

# THE BIG PICTURE

## Space, the new travel spot

Amazon.com founder Jeff Bezos will blast off to the edge of space today on board his rocket Blue Origin, nine days after Virgin Group founder Richard Branson successfully reached it aboard his space plane VSS Unity. Exciting times indeed – but what do these space flights really mean for you? It means space tourism is real, these people are working on it and your next travel destination might be outer space – if you can afford it. Infographics journalist **CEL GULAPA** takes a look at the visionary billionaires and other players who want to take you there, the first paying space tourists and what a Blue Origin flight will be like.



**THE BIG BOYS AND THEIR TOYS**

### JEFF BEZOS BLUE ORIGIN

#### New Shepard

Sub-orbital space flight launched from a reusable rocket, named the New Shepard, which takes off and lands vertically.

#### Space tourism plan

Blue Origin has run several test flights and is planning to put paying passengers into space soon. However, unlike Virgin Galactic, it has not started taking money for tickets. Its plans involve placing up to six passengers on each flight, with room to perform weightless somersaults.

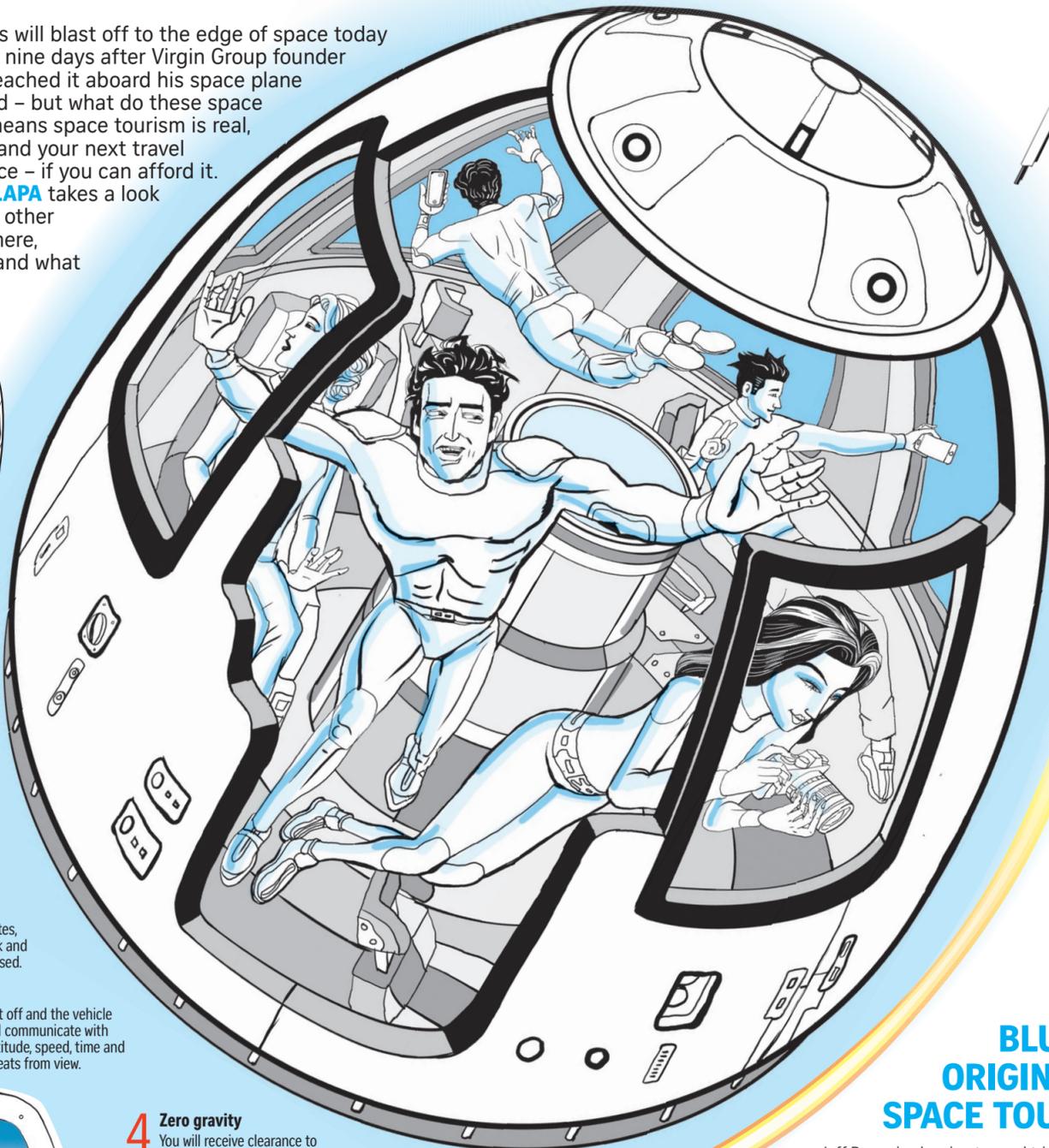
#### Cost

Blue Origin's ticket price is US\$250,000 (S\$340,000).



**Sending humans to outer space is super important... Blue Origin is the most important work I'm doing.**

**JEFF BEZOS**  
FOUNDER AND EXECUTIVE CHAIRMAN OF AMAZON.COM, OWNER OF THE WASHINGTON POST AND FOUNDER OF SPACE COMPANY BLUE ORIGIN



### BLUE ORIGIN'S SPACE TOUR

Jeff Bezos is planning to send trips to the Karman Line – at the very edge of the Earth's atmosphere – about 100km above ground. Flights aboard Blue Origin's spacecraft New Shepard will last around 10 minutes and will include four minutes of zero gravity. This is how the sub-orbital flight will work (see graphic on left).



**3 Separation**  
After the capsule separates, the rocket will come back and self-land, ready to be reused.

**2 Ascent**  
The booster engine is cut off and the vehicle glides into space. You will communicate with Mission Control about altitude, speed, time and G-force as the Earth retreats from view.



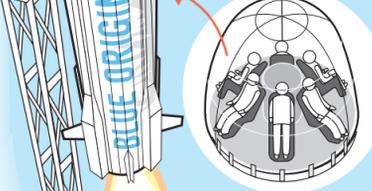
**4 Zero gravity**  
You will receive clearance to release your harness. You will marvel at weightless freedom and lose yourself in breathtaking views and perfect silence.

Having crossed the Karman Line into space, you will have earned your astronaut wings.

**5 Re-entry**  
The capsule will re-enter Earth's atmosphere to get ready to land.

Six large windows immerse you in the vastness of space and the much vaunted life-changing views of planet Earth.

**1 Lift off**  
You will board the capsule in the high desert plains of West Texas. After strapping into your capsule seat atop an 18m-tall rocket, you will listen to the countdown and then feel the engine rumble under you as it climbs through the atmosphere.



**6 Soft landing**  
Capsule, aided by three parachutes, lands gently in the desert and is ready for the next flight back to orbit.

Six passengers are seated around a solid-fuel abort motor.

### ELON MUSK SPACEX



#### SpaceX Dragon 2

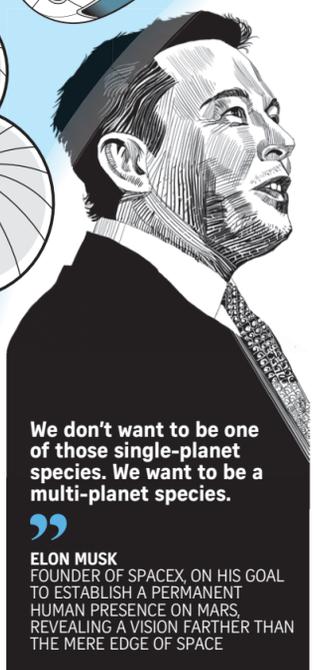
The third player in the race to take tourists to space is Elon Musk and his SpaceX. The Tesla electric car manufacturer has already launched several cargo payloads and astronauts to the International Space Station (ISS) for the National Aeronautics and Space Administration. He plans to send an all-civilian crew into orbit in September.

#### Space tourism plan

The SpaceX Dragon 2 is the first private spacecraft to take humans to the ISS. By late 2021, it plans to carry up to four space tourists in a flight up to five days, on an elliptical orbit with the apogee three times that of the ISS.

#### Cost

SpaceX is already signing up passengers for multi-day trips to space at US\$35 million a seat.



**We don't want to be one of those single-planet species. We want to be a multi-planet species.**

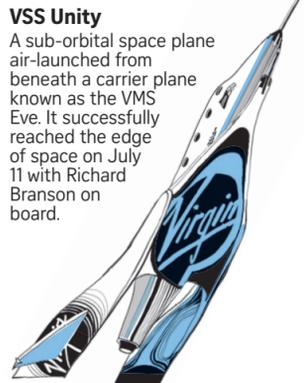
**ELON MUSK**  
FOUNDER OF SPACEX, ON HIS GOAL TO ESTABLISH A PERMANENT HUMAN PRESENCE ON MARS, REVEALING A VISION FARTHER THAN THE MERE EDGE OF SPACE



**I was once a child with a dream, looking up to the stars. Now I'm an adult in a spaceship, looking down to our beautiful Earth. To the next generation of dreamers: If we can do this, imagine what you can do.**

**SIR RICHARD BRANSON**  
FOUNDER OF VIRGIN GROUP OF COMPANIES, WHILE EXPERIENCING ZERO GRAVITY ON BOARD HIS SPACE PLANE VSS UNITY ON JULY 11

### RICHARD BRANSON VIRGIN GALACTIC



#### VSS Unity

A sub-orbital space plane air-launched from beneath a carrier plane known as the VMS Eve. It successfully reached the edge of space on July 11 with Richard Branson on board.

#### Space tourism plan

Virgin Galactic is aiming to launch regular sub-orbital space flights for paying customers. VSS Unity's successful entry to outer space brings the possibility of space tourism closer. However, it has not been without issues, including the crash of the VSS Enterprise space plane in 2014.

#### Cost

It costs around US\$250,000 to fly on Virgin Galactic and US\$1,000 to reserve a seat on a future flight.

Sources: REVFINE, TRAVEL AND LEISURE, THE VERGE, BLUE ORIGIN, SPACE.COM, SPACE TOURISM GUIDE, ENGADGET, BUSINESS INSIDER STRAITS TIMES GRAPHICS: CEL GULAPA, MARLONE RUBIO

### FIRST SPACE TOURISTS

Age at time of flight, place of origin, job, date of flight, space vehicle, cost of flight.

<b>Dennis Tito, 60</b> US entrepreneur and engineer April 2001 Soyuz TMA-32 <b>US\$20m</b>	<b>Mark Shuttleworth, 28</b> South African software creator April 2002 Soyuz TMA-34 <b>US\$20m</b>	<b>Greg Olsen, 60</b> US fibre optics manufacturer October 2005 Soyuz TMA-7 <b>US\$20m</b>	<b>Anousheh Ansari, 40</b> US (Iranian) telecoms CEO September 2006 Soyuz TMA-9 <b>US\$20m</b>	<b>Charles Simonyi, 58</b> US (Hungarian) software architect April 2007 Soyuz TMA-10 <b>US\$25m</b>	<b>Richard Garriot, 47</b> US video game developer October 2008 Soyuz TMA-13 <b>US\$25m</b>	<b>Charles Simonyi, 60</b> US (Hungarian) software architect March 2009 (second trip) Soyuz TMA-14 <b>US\$30m</b>	<b>Guy Laliberte, 49</b> Canadian Cirque du Soleil co-founder September 2009 Soyuz TMA-16 <b>US\$25m</b>
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