

Virgin Galactic reaches beyond space tourism

Launchpad Global - Virgin Galactic Q&A

Published: 21 Aug 2009

In late July, the prospective space tourism provider Virgin Galactic announced that the Abu Dhabi sovereign wealth fund Aabar Investments had invested US\$280m in return for a 32% stake in the company. Aabar also plans to allocate US\$100m for the development of Virgin Galactic's small satellite launch capability.

SatelliteFinance's Ronan Murphy spoke to Virgin Galactic President Will Whitehorn to learn more about the Aabar investment and Virgin Galactic's place in the burgeoning private space industry.

How long had you been working on the Aabar deal?

WW: Let me put it in round terms. If you'd seen me make a speech any time in the last two years I said 2009 was the year when we would go and get outside investment.

We obviously had to prepare the ground for that. We wanted to wait until 2009 because we wanted our vehicles to be finished.

This was the year when we knew the White Knight 2 mothership would be ready to fly, that the Space Ship would be nearing rapidly its first flight, and that if we wanted to get second round investment into the project this was the time to do it.

We knew that if we could credibly continue to take our space tourism business forward as a bedrock for the economics of satellite and payload launch, and human space science we would have a chance. We knew last year that this bedrock was working, we were getting the customers we needed, we were getting the deposits and the cash in the bank.

Did you search for any other outside investment?

Ultimately there were quite a lot of investors in the United States who were interested in this, but very few of them were prepared to make a commitment subject to a good business plan of developing a satellite launch vehicle. Aabar absolutely made that commitment.

I've heard that Aabar had presentations from a number of other players in the industry, including EADS, and the thing that has attracted them towards our system is the type of design work we have done on the business plan. We've built it around space tourism as the first available market to allow investment in building the system to go ahead. We've made sure SpaceShip Two is capable of human space scientific research from the word go. No other space tourism vehicle has been developed on the drawing board while we have a prototype behind us, a long way past the drawing board.

No other vehicle that they could see had the potential for human space science as well as space tourism. If you're looking at our vehicles from an investment point of view you have come across something that has a wide range of 747-style uses. It's not a Concorde.

Aabar is also investing US\$100m into small satellite launches. How far developed is the technology for that and what kind of satellites will you be capable of launching?

We've always worked on the basis that if we could build a first stage to orbit that could release seventeen tonnes at 50,000 feet, the composite technology we were using would be capable of supporting a release of a second and third stage payload up to 100-150kg into low earth orbit at a cost of around US\$3m per flight. We believe we can support 200kg in the future. By this time last year, we were comfortable that White Knight Two could support that kind of first stage tonnage.

I think that in three to four years satellites sized 100 kilos will be relevant, and even 75 kilos will be credible. 25 kilos

will be interesting, the CubeSat market will take off at university level.

These new small sat markets are only being held back by the fact there aren't more companies like Surrey (SSTL). The big sat manufacturers are finding it very hard to get small with the same level of expertise.

Are you seeing stronger support from traditional, governmental areas of the space sector than when you first started?

WW: Yes. One of the things that the space industry as it exists worldwide, it largely relies on government funding. The only commercial aspects to this industry are the commercial use of satellites, and even the commercial use of satellites have often piggy-backed off a government project.

What hasn't happened in space is you haven't seen what happened with mobiles, where it was originally military technology which got huge walls of investment from private finance. It was the same with the internet - unlocked by the military, switched off and then people decided they would carry on using it and there was enormous private sector investment.

Space? That just hasn't happened. Space launch systems have remained largely a government monopoly, partly because of hangovers from the Cold War and the fears about how that technology would be used, although I don't think that is a very good excuse for why development hasn't happened.

One of the main reasons is that there's been a general feeling that the space industry is too dangerous and difficult for the private sector. It was very difficult when you've got that background where the only major private funding comes from the commercial satellite business, although private companies such as Lockheed and Boeing will do government work, but you don't have that kind of Prometheus Unbound approach that you have with internet and mobile telephony where governments don't really have a lot to do with them, even in a regulatory sense there is less and less involvement.

In this sector this has never happened and that has been the reason why when we announced we were going to do this, people just didn't get it. Even Burt Rutan, who has a great deal of credibility in the world of aviation design and composites, had some NASA spokespeople saying that he'd never get this to work. They couldn't conceive that someone with US\$30m could get two people into space in two weeks.

Not only did he do that, but he designed two entirely new prototype technologies and what was at the time the world's largest carbon composite aviation vehicle. After the success of the X Prize that was then forgotten a little bit.

For the following two years, our first available market was people who wanted to do this and sign up. They would create the economics to do a lot of exciting things, because we designed the system to be flexible. So over that eighteen months we just concentrated on marketing and getting our first customers on board, we got on with the job of getting these things designed and built, and we didn't really care what the outside world said.

The Human Space Flight Plans Committee chaired by Norman Augustine has strongly recommended that the private sector take a greater role in the space industry. Has the development at Virgin Galactic influenced this stance?

WW: I think there is no doubt that our single project has had an influence on the Augustine Commission, along with a few others such as SpaceX and Elon Musk in particular, XCORS and SpaceDev.

We are in the very early stages of private space and I think that there are two categories that have already emerged. There is the credible new commercial space generation such as Virgin Galactic and SpaceX and there are the existing private contractors that do all the government work, who could easily move but they are fairly wedded to things like aluminium and liquid rocket motors and old style solids, and they'll have to move quite fast away from that.

You've got this other category that has existed throughout the whole process, which I would call the incredibles, the people who will put a picture up on the website of something that looks very 21st century but has no hope of ever being built. When we get that stage to die away and the credible stage to get much bigger, to really get private equity backing, it will be able to really advance.

The fact that Aabar investments have invested in Galactic and that Elon Musk has been successful in getting second round financing is really exciting.

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