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SPACE TOURISM – A YOUTH PERSPECTIVE

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Abstract

Space Tourism was discussed by young space professionals at the Space Generation Forum (SGF), at UNISPACE-III. This topic is being further developed at the Space Generation Summit (SGS), an event at World Space Congress (WSC) that will unite international young professionals to develop a youth vision and strategy for the peaceful uses of space. SGS, endorsed by the United Nations, took place from October 11-13th, during which 200 delegates discussed ongoing youth space activities, particularly those stemming from the UNISPACE-III/SGF and taken forward by the Space Generation Advisory Council. Delegates addressed a variety of topics with the goal of devising new recommendations according to the theme, "Accelerating Our Pace in Space". The material presented here and in other technical sessions throughout WSC includes the findings of these discussions. In this paper the authors present the visions and recommendations about space tourism. This has great relevance to the theme of SGS and to the future of space activities.

Keywords: Space Tourism, Investment, Suborbital Flight, Orbital Flight

Introduction

Space tourism flights, the next evolutionary step in the travel and tourism industry's "adventure tourism" market, may soon get off the ground with the availability of the next generation of space vehicles optimized to take advantage of a high volume of ticket purchasing passengers that can drastically reduce space launch costs. Today, several private companies are planning vehicles that will put fare-paying customers into space in the next years. Numerous organizations are doing their part to promote space tourism. From the economic point of view, greatly increased travel leads to economies of scale and other efficiencies (such as industry standards) that drive down cost. In the presence of competition, declining costs are quickly followed by declining prices and increased demand. This in turn leads to a virtuous circle of economic growth.



Figure 1: Space Tourism Market (Goehlich)

The true potential of space tourism in the coming decade does not reside within one or two flights per year for \$20 million per trip but in providing a wide range of services with different levels of prices as shown in Figure 1.

Less expensive activities are parabolic flights and high-altitude flights, while sub-orbital flights

and orbital flights are more expensive. The high-end activities are Space Station flights.

Space Generation Summit

The Space Generation Summit (SGS) gathered over 200 international young professionals to develop a youth vision and strategy for the peaceful uses of space. In conjunction with the World Space Congress, (WSC) this conference, endorsed by the United Nations (UN), took place from October 11-13th, 2002. Delegates discussed ongoing youth space activities, particularly those stemming from the UNISPACE-III/SGF and taken forward by the Space Generation Advisory Council. Delegates addressed a variety of topics with the goal of devising new recommendations according to the theme, "Accelerating Our Pace in Space". The material presented here and in other technical sessions throughout WSC includes the findings of these discussions.

Vision

The author's vision is to create a thriving space tourism sector by:

- Capturing the imagination of the public
- Stimulating private investment in the transportation and lodging infrastructure
- Convincing the government to support new private ventures

This will result in a mass space tourism market employing space hotels as shown in Figure 2.

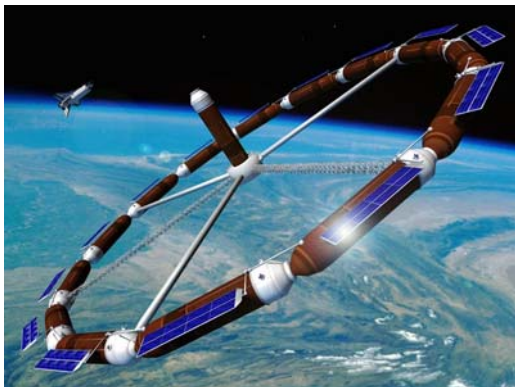


Figure 2: Rotating Hotel (Space Island Group)

Current Status of Space Tourism

Demand

Today's space tourism flights are in the early so-called pioneer phase, which means approximately two tourists per year! For example, Soyuz flights to the International Space Station cost approximately \$20 million, and will last approximately 10 days. In April 2001, Dennis Tito was the first space tourist followed by Mark Shuttleworth in April 2002.

The imagination of the public is beginning to be recaptured. The flight of Dennis Tito, the prospective flight of teen idol Lance Bass, and the development of a TV Show by the producer of Survivor hint at the developing interest of the public in space tourism.

Market research has shown that what most people want to do in space is to watch the Earth. There seems to be an endless fascination in seeing the different continents roll by, with no borders visible between countries. The wish to play and eat in weightlessness can also be satisfied by parabolic aircraft flights.

In the early pioneer phase it is difficult to forecast the demand/price elasticity correctly because the passengers will be mostly multimillionaires for whom prestige and political causes determine the demand, rather than the ticket price itself.

For a first approach, a number of rudimentary market surveys for general space tourist flights have been conducted which are summarized in Figure 3.

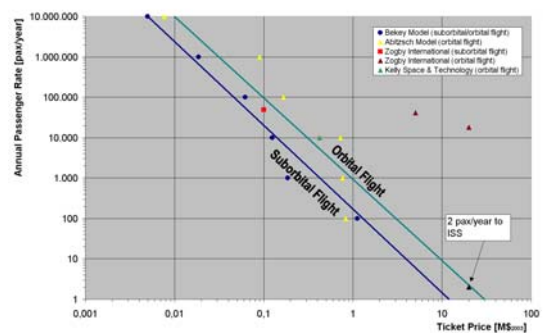


Figure 3: Demand of Space Tourism (Goehlich)

Commercial Activity

Space tourism encompasses lodging, transportation, services and support industries. Space tourism should not be viewed as a new

industry but as an extension of tourism on earth. For this reason, many of the strategies and business models that work on earth need to be applied to space.

Nowadays, the number of commercial space launches in a year is between 70 and 80. Comparing this to the 70 or 80 take-offs by commercial aircraft every minute all around the world, it is obvious that the way the space industry works today makes it very difficult for any commercial venture in space to yield a profit. This is where all the excitement about space tourism comes in. Space tourism has the potential to provide a high number of flights on a regular basis. This is essential to radically bringing launch costs down. Tourism has practically no saturation limits: in the early years, though, the focus will be on suborbital flights, short trips to orbit, simple orbital hotels and after that trips to the Moon, perhaps with a stay at a lunar hotel in far future. In other words, people are the payload of the future.

Several private tourism companies have been created to capitalize on the public's interest, including Space Adventures and ZeroG. The X Prize is encouraging private companies to develop reusable vehicles to transport humans into space. However, more investment in transportation and lodging infrastructure is needed to increase the amount of viable business models.

Government's Role

Governments are supporting the tourism infrastructure in several ways. Governments have laid the foundation for space tourism with previous transportation and lodging initiatives such as the ISS. However, most people involved managing these projects view these efforts as scientific initiatives that should not be used to promote tourism. Russia has bucked this trend by selling seats on Soyuz rockets and persuading other countries to allow Dennis Tito and Mark Shuttleworth to stay on the ISS as shown in Figure 4. However, these actions were based more on Russia's financial needs rather than a genuine interest in directly supporting tourism.



Figure 4: Dennis Tito arriving at ISS (NASA)

Conclusion and Recommendations

The potential of the space tourism sector will not be reached until the lack of public interest, the lack of private investment in infrastructure, and the lack of government support is solved. There seems to be a demand for space tourism, which will undoubtedly increase as the prices drop and more people do it. Although there is some infrastructure to satisfy this demand today, it is controlled by governments reluctant to use it for space tourism. And even if they were fully supporting space tourism, the current technology is not cost-effective, so private investment remains low.

The authors' recommendation is to use education, entertainment and excellence as the key elements to accelerate human pace in space by increasing space awareness for the general public. The authors propose five strategies to deal with these issues:

- 1) Create a global lottery for prospective space tourists. An independent organization would sell lottery tickets for a small fee like \$100. The winner gets the opportunity to train for a visit to the ISS. The lottery would allow the larger population to feel like it's possible for them to go into space.
- 2) Create a new space race. Competition between the United States and the USSR fueled the first space race, and competition between private teams can fuel the second. This competition could build on the foundation of the X Prize to create launch events similar to other sports competitions like the America's

Cup and Formula One. Each team would try to get corporate sponsors. There would be annual events with a cash prize for the winner.

- 3) Create an annual space festival called the "Gravity Defiance Alliance" to stimulate public interest in space tourism. This event would combine the launches of X Prize competitors, the selection of a winner in the space tourism lottery, with a musical concert and other entertainment. In addition to the primary location, the festival would have local events around the world. It could be combined with the Yuri's Night celebrations in April.
- 4) Create a private consortium to fund a tourist module on the ISS. Building a separate space hotel in space at this time seems cost prohibitive. However, several large hotel chains might be willing to invest in a special module on an existing space station. They could use this module as a learning lab for space tourism and eventually create separate hotels.
- 5) Create an education program to garner financial support from industries that might benefit from future space tourism such as transportation, hospitality, mining, etc. Many education initiatives focus on youth, but the youth don't control investment dollars. Once companies in these industries are educated about the potential benefits, they might be willing to invest in the other initiatives outlined above.

These strategies are complex and require coordination between people who aren't currently working together, but they might be the best hope for capturing the public's interest, capturing the private sector's dollars, and unleashing entrepreneurs from the stranglehold of government bureaucracy.

Space tourism is our destiny. To paraphrase President Kennedy, we are not going to do these things because they are easy, but because they are hard. 30 years ago we landed on the Moon, and perhaps 30 years from now our children might be playing on the moon...



Figure 5: *Holiday on the Moon (Reichert)*

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List of Abbreviations

ISS	[-]	International Space Station
SGF	[-]	Space Generation Forum
SGS	[-]	Space Generation Summit
UN	[-]	United Nations
WSC	[-]	World Space Congress

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