Hyperloops: New transport mode enabled by the Physical Internet?

Poster · July 2017

DOI: 10.13140/RG.2.2.25830.32328

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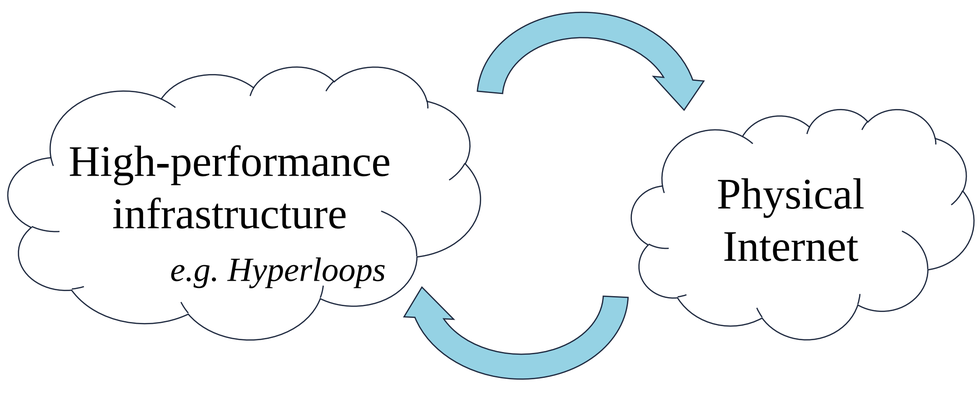
LOGISTIKUM CHALLENGE ACCEPTED

Motivation

- 25 % of carbon emissions caused by transport sector in Austria → overall aim is to reduce carbon footprint
- EU-target: to shift 50 % of transports with a distance of more than 300 km to environmentally friendly alternative modes of transport until 2050
- To be able to cope with the expected increase of demand, investments of € 1.5 trillion in existing infrastructure at the period from 2010 – 2030 are necessary
- Current situation of unsustainable and inefficient transports in terms of economical, environmental and social aspects

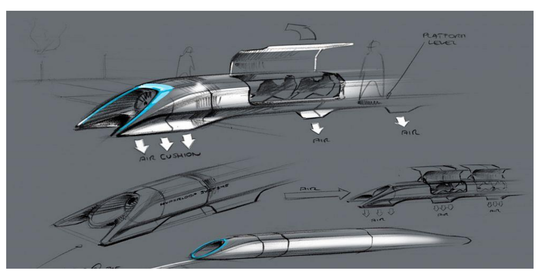
Enabling the Physical Internet

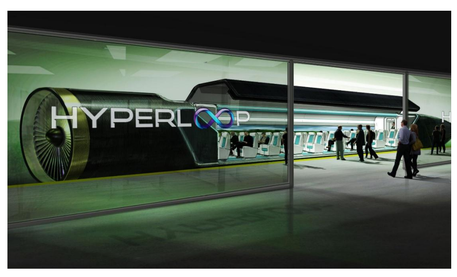


Innovative transport solutions and alternatives are crucial to meet the targets of economical, environmental and social sustainable logistics
→ Hyperloops represent such a solution (?)

Hyperloops: State of the art

- Fully autonomous high-speed transportation of freight and passengers with special capsules through near-atmosphere pressure tubes
- Transportation at top speeds of up to 1220 kilometers per hour
- Capsule departure every 30 seconds possible at peak demands
- Capsules for freight and individual traffic are planned





Interrelations to PI

Characteristics Hyperloop

- Independent departures based on transportation demand are possible
- Transport capability of 12 tons per capsule in order to split and optimize transport frequencies and arrivals at different destinations
- Self-powering by solar panels at the roof of the tubes

Targets Physical Internet

Hyperloop \ Physical Internet	Physical Interconnectivity	Digital Interconnectivity	Operational Interconnectivity	Sustainability	Profitability
High-speed	X				
Time-flexibility	X				
Interoperability	X	X	X		
Eco-friendliness				X	X
Autonomy		X			X
Low operational costs					X

Conclusion

- *Symbiosis Hyperloops – Physical Internet*: Currently unreachable innovations such as hyperloops can be achieved through PI (cf. Montreuil, 2012)
- Mutual benefits existing in implementing hyperloops together with PI
- However, high investment costs required. Potential especially for high value freight transports.

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This work has been funded by FFG and by the Austrian Federal Ministry for Transport, Innovation and Technology (bmvit) within the program "Mobilität der Zukunft" under grant 850339 (inned)

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