

Why Virgin Orbit's new president isn't worried about a bubble in the small satellite market

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It seems like everyone wants their own swarm of small satellites.

SpaceX, OneWeb, Boeing Co. and other companies have proposed putting constellations of small satellites in low-Earth orbit that could provide greater internet access in previously hard-to-reach areas of the globe.

Thanks to technological advances, the costs of developing and launching satellites have fallen to the point where even some schools can afford to send their own science missions into space.

The small-satellite boom has sparked development of new launch methods as well. Earlier this month, Richard Branson's Virgin Galactic space tourism company spun off its small-satellite launching business, Virgin Orbit. Virgin Orbit is developing LauncherOne, a rocket that will drop from the wing of a modified 747 and carry satellites into space.

The Los Angeles Times spoke with Dan Hart, president of Virgin Orbit, about the new market. Hart previously was vice president of government satellite systems at Boeing, where he also worked on the [space shuttle program](#) and Delta launch system.

Here's an edited version of the interview.

Q: How small are these satellites?

A: You're talking about anything from a shoebox, to a microwave, to maybe a large washing machine or small refrigerator size.

The large geosynchronous satellites are the size of minivans, or a small bus, or a maybe a small car.

Q: Why are companies increasingly interested in launching and operating small satellites?

A: I think it all follows a general progression of expectations that we have for communication and imaging. We're seeing that we can build and launch small satellites much less expensively to cover new applications, and we can refresh those as technology changes every two to three years.

The old economy of geosynchronous is you build a large satellite, it's expensive, you want it to last a long time, so you put a lot of money into it ... and you hope it'll last 15 to 20 years.

Q: How is the development of small-satellite launch vehicles like LauncherOne different from that of bigger rockets, like the Delta you previously worked on?

A: Manufacturing technologies and design technologies have advanced significantly over the last five, 10, 20 years. And in composite (materials) and propulsion systems ... there have been huge advances that have helped us to improve the rate of manufacturing and launch costs.

Q: What kinds of processes do you need in place to effectively make affordable small-satellite launchers?

A: It's a combination of new technology, and honestly, what will really drive the cost down for launch is a steady, sustained rate.

What's happening with this whole low-Earth orbit revolution going on in the market is there's really a promise we're seeing for a host of different large-scale constellations for low-Earth orbit spacecraft. And that one will feed the other.

Q: What's the benefit of launching satellites from beneath a plane?

A: We have huge flexibility. We can go out over the ocean and launch it over a wide variety of angles and really get tailored orbits for our customers. And we don't have a big [launch](#) pad setup that we have to clean and refurbish.

Q: A number of these networks were proposed in the 1990s, and many ultimately failed to get off the ground. Are you concerned that today's constellation proposals could meet the same fate?

A: Not really because there's really quite a bit more momentum here, and the technology is so different. So what we're seeing is really proof points that are in orbit already from a number of companies that are already operating relatively large numbers of [small satellites](#).

There were some courageous players back in the late '90s and early 2000s that I think had blazed the trail. Now the technology has really developed to where there's really no doubt that communications (and) remote sensing capabilities can be provided very cost-effectively from low-Earth orbit.

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