
NASA
SPACESTATION
LIVE

1
00:00:08,390 --> 00:00:06,309
with the launch of the fourth orbital

2
00:00:10,310 --> 00:00:08,400
atk resupply mission to the

3
00:00:11,910 --> 00:00:10,320
international space station nasa

4
00:00:13,910 --> 00:00:11,920
delivered a brand new video camera

5
00:00:16,790 --> 00:00:13,920
capable of recording and revealing

6
00:00:18,630 --> 00:00:16,800
images so with six times the detail of

7
00:00:21,109 --> 00:00:18,640
your average high definition television

8
00:00:22,950 --> 00:00:21,119
set and nasa wants to bring this dynamic

9
00:00:24,790 --> 00:00:22,960
and captivating video into your living

10
00:00:26,710 --> 00:00:24,800
room so with that in mind we sat down

11
00:00:28,550 --> 00:00:26,720
with nasa's imagery experts program

12
00:00:30,230 --> 00:00:28,560
manager rodney grubbs here at marshall

13
00:00:34,150 --> 00:00:30,240

to talk about the future of video

14
00:00:35,510 --> 00:00:34,160
imagery and nasa tv in uhd

15
00:00:37,030 --> 00:00:35,520
so a lot of people will be familiar with

16
00:00:38,869 --> 00:00:37,040
their high definition televisions that

17
00:00:40,470 --> 00:00:38,879
they may have in their living room but

18
00:00:42,549 --> 00:00:40,480
there's been a big push lately to go to

19
00:00:43,910 --> 00:00:42,559
something called 4k or ultra high

20
00:00:45,029 --> 00:00:43,920
definition can you explain the

21
00:00:47,670 --> 00:00:45,039
difference for us

22
00:00:51,510 --> 00:00:47,680
so ultra high definition or 4k the four

23
00:00:54,310 --> 00:00:51,520
is four times 1080p so if you're looking

24
00:00:57,430 --> 00:00:54,320
at a television set that says full hd

25
00:00:59,990 --> 00:00:57,440
then it is 1080p resolution this is four

26
00:01:01,670 --> 00:01:00,000
times that in the same space

27
00:01:03,750 --> 00:01:01,680
is it a much sharper and cleaner image

28
00:01:04,630 --> 00:01:03,760
much much sharper and cleaner uh the

29
00:01:06,469 --> 00:01:04,640
there's

30
00:01:07,510 --> 00:01:06,479
many many more pixels and the pixels are

31
00:01:09,750 --> 00:01:07,520
smaller

32
00:01:11,670 --> 00:01:09,760
why is nasa studying this technology so

33
00:01:13,510 --> 00:01:11,680
there's two reasons why

34
00:01:15,990 --> 00:01:13,520
nasa would be interested in shooting in

35
00:01:17,670 --> 00:01:16,000
this format one is

36
00:01:19,429 --> 00:01:17,680
for the science and applica the science

37
00:01:21,830 --> 00:01:19,439
and engineering applications so if we

38
00:01:24,310 --> 00:01:21,840

have more pixels higher dynamic range

39
00:01:26,870 --> 00:01:24,320
higher frame rate then that's more data

40
00:01:27,670 --> 00:01:26,880
for analysis and engineering purposes

41
00:01:30,310 --> 00:01:27,680
right

42
00:01:32,390 --> 00:01:30,320
the other is because a lot of what nasa

43
00:01:35,109 --> 00:01:32,400
does has a shelf life we're still

44
00:01:37,910 --> 00:01:35,119
looking at apollo films

45
00:01:40,630 --> 00:01:37,920
even today all these many years later

46
00:01:42,550 --> 00:01:40,640
well 20 to 40 years from now somebody is

47
00:01:45,429 --> 00:01:42,560
going to be very appreciative that we

48
00:01:47,990 --> 00:01:45,439
shot in video formats that have a shelf

49
00:01:50,950 --> 00:01:48,000
life that actually hold up to whatever

50
00:01:53,270 --> 00:01:50,960
may come in the future 6k 8k

51
00:01:55,350 --> 00:01:53,280
who knows what 40 years from now people

52
00:01:59,190 --> 00:01:55,360
will be able to

53
00:02:01,030 --> 00:01:59,200
watch on large screens and so forth so

54
00:02:03,830 --> 00:02:01,040
having something in a higher resolution

55
00:02:05,350 --> 00:02:03,840
today is going to be useful for many

56
00:02:07,030 --> 00:02:05,360
decades to come so you think it's

57
00:02:09,910 --> 00:02:07,040
helpful for historical documentation as

58
00:02:12,070 --> 00:02:09,920
well yes right so

59
00:02:14,150 --> 00:02:12,080
you know a lot of what we do

60
00:02:16,710 --> 00:02:14,160
may not seem to be

61
00:02:19,190 --> 00:02:16,720
that terribly important today but

62
00:02:21,830 --> 00:02:19,200
there may be some science or application

63
00:02:23,430 --> 00:02:21,840

10 20 30 years from now where somebody's

64
00:02:25,350 --> 00:02:23,440
going to come back and do a search and

65
00:02:28,470 --> 00:02:25,360
find that footage whether it's a solid

66
00:02:30,150 --> 00:02:28,480
rocket booster test in utah or an orion

67
00:02:31,750 --> 00:02:30,160
splashdown

68
00:02:34,630 --> 00:02:31,760
you know the folks working on orion have

69
00:02:37,830 --> 00:02:34,640
been looking at apollo era film to

70
00:02:40,710 --> 00:02:37,840
understand how the capsule behaved

71
00:02:42,630 --> 00:02:40,720
you know at splashdown for example so

72
00:02:44,949 --> 00:02:42,640
you just never know how what we shoot

73
00:02:47,270 --> 00:02:44,959
today is going to be used in the future

74
00:02:49,190 --> 00:02:47,280
if we're shooting an event a one-time

75
00:02:50,710 --> 00:02:49,200
shot you don't get a do-over there may

76
00:02:52,949 --> 00:02:50,720
be something that happened that we

77
00:02:54,550 --> 00:02:52,959
didn't see at first so the analysis

78
00:02:56,869 --> 00:02:54,560
community looks at that footage and they

79
00:02:58,710 --> 00:02:56,879
pour over it frame by frame well if they

80
00:03:00,869 --> 00:02:58,720
can see in the shadows and they can see

81
00:03:03,589 --> 00:03:00,879
in the bright areas or they have more

82
00:03:04,550 --> 00:03:03,599
frames to a higher frame rate to capture

83
00:03:06,229 --> 00:03:04,560
something

84
00:03:08,309 --> 00:03:06,239
the higher resolution the more frames

85
00:03:10,229 --> 00:03:08,319
the better because there may have been

86
00:03:12,229 --> 00:03:10,239
one little instance for a fraction of a

87
00:03:14,070 --> 00:03:12,239
second of something that occurred that

88
00:03:15,589 --> 00:03:14,080

everybody missed in real time and

89
00:03:18,229 --> 00:03:15,599
they've saw it in the review of the

90
00:03:21,030 --> 00:03:18,239
footage well if you think back to uh the

91
00:03:23,030 --> 00:03:21,040
early space flight days we we flew film

92
00:03:24,789 --> 00:03:23,040
cameras and we flew film cameras for

93
00:03:26,070 --> 00:03:24,799
practical reasons and because it had a

94
00:03:29,350 --> 00:03:26,080
shelf life

95
00:03:32,470 --> 00:03:29,360
the same thing uh goes on today so if if

96
00:03:34,470 --> 00:03:32,480
we can have a 4k or 6k camera on board

97
00:03:36,789 --> 00:03:34,480
the space station documenting life and

98
00:03:39,270 --> 00:03:36,799
documenting the science that they do

99
00:03:41,350 --> 00:03:39,280
first off it allows us all the rest of

100
00:03:43,750 --> 00:03:41,360
us to paid for it to go along for the

101
00:03:46,229 --> 00:03:43,760
ride with them and really appreciate

102
00:03:48,309 --> 00:03:46,239
what life is like up there every time we

103
00:03:50,949 --> 00:03:48,319
get a higher resolution

104
00:03:52,789 --> 00:03:50,959
imaging system and we look at it here it

105
00:03:54,630 --> 00:03:52,799
makes you feel like okay i really

106
00:03:56,869 --> 00:03:54,640
actually kind of understand what life is

107
00:03:57,830 --> 00:03:56,879
like up there and then as we mentioned

108
00:03:59,589 --> 00:03:57,840
earlier

109
00:04:01,750 --> 00:03:59,599
the science and engineering applications

110
00:04:04,630 --> 00:04:01,760
of the higher resolution helps too plus

111
00:04:07,990 --> 00:04:04,640
that's a very high dynamic range

112
00:04:10,149 --> 00:04:08,000
place to shoot you have a very stark

113
00:04:11,750 --> 00:04:10,159

contrast so the better the imagery and

114
00:04:13,110 --> 00:04:11,760
the higher the dynamic range of the

115
00:04:15,910 --> 00:04:13,120
imaging system

116
00:04:18,310 --> 00:04:15,920
the more natural it will appear to us

117
00:04:20,310 --> 00:04:18,320
when it's replicated on a screen so it's

118
00:04:22,069 --> 00:04:20,320
again allowing all of us to go for a

119
00:04:24,710 --> 00:04:22,079
ride with them so tell us about the

120
00:04:25,830 --> 00:04:24,720
development of the of the new nasa uhd

121
00:04:26,629 --> 00:04:25,840
channel

122
00:04:29,189 --> 00:04:26,639
so

123
00:04:31,990 --> 00:04:29,199
an encoder manufacturer called harmonic

124
00:04:34,070 --> 00:04:32,000
approached us at a technical expo

125
00:04:36,710 --> 00:04:34,080
and said we would like to talk to nasa

126
00:04:39,430 --> 00:04:36,720
about creating a full-time ultra-high

127
00:04:41,749 --> 00:04:39,440
definition satellite channel

128
00:04:45,350 --> 00:04:41,759
so we went through a negotiation process

129
00:04:48,150 --> 00:04:45,360
uh they provided nasa new encoders so

130
00:04:51,350 --> 00:04:48,160
that we could make room on this

131
00:04:53,350 --> 00:04:51,360
satellite transponder for a new channel

132
00:04:55,110 --> 00:04:53,360
which basically meant we are further

133
00:04:57,430 --> 00:04:55,120
compressing the existing channels that

134
00:04:59,030 --> 00:04:57,440
we had to make room for this ultra high

135
00:05:01,590 --> 00:04:59,040
definition channel

136
00:05:03,990 --> 00:05:01,600
and it gives us an opportunity to

137
00:05:07,350 --> 00:05:04,000
experience have experience with a new

138
00:05:10,230 --> 00:05:07,360

encoding algorithm with new equipment

139
00:05:11,189 --> 00:05:10,240
it also gives nasa an outlet for a lot

140
00:05:13,670 --> 00:05:11,199
of this

141
00:05:15,430 --> 00:05:13,680
4k and ultra high definition content

142
00:05:17,510 --> 00:05:15,440
that we've been accumulating over the

143
00:05:19,749 --> 00:05:17,520
years but really haven't had a practical

144
00:05:21,749 --> 00:05:19,759
way to release to the public

145
00:05:24,230 --> 00:05:21,759
being first being

146
00:05:26,629 --> 00:05:24,240
the first ones to have a full-time

147
00:05:28,710 --> 00:05:26,639
channel in this format is

148
00:05:31,350 --> 00:05:28,720
really exciting for us and i know my

149
00:05:33,830 --> 00:05:31,360
colleagues enjoyed the challenge and it

150
00:05:37,430 --> 00:05:33,840
was a challenge because we're so

151
00:05:38,870 --> 00:05:37,440
out in front of the rest of the industry

152
00:05:40,870 --> 00:05:38,880
that a lot of this equipment that has

153
00:05:43,670 --> 00:05:40,880
come in to this lab

154
00:05:45,830 --> 00:05:43,680
to be worked with by our colleagues was

155
00:05:48,230 --> 00:05:45,840
serial number one or still in

156
00:05:49,749 --> 00:05:48,240
development hardware and software

157
00:05:51,350 --> 00:05:49,759
and so there's some frustration that

158
00:05:52,870 --> 00:05:51,360
goes along with that but it's also kind

159
00:05:56,150 --> 00:05:52,880
of exciting to be

160
00:05:59,350 --> 00:05:56,160
on the very very bleeding edge

161
00:06:03,029 --> 00:05:59,360
at the beginning of what may be a new

162
00:06:04,309 --> 00:06:03,039
revolution in television

163
00:06:06,070 --> 00:06:04,319

i can tell you based on firsthand

164
00:06:07,430 --> 00:06:06,080
experience the clarity and detail of

165
00:06:08,710 --> 00:06:07,440
this video is really impressive and

166
00:06:10,950 --> 00:06:08,720
we're looking forward to sharing it with

167
00:06:12,629 --> 00:06:10,960
you but harmonica nasa are currently in

168
00:06:15,590 --> 00:06:12,639
talks with cable and satellite providers

169
00:06:17,510 --> 00:06:15,600
to deliver nasa tv uhd but right now the

170
00:06:20,390 --> 00:06:17,520
only way to see this new channel is a

171
00:06:22,309 --> 00:06:20,400
with a uhd tv set and b by pulling it

172
00:06:24,469 --> 00:06:22,319
directly off of the satellite and you

173
00:06:26,710 --> 00:06:24,479
can learn more about how to try to do

174
00:06:29,510 --> 00:06:26,720
that by visiting the nasa tv website at