

Vast sums of money were spent breaching new boundaries as man continued to pursue the idea of space travel. Indeed the great popularity of the subject was shown by Dennis Tito's April 2001 orbital flight - the first time a private citizen paid for a flight to space. The wide and deep popular interest in Tito's experience confirmed the results of market research carried out in several countries since 1993, This had shown clearly that the majority of the public, both women and men, young and old, in all cultures, are fascinated by the idea of being able to travel to space themselves. However, to date, OECD nations' space agencies have not considered it their responsibility to develop the technology required to realise space tourism, or even to study its feasibility.



Of the approximately \$25 billion/year that space agencies currently spend, almost none is used in ways that advance the realisation of passenger space travel.

Commercial space activities today are essentially limited to communications, broadcasting and observation satellites. However, declining commercial demand for such satellites is leading to contraction of the commercial space industry, and to the need to develop new space markets if the space industry is to grow. Since there is no other space activity that offers greater potential for growth, space agencies' anti-space tourism stance is growing increasingly untenable.

Perhaps the most striking fact about Tito's flight was that it revealed the thinking that the cheapest and safest way to travel to space was to use the venerable Soyuz rocket - essentially the same rocket that carried Yuri Gagarin to orbit 40 years earlier. OECD space agencies have spent approximately \$1 trillion since 1961 but without reducing the cost of getting to space at all. Revealing clearly that space agencies have not been trying to reduce the cost of getting to space; consequently the widely-used argument against space tourism: "If low-cost access to space was possible, Nasa would have already developed it" is based on a false assumption. Space agencies do not know how low the cost of passenger space flight could fall, because they have not studied the possibility.

Scaled Composites has now revealed the potential for cost reduction by applying some of the

technological progress of the past four decades. The development and test-flight program of "SpaceShipOne" will have cost less than OECD space agencies spend every 12 hours - or about 0.1% of what they spend each year. In addition, its cost per flight is estimated to be \$80,000, that is, between 1/100 and 1/1,000 of the cost of the first US space flight, the short sub-orbital flight by Alan Shepard in 1961.

SpaceShipOne, a privately funded manned rocket, soared into space and back in October 2004 for the second time in less than a week, claiming a \$10-million prize and raising prospects for low-cost, reliable personal space flights.

The small rocket, piloted by former F-18 fighter test pilot Brian Binnie, was propelled by a mixture of rubber and nitrous oxide, or laughing gas, to an altitude of 367,442 feet, well past the 62-mile-high boundary that is widely considered the frontier between the Earth's atmosphere and outer space. It glided safely back to the Mojave Airport before a cheering crowd of more than 10,000 people. The flight marked the third time that the rocket, built by aircraft designer Burt Rutan and financed by Microsoft Corp. co-founder Paul Allen, had reached space.

In June, the rocket climbed to 328,491 feet, becoming the first commercial manned space flight. In September the rocket completed the first leg of its quest to win the \$10-million Ansari X Prize by soaring to 337,500 feet, or about 64 miles up.

## Inside the space plane

SpaceShipOne, designed by Burt Rutan, claimed the \$10 million Ansari X prize by climbing to suborbital space for the second time in a week

