



1
00:00:09,509 --> 00:00:07,269
just about a year ago the third

2
00:00:11,110 --> 00:00:09,519
operational dragon cargo ship arrived at

3
00:00:13,030 --> 00:00:11,120
the international space station carrying

4
00:00:15,829 --> 00:00:13,040
its first external payload the

5
00:00:17,109 --> 00:00:15,839
high-definition earth viewing or hdev

6
00:00:18,790 --> 00:00:17,119
experiment

7
00:00:20,710 --> 00:00:18,800
that was installed on the earth-facing

8
00:00:23,029 --> 00:00:20,720
side of the columbus module's payload

9
00:00:24,870 --> 00:00:23,039
facility and it's been sending beautiful

10
00:00:25,990 --> 00:00:24,880
views of planet earth down to us since

11
00:00:27,910 --> 00:00:26,000
then

12
00:00:30,310 --> 00:00:27,920
recently my colleague dan hewitt spoke

13
00:00:32,069 --> 00:00:30,320

with the h dev project manager david

14

00:00:33,670 --> 00:00:32,079

horniak to find out how the project's

15

00:00:34,709 --> 00:00:33,680

been doing during its first year on

16

00:00:35,990 --> 00:00:34,719

orbit

17

00:00:37,590 --> 00:00:36,000

so the astronauts on board the

18

00:00:39,110 --> 00:00:37,600

international space station always doing

19

00:00:40,950 --> 00:00:39,120

their best to share the sights and

20

00:00:42,709 --> 00:00:40,960

sounds of space with those of us on the

21

00:00:44,389 --> 00:00:42,719

ground there's actually been a payload

22

00:00:45,670 --> 00:00:44,399

up there for about a year now

23

00:00:47,750 --> 00:00:45,680

that's been giving some of the most

24

00:00:50,389 --> 00:00:47,760

spectacular views of planet earth from

25

00:00:53,189 --> 00:00:50,399

about 260 miles above that's the high

26
00:00:54,790 --> 00:00:53,199
definition earth viewing or hdev payload

27
00:00:57,670 --> 00:00:54,800
and i'm joined today by the project

28
00:00:59,270 --> 00:00:57,680
manager dave hornak who's gonna tell us

29
00:01:01,910 --> 00:00:59,280
a little bit more about it so real quick

30
00:01:03,990 --> 00:01:01,920
starts off what is the hdev payload what

31
00:01:05,509 --> 00:01:04,000
was it designed to do you know why kind

32
00:01:07,830 --> 00:01:05,519
of why is it up there

33
00:01:10,149 --> 00:01:07,840
hdev was built in a short schedule in

34
00:01:11,270 --> 00:01:10,159
about nine months to support the spacex

35
00:01:13,350 --> 00:01:11,280
3 launch

36
00:01:16,149 --> 00:01:13,360
we wanted to put something up quickly

37
00:01:17,670 --> 00:01:16,159
that could provide video of the earth

38
00:01:18,789 --> 00:01:17,680

for the whole world to see to see what

39

00:01:21,830 --> 00:01:18,799

the astronauts see when they look out

40

00:01:25,030 --> 00:01:21,840

the window but we also wanted to use

41

00:01:26,870 --> 00:01:25,040

cots systems and integrate cameras into

42

00:01:28,310 --> 00:01:26,880

this infrastructure to see how well they

43

00:01:29,910 --> 00:01:28,320

would survive in the environment as well

44

00:01:31,670 --> 00:01:29,920

as how well they work with the rest of

45

00:01:33,910 --> 00:01:31,680

the space infrastructure real quick cots

46

00:01:35,910 --> 00:01:33,920

what is commercial off the shelf okay so

47

00:01:37,350 --> 00:01:35,920

just you know cameras somebody could go

48

00:01:39,350 --> 00:01:37,360

out and buy right now if they wanted

49

00:01:41,350 --> 00:01:39,360

that's correct most of the system is is

50

00:01:43,190 --> 00:01:41,360

commercial okay available and it's

51
00:01:45,350 --> 00:01:43,200
currently mounted to the earth-facing

52
00:01:47,670 --> 00:01:45,360
side of the esa uh columbus module

53
00:01:49,990 --> 00:01:47,680
european module and so they've been up

54
00:01:51,830 --> 00:01:50,000
there for you know almost a year now how

55
00:01:53,350 --> 00:01:51,840
i know cameras can actually take a

56
00:01:54,870 --> 00:01:53,360
little punishment from the environment

57
00:01:56,870 --> 00:01:54,880
up there how have they been holding up

58
00:01:59,190 --> 00:01:56,880
uh you know over the last like couple of

59
00:02:00,310 --> 00:01:59,200
months yeah the they've done very well

60
00:02:02,630 --> 00:02:00,320
actually done better than we had

61
00:02:04,310 --> 00:02:02,640
anticipated the the only thing that

62
00:02:05,830 --> 00:02:04,320
we've seen so far is one pixel dropout

63
00:02:07,190 --> 00:02:05,840

out of the nadir facing camera that's

64

00:02:09,430 --> 00:02:07,200

the camera that points face down toward

65

00:02:11,750 --> 00:02:09,440

earth and that is an intermittent

66

00:02:13,990 --> 00:02:11,760

dropout it's not even out all the time

67

00:02:16,229 --> 00:02:14,000

so it's actually performed very well

68

00:02:17,990 --> 00:02:16,239

okay and you've also gotten some college

69

00:02:19,589 --> 00:02:18,000

students involved in this process

70

00:02:21,510 --> 00:02:19,599

haven't you what was their role in the

71

00:02:23,750 --> 00:02:21,520

whole project we did during the during

72

00:02:26,869 --> 00:02:23,760

operations we had among uh we had

73

00:02:28,390 --> 00:02:26,879

university of bonn in germany uh while

74

00:02:30,070 --> 00:02:28,400

the german astronaut gerst was on board

75

00:02:31,910 --> 00:02:30,080

last year they created the what they

76
00:02:34,070 --> 00:02:31,920
called the columbus eye website and they

77
00:02:36,790 --> 00:02:34,080
used that website and the video straight

78
00:02:38,550 --> 00:02:36,800
from hdev around germany to to support

79
00:02:40,790 --> 00:02:38,560
his mission as well as a space station

80
00:02:42,790 --> 00:02:40,800
mission to throughout not only the

81
00:02:44,869 --> 00:02:42,800
public but also to schools uh elementary

82
00:02:47,589 --> 00:02:44,879
schools and high schools and so on and

83
00:02:49,750 --> 00:02:47,599
so all of this video again being

84
00:02:51,350 --> 00:02:49,760
streamed live to the internet and i mean

85
00:02:53,509 --> 00:02:51,360
what's some of the response you guys

86
00:02:54,869 --> 00:02:53,519
have gotten back from people who you

87
00:02:56,710 --> 00:02:54,879
know when they find this for the first

88
00:02:58,149 --> 00:02:56,720

time maybe and they you know they're

89

00:02:59,509 --> 00:02:58,159

they're like i'm looking at the earth

90

00:03:00,869 --> 00:02:59,519

from the international space station

91

00:03:02,309 --> 00:03:00,879

what's what's some of the response you

92

00:03:03,670 --> 00:03:02,319

guys have gotten back

93

00:03:06,710 --> 00:03:03,680

so

94

00:03:08,390 --> 00:03:06,720

it's been a lot of people using it

95

00:03:10,390 --> 00:03:08,400

in their own websites we've heard about

96

00:03:11,990 --> 00:03:10,400

a art gallery in new york city that is

97

00:03:15,670 --> 00:03:12,000

using it oh wow it's been used on the

98

00:03:18,949 --> 00:03:15,680

news numerous times uh among uh several

99

00:03:21,270 --> 00:03:18,959

people in in the news and on on the web

100

00:03:22,710 --> 00:03:21,280

so many of them uh popular personalities

101
00:03:24,470 --> 00:03:22,720
have commented how much they love just

102
00:03:25,670 --> 00:03:24,480
spending time watching it and one person

103
00:03:26,550 --> 00:03:25,680
even said they spend too much time

104
00:03:28,869 --> 00:03:26,560
watching

105
00:03:31,830 --> 00:03:28,879
it's it's just a seems to be very well

106
00:03:33,270 --> 00:03:31,840
received by by everybody gets to see it

107
00:03:34,949 --> 00:03:33,280
okay and yeah you can definitely

108
00:03:36,630 --> 00:03:34,959
understand how the astronauts get so

109
00:03:39,270 --> 00:03:36,640
drawn to just staring out a window at

110
00:03:40,949 --> 00:03:39,280
earth now you actually brought kind of a

111
00:03:42,949 --> 00:03:40,959
little highlight really i mean there's

112
00:03:44,630 --> 00:03:42,959
been some really spectacular stuff it's

113
00:03:46,070 --> 00:03:44,640

captured you brought you know some some

114

00:03:47,509 --> 00:03:46,080

of your favorite clips why don't we take

115

00:03:51,190 --> 00:03:47,519

a quick look at those and you can walk

116

00:03:56,149 --> 00:03:53,670

so this was a sunrise uh we get space

117

00:03:57,670 --> 00:03:56,159

station sees about 16 sunrises per day

118

00:04:00,070 --> 00:03:57,680

as it goes around

119

00:04:01,670 --> 00:04:00,080

around the earth every 90 minutes so

120

00:04:03,429 --> 00:04:01,680

when we capture a beautiful sunrise and

121

00:04:04,869 --> 00:04:03,439

sunset it's just great to see them

122

00:04:08,470 --> 00:04:04,879

usually like here you can even see some

123

00:04:09,990 --> 00:04:08,480

of the clouds in the low horizon areas

124

00:04:12,149 --> 00:04:10,000

yeah i mean i mean it's definitely

125

00:04:14,470 --> 00:04:12,159

stunning and it's amazing you're able to

126
00:04:16,710 --> 00:04:14,480
get that too so this was in the midwest

127
00:04:18,710 --> 00:04:16,720
taken in february started out around st

128
00:04:20,710 --> 00:04:18,720
louis area you can see the great lakes

129
00:04:22,950 --> 00:04:20,720
all covered in snow in the great lakes

130
00:04:24,390 --> 00:04:22,960
iced over going over my hometown of

131
00:04:26,469 --> 00:04:24,400
toledo ohio

132
00:04:28,550 --> 00:04:26,479
you're starting to see the east coast

133
00:04:30,710 --> 00:04:28,560
coming up on the right side and the st

134
00:04:31,590 --> 00:04:30,720
lawrence river beneath uh right in the

135
00:04:33,189 --> 00:04:31,600
middle

136
00:04:35,270 --> 00:04:33,199
these you can see clearly see the cities

137
00:04:37,830 --> 00:04:35,280
there's toronto going through right off

138
00:04:39,590 --> 00:04:37,840

lake ontario and montreal and the moon

139

00:04:41,430 --> 00:04:39,600

is rising just over just to the left of

140

00:04:43,030 --> 00:04:41,440

center

141

00:04:46,230 --> 00:04:43,040

and this is florida where we of course

142

00:04:48,070 --> 00:04:46,240

we launched from taken last month

143

00:04:49,270 --> 00:04:48,080

passing over the bahamas and you see the

144

00:04:51,510 --> 00:04:49,280

beautiful

145

00:04:53,590 --> 00:04:51,520

blue waters uh it goes on a little bit

146

00:04:55,189 --> 00:04:53,600

further you see cuba to the left

147

00:04:56,629 --> 00:04:55,199

one of the things i noticed is that when

148

00:04:59,030 --> 00:04:56,639

i start seeing the video

149

00:05:00,790 --> 00:04:59,040

is that like here this is the northern

150

00:05:02,390 --> 00:05:00,800

europe uh with north is to the left

151

00:05:03,590 --> 00:05:02,400

there's the baltic on the left and

152

00:05:05,510 --> 00:05:03,600

you're going right over germany and

153

00:05:07,590 --> 00:05:05,520

poland on the bottom this is near sunset

154

00:05:09,670 --> 00:05:07,600

local time so it's not as clear

155

00:05:10,710 --> 00:05:09,680

but it's but it's another part of the

156

00:05:12,629 --> 00:05:10,720

world

157

00:05:14,390 --> 00:05:12,639

this is the spacex 5

158

00:05:17,590 --> 00:05:14,400

release so the robotic arm is taking

159

00:05:19,749 --> 00:05:17,600

spacex 5 back in february of this year

160

00:05:21,590 --> 00:05:19,759

and moving it around to get it away from

161

00:05:23,510 --> 00:05:21,600

space station so they can release it and

162

00:05:25,430 --> 00:05:23,520

it could return to earth

163

00:05:26,790 --> 00:05:25,440

so we are lucky that where we're

164

00:05:29,110 --> 00:05:26,800

positioned we actually get to see a lot

165

00:05:30,550 --> 00:05:29,120

of the robotic arm operations as well as

166

00:05:33,350 --> 00:05:30,560

the earth going by

167

00:05:35,270 --> 00:05:33,360

and this was a super super typhoon

168

00:05:37,749 --> 00:05:35,280

mayaska i think is how it's pronounced

169

00:05:40,390 --> 00:05:37,759

is taken in the pacific western pacific

170

00:05:42,070 --> 00:05:40,400

this is on march 31st of this year at

171

00:05:45,029 --> 00:05:42,080

the time this was taken the winds were

172

00:05:47,670 --> 00:05:45,039

about 140 miles per hour

173

00:05:49,350 --> 00:05:47,680

the storm continued on to the west and a

174

00:05:51,029 --> 00:05:49,360

few days after this image went over the

175

00:05:52,469 --> 00:05:51,039

philippines thankfully not as strong a

176

00:05:55,590 --> 00:05:52,479

storm as it was

177

00:05:56,710 --> 00:05:55,600

at this time the image was taken

178

00:05:57,749 --> 00:05:56,720

and as it goes away one of the things i

179

00:06:00,070 --> 00:05:57,759

was saying in a minute ago one thing is

180

00:06:01,670 --> 00:06:00,080

that i learned was that it's we're used

181

00:06:03,590 --> 00:06:01,680

to seeing maps where you always know

182

00:06:04,950 --> 00:06:03,600

where north is it's always up that's not

183

00:06:06,230 --> 00:06:04,960

always the case yeah you look out the

184

00:06:08,629 --> 00:06:06,240

window and sometimes north is left

185

00:06:10,469 --> 00:06:08,639

sometimes it's right sometimes you just

186

00:06:11,430 --> 00:06:10,479

it makes it a little more interesting to

187

00:06:13,350 --> 00:06:11,440

try to figure out what you're seeing

188

00:06:15,590 --> 00:06:13,360

sometimes but i mean stunning stunning

189

00:06:17,270 --> 00:06:15,600

seems nonetheless so you know what's

190

00:06:18,790 --> 00:06:17,280

what's what's next for hdav what's on

191

00:06:20,230 --> 00:06:18,800

the horizon how long do you think these

192

00:06:22,550 --> 00:06:20,240

cameras are you know going to be able to

193

00:06:24,710 --> 00:06:22,560

be you know spitting this stuff out so

194

00:06:26,870 --> 00:06:24,720

dude due to a schedule flight schedules

195

00:06:29,749 --> 00:06:26,880

we're going to be on orbit through

196

00:06:30,950 --> 00:06:29,759

spring of 17 right now okay uh so as

197

00:06:32,150 --> 00:06:30,960

long as the cameras are running we're

198

00:06:33,110 --> 00:06:32,160

going to continue to broadcast to the

199

00:06:34,469 --> 00:06:33,120

web

200

00:06:36,870 --> 00:06:34,479

as i mentioned we have are starting to

201

00:06:37,749 --> 00:06:36,880

see some pixel drop out and

202

00:06:39,590 --> 00:06:37,759

we're getting to the point where we

203

00:06:41,990 --> 00:06:39,600

expect things to start to fail we will

204

00:06:43,430 --> 00:06:42,000

broadcast right up until they do uh we

205

00:06:45,990 --> 00:06:43,440

don't expect these types of systems to

206

00:06:48,629 --> 00:06:46,000

just fail off altogether we expect them

207

00:06:50,309 --> 00:06:48,639

to be a slow degradation and as they do

208

00:06:52,390 --> 00:06:50,319

we're learning how they degrade as well

209

00:06:54,469 --> 00:06:52,400

so that way we can monitor future

210

00:06:55,749 --> 00:06:54,479

systems and see what we're doing in the

211

00:06:58,550 --> 00:06:55,759

future so we know when to replace

212

00:07:00,230 --> 00:06:58,560

systems on board okay and we've

213

00:07:02,469 --> 00:07:00,240

we've also

214

00:07:04,629 --> 00:07:02,479

just assigned an agreement with a

215

00:07:06,710 --> 00:07:04,639

company called earthcast where they are

216

00:07:08,390 --> 00:07:06,720

now receiving our video straight and

217

00:07:11,350 --> 00:07:08,400

they're going to integrate it onto their

218

00:07:13,670 --> 00:07:11,360

web platform along with api data such as

219

00:07:15,909 --> 00:07:13,680

location and attitude of space station

220

00:07:18,230 --> 00:07:15,919

and in geolocated with maps and things

221

00:07:20,469 --> 00:07:18,240

like that so that users and app

222

00:07:23,110 --> 00:07:20,479

developers can integrate this video into

223

00:07:25,589 --> 00:07:23,120

what they're doing as well um this is

224

00:07:27,830 --> 00:07:25,599

several organizations and individuals

225

00:07:29,830 --> 00:07:27,840

have tried to take our video and do apps

226

00:07:31,589 --> 00:07:29,840

develop apps with them before

227

00:07:33,990 --> 00:07:31,599

using earthcast will help them to be

228

00:07:36,550 --> 00:07:34,000

able to do that okay fascinating stuff

229

00:07:37,670 --> 00:07:36,560

and again this is all streamed live on

230

00:07:39,510 --> 00:07:37,680

the web

231

00:07:40,790 --> 00:07:39,520

and as always you can check it out uh

232

00:07:43,670 --> 00:07:40,800

here's the website right below

233

00:07:46,790 --> 00:07:43,680

eol.jsc.nasa.gov

234

00:07:48,790 --> 00:07:46,800

hdev um again dave horniank uh the

235

00:07:50,629 --> 00:07:48,800

project manager for hdev thank you so

236

00:07:52,150 --> 00:07:50,639

much for joining me sharon some of your

237

00:07:54,309 --> 00:07:52,160

favorite scenes i mean it's stunning

238

00:07:56,469 --> 00:07:54,319

stuff and we hope it keeps going you