

1.3 Innovation Management

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*1st Reference Group /
Advisory Board meeting -
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Agenda

- ❖ *Snapshot of the Activity*
- ❖ *Methodology*
- ❖ *Status of Deliverables*
- ❖ *Innovation Manager role*
- ❖ *Monitoring*
- ❖ *Next steps*



Snapshot

Task 1.3 Innovation Management (*ERTICO, VUB, TNO*), [M01-M42]

- ERTICO to appoint an *Innovation Manager* (IM) to lead IB.
- *Innovation Board* (IB) includes the Coordinator (TNO – Rene Corbeij), the Technical Manager (VUB) and all WP leaders (AVL AT, TEC, ABB Panion, CERTH, POLIS).
- The IM will develop an *Innovation process to manage and monitor* the development of the project innovations. With the Board, the IM will identify and promote additional innovations arising during the project work and monitor related IPRs. The IB will assess the potential of project outputs throughout the project's lifetime and create synergies with the exploitation task (T8.4).
- The Innovation Management plan is reported in *D1.3* and its implementation in *D1.4*.



Outcomes

N°	Name	Type	Diss. Level	Due date	Author	Status
D1.3	Innovation Management plan and process (description: definition of innovation management processes).	Report	SEN	M9 (March 2023)	ERTICO	submitted
D1.4	Innovation Management report (description: report on the innovation management processes and outcomes of T1.3.).	Report	SEN	M42 (December 2025)	ERTICO	ongoing



NextETRUCK Innovation methodology: *Innovation Elements and Technology Bricks*

- ❖ According to the Grant Agreement and DoA*, the project proposes:
 - i. 6 Innovation Elements (IE) to be implemented to achieve project objectives.
 - ii. Each IE is also composed of Technology Bricks (TB) as interlinked components
- ❖ Other elements: *Product, Leader, SoA, start/end, TRL start/end*

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<i>Innovation elements</i>	<i>Related Bricks</i>	<i>Technology</i>	<i>Product</i>	<i>Leader</i>	<i>SoA before market</i>	<i>SoA after market</i>

Source: Derived from Project Innovation (1.2.2) & Project Execution (1.2.3)



List of Innovation Elements and Technology Bricks

ID	Innovation elements	Technology Bricks
IN-1	Electric powertrain innovations for medium duty freight transport	TB-11 Advanced Power electronics interfaces based on WBG devices TB-12 Reliability assessment tools for the power electronics interfaces TB-13 Thermal management system by using smart active control of the cooling system
IN-2	Digital twin design, fleet management tools and virtual integration of ZEV	TB-21 Digital twin of vehicle components and -systems for impact assessment TB-22 Open-access, web-based user-friendly fleet decarbonisation strategy tool with a map feature TB-23 Improved vehicle simulation techniques (Exp plan) TB-24 Estimation of battery state of charge (SoC) based on BMS data
IN-3	Tools for optimized vehicle design and TCO reduction	TB-31 Innovative thermal management system of the vehicle cabin TB-32 Energy efficient cabin HVAC system TB-33 Total cost of ownership (TCO) calculation tool
IN-4	Flexible ultra-fast charging concepts	TB-41 Charge management and optimisation solution TB-42 Power electronics interfaces based on WBG technologies TB-43 Interoperability solutions updated to evolutions in actual standards
IN-5	New business models for end-user increased acceptance and increased market uptake	TB-51 Business model innovation, holistic approaches to business models for innovative use cases



Snapshot of Technology Bricks and components:

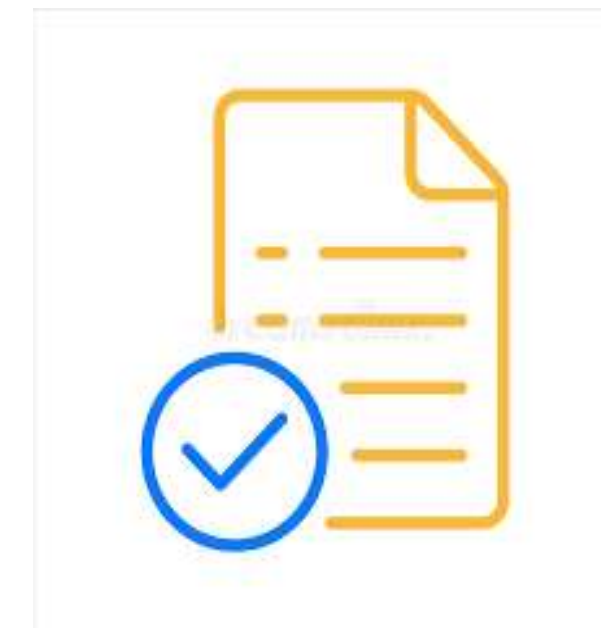
Technology Bricks [Source: Derived from Project Innovation (1.2.2) & Project Execution (1.2.3)]

TB#	Technology Bricks (TB)	INO Link	Techno Brick development task(s) & responsible			TRL @start	SoA @ start of project	TRL @end	SoA @ end of project	Development status (any risks, change of plan? Is TRL met?)	Monitoring
			Task(s)	TB Leader (Partner-name)	Contributors						
TB-11	Advanced Power electronics interfaces based on WBG devices	IN-1	T3.1; T6.1; T6.3;	VUB (Duong Tran)	JEMA, TEVVA, FORD, IRIZAR	4	Power electronics interfaces based on Silicon semiconductor devices, and not designed through a co-design optimisation framework	7	Optimal design of the power electronics interfaces using WBG semiconductor technologies based on SiC/GaN, including reliability performance enhancement with predictive maintenance algorithms	No availability of semiconductor due to the actual shortage situation worldwide --> Modify the standard timing of the design trying to accelerate as much as possible the semiconductors to be used. Close collaboration with Hitachi ABB Powergrids (HAPG), a member at the Reference Group to provide the SiC modules.	
TB-12	Reliability assessment tools for the power electronics interfaces	IN-1	T6.1; T6.2; T6.3;	VUB (Duong Tran)	JEMA	4	Current predictive maintenance algorithms are based on Si-based semiconductor devices and the associated conventional thermal management solutions	7	The next generation reliability and predictive maintenance assessment will be attained thanks to the research on new algorithms for the new e-powertrain designs,	No available data of semiconductor	



D1.3 submitted

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Innovation Manager roles based on in D1.3

- **Monitors** IE, TB and IPR using dedicated templates
 - Continuously monitors key project activities associated with deliverables of significant innovation potential
 - Implements tools and metrics to provide efficient monitoring (e.g. reporting template) asking all WP / Task leaders to report on their IE and TB implementation
 - Including risk assessment feedback provided by each leaders
- **Organise regular IM calls** with all IM and TB leaders to monitor progress and focuss on issues
- Present IM implementation **updates** at EB and GA
- Responsible of IM reports to be summarised in **D1.4** at the end of the project

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Monitoring: *objectives*

- Ensure efficient monitoring on ***innovations and check progress*** as agreed and scheduled, and address challenges / issues.
- Develop the ***monitoring tool*** to be updated regularly by each TB leaders.
- Initiate ***regular and transparent communication*** with relevant partners.
- ***Follow up*** with IB board, EB and GA if any major question arises from Monitoring.





Monitoring tool and techniques

- **The template** developed based on existing tool (xls) and provides possibility to monitor each Technology Brick.
- Regular monitoring is carried out on **quarterly, yearly** basis.
- The monitoring includes **few aspects**:
 - *Main developments*
 - *TRL progress*
 - *Delay and issues*
 - *Status*
 - *3 color monitoring system*: involves assigning different colors to signify varying levels of status or performance. For example, **green** may indicate satisfactory conditions, **orange** for caution or moderate concerns, and **red** for areas requiring immediate attention. During monitoring, assess each aspect and assign the appropriate color code to efficiently communicate the status and address any issues promptly.
- Monitoring may include the **deliverables with significant innovation** potential (ref: D1.3).
- Present and report Monitoring **updates** at **EB and GA**
- Monitoring **outcomes** to be summarised in **D1.4** at the end of the project



Monitoring: 3 color monitoring system

TB#	Technology Bricks (TB)	INO Link	Monitoring			Development status summary (any risks, change of plan? Is TRL met?)	M16-M18	M19-M21
			●	●	●		Oct-Dec 2023	Jan-March 2024
TB-11	Advanced Power electronics interfaces based on WBG devices	IN-1				No availability of semiconductor due to the actual shortage situation worldwide --> Modify the standard timing of the design trying to accelerate as much as possible the semiconductors to be used. Close collaboration with Hitachi ABB Powergrids (HAPG), a member at the Reference Group to provide the SiC modules.	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?
TB-12	Reliability assessment tools for the power electronics interfaces	IN-1				No available data of semiconductor	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?
TB-13	Thermal management system by using smart active control of the cooling system	IN-1				Unavailability of detailed datasheet and models --> The involved partners could conduct measurements to collect the required information and partly use state-of-the-art recent models and methods to ensure on-time delivery and delay minimization.	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?
TB-21	Digital twin of vehicle components and systems for impact assessment	IN-2				Defining interfacing in WP5.	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?	Main developments: xxx TRL progress: Delay and issues: xxx Status: Green (inline with planning) Orange (minor risk/delay): how to be green again? Red (High risk/delay): solution & impact?



Current status and Next steps

- Started in **October 2023**,
 - the monitoring tool made available and requested to be updated regularly by each IE and TB leaders
 - initiate regular and transparent communication with partners responsible for technology development (Innovation Ecosystem and Technology Bricks) through regular calls.
- Collaborate closely with the **Coordinating team, WP Leaders, and Technology Brick (TB) owners.**
- Ensure efficient monitoring on innovations progress as scheduled, and address challenges / risks proactively with the EB **by end of the year (2023)**
- Next call: **January 2024**

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