

Powering European Union Net Zero Future by Escalating Zero Emission HDVs and Logistic Intelligence

#### ESCALATE-HEDEF 5

KÜME 5: İKLİM ENERJİ MOBİLİTE KÜMESİ

Assoc.Prof. Ahu Ece Hartavi Karcı- University of Surrey, UK

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PrimaFrio



**FEV** 



TÜBİTAK



UNIVERSITY

UNIVERSITY OF SURREY





Mercedes-Benz





FORD OTOSAN

Hydrogen

Europe



Ces





Al4SEC

DIN

RSTER





**+** KEMPOWER





#### ESCALATE in a NUTSHELL



Funder: EC

**Duration:** 42 Months

**Budget:**19M€

In line with the European 2050 goals ESCALATE aims to demonstrate high efficiency zHrefuellingDV powertrain for long-haul applications that will provide a range of 800 km without refueling/recharging and cover at least 500 km average daily operation (6+ months) in real conditions. ESCALATE will achieve this following modularity and scalability approach starting from the \beta-level of hardware and software innovations and aiming to reach the  $\gamma$ -level in the first sprint and eventually the  $\delta$ -level at the project end through its 2 sprint-V-cycle.

## ESCALATE in a NUTSHELL



- **ESCALATE** consortium has brought together the **collaborative efforts of 37** partners from **13 countries**.
- 8 out of 37 are from Türkiye.
- $\rightarrow$ BMC
- →DHL
- →FEV TR
- →FORD OTOSAN
- →MERCEDES BENZ
- →ORTEM
- →TEKFEN
- **→**TUBITAK

(in alphabetic order)



### ESCALATE MANAGEMENT





Assoc.Prof. AHU ECE HARTAVI KARCI United Kingdom

SCIENTIFIC & TECHNICAL COORDINATOR





FINANCIAL COORDINATOR







### ESCALATE AIMS





(up to 10%)

B

Develop highly standardizable, ingenious, scalable and modular ecodesigned e-powertrain components

Flexible platforms for battery, fuel cell and range extender trucks (40-44t)

D

Data-driven algorithms, tools and interfaces (e.g.fleet management and PdM) E

3 High-speed charging and H2 refuelling solutions.

2

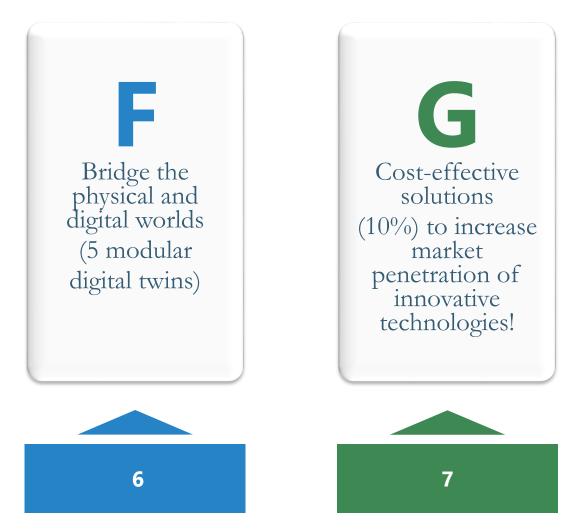
3

A

5

## ESCALATE AIMS cont'd...





## OBJECTIVES2AIMS



#### CL5 aims

...to fight climate change ...by making the transport sectors more climate and environment-friendly, more efficient and competitive, smarter, safer and more resilient

+

Expected Outcomes of the CL5-2022-D5-01

...within the scope of the call!

# OBJECTIVES



#### ...are formulated in such a way that...



O1.D&D of ground-breaking high-efficiency long-haul *b*-HDV, *f*-HDV and r-HDV at a minimum GVW of 40t with 800km uncharged range under real-world operational conditions



O2. D&D of cost-effective standardised modular electric multi-powertrains in RW conditions for a min 500 km daily operation under full load for 6 months

O3. D&D of gridfriendly (multi) energy fast charging solutions



O6. Global
Leadership for
European
Automotive,
Logistics, and
Infrastructure &
Powering EU
Absolute Zero
Future

O4. Seamless integration and fluid operation of z-HDV fleets

O5.Development
of 5 Modular
DTs

...they all bring back to the «challenges» targeted by the call!

## 8 PILOTS

1 MW Fast Charger

**KEM** 

Green green fix multi-fuel station

**ENGIE** 

Battery Electric RegionalTruck **(R)** 



**MOBILE-MODULAR** 

H2

FILLING STATION

**TEKFEN** 

Refrigerator Solar Battery Truck **(R)** 

**ELCT** 



**AESCALATE** 

Refrigerator Fuel Cell Long-Haul Truck

**(V)** 

**FORD** 



Range Extender Long-Haul Truck **(R)** 

**SISU** 



Fuel Cell Long -Haul Truck **(R)** 

**BMC** 

**MBT** 

**PILOTS** 

#### WORK PACKAGES



WP2:
Baseline
Assessments,
Requirements
Specification
and Pilot
Elicitation

#### Core Technical Innovation WPs

WP3: Multi-Powertrain
Standardized, Modular and Scalable
Multipowertrain components

WP4: Refuelling & Charging
Hydrogen refuelling and gridfriendly charging solutions

WP5: Digital <u>Twin</u> and AI

Digital <u>Twin</u> and AI <u>managerial tools</u>

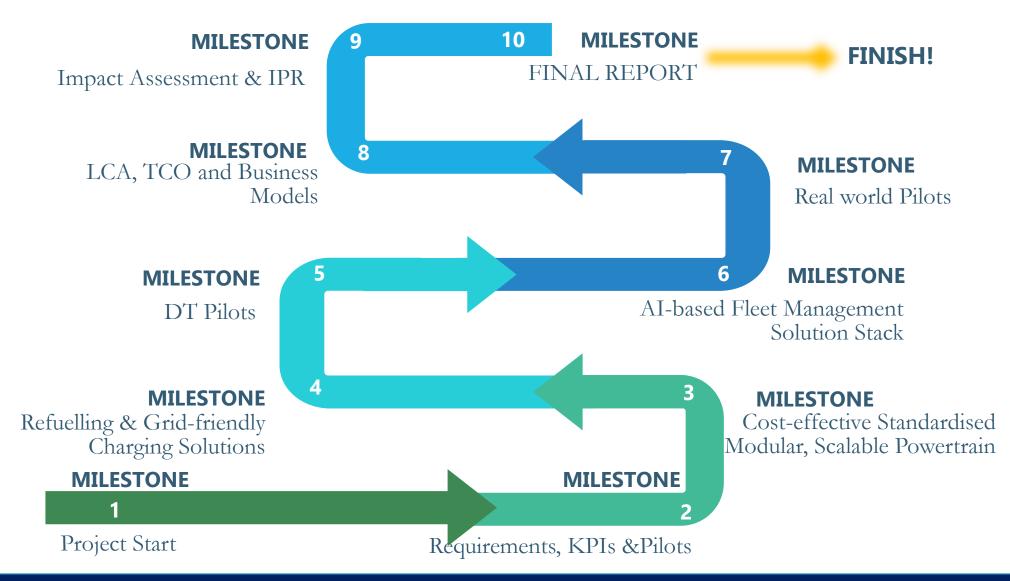
for service and <u>maintenance</u>

#### WP6: Pilots Integration, Validation, Demonstration, Knowledge Sharing Platform & Evaluation of Pilots Pilot1 - SISU Pilot2 - BMC FC range extender Truck Fuel Cell HDV Pilot3 - MTB Battery e-axle & Charger Pilot5 - FORD Pilot4 - ELCT FC Electric Battery refrigerator Refrigerator Truck Truck, e-axle & solar

WP7: Life Cycle Assessments, Business Models and Impact Assesments (cross-cutting)

#### **MILESTONES**









# Thank you!



#### Assoc.Prof. Ahu Ece Hartavi Karcı

Director of Electric and Autonomous Vehicle Control Group Vice Head of Center of Automotive Engineering University of Surrey Guildford, United Kingdom a.hartavikarci@surrey.ac.uk

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