

Innovative Logistics Technology & Trends: The Hyperloop



Technology is playing a critical role in shaping the future of logistics.

What is the Hyperloop?

Hyperloop is a technological concept introduced by Robert H. Goddard (considered the father of modern rocketry) and then recognized and further explored by Elon Musk, Founder of SpaceX, Tesla Motors, and SolarCity. Drawing from the initial concept exposed by Robert H. Goddard, Musk proposed the Hyperloop Alpha model.

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The Hyperloop concept is intended to be a high speed transportation system for passengers and cargo that can go from zero to 550 mph in less than one minute while consuming very low levels of energy.

This is achieved by creating a low pressure environment within a tube which carries a capsule that floats on the air with no support other than a magnetic field – magnetic levitation. This capsule is propelled using a low energy electrical motor and is capable of traveling at higher and faster speeds due to the absence of physical friction and low air resistance.

Think of the Hyperloop as a supersonic train floating on its track through the use of magnetism and contained within a tube with almost no air resistance.

HOW THE HYPERLOOP WORKS

Elon Musk said that if the Concorde, a railgun and an air-hockey table had a three-way, the hyperloop would be the love child. Here's a look inside Hyperloop Tech's high-speed cargo pod.

COMPRESSOR Mounting a giant compressor fan on the front of the capsule is what makes the hyperloop possible, transferring huge volumes of air away from the nose. Without it, the pod would be pushing all the air in front of it, like a syringe, or you'd have to spend big bucks on a bigger tube. Respect the Kantowitz limit—the top speed allowable given a tube-to-pod-area ratio.

VACUUM TUBE Capsules will travel in a near-vacuum to reduce drag significantly. Valves and pumps will keep internal air pressure at about 100 Pascals, or one-thousandth the air pressure at sea level. A little nitrogen may be injected into the tube as a desiccant.



AIR BEARINGS The capsule will ride on a cushion of air pumped from the bottom of lunch-tray-size sleds. Landing gear may need to be deployed as it comes to a stop.

PAYLOAD Hyperloop Tech's cargo capsule will be about 70 feet long, big enough to hold a standard 40-foot intermodal container. The capsule should weigh about 68,000 pounds and could theoretically accelerate from zero to 750mph in less than a minute.

PROPULSION The Hyperloop capsule speeds along a "magnetic river" propelled by linear induction motors spaced along the tube or installed as a continuous strip. Linear induction, used on maglev trains and the Toei Ōedo Line in Tokyo's subway, has no moving parts and low maintenance costs.

Source: Forbes

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How could it contribute to the Logistics and Supply Chain Industry?

It is difficult to understand *all* the contributions this technology will bring to the industry but we can draw some logical conclusions based on the information that has been released so far.

The most obvious contribution this invention will make to the industry is increasing cargo delivery speeds. According to Port Technology, the Hyperloop can reach speeds of over 550 mph. This can easily turn what is now a 3 hour trip into 10 minutes.

With the capsule moving at such quick speeds it will induce more frequent departures, eventually leading to on-demand transport with cargo leaving as much as every other minute.

It is capable of holding a standard 40-foot intermodal container and has built in cargo security due to it operating in a point-to-point secured and dedicated environment – a tube.

Hyperloop also has major contribution potential for green supply chains. It is a carbon free mode of transportation that can also help alleviate traffic congestion on busy highways where trucks produce significant amounts of air pollution. While at the same time significantly reducing transportation costs due to low energy consumption.

Not only is inland freight transportation revolutionized by this capsule, but also ocean and air freight transportation. It can transport cargo through tunnels, above ground and underwater.

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What is the Status of the Hyperloop?

It is a reality! It was recently tested and publicly demonstrated on May 11, 2016 in the Nevada.

One of the companies leading the development of the Hyperloop is Hyperloop One, a company based out of Los Angeles and lead by former Cisco president Rob Lloyd. The company was co-founded in 2014 by a former SpaceX propulsion engineer and venture capitalist Shervin Pishevar.

With more than 150 employees the company has already raised more than 100 million dollars in funding from multiple investors - including the French National Rail Company and GE Ventures. The company has partnered with a number of companies with experience in design, construction and manufacturing to bring this project one step closer to reality.

What's next for Hyperloop?

Finland, Sweden, The Netherlands, Switzerland, Dubai and the United Kingdom are conducting feasibility studies while the city of Moscow has signed a deal with Hyperloop One to explore building high-capacity passenger systems connected to Moscow's transportation grid.

The good news is that the company will be first targeting freight transportation with the goal of testing this innovative technology without putting at risk human lives. As per Rob Lloyd, CEO of Hyperloop One, the company expects to move cargo by 2019 and passengers by 2021.

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To learn more about the Hyperloop One Company and the progress they are making on this revolutionary logistics technology, you can visit their website or follow them on Facebook. On their Facebook page, you can keep track of the progress there are making almost in real-time.

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