



## ZEFES Project Introduction

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

Coordinated by Vrije Universiteit Brussel (VUB)

[www.zefes.eu](http://www.zefes.eu)





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# Vision and Story




- 🚛 Europe commits itself to be CO<sub>2</sub> 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**.

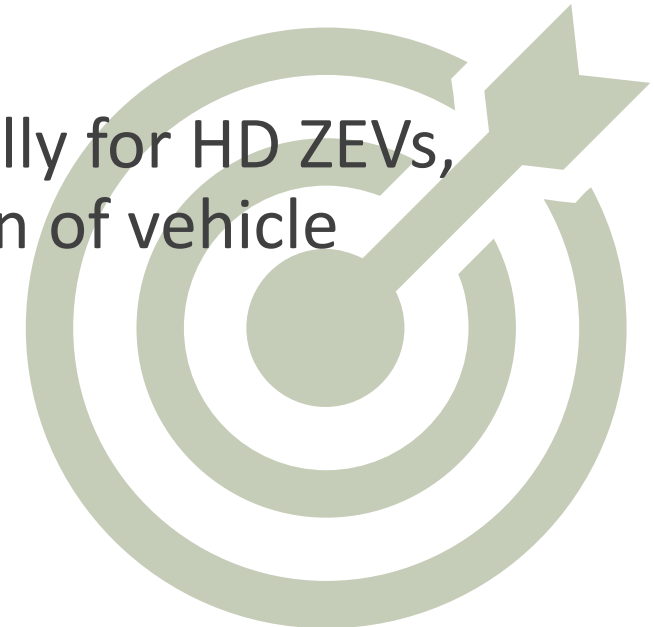
5

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



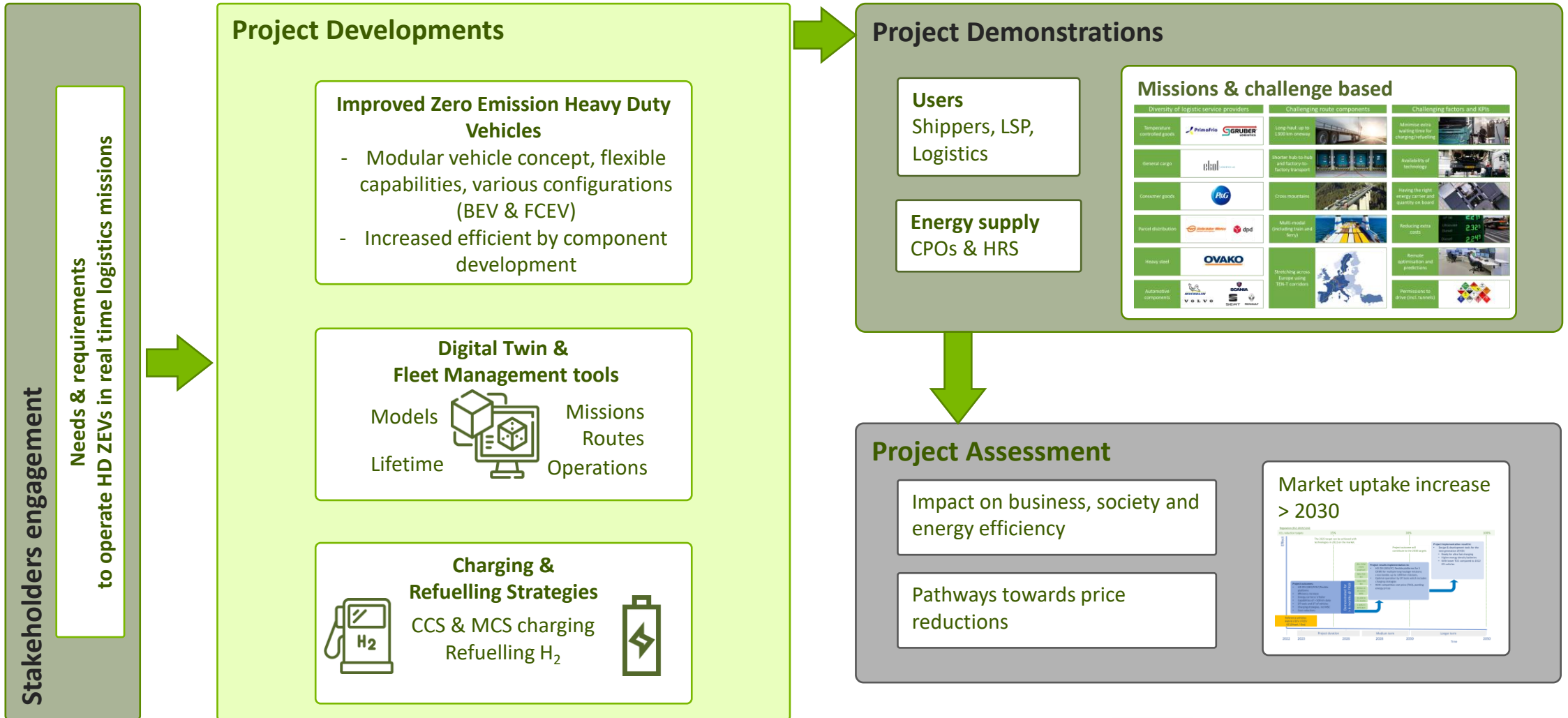
# Objectives



-  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










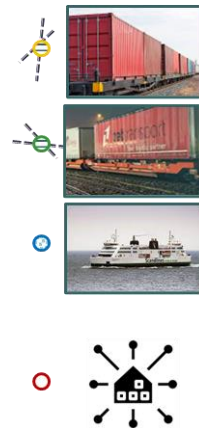
# Concept





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

# 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





# AEVETO Cluster

The AEVETO Cluster logo is a blue rounded rectangle with the word "AEVETO" in large white letters and a circular icon of a truck on a road. Below it, the text "Zero-Emission Road Freight Transport" is written in green. To the right of this logo is a large blue and green arrow pointing towards the right. Below the arrow, there are three dark green rounded rectangles, each containing an icon and text: a map icon for "Mapping Energy Infrastructure", a group of hands icon for "Finding & exploiting synergies", and a thumbs up icon for "Joined events and communication strategy to maximize impact".

**AEVETO**  
Zero-Emission Road Freight Transport

**H2HAUL** **ZEFES**

**Next EIRUCK** **ESCALATE**

**EMPOWER** **MORE LIFE**

A green icon of a map with a location pin.

Mapping Energy Infrastructure

A green icon of five hands joined together in a circle.

Finding & exploiting synergies

A green icon of a thumbs up gesture inside a speech bubble.

Joined events and communication strategy to maximize impact



# Contact

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Thank you for your attention!



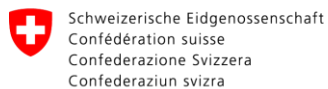
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