
cnes
esa
European Space Agency
esa

1
00:00:10,390 --> 00:00:02,070
station this is houston are you ready

2
00:00:10,400 --> 00:00:14,310
houston we are ready

3
00:00:18,470 --> 00:00:16,310
european space agency this is mission

4
00:00:31,589 --> 00:00:18,480
control houston please call station for

5
00:00:38,950 --> 00:00:33,350
station this is the issa moderator

6
00:00:43,190 --> 00:00:41,030
i hear you five by five how'd you hear

7
00:00:45,270 --> 00:00:43,200
me

8
00:00:47,830 --> 00:00:45,280
i hear you five by five how'd you hear

9
00:00:52,150 --> 00:00:49,910
excellent thanks so much hello tomah

10
00:00:55,189 --> 00:00:52,160
good afternoon you're now connected with

11
00:00:56,869 --> 00:00:55,199
romania ireland and portugal i'll hand

12
00:01:03,270 --> 00:00:56,879
over to you for some opening remarks

13
00:01:07,190 --> 00:01:05,270

all right hi everybody it's a pleasure

14
00:01:09,510 --> 00:01:07,200
to be with you today

15
00:01:10,230 --> 00:01:09,520
from the international space station

16
00:01:16,230 --> 00:01:10,240
i

17
00:01:17,749 --> 00:01:16,240
have

18
00:01:19,030 --> 00:01:17,759
lots of different countries today and

19
00:01:26,070 --> 00:01:19,040
i'm ready to answer all of your

20
00:01:30,149 --> 00:01:27,590
we will begin with our first two

21
00:01:33,350 --> 00:01:30,159
questions from romania romania please go

22
00:01:39,429 --> 00:01:36,789
hello i'm moved from gymbolia

23
00:01:41,830 --> 00:01:39,439
when we think of space most people think

24
00:01:44,389 --> 00:01:41,840
of exploration what are some other

25
00:01:46,870 --> 00:01:44,399
activities related to space

26
00:01:49,429 --> 00:01:46,880
that society may not be

27
00:01:54,550 --> 00:01:49,439
aware of

28
00:01:58,149 --> 00:01:56,310
and that's a good question there's a

29
00:02:00,149 --> 00:01:58,159
there's a lot of activities uh that we

30
00:02:03,190 --> 00:02:00,159
do in space that people might not be

31
00:02:06,469 --> 00:02:03,200
aware of uh there's earth observation

32
00:02:09,669 --> 00:02:06,479
uh we monitor climate change from space

33
00:02:11,270 --> 00:02:09,679
we can provide environmental disasters

34
00:02:14,070 --> 00:02:11,280
relief and support

35
00:02:16,150 --> 00:02:14,080
we do navigation from space gps galileo

36
00:02:19,350 --> 00:02:16,160
good examples we do telecommunications

37
00:02:20,550 --> 00:02:19,360
from space space applications

38
00:02:23,270 --> 00:02:20,560

tv

39
00:02:25,110 --> 00:02:23,280
mobile communications you name it

40
00:02:26,790 --> 00:02:25,120
we also do a lot of science we do

41
00:02:29,190 --> 00:02:26,800
research here on the international space

42
00:02:31,430 --> 00:02:29,200
station but we also have dedicated

43
00:02:32,309 --> 00:02:31,440
satellites that study the earth that

44
00:02:34,470 --> 00:02:32,319
study

45
00:02:37,350 --> 00:02:34,480
the universe around us probes that go

46
00:02:39,830 --> 00:02:37,360
all over so uh so that's that's a lot of

47
00:02:41,990 --> 00:02:39,840
uh various activities and human space

48
00:02:43,830 --> 00:02:42,000
flight and the iss is just one of them

49
00:02:46,070 --> 00:02:43,840
but they all make sense together you

50
00:02:48,869 --> 00:02:46,080
know a coordinated effort to understand

51
00:03:00,790 --> 00:02:48,879
better uh our world and put space at the

52
00:03:06,550 --> 00:03:03,190
hi thomas i'm valentina mate from

53
00:03:08,710 --> 00:03:06,560
dutchies colorada my question is what

54
00:03:11,509 --> 00:03:08,720
kind of research are you conducting

55
00:03:13,910 --> 00:03:11,519
during the proxima mission that could

56
00:03:20,869 --> 00:03:13,920
contribute to new technologies to be

57
00:03:25,990 --> 00:03:23,110
that's a good question we have lots of

58
00:03:27,990 --> 00:03:26,000
technology demonstrations um

59
00:03:29,110 --> 00:03:28,000
maybe one of them is called matisse it

60
00:03:30,550 --> 00:03:29,120
tests

61
00:03:32,630 --> 00:03:30,560
new surfaces

62
00:03:34,789 --> 00:03:32,640
that prevents the proliferation of

63
00:03:36,789 --> 00:03:34,799

bacteria it's going to be very helpful

64
00:03:37,670 --> 00:03:36,799
for us on the iss but it could also be

65
00:03:39,910 --> 00:03:37,680
used

66
00:03:42,710 --> 00:03:39,920
on the ground in

67
00:03:44,470 --> 00:03:42,720
hospitals uh in a clinical environment

68
00:03:46,630 --> 00:03:44,480
or in the transportation hubs like

69
00:03:47,430 --> 00:03:46,640
airports the underground things like

70
00:03:49,990 --> 00:03:47,440
this

71
00:03:52,869 --> 00:03:50,000
we have aqua pad it's a new way of of

72
00:03:55,750 --> 00:03:52,879
testing water for uh for coliform

73
00:03:57,429 --> 00:03:55,760
bacteria and and microbial life uh it's

74
00:03:59,830 --> 00:03:57,439
much faster than we used to do before

75
00:04:01,509 --> 00:03:59,840
and it could be used in countries where

76
00:04:03,350 --> 00:04:01,519
access to clean water is sometimes

77
00:04:06,070 --> 00:04:03,360
problematic so that's only two of the

78
00:04:07,509 --> 00:04:06,080
examples uh but there's many many of the

79
00:04:09,030 --> 00:04:07,519
experiments that we're performing here

80
00:04:10,630 --> 00:04:09,040
that look at new technology because

81
00:04:12,470 --> 00:04:10,640
that's what we what we're trying to do

82
00:04:20,310 --> 00:04:12,480
we're trying to create new technology

83
00:04:24,550 --> 00:04:22,069
thank you tamar we're now heading to

84
00:04:28,070 --> 00:04:24,560
ireland for their two questions ireland

85
00:04:32,550 --> 00:04:30,870
hello tama my name is mary gory and i'm

86
00:04:35,749 --> 00:04:32,560
a science teacher from saint joseph's

87
00:04:37,510 --> 00:04:35,759
college in burrisselli county temporary

88
00:04:40,070 --> 00:04:37,520

our question is

89
00:04:42,950 --> 00:04:40,080
how long does it take for the research

90
00:04:46,469 --> 00:04:42,960
experiments and new findings done on

91
00:04:52,950 --> 00:04:46,479
board the iss to be used in technologies

92
00:04:57,430 --> 00:04:55,510
it's a good question it's um

93
00:04:59,189 --> 00:04:57,440
i mean it depends for for some of the

94
00:05:01,189 --> 00:04:59,199
experiments for especially technology

95
00:05:02,950 --> 00:05:01,199
demonstration it's very quick at the end

96
00:05:05,189 --> 00:05:02,960
of the mission you've proven that the

97
00:05:07,430 --> 00:05:05,199
technology was suitable for space or for

98
00:05:10,469 --> 00:05:07,440
some other applications on the ground uh

99
00:05:11,749 --> 00:05:10,479
for some more complex human research it

100
00:05:13,670 --> 00:05:11,759
takes longer

101
00:05:15,830 --> 00:05:13,680
but that's not only true on board the

102
00:05:17,510 --> 00:05:15,840
iss it's true everywhere for every kind

103
00:05:19,189 --> 00:05:17,520
of scientific research

104
00:05:21,110 --> 00:05:19,199
for example human research we need a lot

105
00:05:23,110 --> 00:05:21,120
of subjects there's only a limited

106
00:05:26,550 --> 00:05:23,120
number of people who fly to space every

107
00:05:28,790 --> 00:05:26,560
year so for example the space headaches

108
00:05:31,110 --> 00:05:28,800
experiment for misa looking at headaches

109
00:05:33,749 --> 00:05:31,120
and how to help prevent them

110
00:05:36,150 --> 00:05:33,759
needs 24 subjects so that's a few years

111
00:05:38,550 --> 00:05:36,160
of data collection data gathering then

112
00:05:40,310 --> 00:05:38,560
analysis and then only publishing and

113
00:05:41,830 --> 00:05:40,320

getting the results so we're working on

114
00:05:43,909 --> 00:05:41,840
that we're trying to make that cycle

115
00:05:45,670 --> 00:05:43,919
between the id and the result as short

116
00:05:47,590 --> 00:05:45,680
as possible but it's still going to be a

117
00:05:57,430 --> 00:05:47,600
few years because that's the nature of

118
00:06:02,070 --> 00:05:59,990
hello tomat my name is alan hobbins i'm

119
00:06:03,350 --> 00:06:02,080
here with some of the boys from claim

120
00:06:05,350 --> 00:06:03,360
boys school

121
00:06:08,309 --> 00:06:05,360
our question is how does your time in

122
00:06:10,710 --> 00:06:08,319
space help us to improve methods of

123
00:06:11,749 --> 00:06:10,720
caring for sick people here on the

124
00:06:12,040 --> 00:06:11,759
ground

125
00:06:17,510 --> 00:06:12,050
thanks

126
00:06:22,629 --> 00:06:19,749
so hold is a whole section of the of the

127
00:06:24,390 --> 00:06:22,639
research we do on iss uh which is human

128
00:06:26,870 --> 00:06:24,400
research so clearly

129
00:06:28,469 --> 00:06:26,880
the goal here is to help improve what's

130
00:06:30,790 --> 00:06:28,479
existing on earth and then and then make

131
00:06:33,029 --> 00:06:30,800
new discoveries um so we look at

132
00:06:34,950 --> 00:06:33,039
different things we look at bone we look

133
00:06:37,270 --> 00:06:34,960
at muscle loss because that's affecting

134
00:06:39,189 --> 00:06:37,280
us and we apply these results to to

135
00:06:42,070 --> 00:06:39,199
people suffering from those those

136
00:06:44,150 --> 00:06:42,080
pathologies on on the ground we look at

137
00:06:46,790 --> 00:06:44,160
neurological research how the brain of

138
00:06:48,469 --> 00:06:46,800

the astronaut gets rewired in a new

139
00:06:51,510 --> 00:06:48,479
environment which is pretty much the

140
00:06:54,070 --> 00:06:51,520
only example of such a such a process in

141
00:06:55,990 --> 00:06:54,080
an adult human being and what that does

142
00:06:59,110 --> 00:06:56,000
is when we come back on the ground the

143
00:07:01,350 --> 00:06:59,120
scientists can can study how we rewired

144
00:07:03,670 --> 00:07:01,360
our brains and then it gives them a

145
00:07:06,550 --> 00:07:03,680
better let's say map of the of the brain

146
00:07:08,390 --> 00:07:06,560
which is very very poorly known and then

147
00:07:09,749 --> 00:07:08,400
they go they can go see people who have

148
00:07:12,550 --> 00:07:09,759
had

149
00:07:14,710 --> 00:07:12,560
traffic accidents bad motorcycle falls

150
00:07:17,110 --> 00:07:14,720
and have brain brain traumas brain

151
00:07:19,270 --> 00:07:17,120
injuries and then now they know where to

152
00:07:20,710 --> 00:07:19,280
look they know how to improve their

153
00:07:22,790 --> 00:07:20,720
condition so that's that's two of the

154
00:07:30,230 --> 00:07:22,800
examples of what we do

155
00:07:33,909 --> 00:07:32,070
thank you tama and now we switch to

156
00:07:37,510 --> 00:07:33,919
portugal for their two questions

157
00:07:41,430 --> 00:07:39,029
hi thomas

158
00:07:42,390 --> 00:07:41,440
i'm cesar from chicago professional

159
00:07:44,710 --> 00:07:42,400
mother

160
00:07:47,350 --> 00:07:44,720
how do you test for water and bacterial

161
00:07:49,830 --> 00:07:47,360
contamination on the iss

162
00:07:56,950 --> 00:07:49,840
are these testing methods also used on

163
00:08:02,390 --> 00:07:59,270

how do we test for water so we have a we

164
00:08:03,909 --> 00:08:02,400
have a process an existing process

165
00:08:06,469 --> 00:08:03,919
um we

166
00:08:09,270 --> 00:08:06,479
we sampled our water water system here

167
00:08:10,629 --> 00:08:09,280
on board the iss and we have a microbial

168
00:08:12,230 --> 00:08:10,639
detection kit

169
00:08:14,710 --> 00:08:12,240
uh going to take uh

170
00:08:16,710 --> 00:08:14,720
45 hours of incubation to test for

171
00:08:18,309 --> 00:08:16,720
coliform bacteria and for other

172
00:08:20,469 --> 00:08:18,319
microbial life

173
00:08:21,510 --> 00:08:20,479
we have some different different bags

174
00:08:25,029 --> 00:08:21,520
different

175
00:08:27,110 --> 00:08:25,039
chemical substances that we test the

176
00:08:28,790 --> 00:08:27,120
water with um

177
00:08:30,869 --> 00:08:28,800
again on that proximal mission we're

178
00:08:32,310 --> 00:08:30,879
testing a new way of doing this much

179
00:08:34,709 --> 00:08:32,320
faster

180
00:08:37,190 --> 00:08:34,719
it's only going to be a few minutes uh

181
00:08:39,350 --> 00:08:37,200
to to inject the water in a very tiny

182
00:08:41,350 --> 00:08:39,360
sample holder and then you incubate and

183
00:08:43,509 --> 00:08:41,360
you get the result right away

184
00:08:45,430 --> 00:08:43,519
and the idea is it's not only going to

185
00:08:46,870 --> 00:08:45,440
save us time here and make our life

186
00:08:48,870 --> 00:08:46,880
simpler

187
00:08:50,230 --> 00:08:48,880
on board the iss but it's also going to

188
00:08:52,230 --> 00:08:50,240

be used

189
00:08:54,710 --> 00:08:52,240
in countries where where sometimes after

190
00:08:56,150 --> 00:08:54,720
a disaster the access to clean water is

191
00:08:58,150 --> 00:08:56,160
problematic

192
00:09:04,790 --> 00:08:58,160
so that's that's pretty much the way we

193
00:09:11,269 --> 00:09:06,710
we will now switch back to romania for

194
00:09:16,630 --> 00:09:14,310
hello thomas i'm nicoletta from

195
00:09:18,949 --> 00:09:16,640
high school compatrilla and my question

196
00:09:21,670 --> 00:09:18,959
is when a natural disaster happens on

197
00:09:24,070 --> 00:09:21,680
earth can you see it from space is there

198
00:09:31,670 --> 00:09:24,080
a way that you or kita can send a

199
00:09:36,310 --> 00:09:33,750
very often so

200
00:09:39,430 --> 00:09:36,320
so it's interesting to know that the iss

201
00:09:41,590 --> 00:09:39,440
flies over 90 percent of the inhabited

202
00:09:43,509 --> 00:09:41,600
uh land in the world every 24 hours so

203
00:09:44,710 --> 00:09:43,519
it's a very good platform for earth

204
00:09:47,269 --> 00:09:44,720
observation

205
00:09:49,829 --> 00:09:47,279
especially when it comes to to land and

206
00:09:50,949 --> 00:09:49,839
natural and sorry and human activities

207
00:09:52,710 --> 00:09:50,959
so

208
00:09:54,949 --> 00:09:52,720
very often we won't be the first ones to

209
00:09:56,790 --> 00:09:54,959
detect a natural disaster it's going to

210
00:09:58,870 --> 00:09:56,800
be detected on the ground or by the

211
00:10:01,269 --> 00:09:58,880
satellites but then what we do

212
00:10:03,110 --> 00:10:01,279
is we try to take imagery of it and

213
00:10:05,829 --> 00:10:03,120

every day we have

214
00:10:06,870 --> 00:10:05,839
targets for us to simply take a picture

215
00:10:09,590 --> 00:10:06,880
of

216
00:10:12,310 --> 00:10:09,600
and we're trying to we're trying to

217
00:10:14,949 --> 00:10:12,320
get the best images we can of different

218
00:10:16,230 --> 00:10:14,959
floodings or volcanic eruptions

219
00:10:18,470 --> 00:10:16,240
landslides

220
00:10:20,150 --> 00:10:18,480
things like this not very nice but but

221
00:10:22,550 --> 00:10:20,160
we're trying to do our best we also used

222
00:10:24,790 --> 00:10:22,560
to have a permanent imaging system on

223
00:10:26,389 --> 00:10:24,800
the on the iss but it's been it's been

224
00:10:28,710 --> 00:10:26,399
retired um

225
00:10:30,870 --> 00:10:28,720
it's been retired recently but so now it

226
00:10:32,470 --> 00:10:30,880
mostly comes down to us simply taking

227
00:10:34,550 --> 00:10:32,480
pictures the best we can

228
00:10:36,630 --> 00:10:34,560
and sending them down and they're being

229
00:10:45,190 --> 00:10:36,640
used to assess the situation and to

230
00:10:49,190 --> 00:10:46,790
thank you to mo we will now head to

231
00:10:51,910 --> 00:10:49,200
ireland for one question ireland go

232
00:10:56,310 --> 00:10:54,389
hello tama my name is guerra dunhu i'm a

233
00:10:58,389 --> 00:10:56,320
primary school teacher from scalida

234
00:10:59,670 --> 00:10:58,399
korberly in limerick and our question

235
00:11:01,509 --> 00:10:59,680
for you is

236
00:11:04,550 --> 00:11:01,519
what new technologies related to

237
00:11:07,030 --> 00:11:04,560
navigation are being used on the iss and

238
00:11:12,389 --> 00:11:07,040

in space which can benefit us here on

239
00:11:17,350 --> 00:11:14,949
so navigation is a is a big deal for us

240
00:11:19,030 --> 00:11:17,360
uh it's a big deal on earth as well

241
00:11:21,110 --> 00:11:19,040
we have so there's there's several

242
00:11:22,710 --> 00:11:21,120
different systems one that we we use all

243
00:11:24,389 --> 00:11:22,720
the time permanently on the iss and

244
00:11:27,350 --> 00:11:24,399
people forget about it's called vessel

245
00:11:28,550 --> 00:11:27,360
idea so it helps tracking ships

246
00:11:30,630 --> 00:11:28,560
[Music]

247
00:11:32,150 --> 00:11:30,640
ships at large at sea

248
00:11:33,910 --> 00:11:32,160
because there's they have there's very

249
00:11:36,710 --> 00:11:33,920
few ways for them to communicate between

250
00:11:39,350 --> 00:11:36,720
one another and to coordinate um and to

251
00:11:41,030 --> 00:11:39,360
exchange information there's no global

252
00:11:43,590 --> 00:11:41,040
monitoring system so we're trying to

253
00:11:45,670 --> 00:11:43,600
provide this and it can help

254
00:11:47,269 --> 00:11:45,680
ships avoid themselves don't don't go on

255
00:11:49,269 --> 00:11:47,279
a collision course or exchange

256
00:11:51,509 --> 00:11:49,279
information so that's one navigation

257
00:11:54,069 --> 00:11:51,519
system that the iss provides for ships

258
00:11:56,470 --> 00:11:54,079
on earth and is being used every day

259
00:11:57,430 --> 00:11:56,480
now as far as the navigation system we

260
00:12:03,030 --> 00:11:57,440
use

261
00:12:05,670 --> 00:12:03,040
in space for um for visiting vehicles to

262
00:12:07,590 --> 00:12:05,680
approach and dock and

263
00:12:10,150 --> 00:12:07,600

fly information very precisely with the

264
00:12:11,670 --> 00:12:10,160
iss and that's one technology that

265
00:12:13,990 --> 00:12:11,680
hasn't been used too much on earth but

266
00:12:15,670 --> 00:12:14,000
it's now being used uh for aircraft

267
00:12:17,590 --> 00:12:15,680
navigation as well with

268
00:12:19,030 --> 00:12:17,600
initiatives like eggnose and more

269
00:12:21,190 --> 00:12:19,040
precise

270
00:12:22,790 --> 00:12:21,200
approach patterns for uh for aircrafts

271
00:12:23,670 --> 00:12:22,800
on the ground so that's that's also one

272
00:12:26,150 --> 00:12:23,680
way that

273
00:12:29,110 --> 00:12:26,160
the iss research and technology helps

274
00:12:35,350 --> 00:12:29,120
providing a better better condition on

275
00:12:42,150 --> 00:12:37,590
thank you toma now back to portugal for

276
00:12:46,870 --> 00:12:44,550
hello my name is vitor fernandez i'm a

277
00:12:49,190 --> 00:12:46,880
teacher at schools kundalini forte casa

278
00:12:51,670 --> 00:12:49,200
i'm a computer science teacher

279
00:12:54,069 --> 00:12:51,680
and i would like to ask do you think it

280
00:12:56,710 --> 00:12:54,079
is possible to live in a completely

281
00:12:57,509 --> 00:12:56,720
self-sustainable environment in space

282
00:12:59,670 --> 00:12:57,519
and

283
00:13:02,230 --> 00:12:59,680
are there any technologies from earth

284
00:13:07,430 --> 00:13:02,240
that are helping this become a reality

285
00:13:11,269 --> 00:13:09,110
so so it's

286
00:13:13,269 --> 00:13:11,279
iss is a very good example of not a

287
00:13:15,509 --> 00:13:13,279
closed environment because we're still

288
00:13:17,670 --> 00:13:15,519

being supplied uh from the ground in

289
00:13:18,310 --> 00:13:17,680
terms of food in terms of spare parts

290
00:13:22,710 --> 00:13:18,320
and

291
00:13:25,030 --> 00:13:22,720
minimize this amount as much as possible

292
00:13:27,509 --> 00:13:25,040
for obvious reasons because it takes a

293
00:13:28,710 --> 00:13:27,519
lot of effort um to bring those supplies

294
00:13:30,230 --> 00:13:28,720
on board the iss they have to be

295
00:13:32,230 --> 00:13:30,240
launched for the earth so we're trying

296
00:13:34,150 --> 00:13:32,240
to recycle as much as we can we're

297
00:13:35,350 --> 00:13:34,160
trying to generate as less waste as we

298
00:13:37,350 --> 00:13:35,360
can

299
00:13:39,990 --> 00:13:37,360
and to be self-sufficient

300
00:13:42,550 --> 00:13:40,000
as much as we can if we want to go

301
00:13:45,509 --> 00:13:42,560
deeper into space it's going to become

302
00:13:47,350 --> 00:13:45,519
um a challenge and and the space agency

303
00:13:48,550 --> 00:13:47,360
have understood that and they're working

304
00:13:51,509 --> 00:13:48,560
on it

305
00:13:53,110 --> 00:13:51,519
in isa we had the we have the melissa

306
00:13:55,590 --> 00:13:53,120
project which is

307
00:13:57,509 --> 00:13:55,600
which is attempting to create a

308
00:13:59,990 --> 00:13:57,519
completely closed

309
00:14:01,670 --> 00:14:00,000
environment and it's going to produce

310
00:14:03,350 --> 00:14:01,680
its own water its own food and it's

311
00:14:04,710 --> 00:14:03,360
going to be completely

312
00:14:07,829 --> 00:14:04,720
closed from the rest of the world and

313
00:14:09,670 --> 00:14:07,839

the idea is if you can do this on earth

314
00:14:11,189 --> 00:14:09,680
and then you'll be able one day to do

315
00:14:12,710 --> 00:14:11,199
this in space

316
00:14:14,790 --> 00:14:12,720
and there are some critical technologies

317
00:14:17,350 --> 00:14:14,800
that we're also testing here on the iss

318
00:14:19,910 --> 00:14:17,360
how to grow plants in space there's a

319
00:14:22,710 --> 00:14:19,920
couple experiments one running right now

320
00:14:25,110 --> 00:14:22,720
as we speak that look at how to how to

321
00:14:26,870 --> 00:14:25,120
make that happen in space so so that

322
00:14:29,269 --> 00:14:26,880
when you when we go deeper into space

323
00:14:31,990 --> 00:14:29,279
for further mission mars and further we

324
00:14:34,230 --> 00:14:32,000
have this this capacity of growing our

325
00:14:36,550 --> 00:14:34,240
own food and not be dependent on

326
00:14:39,269 --> 00:14:36,560
supplies from earth we looked we look at

327
00:14:41,829 --> 00:14:39,279
3d printing how to produce our own tools

328
00:14:44,629 --> 00:14:41,839
and maybe one day we'll use the the

329
00:14:46,870 --> 00:14:44,639
moon regolith to produce our own habitat

330
00:14:48,710 --> 00:14:46,880
or on our own modules our own fuel on

331
00:14:50,230 --> 00:14:48,720
mars so those are all the

332
00:14:51,829 --> 00:14:50,240
projects that we're looking at it seems

333
00:14:53,269 --> 00:14:51,839
futuristic

334
00:14:55,750 --> 00:14:53,279
but it's going to happen if we want to

335
00:15:01,829 --> 00:14:55,760
go further and and we certainly do want

336
00:15:05,670 --> 00:15:03,430
thank you tamar let's head back to

337
00:15:09,350 --> 00:15:05,680
romania for one question romania please

338
00:15:14,870 --> 00:15:12,629

my name is octavian and primary teacher

339
00:15:17,590 --> 00:15:14,880
what do you think in one of the most

340
00:15:20,389 --> 00:15:17,600
significant discoveries of invention for

341
00:15:24,069 --> 00:15:20,399
society created from research carried

342
00:15:31,910 --> 00:15:24,079
out in space and in particular on the

343
00:15:35,509 --> 00:15:33,110
so there's a

344
00:15:37,350 --> 00:15:35,519
there's uh there's different ways that

345
00:15:38,790 --> 00:15:37,360
in in which what we do benefits the

346
00:15:41,430 --> 00:15:38,800
earth there's of course a lot of

347
00:15:43,749 --> 00:15:41,440
technology that's being developed to fly

348
00:15:45,749 --> 00:15:43,759
in space and then applied

349
00:15:47,829 --> 00:15:45,759
on the ground you think about solar

350
00:15:50,389 --> 00:15:47,839
panels uh navigation we've already

351
00:15:52,870 --> 00:15:50,399
mentioned it lighter materials better

352
00:15:55,430 --> 00:15:52,880
propulsion things like this and when you

353
00:15:58,230 --> 00:15:55,440
when you speak about research uh carried

354
00:16:00,550 --> 00:15:58,240
out on the iss um we have a lot of

355
00:16:02,629 --> 00:16:00,560
research into alloys

356
00:16:04,949 --> 00:16:02,639
and now if you have a smartphone that's

357
00:16:07,030 --> 00:16:04,959
lighter and stronger it's more certainly

358
00:16:09,910 --> 00:16:07,040
using the results of what we do on the

359
00:16:11,910 --> 00:16:09,920
iss we look at medicine

360
00:16:14,710 --> 00:16:11,920
thanks to the robotics technology now we

361
00:16:16,710 --> 00:16:14,720
can operate patients inside an mri

362
00:16:19,189 --> 00:16:16,720
machine which was not possible before so

363
00:16:21,749 --> 00:16:19,199

some of the tumors that were

364
00:16:24,550 --> 00:16:21,759
unfortunately fatal before in the past

365
00:16:25,910 --> 00:16:24,560
are not anymore thanks to iss technology

366
00:16:28,150 --> 00:16:25,920
and research

367
00:16:29,829 --> 00:16:28,160
we look at people's health we look at

368
00:16:31,829 --> 00:16:29,839
understanding vision changes it's going

369
00:16:33,030 --> 00:16:31,839
to help people with a bad vision on

370
00:16:35,590 --> 00:16:33,040
earth

371
00:16:37,509 --> 00:16:35,600
and and there's just so many ways in

372
00:16:39,670 --> 00:16:37,519
which every day what we do i try to

373
00:16:41,670 --> 00:16:39,680
think of how is that going to be useful

374
00:16:43,350 --> 00:16:41,680
to people and

375
00:16:44,710 --> 00:16:43,360
and very often i'm really pleased

376
00:16:46,470 --> 00:16:44,720
because i can see directly the link

377
00:16:48,550 --> 00:16:46,480
between what we do and how it's going to

378
00:16:51,269 --> 00:16:48,560
work on earth whether it be studying the

379
00:16:59,590 --> 00:16:51,279
immune system working on a new vaccine

380
00:17:07,189 --> 00:17:01,509
thank you tama we now head to ireland

381
00:17:12,390 --> 00:17:09,829
hello thomas my name is mary mcilhenny

382
00:17:14,390 --> 00:17:12,400
and i'm a primary teacher in the bridges

383
00:17:17,429 --> 00:17:14,400
school in limerick city

384
00:17:18,630 --> 00:17:17,439
and my question for you today relates to

385
00:17:23,590 --> 00:17:18,640
eyesight

386
00:17:25,590 --> 00:17:23,600
change while they're in space

387
00:17:27,750 --> 00:17:25,600
and we're wondering if the research done

388
00:17:31,750 --> 00:17:27,760

in relation to this can have other

389
00:17:34,390 --> 00:17:31,760
applications such as helping to prevent

390
00:17:40,390 --> 00:17:34,400
loss of sight in people on earth thank

391
00:17:44,390 --> 00:17:42,310
yeah we have we have actually a

392
00:17:45,669 --> 00:17:44,400
huge study that we're carrying out right

393
00:17:47,590 --> 00:17:45,679
now

394
00:17:49,190 --> 00:17:47,600
i took part yesterday i'm going to take

395
00:17:51,990 --> 00:17:49,200
part tomorrow as well it's called fluid

396
00:17:53,510 --> 00:17:52,000
shift it looks at vision changes um

397
00:17:55,830 --> 00:17:53,520
related to human spaceflight and

398
00:17:57,669 --> 00:17:55,840
astronauts because

399
00:17:59,270 --> 00:17:57,679
some of us experience a vision change

400
00:18:00,390 --> 00:17:59,280
during the during their spaceflight

401
00:18:03,510 --> 00:18:00,400
sometimes after

402
00:18:05,990 --> 00:18:03,520
so so it's a huge it's a huge deal for

403
00:18:06,710 --> 00:18:06,000
us we're looking at it uh very closely

404
00:18:08,470 --> 00:18:06,720
and

405
00:18:10,310 --> 00:18:08,480
the results that so it's going to take a

406
00:18:11,990 --> 00:18:10,320
few years like i said before we really

407
00:18:14,310 --> 00:18:12,000
have precise results but the results

408
00:18:15,350 --> 00:18:14,320
when we get them are going to apply to

409
00:18:20,070 --> 00:18:15,360
all the

410
00:18:22,310 --> 00:18:20,080
intracranial pressure um

411
00:18:23,990 --> 00:18:22,320
is higher than it should be and and all

412
00:18:25,909 --> 00:18:24,000
that all that kind of all that kind of

413
00:18:27,830 --> 00:18:25,919

eye trauma so yeah it will most

414
00:18:30,070 --> 00:18:27,840
certainly benefit people

415
00:18:31,590 --> 00:18:30,080
with these pathologies on earth and and

416
00:18:38,070 --> 00:18:31,600
i'm i'm hoping it's going to help people

417
00:18:41,029 --> 00:18:39,430
thank you very much for your time

418
00:18:42,630 --> 00:18:41,039
tomorrow unfortunately we have no more

419
00:18:44,870 --> 00:18:42,640
time for questions so i'll give you a

420
00:18:46,549 --> 00:18:44,880
chance to say goodbye to romania ireland

421
00:18:51,190 --> 00:18:46,559
to portugal and to those following

422
00:18:55,350 --> 00:18:52,950
yes it was a pleasure

423
00:18:56,789 --> 00:18:55,360
to be with all of you again across the

424
00:18:58,070 --> 00:18:56,799
whole of europe from the international

425
00:18:59,110 --> 00:18:58,080
space station

426
00:19:01,510 --> 00:18:59,120
and

427
00:19:03,909 --> 00:19:01,520
i'm particularly pleased that this event

428
00:19:05,909 --> 00:19:03,919
took place with teachers and students

429
00:19:08,470 --> 00:19:05,919
it's actually studying hard at school

430
00:19:10,390 --> 00:19:08,480
that got me here so i can only encourage

431
00:19:12,710 --> 00:19:10,400
the people and especially the students

432
00:19:15,270 --> 00:19:12,720
and the kids to uh what to follow their

433
00:19:16,950 --> 00:19:15,280
dreams and to to believe in themselves

434
00:19:19,110 --> 00:19:16,960
and to study hard at school school is

435
00:19:21,029 --> 00:19:19,120
not here to uh to be in the way of

436
00:19:22,870 --> 00:19:21,039
anything is not here to bother you to

437
00:19:25,350 --> 00:19:22,880
prevent you from doing what you like to

438
00:19:27,029 --> 00:19:25,360

do is here to help you it's here to help

439
00:19:28,950 --> 00:19:27,039
you reach your goals it's helped you

440
00:19:31,430 --> 00:19:28,960
help it's here to help you achieve your

441
00:19:43,909 --> 00:19:31,440
dreams that's what worked for me so i'm

442
00:19:49,669 --> 00:19:45,510
station this is houston acr that

443
00:19:53,669 --> 00:19:51,270
thank you to all participants from the

444
00:19:55,270 --> 00:19:53,679
european space agency station we are now