVs and FCEVs for different mission profiles
-  Define pathways for a significant **price reduction** and **volume increase**
-  Analyse the **impact** on business, society and energy efficiency



Concept



Use cases

-  15 demonstrations on TEN-T corridors
-  13 logistics service providers & shippers
-  4 truck OEMs and 2 trailer OEMs
-  Novel vehicle and fast charging concepts
-  Intermodal and cross border
-  15 months under real-world conditions
-  >1Mio kilometres of data



Challenges and KPIs



- 🚛 Transporting:
 - 🚛 Temperature controlled goods
 - 🚛 General cargo
 - 🚛 Consumer goods
 - 🚛 Parcel distribution
 - 🚛 Heavy steel
 - 🚛 Automotive components

Challenging route components	Challenging factors and KPIs
<p>Long-haul: up to 1300 km one-way</p> 	<p>Minimise extra waiting time for charging/refuelling</p> 
<p>Shorter hub-to-hub and factory-to-factory transport</p> 	<p>Availability of technology</p> 
<p>Cross mountains</p> 	<p>Having the right energy carrier and quantity on board</p> 
<p>Multi-modal (including train and ferry)</p> 	<p>Reducing extra costs</p> 
<p>Stretching across Europe using TEN-T corridors</p> 	<p>Remote optimisation and predictions</p>  <p>Permissions to drive (incl. tunnels)</p> 

Partners



40 Partners

- 6 OEM's
- 14 Suppliers
- 11 Shippers & retail
- 9 Research



23 Million EU funding
39 Million project costs



Start date 01 January 2023
Duration 42 Months



Contact



Overall coordinator

Omar Hegazy (VUB)

Omar.hegazy@vub.be

Technical coordinator

Ben Kraaijenhagen (VUB)

Ben.kraaijenhagen@vub.be

Project management

Annemarie Mahieu (UNR)

a.mahieu@uniresearch.com

Dissemination, Communication and Exploitation managers

Anje Middelbos (UNR)

a.middelbos@uniresearch.com



Thank you for your attention!



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