



Mid-term Conference

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NextETRUCK Coordinator
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Co-funded by
the European Union



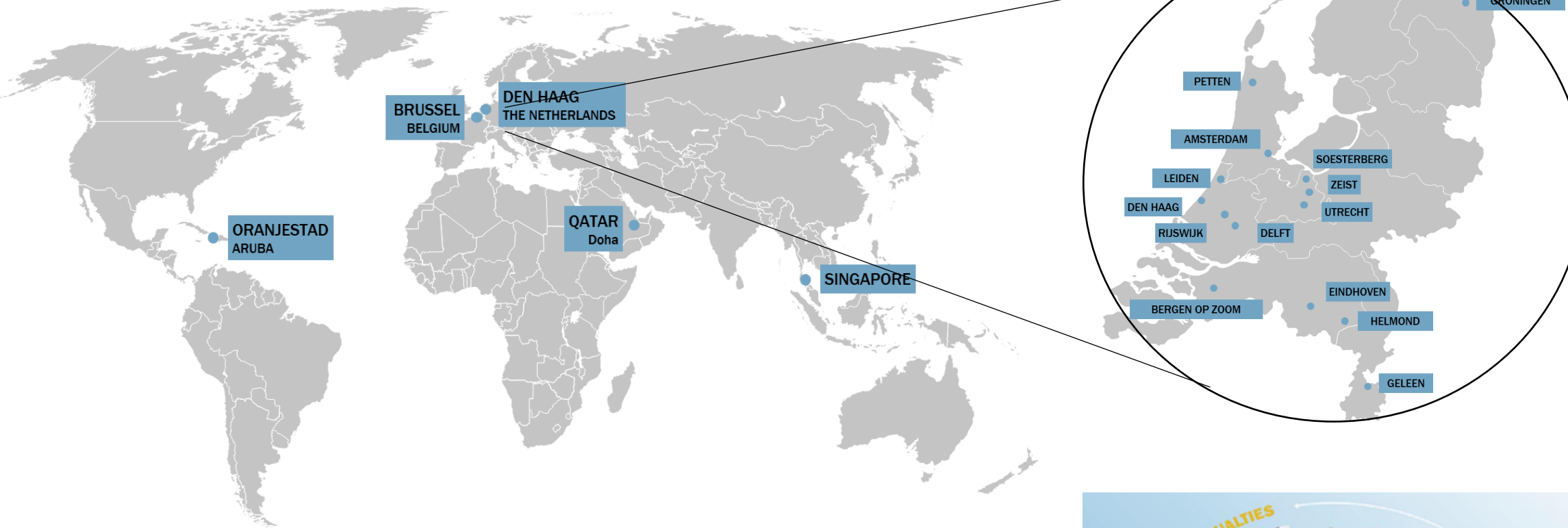
Co-funded by
UK Government

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NEXTETRUCK

TNO innovation
for life

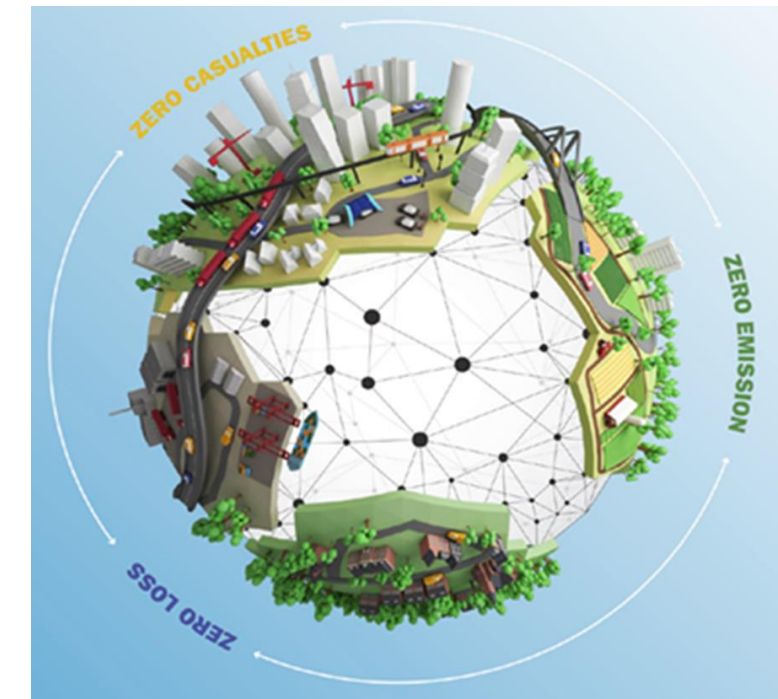


- › The Netherlands Organisation for Applied Scientific Research:
 - › Independent research organisation to boost competitive strength of industry and wellbeing of society
 - › Turnover 570M€
 - › 3652 employees

- › TNO Mobility&Build Environment:

- › Turnover 80M€
- › Approx. 400 employees

Sustainable Traffic & Transport,
Smart & Safe Traffic & Transport,
Safe & Sustainable Living Environment

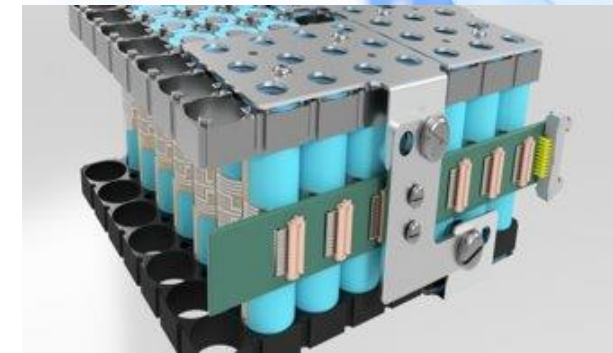
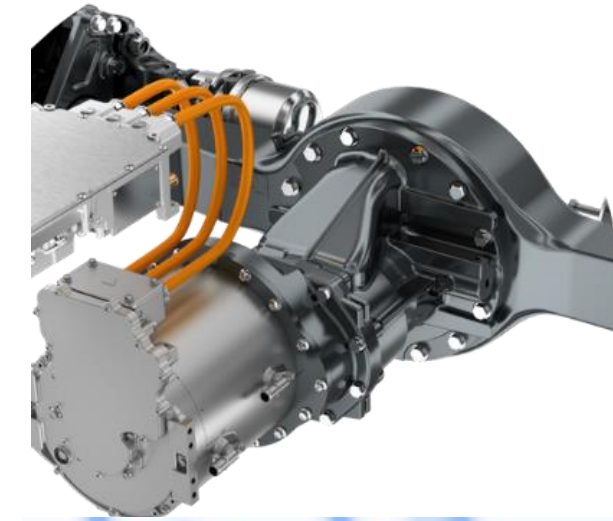


NEXTETRUCK

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

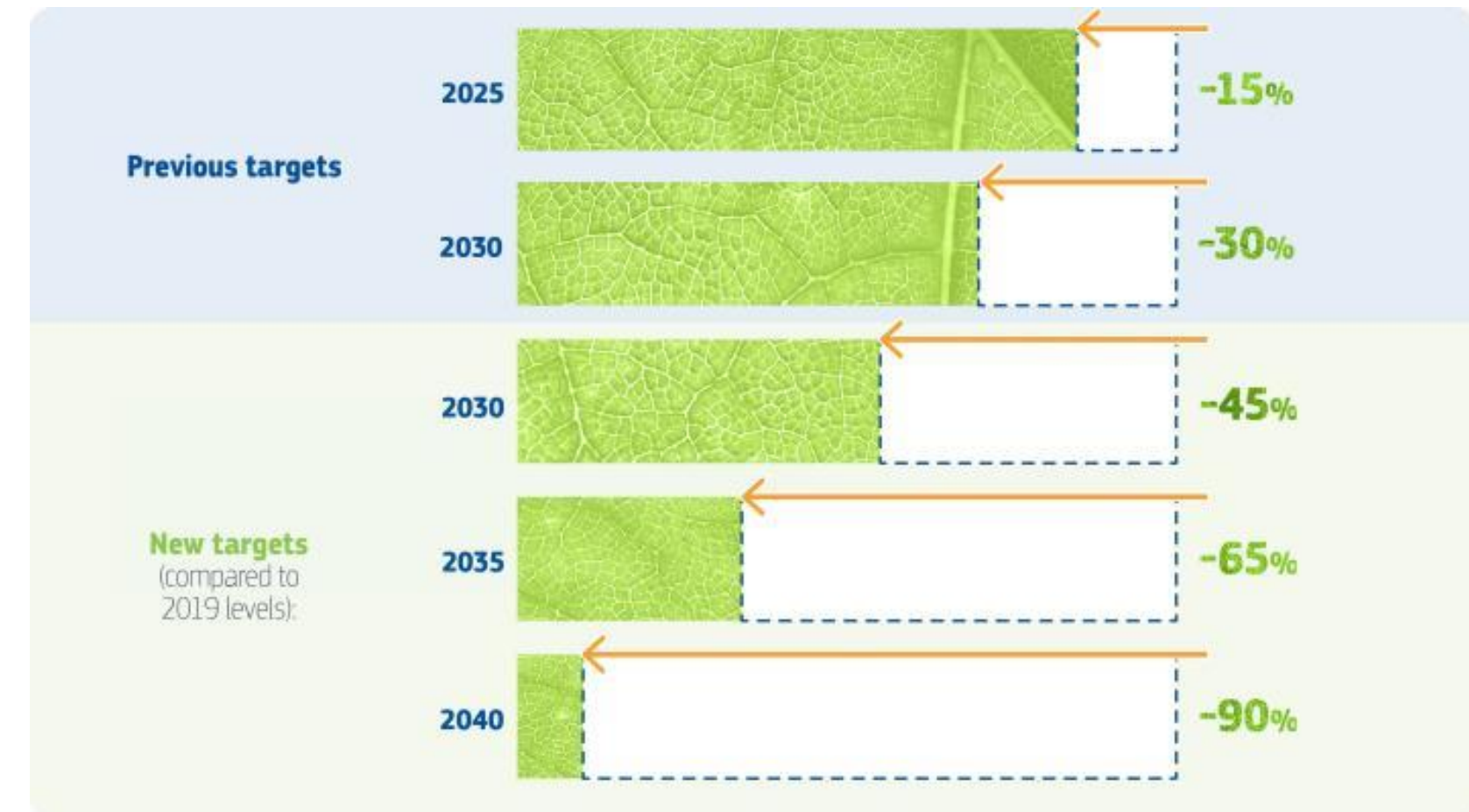
- › Set of tools spanning the vehicle and operational level assesment
 - › Altitude Climate Engine & Vehicle testing
 - › Battery (cell/module/pack) testing
 - › High Power E-charge System testing
 - › Real World Fieldlab Platforms





Reducing CO₂ 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.
- This proposal will 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.
- The EC's proposal has been (provisionally) adopted by the European Parliament and the Council of the EU on 18e January 2024.
- The European Parliament and Council now need to formally approve the agreement. Upon which the new legislation will be published in the Official Journal of the Union and enter into force.





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:

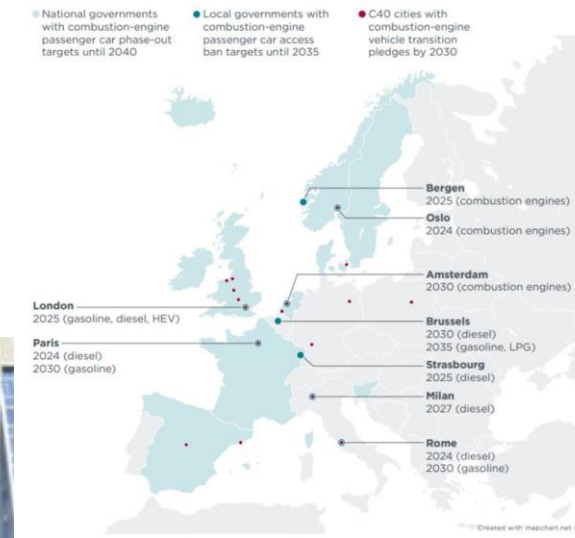
Component level: E-power train / charging infrastructure

Vehicle architecture: Efficiency, cost, flexibility and size

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



NextETRUCK objectives

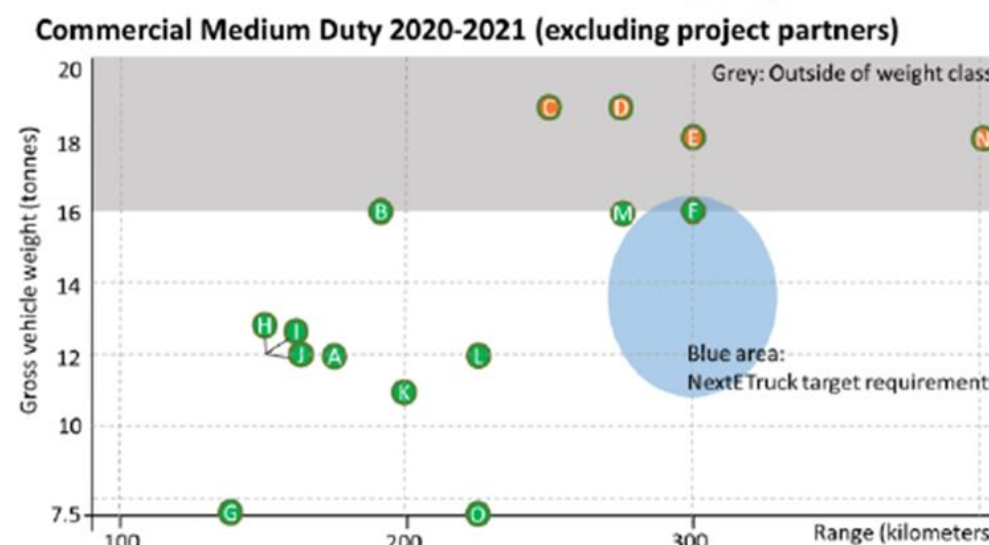




NextETRUCK objectives



- ■ ■ ■ 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.

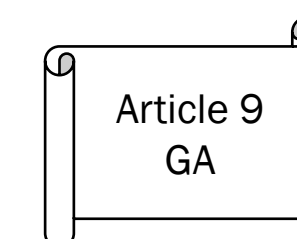
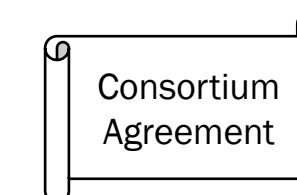
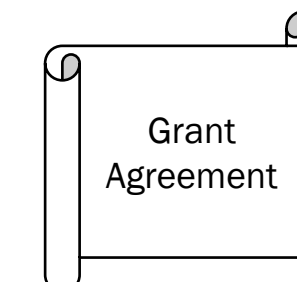


 A. EMOSS BEV Range: 180-200km GVW: 12t	 B. VOLTA Range: 193km GVW: 16t	 C. IVECO Eurocargo Range: est. 250km GVW: 19t	 D. DAF LF Range: 280km GVW: 19t	 E. FUTURICUM Range: 300km GVW: 18t
 F. Volvo FL Range: 300km GVW: 16t	 G. Mitsubishi Fuso Range: ~150km GVW: 7.5t	 H. GINAF Range: 140-280km GVW: 12t	 I. TATA Range: ~150km GVW: 12t	 J. ORTEN Range: ~150km GVW: 12t
 K. BYD T7 Range: 200km GVW: 11t	 L. BYD 6F Range: 220km GVW: 12t	 M. Renault D Range: 140-280km GVW: 16t	 N. Merc. eAtros Range: 400km GVW: 18t	 O. Paneltex Range: 225km GVW: 7.5t



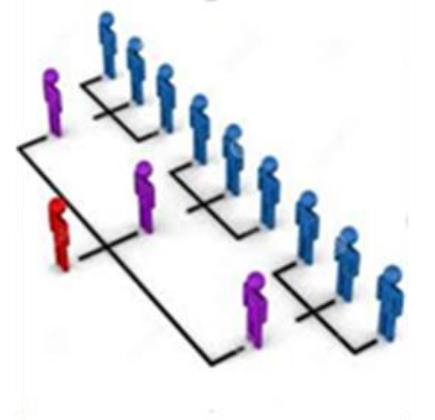
Team

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





NextETRUCK Mgt structure



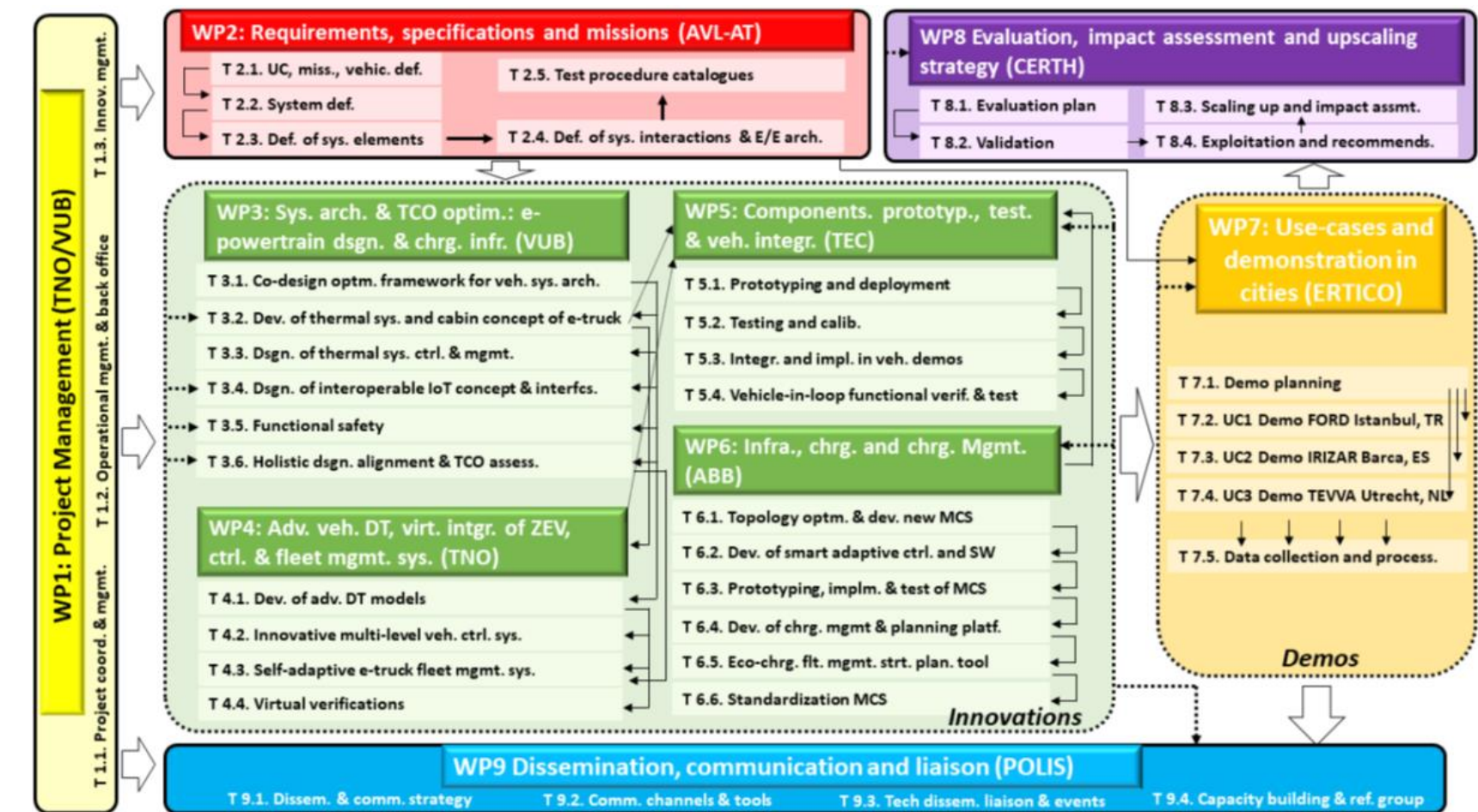
- General Assembly (GA); as the ultimate decision-making body of the consortium.
- Executive Board (EB); consisting of the Coordinator, Scientific Lead, Back office, Innovation Management, WPLs.
- Coordinator; as the legal entity acting as the intermediary between the Parties and the Granting Authority.
- 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 ▼	Year																																									
		1												2												3												4					
Project Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
WP1: Project Management	TNO	[Blue bar]																																									
Task 1.1 Project Coordination - technical project management	TNO	[Blue bar]																																									
Task 1.2 Operational Management - Back office	VUB	[Blue bar]																																									
Task 1.3 Innovation Management	ERTICO	[Blue bar]																																									
WP2: Requirements, specifications and missions	AVL-AT	[Blue bar]																																									
Task 2.1 Use case, mission and overall vehicle definition	ERTICO	[Blue bar]																																									
Task 2.2 System definition	AVL-AT	[Blue bar]																																									
Task 2.3 Definition of System Elements	VUB	[Blue bar]																																									
Task 2.4 Definition of System Interactions and E/E Architecture	AVL-AT	[Blue bar]																																									
Task 2.5 Test procedure catalogues	TNO	[Blue bar]																																									
WP3: System Architecture and TCO optimization: Powertrain and charging infrastructure	VUB	[Blue bar]																																									
Task 3.1 Co-design optimization framework for vehicle e-powertrain architecture	VUB	[Blue bar]																																									
Task 3.2 Development and design of innovative thermal system and cabin concept for the electric trucks	AIT	[Blue bar]																																									
Task 3.3 Design of thermal system control and management system	AVL-D	[Blue bar]																																									
Task 3.4 Design of interoperable IoT concept and Interfaces for connected electric truck fleet	AVL-AT	[Blue bar]																																									
Task 3.5 Functional Safety for demo vehicles	AVL-AT	[Blue bar]																																									
Task 3.6 Holistic design alignment and TCO assessment for electric trucks	CENEX UK	[Blue bar]																																									
WP4: Advanced Digital Twin, Virtual integration of ZEVs, Control and Fleet Management systems	TNO	[Blue bar]																																									
Task 4.1 Development of advanced Digital Twin models of the demo vehicles	TNO	[Blue bar]																																									
Task 4.2 Innovative multi-level vehicle control systems for Use-cases	TEC	[Blue bar]																																									
Task 4.3 Self-adaptive energy truck fleet management system	CERTH	[Blue bar]																																									
Task 4.4 Virtual verification on components, vehicle and fleet concepts	TEC	[Blue bar]																																									
WP5: Components prototyping, testing and vehicle integration	TEC	[Blue bar]																																									
Task 5.1 Component & subsystem prototyping and deployment	AVL-AT	[Blue bar]																																									
Task 5.2 Testing and calibration of components and controls	CID	[Blue bar]																																									
Task 5.3 Integration and implementation in the vehicle demonstrators	AVL-AT	[Blue bar]																																									
Task 5.4 Vehicle-in-the-Loop Functional Verification and testing	TNO	[Blue bar]																																									
WP6: Infrastructure, Charging and Management Systems	ABB	[Blue bar]																																									
Task 6.1 Topology optimization and development of new and efficient Megawatt charging system with multiple outputs for logistics hubs	Jema	[Blue bar]																																									
Task 6.2 Development of smart adaptive local control systems and Software deployment for the MCS	Jema	[Blue bar]																																									
Task 6.3 Prototyping, implementing and testing of the MCS	Jema	[Blue bar]																																									
Task 6.4 Development of Charge Management and Planning Platform	ABB	[Blue bar]																																									
Task 6.5 Eco-charging fleet management strategy planning tool	CENEX UK	[Blue bar]																																									
Task 6.6 Active participation in the relevant standardization bodies for MCS	Jema	[Blue bar]																																									
WP7: Use-cases and Demonstration	ERTICO	[Blue bar]																																									
Task 7.1 Demonstration planning, procedures, ramp-up and pilot	ERTICO	[Blue bar]																																									
Task 7.2 Delivery Truck Demonstration in Turkey	FORD	[Blue bar]																																									
Task 7.3 System demonstration of modular vehicle architecture structure for urban use electric truck demonstration in Barcelona	IRIZAR	[Blue bar]																																									
Task 7.4 Goods distribution Urban electric truck demonstration in the Netherlands	TEVA	[Blue bar]																																									
Task 7.5 Data collection and processing	CENEX UK	[Blue bar]																																									
WP8: Evaluation, Impact Assessment and upscaling strategy	CERTH	[Blue bar]																																									
Task 8.1 Evaluation plan	CERTH	[Blue bar]																																									
Task 8.2 Validation	TNO	[Blue bar]																																									
Task 8.3 Scaling up and Impact Assessment	VUB	[Blue bar]																																									
Task 8.4 Exploitation and recommendations	ERTICO	[Blue bar]																																									
WP9: Dissemination and Exploitations	POLIS	[Blue bar]																																									
Task 9.1 Dissemination & communication strategy	POLIS	[Blue bar]																																									
Task 9.2 Communication channels and tools	ERTICO	[Blue bar]																																									
Task 9.3 Technical dissemination, liaison and events	POLIS	[Blue bar]																																									
Task 9.4 Capacity building and Reference Group	POLIS	[Blue bar]																																									

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



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