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With thousands signing up as early space tourists, a new race is on

By Nicola Clark

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PARIS: The week after Richard Laronde returned home from a 16-day trek to the South Pole in January, he bought a ticket to outer space.

For Laronde, who had also journeyed to the North Pole in 2006, making the decision to splurge \$200,000 on one of the world's first commercial spaceflights took about as long as it takes to do a Google search for "space tourism." "As soon as I got back from the South Pole, I got on the Internet," said Laronde, 56, who owns a prospering event-planning business in Boston.

Within days he had wired a \$20,000 deposit to an accredited space travel agent in New York.

"Astronauts were my heroes growing up," said Laronde, who came of age in the early years of the U.S. space program. "It's always been a childhood dream."

With a personal net worth of more than \$5 million, Laronde has the means to transform this particular fantasy into reality. And as a steadily growing number of companies have come to realize, he is not alone.

There are already several dozen space tourism ventures in various stages of development worldwide, analysts say, offering experiences ranging from a brief trip to the outer limits of the Earth's atmosphere to an extended stay in a zero-gravity space hotel. Public and private investors in places as far flung as Dubai, New Mexico and Singapore are preparing to invest hundreds of millions of dollars to develop full-blown "spaceports," complete with hotels, museums, Imax theaters and other space-themed diversions.

With the first paying passengers expected to take flight sometime in late 2009, Futron, a market research firm, predicts that as many as 14,000 space tourists will be heading into space each year by 2021, generating annual revenue of more than \$700 million.

"There is quite a contest going on at the moment between a number of companies," said Walter Peeters, dean of the International Space University in Strasbourg, France. "I think people underestimate how fast this is developing. For the companies who succeed, it could be very, very lucrative." The leading entrepreneurs driving this recreational space race include several household names, including the British billionaire Richard Branson and Jeff Bezos, the founder of Amazon.com. But major corporations, including European Aeronautic Defense & Space, the parent company of Airbus, are also investing significant sums in projects designed to deliver well-heeled adventurers into space.

Branson's venture, Virgin Galactic, is by far the most advanced in its plans, with test flights on its six-passenger space plane scheduled to begin next year. The company, which counts Laronde as a customer, says it has already received more than \$24 million in deposits from about 200 would-be space tourists in 30 countries.

For their \$200,000, these individuals will receive four days of specialized training followed by a three-hour flight involving just five minutes of weightlessness at an altitude of 70 miles, or 110 kilometers, above sea level. From there, the company says, passengers will be able to see 1,000 miles in any direction, as well as the curved blue line of the Earth's atmosphere against the black sky of space. If all goes according to plan, Virgin Galactic says it expects to fly its first passengers in late 2009 or early 2010.

Virgin's six-seat space plane, which is expected to cost more than \$100 million to develop, is being built by Scaled Composites, an aerospace startup based in California that was acquired in July by Northrop Grumman. Branson's Virgin Group expects to invest a total of \$240 million of its

own funds in the space flight project by 2013, money it expects to quickly begin to recoup once regular services begin.

"We would hope to be profitable within the first three years of flying," said Will Whitehorn, a Virgin Galactic spokesman.

EADS Astrium, the space division of the European aerospace giant, unveiled plans this summer to develop its own four-seat space plane, with tickets to sell for around \$150,000. The company is currently in discussions with a number of private investors and commercial partners with an eye to raising as much as \$1 billion to finance the project by early 2008.

François Auque, the president of EADS Astrium, said in June he hoped the plane, which is expected to enter commercial service in 2012, would "wake up the space ambitions of Europe." The project, he added, could also generate valuable technological spinoffs with other commercial and military applications.

Would-be rivals to Virgin Galactic and EADS abound. They include Benson Space, based in California, which plans to send its first test passengers into space in 2009 aboard a vertically launched craft that can reach space in just 15 minutes. Space Adventures, based in Virginia, claims to have more than 200 reservations with paid deposits worth \$3 million, for a 90-minute ride on a modified Russian spacecraft sometime after 2011. (Space Adventures is best known for brokering deals with Russia to send the first three space tourists into orbit for a reported \$20 million a person.)

Analysts say that Virgin's two- to three-year head start on the competition should guarantee a steady stream of revenues for the company initially.

But forecasters at Futron and others predict that as the number of available seats on space planes increases, ticket prices will drop quickly - possibly as low as \$40,000 - bringing a joyride into space within reach of nonmillionaires.

"Tourist number 150 will not be willing to pay the same price as tourist number five," said Peeters of ISU.

Hence the need for the space tourism industry to quickly diversify its offerings, analysts say. A small handful of companies is already planning for this second phase, which would bring passengers to an orbital station, or space hotel, where they could spend several days in a weightless environment, roughly 200 miles above the Earth.

One prospective space resort operator is Galactic Suite, based in Barcelona, which aims to host its first guests in 2012. Created last year by a group of European engineers with backing from Spanish, Japanese and Middle Eastern investors, Galactic Suite expects to charge around \$4 million for an adventure that includes eight weeks of training on a still-unspecified Caribbean island followed by a three-day stay in space. The company says it already has 28 prospective tourists signed up, who will be asked to advance half the ticket price as a deposit by the end of 2008.

But the real money, some analysts predict, is likely to be made from earthbound ventures linked to the personal space flight industry. The U.S. state of New Mexico has joined with Virgin Galactic to build a \$225 million spaceport and visitors center by 2010 in the desert near the U.S. Army's White Sands missile base. Space Adventures, of Virginia, together with the government of Singapore, is planning to spend at least \$115 million to build a similar facility there, along with a second \$265 million spaceport in the United Arab Emirates.

Xavier Claramunt, a founding director of Galactic Suite, said his company's Caribbean spaceport development would include resort villas and offer outdoor activities such as golfing and scuba diving for tourists to use when they're not busy training for space.

"It will have all the facilities needed to make the ground experience as exciting as the orbital one," Claramunt said.

Peeters likened a spaceport to an airport-cum-tourist attraction along the lines of the Kennedy Space Center in Florida or even a Formula One racecourse. "Say you have 30 people racing, but you have maybe 3,000 people watching and spending money," he said.

"The space tourist who flies brings his family and friends, who have to be occupied for four or five days" while the tourist is trained for the flight, Peeters said. "So in addition to hotels and shops you have flight simulators, maybe a medical facility where the whole family can get space certified. Let them taste space food. Even Imax. You can have a whole infrastructure around it." New Mexico, for example, expects its "Spaceport America" to generate \$1 billion in annual revenue by 2020 and to employ more than 5,000 people.

Still, while the economic possibilities may seem endless to space-travel enthusiasts, some warn that environmental and safety concerns could put off many who could otherwise afford space travel.

"Many people are fascinated with the idea of space travel, but they are afraid that it's not ecological," said Jean-François Rial, chief executive of the French travel agency Voyageurs du Monde, which began promoting space tours for Virgin Galactic in July.

Whitehorn, the Virgin Galactic spokesman, said the company was developing a new rocket fuel made from nitrous oxide and oxidized rubber that would power the space plane. "The CO2 emissions per person for one of our space flights will be less than a single business-class seat from London to New York," Whitehorn said. "It will be the most environmentally efficient space launch system ever developed."

The question of safety, however, does loom large, especially following a deadly explosion in July. Three engineers were killed and three others critically injured during a test on one of the plane's fuel tanks.

"These companies are trying to start commercial operations before they really have a track record," said Marco Caceres, a space industry analyst at the Teal Group, a consulting group based in Virginia. "None of these vehicles has really been tested that much. It is an open question whether the industry will be able to overcome one of these rockets blowing up with passengers on board."

Laronde, the prospective Virgin Galactic passenger, said the accident was a reminder of the high risks involved in this type of adventure.

"It makes you stop and think for a minute," Laronde said. "I'm certainly aware of the dangers, and I've thought about them, but I've never considered that I would not do it."