

In 2050...

...we will travel Europe as if it is one sustainable metropolis...

and

...Europe is a single market connected within several hours...

Welcome to the world of Hyperloop

TO ACHIEVE CLIMATE NEUTRALITY BY 2050, WE NEED FUTURE-PROOF TRANSPORTATION

Demand for passenger and freight transportation will **triple** by 2050¹

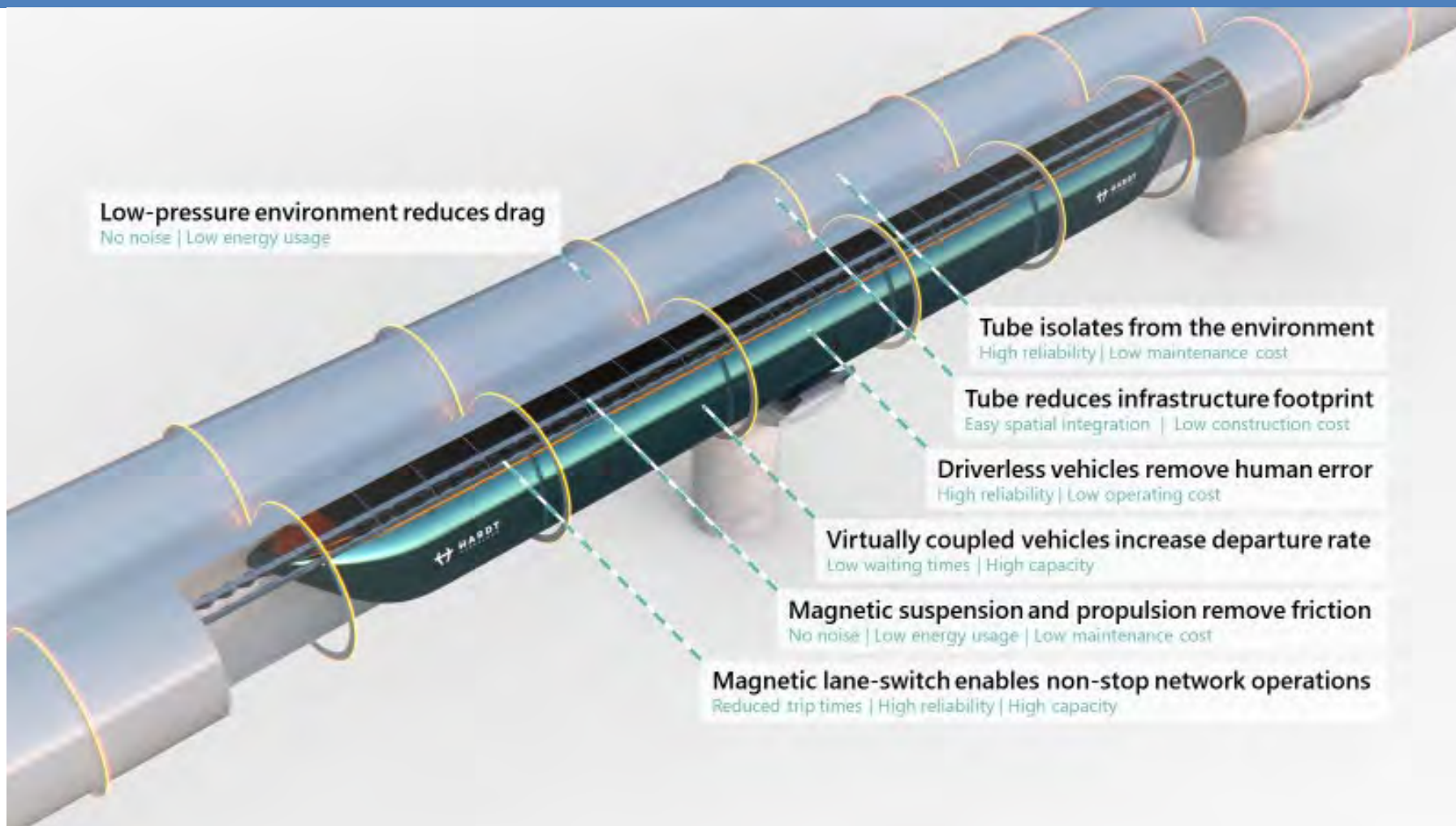
Transport is responsible for **30%** of Greenhouse Gas emissions³

Transport infrastructure investments of **€ 50.000.000.000.000+** are required towards 2050²

1) <https://www.iff-nord.org/transport-demand-will-triple-sector-faces-potential-disruption>
2) Extrapolated from <https://oalook.github.io/>
3) <https://www.esa.europa.eu/data-and-maps/data/data-views/greenhouse-gases-15000>

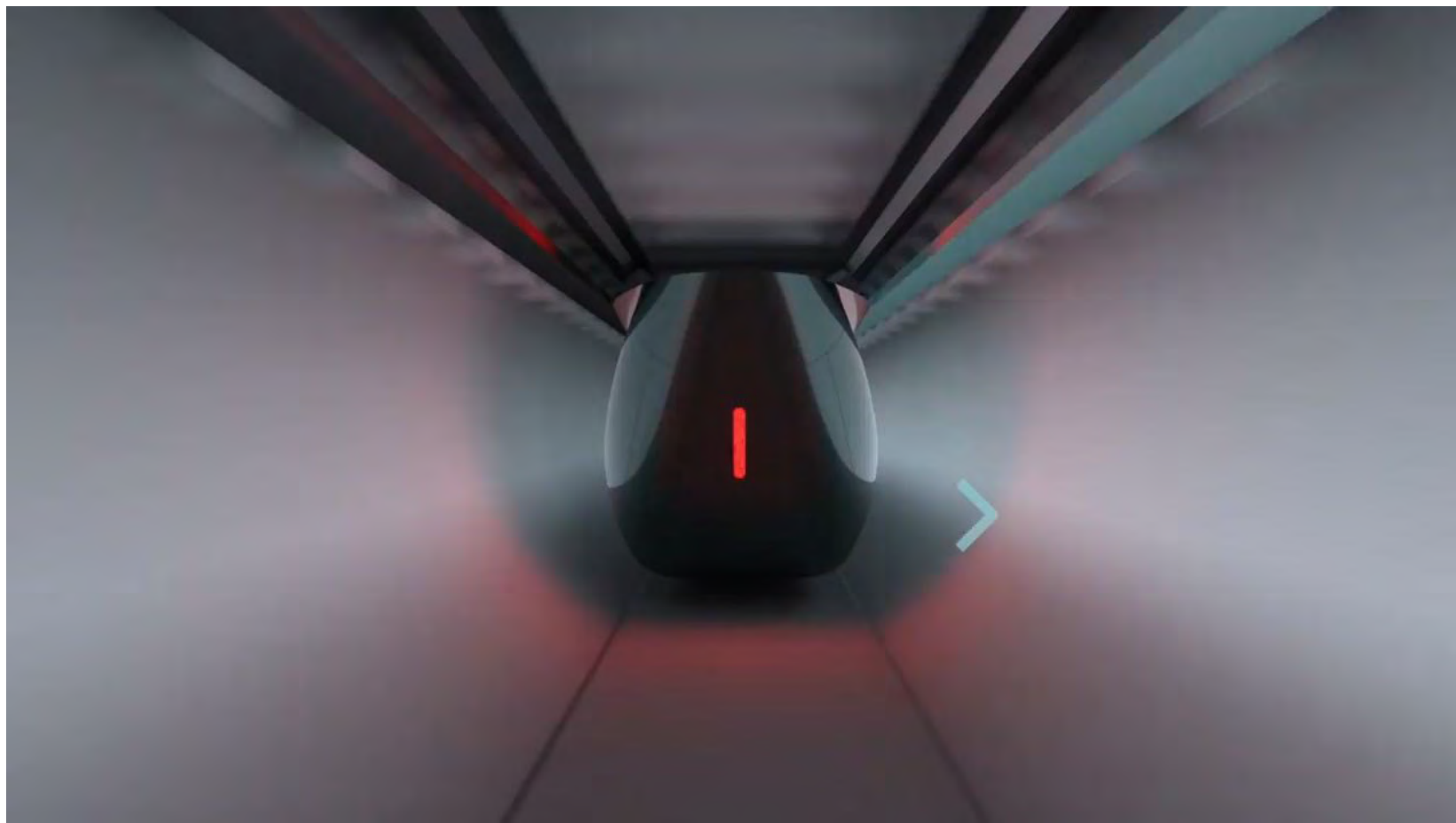


How does hyperloop work?



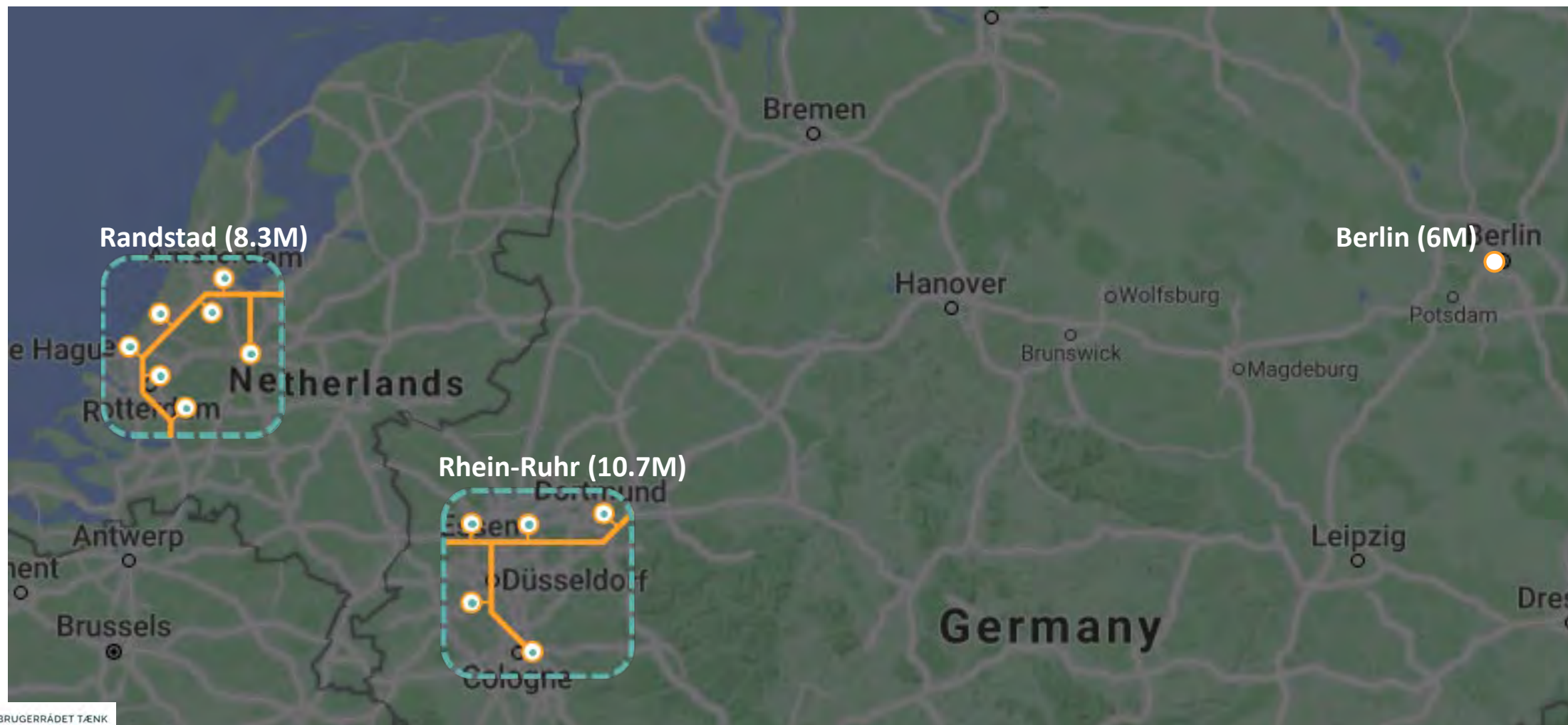


Magnetic lane-switching enables network effects



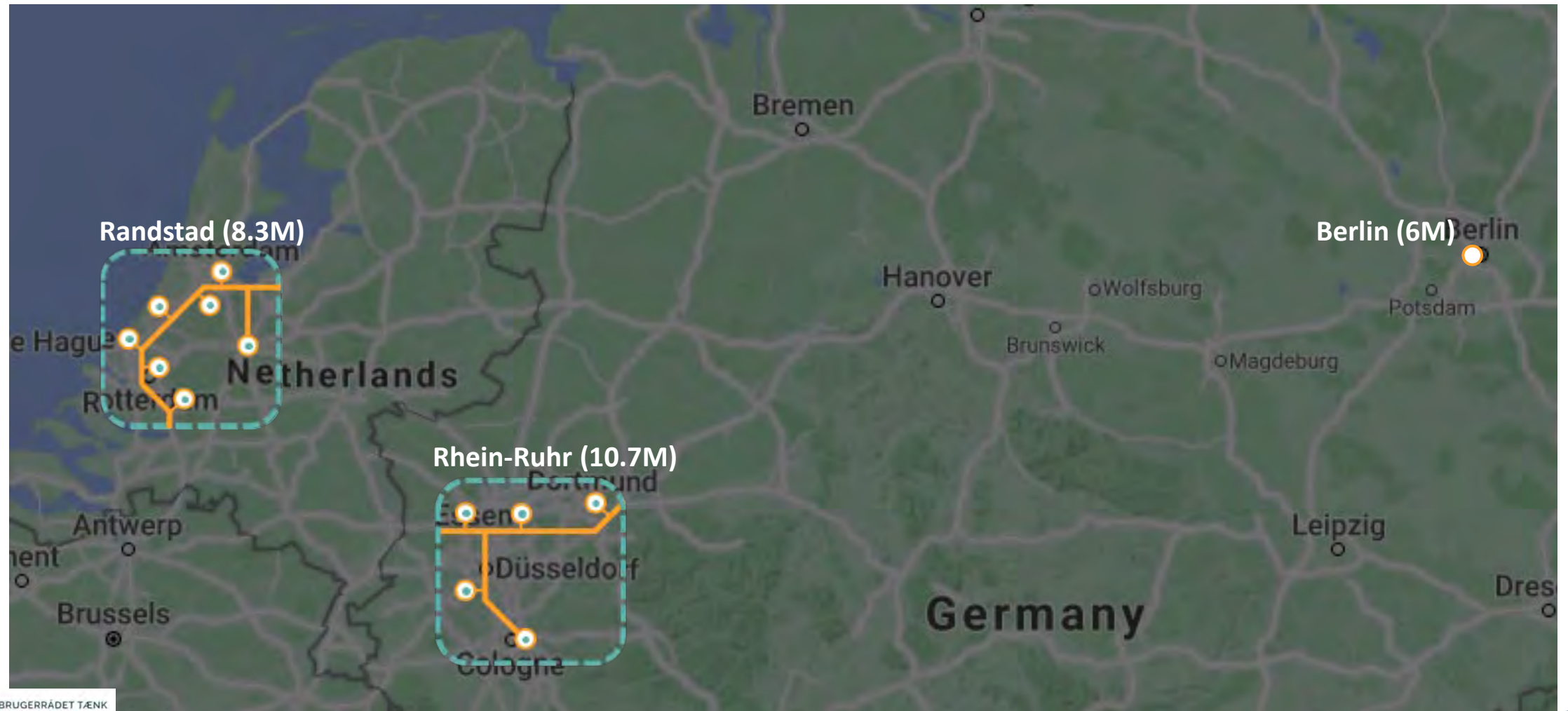


Network effects of hyperloop





Network effects of hyperloop

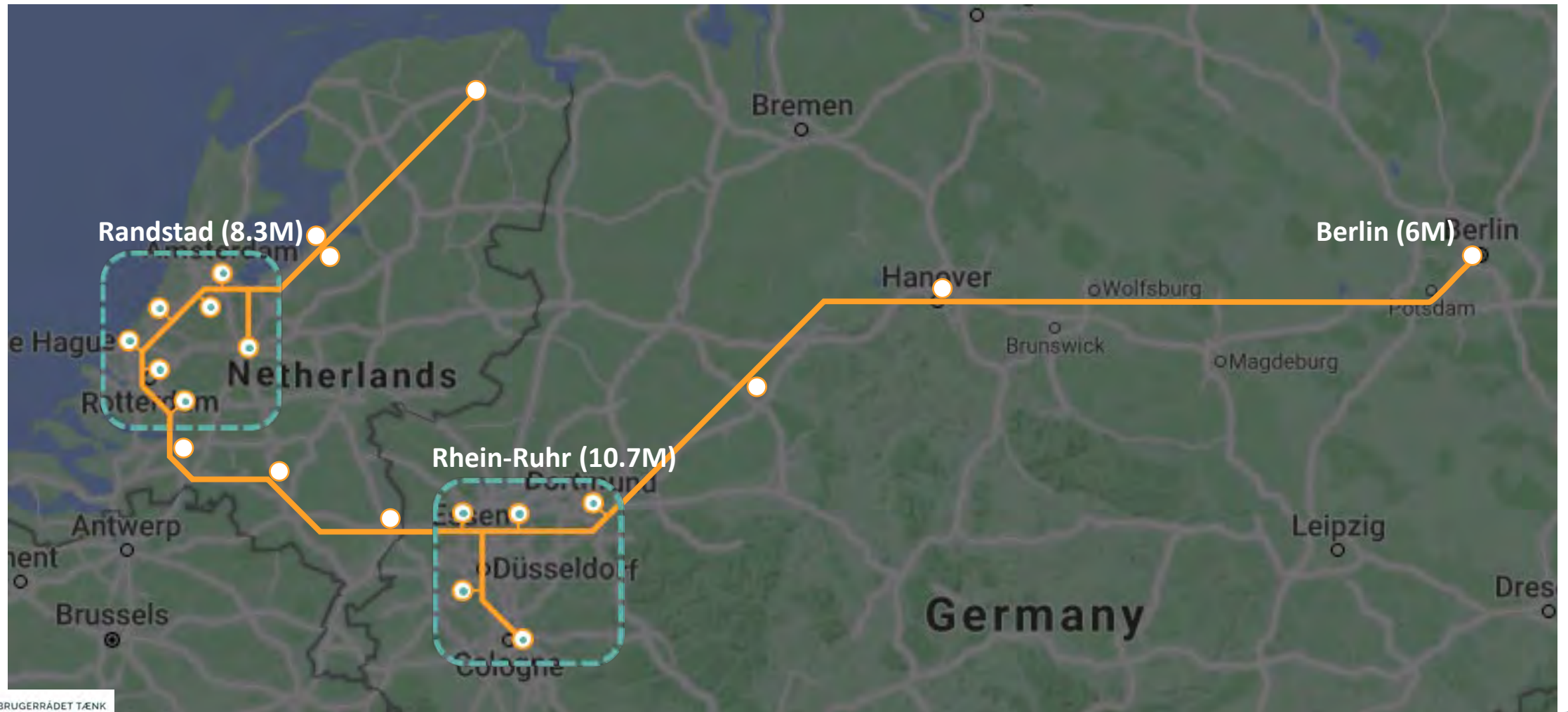






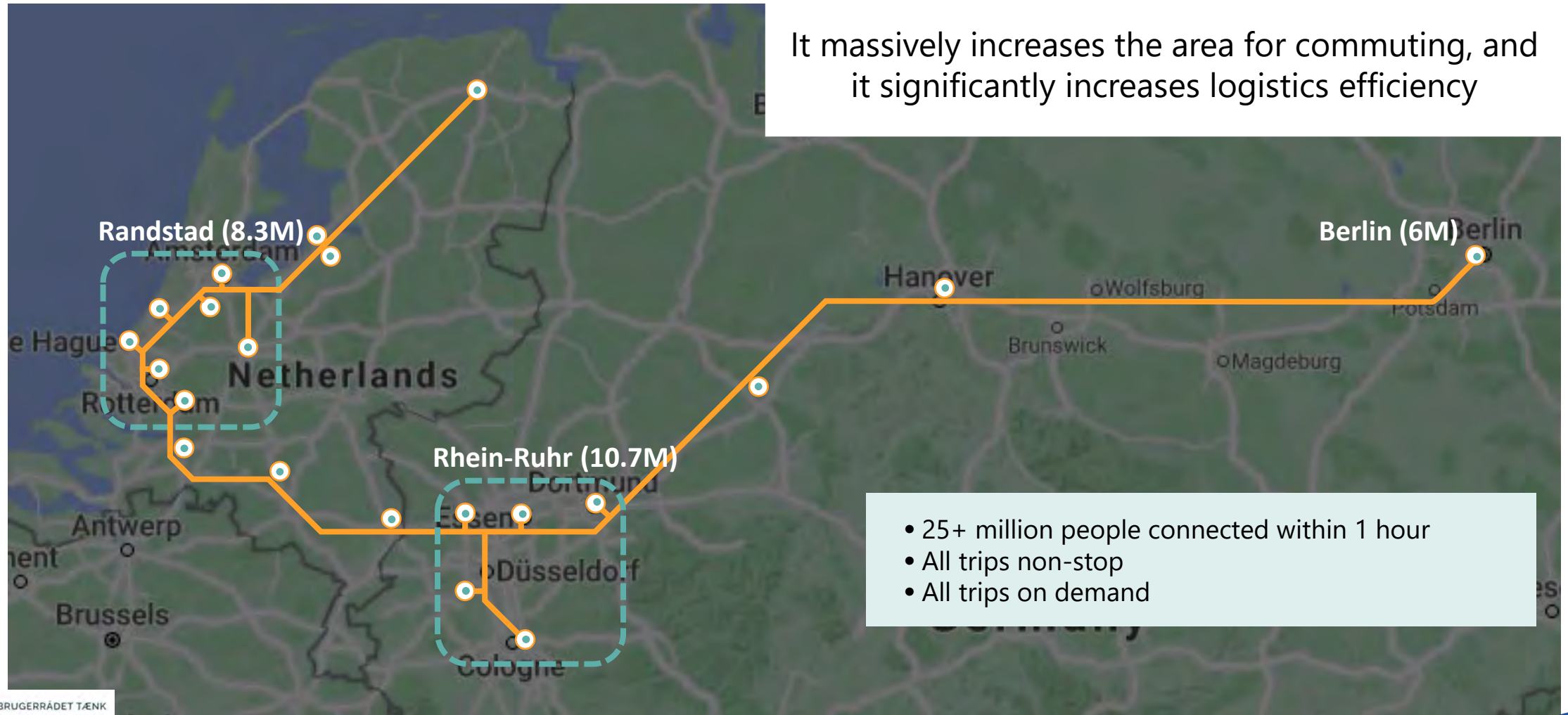


Network effects of hyperloop



Network effects of hyperloop

It massively increases the area for commuting, and it significantly increases logistics efficiency



- 25+ million people connected within 1 hour
- All trips non-stop
- All trips on demand

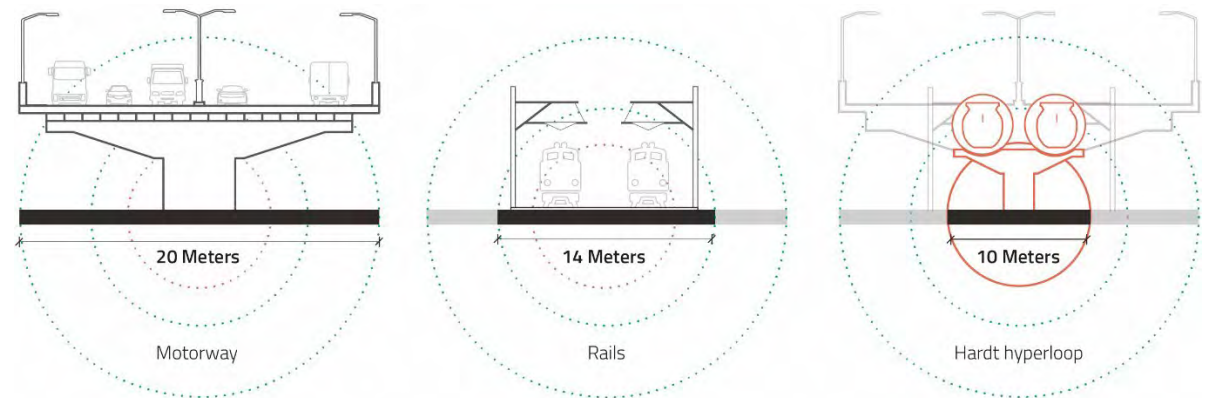
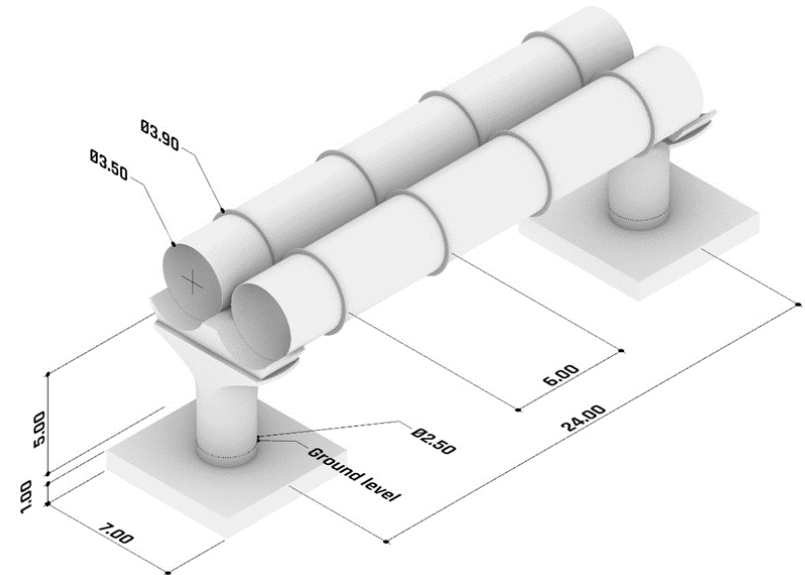
Hyperloop System – Stations

- One hyperloop system carrying both:
 - Passengers
 - Cargo
- Stations can be located in:
 - Cities
 - 'New towns'
 - Airports
 - Logistics locations



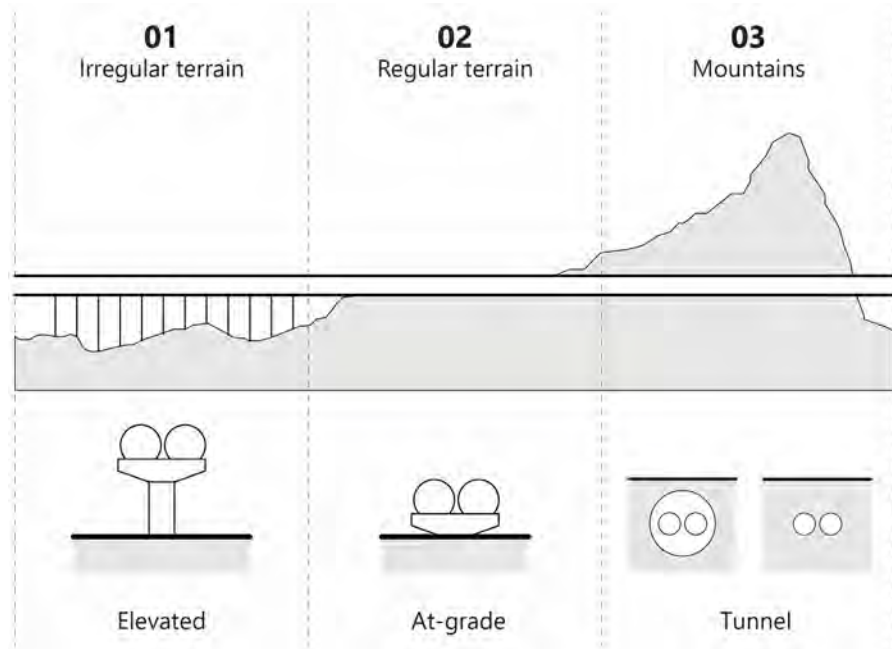
Hyperloop System – Linear Infrastructure

- The tubes provide an enclosed environment:
 - No emissions
 - No noise
 - No influence by weather
- The infrastructure is relatively sleek, so it has a limited footprint



Hyperloop System – Infrastructure Integration

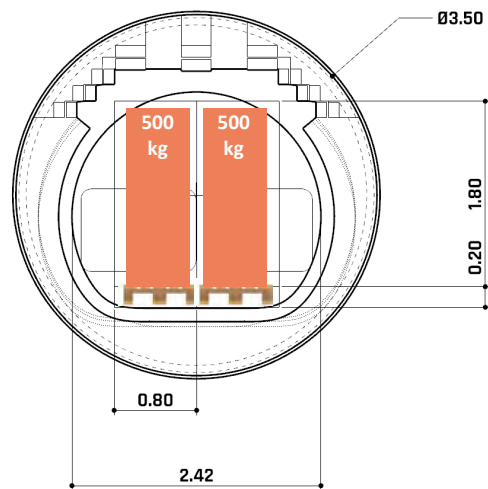
Depending on the terrain, hyperloop can be built underground, at grade or on pylons





Hyperloop System – Cargo

Cargo vehicle



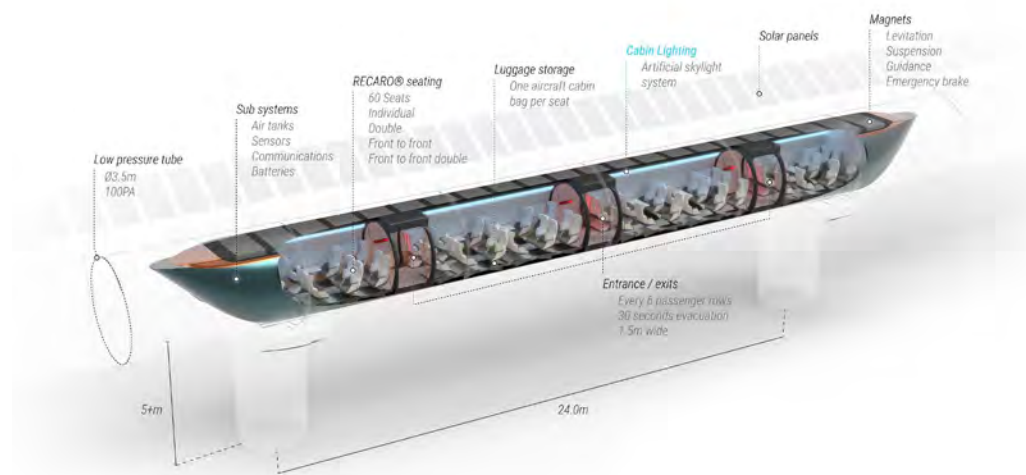
Cargo station





Hyperloop System – Passenger

Passenger vehicle



Passenger station

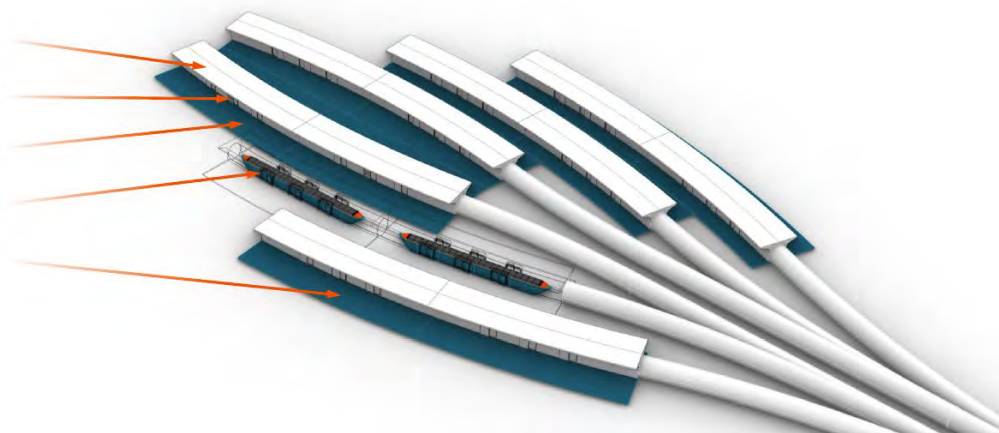
Primary structure

Local Airdock

(Dis)embarking area

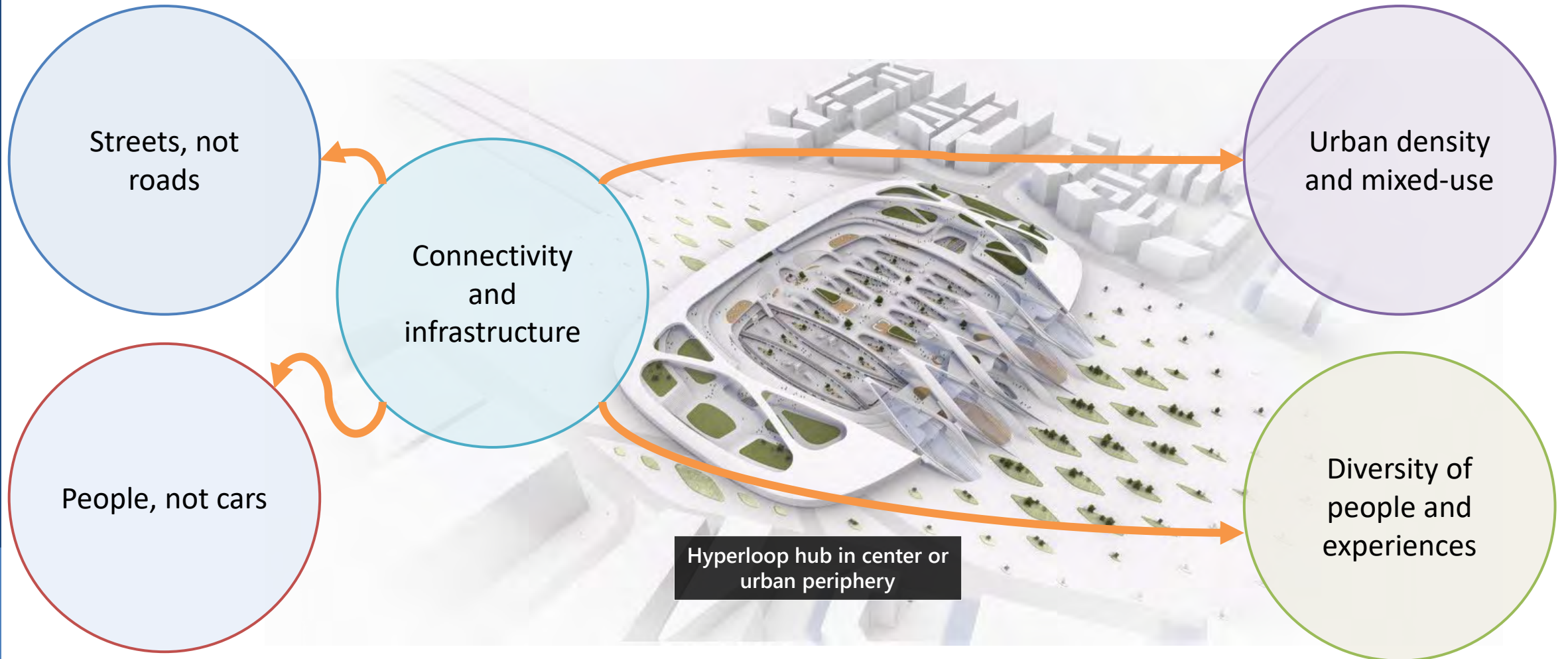
Vehicle

Additional platform



Source: Hardt Hyperloop

Hyperloop should be about enhancing and shaping great places





Mass-transit impacts on city-shaping

Influences urban density levels at all scales (on-site, local, and metropolitan):



Transit-oriented development drives sustainable, more efficient use of land.



Hyperloop Network – Hyperconnected Europe research

Network length: 24,646 km

Core hubs: 29

directly serving major cities of over 1 million people, or major aviation or maritime gateways

Regional hubs: 99

directly serving regional cities of over 100,000 people

Network type: grid or mesh-based

north-south and east-west corridors

Network function: point-to-point

no interchanges between hyperloop pods envisaged

Percentage of hubs on TEN-T corridors: 65%

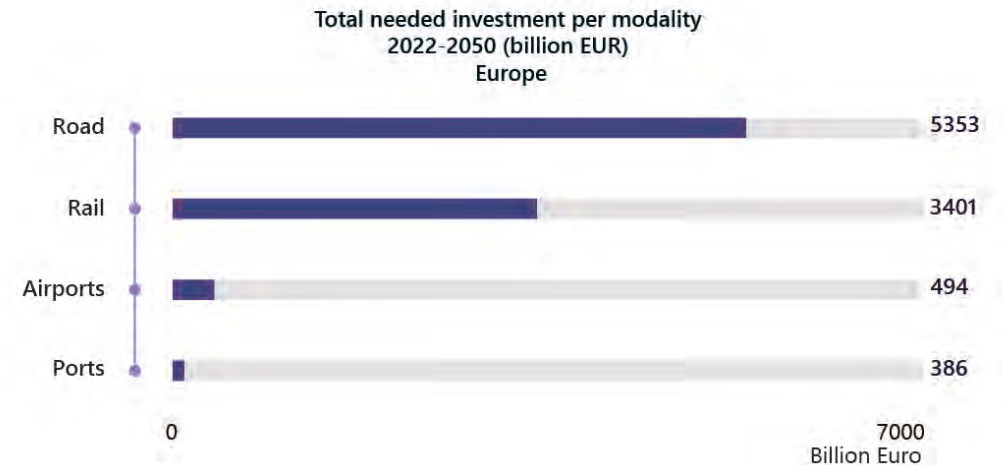
City population catchment size: 170 million

does not include peri-urban catchments

Hyperloop Network – Investment

- By 2050, 69% of the network is estimated to be realized, equivalent to an investment approximately €650bn
- By repurposing about 6.7% of projected transport infrastructure investment need for Europe, a comprehensive hyperloop network can be built

	Length (km)	Costs (billion €)
Infrastructure	24,646	651
<i>At grade (40%)</i>	9,858	189
<i>Elevated (10%)</i>	2,465	57
<i>Bridged (20%)</i>	4,929	123
<i>Tunneled (30%)</i>	7,394	283
Design & Engineering		83
Other Costs		22
Contingency		195
Total		951



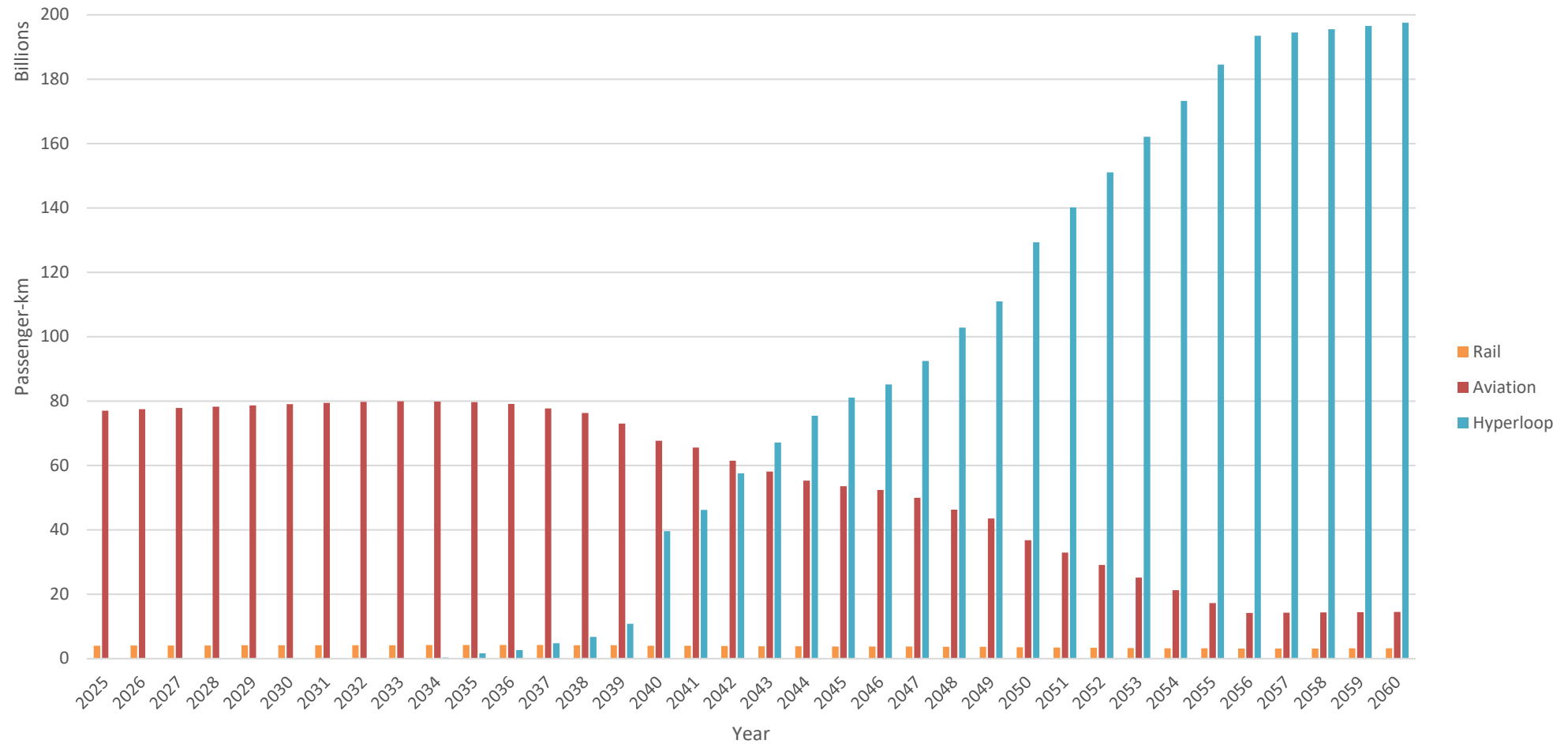
Hyperloop Network – Demand

- The corridors with the highest traffic intensities in: Turkey, Italy, Spain, Portugal and Germany.
- International origin-destination pairs with high demand potential: Frankfurt-Paris, Munich-Paris, Frankfurt-Lisbon, London-Amsterdam.
- The hyperloop connection could potentially bring:
 - A reduction of 90% of short-haul aviation traffic
 - A reduction of 10% of the long distance national and international car and bus trips.
 - A reduction of 30% of rail traffic (mostly conventional rail, on some sections HSR)



Estimated hyperloop traffic intensities when the network is completed

Hyperloop Network – Potential modal shift







Positioning as a modality



RAIL

- / FREQUENCY OF SERVICE & UNIT SIZE
- / EASE OF USE
- / ACCESSABILITY
- / AVAILABILITY & BOOKING
- / LOW ENVIRONMENTAL IMPACT

AVIATION

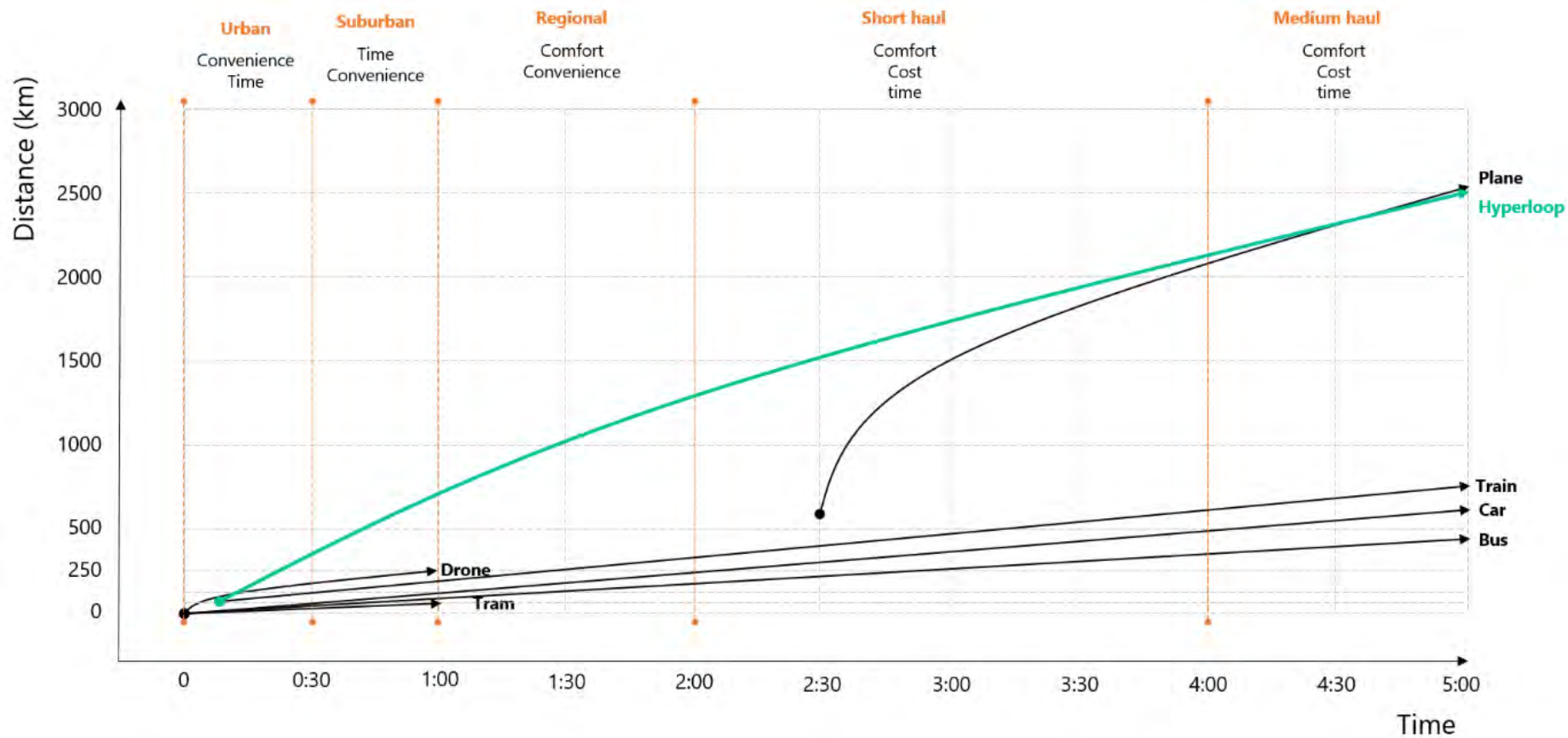
- / CUSTOMER TARGET GROUP
- / TRAVEL DISTANCE & SPEED
- / CABIN CONSTRAINTS
- / COMPETITIVE PRICING
- / REGULATIONS & SAFETY

NEW CHALLENGES
NEW OPPORTUNITIES
NEW EXPERIENCES

Source: Schweizer Consulting, Hyperloop Development Program 2022



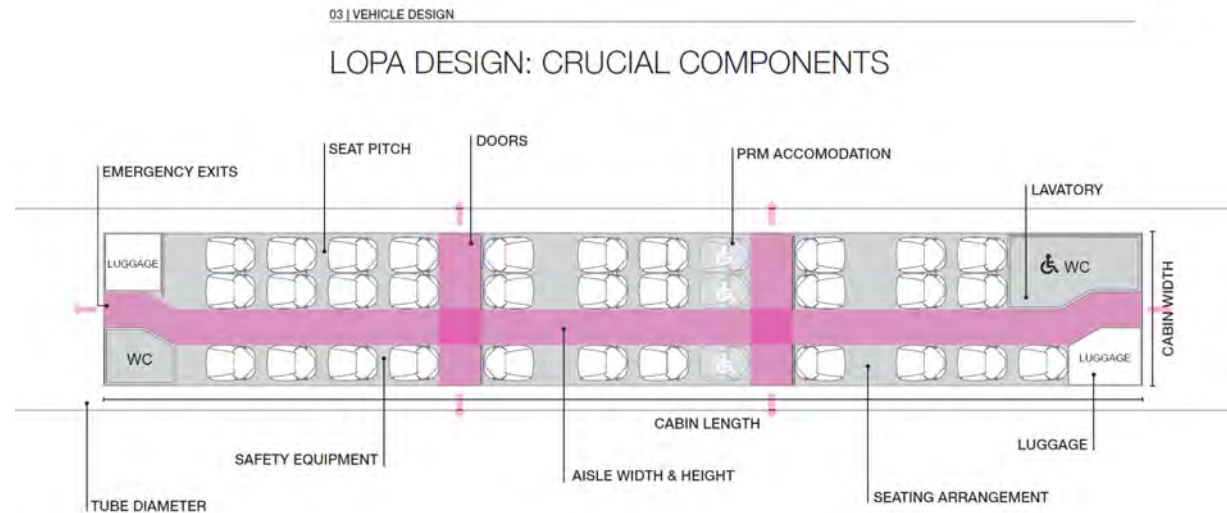
Positioning as a modality



Source: Hyperloop Development Program, 2022

Passenger journey

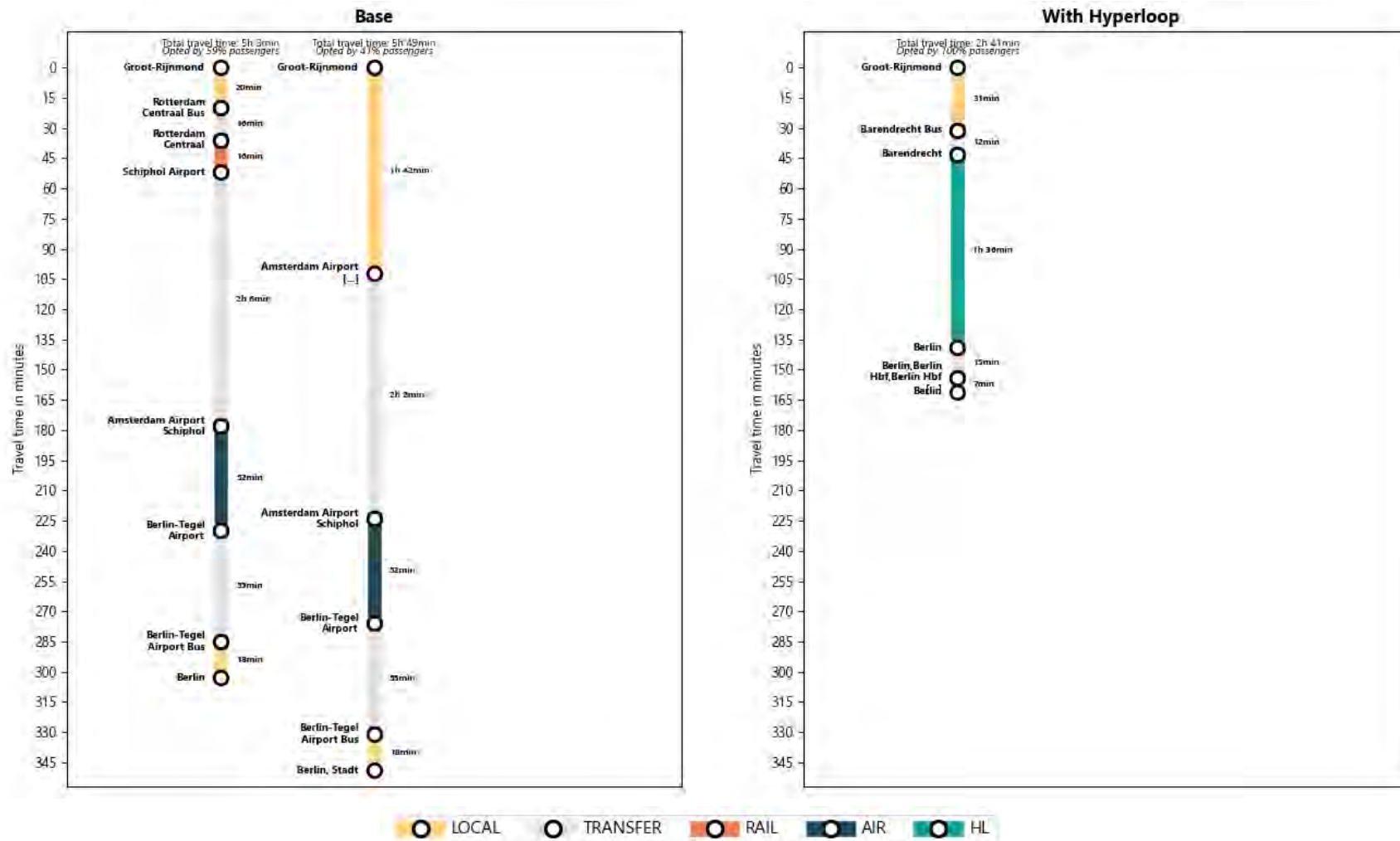
- For travelers to leave their car, a multimodal trip using hyperloop should be:
 - Seamless
 - On-demand
 - Convenient
 - Comfortable
 - Fast



Source: Schweizer Consulting, Hyperloop Development Program 2022



Passenger journey Example Rotterdam to Berlin



TIMELINE

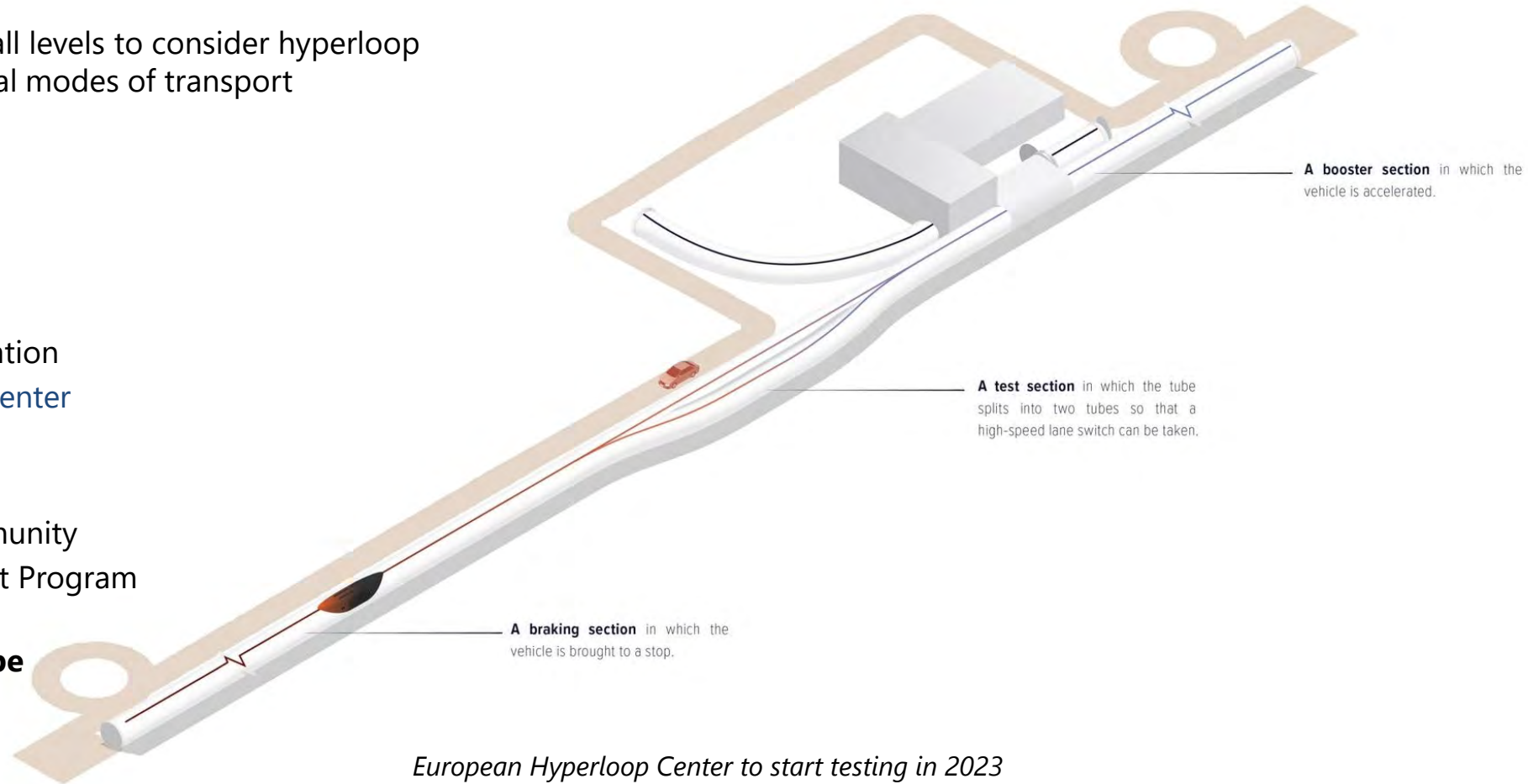
2013	2015	2017	2020	2023	2026	2030+
HYPERLOOP ALPHA + FIRST STARTUPS 	HYPERLOOP COMPETITION 	PROOF OF CONCEPT 	EUROPEAN HYPERLOOP CENTER GRONINGEN 	CARGO PILOT ROUTE 	NETWORK 	PASSENGER TEST
			HYPERLOOP DEVELOPMENT PROGRAM Accelerate development of hyperloop in Public-Private Partnership			

Road to Realization

- Work with governments on all levels to consider hyperloop as an alternative to traditional modes of transport
 - Cities
 - Regions
 - National governments
 - European Union

- Work on testing and certification
 - European Hyperloop Center
 - JTC20

- Build a ecosystem and community
 - Hyperloop Development Program
 - Create a vision of a **Hyperconnected Europe**





Join Hyperconnected Europe!

The Hyperconnected Europe initiative is a community of cities and regions jointly creating a vision for the European hyperloop network.

Community:

- **160** community members
- **10** supporting cities and regions (per June '22)
- **Regional** workshops
- **7** completed webinars

Vision paper publication: **June 23**

Dedicated web page: www.hyperconnected.eu



Hyperloop has become an industry and is here to stay

Europe is leading



Continents & NGO's

World Economic Forum marked **hyperloop as tech of the future**

EU included **hyperloop** in its **Smart Mobility Strategy** and invested **€15 million in Hardt Hyperloop**

\$1.2 Trillion infrastructure Bill includes and enables **hyperloop** investments

Countries & Cities

Wales **stopped any new road** buildings
Highway expansions disputed everywhere

France, Germany & Spain want to **ban short flights**

Texas, Pennsylvania, Alberta & Saudi Arabia have hyperloop in **city planning**

Companies & Universities

✓ **13** hyperloop test centers

✓ **43** hyperloop studies published

✓ **71** Universities & R&D institutes

Get in touch

