

KER 2: Hyperloop

PLANET KERs are innovative, interdisciplinary knowledge exchange networks designed to foster collaboration and knowledge-sharing between different sectors. By facilitating the sharing of knowledge and experience obtained during the development of PLANET, KERs have offered an innovative vision for developing new solutions to complex challenges.

What are the Key Exploitable Results (KERs) in PLANET?

Overview

Hardt is developing a new innovative solution for **moving small and medium, standardized, and configurable shipment units and passengers** - the **hyperloop**, which within PLANET, Hardt seeks to identify how hyperloop services could be shaped to best address these challenges. More specifically, **hyperloop** aims to:

- 1) Radically **improving agility and efficiency of logistics operations** for just-in-time and on-demand deliveries of small and medium sized shipments and packages
- 2) **Unlocking new market opportunities** and economies of scale for time-sensitive and demand-sensitive products,
- 3) Enabling cost-effective **transition to digital and automated logistics operations** to increase responsiveness to demand volatility and changing customer requirements.

The PLANET project has supported the development of the result by **making simulations in digital twin** and analysing the future impact that the KER will have in the future with its implementation.

Description	<p>Hyperloop is a new mode of transport for the transport of cargo and passengers. In the hyperloop, vehicles travel autonomously through a network of low-pressure tubes to remove aerodynamic friction. The vehicles are suspended, guided, and propelled magnetically to remove mechanical friction.</p> <p>Transport is responsible for 23% of greenhouse gas emissions and energy consumption is forecasted to grow by 70% to 2050. Hyperloop uses less energy than road aviation and rail and is fully electric.</p> <p>Short transit times. It enables same-day or next-day delivery on a continental scale (within 2,000-4000 km distance).</p>
Needs Addressed	<p>On-demand capacity. Hyperloop vehicles can be scheduled on-demand to deliver just-in-time. It can directly link with airports, ports, logistics centre and logistics hubs in cities.</p> <p>Fully traceable and continuous operations in controlled environment. Hyperloop is digital by design, allowing full traceability. Lean infrastructure enabling easy integration into production, distribution and demand centres.</p>
KER Type	Product. New service
Direct or indirect exploitation/use of KER	<p>Technology development</p> <p>Further research and innovation activities</p>



Business Model

The Business Model section will provide a comprehensive overview of the different aspects of the KER's business operations, including its key partners, resources, value proposition, customer segments, customer relationships and also highlighting the strengths and opportunities that this KER offers to its partners and stakeholders.

Key Partners	Consortium members, transport hubs, airports, stations, rail operators, airlines, governments, NGOs, consultancies, research institutes.
Key Activities	Route project development, establishing consortium, acquiring financing and permits, preparing bid, negotiation with government, design and engineering, supply chain management, product development, standardization.
Key Resources	Physical office space/workshop, human resources, intellectual resources (trademarks, hyperloops System IP...).
Value Proposition	Reliable, on-demand and low-cost transportation for (time-sensitive) goods, provision of affordable infrastructure and sustainable transport, stability and predictability of returns from investments.
Opportunities	Continental same-day delivery, zero-emission, massive centralization of facilities, single interoperable backbone for Physical Internet.
Customer Segment	Logistics and Supply Chain companies, governments, infrastructure investors, sovereign wealth fund.
Potential USP	High-speed, high-capacity, low energy consumption, low land use, low environmental impact, all in one mode. No compromises.

Exploitation Pathway

In the case of **hyperloop** result the TRL at the end of the project will be low so the exploitation focus after the project will on further research and innovation activities and progress on technology development and standardization. The main objective of the exploitation pathways is to **get public sector commitment for the construction of a pilot and continue development of vehicles and infrastructure to get higher TRL** and set standards for interoperability. One extra key step is needed for the full implementation of the technology, and it is the public support, included also in the table. The main benefits **are to gain knowledge, expertise and a new technology which public governments can facilitate the innovation and implementation**. The drawbacks are that the priorities might diverse, standardization requires common approach and slows down the innovation and the public decision making can be a lengthy process.

In terms of **collaborating entities**, local, national and European authorities are key. As well as academia sector and the stakeholders involved in the transport value chain (good owners, logistic service providers etc.).

Finally, the action plan envisioned for the next years is focused on achieving the standardization of the technology, developing and selecting the most suitable routes and demonstrating the technology and implementing it.

Contact Information

For more information about the **Hyperloop** KER, please contact the members of the KER owner:

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