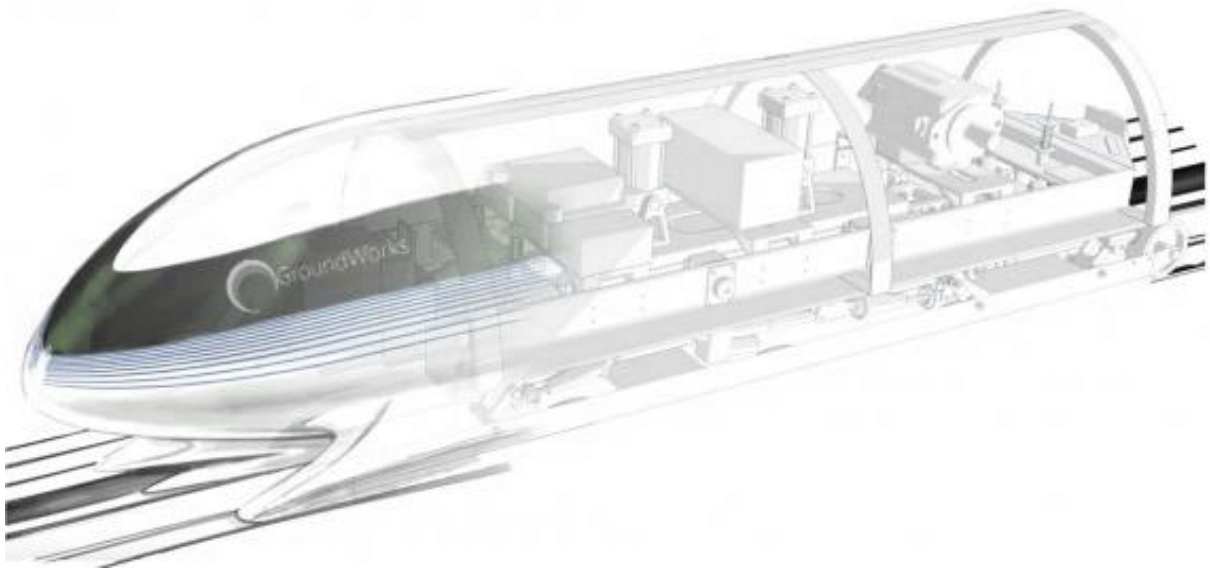


DGWHyperloop



BY DINCLIX GROUNDWORKS (R&D)

www.dinclixgroundworks.com



The following is an outline of the Hyperloop One transportation project of Hyperloop One Inc. This document contains original research performed by Dinclix GroundWorks R&D on the Hyperloop project, DGW presents its own version of the Hyperloop One under Hyperloop One Global Challenge.

The research will be publicly released on Oct 29, 2016 at www.dinclixgroundworks.com/hyperloop.

What is Hyperloop?

Oh come on, we know that 😊



Our version of hyperloop uses EMS levitation system, in the low pressured tube and can achieve speeds up to **1400km/h**. Special additional functionalities like regenerative braking system for the linear induction motor, ultra-aero dynamic designs with least coefficient of drag, etc are the few of its qualities

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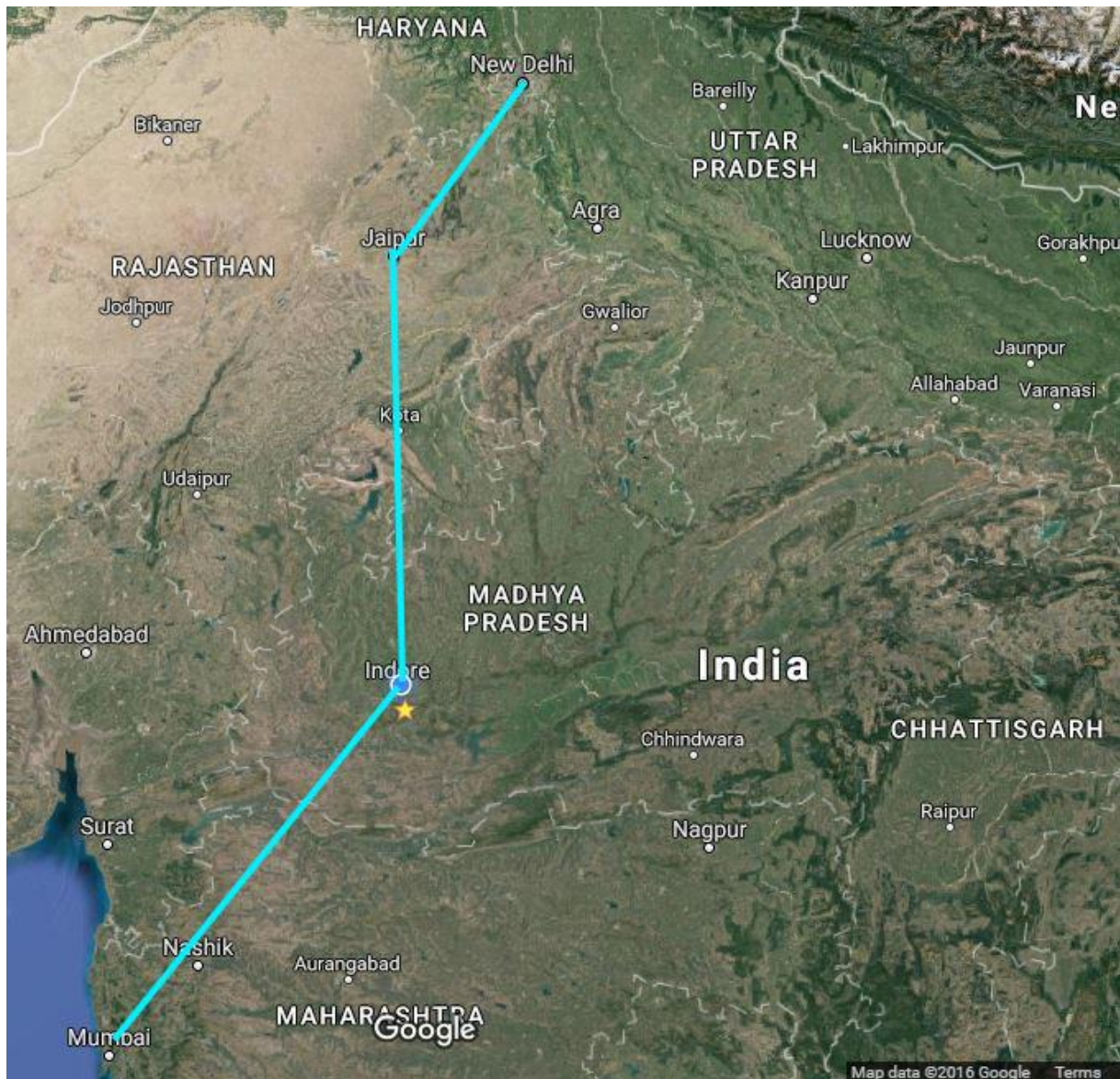
Which cities are we looking up to connect?

The two capitals of India! Delhi, the national capital and Mumbai, the commercial capital are the two of biggest cities in the world, also being the cities with one of the busiest railway and roadway traffic across the country.

Route Map

To connect Delhi and Mumbai, we have two routes in consideration.

#1



The first one starts from Mumbai then to Indore to Jaipur and ends (and starts back) at Delhi.

What makes this corridor special?

The Hyperloop needs to follow a straight route, the following corridor takes turns at two points, both the tier-2 cities, Indore and Jaipur capable of handling the maintenance required for the track and will also work as checkpoints.

PROS:

- More people from other cities would be able to travel.
- All of these cities will be equipped with rescue/evacuation teams and the nearest one would be dispatched if anything goes wrong.
- Landlocked cities of New Delhi, Kota, Jaipur, Indore and Nashik will be able to transport cargo and freight to sea-port of Mumbai and vice-versa.
- Land availability for the project.

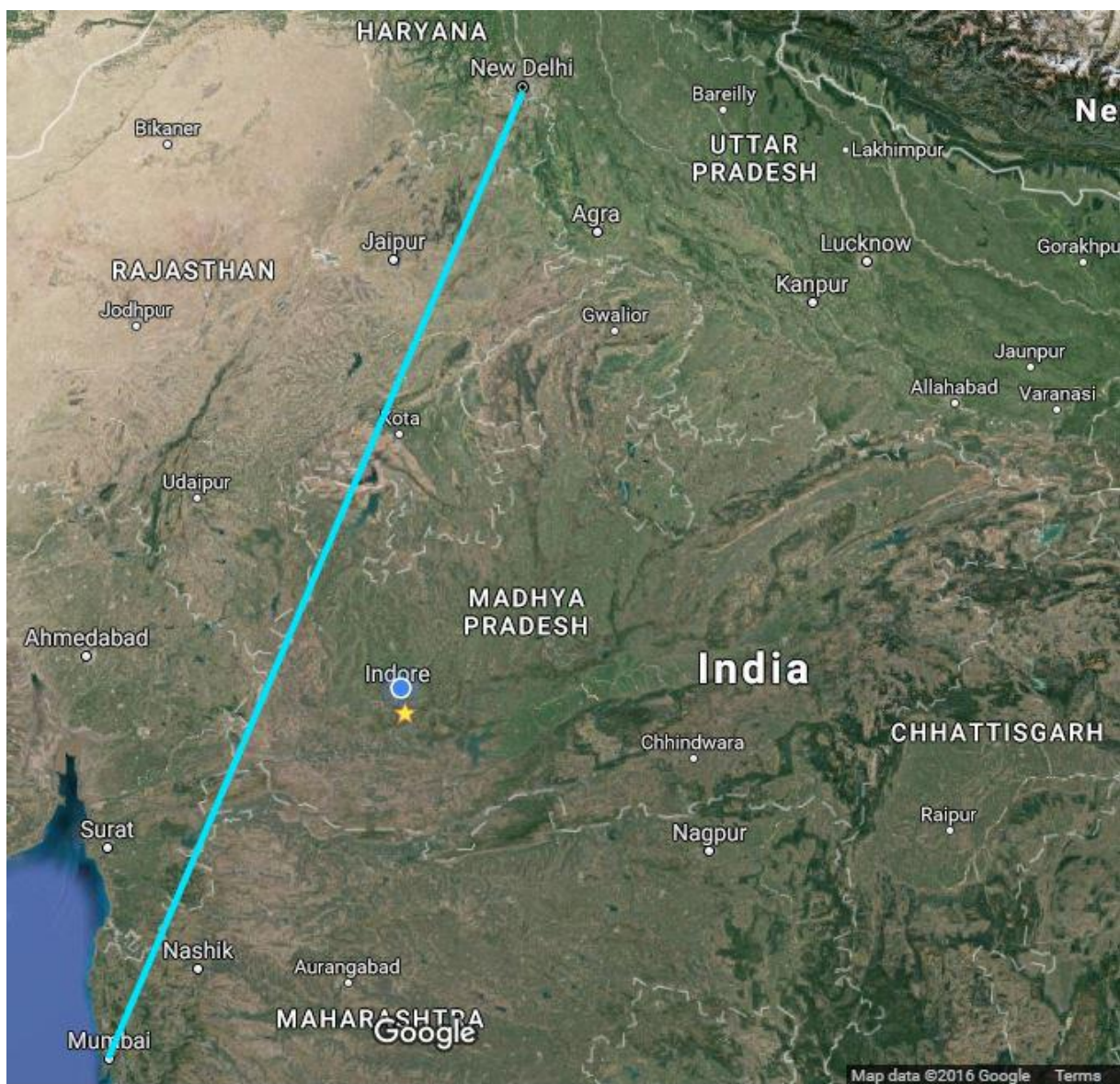
CONS:

- Different policies of different states.
- Long travel time as the track deviates two times.

#2

Delhi-Mumbai direct corridor

This corridor would directly link Delhi and Mumbai, with no checkpoint(s) or stops in between, eventually reducing the travel time and low maintenance cost.



PROS:

- Forms direct connection between Mumbai and Delhi.
- Low maintenance and production cost as only two stations are present.
- Shorter travel duration.
- Pods will run at a constant speed as the corridor is straight.

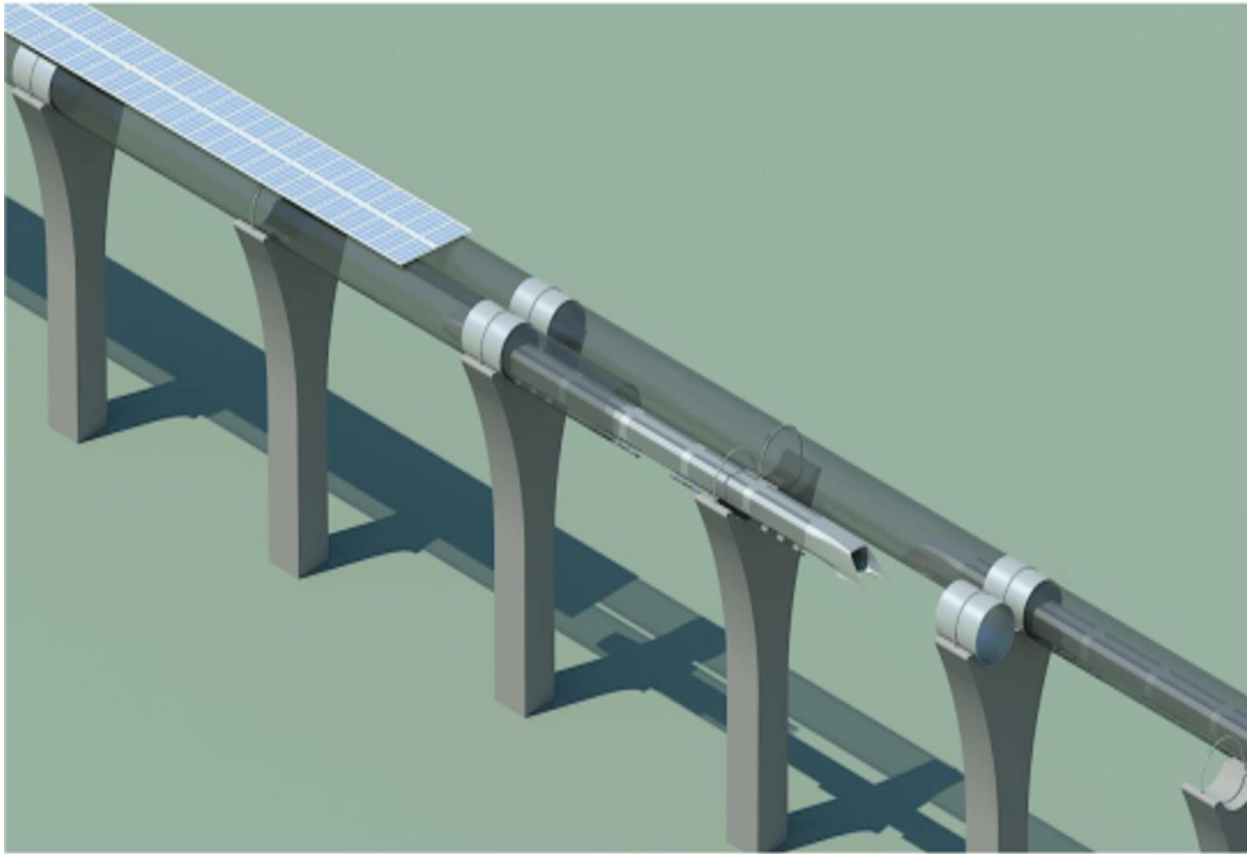
CONS:

- Commuters from other cities won't be able to travel.
- Cargo and freight travel will only exist b/w the two.

Other proposed corridors include Bengaluru-Delhi, Chennai-Delhi, Chennai-Mumbai.

How is the DGW Hyperloop powered?

Solar panels would be placed on top of the tube, providing enough power to keep the pods moving. We estimate that in a country like India, the panels will create more power than what is required to run the Hyperloop, the electricity could be sold to the states at lesser prices.



Solar panels will be installed on the sides too (or rotational panels would be used), to use the energy more efficiently.

DGWHyperloop - Highlights

- An inlet air compressor fan is added at the nose of the pod to help the pod to get rid of any air pressure building ahead of the pod in the tube, also it helps, in propulsion.

Compressed air then pushed out of the outlet section on the pod for extra thrush. For heat management, hot air would go around the pod several times where it would mix with cold water.

- A concrete structure is proposed as the outermost layer, to provide security from any outside damage or anything. It would help in the expansion problem, provide structure a great strength and helps in maintaining partial vacuum pressure in the inner steel cylindrical structure.
- Air sucking vents would be installed in this concrete structure after every 100-200 feet to maintain low pressure inside the steel structure, also these vents would help the tube to re-pressurize the whole hyperloop inner structure in the event of any accident or so
- The compressor fan can also help in the deceleration part. If fan rotates in the opposite direction then it can increase the air drag thus helping the pod to slow down

Pylon structures of course to support the whole System, tight vacuum seals to maintain the 100 pascal

of pressure, solar panels installed on the top of the concrete, help in reducing heat and generate electricity for the liner induction motor to work.

- To cool down the compressed air, cooled water is being used, air should be mixed with this before passing through the outlet valve.
- Regenerative braking system (linear induction motor) to recharge the on board battery pack for power electronics and compressor fan
- For propulsion, a linear electromagnetic induction motor is being used, also for the braking system.
- Wheel support system, for propulsion of the pod in the forward direction, we use the three phases linear induction motor which can give a tremendous amount of forward propulsion force to the pod
- Pod is light, aluminium skeleton with carbon fibre fabrication to meld it into the desired aero dynamic form and it gives the pod it's strength
- Inside the pod there will be sufficient emergency oxygen supply, pod will be pressurized of course, there will be water, food and source of entertainment inside the pod for the passengers
- Our design ensure minimal drag coefficient and lift to drag ratio of 14
- Pod would levitate around 20 mm above the surface and thus reduces the surface contact friction significantly.

Some numbers we estimated

- Cost of Construction: **\$9 Billion***
₹6,04,02,68,45,638
Sixty Thousand Crores, which is actually lesser than the proposed Mumbai-Ahmedabad one-way bullet train project (\$9.7 Billion).
- Price per ticket: **₹1,700 - ₹2,128**
(Mumbai ⇌ Delhi)
- Distance: **1317 Km (Route #1)**
- Travel Time: **48-62 minutes**
- Average waiting time b/w 2 passenger pods: **8 minutes**
- Average time interval b/w 2 cargo pods: **22 minutes**
- Passenger capacity (each pod/trip): **44**

*The cost of production is taken on the baseline of the planned corridor (for the United States), the cost might actually be cheaper in India due to low labour and estate costs.

Which makes the DGWHyperloop better than the proposed MIT Hyperloop and ET3 projects.

The Dinclix GroundWorks CEO and Chairman, Mr. Nipun Khare and Mr. Vivek Tiwari will be meeting His excellency Shri Shivraj Singh Chouhan, hon'ble chief minister of Madhya Pradesh (India) to know the central and state government's stance on the project. Hyperloop One will be informed about the outcomes of the symposium.

a project by



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