



1  
00:00:05,930 --> 00:00:03,020  
good afternoon and welcome to the

2  
00:00:07,730 --> 00:00:05,940  
Kennedy Space Center i'm bob cabana and

3  
00:00:10,850 --> 00:00:07,740  
it's a real privilege for us here at

4  
00:00:13,669 --> 00:00:10,860  
Kennedy to host NASA's kickoff of the

5  
00:00:15,499 --> 00:00:13,679  
agency innovation mission I want to

6  
00:00:17,870 --> 00:00:15,509  
personally thank the NASA first team for

7  
00:00:19,779 --> 00:00:17,880  
the superb job that they did in putting

8  
00:00:22,160 --> 00:00:19,789  
this all together also want to thank

9  
00:00:24,470 --> 00:00:22,170  
Kennedy Space Port integrators for the

10  
00:00:27,560 --> 00:00:24,480  
great job they've done in helping us

11  
00:00:30,500 --> 00:00:27,570  
make nasus Kennedy's days of innovation

12  
00:00:31,999 --> 00:00:30,510  
so successful innovation is inherent in

13  
00:00:34,970 --> 00:00:32,009

all that we do it's critical to our

14

00:00:36,740 --> 00:00:34,980

success it's who we are and it's my

15

00:00:38,270 --> 00:00:36,750

privilege to introduce our keynote

16

00:00:40,549 --> 00:00:38,280

speaker

17

00:00:42,830 --> 00:00:40,559

she is the champion for innovation at

18

00:00:47,150 --> 00:00:42,840

NASA and also our deputy administrator

19

00:00:48,799 --> 00:00:47,160

dr. david newman she is truly one of us

20

00:00:51,740 --> 00:00:48,809

gender bachelor's degree in aerospace

21

00:00:53,990 --> 00:00:51,750

engineering at Notre Dame in her PhD in

22

00:00:56,779 --> 00:00:54,000

aerospace biomedical engineering from

23

00:00:58,700 --> 00:00:56,789

MIT and has been actively involved in

24

00:01:01,549 --> 00:00:58,710

space research for America's space

25

00:01:04,670 --> 00:01:01,559

program throughout her career as the

26

00:01:07,100 --> 00:01:04,680

Apollo professor of astronaut xmit she

27

00:01:09,590 --> 00:01:07,110

shared her passion for space in

28

00:01:12,500 --> 00:01:09,600

innovation with all of our students and

29

00:01:15,350 --> 00:01:12,510

we are blessed to have her as our deputy

30

00:01:22,570 --> 00:01:15,360

administrator so please join me in

31

00:01:29,690 --> 00:01:25,370

and also this weekend

32

00:01:32,480 --> 00:01:29,700

go navy beat notre dame minute

33

00:01:37,520 --> 00:01:32,490

hello how's everyone and thank you so

34

00:01:40,100 --> 00:01:37,530

much Casey thank you dr. cabana go go go

35

00:01:43,399 --> 00:01:40,110

irish be Navy huh

36

00:01:46,130 --> 00:01:43,409

so hello NASA innovators is great to be

37

00:01:47,570 --> 00:01:46,140

with you here today i wanna second

38

00:01:49,399 --> 00:01:47,580

thanks to all the first there's the

39

00:01:56,719 --> 00:01:49,409

first cohort can give them a round of

40

00:01:58,370 --> 00:01:56,729

applause please for across the agency if

41

00:02:00,710 --> 00:01:58,380

you just read everything that's

42

00:02:02,690 --> 00:02:00,720

happening at every Center it's so

43

00:02:05,359 --> 00:02:02,700

incredible i was so excited I flying

44

00:02:07,279 --> 00:02:05,369

down here to look at 12 to three days of

45

00:02:09,559 --> 00:02:07,289

innovation across the agency that's

46

00:02:12,050 --> 00:02:09,569

really why we're here is to celebrate to

47

00:02:15,140 --> 00:02:12,060

celebrate our people celebrate all of

48

00:02:17,120 --> 00:02:15,150

you you have so many great ideas and we

49

00:02:19,190 --> 00:02:17,130

want to listen we want to raise them up

50

00:02:21,020 --> 00:02:19,200

we want to say we're already great but

51  
00:02:22,309 --> 00:02:21,030  
we won't even be better how can how can

52  
00:02:24,440 --> 00:02:22,319  
we be innovative how can we

53  
00:02:27,500 --> 00:02:24,450  
intentionally really be as excellence we

54  
00:02:30,620 --> 00:02:27,510  
want to be and so it's just my honor

55  
00:02:33,020 --> 00:02:30,630  
when i joined all of you at NASA and and

56  
00:02:34,670 --> 00:02:33,030  
mr. Bolden asked me to be in charge of

57  
00:02:36,620 --> 00:02:34,680  
the big TV for technology

58  
00:02:38,360 --> 00:02:36,630  
I listen to you a couple weeks later I

59  
00:02:40,220 --> 00:02:38,370  
came back and I said cannot be

60  
00:02:42,020 --> 00:02:40,230  
technology and innovation I think we

61  
00:02:43,819 --> 00:02:42,030  
have to concentrate innovation Charlie

62  
00:02:45,770 --> 00:02:43,829  
embrace it and ever since i've been

63  
00:02:47,420 --> 00:02:45,780

working with you all and learning from

64

00:02:50,599 --> 00:02:47,430

you all about all the great things going

65

00:02:52,130 --> 00:02:50,609

on at NASA and again just glad with all

66

00:02:54,259 --> 00:02:52,140

of you have this responsibility

67

00:02:56,720 --> 00:02:54,269

how can we even lift ourselves up so

68

00:02:58,099 --> 00:02:56,730

today it's really my pleasure to to

69

00:03:00,140 --> 00:02:58,109

speak with everyone a little bit about

70

00:03:01,640 --> 00:03:00,150

first and foremost of promising

71

00:03:04,099 --> 00:03:01,650

practices because we're doing so many

72

00:03:05,599 --> 00:03:04,109

great things maybe a framework how do we

73

00:03:08,210 --> 00:03:05,609

how we be sustainable in terms of

74

00:03:11,569 --> 00:03:08,220

innovation and then the going forward

75

00:03:13,130 --> 00:03:11,579

plan is well so again what are what are

76

00:03:15,860 --> 00:03:13,140

they what's innovation we all have our

77

00:03:18,199 --> 00:03:15,870

own mental models but we're looking for

78

00:03:21,920 --> 00:03:18,209

is is changed to again maybe just do our

79

00:03:24,050 --> 00:03:21,930

work a little bit better every day maybe

80

00:03:25,580 --> 00:03:24,060

transforming things and talk to you

81

00:03:28,729 --> 00:03:25,590

about this framework but if you remember

82

00:03:30,020 --> 00:03:28,739

anything from today two things that

83

00:03:33,770 --> 00:03:30,030

innovation is

84

00:03:36,770 --> 00:03:33,780

in our DNA NASA it's who we are is what

85

00:03:40,070 --> 00:03:36,780

we do a second we have to be open to

86

00:03:42,650 --> 00:03:40,080

continuous transformation change what

87

00:03:45,920 --> 00:03:42,660

that's hard but again I think it really

88

00:03:48,650 --> 00:03:45,930

is in our on our DNA remind ourselves as

89

00:03:51,410 --> 00:03:48,660

raise ourselves up and then open minded

90

00:03:54,380 --> 00:03:51,420

to continuous transformation so let's

91

00:03:56,570 --> 00:03:54,390

reflect on our our NASA mission little

92

00:03:59,150 --> 00:03:56,580

audacious to drive advances in science

93

00:04:01,540 --> 00:03:59,160

technology Aeronautics Space Exploration

94

00:04:05,000 --> 00:04:01,550

and enhanced knowledge education

95

00:04:07,430 --> 00:04:05,010

innovation economic vitality and

96

00:04:08,300 --> 00:04:07,440

stewardship of Earth we're all up for

97

00:04:10,490 --> 00:04:08,310

the challenge

98

00:04:12,890 --> 00:04:10,500

I know that's why we all join NASA and

99

00:04:14,900 --> 00:04:12,900

so innovation is in our mission with a

100

00:04:17,060 --> 00:04:14,910

complimentary vision and has to reach

101  
00:04:18,949 --> 00:04:17,070  
new heights were revealed unknown for

102  
00:04:20,539 --> 00:04:18,959  
the benefit of all humanity

103  
00:04:22,820 --> 00:04:20,549  
so again that brings it right back down

104  
00:04:25,040 --> 00:04:22,830  
to humanity and it's all about the

105  
00:04:27,230 --> 00:04:25,050  
people for me so I think in the future

106  
00:04:29,150 --> 00:04:27,240  
NASA successes will be largely

107  
00:04:31,070 --> 00:04:29,160  
determined by our investment in the

108  
00:04:33,830 --> 00:04:31,080  
innovations we make in our scientific

109  
00:04:37,370 --> 00:04:33,840  
research our technology and our

110  
00:04:41,270 --> 00:04:37,380  
workforce and our workforce first and

111  
00:04:44,090 --> 00:04:41,280  
first and foremost so thinking about the

112  
00:04:46,370 --> 00:04:44,100  
organization and having this day to just

113  
00:04:49,460 --> 00:04:46,380

celebrate and thank everyone and then

114

00:04:50,990 --> 00:04:49,470

also share some promising practices when

115

00:04:53,990 --> 00:04:51,000

we called the senior leaders together

116

00:04:57,080 --> 00:04:54,000

and ask for promising practices we got

117

00:04:59,210 --> 00:04:57,090

80 we have 80 plus and counting today so

118

00:05:01,310 --> 00:04:59,220

how's that for first responders and that

119

00:05:03,409 --> 00:05:01,320

was just the promising practices coming

120

00:05:06,290 --> 00:05:03,419

out of all of our different centers so

121

00:05:08,659 --> 00:05:06,300

again kudos and going to share just a

122

00:05:10,310 --> 00:05:08,669

few of these with you and then also see

123

00:05:12,440 --> 00:05:10,320

about well how can we have a common

124

00:05:14,000 --> 00:05:12,450

philosophy of innovation so I've been

125

00:05:15,830 --> 00:05:14,010

thinking about again listening to and

126

00:05:17,810 --> 00:05:15,840

we'll have our own mental models but

127

00:05:20,510 --> 00:05:17,820

what does it mean because innovation is

128

00:05:22,520 --> 00:05:20,520

for all of us we all innovate everyday

129

00:05:25,430 --> 00:05:22,530

no matter what your job is at NASA

130

00:05:28,940 --> 00:05:25,440

everyway contributing to all of our our

131

00:05:30,650 --> 00:05:28,950

missions so wanna pose a bit of a

132

00:05:31,520 --> 00:05:30,660

framework for your hair again this is

133

00:05:34,130 --> 00:05:31,530

from listening

134

00:05:36,770 --> 00:05:34,140

everyone is innovating and so you start

135

00:05:39,830 --> 00:05:36,780

with continuous that's just doing

136

00:05:41,120 --> 00:05:39,840

everything better each day can do it

137

00:05:42,200 --> 00:05:41,130

more efficiently can you look at a

138

00:05:43,140 --> 00:05:42,210

different way eighty percent of

139

00:05:44,910 --> 00:05:43,150

innovation comes

140

00:05:47,250 --> 00:05:44,920

with continuous innovation using

141

00:05:49,200 --> 00:05:47,260

existing technologies and existing

142

00:05:51,030 --> 00:05:49,210

organizational structures but we can

143

00:05:53,280 --> 00:05:51,040

transform it can be disruptive in terms

144

00:05:55,440 --> 00:05:53,290

of disrupting the organization a new way

145

00:05:57,180 --> 00:05:55,450

to partner can be revolutionary thinking

146

00:05:58,200 --> 00:05:57,190

one of the revolutionary technologies

147

00:06:00,740 --> 00:05:58,210

one of those transformational

148

00:06:03,030 --> 00:06:00,750

technologies that will get us to Mars

149

00:06:05,040 --> 00:06:03,040

and since we always like a big challenge

150

00:06:07,320 --> 00:06:05,050

let's do both at the same time what

151

00:06:09,450 --> 00:06:07,330

transformational innovation has let's

152

00:06:12,540 --> 00:06:09,460

transform the organization and the

153

00:06:14,580 --> 00:06:12,550

technology at the same time so into

154

00:06:16,410 --> 00:06:14,590

getting ready for today's celebration of

155

00:06:18,210 --> 00:06:16,420

thinking okay is this a kind of a common

156

00:06:23,220 --> 00:06:18,220

philosophy of framework that we can talk

157

00:06:25,380 --> 00:06:23,230

about and all ideas are great ideas all

158

00:06:26,430 --> 00:06:25,390

of your ideas are great the wild crazy

159

00:06:27,840 --> 00:06:26,440

ones those are the ones that i like

160

00:06:29,820 --> 00:06:27,850

because they make me think differently

161

00:06:32,130 --> 00:06:29,830

they challenge you know my assumptions

162

00:06:34,590 --> 00:06:32,140

so saying yes to these great ideas just

163

00:06:36,570 --> 00:06:34,600

given a green light to everybody's yeah

164

00:06:38,670 --> 00:06:36,580

what are those crazy ideas now you know

165

00:06:40,290 --> 00:06:38,680

we have constraints of course the budget

166

00:06:42,330 --> 00:06:40,300

what can we feel but just saying you

167

00:06:44,490 --> 00:06:42,340

know making a say yes stone green light

168

00:06:46,620 --> 00:06:44,500

for bringing all your idea so it's kind

169

00:06:48,570 --> 00:06:46,630

of like a portal at the continuous

170

00:06:51,270 --> 00:06:48,580

innovation then that's just constantly

171

00:06:53,610 --> 00:06:51,280

searching for improvements as I say both

172

00:06:55,200 --> 00:06:53,620

in our organization and in our

173

00:06:56,520 --> 00:06:55,210

technology so just kind of asking

174

00:06:57,780 --> 00:06:56,530

ourselves how can I do it more

175

00:07:00,960 --> 00:06:57,790

efficiently how can I do it more

176  
00:07:02,850 --> 00:07:00,970  
effectively today so out of those 80

177  
00:07:06,270 --> 00:07:02,860  
plus counting promising practices across

178  
00:07:08,210 --> 00:07:06,280  
all NASA highlight a few so it's us

179  
00:07:11,340 --> 00:07:08,220  
organization our digital learning

180  
00:07:12,990 --> 00:07:11,350  
networks what they do is using

181  
00:07:15,240 --> 00:07:13,000  
state-of-the-art communications really

182  
00:07:17,430 --> 00:07:15,250  
scaling up and delivering that content

183  
00:07:19,410 --> 00:07:17,440  
to not just hundreds and thousands but

184  
00:07:21,510 --> 00:07:19,420  
tens of tens of thousands of learners

185  
00:07:23,550 --> 00:07:21,520  
other sharing you know what we're doing

186  
00:07:25,980 --> 00:07:23,560  
at NASA again with the teachers and

187  
00:07:31,170 --> 00:07:25,990  
outreach in the public engaging everyone

188  
00:07:33,360 --> 00:07:31,180

with that learning network so look at

189

00:07:35,910 --> 00:07:33,370

all those kids again each one of these

190

00:07:37,980 --> 00:07:35,920

little ones we get I say that's a when I

191

00:07:39,300 --> 00:07:37,990

count each student you know one by one

192

00:07:41,310 --> 00:07:39,310

and i called the Mars generation of

193

00:07:43,080 --> 00:07:41,320

their school today they're the Mars

194

00:07:45,660 --> 00:07:43,090

generations will be boots on Mars in the

195

00:07:47,760 --> 00:07:45,670

2030s so I'm counting in everything we

196

00:07:49,890 --> 00:07:47,770

do i think in this new audiences for the

197

00:07:51,660 --> 00:07:49,900

next generation is for all over early

198

00:07:53,370 --> 00:07:51,670

career folks the first but all of our

199

00:07:55,110 --> 00:07:53,380

universe for them because you're going

200

00:07:56,200 --> 00:07:55,120

to be the ones who realizes so we need

201  
00:07:58,059 --> 00:07:56,210  
to facilitate

202  
00:08:00,550 --> 00:07:58,069  
all of this for you so again

203  
00:08:02,860 --> 00:08:00,560  
continuously learning i put mission stem

204  
00:08:04,749 --> 00:08:02,870  
up here hope you'll know that our

205  
00:08:06,460 --> 00:08:04,759  
mission stamps for diversity inclusion

206  
00:08:08,320 --> 00:08:06,470  
putting us up there

207  
00:08:11,110 --> 00:08:08,330  
the innovation years ago having the

208  
00:08:13,749 --> 00:08:11,120  
website promising practices goes to all

209  
00:08:15,850 --> 00:08:13,759  
of our grantees all of our grantees to

210  
00:08:17,529 --> 00:08:15,860  
hold them accountable to do have

211  
00:08:19,029 --> 00:08:17,539  
welcoming environments

212  
00:08:21,520 --> 00:08:19,039  
what are you doing about diversity

213  
00:08:23,770 --> 00:08:21,530

inclusion I learned something from from

214

00:08:25,809 --> 00:08:23,780

actually from the 50th anniversary of

215

00:08:27,070 --> 00:08:25,819

star trek from gene roddenberry recently

216

00:08:30,400 --> 00:08:27,080

if you've seen my blog

217

00:08:33,279 --> 00:08:30,410

infinite diversity in infinite inclusion

218

00:08:34,510 --> 00:08:33,289

and how four-sided was that when you

219

00:08:36,880 --> 00:08:34,520

wrote that infinite diversity in

220

00:08:38,170 --> 00:08:36,890

infinite in combinations

221

00:08:40,930 --> 00:08:38,180

infinite diversity in infinite

222

00:08:43,269 --> 00:08:40,940

combinations that's what I'm after

223

00:08:45,340 --> 00:08:43,279

because I'm after excellence and only

224

00:08:47,949 --> 00:08:45,350

way I know how to get excellence is

225

00:08:50,850 --> 00:08:47,959

through the most diverse workforce all

226

00:08:53,050 --> 00:08:50,860

diversity of all kinds gender culture

227

00:08:54,850 --> 00:08:53,060

intellect is all i know is i don't want

228

00:08:56,769 --> 00:08:54,860

to be surrounded by people they're just

229

00:08:58,329 --> 00:08:56,779

like me how boring would that be a whole

230

00:09:00,670 --> 00:08:58,339

buncha you know rocket engineers right

231

00:09:02,470 --> 00:09:00,680

so I need everyone to challenge me and

232

00:09:03,699 --> 00:09:02,480

you'll think differently so i think

233

00:09:06,069 --> 00:09:03,709

again these are these are great examples

234

00:09:07,510 --> 00:09:06,079

we've held this some missions team

235

00:09:09,610 --> 00:09:07,520

conference for all of our grantees

236

00:09:11,230 --> 00:09:09,620

brought him to headquarters and really

237

00:09:13,600 --> 00:09:11,240

challenge them and now we're executing

238

00:09:15,579 --> 00:09:13,610

into the action holding folks compliant

239

00:09:17,610 --> 00:09:15,589

as well to make sure that we're all

240

00:09:21,010 --> 00:09:17,620

working environments that we want to do

241

00:09:22,810 --> 00:09:21,020

so moving onto disruptive ok there's

242

00:09:24,430 --> 00:09:22,820

great examples here again

243

00:09:26,199 --> 00:09:24,440

dozens and dozens i just picked out a

244

00:09:28,210 --> 00:09:26,209

few to highlight when we really

245

00:09:30,790 --> 00:09:28,220

intentionally are changing the

246

00:09:33,370 --> 00:09:30,800

organization we are disrupting and we're

247

00:09:36,790 --> 00:09:33,380

transforming ourselves so our commercial

248

00:09:39,100 --> 00:09:36,800

crew activities are great right there

249

00:09:40,030 --> 00:09:39,110

the case all of our centrex working

250

00:09:42,100 --> 00:09:40,040

together on this

251  
00:09:44,920 --> 00:09:42,110  
partnering public-private partnerships

252  
00:09:47,290 --> 00:09:44,930  
buying services very new model different

253  
00:09:50,710 --> 00:09:47,300  
way to do business is incredibly

254  
00:09:52,000 --> 00:09:50,720  
innovative incredibly transformative and

255  
00:09:54,639 --> 00:09:52,010  
we're getting it done

256  
00:09:58,240 --> 00:09:54,649  
coming up now Commercial Crew not just

257  
00:09:59,319 --> 00:09:58,250  
the cargo another example what about

258  
00:10:00,699 --> 00:09:59,329  
citizen science

259  
00:10:02,769 --> 00:10:00,709  
I know I jump on these websites but

260  
00:10:06,269 --> 00:10:02,779  
again opening up our story to the world

261  
00:10:09,509 --> 00:10:06,279  
saying hey work you need to discover

262  
00:10:11,730 --> 00:10:09,519  
famous name stars and down on the bottom

263  
00:10:13,290 --> 00:10:11,740

I Jupiter right the Juno can opening it

264

00:10:16,530 --> 00:10:13,300

up to the real estate where you wanted

265

00:10:17,999 --> 00:10:16,540

look where we're exploring Jupiter make

266

00:10:19,860 --> 00:10:18,009

sure that people know that they are

267

00:10:22,379 --> 00:10:19,870

include they can help us get our work

268

00:10:25,439 --> 00:10:22,389

done so again just thinking about things

269

00:10:26,790 --> 00:10:25,449

differently being very inclusive and

270

00:10:28,590 --> 00:10:26,800

disrupting kind of what we've done

271

00:10:30,989 --> 00:10:28,600

before in terms of the organization

272

00:10:33,530 --> 00:10:30,999

moving over to the technologies

273

00:10:35,579 --> 00:10:33,540

it's so many great examples just a few

274

00:10:36,929 --> 00:10:35,589

intentionally really thinking about what

275

00:10:38,999 --> 00:10:36,939

are the breakthrough technologies that

276

00:10:41,489 --> 00:10:39,009

we need to do some of our missions so

277

00:10:43,100 --> 00:10:41,499

few examples here and shout out to

278

00:10:46,319 --> 00:10:43,110

aeronautics of course this is

279

00:10:48,329 --> 00:10:46,329

revolutionary transformative in terms of

280

00:10:50,519 --> 00:10:48,339

technology investment into our explains

281

00:10:52,350 --> 00:10:50,529

we are back in business and explains and

282

00:10:55,650 --> 00:10:52,360

you see here you know we're too low boom

283

00:10:58,410 --> 00:10:55,660

supersonic with an ultra-efficient how

284

00:11:00,900 --> 00:10:58,420

about that for a goal 50-percent fuel

285

00:11:03,299 --> 00:11:00,910

reduction and fifty percent less noise

286

00:11:05,309 --> 00:11:03,309

so that's why we look at the future how

287

00:11:07,199 --> 00:11:05,319

can we really do the innovation to

288

00:11:09,299 --> 00:11:07,209

really be transformative for flight on

289

00:11:10,860 --> 00:11:09,309

the bottom there are hybrid electric so

290

00:11:13,740 --> 00:11:10,870

all these investments in the research

291

00:11:14,970 --> 00:11:13,750

and technology to really transform the

292

00:11:16,980 --> 00:11:14,980

way we do things

293

00:11:18,990 --> 00:11:16,990

James Webb Space Telescope supposed to

294

00:11:21,269 --> 00:11:19,000

be a hundred times more powerful than

295

00:11:24,600 --> 00:11:21,279

Hubble dr. mather says i can say that

296

00:11:28,379 --> 00:11:24,610

can you imagine so we are Nobel

297

00:11:31,079 --> 00:11:28,389

laureates and amazing 18 articulating

298

00:11:33,480 --> 00:11:31,089

controlled mirrors phenomenal just you

299

00:11:35,420 --> 00:11:33,490

know get built ready to launch in 2018

300

00:11:37,799 --> 00:11:35,430

so these really are revolutionary

301  
00:11:40,019 --> 00:11:37,809  
technologies and then if we go for the

302  
00:11:42,329 --> 00:11:40,029  
guests 0 which I think we're doing and

303  
00:11:45,119 --> 00:11:42,339  
we're focused on this then come

304  
00:11:46,650 --> 00:11:45,129  
transforming the organization and as

305  
00:11:48,869 --> 00:11:46,660  
well as a technology at the same time

306  
00:11:51,530 --> 00:11:48,879  
I'm some of my favorite examples on

307  
00:11:54,509 --> 00:11:51,540  
international space station 16 years

308  
00:11:57,030 --> 00:11:54,519  
change in organizations partnerships we

309  
00:11:59,040 --> 00:11:57,040  
worked with 95 different nations are

310  
00:12:01,319 --> 00:11:59,050  
five main partners on international

311  
00:12:04,019 --> 00:12:01,329  
space station but this is truly global

312  
00:12:05,819 --> 00:12:04,029  
exploration and Kate rib rubens just

313  
00:12:09,389 --> 00:12:05,829

came down shoutout for Casey landed

314

00:12:12,480 --> 00:12:09,399

safely just one of the experiments a DNA

315

00:12:15,900 --> 00:12:12,490

sequence e in real-time over 2 billion

316

00:12:17,580 --> 00:12:15,910

base pair sequence now as of today we

317

00:12:20,640 --> 00:12:17,590

can sequence in real time

318

00:12:22,770 --> 00:12:20,650

DNA in microgravity completely you know

319

00:12:24,360 --> 00:12:22,780

revolution i really really awesome and

320

00:12:25,980 --> 00:12:24,370

will continue to go because again we're

321

00:12:28,470 --> 00:12:25,990

looking how to keep our astronauts safe

322

00:12:31,280 --> 00:12:28,480

and healthy for the future even longer

323

00:12:34,620 --> 00:12:31,290

durations and getting us to Mars

324

00:12:36,360 --> 00:12:34,630

exoplanets now these blow my mind right

325

00:12:38,760 --> 00:12:36,370

20 years ago this wasn't even a

326

00:12:40,380 --> 00:12:38,770

discipline we didn't have this so going

327

00:12:43,230 --> 00:12:40,390

out and searching for these earth-like

328

00:12:44,790 --> 00:12:43,240

planets these exoplanets I put up this a

329

00:12:46,680 --> 00:12:44,800

wonderful image because we've never seen

330

00:12:48,240 --> 00:12:46,690

them so we brought in the artist help us

331

00:12:51,900 --> 00:12:48,250

help us envision with these exoplanets

332

00:12:53,880 --> 00:12:51,910

even look like and so Kepler 16b you

333

00:12:56,970 --> 00:12:53,890

know move over Luke Skywalker this is a

334

00:12:58,290 --> 00:12:56,980

binary system two sons and so you do

335

00:13:01,700 --> 00:12:58,300

have a double shadow when you're on

336

00:13:04,470 --> 00:13:01,710

Kepler 16b but against searching for

337

00:13:06,960 --> 00:13:04,480

other habitable planets are we alone in

338

00:13:08,910 --> 00:13:06,970

the universe was incredibly enduring

339

00:13:10,740 --> 00:13:08,920

questions that we need to innovate we

340

00:13:12,720 --> 00:13:10,750

need to keep our so sharp so that we

341

00:13:14,090 --> 00:13:12,730

really again doing the impossible we

342

00:13:17,630 --> 00:13:14,100

just make it possible here at NASA

343

00:13:19,740 --> 00:13:17,640

everyday incredibly transformative and

344

00:13:23,490 --> 00:13:19,750

our journey to Mars

345

00:13:25,560 --> 00:13:23,500

I think it will take both transformative

346

00:13:26,790 --> 00:13:25,570

in terms of the organizational business

347

00:13:29,130 --> 00:13:26,800

model change as well as in the

348

00:13:31,770 --> 00:13:29,140

technologies were well on our way you

349

00:13:33,210 --> 00:13:31,780

look at this schematic here earth

350

00:13:34,740 --> 00:13:33,220

reliant were already on international

351

00:13:37,320 --> 00:13:34,750

space station for 16 years we're

352

00:13:40,350 --> 00:13:37,330

learning so much will be there till 2024

353

00:13:42,360 --> 00:13:40,360

we move and assist lunar with sls

354

00:13:43,920 --> 00:13:42,370

launching two years less than two years

355

00:13:46,320 --> 00:13:43,930

right here from Kennedy Space there's

356

00:13:48,150 --> 00:13:46,330

gonna be amazing you know the world's

357

00:13:50,670 --> 00:13:48,160

first heavy-lift launch vehicle move

358

00:13:53,670 --> 00:13:50,680

over Saturn five right when that rockets

359

00:13:56,640 --> 00:13:53,680

into space and gets us to that lunar

360

00:13:58,170 --> 00:13:56,650

looking earth or it'd be amazing will

361

00:14:00,240 --> 00:13:58,180

prove all the technologies these are

362

00:14:02,250 --> 00:14:00,250

some of them are transformative some of

363

00:14:04,470 --> 00:14:02,260

them are revolutionary technologies we

364

00:14:06,510 --> 00:14:04,480

need to learn how to live and work in

365

00:14:09,450 --> 00:14:06,520

deep space and then phase three

366

00:14:09,930 --> 00:14:09,460

moving onto to Mars so again we're all

367

00:14:17,370 --> 00:14:09,940

in

368

00:14:19,920 --> 00:14:17,380

our private partners and our

369

00:14:22,440 --> 00:14:19,930

international partners to to share in

370

00:14:24,810 --> 00:14:22,450

this is this big global vision so kind

371

00:14:27,000 --> 00:14:24,820

of back to then back to this framework

372

00:14:28,890 --> 00:14:27,010

that says well you know how can we how

373

00:14:30,750 --> 00:14:28,900

can we always be thinking I've always

374

00:14:33,120 --> 00:14:30,760

been top of how are we creating a cold

375

00:14:34,770 --> 00:14:33,130

drive innovation with all of our people

376

00:14:36,750 --> 00:14:34,780

saying all of your ideas are good ideas

377

00:14:39,990 --> 00:14:36,760

how can you help us with with our

378

00:14:41,790 --> 00:14:40,000

missions and it's been fun for me to go

379

00:14:42,420 --> 00:14:41,800

to every Center and just listen to all

380

00:14:43,950 --> 00:14:42,430

of you

381

00:14:45,780 --> 00:14:43,960

you feel me with with hope you feel me

382

00:14:47,850 --> 00:14:45,790

with good ideas i can barely write them

383

00:14:50,160 --> 00:14:47,860

all down and then again how intern then

384

00:14:52,800 --> 00:14:50,170

can we facilitate here today we have the

385

00:14:54,870 --> 00:14:52,810

Kickstarter coming up and each Center is

386

00:14:56,160 --> 00:14:54,880

doing so much and let me tell you just

387

00:14:57,690 --> 00:14:56,170

those little investment just a little

388

00:15:00,480 --> 00:14:57,700

bit of specimens to tell people your

389

00:15:02,400 --> 00:15:00,490

ideas are great and know which ones are

390

00:15:04,350 --> 00:15:02,410

gonna hit so we need to place

391

00:15:05,780 --> 00:15:04,360

investments in a lot of them and we also

392

00:15:07,590 --> 00:15:05,790

have to be comfortable with failure

393

00:15:12,210 --> 00:15:07,600

that's tough

394

00:15:13,920 --> 00:15:12,220

it out of our human capital really the

395

00:15:16,290 --> 00:15:13,930

culture how can we feel smart

396

00:15:18,510 --> 00:15:16,300

appropriately we need hands-on lifecycle

397

00:15:20,310 --> 00:15:18,520

experience and then if you fail so what

398

00:15:21,810 --> 00:15:20,320

we get back up and we do it again but

399

00:15:23,670 --> 00:15:21,820

again in terms of being intentional

400

00:15:26,280 --> 00:15:23,680

about it but being able to take the

401  
00:15:28,260 --> 00:15:26,290  
risks that we really do see so our goal

402  
00:15:30,570 --> 00:15:28,270  
is to fold then the way we look at it

403  
00:15:33,060 --> 00:15:30,580  
we're doing very well again here to say

404  
00:15:34,920 --> 00:15:33,070  
thank you to to everyone and try to keep

405  
00:15:37,110 --> 00:15:34,930  
to identify the opportunities that

406  
00:15:41,250 --> 00:15:37,120  
unleash our discovery advancement and

407  
00:15:44,040 --> 00:15:41,260  
our innovation a moment for paws why

408  
00:15:47,130 --> 00:15:44,050  
because a kid we are intending to send

409  
00:15:48,120 --> 00:15:47,140  
humans to Mars in the 2030s so we need

410  
00:15:50,220 --> 00:15:48,130  
these breakthroughs we need these

411  
00:15:55,050 --> 00:15:50,230  
scientific technological and

412  
00:15:57,450 --> 00:15:55,060  
organizational breakthroughs think we're

413  
00:16:00,150 --> 00:15:57,460

well on our way it is about finding our

414

00:16:03,660 --> 00:16:00,160

place in the universe it is about flying

415

00:16:05,880 --> 00:16:03,670

cleaner greener safer quieter aircraft

416

00:16:07,950 --> 00:16:05,890

of the future making that

417

00:16:09,830 --> 00:16:07,960

round-the-world trip six hours on

418

00:16:12,390 --> 00:16:09,840

cleaner fuel I can't wait

419

00:16:15,180 --> 00:16:12,400

and so when we look at all these goals

420

00:16:17,040 --> 00:16:15,190

for innovation in order to reach these

421

00:16:20,250 --> 00:16:17,050

how to show a culture of innovation at

422

00:16:22,680 --> 00:16:20,260

NASA have three guiding principles first

423

00:16:24,960 --> 00:16:22,690

and foremost thank you acknowledge our

424

00:16:26,790 --> 00:16:24,970

history of innovation which in all the

425

00:16:28,620 --> 00:16:26,800

NASA workforce should be celebrating

426

00:16:30,720 --> 00:16:28,630

little bit more positive reinforcement

427

00:16:32,790 --> 00:16:30,730

someone has a good idea your colleague

428

00:16:33,930 --> 00:16:32,800

please you know pat him on the back take

429

00:16:35,190 --> 00:16:33,940

them out for coffee

430

00:16:37,200 --> 00:16:35,200

just listen to him but make sure to

431

00:16:40,590 --> 00:16:37,210

congratulate them on doing a great job

432

00:16:41,940 --> 00:16:40,600

each and every day and then second have

433

00:16:43,140 --> 00:16:41,950

this broad definition of innovation

434

00:16:45,270 --> 00:16:43,150

because it includes

435

00:16:47,970 --> 00:16:45,280

everyone includes all of us regardless

436

00:16:49,860 --> 00:16:47,980

of our role is it really includes every

437

00:16:52,020 --> 00:16:49,870

single one of us to think about this

438

00:16:53,940 --> 00:16:52,030

continuous disruptive transformative and

439

00:16:55,530 --> 00:16:53,950

revolutionary type of innovation so we

440

00:16:56,970 --> 00:16:55,540

have a common philosophy and we're all

441

00:16:59,820 --> 00:16:56,980

on this you know we're on this ship

442

00:17:01,680 --> 00:16:59,830

together spaceship earth i call it my

443

00:17:03,410 --> 00:17:01,690

favorite planet Mars is number two just

444

00:17:06,660 --> 00:17:03,420

in case I haven't mentioned that

445

00:17:09,000 --> 00:17:06,670

and third then really are moving away

446

00:17:11,760 --> 00:17:09,010

from your failures not an option that

447

00:17:13,290 --> 00:17:11,770

that was a bad its time and Apollo 13

448

00:17:15,810 --> 00:17:13,300

and thank goodness we've got the crew

449

00:17:17,910 --> 00:17:15,820

back safely amazing but now you know in

450

00:17:20,910 --> 00:17:17,920

the new NASA you know and moving out

451  
00:17:22,350 --> 00:17:20,920  
also saying no it's it's okay that you

452  
00:17:24,600 --> 00:17:22,360  
know where we're not perfect we're gonna

453  
00:17:26,730 --> 00:17:24,610  
intense learning so much more from our

454  
00:17:29,220 --> 00:17:26,740  
field get back up its hard as

455  
00:17:31,080 --> 00:17:29,230  
challenging that's really important

456  
00:17:34,680 --> 00:17:31,090  
message I think that we all you know

457  
00:17:38,580 --> 00:17:34,690  
need to communicate and other and then

458  
00:17:41,610 --> 00:17:38,590  
again dedicated to cut its new wave of

459  
00:17:43,020 --> 00:17:41,620  
open minded folks that are in the agency

460  
00:17:45,630 --> 00:17:43,030  
and want to do things differently and

461  
00:17:47,520 --> 00:17:45,640  
then it supervises supervisors as well

462  
00:17:50,130 --> 00:17:47,530  
been great spending programs like laser

463  
00:17:51,720 --> 00:17:50,140

what does it take a lot of today there's

464

00:17:53,910 --> 00:17:51,730

a lot of training going on to say okay

465

00:17:56,070 --> 00:17:53,920

we're what training do we need it will

466

00:17:57,960 --> 00:17:56,080

be modular share it across the whole

467

00:17:59,220 --> 00:17:57,970

center and they're actually a lot of fun

468

00:18:00,240 --> 00:17:59,230

as well but again being very intentional

469

00:18:01,770 --> 00:18:00,250

about it

470

00:18:04,230 --> 00:18:01,780

the training the different opportunities

471

00:18:06,060 --> 00:18:04,240

that that we all seek so we're on that

472

00:18:07,800 --> 00:18:06,070

and we're starting to lay out some today

473

00:18:12,150 --> 00:18:07,810

and thank you for everyone's great work

474

00:18:14,940 --> 00:18:12,160

and when it kinda show you a summary

475

00:18:17,460 --> 00:18:14,950

here so this is a picture of our of

476

00:18:19,200 --> 00:18:17,470

justice since 2011 NASA's you know

477

00:18:22,230 --> 00:18:19,210

innovation visual history if you well

478

00:18:24,570 --> 00:18:22,240

and there was a document and barriers to

479

00:18:26,280 --> 00:18:24,580

innovation and you know people are are

480

00:18:28,110 --> 00:18:26,290

anxious and want to get going and that's

481

00:18:29,700 --> 00:18:28,120

fine we've identified those but we've

482

00:18:31,650 --> 00:18:29,710

been on the recommendation working

483

00:18:34,140 --> 00:18:31,660

working these recommendations and we be

484

00:18:36,960 --> 00:18:34,150

you know a more innovative culture and

485

00:18:38,370 --> 00:18:36,970

lean forward feels right letting you

486

00:18:40,890 --> 00:18:38,380

know celebrating that celebrating

487

00:18:42,780 --> 00:18:40,900

people's great work and then the agency

488

00:18:44,760 --> 00:18:42,790

culture strategy came out comes out of

489

00:18:46,560 --> 00:18:44,770

human capital recognizing and rewarding

490

00:18:48,960 --> 00:18:46,570

you know kind of developing these

491

00:18:51,060 --> 00:18:48,970

supervisors training for people so we

492

00:18:52,000 --> 00:18:51,070

march all along and then we actually did

493

00:18:53,530 --> 00:18:52,010

have a a

494

00:18:55,120 --> 00:18:53,540

bit of a bit of a burial this rest in

495

00:18:57,190 --> 00:18:55,130

peace of those those berries does not go

496

00:18:58,690 --> 00:18:57,200

back and say oh but here's the bears

497

00:19:00,670 --> 00:18:58,700

they know we are moving forward we're

498

00:19:02,620 --> 00:19:00,680

moving on the senior management council

499

00:19:04,840 --> 00:19:02,630

we got together in may and that's again

500

00:19:06,700 --> 00:19:04,850

i'm so glad to be here just six months

501  
00:19:08,560 --> 00:19:06,710  
later saying yes let's have an

502  
00:19:10,630 --> 00:19:08,570  
innovation day let's celebrate our

503  
00:19:13,090 --> 00:19:10,640  
people that's learn from one another to

504  
00:19:14,710 --> 00:19:13,100  
celebrate all of these great promising

505  
00:19:16,270 --> 00:19:14,720  
practices we already know you're going

506  
00:19:18,640 --> 00:19:16,280  
on and kind of hold ourselves

507  
00:19:21,340 --> 00:19:18,650  
accountable so the actions and we're

508  
00:19:24,070 --> 00:19:21,350  
working on from that first that the

509  
00:19:25,030 --> 00:19:24,080  
chief and deputy center technologist as

510  
00:19:26,530 --> 00:19:25,040  
well as with headquarters

511  
00:19:29,200 --> 00:19:26,540  
they're taking the lead to develop

512  
00:19:30,760 --> 00:19:29,210  
agency-wide process the mask is for

513  
00:19:32,650 --> 00:19:30,770

employees for what opportunities for

514

00:19:34,960 --> 00:19:32,660

innovation that you have all these

515

00:19:36,970 --> 00:19:34,970

problems so we're on it but expanding

516

00:19:38,290 --> 00:19:36,980

the network also empowering so there

517

00:19:41,170 --> 00:19:38,300

really are leaders in each of your

518

00:19:43,420 --> 00:19:41,180

centers all over the agency to to go to

519

00:19:46,210 --> 00:19:43,430

to say look for these innovative so

520

00:19:47,410 --> 00:19:46,220

innovative solutions for NASA are

521

00:19:49,330 --> 00:19:47,420

identified by leadership of their

522

00:19:50,890 --> 00:19:49,340

identified by any of you to really kind

523

00:19:53,800 --> 00:19:50,900

of build that networking and our

524

00:19:55,120 --> 00:19:53,810

innovative culture second in terms of

525

00:19:56,830 --> 00:19:55,130

leading and celebrate building the

526

00:19:59,200 --> 00:19:56,840

efforts from the mission directors to

527

00:20:01,170 --> 00:19:59,210

foster innovation lisa rose on this when

528

00:20:04,450 --> 00:20:01,180

she's leaving it with a great team

529

00:20:06,100 --> 00:20:04,460

the day is government personnel center

530

00:20:08,020 --> 00:20:06,110

directors have been involved and we're

531

00:20:10,660 --> 00:20:08,030

calling this leading questions for

532

00:20:12,610 --> 00:20:10,670

projects urge innovation so the goal is

533

00:20:14,680 --> 00:20:12,620

continuing look continually look for

534

00:20:17,770 --> 00:20:14,690

ways within our current missions that

535

00:20:20,140 --> 00:20:17,780

enable future missions NASA even greater

536

00:20:21,640 --> 00:20:20,150

and more capable than we are today the

537

00:20:23,500 --> 00:20:21,650

mission directors and all the project

538

00:20:25,330 --> 00:20:23,510

leaders already do this for capturing

539

00:20:27,760 --> 00:20:25,340

engineering research data to inform

540

00:20:30,070 --> 00:20:27,770

future design decisions were looking for

541

00:20:31,390 --> 00:20:30,080

new ways to reduce mission cost other

542

00:20:33,550 --> 00:20:31,400

incentives are demonstrating new

543

00:20:36,160 --> 00:20:33,560

technologies and advanced cross-cutting

544

00:20:38,200 --> 00:20:36,170

technologies that can support missions

545

00:20:40,210 --> 00:20:38,210

of the future and lisas helping us

546

00:20:42,010 --> 00:20:40,220

consider how we can use that in terms of

547

00:20:44,080 --> 00:20:42,020

our project management reviews and

548

00:20:46,600 --> 00:20:44,090

highlight these innovative approaches so

549

00:20:48,760 --> 00:20:46,610

that will be coming forward 44 agency

550

00:20:51,820 --> 00:20:48,770

review and sold out so again we have new

551  
00:20:53,650 --> 00:20:51,830  
projects new programs just right right

552  
00:20:55,840 --> 00:20:53,660  
on friend what are the leading questions

553  
00:20:58,060 --> 00:20:55,850  
and innovation we asking could we do it

554  
00:20:59,980 --> 00:20:58,070  
differently we do a different one of the

555  
00:21:02,080 --> 00:20:59,990  
other ideas we need to bring bring in

556  
00:21:04,300 --> 00:21:02,090  
right from the beginning of our problem

557  
00:21:05,620 --> 00:21:04,310  
programs and then third the innovation

558  
00:21:08,290 --> 00:21:05,630  
framework which is

559  
00:21:09,670 --> 00:21:08,300  
I've had fun and the pleasure to try to

560  
00:21:12,100 --> 00:21:09,680  
put together maybe a common philosophy

561  
00:21:13,960 --> 00:21:12,110  
or framework that we can all talk about

562  
00:21:16,000 --> 00:21:13,970  
we think strategically that where should

563  
00:21:17,710 --> 00:21:16,010

we be investing where do we want those

564

00:21:19,000 --> 00:21:17,720

transformations and breakthroughs to

565

00:21:21,040 --> 00:21:19,010

come from

566

00:21:23,290 --> 00:21:21,050

so at the end of the day we want to

567

00:21:25,120 --> 00:21:23,300

celebrate the many many pop things that

568

00:21:27,400 --> 00:21:25,130

we have going on at NASA we want to be

569

00:21:29,830 --> 00:21:27,410

very inclusive we want to foster this

570

00:21:31,840 --> 00:21:29,840

culture that allows people to take risks

571

00:21:34,360 --> 00:21:31,850

and yes learn from those we learned so

572

00:21:37,090 --> 00:21:34,370

much more from those and mostly it's

573

00:21:39,460 --> 00:21:37,100

about all of you and my pleasure to have

574

00:21:42,430 --> 00:21:39,470

joined you and work with you and the

575

00:21:43,810 --> 00:21:42,440

people at the biggest asset of NASA even

576  
00:21:45,910 --> 00:21:43,820  
though i love the rockets and the

577  
00:21:47,650 --> 00:21:45,920  
technology it's the people it's all of

578  
00:21:51,580 --> 00:21:47,660  
you the biggest asset we have is is one

579  
00:21:53,110 --> 00:21:51,590  
another and so my pleasure to to have

580  
00:21:56,320 --> 00:21:53,120  
worked with you continue to work with

581  
00:21:58,270 --> 00:21:56,330  
you and say you know again let's do our

582  
00:22:00,340 --> 00:21:58,280  
absolute best because in the innovation

583  
00:22:02,560 --> 00:22:00,350  
is in our DNA and let's be proud about

584  
00:22:04,630 --> 00:22:02,570  
that every day and then celebrated and

585  
00:22:06,550 --> 00:22:04,640  
move their further and make NASA you

586  
00:22:07,840 --> 00:22:06,560  
know envision we have great dreams for

587  
00:22:10,030 --> 00:22:07,850  
the future and I just say you know we

588  
00:22:11,590 --> 00:22:10,040

always make the impossible possible we

589

00:22:13,420 --> 00:22:11,600

make it easy it's not easy I know it's

590

00:22:15,370 --> 00:22:13,430

not easy but that's what we do every day

591

00:22:17,860 --> 00:22:15,380

so I think all of you I thank you for

592

00:22:20,620 --> 00:22:17,870

your information and that's we are at

593

00:22:22,180 --> 00:22:20,630

nap happy that answer any questions i

594

00:22:35,200 --> 00:22:22,190

think we have a Q&A time now

595

00:22:42,950 --> 00:22:38,480

so questions can be submitted virtually

596

00:22:45,139 --> 00:22:42,960

at larc dot CNF dot IO and our first

597

00:22:46,940 --> 00:22:45,149

question for David is what would you

598

00:22:48,769 --> 00:22:46,950

like to see change within the agency

599

00:23:01,610 --> 00:22:48,779

that would have a positive impact on

600

00:23:04,070 --> 00:23:01,620

innovation little time like okay well

601  
00:23:05,269 --> 00:23:04,080  
set so it was one of the first question

602  
00:23:10,490 --> 00:23:05,279  
was one of the first things i like to

603  
00:23:13,039 --> 00:23:10,500  
see for in then the agency and have a

604  
00:23:14,419 --> 00:23:13,049  
positive impact on implementation so

605  
00:23:16,100 --> 00:23:14,429  
changed with innovation and change

606  
00:23:17,720 --> 00:23:16,110  
within the agency again I think it I

607  
00:23:19,789 --> 00:23:17,730  
think I point right down to that kind of

608  
00:23:22,039 --> 00:23:19,799  
continuous again just I'm not to

609  
00:23:24,470 --> 00:23:22,049  
underestimate just the intentional kind

610  
00:23:26,629 --> 00:23:24,480  
of slow changes everyday thinking about

611  
00:23:28,129 --> 00:23:26,639  
how we can do it a little bit better and

612  
00:23:29,990 --> 00:23:28,139  
i think it will have a huge and I

613  
00:23:30,799 --> 00:23:30,000

already know we've already started it is

614

00:23:34,070 --> 00:23:30,809

going on

615

00:23:36,590 --> 00:23:34,080

it does have a huge impact on the agency

616

00:23:37,700 --> 00:23:36,600

in terms of being being innovative but

617

00:23:38,779 --> 00:23:37,710

we have to celebrate it

618

00:23:40,759 --> 00:23:38,789

you know we have to celebrate with a

619

00:23:45,769 --> 00:23:40,769

little bit more positive reinforcement

620

00:23:48,440 --> 00:23:45,779

and add to that just say yes if you're a

621

00:23:51,230 --> 00:23:48,450

supervisor of one per one person of

622

00:23:53,360 --> 00:23:51,240

17,000 people say yes please say yes

623

00:23:55,190 --> 00:23:53,370

make it make it the yes stone that will

624

00:23:56,539 --> 00:23:55,200

have the most important impact I think

625

00:23:59,210 --> 00:23:56,549

because guess what you get that

626

00:24:02,450 --> 00:23:59,220

innovative idea and you'll get hundreds

627

00:24:04,369 --> 00:24:02,460

more but the moment we say no we never

628

00:24:06,680 --> 00:24:04,379

hear back from that person so I want to

629

00:24:11,180 --> 00:24:06,690

make NASA that yes so and I think we're

630

00:24:13,039 --> 00:24:11,190

well on our way to do on that question

631

00:24:16,610 --> 00:24:13,049

is can you explain the importance of

632

00:24:19,519 --> 00:24:16,620

steamed instead of just stem yeah thank

633

00:24:22,249 --> 00:24:19,529

you for that question out there so I

634

00:24:24,799 --> 00:24:22,259

heard me speak before so STEM education

635

00:24:26,570 --> 00:24:24,809

we try a nice day and a lot of the

636

00:24:28,460 --> 00:24:26,580

leaders that were you know 19-plus

637

00:24:30,860 --> 00:24:28,470

billion-dollar agency for stem we're

638

00:24:32,299 --> 00:24:30,870

gonna do everything we can for the US

639

00:24:33,740 --> 00:24:32,309

workforce in science technology

640

00:24:36,440 --> 00:24:33,750

engineering math we want to lift

641

00:24:39,470 --> 00:24:36,450

everyone up we we need you all we need

642

00:24:41,840 --> 00:24:39,480

to do that for the nation i believe but

643

00:24:43,630 --> 00:24:41,850

I think as an engineer I can put it on

644

00:24:46,400 --> 00:24:43,640

honest especially as a former academic

645

00:24:48,680 --> 00:24:46,410

we have to change the conversation we

646

00:24:50,360 --> 00:24:48,690

made stamina thing so i go and i talked

647

00:24:50,870 --> 00:24:50,370

two little girls and boys and I'll tell

648

00:24:59,000 --> 00:24:50,880

me

649

00:25:00,799 --> 00:24:59,010

written asses for everyone I think and I

650

00:25:03,820 --> 00:25:00,809

want to raise up our stem capabilities

651  
00:25:06,230 --> 00:25:03,830  
in us so how do you do that so I have a

652  
00:25:09,020 --> 00:25:06,240  
hypothesis and now beta testing it on

653  
00:25:09,980 --> 00:25:09,030  
folks now i've called it seemed to be

654  
00:25:12,080 --> 00:25:09,990  
inclusive

655  
00:25:13,909 --> 00:25:12,090  
I bring in the arts because these

656  
00:25:15,710 --> 00:25:13,919  
exoplanets I guess what the artist

657  
00:25:17,720 --> 00:25:15,720  
needed to paint those pictures because

658  
00:25:21,409 --> 00:25:17,730  
we have never seen them they need to

659  
00:25:23,450 --> 00:25:21,419  
tell the history artists humanities have

660  
00:25:24,799 --> 00:25:23,460  
always been with us at NASA there are

661  
00:25:26,600 --> 00:25:24,809  
colleagues at work because they paint

662  
00:25:29,120 --> 00:25:26,610  
the pictures they tell the stories they

663  
00:25:30,590 --> 00:25:29,130

help us communicate i tweet now right

664

00:25:33,890 --> 00:25:30,600

because i want to communicate to the

665

00:25:35,990 --> 00:25:33,900

world d is for the the 3d maker

666

00:25:37,880 --> 00:25:36,000

generation because the next generation

667

00:25:40,360 --> 00:25:37,890

always do this how many people have a

668

00:25:42,740 --> 00:25:40,370

have done you know done 3d printing

669

00:25:44,750 --> 00:25:42,750

probably is always a lot of file you

670

00:25:47,270 --> 00:25:44,760

know half the folks here at NASA my own

671

00:25:48,830 --> 00:25:47,280

3d printer but that's a whole new

672

00:25:51,350 --> 00:25:48,840

generation Saudi if they see themselves

673

00:25:52,880 --> 00:25:51,360

as a maker then I say you're in so

674

00:25:55,250 --> 00:25:52,890

changing the conversation be very

675

00:25:56,659 --> 00:25:55,260

inclusive saying that we're all in i

676

00:25:59,810 --> 00:25:56,669

think we'll actually have the best

677

00:26:02,029 --> 00:25:59,820

effect on stem and explicitly changing

678

00:26:03,890 --> 00:26:02,039

the conversation or do the best in math

679

00:26:05,539 --> 00:26:03,900

calculus and physics that was I was

680

00:26:07,970 --> 00:26:05,549

that's what i was told that's really

681

00:26:09,560 --> 00:26:07,980

intimidating so we don't have many if we

682

00:26:11,060 --> 00:26:09,570

change the conversation to say you want

683

00:26:12,649 --> 00:26:11,070

to build rockets you want to get us to

684

00:26:14,690 --> 00:26:12,659

Mars you want to search for other

685

00:26:15,950 --> 00:26:14,700

planets you want to invent the coolest

686

00:26:18,590 --> 00:26:15,960

planes for tomorrow

687

00:26:19,399 --> 00:26:18,600

yes to all that then we assure their

688

00:26:20,570 --> 00:26:19,409

success

689

00:26:22,669 --> 00:26:20,580

they're just tools you have to study

690

00:26:25,220 --> 00:26:22,679

math chemistry physics shirt but they're

691

00:26:25,789 --> 00:26:25,230

just tools and so I like that you know

692

00:26:27,350 --> 00:26:25,799

it

693

00:26:29,930 --> 00:26:27,360

terms of changing the conversation to be

694

00:26:31,760 --> 00:26:29,940

very inclusive and then you know put

695

00:26:33,649 --> 00:26:31,770

Nona so we need to assure those little

696

00:26:35,840 --> 00:26:33,659

folks success we need that generation

697

00:26:40,549 --> 00:26:35,850

and then we'll have an enormous impact I

698

00:26:42,200 --> 00:26:40,559

think in the stem workforce time for one

699

00:26:44,750 --> 00:26:42,210

more question what do you see is that go

700

00:26:47,899 --> 00:26:44,760

forward plan for NASA's innovation the

701  
00:26:49,760 --> 00:26:47,909  
going forward plans so and casey has

702  
00:26:51,380 --> 00:26:49,770  
been innovation days for now for I think

703  
00:26:53,360 --> 00:26:51,390  
six years running but the going for a

704  
00:26:54,409 --> 00:26:53,370  
plan let's be sustainable get their

705  
00:26:56,659 --> 00:26:54,419  
great ideas there

706  
00:26:58,970 --> 00:26:56,669  
I think we definitely can be sustainable

707  
00:27:01,070 --> 00:26:58,980  
working across centers though we do need

708  
00:27:02,869 --> 00:27:01,080  
to scale some things up the things that

709  
00:27:05,239 --> 00:27:02,879  
are ripe to be scaled up across the

710  
00:27:06,680 --> 00:27:05,249  
agency we'd love to see those happens so

711  
00:27:08,869 --> 00:27:06,690  
we just we just have a start this year

712  
00:27:11,119 --> 00:27:08,879  
but let's keep that going and then

713  
00:27:12,830 --> 00:27:11,129

learning from from each other we have

714

00:27:15,080 --> 00:27:12,840

many different centers so again but what

715

00:27:17,149 --> 00:27:15,090

can we scale up how can we work together

716

00:27:19,580 --> 00:27:17,159

how can we all collaborate and then

717

00:27:21,680 --> 00:27:19,590

again in terms of a government agency

718

00:27:23,029 --> 00:27:21,690

I'm just so proud of us were that were

719

00:27:25,519 --> 00:27:23,039

at the forefront we're kind of running

720

00:27:28,279 --> 00:27:25,529

the experiment and we're already act by

721

00:27:29,799 --> 00:27:28,289

MIT and the other agencies of hey it has

722

00:27:32,389 --> 00:27:29,809

to have we already have best practices

723

00:27:33,950 --> 00:27:32,399

so I say we just keep going with what

724

00:27:40,999 --> 00:27:33,960

we're doing but be very intentional

725

00:27:42,529 --> 00:27:41,009

about it so I'm thank you so much David

726  
00:27:44,060 --> 00:27:42,539  
for coming today and for speaking to us

727  
00:27:47,749 --> 00:27:44,070  
all thank you everybody for submitting

728  
00:27:49,039 --> 00:27:47,759  
your questions and also thank you on

729  
00:27:51,409 --> 00:27:49,049  
behalf of a whole first team for

730  
00:27:53,659 --> 00:27:51,419  
trusting us to take your idea of a

731  
00:27:56,330 --> 00:27:53,669  
agency-wide innovation day and make it

732  
00:27:58,099 --> 00:27:56,340  
into success we're going to continue our

733  
00:28:00,560 --> 00:27:58,109  
day of innovation next with the NASA

734  
00:28:03,769 --> 00:28:00,570  
innovation Kickstarter Knicks would be

735  
00:28:05,629 --> 00:28:03,779  
held live across the agency here locally

736  
00:28:07,549 --> 00:28:05,639  
you can stay in this room to view it

737  
00:28:10,310 --> 00:28:07,559  
will also have it available on your

738  
00:28:12,470 --> 00:28:10,320

local nasa TV channel across the entire

739

00:28:14,930 --> 00:28:12,480

agency so thank you everybody for coming