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Space Tourism

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Abstract

"Space Tourism" denotes any commercial activity that offers customers direct or indirect experience with space travel. Such activities have many different designs, ranging from long-term stays in orbital facilities to short-term orbital or suborbital flights, and even parabolic flights in an aircraft exposing passengers to short periods of weightlessness. Flights into outer space by private individuals are finding increased attention in the public. While there are not yet chartered flights, occasional orbital flights with "space tourists" have taken place. So far, seven "space tourists" have been taken to the International Space Station ("ISS"), all of whom were charged large sums of money for the experience. In this paper an attempt has been made by me to give the well understandable definition of Space Tourism. The concept of space and space station is also touched in a very well in a very well detail in this paper and also the details of first space station is given in this paper. I have also touched the history and development of Space Tourism in this research paper. Advantages and disadvantages of the Space Tourism are also discussed in this paper. Further I have also make an attempt to discuss the effect of space travel on humans and the development and future of Space Tourism is also discussed.

Keywords: Skotel, Space, Gravity, Spaceship, Space Tourist, Space Station, Weightlessness, Virtual Reality, Astronauts, Cosmonauts

1. Introduction

Space Tourism is a space travel for recreational, leisure, or business purposes. Space Tourism is the term broadly applied to the concept of paying customers travelling beyond earth's atmosphere. Space Tourism can be also defined to include not only the vehicles that take public passengers into space, but also from the perspective of the destination paradigm. As such, the industry can be envisioned to include not only earth based attractions that simulate the space experience such as Space Theme Parks, Space Training Camps, Virtual Reality Facilities, Space Hotels (Skotel), Multimedia interactive games and Tele Robotic Moon Rovers controlled from earth, but also Parabolic flights, Vertical Suborbital flights lasting up to three days, or weeklong stay at floating Space Hotel, including participatory educational

Research and entertainment experiences, as well as sports competitions (i.e. space Olympics). However the definitions of Space Tourism vary between nations and organisations concerning different points of view. Many private travellers have objected to the term "Space Tourist" often pointing that their role went beyond that of an observer, since they also carried out scientific experiments in the course of journey. Much higher Suborbital flights would open up new regimes for space experiences. Suborbital space flight for Tourism can be defined by the term. Customers go on a quick ballistic flight in a Space Craft into Space, get a few minutes of weightlessness and then return to the earth, without reaching orbiting. For example Suborbital flight by using Ascender (Bristol Space Planes). No Suborbital Space Tourism has occurred yet, but since it is projected to be more affordable. Many companies view it as a money making proposition. Passengers would experience three to six minutes of weightlessness, a view of Twinkle free Starfield and the vista of the curved earth below.

Orbital flights would allow passengers to watch different continents and many sunsets and sunrises. There would be plenty of time for experiences in weightlessness. For example Orbit flight by using Kankon Maru (Kawasaki). When compared to a simple Suborbital or Orbital flight, the complexity of the scenario increases significantly for a Moon Trip. Total delta velocity required for entire mission is of the order of 20KM/sec. In the context of Space Tourism, Moon Trips are unlikely in short term, but might happen in long term. For example holiday on the Moon, Space Tourism to other Planets.

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| Space experience options | Parabolic flight | High altitude balloon flight (Proposed) | High altitude jet flight | Suborbital flight (Proposed) | Orbital flight |
|---|---|---|---|---|--|
| Brief description | Flying on a passenger jet in a series of parabolic arcs to create brief periods of weightlessness | A balloon ride in a commercially built "gondola" to the upper reaches of the atmosphere | Flying with a pilot on a fighter jet to twice the altitude of a commercial airline flight | Flying on a commercially built suborbital spacecraft past the threshold of space | Launching into orbit for a multi-day stay aboard the International Space Station |
| Total flight duration | 90 minutes | 3 to 4 hours | 45 minutes | 2 hours | 1 to 2 weeks |
| Weightlessness | 30-second bursts for a total of 10 minutes | Brief periods of reduced gravity may be possible during descent | None | 1 to 5 minutes | 1 to 2 weeks |
| Required Training | 1 hour briefing | 1 hour briefing | Same-day training and medical checks | 2 to 3 days of training and medical checks | 3 to 6 months of training and medical checks |
| Passenger Capacity (per flight) | Up to 30 people | Up to 4 people | 1 person | Up to 6 people | 1 person |
| Price per person (not including transportation to launch site) | \$5,200 | \$155,000 | \$25,000 | \$95,000 to \$200,000 | \$50 million |
| Maximum altitude | 34,000 feet (~6 miles) | 118,000 feet (~22 miles) | 70,000 feet (~13 miles) | 327,000 feet (~62 miles) | 1 million feet (~200 miles) |
| View | Similar to the view from a commercial airliner | Curvature of the Earth, blackness of space, and thin blue layer of the atmosphere | Curvature of the Earth, blackness of space | Curvature of the Earth, blackness of space, and thin blue layer of the atmosphere | Orbit the entire Earth every 90 minutes |

Table 6: Space-related tourism experiences (including SRVs)

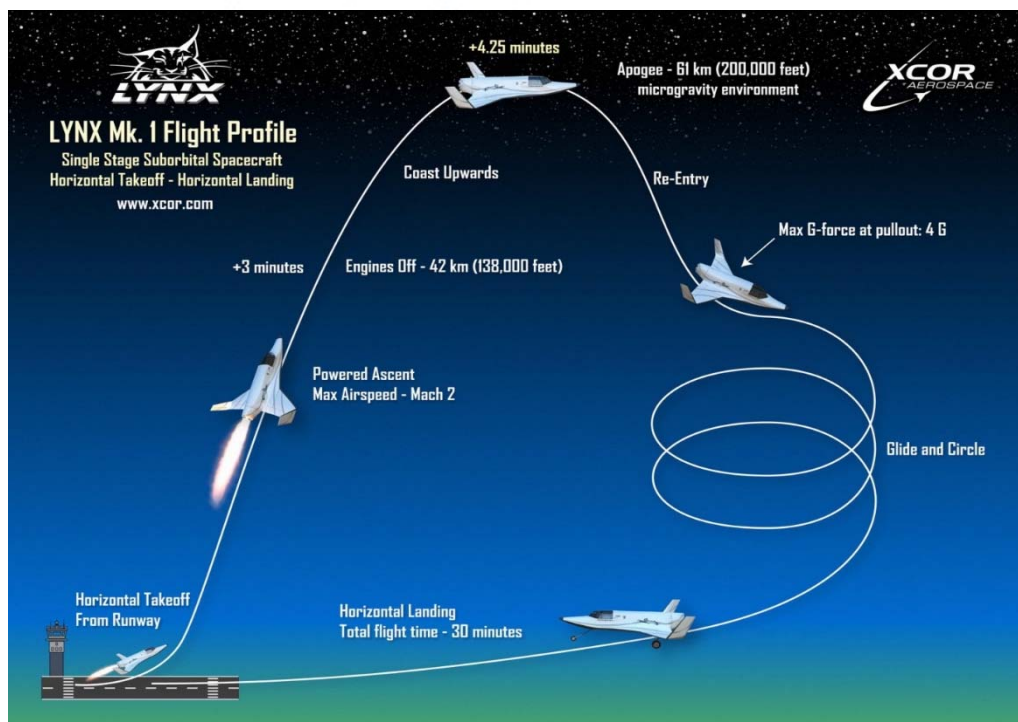




Image of Proposed Space Hotel (Skotel)

However, interest seems to be shifting to providing "cheaper flights" which are not aimed at the ISS but remain "suborbital" so that they are affordable for a somewhat broader public. Yet, even with such short-term flights, a space tourist has different options. One option, modelled after SpaceShipOne, (i) uses an aircraft to lift a space cabin to a certain altitude. The cabin then separates from the aircraft and continues its suborbital flight to higher altitudes. There are two possibilities for return when this method is used: (a) the space vehicle returns to where it started from, or (b) it returns to a different location on Earth ("space transportation"). A second option, which is modelled on the "Delta Clipper Experimental,"(ii) uses a rocket with a space capsule on top which is launched, and then the capsule separates from the rocket at a certain altitude. As a result, the passengers of the space capsule are exposed to Zero-G gravity and both vehicles return to Earth independent from each other. It is expected that Blue Origin's "New Shepard" will use this method.(iii) "Space Tourism" activities may thus include the use of an aircraft and/or spacecraft. Depending on where such activities actually take place, either air law or space law, or even both, may apply. The two legal regimes have historically evolved independently from each other and accordingly show some major differences. A variety of legal issues regarding the conduct of Space Tourism activities arise as a result. This Article focuses on some of the most problematic issues of relevance such as the delimitation of airspace and outer space, authorization to conduct Space Tourism, registration of the aircraft or spacecraft, liability to passengers and third parties, and the status of passengers. Regarding air law, there are comprehensive regulations for passenger transportation in both international and national law. International space law, however, does not yet contain detailed regulations of passenger transport. In terms of national space laws, the United States was the first country to include specific reference to "space flight participants" in its national space law. Even if these U.S. regulatory activities are only of national character, however, they may

indicate a tendency toward the regulation of Space Tourism activities on both the international and the national level. In this respect, it is interesting to note that on January 26, 2007, the Swedish government announced an agreement with Virgin Galactic concerning mid-summer and mid-winter flights of Virgin's "SpaceShipTwo" from Sweden's spaceport in Kiruna.(iv) Their Memorandum of Understanding calls for Swedish authorities to prepare a regulatory regime modelled on that of the U.S. Federal Aviation Administration ("FAA").(v) Accordingly, a closer look at the respective recent U.S. regulatory initiatives seems most interesting.(vi) When examining these legal aspects, the question naturally arises whether existing laws are sufficient for future Space Tourism activities, or whether new international legal instruments or an amendment to an existing law or legal structure will become necessary.

What Is Space?

From the perspective of an Earthling, outer space is a zone that occurs about 100 kilometres (60 miles) above the planet earth, where there is no appreciable air to breathe or to scatter light. In that area, blue gives way to black because oxygen molecules are not in enough abundance to make the sky blue. Further no one knows how big the space is. In space, no one can hear you scream. This is because there is no air in space – it is a vacuum. Sound waves cannot travel through a vacuum. In space, no one can hear you scream. This is because there is no air in space – it is a vacuum. Sound waves cannot travel through a vacuum. In space there is no earth's gravity, as a result there is weightlessness. space is everything in the universe beyond the top of the Earth's atmosphere – the Moon, where the GPS satellites orbit, Mars, other planets, other stars, the Milky Way, black holes, and distant quasars. Space also means what's between planets, moons, stars, etc. – it's the near-vacuum otherwise known as the interplanetary medium, the interstellar medium, the inter-galactic medium, the intra-cluster medium, etc.; in other words, it's very low density gas or plasma.



Image of Space

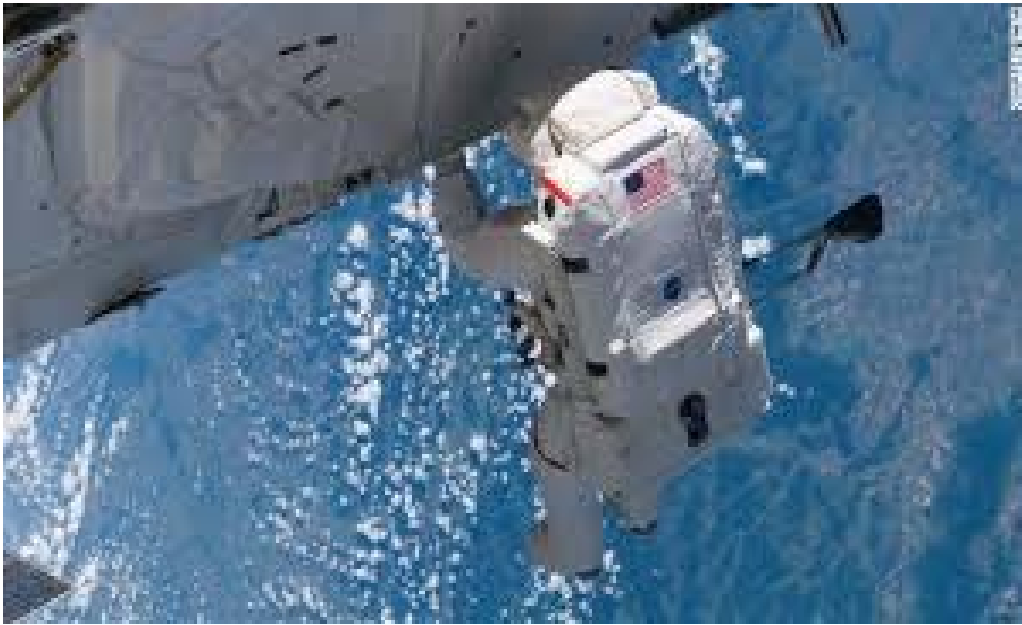


Image of Astronaut in Space



Image of Spaceship

International Space Station:

Astronauts carry out research in space stations. They examine the behaviour of materials and living things in a microgravity (near-weightless) environment. They also study the effect of space flight on the human body. The International Space Station is a large spacecraft in orbit around Earth. It serves as a home where crews of astronauts and cosmonauts live. The International Space Station is not only an orbiting laboratory, but also a space port for a variety of international spacecraft. The space station is also a science lab. Many countries worked together to build it. They also work together to use it. The space station is also a unique science laboratory. Several nations worked together to build and use the space station. The International Space Station (ISS) is a space station, or a habitable artificial satellite, in low Earth orbit. It is a modular structure whose first component was launched in 1998. Now the largest artificial body in orbit, it can often be seen with the naked eye from Earth. The ISS consists of pressurised modules,

external trusses, solar arrays and other components. ISS components have been launched by American Space Shuttles as well as Russian Proton and Soyuz rockets.

Mir was a space station that operated in low Earth orbit from 1986 to 2001, owned by the Soviet Union and later by Russia. Mir was the first modular space station and was assembled in orbit from 1986 to 1996. Mir was the first continuously inhabited long-term research station in orbit and set the record for the longest continuous human presence in space at 3,644 days until 23 October 2010 when it was surpassed by the ISS. It holds the record for the longest single human spaceflight, with Valeri Polyakov spending 437 days and 18 hours on the station between 1994 and 1995. Mir was occupied for a total of twelve and a half years out of its fifteen-year lifespan, having the capacity to support a resident crew of three, or larger crews for short term visits. Finally the fiery remnants of Russia's Mir space station have crashed into the southern Pacific Ocean under the controlled manner.



Images from Space Station

History and Development of Space Tourism:

Dream of Space Travel are assumed to be as old as mankind itself, when humans observed the sky, they wanted to explore the universe in the same way as they wished to fly when they observed birds. Most people don't know that it was not in 1903, but in the 1800s, that the Wright brothers, working with kites, had worked out the key issue for flight control. Orville and Wilbur created a method for the pilot to control the airplane. The real breakthrough was their ingenious invention of "wing-warping. This was the beginning of the invention of first aeroplane.

The realistic proposal of space travel goes back to Konstantin Tsiolkovsky. His most famous work, "The Exploration of Cosmic Space by Means of Reaction Devices" was published in 1903, but this theoretical work was not widely influential outside Russia.Spaceflight became an engineering possibility with the work of Robert H. Goddard's publication in 1919 of his paper 'A Method of Reaching Extreme Altitudes'; where his application of the de Laval nozzle to liquid fuel rockets improved efficiency enough for interplanetary travel to become possible. He also proved in the laboratory that rockets would work in the vacuum of space; not all scientists of that day believed they

would. This paper was highly influential on Hermann Oberth and Wernher Von Braun, later key players in spaceflight. The first rocket to reach space, an altitude of 189 km, was the German V-2 rocket-the first operational liquid fuel rocket under the responsibility of W.V.Braun during the second world war on a test flight in June 1944. One of the first concepts of the passenger transportation by a space vehicle was developed by the Chinese rocket scientist Tsien Hsue-Shen in 1949. The vehicle concept was based on design of German v-2 rocket and it might transport 10 passengers on a suborbital trajectory. Although R.Citron's inspiration of passengers in the cargo bay of space shuttle was rejected due to safety reasons. On 4 October 1957, the Soviet Union launched Sputnik 1, which became the first artificial satellite to orbit the Earth. The first human spaceflight was Vostok 1 on April 12, 1961, aboard which Soviet cosmonaut Yuri Gagarin made one orbit around the Earth. The lead architects behind the Soviet space program's Vostok 1 mission were the rocket scientists Sergey Korolyov and Kerim Kerimov.Rockets are the only means currently capable of reaching orbit. Other non-rocket spacelaunch technologies have yet to be built, or remain short of orbital speeds.



Image of Space Walk of Yuri Gagarin

Apollo 11 was the spaceflight that landed the first humans on the Moon, Americans Neil Armstrong and Buzz Aldrin, on July 20, 1969, at 20:18 UTC. Armstrong became the first to step onto the lunar surface six hours later on July 21 at 02:56 UTC. Armstrong spent about two and a half hours outside the spacecraft, Aldrin slightly less, and together they

collected 47.5 pounds (21.5 kg) of lunar material for return to Earth. The third member of the mission, Michael Collins, piloted the command spacecraft alone in lunar orbit until Armstrong and Aldrin returned to it just under a day later for the trip back to Earth.

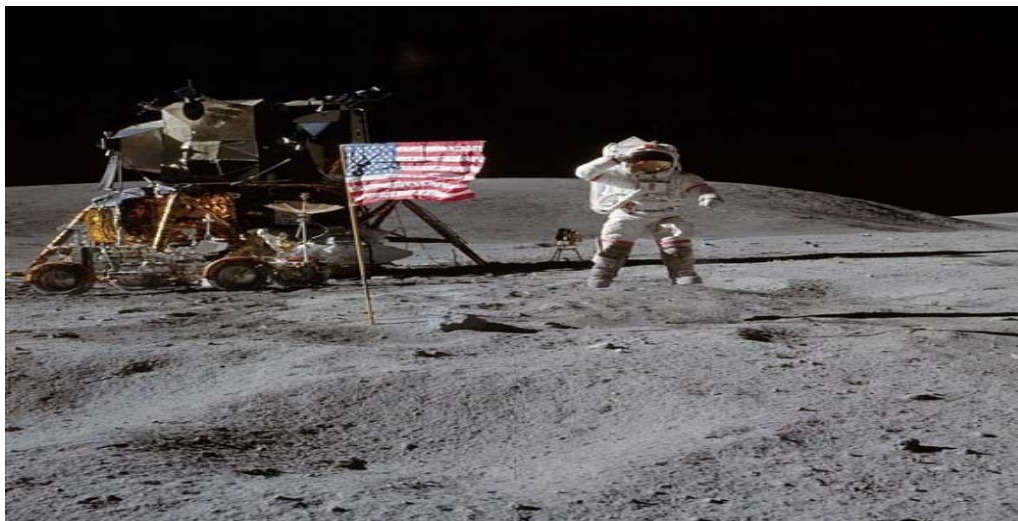


Image of Neil Armstrong on Moon



Image of Neil Armstrong on Moon

Advantages and Disadvantages of Space Tourism:

One of Space Tourism's biggest advantages as an emerging industry is its newsworthiness. It gains a great deal of public attention with every major step forward it takes. This in turn creates much interest in Space Tourism ventures by investors, allowing the companies involved to sustain themselves until actual tours are delivered. The nascent industry also benefits from the cutting-edge technology necessary for its operations, allowing it to be a leader in innovation and research. Space Tourism can generate a lot of job opportunities and also it will generate the money for the research purpose. A 2010 report from the Federal Aviation Administration, titled "The Economic Impact of Commercial Space Transportation on the U. S Economy in 2009", cites studies done by Futron, an aerospace and technology-consulting firm, which predict that Space Tourism could become a billion-dollar market within 20 years. In addition, in the decade since Dennis Tito journeyed to the International Space Station, eight private citizens have paid the \$20 million fee to travel to space. Space Adventures suggests that this number could increase fifteen-fold by 2020. These figures do not include other private space agencies such as Virgin Galactic, which as of 2014 has sold approximately 700 tickets worth \$200,000 dollars each and has accepted more than \$80 million in deposits.

One of the big drawbacks of Space Tourism is its very steep initial set-up costs. What the industry is attempting to do, sending humans safely into space and returning them on a regular basis, has never been accomplished by a private entity before. The price for the technology to do so remains astronomically high. Space is also an extremely hostile environment. Even with safety foremost in the plans of the companies involved, the potential for catastrophic disasters

that could cost human lives cannot be casually brushed aside. Crash of challenger (1986) and Columbia (2003) Space shuttles has raised the question on safety of space flights. There have been a number of such incidents in the history of spaceflight, in particular 18 astronaut and cosmonaut fatalities, as of 2013. There have been some astronaut fatalities during training for space missions, such as the Apollo 1 launch pad fire which killed all three crew members. There have also been some non-astronaut fatalities during spaceflight-related activities. Space Tourism is the privilege of the hugely wealthy persons because it costs a lot of money and the tours are very expensive. A 2010 study published in Geophysical Research Letters raised concerns that the growing commercial spaceflight industry could accelerate global warming. The study, funded by NASA and The Aerospace Corporation, simulated the impact of 1,000 suborbital launches of hybrid rockets from a single location, calculating that this would release a total of 600 tonnes of black carbon into the stratosphere. They found that the resultant layer of soot particles remained relatively localised, with only 20% of the carbon straying into the southern hemisphere, thus creating a strong hemispherical asymmetry. This unbalance would cause the temperature to decrease by about 0.4 °C in the tropics and subtropics, whereas the temperature at the poles would increase by between 0.2 and 1 °C. The ozone layer would also be affected, with the tropics losing up to 1.7% of ozone cover, and the polar regions gaining 5-6%. The researchers stressed that these results should not be taken as "a precise forecast of the climate response to a specific launch rate of a specific rocket type", but as a demonstration of the sensitivity of the atmosphere to the large-scale disruption that commercial Space Tourism could bring.

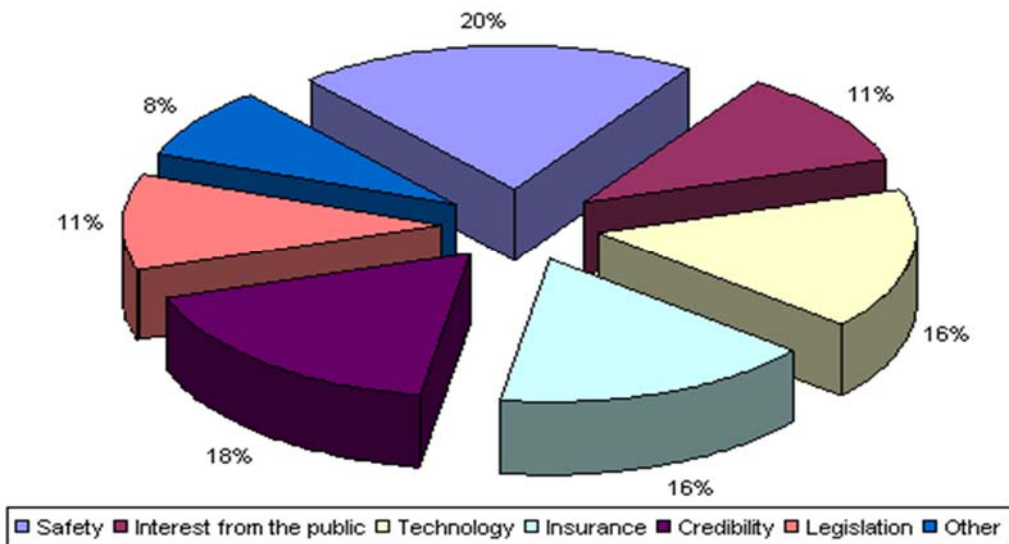


Astronauts of Space Shuttle Columbia That Crashed In 2003



Astronauts of Space Shuttle Challenger That Crashed In 1986

Figure 9. In terms of Space Tourism, what problems do you foresee?



Effects of Space Tourism on Human Body:

Humans are physiologically well-adapted to life on Earth. Consequently, spaceflight has many negative effects on the body. The most significant adverse effects of long-term weightlessness are muscle atrophy and deterioration of the skeleton (spaceflight osteopenia). Other significant effects include a slowing of cardiovascular system functions, decreased production of red blood cells, balance disorders, and a weakening of the immune system. Lesser symptoms include fluid redistribution (causing the "moon-face" appearance typical in pictures of astronauts experiencing weightlessness), loss of body mass, nasal congestion, sleep disturbance, and excess flatulence. Most of these effects begin to reverse quickly upon return to Earth.

Development and Future of Space Tourism:

•SpaceX is a private space company which is developing their own rocket family called Falcon and a capsule named Dragon, capable of sending up to seven people to any space station. Falcon 1 has already undertaken testflights and successfully completed its first commercial flight on July 14, 2009, deploying the Malaysian RazakSAT into orbit. Falcon 9 (which will be the rocket for the Dragon capsule) was first launched June 4, 2010, at Space Launch Complex 40 in Cape Canaveral. An initial prototype of the Dragon capsule was used on that test flight, and a pressurized cargo version of the capsule was used in the next test flight, which also returned for recovery on December 8, 2010. SpaceX anticipates that Dragon could be qualified for human spaceflight within 3 years of the receipt of NASA CCDev funding. On May 25, 2012, an uncrewed variant of Dragon became the first commercial spacecraft to successfully rendezvous with the International Space Station.

• Boeing is building the CST-100 as part of the CCDev program and intends to fly tourists. The CST-100 is planned to be launched by an Atlas V rocket.

• Space Adventures Ltd. has announced that they are working on DSE-Alpha, a circumlunar mission to the moon, with the price per passenger being \$100,000,000.

• Excalibur Almaz, a private company based in the Isle of Man, plans to use modernized TKS space capsules to carry paying research crews into low Earth orbit and beyond. In June 2012, it announced it was ready to sell tickets for private expeditions to the moon, and expects to undertake the first of these voyages by 2015.

Several plans have been proposed for using a space station as a hotel:

American motel tycoon Robert Bigelow has acquired the designs for inflatable space habitats from the Transhab program abandoned by NASA. His company, Bigelow Aerospace, has already launched two first inflatable habitat modules. The first, named Genesis I, was launched July 12, 2006. The second test module, Genesis II, was launched June 28, 2007. Both Genesis habitats remain in orbit as of March 2012. The BA 330, an expandable habitation module with 330 cubic meters of internal space, is expected to be ready for launch by 2017. In 2004, Bigelow Aerospace established a competition called America's Space Prize, which offered a \$50 million prize to the first US company to create a reusable spacecraft capable of carrying passengers to a Nautilus space station. The prize expired in January 2010 without anyone making a serious effort to win it.

The Space Island Group have set out plans for their Space Island Project, and plans on having 20,000 people on their "space island" by 2020, with the number of people doubling for each decade.

| Company | SRV | Seats* | Locker Equivalents (estimated) | Cargo (kg) | Price | Announced Operational Date |
|----------------------|---------------|--------|--------------------------------|------------|--|----------------------------|
| UP Aerospace | SpaceLoft XL | -- | 0.5 | 36 | \$350k per launch | 2006 (actual) |
| Armadillo Aerospace | STIG A | -- | 1 | 10** | Not announced | 2012 |
| | STIG B | -- | 2 | 50** | Not announced | 2013 |
| | Hyperion | 2 | 12 | 200** | \$102k per seat | 2014 |
| XCOR Aerospace | Lynx Mark I | 1 | 3 | 120 | \$95k per seat | 2013 |
| | Lynx Mark II | 1 | 3 | 120 | \$95k per seat | 2013 |
| | Lynx Mark III | 1 | 28 | 770 | \$95k per seat, \$500k for small sat. launch | 2017 |
| Virgin Galactic | SpaceShipTwo | 6 | 36 | 600 | \$200k per seat | 2013 |
| Masten Space Systems | Xaero | -- | 4 | 25 | Not announced | 2012 |
| | Xogdor | -- | 4 | 25 | Not announced | 2013 |
| Blue Origin | New Shepard | 3+ | 5 | 120** | Not announced | Not announced |

Table 1: SRV status details

* Maximum number of space flight participants, exclusive of crew (several vehicles are piloted)

** Net of payload infrastructure

Space Tourists So Far:

Many private space travellers have objected to the term "space tourist", often pointing out that their role went beyond that of an observer, since they also carried out scientific experiments in the course of their journey. Richard Garriott additionally emphasized that his training was

identical to the requirements of non-Russian Soyuz crew members, and that teachers and other non-professional astronauts chosen to fly with NASA are called astronauts. He has said that if the distinction has to be made, he would rather be called "private astronaut" than "tourist". Dennis Tito has asked to be known as an "independent researcher",

and Mark Shuttleworth described himself as a "pioneer of commercial space travel". Gregory Olsen prefers "private researcher", and Anousheh Ansari prefers the term "private space explorer". Other space enthusiasts object to the term on similar grounds. Rick Tumlinson of the Space Frontier Foundation, for example, has said: "I hate the word tourist, and I always will ... 'Tourist' is somebody in a flowered shirt with three cameras around his neck." Russian cosmonaut Maksim Surayev told the press in 2009 not to describe Guy Laliberté as a tourist: "It's become fashionable to speak of space tourists. He is not a tourist but a participant in the mission." "Spaceflight participant" is the official term used by NASA and the Russian Federal Space Agency to distinguish between private space travellers and career

astronauts. Tito, Shuttleworth, Olsen, Ansari, and Simonyi were designated as such during their respective space flights. NASA also lists Christa McAuliffe as a spaceflight participant (although she did not pay a fee), apparently due to her non-technical duties aboard the STS-51-L flight. The U.S. Federal Aviation Administration awards the title of "Commercial Astronaut" to trained crew members of privately funded spacecraft. The only people currently holding this title are Mike Melvill and Brian Binnie, the pilots of Spaceship One.

So far there were seven space tourists from 2001 from different countries. The name of the tourists, duration of travel in space and the total cost of their travel is given in the following table.

| Name | Reported Trip Price | Date Launched | Date Returned | Trip Duration |
|-------------------|---------------------|---------------|---------------|----------------|
| Dennis Tito | \$20M | 4/28/2001 | 5/6/2001 | 9 days |
| Mark Shuttleworth | \$20M | 04/25/2002 | 5/5/2002 | 11 days |
| Gregory Olsen | \$19M | 11/1/2005 | 11/11/2005 | 11 days |
| Anousheh Ansari | \$20M | 9/18/2006 | 9/29/2006 | 12 days |
| Charles Simonyi | \$25M | 4/7/2007 | 4/21/2007 | 15 days |
| Richard Garriott | \$30M | 11/12/2008 | 11/23/2008 | 12 days |
| Charles Simonyi | \$35M | 3/26/2009 | 4/8/2009 | 14 days |
| Guy Laliberte | \$35M | 9/30/2009 | 10/11/2009 | 12 days |
| TOTALS | \$204M | | | 96 days |

2001: A Space Adventure

US company Space Adventures forms agreement with Russian Space Agency for space tourism trips to International Space Station. Cost \$20-30 million



Dennis Tito (US)
Soyuz TM-32, Apr 2001



Anousheh Ansari (Iran/US)
Soyuz TMA-9, Sep 2006



Mark Shuttleworth (S. Africa/UK)
Soyuz TM-34, Apr 2002



Charles Simonyi (Hungary/US)
Soyuz TMA-10, Apr 2007



Greg Olsen (US)
Soyuz TMA-7, Oct 2005



Richard Garriott (UK/US)
Soyuz TMA-13, Oct 2008

Potential Market for Space Tourism:

A comparison of Space Tourism market research carried out recently in Japan, United Kingdom, Germany and USA/Canada has been presented the first time showing the current state of demand for Space Tourism. These market studies reveal very promising figures concerning the overall assent to Space Tourism. So, the percentage of people interested in travelling to space reaches from 43% up to 70%.

Conclusion:

There are certain aspects of Space Tourism, such as cost analysis, current market base, risk assessment, and future scenarios, and sought the possibility of making Space Tourism a reality. Recent surveys taken in Europe, the U.S. and Japan revealed that more than forty million people are willing to invest on Space Tourism. Market research also showed that the Space Tourism industry has the potential become a major force in the trillion dollar tourism industry, which could rival the size of the commercial airplane industry. Furthermore, cost analysis proved that Space Tourism could provide large profits for investors. However, it would take more than twenty years recuperate initial investment, and it is highly doubtful the original infrastructure would remain intact. One of the major hardships that have hampered the development of Space Tourism industry is high risks on initial investments, which surges from the low reliability of current launching systems and the high cost of transportation into space. In order to improve orbital transportation system cost and reliability, we encourage investment in development of new technologies such as the RLV (Reusable Launch Vehicles). RLV provide with a long term cost reduction and risk reduction solution, the development of the RLV would correct what we consider to be the primary ailments that are keeping the Space Tourism industry currently grounded. From preceding projects such as the Kankoh-maru and new technological developments, the safety for space travel can be improved. The tourism industry would not only take individuals into space, but would also support activities one can only experience in space. Space Tourism would be supported and complimented by ground facilities derived from the current infrastructure of the Space Tourism industry. In conclusion, we have established the potential of the Space Tourism industry and we encourage investors to take advantage of a potentially immense industry at its early stages. We attempted to demonstrate to them how this would become reality, through the aspects of technology, cost, and its risks. All that is left is for individuals to take a forward step towards investing in Space Tourism. Since Space Tourism is affair of very very highly income group, therefore we cannot expect a mass character in Space Tourism in near future. Further Space Tourism cannot be an affair of day to day basis, but it can take place after year or years.

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