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Introduction

Yuri Gagarin blasted off into space and into the history books over forty years ago when he became the first person to orbit Earth. Alan Shepard followed one month later with a 15-minute suborbital *Mercury* ride in May 1961. Today, we are witnessing the natural evolution of those early events — space travel for members of the general public.

Despite this clear evolution, a number of factors have constrained the development of the market for public space travel. One of those constraints is the lack of knowledge about the potential market size for this emerging market. Futron Corporation, the industry leader in forecasting space-related markets, decided to address this constraint by objectively assessing the current interest in public space travel, and quantifying and forecasting the future demand for this service.

As neither an advocate for, nor a participant in, the development of public space travel, Futron was able to maintain a balanced and objective viewpoint on the future of this industry. Futron conducted a nationwide survey to examine the demand for space tourism with a strong emphasis on realism. The Futron/Zogby survey presented a realistic portrayal of spaceflight to its respondents and selected a survey population that could potentially afford to pay the prices for the service. The full results of this survey are available in Futron's report, *Space Tourism Market Study*. My remarks today represent extracts from that report pertinent to today's hearing.

Public Space Travel — the Current Picture

Tourists desiring unique, challenging, and fun experiences drive demand for public space travel. This desire is currently fueling a worldwide tourism industry with receipts in excess of US$450 billion. Given the generous revenues associated with tourism, public space travel represents a huge potential market. It is only potentially large, however, because the technical ability to service this market is currently very limited.

Two distinct services are currently envisioned for public space travel: travel to low earth orbit or orbital flights, and short excursions beyond Earth's atmosphere and back, or suborbital flights. Each of these markets is in a different stage of development.

Orbital Flights

Orbital space tourism became a reality in April 2001 when American businessman Dennis Tito reportedly paid US$20 million to fly to space. Mr. Tito was launched on a Russian *Soyuz* spacecraft, which docked with the International Space Station (ISS) during the mission. Mr. Tito spent eight days in space, six of which were spent inside the ISS.

Tito's successful flight, carried out over the initial objections of NASA and other ISS partner nations, opened the door to further flights by paying customers. In April 2002, South African entrepreneur Mark Shuttleworth became the second commercial space tourist as a member of another *Soyuz* mission to the ISS. At the time of this writing, a number of other potential orbital passengers have been announced.

Orbital public space travel is currently limited to one spacecraft, the Russian *Soyuz* vehicle. Russia regularly launches *Soyuz* on supply flights to the ISS. Because only two cosmonauts are required to fly the *Soyuz*, a third seat on each mission is available to potential space tourists. This creates a steady number of flight opportunities for those interested in orbital public space travel.

Suborbital Flights

While most public attention on space tourism has focused on orbital flights, suborbital space tourism holds significant promise. Space Adventures, a space tourism agency, currently claims to have over 100 reservations for suborbital flights at a price of US$98,000 each, despite the current absence of a vehicle capable of offering such a flight. The projected price of a suborbital flight is a small fraction of the price of orbital travel, and as such, puts space tourism within the financial means of a much larger audience.

While there are currently no vehicles that can serve the suborbital space tourism market, a number of vehicles are under development. The primary forum for development is private entrepreneurial ventures competing for the X PRIZE, a competition that will award US$10 million to the first team to privately build and fly a spacecraft capable of carrying three people to 100 kilometers altitude twice in a two-week period. In addition to the X PRIZE participants, there are several other companies and entrepreneurs attempting to develop vehicles to serve the suborbital public space travel market.

All of these ventures face a number of obstacles in their efforts to turn plans and prototypes into operational vehicles. In addition to the technical obstacles associated with any new aerospace vehicle, passenger spacecraft will undoubtedly face major financial and regulatory hurdles as well.

Understanding the Current Demand for Public Space Travel

Given the nascent state of the public space travel industry, Futron examined the current demand for public space travel via a nationwide survey, which featured the following:

1. Only affluent Americans were surveyed, i.e., the population most likely to be able to afford a trip into space;
2. Survey respondents were provided with a realistic description of what the space travel experience would be like — a former Space Shuttle commander vetted our description;
3. We asked survey respondents direct questions on space travel, as well as other questions on the perceived risk of this and other activities, respondent's health, past buying habits, etc. to validate their responses; and
4. The Futron/Zogby survey interviewed over 450 millionaires (interviews lasted approximately 30 minutes each) — the margin of error was calculated at +/- 4.7%.

Although a number of potential public space travel scenarios can be envisioned, Futron chose to focus the study on the two previously mentioned public space travel scenarios:

- A 15-minute suborbital ride to the edge of space, and
- A two-week orbital flight to an orbiting space station

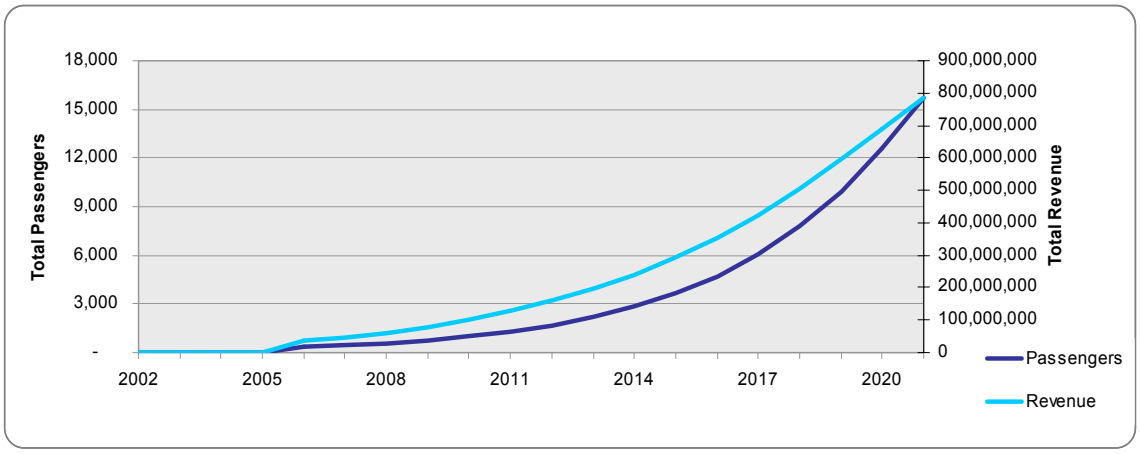
Regarding interest level in a suborbital trip, the Futron/Zogby survey results indicated that almost 20% of the survey population was either "Definitely Likely" or "Very Likely" to participate in suborbital space travel. Further, these individuals were interested in this service at realistic price points.

Regarding interest level in an orbital trip, again almost 20% of the survey population was either "Definitely Likely" or "Very Likely" to participate at realistic price points.

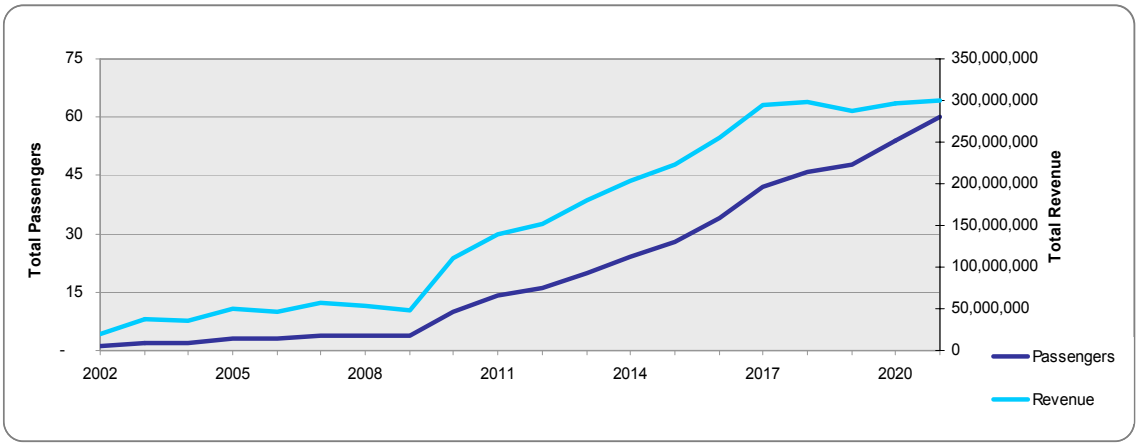
It is interesting to note that the ability to purchase a trip from a U.S. company or to complete the required training inside the United States were potential options that most positively influenced interest level. 27% of respondents were "much more likely" to participate in an orbital flight if the trip could be purchased from a U.S. company. And, over 60% of the survey pool would be more likely to participate in an orbital trip if they could train in the United States.

The Future of Space Tourism

Incorporating these results with other survey responses and secondary research, Futron developed forecasts of these markets. Our conclusion is that suborbital space travel is a promising market — Futron's forecast for suborbital space travel projects that by 2021, over 15,000 passengers could be flying annually, representing revenues in excess of US$700 million.



Orbital space travel is also a promising market — Futron's forecast for orbital space travel projects that by 2021, 60 passengers may be flying annually, representing revenues in excess of US$300 million.



The challenge for the U.S. aerospace industry is to develop a vehicle that can cost-effectively meet this demand. The company that ultimately meets this challenge may come from the X PRIZE competition; it may be a traditional aerospace company (perhaps leveraging some government-sponsored technology); or it may come from a company not based in the United States. However, regardless of where the company comes from or how it meets the challenge, the demand for the public space travel is real, robust, will eventually make someone very wealthy, and is one of the few areas where growth can be predicted for the launch industry.