SILICON VALLEY

PODCAST

1
00:00:00,030 --> 00:00:05,310
welcome to NASA in Silicon Valley
episode 60 last week we changed

2
00:00:05,310 --> 00:00:08,700
up the intro a little bit and I had
somebody else come in so we could record

3
00:00:08,700 --> 00:00:13,679
the introduction so I'd liked it so much
we're gonna do that again so joining me

4
00:00:13,679 --> 00:00:18,480
here in the studio we have Kimberly
Minafra hey Matt so Kimberly is a science

5
00:00:18,480 --> 00:00:22,140
communicator and she works a lot with
the engineers and the technical side

6
00:00:22,140 --> 00:00:27,119
here over at Ames and you may recognize
her voice so a lot of the stories that

7
00:00:27,119 --> 00:00:31,380
she writes that go up on nasa.gov she's
come in to also record an audio version

8
00:00:31,380 --> 00:00:37,440
of that for the podcast so but this week
we have an episode with Jessica Marquez

9
00:00:37,440 --> 00:00:42,300
somebody that Kimberly's worked quite a
bit with that's right Jessica is a human

10
00:00:42,300 --> 00:00:46,260
systems engineer and research scientist
right here at Ames in the human systems

11
00:00:46,260 --> 00:00:50,579
integration division she develops a lot
of tools that enable astronauts on the

12
00:00:50,579 --> 00:00:54,420
space station as well as training
astronauts and flight controllers in the

13
00:00:54,420 --> 00:00:58,500
field better plan out their workload so
she's very integral to a lot of the work

14
00:00:58,500 --> 00:01:02,100
we do for now the missions now and
future missions pretty cool stuff

15
00:01:02,100 --> 00:01:06,000
yeah we had a lot of fun chatting with
her but before we jump into it just as a

16
00:01:06,000 --> 00:01:10,049
quick reminder we'd love to get your
feedback we've been using the hashtag

17
00:01:10,049 --> 00:01:15,119
NASA Silicon Valley you can go ahead and
jump on Twitter type that in so you can

18
00:01:15,119 --> 00:01:19,409
send us whatever feedback you may have
but we also now have a phone number so

19
00:01:19,409 --> 00:01:23,970
for those who like to do it old-school the number is six five zero six zero

20
00:01:23,970 --> 00:01:29,430
four one four zero zero we already got a
couple messages coming in so if you want

21

00:01:29,430 --> 00:01:33,960
to be a part of the podcast seriously
just call in we're listening to all of

22
00:01:33,960 --> 00:01:36,869
those messages and we're trying to
figure out for future episodes we'll

23
00:01:36,869 --> 00:01:42,540
start integrating those messages in as
with our future guests don't forget we'd

24
00:01:42,540 --> 00:01:47,520
love your feedback on the similar vein
if you could like share subscribe

25
00:01:47,520 --> 00:01:51,990
comment do whatever it is on your
favorite podcast app or social media

26
00:01:51,990 --> 00:01:56,850
that is really the best way for others
to find this content because you know as

27
00:01:56,850 --> 00:02:02,009
I say we are a NASA podcast but I also
want to remind you that we are not the

28
00:02:02,009 --> 00:02:05,159
only
NASA podcast we have Houston We Have a

29
00:02:05,159 --> 00:02:10,440
Podcast there's also this week at NASA
that comes out every single Friday and

30
00:02:10,440 --> 00:02:15,930
also NASA has a master podcast called
NASA casts what they ended up doing is

31

00:02:15,930 --> 00:02:21,140
taking every single podcast that NASA
does and combining them into one giant

32
00:02:21,140 --> 00:02:26,610
RSS feed so that's how you can find us
that's how you can talk to us but for

33
00:02:26,610 --> 00:02:31,459
this week let's hear from Jessica
Marquez

34
00:02:41,580 --> 00:02:47,200
how did you end up at NASA how did you
end up in Silicon Valley I actually grew

35
00:02:47,200 --> 00:02:52,810
up in Lima Peru okay and I moved to the
US after I finished high school to start

36
00:02:52,810 --> 00:02:58,150
undergrad and I had always been
interested in space I didn't know what

37
00:02:58,150 --> 00:03:02,530
to do in space knew I was gonna do
something I knew I was gonna do

38
00:03:02,530 --> 00:03:05,860
something because I really liked it and
I didn't just didn't know what to do and

39
00:03:05,860 --> 00:03:09,880
I have this really clear memory of
writing at my mom always goes write a

40
00:03:09,880 --> 00:03:16,390
letter Jessica nice and so I wrote a letter I
remember going to the back of the

41

00:03:16,390 --> 00:03:19,930
library books and and finding a letter
that I someone I could write to

42
00:03:19,930 --> 00:03:24,550
about what I could do in space and space
science and I have this really clear

43
00:03:24,550 --> 00:03:30,670
memory of having the letter returned
back to me undelivered and I was so disappointed

44
00:03:30,670 --> 00:03:35,440
and when I started undergrad I decided
I'd like I was gonna try to do

45
00:03:35,440 --> 00:03:39,700
engineering okay and actually when I was
undergrad I was fortunate enough to get

46
00:03:39,700 --> 00:03:43,870
an internship here at NASA Ames really
so you came out to the Bay Area for

47
00:03:43,870 --> 00:03:48,519
school no I was actually in the East
Coast I was in Pinceton and through the

48
00:03:48,519 --> 00:03:54,130
NASA state grants
I got a internship with NASA

49
00:03:54,130 --> 00:04:01,269
Astrobiology Academy oh cool when I had just
started back in the 90s and I got to

50
00:04:01,269 --> 00:04:06,070
stay here at whole summer I got to learn
about what it's like to actually work in

51

00:04:06,070 --> 00:04:11,320
in NASA what kind of things people did and our Astrobiology Academy group

52
00:04:11,320 --> 00:04:16,120
was very diverse we had people doing
space science so they're investigating

53
00:04:16,120 --> 00:04:20,590
and learning about the universe we had
people that were in engineering and

54
00:04:20,590 --> 00:04:25,570
doing stuff with virtual reality we had
people in biology itself like

55
00:04:25,570 --> 00:04:31,810
geochemistry yeah and I ended up doing
work with earth science and looking at

56
00:04:31,810 --> 00:04:36,729
models and how we can improve the models
and and after that whole exposure with

57
00:04:36,729 --> 00:04:40,630
the Academy which was really great
because we got to see not just aims we

58
00:04:40,630 --> 00:04:45,100
got to see other centers yeah and
understand the scope of what it means to

59
00:04:45,100 --> 00:04:50,650
actually work in space in the space
world that I decided to go to grad

60
00:04:50,650 --> 00:04:56,560
school so I went to grad school and I
decided to shift my attention a little

61
00:04:56,560 --> 00:05:02,289

bit to the aeronautics astronautics I
studied mechanical engineering as an

62
00:05:02,289 --> 00:05:05,890
undergrad and then in grad school I went
to MIT and I was very fortunate to go to

63
00:05:05,890 --> 00:05:11,200
the man vehicle lab and in that lab
everything we did has to do with how

64
00:05:11,200 --> 00:05:18,729
humans interact with space and so that's
how I truly delved and sort of grew in

65
00:05:18,729 --> 00:05:23,620
my passion of understanding how people
interact with space how people interact

66
00:05:23,620 --> 00:05:29,650
with complex aerospace systems yeah so
having been an engineer I never I

67
00:05:29,650 --> 00:05:34,870
totally shied away from doing anything
that was related to biology but one of

68
00:05:34,870 --> 00:05:38,860
the first things I learned was how does
the human body function in space because

69
00:05:38,860 --> 00:05:43,630
that's very fundamental to how people
might operate and work and live in space

70
00:05:43,630 --> 00:05:50,560
and so I started doing that I got really
interested in how people use complex

71
00:05:50,560 --> 00:05:54,479

automation okay I started doing some
work in virtual reality

72
00:05:54,479 --> 00:06:00,220
and this is all almost 20 years ago
almost well I remember it like on the on

73
00:06:00,220 --> 00:06:05,200
the podcast we had Terry Fong on like
this is earlier back in like January and

74
00:06:05,200 --> 00:06:10,960
he'd talked a lot about those early days
of doing VR and now automation stuff

75
00:06:10,960 --> 00:06:17,950
were you working with him not Terry
specifically but with the groups yeah my

76
00:06:17,950 --> 00:06:23,950
lab is a was a very well funded lab they
had NASA grants so I was very engaged

77
00:06:23,950 --> 00:06:29,320
with with the NASA community pretty much
right as soon as I started grad school

78
00:06:29,320 --> 00:06:34,240
so my first exposure was my internship
here at Ames and then in grad school I

79
00:06:34,240 --> 00:06:39,219
started learning a lot more about this
specific area and so my project for my

80
00:06:39,219 --> 00:06:45,370
master's thesis was really looking at
how we would train astronauts with using

81
00:06:45,370 --> 00:06:52,060

virtual reality to teach them about the
space station and so full circle I'm

82
00:06:52,060 --> 00:06:58,270
working now back here where I get to
actually help develop the training

83
00:06:58,270 --> 00:07:03,370
systems help develop the other systems
that support the space station so it's

84
00:07:03,370 --> 00:07:07,030
really kind of cool to to sort of see
like that

85
00:07:07,030 --> 00:07:12,280
that little piece of research that I
started almost 20 ago yeah that just you know

86
00:07:12,280 --> 00:07:16,600
that thematically just prepared me to to
the point that I've now been working

87
00:07:16,600 --> 00:07:21,250
here in NASA Ames almost 10 years wow
so like did you while you're finishing

88
00:07:21,250 --> 00:07:26,200
up school did you keep coming back and
doing internships or did you always kind

89
00:07:26,200 --> 00:07:28,630
of have in the back of your head
eventually I'm gonna end up back over

90
00:07:28,630 --> 00:07:33,400
there um so I when I was in grad school
I was fortunate enough that I had enough

91
00:07:33,400 --> 00:07:42,550

funding to stick around school and so I
did do I did have other NASA fellowships

92
00:07:42,550 --> 00:07:46,600
and other NASA grants that supported my
work but the first time I got to come

93
00:07:46,600 --> 00:07:51,790
back here was almost very much at the
end of my grad life yeah cuz we had an

94
00:07:51,790 --> 00:07:54,440
opportunity to start collaborating with
someone

95
00:07:54,440 --> 00:08:01,280
in Code TI where Terri is now
Code TI for folks that's a they they work on

96
00:08:01,330 --> 00:08:06,420
all the automation robotics yeah and so
we started I started coming I came here

97
00:08:06,430 --> 00:08:10,540
once and and I had still maintained all
those relationships that I had built

98
00:08:10,540 --> 00:08:15,280
when I had been an undergrad and so I
was fortunate enough when I was starting

99
00:08:15,280 --> 00:08:20,680
to look for a job it actually kind of
happens and if you've ever tried to find

100
00:08:20,680 --> 00:08:27,370
a job applying just on a website is is
just the first step it's really trying

101
00:08:27,370 --> 00:08:32,320

to reach out to the right people that
you know to have them connect you and

102
00:08:32,320 --> 00:08:36,880
start conversations and I very quickly
learned that and I was very grateful

103
00:08:36,880 --> 00:08:41,020
that I had maintained those
relationships I affectionately refer to

104
00:08:41,020 --> 00:08:45,700
things as like informational interviews
sometimes it's like just you know being

105
00:08:45,700 --> 00:08:49,240
curious and talking to people about
their jobs and if you have a connection

106
00:08:49,240 --> 00:08:53,290
that's like use it start those
conversations and even if it's not if

107
00:08:53,290 --> 00:08:58,600
even if it's not gonna lead anywhere it
makes you more aware about what people

108
00:08:58,600 --> 00:09:03,070
are looking for who to talk to
yeah potentially the opportunities for

109
00:09:03,070 --> 00:09:07,360
other jobs that you might not have been
aware of and so when I started

110
00:09:07,360 --> 00:09:11,980
interviewing for jobs I started doing
interviews for just human factors

111
00:09:11,980 --> 00:09:15,670

engineering that's what I'm sort of
classically trained in the domain of

112
00:09:15,670 --> 00:09:20,769
human factors engineering specifically
space but I I was

113
00:09:20,769 --> 00:09:26,529
a sort of a wide range of stuff and I
very quickly realized that when I was

114
00:09:26,529 --> 00:09:29,769
doing the interviews I was just not
passionate about anything that was not

115
00:09:29,769 --> 00:09:34,360
about space oh yeah
and so what ended up happening I was just

116
00:09:34,360 --> 00:09:38,019
like yeah I know I'm I'm like shooting
myself on the foot here every time I go

117
00:09:38,019 --> 00:09:43,480
this yeah and so I was like okay they
changed my strategy I'm just gonna you

118
00:09:43,480 --> 00:09:47,709
know for a time period just gonna devote
all my attention to getting something in

119
00:09:47,709 --> 00:09:51,429
the space domain okay
and so I was applying to only things

120
00:09:51,429 --> 00:09:56,709
that were space related and then on a
lark I I was was gonna come out here to

121
00:09:56,709 --> 00:10:03,040

visit and I my mentor a Douglas O Hanley
I was like hey I'm gonna be out there is

122
00:10:03,040 --> 00:10:07,449
there anybody I should talk to yeah he
put me into contact with someone who put

123
00:10:07,449 --> 00:10:13,660
me into contact with someone else and
interviewing like spontaneously that

124
00:10:13,660 --> 00:10:18,369
afternoon when I was here who with the
person that basically hired me oh that's

125
00:10:18,369 --> 00:10:24,910
awesome and it was that at that time
where we were NASA was doing 10 healthy

126
00:10:24,910 --> 00:10:31,749
centers okay and so that timeframe is
basically this the NASA headquarters

127
00:10:31,749 --> 00:10:35,799
said hey let's have all the civil
servants work and support each other

128
00:10:35,799 --> 00:10:39,189
across the agency regardless of where
you are ok so it's not like you're

129
00:10:39,189 --> 00:10:42,850
competing and fighting with each other
for funding this is like everybody

130
00:10:42,850 --> 00:10:46,689
working together one NASA one big thing
and so there was an opportunity to

131
00:10:46,689 --> 00:10:51,069

really they were looking to make sure
that all the competencies were

132
00:10:51,069 --> 00:10:54,790
distributed
okay well across the the NASA as a whole

133
00:10:54,790 --> 00:11:01,420
and so that was just a golden
opportunity and I was I explain it to

134
00:11:01,420 --> 00:11:06,429
people like I was like I put all my
chips in one bucket except this one chip

135
00:11:06,429 --> 00:11:10,689
that I put out here in California okay I
knew very few people I had like my

136
00:11:10,689 --> 00:11:16,329
mentor out here but that was about it
no yeah and that was the one that you

137
00:11:16,329 --> 00:11:22,239
know beared fruit what section were you
working in what were you working on when

138
00:11:22,239 --> 00:11:25,869
you first came on board so the first
project that I got to work on was really

139
00:11:25,869 --> 00:11:31,029
interesting it was about how would we go
about making new training systems for

140
00:11:31,029 --> 00:11:34,420
astronauts for the new constellation
program

141
00:11:34,420 --> 00:11:40,839

the constellation program was focused on
not just creating a new rocket in a new

142
00:11:40,839 --> 00:11:45,399
spacecraft mm-hmm
to go on the rocket but also that it was

143
00:11:45,399 --> 00:11:47,709
gonna go to the Moon and it was gonna go
to Mars

144
00:11:47,709 --> 00:11:52,480
so from and for folks listed the
constellation eventually through through

145
00:11:52,480 --> 00:11:56,860
the joys of government bureaucracy and
changing priorities turned into

146
00:11:56,860 --> 00:12:03,760
basically what is now SLS more or less
which is the Space Launch System so

147
00:12:03,760 --> 00:12:07,320
I'm sorry
when it first started it was this

148
00:12:07,320 --> 00:12:11,260
integrated program where yeah we were
gonna do all these things under one

149
00:12:11,260 --> 00:12:17,910
program and the training part of it was
interesting because how do I prepare

150
00:12:17,910 --> 00:12:22,029
people to do all these things that I'm
not quite sure when they're gonna do

151
00:12:22,029 --> 00:12:27,190

that and I'm not quite sure how the
system is gonna be actually created and

152
00:12:27,190 --> 00:12:32,170
done but yet still provide those
simulators in time and before you

153
00:12:32,170 --> 00:12:36,970
actually launch wow everybody puts on
the schedule when we're gonna send

154
00:12:36,970 --> 00:12:41,829
someone up and we're gonna launch them
on the rocket ship I'm like yeah but you

155
00:12:41,829 --> 00:12:45,279
don't realize there's a whole other
deadline that comes away before that

156
00:12:45,279 --> 00:12:48,910
where it's like you train them to go on
the rocket ship and if you haven't done

157
00:12:48,910 --> 00:12:53,620
that guess what things are gonna get
delayed yeah and that was another

158
00:12:53,620 --> 00:12:58,390
surprising thing I never knew that there
were all these other roles and mission

159
00:12:58,390 --> 00:13:04,959
operation that played a critical path
it all builds and grows yeah so that gave me the

160
00:13:04,959 --> 00:13:09,519
opportunity to start traveling to NASA
Johnson Space Center a lot so I started

161
00:13:09,519 --> 00:13:14,740

working with them traveling there
frequently I then started to get

162
00:13:14,740 --> 00:13:18,310
involved with the human-computer
interaction group and they were doing

163
00:13:18,310 --> 00:13:23,500
two types of and they still are doing
two types of work one of them has to do

164
00:13:23,500 --> 00:13:27,610
with mission data systems okay and the
other one is planning and scheduling

165
00:13:27,610 --> 00:13:32,920
systems and I wanted to work on the
planning and scheduling system because

166
00:13:32,920 --> 00:13:38,889
that's what I've done for my PhD
Oh fun yeah and and they were making the

167
00:13:38,889 --> 00:13:46,570
actual planning and scheduling systems
to go to Mars to operate Rovers on Mars

168
00:13:46,570 --> 00:13:52,450
and I was like well yeah I want to do
that that's why I did my PhD for sure as

169
00:13:52,450 --> 00:13:57,430
a PhD student you didn't really realize
this is what you're gonna you know you'd

170
00:13:57,430 --> 00:14:02,380
have an opportunity to actually work on
that thing being built so I joined that

171
00:14:02,380 --> 00:14:08,260

team and we got a lot of projects with ISS I started doing planning and

172
00:14:08,260 --> 00:14:12,400
scheduling tools for the International Space Station and that's where again I

173
00:14:12,400 --> 00:14:17,680
was traveling a lot more to JSC and so everything that I've been doing in Ames

174
00:14:17,680 --> 00:14:25,750
has centered around how people operate and manage to work and live in space not

175
00:14:25,750 --> 00:14:31,000
from the biological sense or the physiological sense but centered around

176
00:14:31,000 --> 00:14:35,220
how do you work how do you how do you bring all these complex pieces together

177
00:14:35,220 --> 00:14:40,270
mm-hmm it's like a complicated puzzle I suppose and if everything doesn't fit

178
00:14:40,270 --> 00:14:43,780
ever so perfectly yeah and there's so many other moving parts there's like the

179
00:14:43,780 --> 00:14:48,730
training part there is maintaining the hardware for Mission Control they're all

180
00:14:48,730 --> 00:14:52,600
the different disciplines and Mission Control that's one of my favorite things

181
00:14:52,600 --> 00:14:57,730

to do when I go to JSC NASA Johnson Space Center is just sit in Mission

182
00:14:57,730 --> 00:15:00,340
Control
it's amazing you sit there and they let

183
00:15:00,340 --> 00:15:05,140
you if you have permission to go inside that area you could just sit there and

184
00:15:05,140 --> 00:15:09,280
observe them just look at a computer and you're like oh well that's what's the

185
00:15:09,280 --> 00:15:12,130
big deal about just someone staring at your computer I'm like they're staring a

186
00:15:12,130 --> 00:15:18,100
computer because they're watching a giant spaceship go around the earth

187
00:15:18,100 --> 00:15:25,420
every 90 minutes that have six people living in them wow and when you start

188
00:15:25,420 --> 00:15:29,260
thinking about the immensity of that yeah and your little piece of

189
00:15:29,260 --> 00:15:34,450
contribution that you did for it it's just it just blows my mind which is this

190
00:15:34,450 --> 00:15:38,260
is why I love just even just sitting there and just watching and looking at

191
00:15:38,260 --> 00:15:42,310

some of the stuff that you're doing now
it does it still is so centered around

192
00:15:42,310 --> 00:15:46,930
like your day-to-day work today is it
still around that stuff around like the

193
00:15:46,930 --> 00:15:52,120
space station and keeping astronauts up
there yeah so with all our experience

194
00:15:52,120 --> 00:15:55,660
doing planning and scheduling for
International Space Station we started

195
00:15:55,660 --> 00:16:00,570
looking a lot more at what is the
astronaut need so for the last

196
00:16:00,570 --> 00:16:05,769
10-12 years we very much focus on the
planner the planner is a person that

197
00:16:05,769 --> 00:16:09,160
integrates all the inputs from everyone
mm-hmm

198
00:16:09,160 --> 00:16:14,800
in ISS you have the crew is a person
that executes that plan yeah and when you

199
00:16:14,800 --> 00:16:18,790
do it on Mars
you have the rover execute things

200
00:16:18,790 --> 00:16:24,130
exactly as the command send yeah was
sent or as best as the commands can be

201
00:16:24,130 --> 00:16:27,940

interpreted by the robot yeah in Space
Station is very different you have a

202
00:16:27,940 --> 00:16:31,899
person you have to give them
instructions you need to give them

203
00:16:31,899 --> 00:16:37,180
enough instructions that they know what
to do without overwhelming them it's

204
00:16:37,180 --> 00:16:43,390
like imagine you know you get your IKEA
instructions you're like okay well I

205
00:16:43,390 --> 00:16:50,320
expect you to be done in an hour and you're like what is this allen wrench what do I do this is the

206
00:16:50,320 --> 00:16:54,700
first time I've seen this how am I
supposed to how do I make sure that like

207
00:16:54,700 --> 00:16:59,649
how do I get all the parts where are all
the parts what order do I supposed to do this

208
00:16:59,649 --> 00:17:04,720
yeah or if I get interrupted it's like I
oh where did I leave off in these

209
00:17:04,720 --> 00:17:09,640
instructions so even just little simple
things like I learned a lot about then

210
00:17:09,640 --> 00:17:15,370
how you work in space and actually do
the things that astronauts are doing in

211
00:17:15,370 --> 00:17:21,400
space it's like the astronauts are

highly accomplished like extremely smart

212
00:17:21,400 --> 00:17:24,790
individuals but at the same time you
have all these different science

213
00:17:24,790 --> 00:17:28,510
experiments and different things and
you're asking a lot of these people and

214
00:17:28,510 --> 00:17:33,130
you can't be a a specialist in
everything and so it's like you know we

215
00:17:33,130 --> 00:17:36,130
have the people who are building these
you know science experiments but at the

216
00:17:36,130 --> 00:17:39,610
end of the day you have a human being on
the space station that has to execute it

217
00:17:39,610 --> 00:17:44,710
and do it that's so that's crazy
so yeah I'd imagine like the planning

218
00:17:44,710 --> 00:17:47,530
logistics on that is just completely nuts
yeah so the things that we had

219
00:17:47,530 --> 00:17:52,240
emphasized before was how do we make
sure that that all the resources are in

220
00:17:52,240 --> 00:17:57,370
place to do this task yeah and more
recently we've been focused a little

221
00:17:57,370 --> 00:18:01,540
more on okay

now that you have all the resources how

222
00:18:01,540 --> 00:18:08,380
do we help the astronaut do their job
like for instance a very complex example

223
00:18:08,380 --> 00:18:14,470
is preparing for a spacewalk okay so to
do a spacewalk you need to do all sorts

224
00:18:14,470 --> 00:18:20,230
of things to prepare the space station
to make sure that it's configured in a

225
00:18:20,230 --> 00:18:25,600
way that it's most safe for the
astronaut because they're gonna be going

226
00:18:25,600 --> 00:18:28,960
out there in case you didn't know the
solar arrays in the space station move

227
00:18:28,960 --> 00:18:32,289
because they're tracking the Sun when
you have a spacewalk I believe they're

228
00:18:32,289 --> 00:18:36,220
fixed so you have to do all this
preparation so once you fix the space

229
00:18:36,220 --> 00:18:39,100
station the solar arrays in the space
station that means you're affecting your

230
00:18:39,100 --> 00:18:43,570
power which then means you're affecting
all the entire payloads all the size

231
00:18:43,570 --> 00:18:48,250
that's happening on the space station

and your ability to use a robotic arm or

232
00:18:48,250 --> 00:18:53,049
your ability to manage life-support
systems and so if everything is like

233
00:18:53,049 --> 00:18:56,620
okay we have this one thing it's like oh
yeah we're gonna do a spacewalk it's not that

234
00:18:56,620 --> 00:19:00,669
simple there's a whole bunch of things
that are coming about to prepare for

235
00:19:00,669 --> 00:19:06,159
that and then you're like okay well now
the astronaut has to do that there's a

236
00:19:06,159 --> 00:19:10,900
whole other set of things that they have
to prepare to do that that specific task

237
00:19:10,900 --> 00:19:14,890
and so the work that we've been doing
has been focused on how do we make it

238
00:19:14,890 --> 00:19:21,760
easier to even though we have extremely
highly trained highly capable astronauts

239
00:19:21,760 --> 00:19:26,710
on space station how do we make their
lives easier kind of like if you ever

240
00:19:26,710 --> 00:19:31,450
encountered a really poorly design app
mm-hmm and you're like you can't you're

241
00:19:31,450 --> 00:19:36,070
like I don't know how nothing makes

sense it's like it's supposed to be a

242
00:19:36,070 --> 00:19:40,600
very you know a simple way to interact
or interface it then you're like why

243
00:19:40,600 --> 00:19:43,270
couldn't you have just done it this way
and it's just been easier for me to

244
00:19:43,270 --> 00:19:46,330
understand and do my job that's right and keeping in mind that

245
00:19:46,330 --> 00:19:51,130
there's a lot of tech companies spending
a lot of money on people who are experts

246
00:19:51,130 --> 00:19:56,260
in design and human psychology and
having that consistency of where buttons

247
00:19:56,260 --> 00:20:01,120
go and why and how to make it make what
you want to do the path of least

248
00:20:01,120 --> 00:20:07,120
resistance and so in space the people
that are designing all these these tools

249
00:20:07,120 --> 00:20:11,320
for the astronauts we have a very
limited pool of people and so our job is

250
00:20:11,320 --> 00:20:17,080
to make the most efficient effective set
of systems that the astronauts can use

251
00:20:17,080 --> 00:20:22,270
effectively and easily wow and so we've
been developing different types of

252
00:20:22,270 --> 00:20:27,399
things like can we make their timeline
tool easier to use can we give them a

253
00:20:27,399 --> 00:20:29,929
little flexible
and allow them to schedule some of their

254
00:20:29,929 --> 00:20:34,190
activities there up there they should
know better what what they should do

255
00:20:34,190 --> 00:20:38,780
when but maybe you can't do this
particular thing because you didn't have

256
00:20:38,780 --> 00:20:43,429
enough power or you're not supposed to
do them in that order so we don't want

257
00:20:43,429 --> 00:20:46,850
to make we want to make sure that we
give the astronauts flexibility to do

258
00:20:46,850 --> 00:20:50,929
what they think is best and what they
might be most effective and efficient

259
00:20:50,929 --> 00:20:55,820
but at the same time we don't want to
throw away all the good work that the

260
00:20:55,820 --> 00:21:00,289
people in the ground have done to create
a plan that meets all these different

261
00:21:00,289 --> 00:21:05,659
constraints that are going around so
what I wanted to talk about was well I'd

262
00:21:05,659 --> 00:21:11,720
need to do a plug for you on a recent
relatively recent activity we did called

263
00:21:11,720 --> 00:21:18,049
Google expeditions but also the location
where that was done was in our over at

264
00:21:18,049 --> 00:21:25,970
Ames we call it the Mars rover scape or
the rover scape so for those folks who aren't aware

265
00:21:25,970 --> 00:21:29,539
listening who are unaware there's an app
if you jump in it's called like Google

266
00:21:29,539 --> 00:21:35,960
expeditions and it's kind of a way that
teachers and students can kinda in a 360

267
00:21:35,960 --> 00:21:42,230
VR type atmosphere do tours and look at
things and so NASA did a whole set of

268
00:21:42,230 --> 00:21:46,690
these had several different people you
know representing different centers and

269
00:21:46,690 --> 00:21:53,059
Jessica she was our person for Ames it
was set at the at the rover scape and

270
00:21:53,059 --> 00:21:57,919
you if you pull up the app and you look
up for Jessica's you look around you can

271
00:21:57,919 --> 00:22:02,510
see these different points of interest
so talk a little bit about that why in the

272
00:22:02,510 --> 00:22:06,919
rover scape what was some of the stuff
related to that so we did in the

273
00:22:06,919 --> 00:22:11,840
rover escape because we wanted to
capture people's imagination because

274
00:22:11,840 --> 00:22:16,490
it's NASA but also captured people's
imagination about what exploration might

275
00:22:16,490 --> 00:22:22,130
be like in the future so if you think
about how we send Rovers and potentially

276
00:22:22,130 --> 00:22:28,429
than people to Mars we're gonna have to
be a little more autonomous and work

277
00:22:28,429 --> 00:22:32,480
more independently from Earth so this is
a reoccurring theme that you see in in

278
00:22:32,480 --> 00:22:39,049
Journey to Mars at the hashtag Journey
to Mars as we go farther and farther

279
00:22:39,049 --> 00:22:44,710
away
we inevitably hit this impossible not

280
00:22:44,710 --> 00:22:48,880
impossible but this physics constraint
the farther we go away the longer it

281
00:22:48,880 --> 00:22:52,960
takes for your message to go back and
forth the light can only travel so fast

282
00:22:52,960 --> 00:22:57,340
yeah
and so this bounced how frequently and

283
00:22:57,340 --> 00:23:01,930
how often you can actually talk back to
earth not just because of the speed of

284
00:23:01,930 --> 00:23:06,580
the the data the communication back and
forth but also because you're going

285
00:23:06,580 --> 00:23:11,140
through a very tiny pipeline you
actually have to depend on very limited

286
00:23:11,140 --> 00:23:16,120
amount of data that is going from
interstellar space because it's

287
00:23:16,120 --> 00:23:23,020
literally interstellar space yes it's not
hyperbole back to earth and there's only

288
00:23:23,020 --> 00:23:27,600
a certain certain number of satellites
and basically your pipeline is very

289
00:23:27,600 --> 00:23:34,000
small to get all that data so as we
start imagining what missions to Mars

290
00:23:34,000 --> 00:23:39,190
might be like with people and rovers you
start to realize how much more

291
00:23:39,190 --> 00:23:43,680
independent people and rovers are gonna
have to be from Earth because we're just

292
00:23:43,680 --> 00:23:52,000
limited by physics and so the idea is
that one of our tools PlayBook it

293
00:23:52,000 --> 00:23:58,150
is a time line tool that hopefully will
help astronauts manage their own

294
00:23:58,150 --> 00:24:02,440
schedule more easily and we're hoping
that this will be an integral part about

295
00:24:02,440 --> 00:24:08,500
how they work with rovers in future
missions and deep space missions and

296
00:24:08,500 --> 00:24:12,670
Mars missions and so does the PlayBook
software is that also related to some of

297
00:24:12,670 --> 00:24:18,820
the other Mars analog I think is what we
like to say other practice sessions that

298
00:24:18,820 --> 00:24:23,680
I know Ames has worked on either in
Idaho or Hawaii so one of the coolest

299
00:24:23,680 --> 00:24:28,780
things about my job is that we have to
become very clever in how we learn about

300
00:24:28,780 --> 00:24:33,850
traveling to Mars in deep space when we
can't actually do it yeah

301
00:24:33,850 --> 00:24:40,270
so we finds all sorts of different ways
of simulating this environment and the

302
00:24:40,270 --> 00:24:45,160
earth analogs provide a really great way
of studying different aspects of the

303
00:24:45,160 --> 00:24:50,650
missions and different constraints that
we will encounter as we do these future

304
00:24:50,650 --> 00:24:55,500
missions and so PlayBook has been our
tool that we've been using and

305
00:24:55,500 --> 00:25:00,510
developing slowly over time and we call
it our next generation of planning and

306
00:25:00,510 --> 00:25:05,670
scheduling tools for NASA and we have
managed to test this in many different

307
00:25:05,670 --> 00:25:11,970
types of analogs we do it at NEMA which
is the underwater analog we've done it

308
00:25:11,970 --> 00:25:17,309
at BASALT which is looking at science
objectives in the context of Mars

309
00:25:17,309 --> 00:25:22,950
exploration we have done it in HERA
which is this JSC analog where people

310
00:25:22,950 --> 00:25:26,780
are in a confined environment in
isolation

311
00:25:26,780 --> 00:25:32,640
we are now actually also in high seas
which is this 8 month long analog wow

312
00:25:32,640 --> 00:25:39,840
where they put crew in isolation for 8 months oh wow and so we learn different

313
00:25:39,840 --> 00:25:45,059
things with different missions about how self scheduling and playbook might work

314
00:25:45,059 --> 00:25:49,440
in these environments excellent so as a throwback to folks listening to the

315
00:25:49,440 --> 00:25:54,030
podcast we had an episode with Darlene Lim who works on BASALT on one of

316
00:25:54,030 --> 00:25:57,120
those so for anybody who wants to get more information on that I will throw

317
00:25:57,120 --> 00:26:01,340
that into the show notes so people can go back and listen to that episode but

318
00:26:01,340 --> 00:26:05,370
awesome and also for anybody if you're looking for the Google expeditions we'll

319
00:26:05,370 --> 00:26:09,120
throw in a link for that if you want to check out Jessica and you can move your

320
00:26:09,120 --> 00:26:13,410
phone around and 360 and see all the little points and learn more about

321
00:26:13,410 --> 00:26:17,550
PlayBook and stuff but for folks who have anybody has questions for Jessica

322
00:26:17,550 --> 00:26:23,309
we are on twitter at NASA Ames we use
the hashtag NASA Silicon Valley this has