



1
00:00:07,030 --> 00:00:04,470
small relatively inexpensive satellites

2
00:00:09,110 --> 00:00:07,040
referred to as cubesats will provide a

3
00:00:11,430 --> 00:00:09,120
variety of technology demonstrations on

4
00:00:13,830 --> 00:00:11,440
the space station using nanoracks

5
00:00:15,430 --> 00:00:13,840
nanoracks house experiments and we

6
00:00:17,109 --> 00:00:15,440
recently spoke with the operations

7
00:00:19,670 --> 00:00:17,119
manager and payload developer with

8
00:00:22,710 --> 00:00:19,680
nanoracks to find out more about these

9
00:00:25,189 --> 00:00:22,720
tiny inventions all right rob the logo

10
00:00:27,830 --> 00:00:25,199
is space for everyone what does that

11
00:00:29,429 --> 00:00:27,840
mean it's a nanorack okay well what a

12
00:00:31,429 --> 00:00:29,439
nanorack is

13
00:00:34,470 --> 00:00:31,439

is a cube

14

00:00:36,790 --> 00:00:34,480

or we can do a double cube or a triple

15

00:00:38,790 --> 00:00:36,800

cube or a quadruple cube

16

00:00:41,110 --> 00:00:38,800

we have a couple platforms on the

17

00:00:44,069 --> 00:00:41,120

international space station

18

00:00:46,950 --> 00:00:44,079

that include usb ports that you can plug

19

00:00:49,670 --> 00:00:46,960

these into so what you do is you fit

20

00:00:51,590 --> 00:00:49,680

your experiment inside this cube

21

00:00:52,950 --> 00:00:51,600

that connects to the controller card

22

00:00:56,310 --> 00:00:52,960

into the cube

23

00:00:58,709 --> 00:00:56,320

and then we plug it in into the

24

00:01:01,590 --> 00:00:58,719

platform on the iss

25

00:01:03,510 --> 00:01:01,600

now some people don't want to fit their

26
00:01:05,270 --> 00:01:03,520
experiment inside the cubes they want to

27
00:01:08,710 --> 00:01:05,280
fly something else

28
00:01:10,870 --> 00:01:08,720
so we have some facilities such as this

29
00:01:13,109 --> 00:01:10,880
microscope we have one just like this on

30
00:01:15,109 --> 00:01:13,119
board that the crew plugs into

31
00:01:17,510 --> 00:01:15,119
one of the laptops

32
00:01:20,230 --> 00:01:17,520
points it on something interesting

33
00:01:23,190 --> 00:01:20,240
nano tiny right so

34
00:01:24,870 --> 00:01:23,200
space is limited on the space station so

35
00:01:26,390 --> 00:01:24,880
it's perfect for folks to get their

36
00:01:29,830 --> 00:01:26,400
experiments to fit into something like

37
00:01:32,390 --> 00:01:29,840
this yes i mean this is a 10 by 10 by 10

38
00:01:35,670 --> 00:01:32,400

centimeter cube and

39

00:01:36,550 --> 00:01:35,680

so for the opportunity to fly

40

00:01:39,590 --> 00:01:36,560

we are

41

00:01:42,630 --> 00:01:39,600

relatively inexpensive and we do things

42

00:01:43,749 --> 00:01:42,640

very fast from concept to flight in nine

43

00:01:45,030 --> 00:01:43,759

months

44

00:01:47,910 --> 00:01:45,040

so to

45

00:01:50,630 --> 00:01:47,920

take advantage of the opportunity

46

00:01:53,109 --> 00:01:50,640

a lot of research developers are willing

47

00:01:56,630 --> 00:01:53,119

to downscale their experiment so that it

48

00:01:58,310 --> 00:01:56,640

will fit inside our our structure rather

49

00:02:01,510 --> 00:01:58,320

than trying to

50

00:02:04,310 --> 00:02:01,520

fit the spacecraft around the experiment

51
00:02:05,670 --> 00:02:04,320
and a unique concept as well is you have

52
00:02:07,510 --> 00:02:05,680
educators

53
00:02:08,630 --> 00:02:07,520
and researchers

54
00:02:10,150 --> 00:02:08,640
all over

55
00:02:12,229 --> 00:02:10,160
putting their experiments in here but

56
00:02:15,670 --> 00:02:12,239
you also have educators building these

57
00:02:16,550 --> 00:02:15,680
nanoracks yes we've got several programs

58
00:02:19,110 --> 00:02:16,560
that

59
00:02:22,390 --> 00:02:19,120
involve schools from around the world

60
00:02:24,550 --> 00:02:22,400
one of our most successful programs

61
00:02:27,589 --> 00:02:24,560
involves a

62
00:02:28,949 --> 00:02:27,599
valley christian high school in san jose

63
00:02:30,790 --> 00:02:28,959

california

64

00:02:33,270 --> 00:02:30,800

has flown

65

00:02:35,350 --> 00:02:33,280

four of these boxes so far that have

66

00:02:38,470 --> 00:02:35,360

split a nanorack

67

00:02:40,550 --> 00:02:38,480

four sub modules or minilabs and they

68

00:02:42,150 --> 00:02:40,560

fit a different experiment in each of

69

00:02:44,869 --> 00:02:42,160

these many labs

70

00:02:47,270 --> 00:02:44,879

with a camera and i've been able to pull

71

00:02:49,589 --> 00:02:47,280

down real-time pictures from each of the

72

00:02:51,430 --> 00:02:49,599

many labs what types of experiments will

73

00:02:53,110 --> 00:02:51,440

go into something like that what are

74

00:02:56,390 --> 00:02:53,120

they we've had bacterial growth

75

00:02:59,270 --> 00:02:56,400

experiments uh ferrofluid experiments

76

00:03:01,190 --> 00:02:59,280

they're about to fly up a co2 sensor

77

00:03:07,350 --> 00:03:01,200

that they'd like to test

78

00:03:11,509 --> 00:03:08,550

aluminum

79

00:03:14,229 --> 00:03:11,519

bronzing type experiments so it really

80

00:03:16,710 --> 00:03:14,239

works with whatever can fit inside the

81

00:03:18,790 --> 00:03:16,720

tube inside the cube and fits within

82

00:03:21,270 --> 00:03:18,800

nasa's safety rules

83

00:03:23,750 --> 00:03:21,280

why is this so unique for nasa and the

84

00:03:27,670 --> 00:03:23,760

space station to have this capability

85

00:03:31,190 --> 00:03:27,680

well we are a private company and we

86

00:03:34,710 --> 00:03:31,200

do not have a our selection process is

87

00:03:37,509 --> 00:03:34,720

who is ready to fly and

88

00:03:39,350 --> 00:03:37,519

who is able to provide us the funding to

89

00:03:41,830 --> 00:03:39,360

fly their experiment

90

00:03:42,630 --> 00:03:41,840

and we do things very very quickly we

91

00:03:46,390 --> 00:03:42,640

don't

92

00:03:49,190 --> 00:03:46,400

require a long process to decide who's

93

00:03:51,589 --> 00:03:49,200

more worthy than anybody else and we

94

00:03:53,670 --> 00:03:51,599

also provide a simple structure

95

00:03:54,789 --> 00:03:53,680

structure that researchers can work

96

00:03:55,750 --> 00:03:54,799

within

97

00:03:57,990 --> 00:03:55,760

and

98

00:04:01,509 --> 00:03:58,000

fortunately we have a close partnership

99

00:04:05,190 --> 00:04:01,519

with nasa so that we're constantly

100

00:04:07,589 --> 00:04:05,200

working with nasa making sure that the

101

00:04:10,229 --> 00:04:07,599

suggested experiments will fall within

102

00:04:13,110 --> 00:04:10,239

the safety requirements i'm a former

103

00:04:14,869 --> 00:04:13,120

safety person myself so that does that

104

00:04:16,949 --> 00:04:14,879

does help and

105

00:04:19,270 --> 00:04:16,959

nasa helps us with development of the

106

00:04:23,749 --> 00:04:19,280

procedures we do the

107

00:04:27,189 --> 00:04:24,550

and

108

00:04:29,909 --> 00:04:27,199

so this gives a gateway to the space

109

00:04:32,150 --> 00:04:29,919

station that was not always already

110

00:04:34,310 --> 00:04:32,160

there not bad for a company that started

111

00:04:37,430 --> 00:04:34,320

out in someone's garage then moved to a