



WHITEPAPER

Arab Hyper Loop

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what is a hyperloop? and how revolutionary is it?

Although still widely regarded as a futuristic means of travel that might require more decades of research and trials, a hyperloop is simply a transportation system where human-loaded pods which look quite similar to capsules are pushed through a system of tubes with reduced pressure so pods fly at the maximum speed possible, from an point A to point B.

Compared to the maximum speed available to airplanes which nears 804.672 km/h, hyperloops will help humans save a lot of time and effort while traveling around. However, one of the main challenges to the development of this new near fantasy-like system is its need for thousands of kilometers of well-built tubes on the ground, requiring huge work on the part of infrastructure and construction developers.



Futuristic technology

Hyperloop consists of transporting capsules that can contain people or goods at very high speed, via tubes, out of transport “pipelines”. While technical challenges remain (passenger safety, vacuuming, air flow management), the project is progressing around the world, thanks to a commitment to collaboration and open innovation shared by all stakeholders. To date, a German team has just reached a speed of 436 km/h for one of its capsules, a record!



Hyperloop is a Futuristic Concept That Promises to Revolutionize Transport

Virgin Hyperloop One is a startup aiming to commercialize a high-speed transportation concept called Hyperloop. Formed in 2014 by venture investor Shervin Pishevar as Hyperloop Technologies, it was renamed Hyperloop One soon after. Billionaire Richard Branson invested in the startup in 2017, became its chairman, and rebranded it as Virgin Hyperloop One.

The idea for Hyperloop came from Space X and Tesla chief Elon Musk back in 2013. Musk believed that small pods running at high speeds could carry passengers or cargo in a frictionless, air-resistance free tube. The pods would theoretically reach speeds of up to 760 miles per hour, drastically reducing land travel times.

The pods would be different from traditional rail lines in that they would levitate above ground through the use of magnets, and the vacuum created inside the tube they would run in would allow the pods to maximize their speeds, according to the basic design Musk had proposed.

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HYPERLOOP TECHNOLOGY MARKET

MARKET BY REGION



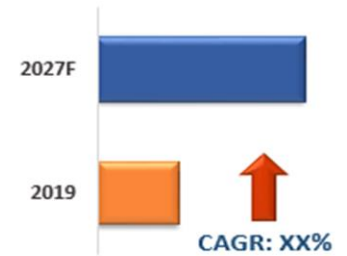
MARKET BY CARRIER TYPE



High speed of hyperloop technology in comparison to other modes of transportation

Lack of knowledge about the hyperloop transit system

MARKET SIZE



INCREMENTAL GROWTH

USD XX BN

MARKET STUDY PERIOD

HISTORIC YEAR: 2019
BASE YEAR: 2020
FORECAST YEAR: 2021-2027

MARKET BY COMPONENT

The tube segment dominates the market, this is mostly because tubes make up a significant portion of the hyperloop infrastructure and are available along the whole path. The hyperloop pod moves through tubes, which are enclosed lanes or tracks. To lessen air resistance to capsule motion, the tube is kept at nearly vacuum pressure. By positioning vacuum/pressure/evacuating pumps at regular intervals along the tube's length and maintaining a pressure of roughly 5 to 6 pounds per square inch, the near-vacuum atmosphere inside the tube is managed. These tubes are currently composed of steel.



The potential upside of Hyperloop technology is tremendous. If it can achieve commercial viability, Hyperloop technology promises to revolutionize land transport. Hyperloop will be cheaper and faster than any form of land transport available today. It would also be environmentally sustainable and would require less time to build than rail networks once the idea has been engineered to reality. The economic benefits of potentially easing pressure on roads and railways in urban centers around the world would also be numerous.

In addition to Virgin Hyperloop One, other companies like Hyperloop Transportation Technologies (HTT) and Transpod are also aiming to be pioneers of the field. According to the NYT, HTT has \$42 million for research and development on Hyperloop, while Canadian firm Transpod has secured \$52 million in venture funding to build Hyperloop technology.



Test Track

Already involved in the Dubai desert, the Hyperloop project is taking steps to establish itself in the Saudi neighbor. The partnership framework involves developing and testing the technology in Saudi Arabia, creating a 35km long track near King Abdullah's economic city, and conducting a study on the economic impact the project could have on the region.



Emirati Investors Back Hyperloop with Megaprojects

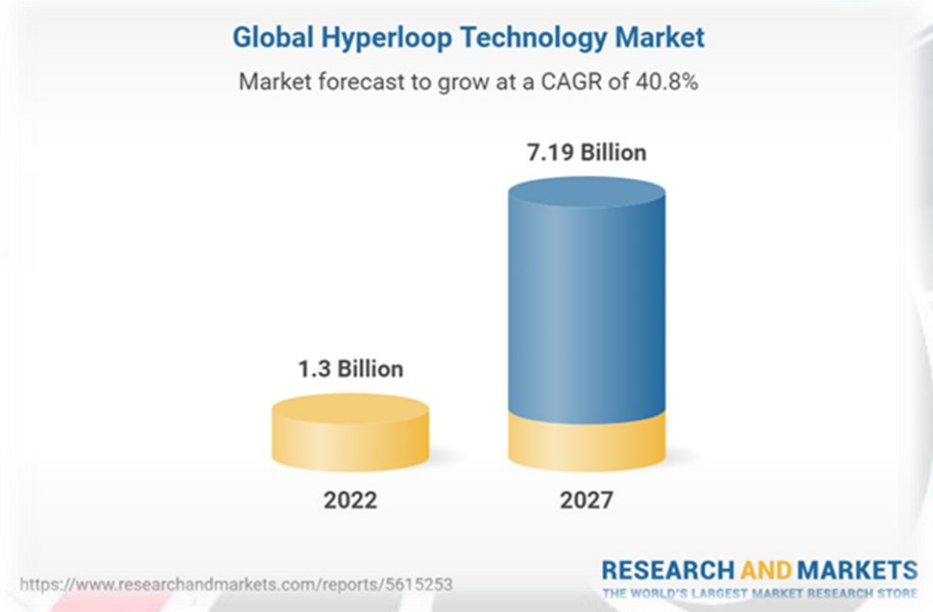
In October 2018, Business Insider reported that HTT was aiming to build a Hyperloop for the transportation system of Abu Dhabi by late 2019. A statement released by the company said that it had signed a contract with state-controlled Aldar Properties to build a ten-kilometer Hyperloop track on the border with Dubai.

In January 2019, Gulf News claimed that the proposed pod for this endeavor had already been assembled in Spain and left for Toulouse in France for a test run, where a prototype track had been specially set up for the purpose. A top executive told Gulf News that the cost of building the Hyperloop would be \$40 million per 0.6 miles.

Although the end goal of the project is to link Abu Dhabi to neighboring Dubai, the first phase is expected to be functional by 2020. Abu Dhabi is 93.2 miles away from Dubai, and the total cost of building the Hyperloop according to recent estimates would run in excess of \$6 billion. Chairman HTT Bibop Gresta believes this amount is recoverable within eight to fifteen years of the Hyperloop becoming functional.

Besides Abu Dhabi, Dubai is also betting big on Hyperloop. In April 2018, The National reported that Virgin Hyperloop One had struck a deal with DP World to build a new transport network in Dubai which could ferry goods all over the world in just 48 hours using Hyperloop technology. A statement released by DP World CEO Sultan Ahmed bin Sulayem (who also sits on the board of Virgin Hyperloop One) revealed that the venture would be named DP World Cargospeed.

DP World Cargospeed would peak hours, but switch to peak hours. According to deliver airspeed for the price connect ports to global to businesses and would eventually replace cut warehouse space as well.



aim to serve passengers in consumer goods during off-Sulayem, Cargospeed would of transport by land, and supply chains. Catering both individuals, the new system heavy lorries on roads and

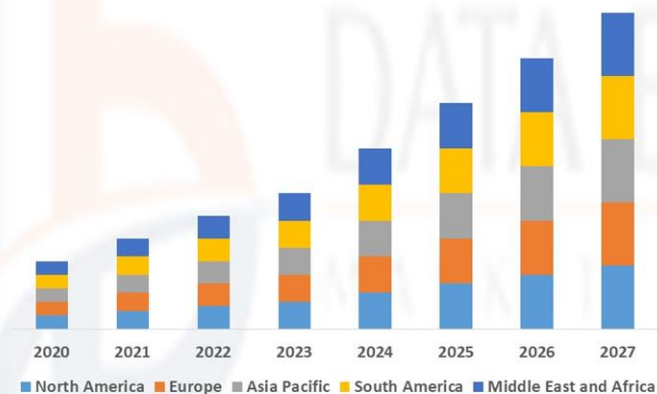
Virgin Hyperloop One claims that it has already reached more than half the maximum speed of 760 mph during testing in Nevada. It is also in the process of negotiating Hyperloop deals in India and Saudi Arabia, although The Verge contends that the deal with the Saudis has already fallen through.

The Middle East is taking the train of progress

In the United Arab Emirates, the Hyperloop TT project hopes to rally Abu Dhabi to Dubai in a few minutes by 2020; in Saudi Arabia, Virgin Hyperloop One makes the following bet: if the development is going well, it will take 76 minutes to travel from Riyadh to Jeddah, compared to more than 10 hours at present. You can't stop progress!

About this partnership, Monahud A. Helal, Secretary-General of the Economic Cities Authority, said: „As we continue to help deliver the strategic pillars of Vision 2030, technology transfer and high-tech job creation opportunities that this relationship will bring are fundamental to our progress as a nation. Having hyperloop at King Abdullah Economic City is going to act as a catalyst for a Saudi Silicon Valley effect and galvanize our software development, high technology research, and manufacturing industries.”

Global Hyperloop Technology Market is Expected to Account for USD 13,322.88 Million by 2029



Global Hyperloop Technology Market, By Regions, 2022 to 2029



DATA BRIDGE MARKET RESEARCH



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Saudi Arabia is the largest country in the region by land and influence. We have this idea of a connected Gulf coming out like a spider web from the kingdom. It plays into the country's 2030 Vision... our transport network could create a new backbone for the region.

The Hyperloop could potentially deliver a maximum journey length of one hour between any two points in the Gulf.

We want to connect the region a way that hasn't been done before, adding that desert environs present some unique engineering challenges, such as hot temperatures, sandy tracks and errant camels.

In the Gulf, governments have the chance to build something new as there is less legacy. There is a lot of infrastructure to build, adding that the joint MoU would generate valuable data" that the kingdom could export globally in time.

Virgin is also working towards a project in Dubai for port operator DP World and on a system connecting the Indian cities Mumbai and Pune.



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In June, Virgin partnered with the Mohamed bin Zayed University of Artificial Intelligence (MZUAI) in the UAE to work on next generation solutions to help power the Hyperloop also use new Technology like blockchain technology and artificial intelligence.

Our partnership with Arab Hyperloop is helping us to build a local ecosystem of AI-qualified professionals who understand our business. We are very software-led – we are looking to be a company that is empowered by software and blockchain technology, which makes us better and safer over time.

Across the Middle East, Virgin Hyperloop has plans for 4,000km of track. We could also radically hasten freight and logistics speeds across the region.

In 20 years time, you will see the Hyperloop moving the majority of people between Neom [smart city] and the rest of Saudi Arabia. We are enabling a whole new future of movement, which will be fast and run on sustainable energy, we added – citing either solar or green hydrogen as possible fuel sources.

It's just going to be a game-changer where people will be able to live in one Gulf country and work in another. The Gulf region could have the world's first national scale network and that's exciting.

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Virgin Hyperloop has already conducted over 500 tests, with investors including DP World and Abu Dhabi Capita Group.

Roadmap



Ecosystem

Structural point of view

Hyperloop and all connected service providers would make up an ecosystem themselves. From a customer's point of view, some actors in this ecosystem are already connected, while other players are not yet fully integrated, such as the surrounding services. A loose coupling of the involved players could be provided by vouchers offered by Hyperloop.

Technical point of view

An ecosystem is defined by data streams among different companies and their underlying IT systems. Some of these data streams may be defined and empowered by the offering of APIs on one or both sides of the connection. Other data streams may exist, but not yet be supported by an automated integration.

Tokenization

The method chosen to build an integrated ecosystem is tokenization, i.e. the transfer of participating values and assets into tokens that act like value representatives or vouchers with a specific sense in the ecosystem that is being created.

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Tokens can be configured as transferable, partial, controllable and can be restricted in their use due to location, time or events.

It is worth remarking that, when tokenizing values and assets that can be part of that future ecosystem, Hyperloop can also check on possible transformations of existing value-based systems, such as any reward program where a customer can collect points for each ticket purchase.

Blockchain

Blockchain is the perfect technology to build tokenized ecosystems, for various reasons, among which:

The value created on a blockchain can be personalized and shared within all actors while keeping the ecosystem decentralized;

The concept of “trust-less trust”, itself part of the new paradigm introduced by blockchain technology, makes it easier for new participants to decide whether or not to become part of the ecosystem;

The client can preliminarily evaluate and constantly monitor the real benefit of being part of a decentralized ecosystem, thus implicitly strengthening the whole ecosystem while also acting towards his/her own benefit (virtuous cycle).

Technically, the basic idea behind the integration of existing players into a new build “off-chain” is to represent all parts of a common “journey” by tokens on a blockchain, meaning single travels (or traveled miles), services, catering, hotel bookings, local transport or other assets that bring value to the overall journey made by a customer via Hyperloop, which

can be saved in the customer's personal wallet. The customer may then transfer these assets, wholly or partially, even selling them or giving them back to the issuer. The use of a specific asset is carried out by transferring the corresponding tokens from the customer's wallet to those of the service provider.

Roles

- Hyperloop (issuing entity) defines new tokens to become part of the ecosystem, e.g. when a new provider is included.
- The provider can offer Hyperloop tokens for sale on a dedicated platform.
- The collector transfers tokens from users to providers, either automatically or through human intervention.
- The consumer uses the wallet to hold and monitor the balance of tokens.

Processes

- The initial sale of tokens (ICO/IEO)
- Collection of tokens
- Transfer of tokens

Issuance of new tokens for new assets offered by new providers – These tokens can be organized in clusters (like travel, food or accommodation) and can be (independently) redeemed for their initial purpose and also be bought later to refill the personal balance. The type of token representing the services offered by any new provider could be issued by Hyperloop directly and be redeemed per driven mile in a long-distance Hyperloop journey (billing per mile model).

Usage of tokenized assets

A big benefit is given in time-, location- or event-based conversions between different assets represented by the various types of Hyperloop tokens, like the case of:

- **Suspension of a Hyperloop route: Option to convert "Distance Token X" to "Taxi Token Y"**
- **Train delay: Subsidized conversion of distance tokens to hotel tokens or subsidized supply of food vouchers**
- **Advertisement: Airdrop of vouchers for specific events at specific locations**
- **These conversions could be offered automatically, based on specific parameters which would - trigger the clauses programmed in a set of interdependent smart contracts.**

Tokenomic

Total supply: 1.000.000.000

Buy: 3 %

Fairlaunch: 500.000.000 (50%)

Sell: 3 %

auto reflection to all Holder 1%

Ecosystem: 250.000.000 (25%)

auto Liquidty generator (benefit System 1%)

Exchange: 100.000.000 (10%)

(Kucoin & Gate.io)

Marketing: 100.000.000 (10%)

Bounty: 50.000.000 (5%)

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Validation and Implementation

MVP

For each asset, a specific token is created, representing the balance of such asset, and, for each token, a reverse token is created, simulating the claim to this asset when the service is provided to the users. The aforementioned token is connected to a “duty”-token that blocks the recipient from refusing the claim.

All tokens are initially stored in wallets that are owned by Hyperloop, which acts as the central issuer.

Every purchased travel should lead to a wallet assigned to a specific user, holding the purchased and claimed tokens.

The API used for the simulation in the context of the MVP must support the following operations:

- Booking a journey via mobile app and paying for it
- Creating a wallet and purchasing tokens
- Transferring tokens
- Clearing
- Evaluation

The outcome of the testing phase will not lead to a near-term implementation but will function as the basis to understand the potential of a specific use case of tokenization in the Hyperloop ecosystem.

Conclusions

Though building an open and integrated solution for Hyperloop is quite a challenge and additional demands may arise from regulators and consumer protection entities, blockchain-based tokenization can really help in getting one step closer to a real implementation of a first version of such 4.0 ecosystem for Hyperloop. On top of everything that has been said already, tokenization can expand company-wide insights to market-wide insights, build new distribution channels, affecting logistics, and markets, while enabling Hyperloop to better understand and know the customers and their wishes.



Who takes credit for developing hyperloops?

The internet will instantly tell us that it's Elon Musk's idea, considering that he was the very first person to mention it publicly in 2012, suggesting that a solar-powered hyperloop can offer a transportation system that is twice as fast as planes.

Yet, it's too early to attribute the whole system to anyone or any company before we actually see a successfully working accident-free system in reality.

Do you think traveling through a hyperloop is going to be a practical means of transportation anytime soon? Where will hyperloops be needed the most and when is it going to be ready for human everyday use?

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