Reference Group, Advisory Board Meeting

Ir. René Corbeij
Senior Program Manager TNO
NextETRUCK Coordinator
December 2023

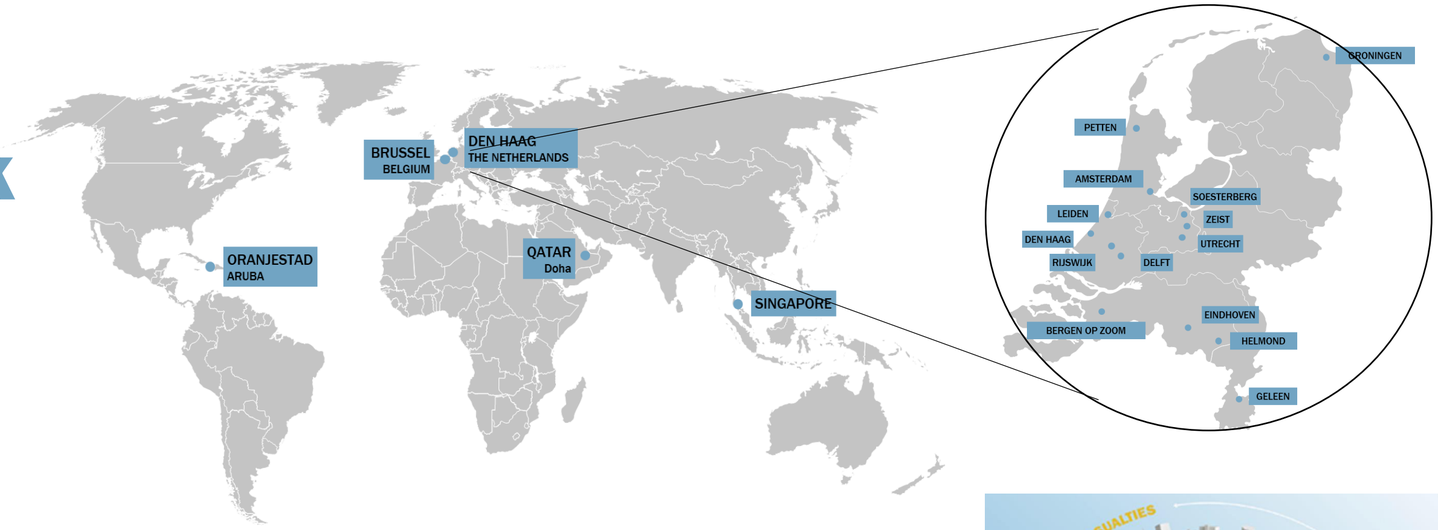
Co-funded by the European Union

Co-funded by UK Government

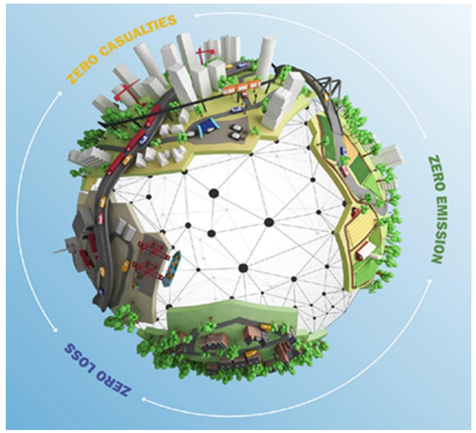
This project has received funding from the European Union's Horizon Europe programme under grant agreement No 101056740

NEXTETRUCK

TNO innovation for life



- The Netherlands Organisation for Applied Scientific Research:
  - Independent research organisation to boost competitive strength of industry and wellbeing of society
  - Turnover 570M€
  - 3652 employees



- TNO Mobility&Build Environment:
  - Turnover 80M€
  - Approx. 400 employees

    Sustainable Traffic & Transport,

    Smart &Safe Traffic & Transport,

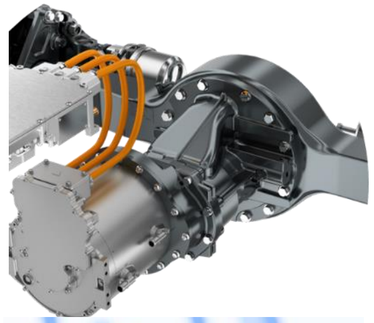
    Safe &Sustainable Living Environment

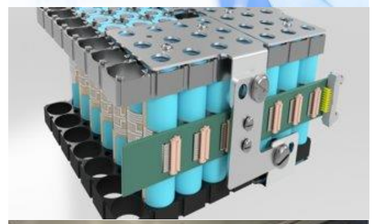
NEXTETRUCK

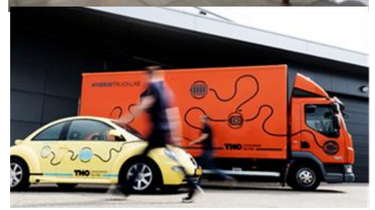
TNO POWERTRAINS / NEXTETRUCK

- Know how:
  - Battery Management (State, Charge, Thermal, Remaining useful life)
  - Modular Energy Management Systems (MEMS)
  - Digital twinning & logistics integration
  - Specific expertise on Heavy Duty vehicle modelling and assessment
  - System Engineering of hybrid/electric powertrains

- Set of tools spanning the vehicle and operational level assesment
  - Altitude Climate Engine & Vehicle testing
  - Battery (cell/module/pack) testing
  - High Power E-charge System testing
  - Real World Fieldlab Platforms

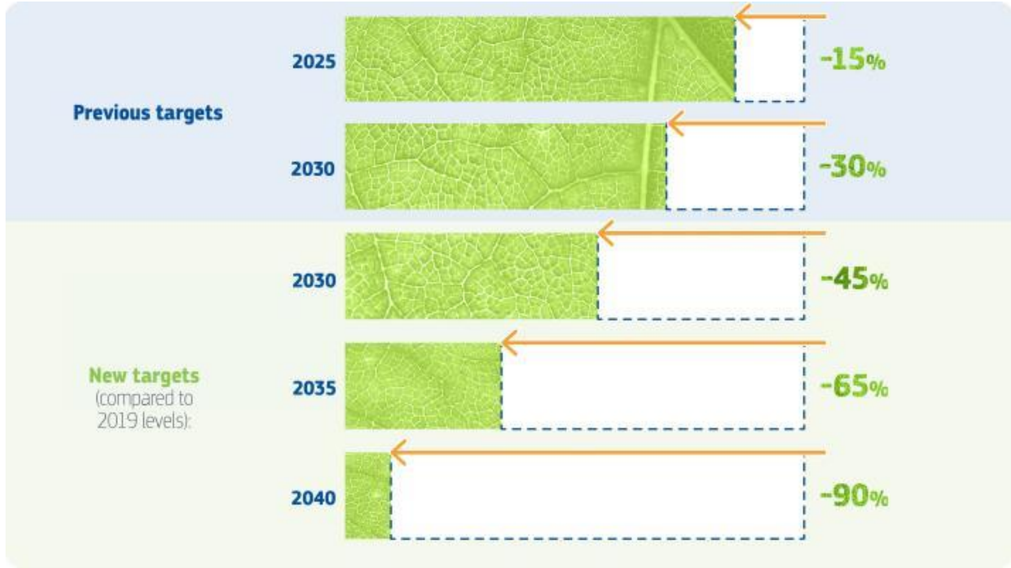






Reducing CO_2 emissions from heavy-duty vehicles

- HD vehicles cause >25% of road transport **GHG** the EU, >6% of total EU GHG emissions.
- Despite improvements, these emissions are still rising, due to increasing road freight traffic.
- The EC proposed a revision of the Regulation on **CO2 emission** standards for HD vehicles.
- If adopted, the proposal would introduce new, stronger CO2 emission standards for HD vehicles from 2030 onwards, and extend the scope of the Regulation to cover smaller trucks, city buses, long-distance buses and trailers.
- To enter into force, the EC's proposal now needs to be adopted by the European Parliament and the Council of the EU.



Reducing CO_2 emissions from heavy-duty vehicles (europa.eu)

NextETRUCK

Efficient and affordable Zero Emission logistics through NEXT generation Electric TRUCKs

Grant: 12 M€
Consortium: 19 partners
Start date: 1 July 2022
Duration: 42 Months
Type of action: HORIZON Innovation Actions

Scope of the project:

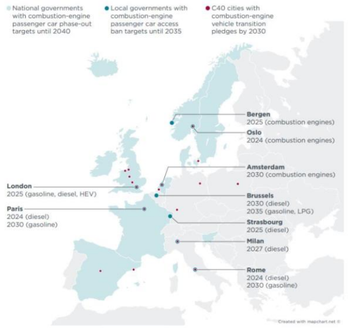
New medium freight haulage vehicle for urban/suburban use optimized on:

Component level: E-power train / charging infrastructure

Vehicle architecture: Efficiency, cost, flexibility and size

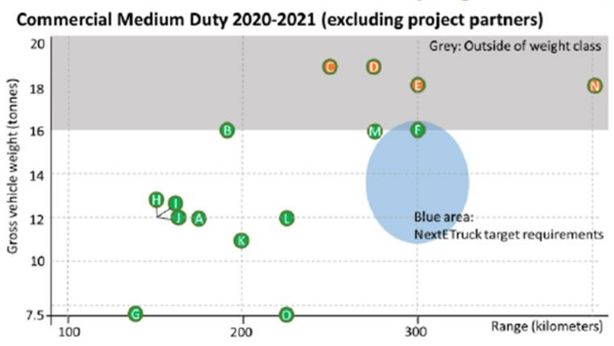
Ecosystem: Charging strategy, integration in mixed fleet, new business opportunities

NextETRUCK objectives

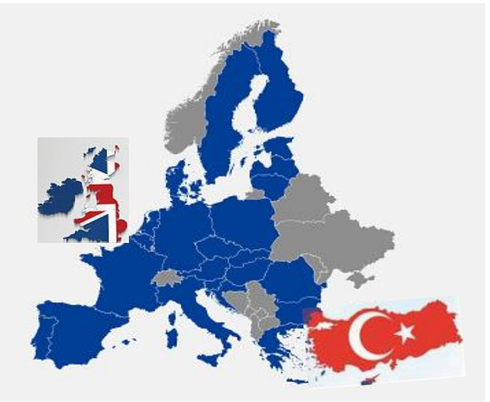


NextETRUCK objectives

- ZEV concepts tailored for regional medium freight haulage (N2 & N3) with at least 10% energy efficiency increase compared to existing highest-end benchmark EVs of the same size category and operating for similar mission profiles.
- Advanced vehicle Digital Twin, as well as digital tools for fleet management and virtual integration of ZEV
- Vehicle architecture design tool for optimized design, safety, sizing and integration of powertrain components, leading to TCO reduction
- Efficient fast charging concept and infrastructure demonstrator that is cost-efficient, flexible and compliant with various business practices and fleet operation structures
- Demonstrators in three different unique real-world cases where the concepts' feasibility and superiority to the existing MFH systems are validated for a range of at least 200 km daily operation over a period of at least 6 months
- New business models to increase the end user acceptance and foster market uptake of the NextETRUCK solutions.



Team



Participant No. *	Participant organisation name	Short name	Country
1 (Coordinator)	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK	TNO	NL
2	VRIJE UNIVERSITEIT BRUSSEL	VUB	BE
3	ABB eMobility DIGITAL VENTURE GMBH	ABB	DE
4	FUNDACION TECNALIA RESEARCH & INNOVATION	TEC	ES
5	NNG SZOFTVERFEJLESZTO ES KERESKEDELMI KFT	NNG	HU
6	EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION - INTELLIGENT TRANSPORT SYSTEMS & SERVICES EUROPE	ERTICO	BE
7	PROMOTION OF OPERATIONAL LINKS WITH INTEGRATED SERVICES, ASSOCIATION INTERNATIONALE	POLIS	BE
8	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS	CERTH	EL
9	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	AIT	AT
10	FORD OTOMOTIV SANAYI ANONIM SIRKETI	FORD	TR
11	JEMA ENERGY SA	JEMA	ES
12	AVL DEUTSCHLAND GMBH	AVL-D	DE
13	AVL LIST GMBH	AVL-AT	AT
14	IRIZAR S COOP	IRIZAR	ES
15	FUNDACION CIDETEC	CID	ES
16	STICHTING CENEX NEDERLAND	CENEX NL	NL
17	DATIK INFORMACION INTELIGENTE S.L.	DATIK	ES

18 (Associated partner)	TEVVA MOTORS LIMITED	TEVVA	UK
19 (Associated partner)	CENEX - CENTRE OF EXCELLENCE FOR LOW CARBON AND FUEL CELL TECHNOLOGIES	CENEX UK	UK

Grant Agreement

Consortium Agreement

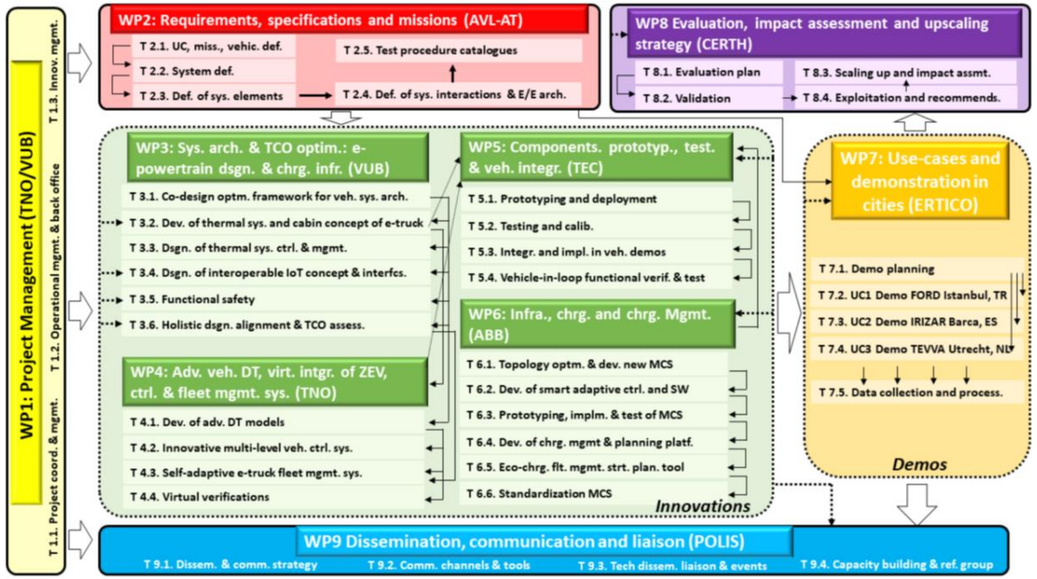
Article 9 GA

NextETRUCK Mgt structure

General Assembly (GA);	as the ultimate decision-making body of the consortium.
Executive Board (EB);	consisting of the Coordinator, Scientific Lead, Back office, Innovation Management, WPLs.
Coordinator;	as the legal entity acting as the intermediary between the Parties and the Granting Authority.
Project Back Office;	supporting the Executive Board and the Coordinator.
Work Package Leaders;	manage the Work Packages as set out in the Grant Agreement. This group supports and monitors Task Leaders.
Task Leaders;	have to provide a successful implementation of the individual tasks within the Work Packages.
Partner Manager;	representing the consortium partner in the GA.

WPs & WPLs

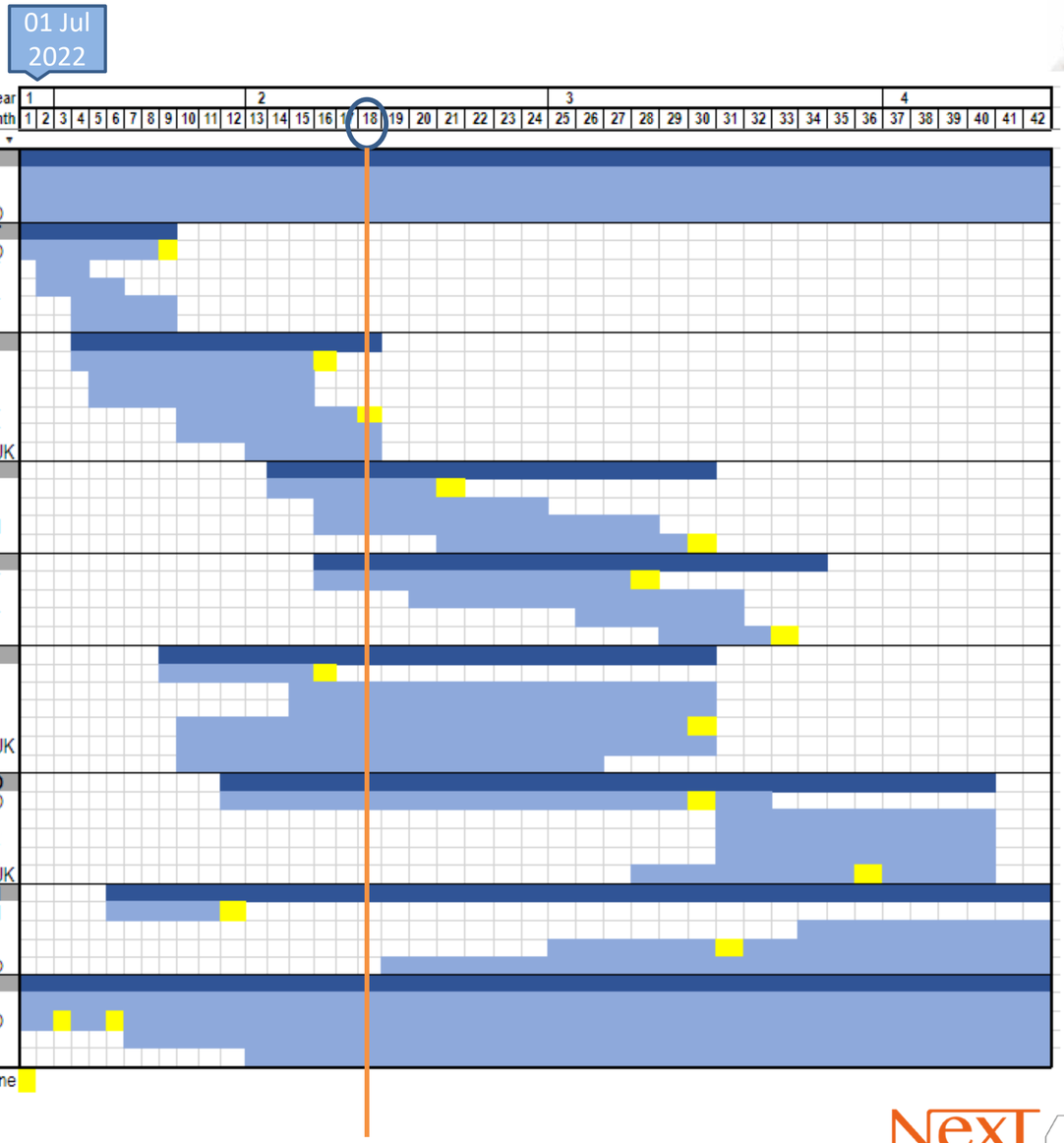
Work Package No	Work Package name	Lead Beneficiary
WP1	Project Coordination and Management	1 - TNO
WP2	Requirements, specifications and missions	13 - AVL AT
WP3	System Architecture and TCO optimization: e-Powertrain and charging infrastructure	2 - VUB
WP4	Advanced Digital Twin, Virtual integration of ZEVs, Control and Fleet Management systems	1 - TNO
WP5	Components prototyping, testing and vehicle integration	4 - TEC
WP6	Infrastructure, Charging and Management Systems	3 - ABB Panion
WP7	Use-cases and Demonstrations	6 - ERTICO
WP8	Evaluation, Impact Assessment and upscaling strategy	8 - CERTH
WP9	Dissemination, Communication and Liaison	7 - POLIS



Planning

01 Jul 2022

Activities	Leader
WP1: Project Management	**TNO**
Task 1.1 Project Coordination - technical project management	TNO
Task 1.2 Operational Management - Back office	VUB
Task 1.3 Innovation Management	ERTICO
WP2: Requirements, specifications and missions	**AVL-AT**
Task 2.1 Use case, mission and overall vehicle defintion	ERTICO
Task 2.2 System definition	AVL-AT
Task 2.3 Definition of System Elements	VUB
Task 2.4 Definition of System Interactions and E/E Architecture	AVL-AT
Task 2.5 Test procedure catalogues	TNO
WP3: System Architecture and TCO optimization: Powertrain and charging infrastructure	**VUB**
Task 3.1 Co-design optimization framework for vehicle e-powertrain architecture	VUB
Task 3.2 Development and design of innovative thermal system and cabin concept for the electric trucks	AIT
Task 3.3 Design of thermal system control and management system	AVL-D
Task 3.4 Design of interoperable IoT concept and Interfaces for connected electric truck fleet	AVL-AT
Task 3.5 Functional Safety for demo vehicles	AVL-AT
Task 3.6 Holistic design alignment and TCO assessment for electric trucks	CENEX UK
WP4: Advanced Digital Twin, Virtual integration of ZEVs), Control and Fleet Management systems	**TNO**
Task 4.1 Development of advanced Digital Twin models of the demo vehicles	TNO
Task 4.2 Innovative multi-level vehicle control systems for Use-cases	TEC
Task 4.3 Self-adaptive energy truck fleet management system	CERTH
Task 4.4 Virtual verification on components, vehicle and fleet concepts	TEC
WP5: Components prototyping, testing and vehicle integration	**TEC**
Task 5.1 Component & subsystem prototyping and deployment	AVL-AT
Task 5.2 Testing and calibration of components and controls	CID
Task 5.3 Integration and implementation in the vehicle demonstrators	AVL-AT
Task 5.4 Vehicle-in-the-Loop Functional Verification and testing	TNO
WP6: Infrastructure, Charging and Management Systems	**ABB**
Task 6.1 Topology optimizaton and development of new and efficient Megawatt charging system with multiple outputs for logistics hubs	Jema
Task 6.2 Development of smart adaptive local control systems and Software deployment for the MCS	Jema
Task 6.3 Prototyping, implementing and testing of the MCS	Jema
Task 6.4 Development of Charge Management and Planning Platform	ABB
Task 6.5 Eco-charging fleet management strategy planning tool	CENEX UK
Task 6.6 Active participation in the relevant standardization bodies for MCS	Jema
WP7: Use-cases and Demonstration	**ERTICO**
Task 7.1 Demonstration planning, procedures, ramp-up and pilot	ERTICO
Task 7.2 Delivery Truck Demonstration in Turkey	FORD
Task 7.3 System demonstration of modular vehicle architecture structure for urban use electric truck demonstration in Barcelona	IRIZAR
Task 7.4 Goods distribution Urban electric truck demonstration in the Netherlands	TEVVA
Task 7.5 Data collection and processing	CENEX UK
WP8: Evaluation, Impact Assessment and upscaling strategy	**CERTH**
Task 8.1 Evaluation plan	CERTH
Task 8.2 Validation	TNO
Task 8.3 Scaling up and Impact Assessment	VUB
Task 8.4 Exploitation and recommendations	ERTICO
WP9: Dissemination and Exploitations	**POLIS**
Task 9.1 Dissemination & communication strategy	POLIS
Task 9.2 Communication channels and tools	ERTICO
Task 9.3 Technical dissemination, liaison and events	POLIS
Task 9.4 Capacity building and Reference Group	POLIS
	Milestone



NextETRUCK

USE CASES

- Use case 1: Istanbul

  A demonstrator truck from **Ford Otosan** will be demonstrated on-road in Turkey in collaboration with a logistic company

- Use case 2: Barcelona

  Refuse Truck from **Irizar** in Barcelona operated by waste collection & recycle company

- Use case 3: UK

  “Back to base” logistics vehicle manufactured by **Tevva** operated in a single shift per day planning

Thank you for your attention

@nextetruck

NextETRUCK

nextetruck.eu

Co-funded by
the European Union