Book the next rocket to New York? What it'll take to realize Elon Musk's bizarre travel plan

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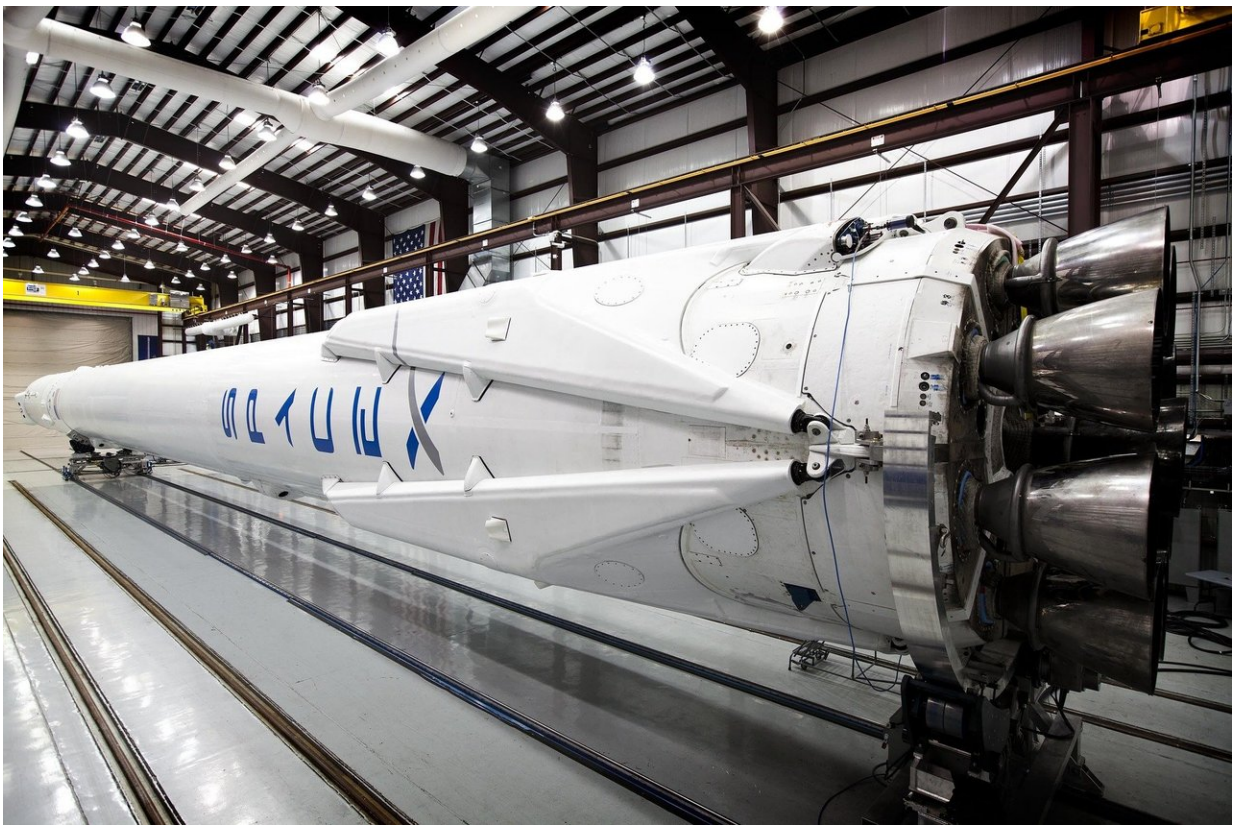

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SpaceX Chief Executive Elon Musk envisions a time in the near future when long-distance travelers on Earth can hop on a rocket to go across

the globe in less than an hour.

But before Musk can set his plans in motion, there are a few down-to-Earth logistics questions he'll have to answer first.

Under the plan announced last week by Musk, passengers would board a large rocket and spacecraft system known for now as BFR. The rocket would hurtle passengers into space, before the first-stage booster returns to Earth and the spacecraft and second-stage continues on to touch down at its destination.

A video Musk showed during his keynote speech at the International Astronautical Congress in Adelaide, Australia, said the maximum speed of the vehicle would be about 16,000 mph. That would make a trip from New York to Shanghai as short as 39 minutes.

Questions remain about some technical details of the transport system, as well as what kind of market it would serve. But several analysts said Musk's vision at least forces people to think out of the box about supersonic or hypersonic passenger travel. (Supersonic flight is anything faster than the speed of sound, or Mach 1; hypersonic is generally regarded as Mach 5 or faster.)

Musk's ideas, and the actions behind his ideas, broaden minds about the "future of movement," said Megan Ryerson, an assistant professor of city and regional planning and electrical and systems engineering at the University of Pennsylvania.

"And I think that is exciting, even if there are a lot of kinks to work out," she said.

Here are some of those considerations.

The sonic boom that ripples outward after the first-stage booster lands would probably force the takeoff and landing areas to be several hours outside of major metropolitan areas the system is intended to serve.

That could make travelers think twice about whether a rocket trip would be worth it. The video shown by Musk at last week's space conference depicts a group of passengers boarding a speedy ship to reach a floating platform with the rocket far off the coast of New York City.

The computer-generated animation also shows the rocket landing on a similar floating platform far off the coast of Shanghai.

"You may end up saving some number of hours, but you would have to get to the launch site, and then you'd have to launch and then you'd have to arrive at the destination," said Richard Wirz, a professor at UCLA and director of the university's Plasma and Space Propulsion Laboratory. "There would have to be hours on either end of you embarking and disembarking on your trip."

Ryerson said passengers already have to decide that kind of trade-off when determining whether to travel a potentially further distance to a larger airport with nonstop flights, versus a closer, but smaller airport that offers trips with more layovers.

"While a trip to the rocket launcher might be longer for some people, presumably you would make all that up with the time savings in the air," she said.

On the plus side, the flights themselves would be very fast: Musk said in his presentation that most long-distance trips would take less than 30 minutes and that passengers could reach anywhere on Earth in less than an hour.

Several analysts pointed to the supersonic Concorde jetliner as an example of a speedy, but expensive, transportation option whose tiny market was not profitable enough.

The plane could cut travel times in half, but it was ultimately challenged by high maintenance costs, limited routes and ultra-high ticket costs. After 27 years of service and a catastrophic fatal crash in 2000, the Concorde touched down for the last time in 2003.

"It was very much a niche market," said Ray Jaworowski, senior aerospace analyst at market research firm Forecast International. "I don't think a whole lot has happened in the intervening years to change that."

Although speed is an important factor, airlines rank range, operating costs and seating capacity as more important considerations when determining which aircraft to purchase, Jaworowski said.

Musk has said the cost of a seat on the BFR will be "about the same" as full fare economy class in an aircraft.

A new crop of supersonic jet developers is banking on technological improvements in materials and computing to decrease construction costs. But analysts say the market for extremely fast air travel will be limited, at least initially, with the first aircraft to be supersonic likely to be business jets.

Boom Technology Inc., a Centennial, Colo., startup, plans to build a supersonic jetliner called the Boom. Aerion Corp. of Reno, Nev., has been working with Airbus to develop the A2, a supersonic business jet.

Even NASA is interested in the concept of supersonic planes. Last year, the agency partnered with aerospace giant Lockheed Martin Corp. to create a preliminary design for a Quiet Supersonic Transport, or

QueSST, experimental plane.

SpaceX has made landing rocket boosters back on Earth seem routine, but the company will have to scale that technological achievement up to achieve reliable service for everyday travelers.

The idea of a rocket that can serve many markets - point-to-point travel on Earth, missions to the moon and to Mars, as well as low-Earth orbit launches - is the "holy grail of the space industry," said Jim Bell, professor at Arizona State University's School of Earth and Space Exploration and president of the Planetary Society space advocacy group.

Bell said overcoming some of these technical hurdles could be a tall order. But he noted that many people had doubted SpaceX's ability to land first-stage boosters on floating droneships in the ocean. SpaceX has landed 16 boosters so far, nine of them at sea.

"I don't think it pays to bet against Elon Musk at all on this stuff," he said.