

Rome, October 4th 2017, UIC, Energy efficiency of future trains

Hyperloop



Pierre-Etienne Gautier

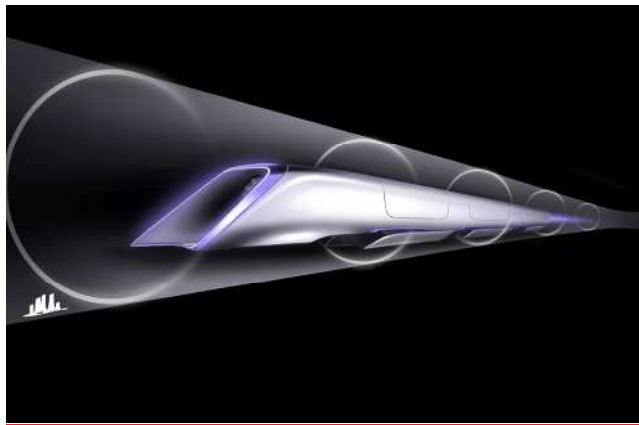
SYSTRA



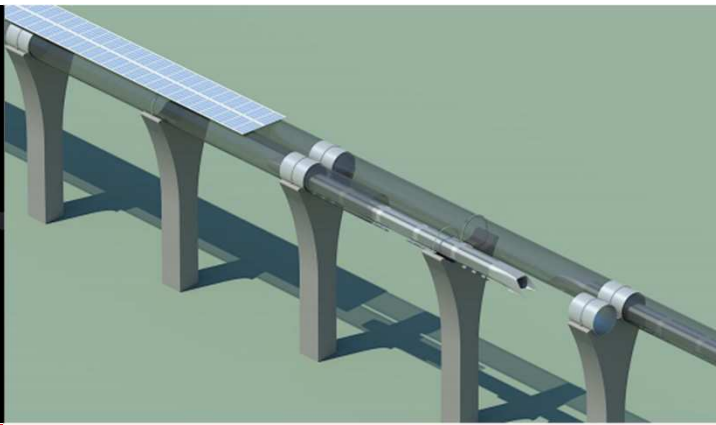
Hyperloop initial concept

From a white paper released and open-sourced in 2013 by Elon Musk

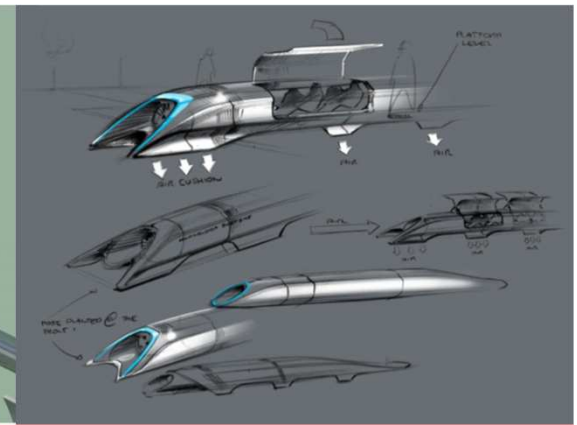
1200 km/h -
Electromagnetic linear
motors



Low pressure tubes



Air bearings or
magnetic levitation



SYSTRA

—○— Several organizations developing the technology

hyperloop | one

HYPERLOOP
TRANSPORTATION TECHNOLOGIES

TRANSP  D



SYSTRA

Several organizations developing the technology

HYPERLOOP TRANSPORTATION TECHNOLOGIES

- Created in 2013 in Los Angeles
- Crowd-sourcing
- Several commercial agreements (EAU, Slovakia, Indonesia, South Korea...)
- Pod construction announced for 2018
- Research center in Toulouse

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- Created in 2014 in Los Angeles
- \$160M funding
- Several commercial agreements
- Several technical demonstrations
- **SYSTRA-Hyperloop One partnership**

TRANSPOND

- Canadian start-up created in 2015
- \$15M funding
- Aim to develop the system by 2020, target a first project in Canada
- Several partnerships among engineering, space, aviation or railway companies

—○ Several organizations developing the technology



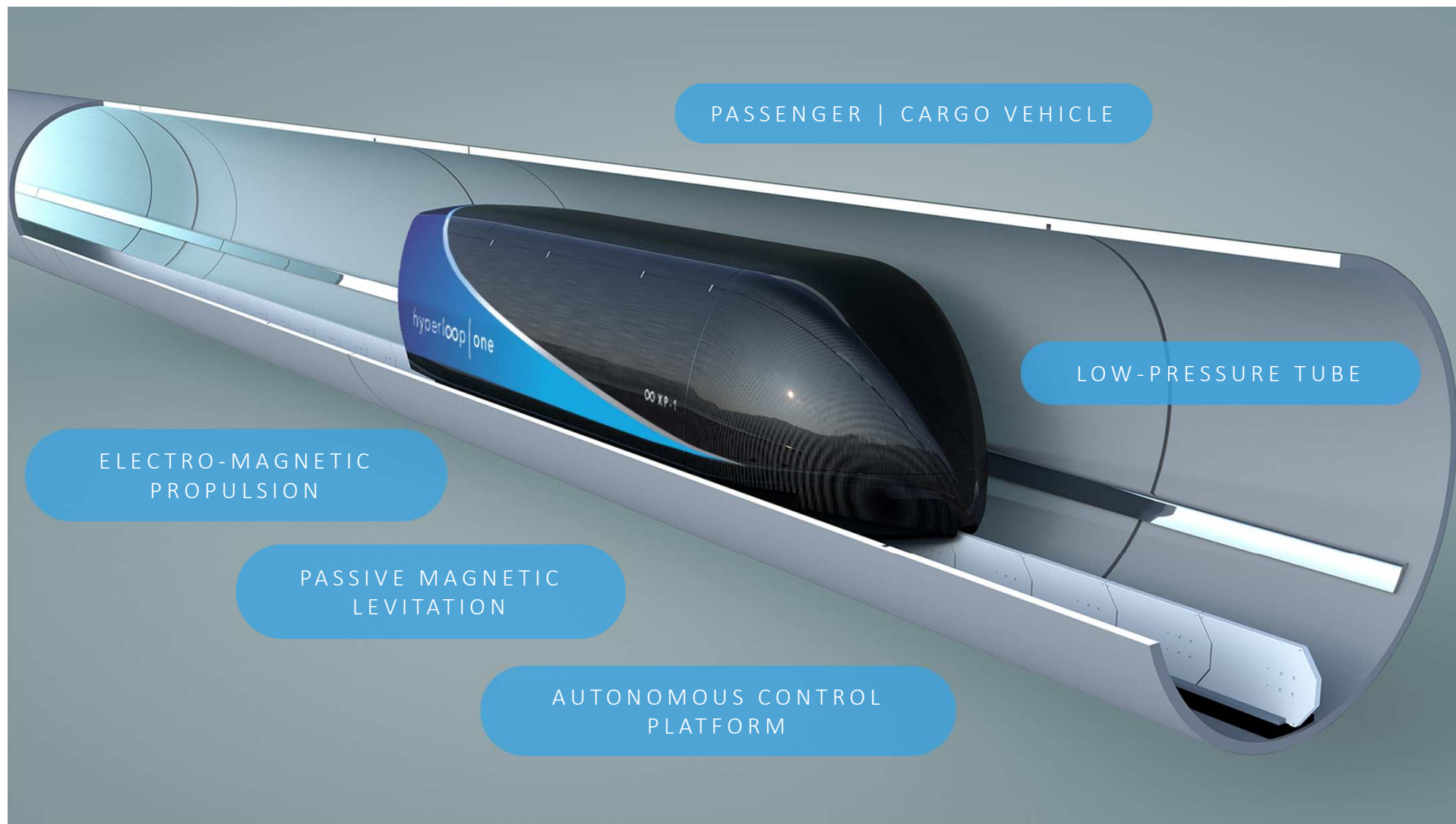
- Company created in 2017
- By former employees of Hyperloop One (including Brogan BamBrogan, a former Hyperloop One co-founder)



- Challenge launched in 2015 by SpaceX
- Mainly students teams
- Goal : build the best Hyperloop pod.
- Test track at SpaceX headquarters

A FOCUS ON HYPERLOOP ONE

HYPERLOOP ONE TECHNOLOGY AND GOALS



PASSENGER | CARGO VEHICLE

LOW-PRESSURE TUBE

ELECTRO-MAGNETIC
PROPULSION

PASSIVE MAGNETIC
LEVITATION

AUTONOMOUS CONTROL
PLATFORM

300 m/s
1080 km/h
670 mph

An aerial photograph of a city, likely Copenhagen, showing a modern transit hub with a circular glass-roofed structure and a large railway yard with many tracks. The city is built on islands with water and green spaces. Three blue text boxes are overlaid on the image.

ON DEMAND DEPARTURES EVERY
MINUTE

DIRECT TO DESTINATION

CONNECTS TO EXISTING
MODES OF TRANSPORT



A Healthier Planet

REDUCE CONGESTION

Curb gasoline use &
emissions

EFFICIENT LAND USE

Space-saving design
above or below grade.
Less disruption to wildlife,
communities, horizons

SUSTAINABLE OPERATIONS

Higher energy efficiency per
passenger mile than most
traditional modes of transport

Superior Economics To High Speed Rail

COST



2/3 costs

SPEED



2-3x faster

BENEFIT



3.5x – 4x
economic
benefits

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Source: Hyperloop One analysis based on multiple route studies globally

ROUTES UNDER STUDY

PROJECTS UNDERWAY IN FIVE COUNTRIES

NETHERLANDS

Pre-feasibility study for a Schiphol airport link.

COLORADO

P3 formed with CDOT/AECOM to undertake feasibility study

PORT OF LA & LONG BEACH

ports to inland locations. Study nearing completion.

SWEDEN – FINLAND

Study of Helsinki-Stockholm route underway

DUBAI - RTA

Phase 1 study for a passenger system between Dubai & Abu Dhabi complete. Phase 2 beginning Spring 2017.

DUBAI – DP WORLD

Completing phase 1 study on applicability, feasibility of technology for port

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REGIONAL CONNECTOR
Stockholm → Helsinki



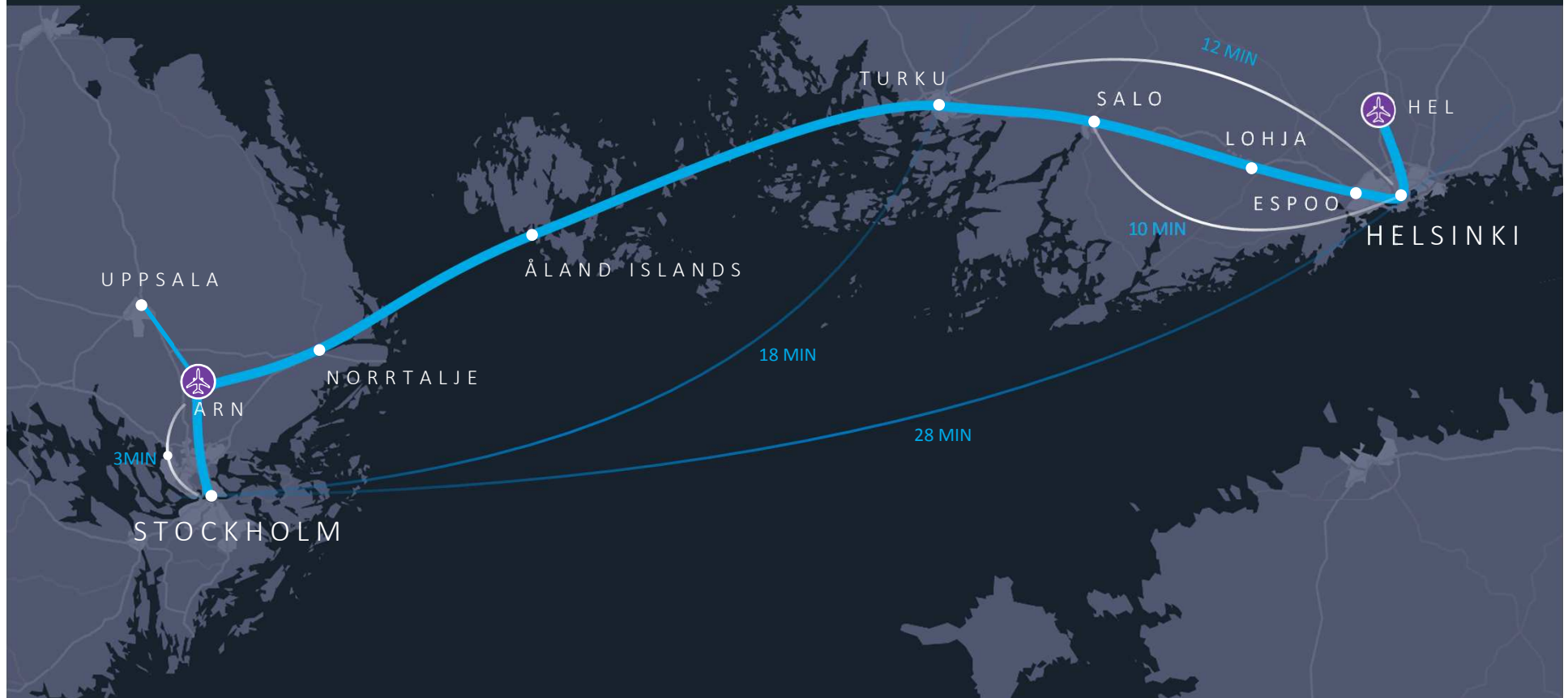
HYPERLOOP
28mins



AIRPLANE
1hr



FERRY
17hrs 30min



INTER-CITY

Dubai → Abu Dhabi



HYPERLOOP
12 min



BUS
1hr 50min



CAR
1hr 30min

ETIHAD
TOWERS



ABU DHABI
INTL AIRPORT

DUBAI MARINA

DUBAI WORLD
CENTRAL

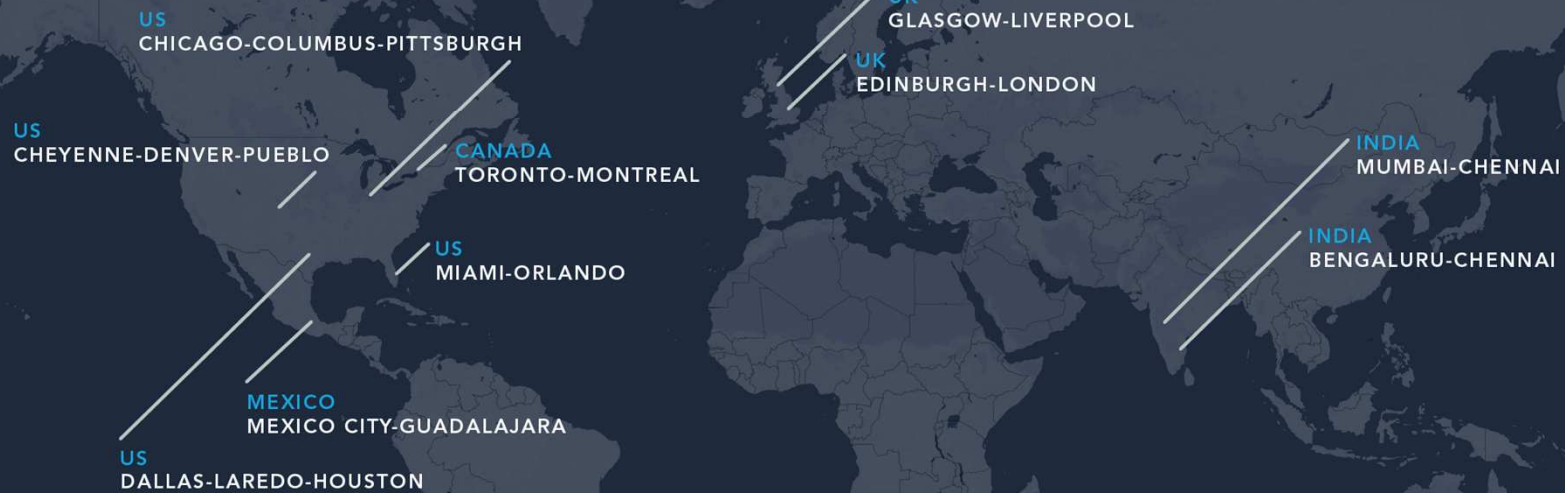
BURJ KHALIFA



DUBAI
AIRPORT



GLOBAL CHALLENGE WINNING ROUTES



© Hyperloop One, © Mapbox, © OpenStreetMap

10 Routes | 3 Continents | 5 Countries

53 urban centers | 6,000+ km | 148+ million people connected

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TECHNICAL DEMONSTRATIONS



Hyperloop One technical demonstrations

May 2016: POAT (Propulsion Open Air Test): First test of a propulsion system (acceleration of a sled up to 116 mph in 1,1s)

Since May 2017: Tests on a full-scale system: Devloop

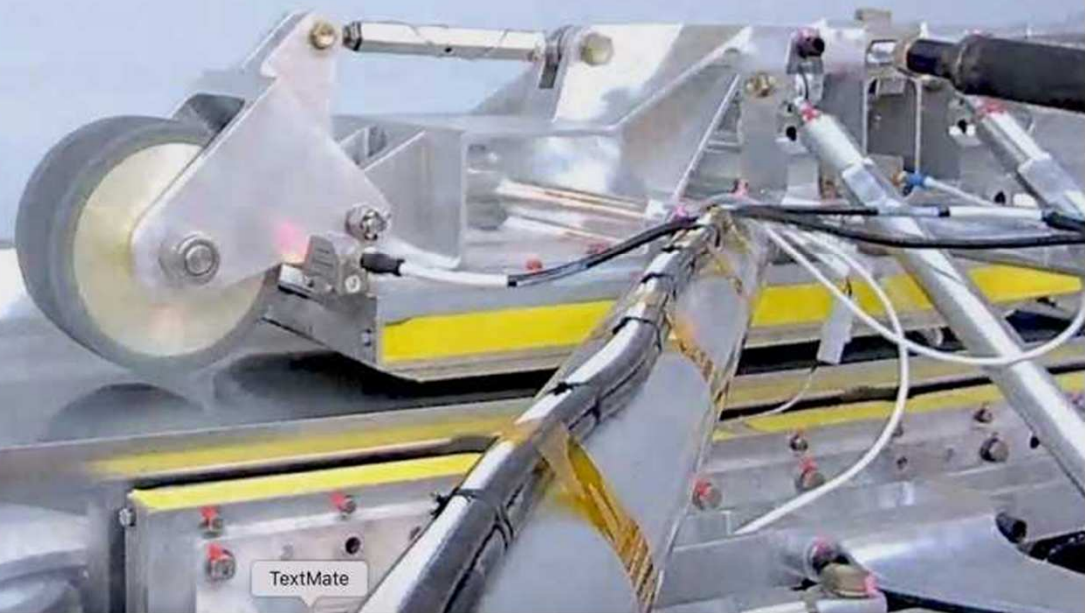


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World's First Full-Scale Full-System Hyperloop Test

MAY 12, 2017

5.3 seconds
30 meters
111 km/h



STATE 2 TESTING | July 2017

NORTH LAS VEGAS, NEVADA

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10.6 seconds
310 km/h
436 meters



XP-1

NORTH LAS VEGAS, NEVADA

First Hyperloop
One vehicle





CONFIDENCE MOVES THE WORLD

[systra.com](https://www.systra.com)

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