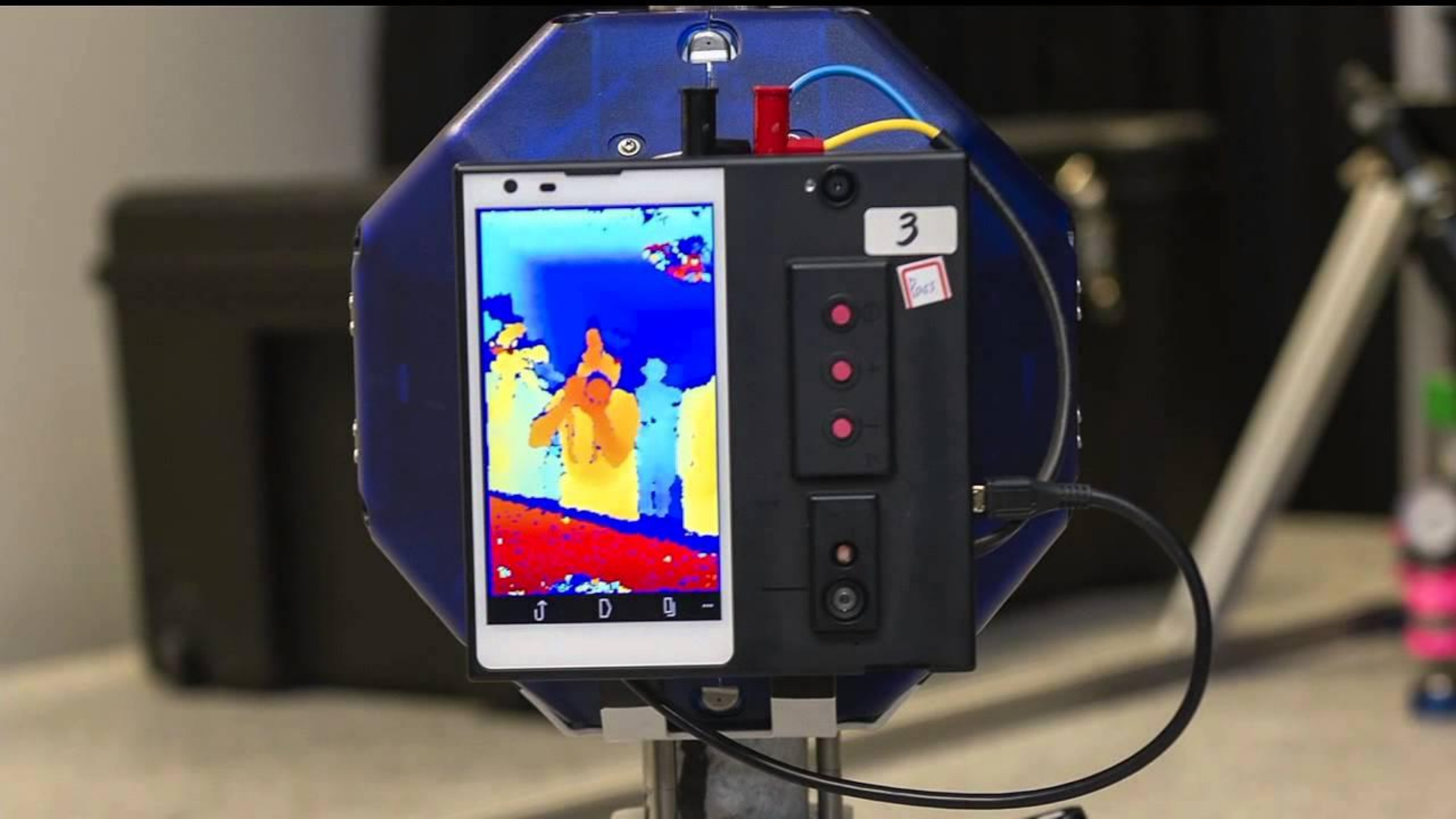
3

1
00:00:03,909 --> 00:00:01,910
this month we're going to be

2
00:00:05,910 --> 00:00:03,919
highlighting a lot of the technology

3
00:00:07,590 --> 00:00:05,920
tests and demonstrations happening on

4
00:00:09,110 --> 00:00:07,600
board the iss

5
00:00:10,549 --> 00:00:09,120
today we're going to talk about one

6
00:00:12,070 --> 00:00:10,559
that's actually using a piece of

7
00:00:14,230 --> 00:00:12,080
technology that many of you probably

8
00:00:16,230 --> 00:00:14,240
have in your hand right now

9
00:00:18,390 --> 00:00:16,240
lori meigs is standing by at nasa's

10
00:00:20,950 --> 00:00:18,400
payload operations integration center at

11
00:00:25,189 --> 00:00:20,960
the marshall space flight center to tell

12
00:00:28,950 --> 00:00:26,550
if you have a smartphone then you

13
00:00:30,630 --> 00:00:28,960

already have half of this experiment

14
00:00:33,270 --> 00:00:30,640
it's called smart spheres and it

15
00:00:35,030 --> 00:00:33,280
combines a smartphone with the spheres

16
00:00:37,270 --> 00:00:35,040
free-flying satellites that are on the

17
00:00:39,190 --> 00:00:37,280
station for a technology demonstration

18
00:00:42,869 --> 00:00:39,200
we caught up with terry fong from nasa's

19
00:00:45,990 --> 00:00:44,229
so with spheres we've been doing some

20
00:00:47,590 --> 00:00:46,000
work over the past few years of turning

21
00:00:50,229 --> 00:00:47,600
it from being a satellite into a

22
00:00:52,229 --> 00:00:50,239
free-flying robot

23
00:00:53,830 --> 00:00:52,239
so what does that mean well for us that

24
00:00:55,510 --> 00:00:53,840
means actually converting what was

25
00:00:56,950 --> 00:00:55,520
originally designed as being a micro

26
00:00:59,670 --> 00:00:56,960
satellite something the size of a

27
00:01:02,790 --> 00:00:59,680
volleyball into a robot and to do that

28
00:01:05,189 --> 00:01:02,800
we've had to add a processor a cameras

29
00:01:06,390 --> 00:01:05,199
uh display and if you put those all

30
00:01:08,149 --> 00:01:06,400
together that basically turns into a

31
00:01:09,270 --> 00:01:08,159
smartphone

32
00:01:10,950 --> 00:01:09,280
wow

33
00:01:12,390 --> 00:01:10,960
that kind of blows my mind so how did

34
00:01:13,910 --> 00:01:12,400
you get make that connection that you

35
00:01:16,310 --> 00:01:13,920
could do that well you know we were

36
00:01:17,830 --> 00:01:16,320
looking for a way to to basically add

37
00:01:19,830 --> 00:01:17,840
you know sensors and a camera and

38
00:01:21,109 --> 00:01:19,840

processor to the spheres we were sitting

39
00:01:22,469 --> 00:01:21,119
around in a conference room everybody's

40
00:01:23,749 --> 00:01:22,479
got their smartphone on saying boy

41
00:01:26,149 --> 00:01:23,759
wouldn't it be great if we had some sort

42
00:01:27,910 --> 00:01:26,159
of you know high-powered computer in a

43
00:01:30,230 --> 00:01:27,920
box and everybody's like oh like one of

44
00:01:32,469 --> 00:01:30,240
these um and then a few years ago that

45
00:01:34,069 --> 00:01:32,479
turned into our first smartphone which

46
00:01:35,590 --> 00:01:34,079
we sent up on the last shuttle flight

47
00:01:37,910 --> 00:01:35,600
and we've been using it on station for

48
00:01:39,590 --> 00:01:37,920
the past three years are these like our

49
00:01:41,670 --> 00:01:39,600
typical smartphones or they're a little

50
00:01:43,590 --> 00:01:41,680
more advanced well the the

51
00:01:46,069 --> 00:01:43,600
new one the project tango phone has got

52
00:01:47,910 --> 00:01:46,079
a built-in 3d sensor it's basically the

53
00:01:50,310 --> 00:01:47,920
same kind of thing you see in an xbox

54
00:01:53,109 --> 00:01:50,320
connect it allows you to basically do 3d

55
00:01:55,190 --> 00:01:53,119
mapping tracking of things uh in the

56
00:01:57,109 --> 00:01:55,200
real world and we hope it'll allow us to

57
00:01:59,109 --> 00:01:57,119
take the the spheres and fly freely

58
00:02:00,789 --> 00:01:59,119
throughout the us segment

59
00:02:02,630 --> 00:02:00,799
why is that important to learn how to do

60
00:02:04,550 --> 00:02:02,640
that well right now the spheres operate

61
00:02:06,789 --> 00:02:04,560
with an external positioning system it's

62
00:02:08,309 --> 00:02:06,799
a set of these these ultrasonic beacons

63
00:02:10,229 --> 00:02:08,319

which allows us to fly around in

64
00:02:12,550 --> 00:02:10,239
basically a two by two by two meter

65
00:02:14,470 --> 00:02:12,560
volume so pretty small test area if we

66
00:02:16,630 --> 00:02:14,480
want to fly anywhere in the station we

67
00:02:19,190 --> 00:02:16,640
have to find uh you know technology that

68
00:02:22,470 --> 00:02:19,200
will let us just flee uh you know freely

69
00:02:24,070 --> 00:02:22,480
fly and uh this new smartphone may be a

70
00:02:26,229 --> 00:02:24,080
way of doing that we've done actually a

71
00:02:28,390 --> 00:02:26,239
lot of testing on the ground we also did

72
00:02:30,710 --> 00:02:28,400
a series of parabolic test flights on a

73
00:02:32,229 --> 00:02:30,720
zero g aircraft back in february to try

74
00:02:33,750 --> 00:02:32,239
to test out the smartphone and the

75
00:02:35,589 --> 00:02:33,760
combination of the smartphone with

76
00:02:37,270 --> 00:02:35,599
spheres and we're pretty confident that

77
00:02:38,949 --> 00:02:37,280
we'll be able to actually do this 3d

78
00:02:41,030 --> 00:02:38,959
mapping and navigation

79
00:02:42,630 --> 00:02:41,040
so the obvious question might be

80
00:02:43,910 --> 00:02:42,640
so you can do that with the parabolic

81
00:02:45,110 --> 00:02:43,920
flights and you can do it on the ground

82
00:02:46,869 --> 00:02:45,120
why do you have to do it on the space

83
00:02:48,229 --> 00:02:46,879
station well because there are there are

84
00:02:50,790 --> 00:02:48,239
a lot of things that you just can't you

85
00:02:52,070 --> 00:02:50,800
know do you know on the ground fully uh

86
00:02:53,190 --> 00:02:52,080
even though the parabolic flights are a

87
00:02:55,110 --> 00:02:53,200
really great way of getting into

88
00:02:57,190 --> 00:02:55,120

microgravity you only get microgravity

89
00:02:59,589 --> 00:02:57,200
for a few seconds maybe maybe 10 to 12

90
00:03:00,869 --> 00:02:59,599
seconds um so your testing is really

91
00:03:01,990 --> 00:03:00,879
hurry up let's test for a short period

92
00:03:04,070 --> 00:03:02,000
of time hurry up let's test for a short

93
00:03:05,910 --> 00:03:04,080
period of time it's not like in space

94
00:03:07,190 --> 00:03:05,920
it's not like in true microgravity the

95
00:03:09,589 --> 00:03:07,200
work we've been doing with spheres

96
00:03:10,949 --> 00:03:09,599
really is just a precursor to what's

97
00:03:12,710 --> 00:03:10,959
going to come next

98
00:03:14,470 --> 00:03:12,720
my current project the human exploration

99
00:03:16,390 --> 00:03:14,480
telerobotics project is actually

100
00:03:18,229 --> 00:03:16,400
wrapping up in just a few months but

101
00:03:20,390 --> 00:03:18,239
there is a follow-on project the

102
00:03:22,630 --> 00:03:20,400
telerobotics 2 project that's actually

103
00:03:24,309 --> 00:03:22,640
going to develop a new free-flying robot

104
00:03:25,509 --> 00:03:24,319
for the space station and we're going to

105
00:03:27,270 --> 00:03:25,519
take everything we've learned with the

106
00:03:29,190 --> 00:03:27,280
smart sphere system and roll that into

107
00:03:30,390 --> 00:03:29,200
this brand new free flying robot that

108
00:03:32,630 --> 00:03:30,400
hopefully we'll see on station in the

109
00:03:34,470 --> 00:03:32,640
next two to three years

110
00:03:36,070 --> 00:03:34,480
and as we take a live look into the

111
00:03:37,670 --> 00:03:36,080
payload operations integration center

112
00:03:39,910 --> 00:03:37,680
busy at work today they are helping with

113
00:03:42,309 --> 00:03:39,920

the rodent research project we want to

114
00:03:44,390 --> 00:03:42,319
remind everyone that the destination

115
00:03:47,270 --> 00:03:44,400
station technology forum will be here in

116
00:03:49,750 --> 00:03:47,280
huntsville october 27th that will be

117
00:03:51,430 --> 00:03:49,760
broadcast live on nasa tv from 9 to 10

118
00:03:53,589 --> 00:03:51,440
a.m and you'll hear from many other

119
00:03:55,589 --> 00:03:53,599
experts like terry fong who are talking

120
00:03:58,229 --> 00:03:55,599
about the technology demonstrations and