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The Greatest Inventions of Elon Musk

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1. Tesla Motors

Tesla, Inc. (formerly Tesla Motors) is an American company that specializes in electric vehicles, energy storage and solar panel manufacturing based in Palo Alto, California. Founded in 2003, the company specializes in electric cars, lithium-ion battery energy storage, and residential photovoltaic panels. The additional products Tesla sells include the Tesla Powerwall and Powerpack batteries, solar panels and solar roof tiles.

CEO Elon Musk said that he envisions Tesla as a technology company and independent automaker, aimed at eventually offering electric cars at prices affordable to the average consumer. The company was named after the electrical engineer and physicist Nikola Tesla by company co-founders Martin Eberhard and Marc Tarpenning.

The company's Model S was the world's best-selling plug-in electric car in 2015 and 2016. Global sales of the Model S reached the 200,000 unit milestone during the fourth quarter of 2017. In September 2015, the company released its Model X, a crossover SUV. The Model 3 was released in July 2017. Tesla production passed 300,000 vehicles in February 2018.

Tesla operates multiple production and assembly plants, notably Gigafactory 1 near Reno, Nevada and its main vehicle manufacturing facility at Tesla Factory in Fremont, California.

The Gigafactory primarily produces batteries and battery packs for Tesla vehicles and energy storage products [1].

2. *SpaceX*

Space Exploration Technologies Corp., doing business as SpaceX, is a private American aerospace manufacturer and space transport services company headquartered in Hawthorne, California. It was founded in 2002 by entrepreneur Elon Musk with the goal of reducing space transportation costs and enabling the colonization of Mars. SpaceX has since developed the Falcon launch vehicle family and the Dragon spacecraft family, which both currently deliver payloads into Earth orbit.

SpaceX's achievements include the first privately funded liquid-propellant rocket to reach orbit (Falcon 1 in 2008), the first privately funded company to successfully launch, orbit, and recover a spacecraft (Dragon in 2010), the first private company to send a spacecraft to the International Space Station (Dragon in 2012), the first propulsive landing for an orbital rocket (Falcon 9 in 2015), the first reuse of an orbital rocket (Falcon 9 in 2017), and the first privately funded space agency to launch an object into solar orbit (Falcon Heavy's payload of a Tesla Roadster in 2018).

SpaceX announced in 2011 that they were beginning a funded reusable launch system technology development program. In December 2015, a first stage was flown back to a landing pad near the launch site, where it successfully accomplished a propulsive vertical landing. This was the first such achievement by a rocket for orbital spaceflight [2]. In April 2016, with the launch of CRS-8, SpaceX successfully vertically landed a first stage on an ocean drone ship landing platform.

In September 2016, CEO Elon Musk unveiled the mission architecture of the Interplanetary Transport System program, an ambitious privately funded initiative to

develop spaceflight technology for use in manned interplanetary spaceflight. If demand emerges, this transportation architecture could lead to sustainable human settlements on Mars over the long term.

3. PayPal

PayPal Holdings, Inc. is an American company operating a worldwide online payments system that supports online money transfers and serves as an electronic alternative to traditional paper methods like checks and money orders. The company operates as a payment processor for online vendors, auction sites, and other commercial users, for which it charges a small fee in exchange for benefits such as one-click transactions and password memory.

Established in 1998 as Confinity, PayPal had its initial public offering in 2002, and became a wholly owned subsidiary of eBay later that year.

In 2014, eBay announced plans to spin-off PayPal into an independent company by mid-2015 and this was completed on July 18, 2015.

In 2018, eBay announced that after the existing eBay-PayPal agreement ends in 2020, PayPal will remain a payment option for shoppers on eBay, but it won't be prominently featured ahead of debit and credit card options as it is today. PayPal will cease to process card payments for eBay at that time.

4. Hyperloop

A Hyperloop is a proposed mode of passenger and/or freight transportation, first used to describe an open-source vactrain design released by a joint team from Tesla and SpaceX. Drawing heavily from Robert Goddard's vactrain, a hyperloop is a sealed tube or system of tubes through which a pod may travel free of air resistance or friction conveying people or objects at high speed while being very efficient.

Elon Musk's version of the concept, first publicly mentioned in 2012, incorporates reduced-pressure tubes in which pressurized capsules ride on air bearings driven by linear induction motors and air compressors.

The Hyperloop Alpha concept was first published in August 2013, proposing and examining a route running from the Los Angeles region to the San Francisco Bay Area roughly following the Interstate 5 corridor. The paper conceived of a hyperloop system that would propel passengers along the 350-mile (560 km) route at a speed of 760 mph (1,200 km/h), allowing for a travel time of 35 minutes, which is considerably faster than current rail or air travel times. Preliminary cost estimates for this LA–SF suggested route were included in the white paper – US\$6 billion for a passenger-only version, and US\$7.5 billion for a somewhat larger-diameter version transporting passengers and vehicles – although transportation analysts had doubts that the system could be constructed on that budget; some analysts claimed that the Hyperloop would be several billion dollars over budget, taking into consideration construction, development and operation costs [3].

The Hyperloop concept has been explicitly *open-sourced* by Musk and SpaceX, and others have been encouraged to take the ideas and further develop them.

References:

1. Mode of access: [https:// en.wikipedia.org/wiki/Tesla, Inc.](https://en.wikipedia.org/wiki/Tesla,_Inc.) – Date of access: 17.03.2018.
2. Mode of access: <https://en.wikipedia.org/wiki/SpaceX.> – Date of access: 19.03.2018.
3. Mode of access: <https://www.indiatimes.com/lifestyle/self/11-great-inventions-by-elon-musk-that-are-changing-the-world-we-live-in-334060.html>. – Date of access: 19.03.2018.