1
00:00:14,000 --> 00:00:17,010
They started out as hitchhikers.

2
00:00:17,010 --> 00:00:22,270
For years, tiny CubeSat satellites have only
been able to fly into space by riding along

3
00:00:22,270 --> 00:00:24,650
with larger, primary payloads.

4
00:00:24,650 --> 00:00:29,860
Now, they're about to get their own rides
into space… on their own terms… and that's

5
00:00:29,860 --> 00:00:32,190
a big plus for science.

6
00:00:32,190 --> 00:00:35,309
To explain, let's rewind a little bit.

7
00:00:35,309 --> 00:00:42,480
In 2015, NASA introduced Venture Class Launch
Services – and the companies the agency

8
00:00:42,480 --> 00:00:49,460
selected to make the dream of small-satellite-friendly
launch vehicles a reality: Rocket Lab USA

9
00:00:49,460 --> 00:00:56,040
of Huntington Beach and Virgin Orbit, formerly
Virgin Galactic of Long Beach, California.

10
00:00:56,040 --> 00:01:00,480
CubeSats might be small satellites, but don't
be fooled by their size.

11
00:01:00,480 --> 00:01:06,810
They offer a big benefit: a low-cost way for
educational institutions, non-profits and

12
00:01:06,810 --> 00:01:11,970
others to design spacecraft, fly a mission
and collect real data.

13
00:01:11,970 --> 00:01:17,289
But flying to space along with other payloads
was like flying “coach class to space”

14
00:01:17,289 --> 00:01:21,630
– and it placed limitations on where CubeSats
could go in orbit.

15
00:01:21,630 --> 00:01:28,391
GARRETT SKROBOT: By flying piggyback, it meant
we had to go where the primary went; we were

16
00:01:28,391 --> 00:01:33,970
not able to select our orbit; we had to build
our science around particular orbits or sacrifice

17
00:01:33,970 --> 00:01:35,030
some of the science.

18
00:01:35,030 --> 00:01:39,310
That’s what the Venture Class Launch Services
was developed to fix.

19
00:01:39,310 --> 00:01:43,619
In short, it’s a small-satellite game-changer.

20
00:01:43,619 --> 00:01:45,619
Fast forward three years.

21
00:01:45,619 --> 00:01:48,939
In this business, that’s the blink of an
eye – especially if you’re going from

22
00:01:48,939 --> 00:01:55,310

a rocket on paper to a rocket that's ready
to fly. – with CubeSats as the primary payload.

23
00:01:55,310 --> 00:01:56,310
Now?

24
00:01:56,310 --> 00:01:59,229
CubeSats are the primary payload.

25
00:01:59,229 --> 00:02:03,610
In other words, they're going to be flying
first class.

26
00:02:03,610 --> 00:02:09,820
Rocket Lab and Virgin Orbit – are on the
leading edge of this new era in small satellite capability.

27
00:02:09,820 --> 00:02:14,280
Rocket Lab's two-stage Electron rocket stands
nearly 56 feet tall.

28
00:02:14,290 --> 00:02:19,320
Its Rutherford engine is the first oxygen/kerosene
engine to have all its primary components

29
00:02:19,320 --> 00:02:23,930
created by 3-D printing – in just 24 hours.

30
00:02:23,930 --> 00:02:28,290
Prelaunch processing takes place at the company's
location in Huntington Beach, California.

31
00:02:28,290 --> 00:02:31,480
Then it's all shipped to New Zealand.

32
00:02:31,480 --> 00:02:36,860
Launch Complex-1 is located an 8-hour drive
from Aukland at remote Mahia Peninsula.

33

00:02:36,860 --> 00:02:42,110
Peter Beck: It's a testament to NASA's
vision for the future and to invest in something

34
00:02:42,110 --> 00:02:44,880
this early, and it's truly fantastic.

35
00:02:44,880 --> 00:02:49,530
What Rocket Lab is about is enabling really
small satellites to do really important things

36
00:02:49,530 --> 00:02:51,530
that affect us all.

37
00:02:51,530 --> 00:02:56,770
Virgin Orbit's LauncherOne is a two-stage
rocket, about 70 feet in length and weighing

38
00:02:56,770 --> 00:03:00,769
in around 57,000 pounds at takeoff.

39
00:03:00,769 --> 00:03:05,160
Rocket and payload are processed at the company's
facility in Long Beach, California.

40
00:03:05,160 --> 00:03:11,970
Finally, LauncherOne is air-launched from
Cosmic Girl, the company's 747 carrier aircraft…

41
00:03:11,970 --> 00:03:15,989
providing the flexibility to launch from locations
around the world.

42
00:03:15,989 --> 00:03:19,599
Steve Isakowitz: Really appreciate the effort
that's gone into this new innovative program

43
00:03:19,599 --> 00:03:24,250
that's not only going to unleash the revolution
that's going to be created by small sats,

44
00:03:24,250 --> 00:03:28,280
but also is going to change the way, how we
conduct business, and how we work with NASA.

45
00:03:28,280 --> 00:03:32,420
So how do the CubeSat missions get matched
to the right rocket for the job?

46
00:03:32,420 --> 00:03:37,629
That's where NASA's Launch Services Program
comes in.

47
00:03:37,629 --> 00:03:42,920
Based at the agency's Kennedy Space Center,
LSP makes the hard business of rocket science

48
00:03:42,920 --> 00:03:44,080
a little easier.

49
00:03:44,080 --> 00:03:49,470
LSP is Earth's bridge to space… and that
includes finding innovative ways to lower

50
00:03:49,470 --> 00:03:54,120
the cost of a ride to orbit for all spacecraft…
large and small.

51
00:03:54,120 --> 00:03:58,200
Venture Class Launch Services is a natural
fit for this talented team.

52
00:03:58,200 --> 00:04:02,890
Mark Wiese: So the Venture Class Launch Service
was born out of a strategic initiative led

53
00:04:02,890 --> 00:04:07,910
by the Launch Services Program, rooted in
that drive to seek a new way to get to space.

54
00:04:07,910 --> 00:04:15,110
In only three years, the Venture Class Launch
Services capability went from this …

55
00:04:15,110 --> 00:04:21,239
And it all started with a pioneering idea
for a low-cost… first-class…