



Eric Smith

NASA HQ

frank rosenzweig

Andy Burnett

Michael New

Attendees (62)

▼ Hosts (2)

- Mike Toillion
- NASA HQ

▼ Presenters (5)

- Andy Burnett
- Eric Smith
- frank rosenzweig
- Michael New
- Shawn Domagal...

▼ Participants (55)

- Aaron Burton
- Aaron Noell
- Alfonso Davila
- Andrew C. Schuer...
- Andy Czaja
- Anthony Del Genio
- Astrobiology
- Beatrice Birrer
- Bill Irvine
- Brian Jackson
- Burckhard Seelig

Open Chat (Everyone)

----- (09/19/2013 11:24) -----
 Mike Toillion: FYI, each user can locally fullscreen the slide pod by clicking on the Full Screen button in the upper right hand corner of the slide pod.

----- (09/19/2013 11:25) -----
 Mike Toillion: Feel free to post your thoughts here in the chat room!

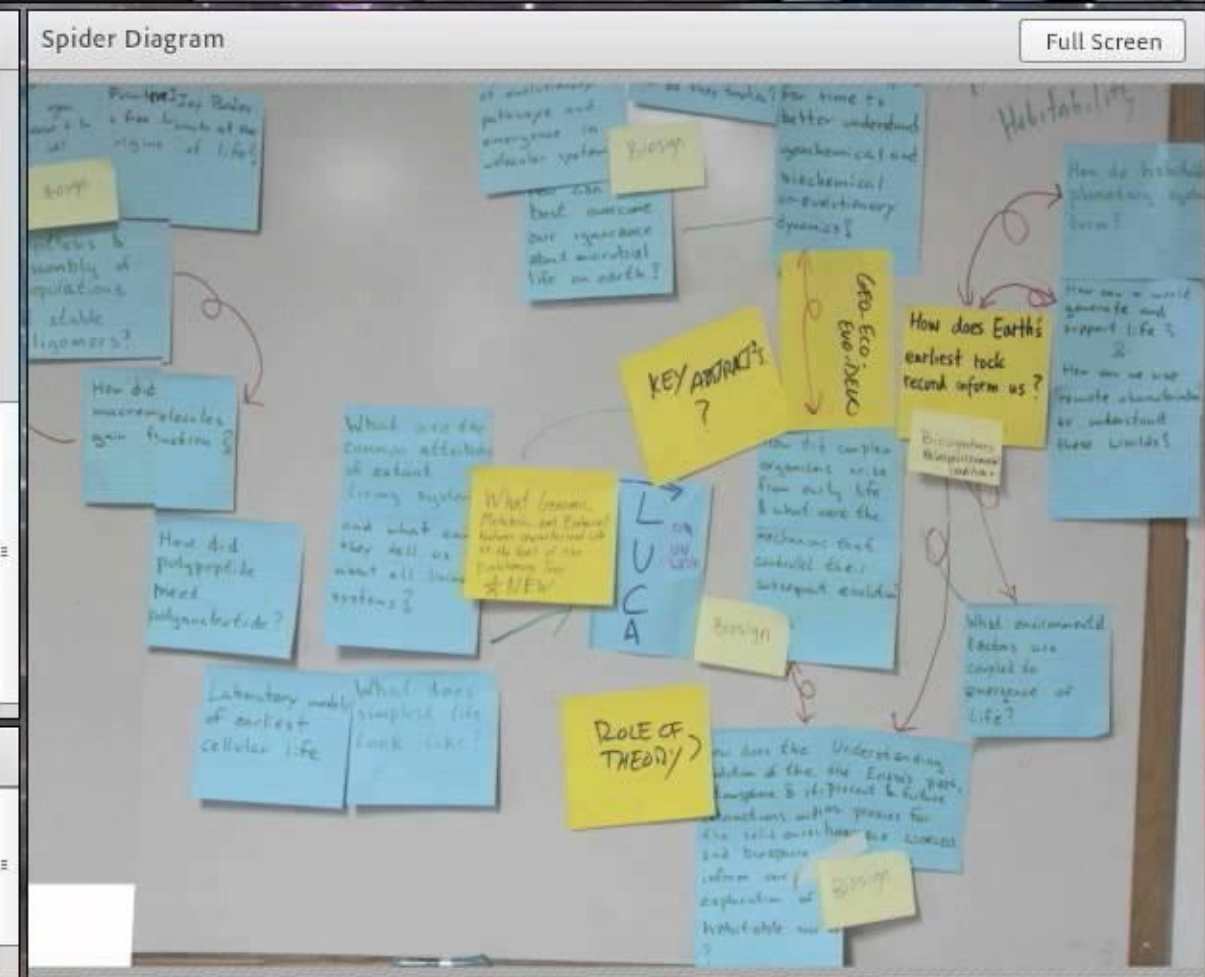
----- (09/19/2013 11:31) -----
 Rogier Braakman: just as evaluating the biosphere within the range of possible biospheres, can we evaluate biochemistry within the space of possible chemistries?

----- (09/19/2013 11:32) -----
 Mike Toillion: FYI, these documents can be found on the front page of <http://astrobiologyfuture.org> under "Concept Documents"

Christopher Carr (MIT): It seems synthetic biology approaches may be applicable to several areas here, from minimal life to testing alternative biochemistries.

Teleconference Instructions (Parti...

Teleconference Line: 866-692-3158
 Passcode: 9109668#
 Please use *6 to **MUTE** your phone's mic when not speaking.
 More info: <https://astrobiologyfuture.org>



Notepad

1
00:00:14,959 --> 00:00:12,440
ladies gentlemen welcome to the next in

2
00:00:16,250 --> 00:00:14,969
our webinar series i'm andy burnett and

3
00:00:19,939 --> 00:00:16,260
one of the people who've been involved

4
00:00:22,370 --> 00:00:19,949
in facilitating the overall strategy

5
00:00:25,580 --> 00:00:22,380
development process this webinar is

6
00:00:27,849 --> 00:00:25,590
going to give us an update on what's

7
00:00:30,439 --> 00:00:27,859
been happening since the Wallops Island

8
00:00:32,990 --> 00:00:30,449
workshop and also talk about what we're

9
00:00:37,340 --> 00:00:33,000
going to be doing over the coming weeks

10
00:00:39,709 --> 00:00:37,350
and months I want to pass over to

11
00:00:41,900 --> 00:00:39,719
Michael new just remember to to set some

12
00:00:44,479 --> 00:00:41,910
context and then we'll go through Frank

13
00:00:48,200 --> 00:00:44,489

and Eric and come back to Michael so

14

00:00:49,369 --> 00:00:48,210

Michael so good afternoon good morning I

15

00:00:55,549 --> 00:00:49,379

don't think it's good evening for

16

00:00:58,729 --> 00:00:55,559

anybody but it is so what we're going to

17

00:01:01,099 --> 00:00:58,739

be talking about today is a recap first

18

00:01:02,990 --> 00:01:01,109

of how we got to where we are and that

19

00:01:05,390 --> 00:01:03,000

Frank Rosen's like is going to be doing

20

00:01:07,399 --> 00:01:05,400

for us then Eric Smith is going to be

21

00:01:10,670 --> 00:01:07,409

telling everybody a little bit about how

22

00:01:13,730 --> 00:01:10,680

we think the various concepts that came

23

00:01:16,310 --> 00:01:13,740

out of the Wallops workshop fit together

24

00:01:18,380 --> 00:01:16,320

it's one way they kept it together then

25

00:01:21,770 --> 00:01:18,390

I'll tell you a little bit about where

26
00:01:23,179 --> 00:01:21,780
we're going from here you basically have

27
00:01:25,719 --> 00:01:23,189
a big push up to the Wallops Island

28
00:01:30,410 --> 00:01:25,729
workshop and now things that sort of

29
00:01:32,569 --> 00:01:30,420
trickled off for a while but we're

30
00:01:34,819 --> 00:01:32,579
restarting now and we're making another

31
00:01:38,539 --> 00:01:34,829
portion now for putting this all

32
00:01:40,940 --> 00:01:38,549
together so I thank everybody for their

33
00:01:42,590 --> 00:01:40,950
hard work leading up to this and I thank

34
00:01:47,960 --> 00:01:42,600
you Vance for the hard work that you're

35
00:01:51,170 --> 00:01:47,970
going to be doing and I I turn it over

36
00:01:58,639 --> 00:01:51,180
to Frank I yes tell us how we got where

37
00:02:04,100 --> 00:01:58,649
we are very good so am I on now is that

38
00:02:07,700 --> 00:02:04,110

ok very good alright so sort of

39

00:02:09,940 --> 00:02:07,710

humorously entitled my my 15 minutes

40

00:02:14,890 --> 00:02:09,950

here as welcome to our

41

00:02:17,309 --> 00:02:14,900

worlds and my past is to describe to you

42

00:02:20,170 --> 00:02:17,319

how we got to the point where we are now

43

00:02:23,770 --> 00:02:20,180

that's going to be sort of part one of

44

00:02:27,250 --> 00:02:23,780

the process and then part two Eric Smith

45

00:02:29,140 --> 00:02:27,260

will talk in greater detail about some

46

00:02:32,860 --> 00:02:29,150

of the concept papers that have emerged

47

00:02:36,430 --> 00:02:32,870

out of the out of the Wallops Island

48

00:02:41,410 --> 00:02:36,440

meeting and then Michael will tell us

49

00:02:43,930 --> 00:02:41,420

about the road ahead so let's see if I

50

00:02:46,600 --> 00:02:43,940

could manipulate this all right so what

51
00:02:48,460 --> 00:02:46,610
we're trying to do and some of you may

52
00:02:52,059 --> 00:02:48,470
have been involved in this process who

53
00:02:54,100 --> 00:02:52,069
are joining us today others may not but

54
00:03:00,160 --> 00:02:54,110
we're creating the roadmap for the new

55
00:03:03,819 --> 00:03:00,170
Astra by prateek plan and Michael and

56
00:03:05,819 --> 00:03:03,829
Mary Voight x gold the NASA Directorate

57
00:03:09,699 --> 00:03:05,829
was seeking really to engage the whole

58
00:03:12,520 --> 00:03:09,709
astrobiology community rather than just

59
00:03:15,400 --> 00:03:12,530
a group to produce a successor to the to

60
00:03:18,160 --> 00:03:15,410
the current grant so this is the agenda

61
00:03:19,809 --> 00:03:18,170
to look at the process to date talk

62
00:03:26,800 --> 00:03:19,819
about the concept documents and

63
00:03:30,699 --> 00:03:26,810

highlight the next steps so perhaps

64

00:03:34,900 --> 00:03:30,709

you've got to this webinar today by

65

00:03:38,949 --> 00:03:34,910

clicking on the HTTPS astrobiology

66

00:03:43,270 --> 00:03:38,959

future org this is in fact the gateway

67

00:03:46,110 --> 00:03:43,280

to to the process and so if you look

68

00:03:49,900 --> 00:03:46,120

down here you can see click here to join

69

00:03:53,170 --> 00:03:49,910

discussion I think that one thing that

70

00:03:56,440 --> 00:03:53,180

has been strongly encouraged by the NASA

71

00:04:00,339 --> 00:03:56,450

Directorate from the get-go is is that

72

00:04:03,400 --> 00:04:00,349

this is really a grassroots effort so a

73

00:04:06,280 --> 00:04:03,410

bit of a background the exobiology

74

00:04:11,640 --> 00:04:06,290

program is you may or may not know has

75

00:04:14,159 --> 00:04:11,650

passed its 50th anniversary and it grew

76

00:04:18,069 --> 00:04:14,169

over the years into the astrobiology

77

00:04:20,180 --> 00:04:18,079

program this program aimed at

78

00:04:22,190 --> 00:04:20,190

understanding the origin evolution

79

00:04:26,300 --> 00:04:22,200

distribution and future of life in the

80

00:04:29,690 --> 00:04:26,310

cosmos so there were previous road maps

81

00:04:33,950 --> 00:04:29,700

that were created in 98 and 2003 with

82

00:04:40,160 --> 00:04:33,960

kind of a reality check in 2008 and that

83

00:04:43,100 --> 00:04:40,170

reality check resulted in a paper by de

84

00:04:48,800 --> 00:04:43,110

maría and knew that al published in

85

00:04:51,470 --> 00:04:48,810

astrobiology this was arrived at through

86

00:04:54,620 --> 00:04:51,480

a set of chaired workshops with writing

87

00:04:58,870 --> 00:04:54,630

assignments and results circulated and

88

00:05:03,010 --> 00:04:58,880

this focused paper has really served

89

00:05:05,300 --> 00:05:03,020

many of us who are members of the XO

90

00:05:08,570 --> 00:05:05,310

astrobiology community in the

91

00:05:11,510 --> 00:05:08,580

preparation of our grants for those of

92

00:05:15,620 --> 00:05:11,520

us who are submitting papers to the

93

00:05:18,080 --> 00:05:15,630

journal astrobiology we sort of have at

94

00:05:22,850 --> 00:05:18,090

least the people i know have kept the

95

00:05:27,460 --> 00:05:22,860

goals and tasks that were described in

96

00:05:29,870 --> 00:05:27,470

the 2008 roadmap firmly in mind and

97

00:05:32,500 --> 00:05:29,880

actually i think it served a really good

98

00:05:36,980 --> 00:05:32,510

purpose in terms of letting people know

99

00:05:40,760 --> 00:05:36,990

exactly what NASA's mission is the types

100

00:05:46,220 --> 00:05:40,770

of things that are funded and the goals

101

00:05:50,990 --> 00:05:46,230

that that we have as a community so the

102

00:05:55,310 --> 00:05:51,000

process then was somewhat a prescriptive

103

00:05:58,340 --> 00:05:55,320

and it was essentially arrived at

104

00:06:02,390 --> 00:05:58,350

through the activities of a council of

105

00:06:05,690 --> 00:06:02,400

elders if you will the process now is

106

00:06:10,580 --> 00:06:05,700

aimed at creating another decade old

107

00:06:14,630 --> 00:06:10,590

road map but the idea that NASA has now

108

00:06:18,290 --> 00:06:14,640

is to create this by grassroots means to

109

00:06:23,870 --> 00:06:18,300

do to gain consensus to be inspirational

110

00:06:28,700 --> 00:06:23,880

as well as aspirational and this

111

00:06:32,510 --> 00:06:28,710

process has been facilitated by no

112

00:06:34,940 --> 00:06:32,520

innovation which is a facilitation group

113

00:06:37,040 --> 00:06:34,950

that had worked previously with the

114

00:06:40,640 --> 00:06:37,050

National Science Foundation and other

115

00:06:44,810 --> 00:06:40,650

groups and I think 11 difference between

116

00:06:46,880 --> 00:06:44,820

then and now is that the the technology

117

00:06:51,170 --> 00:06:46,890

that's available to do this kind of

118

00:06:54,890 --> 00:06:51,180

grassroots effort is has advanced to a

119

00:06:59,420 --> 00:06:54,900

point where we we can engage scores if

120

00:07:01,510 --> 00:06:59,430

not hundreds of individuals to to come

121

00:07:05,030 --> 00:07:01,520

up with a new roadmap that's inclusive

122

00:07:09,230 --> 00:07:05,040

that's been sparked by outside-the-box

123

00:07:11,690 --> 00:07:09,240

thinking where you have user-generated

124

00:07:15,730 --> 00:07:11,700

groups we can go through this this

125

00:07:21,610 --> 00:07:15,740

process of idea generation idea

126

00:07:28,760 --> 00:07:24,890

electronically and as I said this has

127

00:07:33,020 --> 00:07:28,770

been facilitated by professional outfit

128

00:07:38,380 --> 00:07:33,030

of which Andy Burnett is the CEO and

129

00:07:41,780 --> 00:07:38,390

Founder so the roadmap process until now

130

00:07:45,290 --> 00:07:41,790

about a year ago of the directorate's

131

00:07:48,500 --> 00:07:45,300

began to plan the activities associated

132

00:07:52,160 --> 00:07:48,510

with the road mapping process and this

133

00:07:56,270 --> 00:07:52,170

was kicked off last spring with a set of

134

00:07:59,110 --> 00:07:56,280

five webinars that many of you who are

135

00:08:03,350 --> 00:07:59,120

in attendance today have participated in

136

00:08:09,710 --> 00:08:03,360

either as discussants or as presenters

137

00:08:11,870 --> 00:08:09,720

these webinars were five solar systems

138

00:08:14,450 --> 00:08:11,880

exploration prebiotic evolution

139

00:08:16,880 --> 00:08:14,460

evolution of advanced life early

140

00:08:20,990 --> 00:08:16,890

evolution of life and planetary

141

00:08:26,360 --> 00:08:21,000

conditions for life so this occupied us

142

00:08:29,390 --> 00:08:26,370

during the month of May and then the

143

00:08:33,120 --> 00:08:29,400

following I'm going to click through the

144

00:08:36,610 --> 00:08:33,130

road mapping process and

145

00:08:40,629 --> 00:08:36,620

sort of illustrate what this part one of

146

00:08:43,329 --> 00:08:40,639

the process was so in conjunction with

147

00:08:45,819 --> 00:08:43,339

no innovation a website was created

148

00:08:48,879 --> 00:08:45,829

we've already already flipped through

149

00:08:52,930 --> 00:08:48,889

that that's a home for our virtual

150

00:08:55,389 --> 00:08:52,940

community we had these webinars then

151

00:08:58,300 --> 00:08:55,399

that was followed by discussion in

152

00:09:00,579 --> 00:08:58,310

forums that went on for at least a week

153

00:09:04,600 --> 00:09:00,589

following each one of these webinars

154

00:09:07,540 --> 00:09:04,610

that was presented last May and then a

155

00:09:10,269 --> 00:09:07,550

big question was picked for each topic

156

00:09:13,829 --> 00:09:10,279

area or web-based discussion on that

157

00:09:19,210 --> 00:09:13,839

alone and then all of these activities

158

00:09:23,410 --> 00:09:19,220

were recorded and uploaded onto the

159

00:09:25,329 --> 00:09:23,420

astrobiology future org website where

160

00:09:28,560 --> 00:09:25,339

the notes should be available to the

161

00:09:32,620 --> 00:09:28,570

community as a whole so that's part one

162

00:09:34,329 --> 00:09:32,630

so what was the how many people

163

00:09:38,110 --> 00:09:34,339

participated in this there were almost

164

00:09:41,559 --> 00:09:38,120

600 people from all over the world 82

165

00:09:46,059 --> 00:09:41,569

discussions follow these five initial

166

00:09:51,129 --> 00:09:46,069

webinars hundreds of posts 11

167

00:09:54,430 --> 00:09:51,139

user-generated groups and amazingly the

168

00:09:57,759 --> 00:09:54,440

discussions were both collegial and its

169

00:10:02,410 --> 00:09:57,769

Eiffel and sort of led us to part two of

170

00:10:05,160 --> 00:10:02,420

his process so part two was the Wallops

171

00:10:08,019 --> 00:10:05,170

Island meeting and again some of the

172

00:10:10,269 --> 00:10:08,029

discussants today were a present at this

173

00:10:13,180 --> 00:10:10,279

meeting and if you were I hope you enjoy

174

00:10:18,939 --> 00:10:13,190

some of the pictures that Andy and his

175

00:10:21,309 --> 00:10:18,949

crew took Michael and Mary invited over

176
00:10:23,680 --> 00:10:21,319
a hundred researchers all the people who

177
00:10:26,470 --> 00:10:23,690
have participated in webinars people who

178
00:10:30,040 --> 00:10:26,480
had seriously and actively commented

179
00:10:33,009 --> 00:10:30,050
along the way AI researchers and they

180
00:10:36,400 --> 00:10:33,019
really tried not only to cast a wide net

181
00:10:39,430 --> 00:10:36,410
in terms of their of the interests that

182
00:10:43,300 --> 00:10:39,440
were represented but also gender

183
00:10:45,220 --> 00:10:43,310
diversity and also trying to bring on

184
00:10:47,950 --> 00:10:45,230
board not just

185
00:10:51,400 --> 00:10:47,960
the elders who would make up a council

186
00:10:55,150 --> 00:10:51,410
of elders but rather mid-career as well

187
00:10:58,660 --> 00:10:55,160
as early career scientists and of those

188
00:11:01,570 --> 00:10:58,670

people invited over 50 came there were a

189

00:11:04,720 --> 00:11:01,580

number who participated virtually

190

00:11:07,780 --> 00:11:04,730

throughout the Wallops Island meeting

191

00:11:12,790 --> 00:11:07,790

and so what was the outcome well the

192

00:11:16,800 --> 00:11:12,800

outcome of the process was 23 excuse me

193

00:11:19,900 --> 00:11:16,810

21 three-page concept documents and

194

00:11:22,300 --> 00:11:19,910

these concepts documents as you will

195

00:11:26,200 --> 00:11:22,310

learn from Eric and Michael are shortly

196

00:11:29,140 --> 00:11:26,210

to be made available online and then

197

00:11:33,610 --> 00:11:29,150

will serve as the basis for additional

198

00:11:37,210 --> 00:11:33,620

discussion hopefully consolidation and I

199

00:11:39,220 --> 00:11:37,220

will steal no thunder from anyone so the

200

00:11:43,270 --> 00:11:39,230

question then how is this achieved how

201
00:11:46,330 --> 00:11:43,280
do how do we get these concept documents

202
00:11:49,180 --> 00:11:46,340
well I'd like to emphasize that there

203
00:11:53,710 --> 00:11:49,190
was a lot of hard work that was involved

204
00:11:56,530 --> 00:11:53,720
in the at the Wallops Island meeting and

205
00:12:01,980 --> 00:11:56,540
in addition to hard work there was some

206
00:12:04,720 --> 00:12:01,990
painful introspection people that had

207
00:12:06,700 --> 00:12:04,730
these I'm being a bit facetious here but

208
00:12:08,980 --> 00:12:06,710
they had a very very good time it was a

209
00:12:13,720 --> 00:12:08,990
quite an exciting meeting took place in

210
00:12:17,850 --> 00:12:13,730
June over a three-day period so the

211
00:12:22,360 --> 00:12:17,860
process at Wallops Island was was

212
00:12:24,700 --> 00:12:22,370
initially catalyzed by the no innovation

213
00:12:30,280 --> 00:12:24,710

people posing a number of questions and

214

00:12:32,380 --> 00:12:30,290

the questions were really there the same

215

00:12:34,030 --> 00:12:32,390

question asked three different ways one

216

00:12:36,610 --> 00:12:34,040

is what is the title of a paper you'd

217

00:12:38,890 --> 00:12:36,620

like to publish 10 years from now or

218

00:12:41,530 --> 00:12:38,900

what is a question you'd like to see

219

00:12:43,030 --> 00:12:41,540

answered ten years from now or what is

220

00:12:48,940 --> 00:12:43,040

the title of a seminar that you'd like

221

00:12:53,190 --> 00:12:48,950

to attend 10 years from them and the the

222

00:12:56,470 --> 00:12:53,200

sort of brainstorm 10 minute answers

223

00:12:59,290 --> 00:12:56,480

were put on post-it notes

224

00:13:02,650 --> 00:12:59,300

scores upon scores of these post-it

225

00:13:05,350 --> 00:13:02,660

notes because each person had the

226

00:13:08,800 --> 00:13:05,360

liberty to to ask several of these

227

00:13:11,110 --> 00:13:08,810

questions so you just do the math of 53

228

00:13:13,540 --> 00:13:11,120

times three or four so we had lots of

229

00:13:20,970 --> 00:13:13,550

these post-it notes we tried to Ben

230

00:13:25,180 --> 00:13:20,980

group them by buying categories and then

231

00:13:29,410 --> 00:13:25,190

after having done that the no innovation

232

00:13:33,069 --> 00:13:29,420

people instructed us to form chains of

233

00:13:37,110 --> 00:13:33,079

interest and basically we were allowed

234

00:13:41,319 --> 00:13:37,120

to group as elephants on the move

235

00:13:45,069 --> 00:13:41,329

instead of truant to tail finger to

236

00:13:47,670 --> 00:13:45,079

finger to arm with the last person

237

00:13:51,550 --> 00:13:47,680

pointing to the particular topic and

238

00:13:54,100 --> 00:13:51,560

these chains of interest then formed the

239

00:13:56,759 --> 00:13:54,110

basis of working groups and these

240

00:13:59,410 --> 00:13:56,769

working groups than said about

241

00:14:03,360 --> 00:13:59,420

consolidating these questions as much as

242

00:14:06,569 --> 00:14:03,370

possible discussing the mid-length and

243

00:14:11,129 --> 00:14:06,579

synthesizing these questions under these

244

00:14:16,030 --> 00:14:11,139

major themes it was not one particular

245

00:14:19,420 --> 00:14:16,040

individual who set of individuals that

246

00:14:23,170 --> 00:14:19,430

formed these working groups this was a

247

00:14:26,470 --> 00:14:23,180

very dynamic process and people did a

248

00:14:31,540 --> 00:14:26,480

regular musical chairs according to

249

00:14:35,139 --> 00:14:31,550

their scientific interest and then this

250

00:14:39,730 --> 00:14:35,149

was the result of this process these

251
00:14:43,090 --> 00:14:39,740
working groups in many places confronted

252
00:14:46,720 --> 00:14:43,100
ignorance so for example one group came

253
00:14:51,850 --> 00:14:46,730
up with this poster confronting our

254
00:14:54,009 --> 00:14:51,860
ignorance about life someone else asking

255
00:14:56,370 --> 00:14:54,019
specific questions and going through

256
00:14:59,769 --> 00:14:56,380
possible approaches how did earth obtain

257
00:15:02,230 --> 00:14:59,779
/ retain habitability throughout its

258
00:15:05,800 --> 00:15:02,240
history and then we had a set of

259
00:15:07,820 --> 00:15:05,810
impromptu poster sessions that were put

260
00:15:11,790 --> 00:15:07,830
together by these

261
00:15:14,100 --> 00:15:11,800
working groups with multiple people in

262
00:15:19,980 --> 00:15:14,110
these working groups and participating

263
00:15:23,280 --> 00:15:19,990

in multiple working groups so this these

264

00:15:26,130 --> 00:15:23,290

posters shet sessions were run during

265

00:15:28,940 --> 00:15:26,140

the afternoon over the course of a

266

00:15:33,090 --> 00:15:28,950

couple of days and then on the last day

267

00:15:39,210 --> 00:15:33,100

we have what I would term many symposia

268

00:15:42,090 --> 00:15:39,220

where the surviving ideas basically were

269

00:15:45,840 --> 00:15:42,100

discussed by the group as a whole so all

270

00:15:52,400 --> 00:15:45,850

53 people plus the four to six virtual

271

00:15:58,170 --> 00:15:55,620

all these different proposals these

272

00:16:02,010 --> 00:15:58,180

different questions approaches and then

273

00:16:05,990 --> 00:16:02,020

that served as the basis for generating

274

00:16:11,790 --> 00:16:06,000

the concept papers so the next step then

275

00:16:14,280 --> 00:16:11,800

so to summarize the we were charged with

276

00:16:16,590 --> 00:16:14,290

answering this question about what talk

277

00:16:20,760 --> 00:16:16,600

or seminar we would like to give her

278

00:16:25,740 --> 00:16:20,770

here in the next 10 years we put these

279

00:16:28,440 --> 00:16:25,750

ideas together omas then we group them

280

00:16:31,140 --> 00:16:28,450

under broader concepts and describe them

281

00:16:34,590 --> 00:16:31,150

in these one page documents and then

282

00:16:39,240 --> 00:16:34,600

since the Wallops Island meeting in June

283

00:16:44,190 --> 00:16:39,250

these one pagers have evolved into a set

284

00:16:49,130 --> 00:16:44,200

of three page concept documents and so

285

00:16:51,720 --> 00:16:49,140

here is a low resolution version of a

286

00:16:54,810 --> 00:16:51,730

image that you will see in the

287

00:16:57,840 --> 00:16:54,820

succeeding presentations by Eric Smith

288

00:17:00,330 --> 00:16:57,850

and Michael new these are the concepts

289

00:17:02,690 --> 00:17:00,340

papers and of course you can't see

290

00:17:06,510 --> 00:17:02,700

anything in these ovals and rectangles

291

00:17:10,230 --> 00:17:06,520

but that will become better resolved in

292

00:17:14,500 --> 00:17:10,240

the next half an hour or so so in

293

00:17:18,579 --> 00:17:14,510

summary then this is

294

00:17:21,370 --> 00:17:18,589

community effort this is the community

295

00:17:24,189 --> 00:17:21,380

is continuing to recruit new members

296

00:17:27,060 --> 00:17:24,199

even as the road mapping process is

297

00:17:30,490 --> 00:17:27,070

underway please encourage your

298

00:17:34,000 --> 00:17:30,500

colleagues who you think would have

299

00:17:36,970 --> 00:17:34,010

something interesting some insights into

300

00:17:39,160 --> 00:17:36,980

the process to to weigh in in the next

301
00:17:42,490 --> 00:17:39,170
steps thank you because you haven't been

302
00:17:45,310 --> 00:17:42,500
a part of the process up until now does

303
00:17:50,380 --> 00:17:45,320
not mean that you cannot join to join

304
00:17:54,510 --> 00:17:50,390
the show for the next for the next

305
00:17:57,910 --> 00:17:54,520
several months so that concludes my

306
00:18:01,060 --> 00:17:57,920
presentation of the road mapping process

307
00:18:05,170 --> 00:18:01,070
and how we actually got to this point

308
00:18:07,870 --> 00:18:05,180
and then the eric smith from George

309
00:18:10,930 --> 00:18:07,880
Mason University will be next thank you

310
00:18:14,770 --> 00:18:10,940
very much lovely thank you Franklin I

311
00:18:17,860 --> 00:18:14,780
just spin briefly particularly for

312
00:18:20,710 --> 00:18:17,870
people who might be watching this after

313
00:18:23,950 --> 00:18:20,720

the event if you are registered on the

314

00:18:25,930 --> 00:18:23,960

site or if you're registered and you're

315

00:18:27,100 --> 00:18:25,940

having any kind of technical problems

316

00:18:30,220 --> 00:18:27,110

such as you can't remember your password

317

00:18:33,880 --> 00:18:30,230

anything like that please do click on

318

00:18:36,430 --> 00:18:33,890

the support tab and we will sort out any

319

00:18:38,230 --> 00:18:36,440

problems that you're having because it's

320

00:18:40,450 --> 00:18:38,240

really important that you do register so

321

00:18:43,450 --> 00:18:40,460

you can be part of the conversation and

322

00:18:48,370 --> 00:18:43,460

the threads that emerge so with that

323

00:18:49,930 --> 00:18:48,380

Eric thanks Andy hello everybody the

324

00:18:53,890 --> 00:18:49,940

part of this that I'm supposed to cover

325

00:18:55,750 --> 00:18:53,900

is uh the combination of the concept

326

00:18:58,270 --> 00:18:55,760

documents which I'll probably also slip

327

00:19:00,280 --> 00:18:58,280

and refer to as white papers and the

328

00:19:02,500 --> 00:19:00,290

network diagram that Frank just showed

329

00:19:05,800 --> 00:19:02,510

you as a kind of interface between

330

00:19:07,480 --> 00:19:05,810

what's been done up to this time and the

331

00:19:09,150 --> 00:19:07,490

next stage of the planning so this is

332

00:19:12,460 --> 00:19:09,160

kind of a snapshot of where we are now

333

00:19:16,000 --> 00:19:12,470

what you see in front of you right now

334

00:19:18,940 --> 00:19:16,010

is the blackboard where the no

335

00:19:21,460 --> 00:19:18,950

innovation guys had us or they produced

336

00:19:24,490 --> 00:19:21,470

these blue post-its each one of which

337

00:19:27,100 --> 00:19:24,500

corresponded roughly to one of the white

338

00:19:27,700 --> 00:19:27,110

papers that had been sketched or drafted

339

00:19:30,370 --> 00:19:27,710

at that

340

00:19:33,159 --> 00:19:30,380

and then the group was instructed to go

341

00:19:34,810 --> 00:19:33,169

to the whiteboard and put things that

342

00:19:36,820 --> 00:19:34,820

had some relation to each other in

343

00:19:38,980 --> 00:19:36,830

proximity and indicate where there

344

00:19:42,430 --> 00:19:38,990

seemed to be network relations among

345

00:19:44,139 --> 00:19:42,440

them then beyond that further comments

346

00:19:49,330 --> 00:19:44,149

were added in various little yellow

347

00:19:50,950 --> 00:19:49,340

stickies so for instance you may not be

348

00:19:53,740 --> 00:19:50,960

able to see we'll make this available in

349

00:19:55,750 --> 00:19:53,750

more resolution this bio sign for bio

350

00:19:57,549 --> 00:19:55,760

signature seems to have peppered the

351

00:20:00,490 --> 00:19:57,559

graph bio signature seemed to be a

352

00:20:02,380 --> 00:20:00,500

common theme in everything and you see

353

00:20:04,810 --> 00:20:02,390

that there was also some enthusiasm for

354

00:20:07,600 --> 00:20:04,820

links that these ideas had something to

355

00:20:11,049 --> 00:20:07,610

do with each other so the reason this

356

00:20:13,120 --> 00:20:11,059

was done is that the concept documents

357

00:20:14,889 --> 00:20:13,130

needed to be narrow enough that a

358

00:20:16,510 --> 00:20:14,899

coherent narrative could be spun around

359

00:20:18,370 --> 00:20:16,520

them that means at some level they

360

00:20:21,070 --> 00:20:18,380

needed to be what people know how to do

361

00:20:24,580 --> 00:20:21,080

now and what they think can be put

362

00:20:26,529 --> 00:20:24,590

forward as a plausible and you know

363

00:20:29,380 --> 00:20:26,539

possibly feasible research project on

364

00:20:30,909 --> 00:20:29,390

the time frame of 10 years that doesn't

365

00:20:34,060 --> 00:20:30,919

mean that they capture everything about

366

00:20:35,980 --> 00:20:34,070

the scope of ideas people had in mind so

367

00:20:38,200 --> 00:20:35,990

the blackboard sort of the proximity

368

00:20:39,760 --> 00:20:38,210

diagram putting things in the same place

369

00:20:44,049 --> 00:20:39,770

and then indicating where there were

370

00:20:48,700 --> 00:20:44,059

explicit links was an attempt to make it

371

00:20:50,680 --> 00:20:48,710

material that these concept documents

372

00:20:54,149 --> 00:20:50,690

exist in the context of both larger

373

00:20:57,460 --> 00:20:54,159

themes and larger communities so Michael

374

00:20:58,870 --> 00:20:57,470

this is the way the concept documents

375

00:21:01,810 --> 00:20:58,880

were related at the end of the meeting

376

00:21:03,340 --> 00:21:01,820

I'll move next to a graph which is a

377

00:21:05,529 --> 00:21:03,350

cleaned-up version of this this is a

378

00:21:07,630 --> 00:21:05,539

snapshot of where they were and June

379

00:21:09,880 --> 00:21:07,640

they've continued to change slightly

380

00:21:11,620 --> 00:21:09,890

there's been some merger of topics

381

00:21:13,240 --> 00:21:11,630

people who were not able to be present

382

00:21:16,539 --> 00:21:13,250

in person have added a couple of

383

00:21:18,639 --> 00:21:16,549

documents and Michael will show you how

384

00:21:21,039 --> 00:21:18,649

the network has been modified slightly

385

00:21:24,639 --> 00:21:21,049

since that time I'm going to refer to

386

00:21:26,169 --> 00:21:24,649

the June slot and I'll move you to to

387

00:21:28,990 --> 00:21:26,179

this network and we'll zoom in a little

388

00:21:31,630 --> 00:21:29,000

bit you won't be able to see all of this

389

00:21:34,090 --> 00:21:31,640

in full resolution but maybe you get

390

00:21:37,060 --> 00:21:34,100

enough to understand roughly what was

391

00:21:39,519 --> 00:21:37,070

there as the white papers roll out and

392

00:21:40,370 --> 00:21:39,529

you get to see the content at the end of

393

00:21:43,610 --> 00:21:40,380

each of the

394

00:21:45,080 --> 00:21:43,620

is the writers own idea of which other

395

00:21:46,700 --> 00:21:45,090

documents are linked so there are

396

00:21:48,860 --> 00:21:46,710

multiple representations of network

397

00:21:50,600 --> 00:21:48,870

connectivity that will be available as

398

00:21:55,550 --> 00:21:50,610

part of the content coming out of the

399

00:21:58,730 --> 00:21:55,560

meeting so let me zoom in a little bit

400

00:22:04,640 --> 00:21:58,740

and all kind of pan around I'll zoom out

401
00:22:06,320 --> 00:22:04,650
first yikes so this is kind of the scope

402
00:22:09,470 --> 00:22:06,330
of the whole network you can see that

403
00:22:11,390 --> 00:22:09,480
there are sooo two or three perhaps main

404
00:22:13,460 --> 00:22:11,400
these areas that are kind of connected

405
00:22:14,960 --> 00:22:13,470
components I'll zoom in and I'll pan

406
00:22:20,570 --> 00:22:14,970
around a little bit to give you an idea

407
00:22:22,640 --> 00:22:20,580
what those were there's a kind of a big

408
00:22:24,410 --> 00:22:22,650
cluster here that has to do with the

409
00:22:27,310 --> 00:22:24,420
sequence from prebiotic to biotic

410
00:22:30,080 --> 00:22:27,320
chemistry that starts out on the top of

411
00:22:32,270 --> 00:22:30,090
with consideration of Astrophysical

412
00:22:35,060 --> 00:22:32,280
atmospheric or planetary or other body

413
00:22:37,280 --> 00:22:35,070

synthesis of small organics there's a

414

00:22:39,320 --> 00:22:37,290

cluster of papers in here that discuss

415

00:22:40,970 --> 00:22:39,330

what I would call the rise of

416

00:22:44,630 --> 00:22:40,980

hierarchical complexity and the

417

00:22:47,330 --> 00:22:44,640

functions associated with it all of this

418

00:22:48,740 --> 00:22:47,340

goes to a sort of emphasis on what can

419

00:22:50,990 --> 00:22:48,750

be done with reductive or synthetic

420

00:22:53,870 --> 00:22:51,000

methods so getting at a notion of what's

421

00:22:56,660 --> 00:22:53,880

the minimum to be alive feeding into

422

00:22:59,150 --> 00:22:56,670

that there was a thread on what we can

423

00:23:01,040 --> 00:22:59,160

do with historical reconstruction how

424

00:23:05,000 --> 00:23:01,050

much we can understand about minimality

425

00:23:07,100 --> 00:23:05,010

and retrace toward Aboriginal forms this

426
00:23:10,010 --> 00:23:07,110
will connect through the ubiquitous bio

427
00:23:12,590 --> 00:23:10,020
signatures stickies to an explicit paper

428
00:23:16,070 --> 00:23:12,600
on bio signatures now coming to a

429
00:23:17,660 --> 00:23:16,080
completely different thread the previous

430
00:23:20,900 --> 00:23:17,670
thread was basically chemistry and

431
00:23:23,690 --> 00:23:20,910
synthesis there's another collection up

432
00:23:26,090 --> 00:23:23,700
here this the sort of broad theme that

433
00:23:28,640 --> 00:23:26,100
participants chose here could be called

434
00:23:30,740 --> 00:23:28,650
complexification of the systems that

435
00:23:32,060 --> 00:23:30,750
come out of these components there's a

436
00:23:34,700 --> 00:23:32,070
cluster up here that's sort of

437
00:23:36,740 --> 00:23:34,710
explicitly biological can we talk about

438
00:23:38,210 --> 00:23:36,750

what are the rules of biogenesis what

439

00:23:41,150 --> 00:23:38,220

are the conditions for a thing to be

440

00:23:43,520 --> 00:23:41,160

alive is there a typology of biospheres

441

00:23:45,980 --> 00:23:43,530

that generalizes from the one that we

442

00:23:48,020 --> 00:23:45,990

know what do we know conceptually about

443

00:23:50,600 --> 00:23:48,030

the nature of evolutionary dynamics that

444

00:23:51,919 --> 00:23:50,610

tells us you know what we're looking for

445

00:23:55,249 --> 00:23:51,929

is the outcome

446

00:23:57,889 --> 00:23:55,259

of this process this all kind of feeds

447

00:23:59,570 --> 00:23:57,899

in there was a very healthy awareness

448

00:24:02,419 --> 00:23:59,580

that the biosphere needs to be

449

00:24:05,269 --> 00:24:02,429

understood as a component within an

450

00:24:08,899 --> 00:24:05,279

ongoing planetary dynamic process so

451
00:24:11,060 --> 00:24:08,909
there was discussion of the evolutionary

452
00:24:12,409 --> 00:24:11,070
dynamics not in a biological sense but

453
00:24:15,019 --> 00:24:12,419
just in a sense of unfolding of

454
00:24:16,999 --> 00:24:15,029
complexity of the planet both before and

455
00:24:19,820 --> 00:24:17,009
with the biosphere and also looking

456
00:24:22,700 --> 00:24:19,830
toward the future coming over to the

457
00:24:24,950 --> 00:24:22,710
side we talked about generalization from

458
00:24:27,440 --> 00:24:24,960
the life we know so there's a discussion

459
00:24:29,840 --> 00:24:27,450
of the formation of planets that are

460
00:24:32,450 --> 00:24:29,850
habitable or inhabited there were

461
00:24:34,700 --> 00:24:32,460
discussions of the criteria and also the

462
00:24:38,119 --> 00:24:34,710
techniques for exploration and then

463
00:24:40,070 --> 00:24:38,129

particularly what to look for in planets

464

00:24:44,779 --> 00:24:40,080

outside earth or outside the solar

465

00:24:47,299 --> 00:24:44,789

system so let me try to convey to you

466

00:24:49,489 --> 00:24:47,309

the sorts of things that we hope the

467

00:24:51,980 --> 00:24:49,499

concept documents and the network

468

00:24:54,190 --> 00:24:51,990

representation of them are meant to

469

00:24:57,350 --> 00:24:54,200

provide as an interface for discussion

470

00:24:59,180 --> 00:24:57,360

first questions to the community as you

471

00:25:00,769 --> 00:24:59,190

read through these and as you look is

472

00:25:03,350 --> 00:25:00,779

the research that you care about

473

00:25:05,690 --> 00:25:03,360

represented either within the scope of

474

00:25:07,970 --> 00:25:05,700

one of the concept documents or if not

475

00:25:10,249 --> 00:25:07,980

within a concept document at least

476
00:25:12,109 --> 00:25:10,259
within one of these network clusters so

477
00:25:14,239 --> 00:25:12,119
that there are things in proximity to it

478
00:25:16,159 --> 00:25:14,249
if what you care about is not well

479
00:25:18,889 --> 00:25:16,169
represented what needs to be added

480
00:25:22,039 --> 00:25:18,899
either by central theme or possibly a

481
00:25:24,200 --> 00:25:22,049
whole area that's underrepresented the

482
00:25:26,779 --> 00:25:24,210
proximity here doesn't only represent

483
00:25:28,669 --> 00:25:26,789
themes it also represents communities of

484
00:25:31,220 --> 00:25:28,679
people who should be in contact with

485
00:25:34,850 --> 00:25:31,230
each other the meeting was pretty

486
00:25:37,369 --> 00:25:34,860
diverse of and deep in a surprising you

487
00:25:40,159 --> 00:25:37,379
know surprisingly collect eclectic set

488
00:25:42,619 --> 00:25:40,169

of domains but it was a modest-sized

489

00:25:44,749 --> 00:25:42,629

sample from a large community are there

490

00:25:47,720 --> 00:25:44,759

other people we need to seek out are

491

00:25:49,700 --> 00:25:47,730

there people who don't even think of

492

00:25:53,359 --> 00:25:49,710

themselves as having content relative to

493

00:25:55,039 --> 00:25:53,369

this who need to be solicited the

494

00:25:57,220 --> 00:25:55,049

concept documents will be rolled out

495

00:25:59,090 --> 00:25:57,230

there will be webinars and discussions

496

00:26:00,630 --> 00:25:59,100

associated with each of them and then

497

00:26:03,060 --> 00:26:00,640

periods of content

498

00:26:05,130 --> 00:26:03,070

and methods for revision there's also

499

00:26:07,680 --> 00:26:05,140

been some possibility of putting the

500

00:26:10,110 --> 00:26:07,690

network itself out so that other

501
00:26:11,910 --> 00:26:10,120
comments on different arrangements

502
00:26:17,340 --> 00:26:11,920
different types of relations or linkages

503
00:26:18,510 --> 00:26:17,350
can also be collected so what you know

504
00:26:20,520 --> 00:26:18,520
what does the director wish to

505
00:26:22,680 --> 00:26:20,530
accomplish with this a theme that has

506
00:26:25,200 --> 00:26:22,690
been reiterated in both internal

507
00:26:28,920 --> 00:26:25,210
meetings and also the things that we

508
00:26:31,230 --> 00:26:28,930
were told at the conference is this

509
00:26:33,090 --> 00:26:31,240
roadmap is meant to inspire ideas and

510
00:26:35,910 --> 00:26:33,100
not just to list the ideas people

511
00:26:38,970 --> 00:26:35,920
already have so there's a healthy

512
00:26:40,800 --> 00:26:38,980
tension here between sort of explaining

513
00:26:43,560 --> 00:26:40,810

what we understand now and what we think

514

00:26:47,030 --> 00:26:43,570

we can do in 10 years but also allowing

515

00:26:50,310 --> 00:26:47,040

the roadmap to set long-range vision and

516

00:26:52,710 --> 00:26:50,320

to teach us to ask the questions that

517

00:26:53,970 --> 00:26:52,720

will give greater depth than just sort

518

00:26:57,300 --> 00:26:53,980

of the projects that are within easy

519

00:27:00,420 --> 00:26:57,310

reach here I'll interject a personal

520

00:27:03,060 --> 00:27:00,430

opinion astrobiology is naturally a very

521

00:27:04,920 --> 00:27:03,070

multidisciplinary field the emergence of

522

00:27:07,860 --> 00:27:04,930

life is a process in physical chemistry

523

00:27:10,320 --> 00:27:07,870

in a planetary context possibly a larger

524

00:27:12,600 --> 00:27:10,330

spatial context that led to all of the

525

00:27:14,460 --> 00:27:12,610

things that make up biology that means

526

00:27:16,860 --> 00:27:14,470

that it has meaningful content with a

527

00:27:20,010 --> 00:27:16,870

very large number of essentially

528

00:27:22,140 --> 00:27:20,020

essential in basic scientific fields we

529

00:27:24,690 --> 00:27:22,150

can be exposing frontiers in those

530

00:27:27,510 --> 00:27:24,700

fields and that seems a very healthy

531

00:27:29,400 --> 00:27:27,520

role for astrobiology as a community we

532

00:27:32,550 --> 00:27:29,410

can also think about seeding

533

00:27:35,190 --> 00:27:32,560

collaborations it's natural in the

534

00:27:37,710 --> 00:27:35,200

course of practical work to need certain

535

00:27:39,180 --> 00:27:37,720

things you know you need simplification

536

00:27:41,220 --> 00:27:39,190

if you're in the synthesis or the

537

00:27:43,530 --> 00:27:41,230

analysis business but if you're trying

538

00:27:44,910 --> 00:27:43,540

to reconstruct planetary histories they

539

00:27:47,760 --> 00:27:44,920

may tell you that more than a certain

540

00:27:50,370 --> 00:27:47,770

degree of simplicity is not realistic to

541

00:27:52,560 --> 00:27:50,380

what extent can these sort of

542

00:27:55,320 --> 00:27:52,570

conflicting needs be brought into a

543

00:27:57,060 --> 00:27:55,330

productive contact and how much will

544

00:27:58,320 --> 00:27:57,070

they teach us how to ask the technical

545

00:28:00,600 --> 00:27:58,330

questions that we don't know how to ask

546

00:28:02,880 --> 00:28:00,610

currently so that's another that's

547

00:28:04,920 --> 00:28:02,890

another kind of relationship that the

548

00:28:08,670 --> 00:28:04,930

network can stand for if you use it if

549

00:28:11,790 --> 00:28:08,680

we use it well so I was encouraged to

550

00:28:13,139 --> 00:28:11,800

sort of put out my own views for things

551

00:28:14,519 --> 00:28:13,149

that can be done not be

552

00:28:18,149 --> 00:28:14,529

because they're special but to just kind

553

00:28:20,039 --> 00:28:18,159

of give an idea of what the roadmap can

554

00:28:21,209 --> 00:28:20,049

provide an interface for doing what the

555

00:28:23,729 --> 00:28:21,219

what the network can provide an

556

00:28:25,499 --> 00:28:23,739

interface for doing first of all there's

557

00:28:27,209 --> 00:28:25,509

not just one network there are many

558

00:28:29,279 --> 00:28:27,219

networks as viewed by many different

559

00:28:31,349 --> 00:28:29,289

people and communities we're not limited

560

00:28:33,629 --> 00:28:31,359

to paper anymore we have computers we

561

00:28:35,339 --> 00:28:33,639

can keep all of this we can try to do

562

00:28:38,879 --> 00:28:35,349

statistics on it to find out who's out

563

00:28:41,669 --> 00:28:38,889

and who cares about what as you read the

564

00:28:44,190 --> 00:28:41,679

position papers I hope that you will be

565

00:28:46,709 --> 00:28:44,200

impressed with the amazing amount of

566

00:28:48,450 --> 00:28:46,719

topical depth that's in them my

567

00:28:50,909 --> 00:28:48,460

experience in this community doesn't go

568

00:28:52,979 --> 00:28:50,919

far enough back to know what was present

569

00:28:56,190 --> 00:28:52,989

in informal discussion 10 or 20 years

570

00:28:57,839 --> 00:28:56,200

ago but I was amazed at the range of

571

00:29:00,869 --> 00:28:57,849

thoughtful questions that are contained

572

00:29:02,549 --> 00:29:00,879

in this even so there are certain things

573

00:29:04,200 --> 00:29:02,559

that perhaps have been opened in this

574

00:29:06,209 --> 00:29:04,210

discussion that we want to amplify her

575

00:29:08,639 --> 00:29:06,219

that we want to make real priorities or

576

00:29:11,039 --> 00:29:08,649

possibly other things that we think can

577

00:29:12,839 --> 00:29:11,049

be solicited beyond what's been done so

578

00:29:15,089 --> 00:29:12,849

you know I'm painfully aware of how

579

00:29:17,070 --> 00:29:15,099

little of what's in this network I have

580

00:29:19,079 --> 00:29:17,080

any ability to understand or to speak to

581

00:29:21,089 --> 00:29:19,089

so this will reflect the areas where I

582

00:29:23,459 --> 00:29:21,099

have some exposure and the hope is that

583

00:29:26,399 --> 00:29:23,469

the community will fill this out with

584

00:29:28,409 --> 00:29:26,409

everything we want in it so first what

585

00:29:31,349 --> 00:29:28,419

collaborations have already been opened

586

00:29:33,479 --> 00:29:31,359

but maybe can be strengthened I was

587

00:29:35,219 --> 00:29:33,489

impressed with the webinars running up

588

00:29:37,200 --> 00:29:35,229

to the meeting and even more with what's

589

00:29:39,089 --> 00:29:37,210

in the concept documents that there

590

00:29:41,219 --> 00:29:39,099

seems to be a change in the discussion

591

00:29:42,989 --> 00:29:41,229

in this cycle from what I have seen in

592

00:29:45,269 --> 00:29:42,999

previous discussions and literature

593

00:29:47,609 --> 00:29:45,279

there's much more consideration of

594

00:29:49,259 --> 00:29:47,619

molecular heterogeneity we have some

595

00:29:51,479 --> 00:29:49,269

experience with individual molecule

596

00:29:53,219 --> 00:29:51,489

classes but people are now trying to

597

00:29:55,289 --> 00:29:53,229

seriously figure out what happens when

598

00:29:56,539 --> 00:29:55,299

you can't exclude any molecule class and

599

00:29:59,849 --> 00:29:56,549

you have to deal with all of them

600

00:30:01,979 --> 00:29:59,859

there's much more sense that ecosystems

601
00:30:03,959 --> 00:30:01,989
can control dynamics and that we may not

602
00:30:06,899 --> 00:30:03,969
always want to use the organism or the

603
00:30:08,519 --> 00:30:06,909
species as a model for evolution but

604
00:30:09,899 --> 00:30:08,529
instead we want to understand what types

605
00:30:12,359 --> 00:30:09,909
of dynamics are inherent in the

606
00:30:15,389 --> 00:30:12,369
ecosystem overall there seems to have

607
00:30:18,180 --> 00:30:15,399
been a tendency in these discussions to

608
00:30:20,099 --> 00:30:18,190
think about heterogeneous systems with

609
00:30:22,589 --> 00:30:20,109
lots of small and sometimes ad-hoc

610
00:30:25,229 --> 00:30:22,599
recruited components that wind up

611
00:30:25,950 --> 00:30:25,239
generating a robust structure this seems

612
00:30:28,080 --> 00:30:25,960
to me

613
00:30:29,940 --> 00:30:28,090

tremely healthy and very exciting it

614

00:30:32,159 --> 00:30:29,950

also seems to me like the kind of

615

00:30:34,710 --> 00:30:32,169

discussions the systems biology has been

616

00:30:37,139 --> 00:30:34,720

led into we once had a simple view of

617

00:30:39,570 --> 00:30:37,149

RNA we now realize that all living

618

00:30:41,880 --> 00:30:39,580

systems or RNA regulated machines in

619

00:30:44,820 --> 00:30:41,890

which DNA and proteins have sort of

620

00:30:47,519 --> 00:30:44,830

specialized roles can we tie into that

621

00:30:49,710 --> 00:30:47,529

discussion better macro ecology is

622

00:30:51,779 --> 00:30:49,720

recognizing the dynamics of ecosystems

623

00:30:53,070 --> 00:30:51,789

and of course in evolutionary biology

624

00:30:54,990 --> 00:30:53,080

there's a wealth of thinking about

625

00:30:57,600 --> 00:30:55,000

structure and the way structure is used

626
00:31:00,289 --> 00:30:57,610
to create whole domains of dynamics

627
00:31:02,549 --> 00:31:00,299
those seem to be communities with which

628
00:31:05,159 --> 00:31:02,559
collaboration is very natural and a good

629
00:31:07,620 --> 00:31:05,169
thing to develop that's in the documents

630
00:31:09,450 --> 00:31:07,630
already it's a thing we can think about

631
00:31:11,970 --> 00:31:09,460
whether we want to even more actively

632
00:31:14,630 --> 00:31:11,980
solicit another thing that I thought was

633
00:31:17,250 --> 00:31:14,640
great in going through in this cycle

634
00:31:19,529 --> 00:31:17,260
there are naive views of Darwinian

635
00:31:21,269 --> 00:31:19,539
dynamics which sort of take

636
00:31:22,860 --> 00:31:21,279
individuality for granted as the

637
00:31:25,200 --> 00:31:22,870
platform on which competition and

638
00:31:26,700 --> 00:31:25,210

replication and selection occur but

639

00:31:28,799 --> 00:31:26,710

there's also the awareness that

640

00:31:30,360 --> 00:31:28,809

individuality is a complicated notion

641

00:31:32,669 --> 00:31:30,370

that's constructive and that has to be

642

00:31:34,080 --> 00:31:32,679

understood that's actually been

643

00:31:35,850 --> 00:31:34,090

discussed this is a thing that's

644

00:31:37,320 --> 00:31:35,860

starting to flower in evolution of

645

00:31:40,740 --> 00:31:37,330

development and in sort of a bigger

646

00:31:42,990 --> 00:31:40,750

merger of ecology evolution and

647

00:31:46,350 --> 00:31:43,000

development and somewhere in here in the

648

00:31:47,850 --> 00:31:46,360

middle of the graph I would say this

649

00:31:51,419 --> 00:31:47,860

thing that has been tongue-in-cheek

650

00:31:53,430 --> 00:31:51,429

called goe goe evo-devo recognizing that

651
00:31:55,590 --> 00:31:53,440
life is also part of a planetary process

652
00:31:57,480 --> 00:31:55,600
that's kind of a center of mass that

653
00:31:59,490 --> 00:31:57,490
links several different white papers in

654
00:32:00,750 --> 00:31:59,500
this area that's another thing that

655
00:32:06,269 --> 00:32:00,760
personally I have a lot of enthusiasm

656
00:32:09,180 --> 00:32:06,279
for um areas that I think good as it was

657
00:32:12,360 --> 00:32:09,190
the meeting did not yet plum as fully as

658
00:32:14,549 --> 00:32:12,370
it might I think in chemistry and

659
00:32:17,130 --> 00:32:14,559
molecular biology we're seeing sort of

660
00:32:20,370 --> 00:32:17,140
cut from the whole cloth very

661
00:32:22,409 --> 00:32:20,380
sophisticated characterization of the

662
00:32:24,510 --> 00:32:22,419
kinds of dynamical order that can form

663
00:32:26,700 --> 00:32:24,520

in complex state spaces state spaces

664

00:32:30,210 --> 00:32:26,710

that involve chemical complexity and

665

00:32:31,980 --> 00:32:30,220

organic chemistry in mineralogy and then

666

00:32:34,529 --> 00:32:31,990

the heterogeneous components that wind

667

00:32:36,389 --> 00:32:34,539

up making up cellular systems now in

668

00:32:37,470 --> 00:32:36,399

parallel with this and not in much

669

00:32:39,750 --> 00:32:37,480

contact with

670

00:32:42,090 --> 00:32:39,760

non-equilibrium statistical mechanics

671

00:32:44,580 --> 00:32:42,100

has been making great strides and

672

00:32:46,340 --> 00:32:44,590

actually clarifying the concepts for

673

00:32:48,960 --> 00:32:46,350

what non-equilibrium order means

674

00:32:51,299 --> 00:32:48,970

interestingly enough most of that work

675

00:32:54,060 --> 00:32:51,309

that's devoted to concepts has used

676
00:32:56,640 --> 00:32:54,070
systems with relatively simple low-level

677
00:32:59,210 --> 00:32:56,650
micro structure seems to me that

678
00:33:01,530 --> 00:32:59,220
astrobiology is the fertile ground for

679
00:33:02,700 --> 00:33:01,540
bringing in the problem of dynamical

680
00:33:05,700 --> 00:33:02,710
order and non-equilibrium statistical

681
00:33:08,340 --> 00:33:05,710
mechanics when the basic state space is

682
00:33:09,960 --> 00:33:08,350
complicated so that's an that's a

683
00:33:11,940 --> 00:33:09,970
conversation I would love to see opened

684
00:33:14,580 --> 00:33:11,950
there are people in the community doing

685
00:33:16,200 --> 00:33:14,590
this already it does not seem to me that

686
00:33:18,539 --> 00:33:16,210
it's presently a front and center

687
00:33:20,610 --> 00:33:18,549
awareness within physics maybe we could

688
00:33:23,400 --> 00:33:20,620

make it one another thing that was

689

00:33:25,200 --> 00:33:23,410

discussed that you can see on the

690

00:33:26,730 --> 00:33:25,210

previous slide there's always the

691

00:33:29,669 --> 00:33:26,740

question of what's the appropriate role

692

00:33:31,500 --> 00:33:29,679

of theory you know every biologist can

693

00:33:33,270 --> 00:33:31,510

give you an example where theoreticians

694

00:33:35,159 --> 00:33:33,280

had grand aims and then didn't do a very

695

00:33:37,650 --> 00:33:35,169

good job dealing with the complexity of

696

00:33:38,850 --> 00:33:37,660

mechanism and as a result of that the

697

00:33:40,740 --> 00:33:38,860

role of theory has kind of been

698

00:33:42,870 --> 00:33:40,750

attenuated in a lot of these discussions

699

00:33:44,820 --> 00:33:42,880

but we're getting to the point where

700

00:33:48,600 --> 00:33:44,830

system characterization is sophisticated

701
00:33:50,610 --> 00:33:48,610
enough and rich enough that we have good

702
00:33:52,200 --> 00:33:50,620
descriptions of mechanism and also of

703
00:33:54,450 --> 00:33:52,210
the concepts that are coming out and now

704
00:33:56,940 --> 00:33:54,460
we're starting to face the problem of

705
00:33:59,640 --> 00:33:56,950
navigating this complexity perhaps that

706
00:34:01,890 --> 00:33:59,650
defines one role for theory probably not

707
00:34:03,690 --> 00:34:01,900
the only one maybe the theory we need

708
00:34:06,630 --> 00:34:03,700
will be different from what has existed

709
00:34:09,480 --> 00:34:06,640
in the past I'm enthusiastic for a

710
00:34:11,639 --> 00:34:09,490
larger role for computation as its own

711
00:34:13,409 --> 00:34:11,649
scientific discipline complexity of

712
00:34:16,230 --> 00:34:13,419
algorithms what's solvable what's not

713
00:34:17,430 --> 00:34:16,240

solvable as a part in this discussion so

714

00:34:19,290 --> 00:34:17,440

that's a community that I would have

715

00:34:22,830 --> 00:34:19,300

enthusiasm for bringing in and engaging

716

00:34:24,450 --> 00:34:22,840

of as the discussion goes on so at this

717

00:34:25,740 --> 00:34:24,460

point let me turn it over to Michael to

718

00:34:27,240 --> 00:34:25,750

tell you where we're going and also

719

00:34:29,220 --> 00:34:27,250

update beyond what I could show you as

720

00:34:31,230 --> 00:34:29,230

of the end of June Thanks actually

721

00:34:33,690 --> 00:34:31,240

Michael Mayer just interject for a

722

00:34:35,820 --> 00:34:33,700

moment because of a couple of questions

723

00:34:38,639 --> 00:34:35,830

are being asked in the chat room just to

724

00:34:41,310 --> 00:34:38,649

be clear the slide packs for all three

725

00:34:44,190 --> 00:34:41,320

presenters and now on the front page

726
00:34:48,750 --> 00:34:44,200
they're linked on the front page of the

727
00:34:51,590 --> 00:34:48,760
website and each of the slide packs has

728
00:34:53,810 --> 00:34:51,600
part of the discussion threat

729
00:34:57,280 --> 00:34:53,820
now particularly with the presentation

730
00:35:01,130 --> 00:34:57,290
of eric has just given we'd asked him to

731
00:35:05,060 --> 00:35:01,140
to give an overview of the way the

732
00:35:07,160 --> 00:35:05,070
network came together and and I just

733
00:35:11,360 --> 00:35:07,170
wanted went clear we're not in any way

734
00:35:13,360 --> 00:35:11,370
asking him to defend any particular

735
00:35:16,340 --> 00:35:13,370
structure within the net words he is a

736
00:35:18,950 --> 00:35:16,350
participant in it and has interested

737
00:35:20,870 --> 00:35:18,960
views but I encourage everyone both the

738
00:35:23,180 --> 00:35:20,880

people who work at Wallops them were

739

00:35:25,280 --> 00:35:23,190

involved in meeting the network and

740

00:35:27,080 --> 00:35:25,290

anyone else who's looking at it now to

741

00:35:29,630 --> 00:35:27,090

sort of get involved in the discussion

742

00:35:32,570 --> 00:35:29,640

I'm sure Eric will join in on that but

743

00:35:34,550 --> 00:35:32,580

but it's not his network and I just

744

00:35:37,610 --> 00:35:34,560

wanted to make sure everyone is clear on

745

00:35:39,710 --> 00:35:37,620

that also for people who are adding

746

00:35:43,970 --> 00:35:39,720

comments in the chat window that's great

747

00:35:46,070 --> 00:35:43,980

and if you could start the threads on

748

00:35:48,920 --> 00:35:46,080

the website as well that will probably

749

00:35:51,290 --> 00:35:48,930

give us a great way to involve a wider

750

00:35:56,270 --> 00:35:51,300

range in the community and with that

751
00:36:00,050 --> 00:35:56,280
Michael Oh somewhere I should ever since

752
00:36:04,580 --> 00:36:00,060
lives somewhere somewhere there will be

753
00:36:06,320 --> 00:36:04,590
some slides Mike slide actually didn't

754
00:36:09,890 --> 00:36:06,330
receive it sorry about that can you

755
00:36:12,200 --> 00:36:09,900
share your screen Michael uh yeah I can

756
00:36:18,800 --> 00:36:12,210
share my screen hang on everybody see

757
00:36:21,110 --> 00:36:18,810
that now yep great so I can't see the

758
00:36:22,700 --> 00:36:21,120
chat window really 20 so if somebody has

759
00:36:23,900 --> 00:36:22,710
a question somebody else is going to

760
00:36:27,020 --> 00:36:23,910
have to tell me that they have questions

761
00:36:28,730 --> 00:36:27,030
we can relate it to you thank you so I'm

762
00:36:30,080 --> 00:36:28,740
here to wrap it up and say where we're

763
00:36:32,540 --> 00:36:30,090

going to from here and how we're going

764

00:36:35,810 --> 00:36:32,550

to get there first I really want to

765

00:36:37,910 --> 00:36:35,820

thank Frank and an Eric for presenting

766

00:36:39,860 --> 00:36:37,920

today they didn't have to do it we kind

767

00:36:44,270 --> 00:36:39,870

of we asked them and they did a great

768

00:36:46,220 --> 00:36:44,280

job and it was from really goodness of

769

00:36:47,590 --> 00:36:46,230

their hearts to do this and I really do

770

00:36:51,050 --> 00:36:47,600

think that we're doing a wonderful job

771

00:36:53,210 --> 00:36:51,060

um to the way forward so now we've got

772

00:36:56,330 --> 00:36:53,220

to set of concept documents it covers

773

00:36:58,460 --> 00:36:56,340

some hopefully much of astrobiology and

774

00:37:02,010 --> 00:36:58,470

we'd like to bring the back the broad

775

00:37:04,320 --> 00:37:02,020

community is back into the discussion

776

00:37:06,650 --> 00:37:04,330

so each document is going to be the

777

00:37:09,630 --> 00:37:06,660

focus of a single hour-long webinar

778

00:37:11,670 --> 00:37:09,640

given by some of the original authors to

779

00:37:16,410 --> 00:37:11,680

convey the community what they were

780

00:37:18,120 --> 00:37:16,420

thinking that on the Monday before their

781

00:37:21,000 --> 00:37:18,130

webinars the webinars are going to be on

782

00:37:25,440 --> 00:37:21,010

Wednesdays and Thursdays the days in

783

00:37:28,380 --> 00:37:25,450

Thursday's on that Monday before we will

784

00:37:31,560 --> 00:37:28,390

open up the documents for reading and

785

00:37:35,100 --> 00:37:31,570

comments and these are comments not

786

00:37:37,740 --> 00:37:35,110

edits only the individuals will says

787

00:37:40,880 --> 00:37:37,750

authors will be able to edit the

788

00:37:44,130 --> 00:37:40,890

document but everybody put a comment in

789

00:37:45,870 --> 00:37:44,140

authors will be able to resolve comments

790

00:37:48,180 --> 00:37:45,880

is the language of Google Docs which

791

00:37:50,280 --> 00:37:48,190

we're using and of course existing

792

00:37:53,520 --> 00:37:50,290

authors can invite other individuals to

793

00:37:56,730 --> 00:37:53,530

become new authors I encourage everybody

794

00:37:58,560 --> 00:37:56,740

before they start commenting to please

795

00:38:01,140 --> 00:37:58,570

go online and read the guidelines for

796

00:38:03,480 --> 00:38:01,150

commenters we've written these to sort

797

00:38:07,020 --> 00:38:03,490

of control the process a little bit but

798

00:38:09,200 --> 00:38:07,030

not too much the key guidelines are we

799

00:38:12,900 --> 00:38:09,210

would prefer comments or not anonymous

800

00:38:15,900 --> 00:38:12,910

we'd like you to login to Google as

801
00:38:16,980 --> 00:38:15,910
yourself um we'd like you to encourage

802
00:38:19,740 --> 00:38:16,990
you that the common should be on the

803
00:38:23,550 --> 00:38:19,750
point and created with the thought of

804
00:38:26,640 --> 00:38:23,560
improving the document not just throwing

805
00:38:30,210 --> 00:38:26,650
some brick Bats comments can be of any

806
00:38:32,550 --> 00:38:30,220
way from our point of view google docs

807
00:38:36,360 --> 00:38:32,560
has its own view of that and basically

808
00:38:41,190 --> 00:38:36,370
limits a comment to 2048 characters

809
00:38:44,070 --> 00:38:41,200
including spaces so if your comment is

810
00:38:46,890 --> 00:38:44,080
longer than that create a new Google Doc

811
00:38:49,250 --> 00:38:46,900
give it a name and refer to it in the

812
00:38:51,660 --> 00:38:49,260
comment in the original document I

813
00:38:53,430 --> 00:38:51,670

really hope that everybody who chooses

814

00:38:55,260 --> 00:38:53,440

to comment will challenge the

815

00:38:57,780 --> 00:38:55,270

assumptions and the conclusions of these

816

00:39:00,150 --> 00:38:57,790

documents in a professional manner when

817

00:39:02,130 --> 00:39:00,160

you start making comments please include

818

00:39:03,540 --> 00:39:02,140

relevant citations because we're altime

819

00:39:05,490 --> 00:39:03,550

tlie in the final doc you're going to

820

00:39:07,200 --> 00:39:05,500

have to have them and if you've got some

821

00:39:09,450 --> 00:39:07,210

issue or issues that you're just too

822

00:39:12,060 --> 00:39:09,460

large to be easily contained in a set of

823

00:39:14,070 --> 00:39:12,070

comments um feel free to contact the

824

00:39:15,500 --> 00:39:14,080

authors directly and enter into a

825

00:39:17,970 --> 00:39:15,510

conversation with them

826

00:39:20,460 --> 00:39:17,980

all comments should be written using

827

00:39:24,109 --> 00:39:20,470

standard American English grammar and

828

00:39:27,390 --> 00:39:24,119

spelling this is just a matter for

829

00:39:29,310 --> 00:39:27,400

consistency of usage and finally it's

830

00:39:32,040 --> 00:39:29,320

something that I take very seriously is

831

00:39:34,650 --> 00:39:32,050

that comments that personally disparage

832

00:39:36,870 --> 00:39:34,660

an author or any of the referenced

833

00:39:40,130 --> 00:39:36,880

researchers in that paper they'll be

834

00:39:43,349 --> 00:39:40,140

deleted and any commenter who displays a

835

00:39:45,930 --> 00:39:43,359

pattern of this type of behavior will be

836

00:39:47,760 --> 00:39:45,940

banned so far everybody's been very

837

00:39:52,410 --> 00:39:47,770

collegial and I really appreciate that

838

00:39:54,839 --> 00:39:52,420

I'd like it to remain that way so the

839

00:39:56,250 --> 00:39:54,849

we've scheduled the first for Michael we

840

00:39:58,950 --> 00:39:56,260

do have one question about comments oh

841

00:40:02,430 --> 00:39:58,960

yeah to not put an anonymous comment one

842

00:40:04,440 --> 00:40:02,440

needs a google account yes correct but

843

00:40:06,240 --> 00:40:04,450

not necessarily gmail address not

844

00:40:07,470 --> 00:40:06,250

necessarily gmail address it'll come

845

00:40:10,440 --> 00:40:07,480

with one but you need a google account

846

00:40:12,300 --> 00:40:10,450

me a google account yet so yes I'm

847

00:40:15,300 --> 00:40:12,310

somehow putting money in Google's pocket

848

00:40:19,020 --> 00:40:15,310

and I apologize for that they got a lot

849

00:40:23,070 --> 00:40:19,030

of money already so thanks the lindsay

850

00:40:25,650 --> 00:40:23,080

hayes we've scheduled up the first 14

851
00:40:28,410 --> 00:40:25,660
webinars and i'm not going to read them

852
00:40:31,710 --> 00:40:28,420
all but basically starting next week and

853
00:40:33,450 --> 00:40:31,720
running through early november the

854
00:40:36,180 --> 00:40:33,460
titles of the documents to be discussed

855
00:40:38,750 --> 00:40:36,190
are on this in this slide and they set

856
00:40:41,010 --> 00:40:38,760
of slides and they're on the website and

857
00:40:43,109 --> 00:40:41,020
its starting off next week with two of

858
00:40:44,820 --> 00:40:43,119
them the first about how's the evolution

859
00:40:46,380 --> 00:40:44,830
of the atmosphere and its interaction

860
00:40:48,450 --> 00:40:46,390
with the solid earth and the bio spoon

861
00:40:51,630 --> 00:40:48,460
form our exploration of habitable worlds

862
00:40:53,160 --> 00:40:51,640
and the second one will be on 26 is one

863
00:40:54,960 --> 00:40:53,170

of the sources of organic monomers

864

00:40:58,040 --> 00:40:54,970

relevant to the arch of life and then

865

00:41:00,570 --> 00:40:58,050

there's a whole list of 12 more I

866

00:41:02,849 --> 00:41:00,580

encourage everybody who's interested to

867

00:41:06,150 --> 00:41:02,859

come listen to them then comment and

868

00:41:09,599 --> 00:41:06,160

discuss on them so after the webinar is

869

00:41:13,980 --> 00:41:09,609

what happens so assuming approximate

870

00:41:15,060 --> 00:41:13,990

dates this process of webinars and the

871

00:41:18,120 --> 00:41:15,070

community reading and community

872

00:41:22,140 --> 00:41:18,130

commenting will extend to early mid

873

00:41:24,150 --> 00:41:22,150

January of 2014 for about a month

874

00:41:26,040 --> 00:41:24,160

thereafter we would the authors are

875

00:41:28,200 --> 00:41:26,050

going to the author groups are going to

876

00:41:28,650 --> 00:41:28,210

meet either in person or virtually and

877

00:41:30,779 --> 00:41:28,660

they're going

878

00:41:33,450 --> 00:41:30,789

adjudicator the different comments and

879

00:41:36,299 --> 00:41:33,460

polish up there riding around that time

880

00:41:38,640 --> 00:41:36,309

we're also going to engage the services

881

00:41:40,380 --> 00:41:38,650

of a professional technical editor so

882

00:41:44,520 --> 00:41:40,390

that whatever final document we produce

883

00:41:46,049 --> 00:41:44,530

actually will look professional and a

884

00:41:48,029 --> 00:41:46,059

februari we're planning on having a no

885

00:41:50,220 --> 00:41:48,039

face-to-face workshop that will

886

00:41:52,380 --> 00:41:50,230

integrate all the papers and produce a

887

00:41:56,220 --> 00:41:52,390

more or less and I emphasize the more or

888

00:41:57,960 --> 00:41:56,230

less coherent document and about a

889

00:42:00,720 --> 00:41:57,970

couple weeks after that we will have

890

00:42:03,299 --> 00:42:00,730

hopefully a first draft ready for review

891

00:42:06,299 --> 00:42:03,309

by any and all we are planning right now

892

00:42:07,559 --> 00:42:06,309

on definitely having the planetary

893

00:42:11,039 --> 00:42:07,569

science subcommittee of the nasa

894

00:42:13,859 --> 00:42:11,049

advisory council provide a formal review

895

00:42:16,890 --> 00:42:13,869

and we are exploring other options for

896

00:42:20,130 --> 00:42:16,900

other formal reviews our target is

897

00:42:23,730 --> 00:42:20,140

middle of april of 2014 to have a final

898

00:42:25,799 --> 00:42:23,740

draft ready for publication there is one

899

00:42:26,910 --> 00:42:25,809

more more of a comment and a question it

900

00:42:28,260 --> 00:42:26,920

would be good to create a google

901
00:42:29,700 --> 00:42:28,270
calendar with all the webinars and

902
00:42:32,490 --> 00:42:29,710
meetings it can then be easily imported

903
00:42:37,799 --> 00:42:32,500
on personal accounts good idea we will

904
00:42:41,190 --> 00:42:37,809
take care of that so this is another

905
00:42:44,190 --> 00:42:41,200
version of the network diagram that Eric

906
00:42:46,230 --> 00:42:44,200
so eloquently spoke about this is where

907
00:42:48,720 --> 00:42:46,240
it stood them back in June and since

908
00:42:50,220 --> 00:42:48,730
we've started talking with the author

909
00:42:53,190 --> 00:42:50,230
group so you've had a couple of small

910
00:42:56,609 --> 00:42:53,200
changes that have happened the changes

911
00:43:01,049 --> 00:42:56,619
are essentially in green here so if I

912
00:43:06,359 --> 00:43:01,059
put back and forth tanase you see my

913
00:43:08,490 --> 00:43:06,369

cursor at all no I guess yes ok so these

914

00:43:10,769 --> 00:43:08,500

two papers down here that essentially

915

00:43:12,390 --> 00:43:10,779

were about two different approaches to

916

00:43:15,660 --> 00:43:12,400

minimal life either building from the

917

00:43:18,120 --> 00:43:15,670

ground up synthetically or reductively

918

00:43:21,210 --> 00:43:18,130

by throwing out things from modern life

919

00:43:22,920 --> 00:43:21,220

we've come combined into simply what is

920

00:43:30,480 --> 00:43:22,930

the simplest life look for look like

921

00:43:32,250 --> 00:43:30,490

sorry up here would you know metabolic

922

00:43:34,620 --> 00:43:32,260

and ecological features characterized

923

00:43:37,019 --> 00:43:34,630

Luca Luca being the last Universal

924

00:43:39,269 --> 00:43:37,029

common ancestor and then what genomic

925

00:43:40,770 --> 00:43:39,279

metabolic an ecological features

926

00:43:42,480 --> 00:43:40,780

characterized life at the

927

00:43:44,370 --> 00:43:42,490

The Tree of Life well the root of the

928

00:43:47,370 --> 00:43:44,380

tree life is considered is by definition

929

00:43:48,750 --> 00:43:47,380

in some sense Luca so they've gotten

930

00:43:51,080 --> 00:43:48,760

combined and do what you know event of

931

00:43:55,760 --> 00:43:51,090

all ideological features characterized

932

00:43:59,220 --> 00:43:55,770

Luca up here in this area some of these

933

00:44:02,490 --> 00:43:59,230

papers and concepts have gotten combined

934

00:44:06,480 --> 00:44:02,500

together the other big area where we've

935

00:44:08,250 --> 00:44:06,490

had a lot of changes is out here in what

936

00:44:10,140 --> 00:44:08,260

I call the formation of habitability and

937

00:44:15,780 --> 00:44:10,150

Eric had a much better term for it but

938

00:44:18,810 --> 00:44:15,790

basically there were therefore there's a

939

00:44:22,200 --> 00:44:18,820

dual dual die-cut emerges dual dichotomy

940

00:44:24,360 --> 00:44:22,210

up here papers having to do with in our

941

00:44:26,940 --> 00:44:24,370

solar system versus at outside of our

942

00:44:29,490 --> 00:44:26,950

solar system whether a planet or

943

00:44:33,480 --> 00:44:29,500

environment is habitable or actually

944

00:44:35,760 --> 00:44:33,490

inhabited and rather than have multiple

945

00:44:39,030 --> 00:44:35,770

papers covering this we decided to

946

00:44:41,100 --> 00:44:39,040

combine some papers so we now have how

947

00:44:43,020 --> 00:44:41,110

do we find and remotely identify

948

00:44:44,970 --> 00:44:43,030

habitable or inhabited planets around

949

00:44:48,210 --> 00:44:44,980

other stars which is the extra solar

950

00:44:50,430 --> 00:44:48,220

question how would we search for life in

951
00:44:52,110 --> 00:44:50,440
on other worlds in our solar system

952
00:44:54,440 --> 00:44:52,120
which is the inhabited in our solar

953
00:44:56,610 --> 00:44:54,450
system and then how can we identify

954
00:44:59,220 --> 00:44:56,620
habitable environments in our solar

955
00:45:02,940 --> 00:44:59,230
system so those bunch of papers kind of

956
00:45:05,670 --> 00:45:02,950
got collapsed there's also a new one on

957
00:45:10,560 --> 00:45:05,680
did life or prebiotic chemistry evolve

958
00:45:12,570 --> 00:45:10,570
on differentiated icy worlds and finally

959
00:45:14,250 --> 00:45:12,580
what is the geophysical evolutionary

960
00:45:16,560 --> 00:45:14,260
history of terrestrial planets of

961
00:45:18,390 --> 00:45:16,570
different sizes and compositions this is

962
00:45:22,800 --> 00:45:18,400
a new one that's been suggested to us as

963
00:45:24,840 --> 00:45:22,810

a gap essentially about terrestrial

964

00:45:26,820 --> 00:45:24,850

planets and how do they get the way they

965

00:45:29,910 --> 00:45:26,830

are since those the ones we know for

966

00:45:32,160 --> 00:45:29,920

life this is where it is today if you

967

00:45:34,080 --> 00:45:32,170

come back and look at this diagram in a

968

00:45:37,410 --> 00:45:34,090

week or two it could very well be

969

00:45:39,510 --> 00:45:37,420

different we are going to come up with a

970

00:45:41,640 --> 00:45:39,520

facility for the community to modify

971

00:45:44,970 --> 00:45:41,650

this diagram and save their own versions

972

00:45:47,430 --> 00:45:44,980

but we're not there yet mostly because

973

00:45:50,130 --> 00:45:47,440

we really want people to focus on the

974

00:45:54,520 --> 00:45:50,140

documents and not on the bright shiny

975

00:46:01,579 --> 00:45:57,700

so that's pretty much where I'm done I

976

00:46:05,960 --> 00:46:01,589

am happy to answer any questions by chat

977

00:46:11,780 --> 00:46:05,970

or by email or any which way so that's

978

00:46:14,150 --> 00:46:11,790

it for me so just what we're waiting for

979

00:46:17,630 --> 00:46:14,160

people have a chance to to ask questions

980

00:46:21,859 --> 00:46:17,640

on that let me elaborate slightly on the

981

00:46:25,819 --> 00:46:21,869

commenting process so first of all we're

982

00:46:27,799 --> 00:46:25,829

going to run the first few concept

983

00:46:31,280 --> 00:46:27,809

papers through a fairly simple process

984

00:46:32,930 --> 00:46:31,290

which is they will be available at the

985

00:46:35,180 --> 00:46:32,940

beginning of the week they're presenting

986

00:46:38,000 --> 00:46:35,190

on although if you go to the website now

987

00:46:40,609 --> 00:46:38,010

you'll actually see that that three of

988

00:46:43,220 --> 00:46:40,619

them are there too but they're available

989

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

in read-only mode so the basic process

990

00:46:48,650 --> 00:46:46,050

we're going to try is the papers will be

991

00:46:51,740 --> 00:46:48,660

there in read-only mode after the

992

00:46:53,420 --> 00:46:51,750

webinar it then switches to comment mode

993

00:46:55,309 --> 00:46:53,430

so after you've had a chance to listen

994

00:46:57,680 --> 00:46:55,319

to what people are saying and will

995

00:47:00,829 --> 00:46:57,690

encourage you to comment them what we

996

00:47:04,760 --> 00:47:00,839

don't know is whether the Google

997

00:47:06,920 --> 00:47:04,770

commenting system will be effective

998

00:47:09,500 --> 00:47:06,930

enough to allow the authors and the rest

999

00:47:11,870 --> 00:47:09,510

of the community to really understand

1000

00:47:14,630 --> 00:47:11,880

the comments and to engage in that

1001

00:47:17,180 --> 00:47:14,640

discussion or whether it will look like

1002

00:47:19,250 --> 00:47:17,190

an explosion in a post it note factory

1003

00:47:21,410 --> 00:47:19,260

where there are comments everywhere and

1004

00:47:23,660 --> 00:47:21,420

it's difficult to follow so we have to

1005

00:47:27,440 --> 00:47:23,670

try the simplest possible approach first

1006

00:47:30,160 --> 00:47:27,450

if that proves to be difficult or if the

1007

00:47:32,120 --> 00:47:30,170

community come back and say actually the

1008

00:47:34,640 --> 00:47:32,130

conversations that we want to have need

1009

00:47:37,670 --> 00:47:34,650

to be more expansive and threaded than

1010

00:47:40,270 --> 00:47:37,680

this then we will associate each paper

1011

00:47:43,670 --> 00:47:40,280

with a discussion thread on the website

1012

00:47:46,130 --> 00:47:43,680

the only downside to that is it becomes

1013

00:47:47,480 --> 00:47:46,140

harder for the authors to crack back the

1014

00:47:49,670 --> 00:47:47,490

comment that you're making in a

1015

00:47:51,349 --> 00:47:49,680

discussion thread with the specific

1016

00:47:52,970 --> 00:47:51,359

elements that they're writing so we're

1017

00:47:57,289 --> 00:47:52,980

we undertake the simplest possible

1018

00:47:59,180 --> 00:47:57,299

approach first and see how that works so

1019

00:48:01,730 --> 00:47:59,190

basic approach prior to the webinar

1020

00:48:03,990 --> 00:48:01,740

you'll be able to read post the webinar

1021

00:48:06,300 --> 00:48:04,000

you'll be able to comment and

1022

00:48:09,240 --> 00:48:06,310

if necessary you'll be it will set up a

1023

00:48:11,930 --> 00:48:09,250

threat there is also the discussion

1024

00:48:15,330 --> 00:48:11,940

thread particularly for the concept

1025

00:48:18,060 --> 00:48:15,340

diagram the spider diagram which eric

1026

00:48:21,090 --> 00:48:18,070

said are and that might be a good place

1027

00:48:23,270 --> 00:48:21,100

if you want to talk about aspects that

1028

00:48:25,350 --> 00:48:23,280

you feel a missing from it or

1029

00:48:28,170 --> 00:48:25,360

alternative ways of structuring it

1030

00:48:32,970 --> 00:48:28,180

that's already there so by all means add

1031

00:48:35,130 --> 00:48:32,980

to that discussion thread so Michael

1032

00:48:39,780 --> 00:48:35,140

there are the questions we've got one

1033

00:48:45,060 --> 00:48:39,790

from Aaron on there if we can respond to

1034

00:48:47,130 --> 00:48:45,070

that sure so Aaron no I'll ask one thing

1035

00:48:48,690 --> 00:48:47,140

that was in the chat rooms but not

1036

00:48:51,150 --> 00:48:48,700

mentioned here are documents about

1037

00:48:52,950 --> 00:48:51,160

missions under technology development

1038

00:48:55,560 --> 00:48:52,960

priorities or desires has this been

1039

00:48:57,870 --> 00:48:55,570

deliberately left off and left out

1040

00:48:59,940 --> 00:48:57,880

excuse me and the short answer that I

1041

00:49:03,390 --> 00:48:59,950

was typing to Aaron is yeah we have

1042

00:49:05,820 --> 00:49:03,400

deliberately left this out this ultimate

1043

00:49:08,480 --> 00:49:05,830

document is intended to be a science

1044

00:49:10,620 --> 00:49:08,490

strategy as opposed to an actual

1045

00:49:12,720 --> 00:49:10,630

implementation document that says do

1046

00:49:16,830 --> 00:49:12,730

these missions develop this instrument

1047

00:49:20,310 --> 00:49:16,840

build this technology why because as

1048

00:49:23,280 --> 00:49:20,320

we've seen recently implementation

1049

00:49:27,390 --> 00:49:23,290

documents about missions and instruments

1050

00:49:30,660 --> 00:49:27,400

and technologies are very very dependent

1051

00:49:32,430 --> 00:49:30,670

on budget and if the budget changes

1052

00:49:34,560 --> 00:49:32,440

suddenly then all of a sudden we're

1053

00:49:36,270 --> 00:49:34,570

holding a document that says do XY and z

1054

00:49:38,850 --> 00:49:36,280

and we have the money to do none of the

1055

00:49:42,870 --> 00:49:38,860

above or one of the above or house with

1056

00:49:44,880 --> 00:49:42,880

you or half of the above and that's not

1057

00:49:46,680 --> 00:49:44,890

a good document that's going to live

1058

00:49:50,520 --> 00:49:46,690

very long and we want this document to

1059

00:49:52,890 --> 00:49:50,530

look for at least a decade so Mary and I

1060

00:49:55,020 --> 00:49:52,900

decided that this will be a science

1061

00:49:58,290 --> 00:49:55,030

strategy or the big science questions

1062

00:50:02,300 --> 00:49:58,300

how they interrelate and if we need to

1063

00:50:04,800 --> 00:50:02,310

start doing mission planning or

1064

00:50:08,010 --> 00:50:04,810

technology prioritization we will then

1065

00:50:09,870 --> 00:50:08,020

use that science strategy to spin up a

1066

00:50:13,000 --> 00:50:09,880

group that will then take that and turn

1067

00:50:16,240 --> 00:50:13,010

that into set a priority to turn it into

1068

00:50:18,550 --> 00:50:16,250

a roadmap for build this then build that

1069

00:50:23,200 --> 00:50:18,560

then build the other thing that's the

1070

00:50:24,550 --> 00:50:23,210

answer to that question and well a

1071

00:50:26,050 --> 00:50:24,560

couple of other people are tightening

1072

00:50:29,440 --> 00:50:26,060

their mother looks let me just remind

1073

00:50:32,140 --> 00:50:29,450

you that if you want to actually ask a

1074

00:50:37,450 --> 00:50:32,150

question and and talk all you have to do

1075

00:50:39,430 --> 00:50:37,460

is click the button at the top top part

1076
00:50:43,990 --> 00:50:39,440
of your screen over here with the little

1077
00:50:48,100 --> 00:50:44,000
hand and Mike will open up the the audio

1078
00:51:01,380 --> 00:50:48,110
line for you just in case anyone prefers

1079
00:51:06,250 --> 00:51:03,760
although there is something of a sort of

1080
00:51:08,200 --> 00:51:06,260
old-fashioned movie quality to this it's

1081
00:51:11,290 --> 00:51:08,210
a bit like watching the ticker tape come

1082
00:51:13,540 --> 00:51:11,300
out as you see people are typing the

1083
00:51:18,280 --> 00:51:13,550
treasure is buried in we lost the

1084
00:51:20,020 --> 00:51:18,290
connection I actually was just thinking

1085
00:51:21,910 --> 00:51:20,030
about how I miss the old days a chat

1086
00:51:25,720 --> 00:51:21,920
windows where you'd actually see each

1087
00:51:35,020 --> 00:51:25,730
letter coming up and then I the typos

1088
00:51:37,330 --> 00:51:35,030

and then the back isn't fixing it have

1089

00:51:38,710 --> 00:51:37,340

fun so Aaron is asked to name it on this

1090

00:51:40,359 --> 00:51:38,720

round but he would like to see it

1091

00:51:42,359 --> 00:51:40,369

realistic but not explicitly cost

1092

00:51:47,349 --> 00:51:42,369

constraint top 5 wish list of

1093

00:51:56,770 --> 00:51:47,359

astrobiology specific missions um it

1094

00:52:00,540 --> 00:51:56,780

could be fun uh yeah you definitely try

1095

00:52:03,720 --> 00:52:00,550

to do that over beers one night a

1096

00:52:08,800 --> 00:52:03,730

community-wide voting on that as well

1097

00:52:28,690 --> 00:52:08,810

the beer or the mission two separate

1098

00:52:33,579 --> 00:52:30,849

yeah we'd love to hear your voices so

1099

00:52:35,589 --> 00:52:33,589

you know please think about raising your

1100

00:53:18,190 --> 00:52:35,599

hand and talking rather than putting

1101

00:53:18,200 --> 00:53:30,150

your date attack

1102

00:53:35,500 --> 00:53:32,590

fabulous asked a question or comment it

1103

00:53:38,290 --> 00:53:35,510

seems to me that other people who would

1104

00:53:39,760 --> 00:53:38,300

be precious to shape astrobiology in the

1105

00:53:42,700 --> 00:53:39,770

future of those involved information

1106

00:53:43,960 --> 00:53:42,710

management database creation etc the

1107

00:53:45,910 --> 00:53:43,970

huge amount of interdisciplinary

1108

00:53:47,590 --> 00:53:45,920

information that astrobiology creates

1109

00:53:49,000 --> 00:53:47,600

the new way to access it and make it

1110

00:53:51,610 --> 00:53:49,010

available to the scientific community

1111

00:53:54,820 --> 00:53:51,620

and the public is this a subject that

1112

00:53:57,840 --> 00:53:54,830

has been discussed I don't know if it's

1113

00:54:00,190 --> 00:53:57,850

been discussed in this activity it is a

1114

00:54:03,150 --> 00:54:00,200

an issue that's near and dear to my

1115

00:54:09,550 --> 00:54:03,160

heart and to marry boy Tex and we are

1116

00:54:13,090 --> 00:54:09,560

once this science strategy gets put to

1117

00:54:14,530 --> 00:54:13,100

bed and then the the new competition for

1118

00:54:17,800 --> 00:54:14,540

membership in the astrobiology institute

1119

00:54:19,330 --> 00:54:17,810

gets completed very high on our list of

1120

00:54:21,390 --> 00:54:19,340

things to do will be actually that

1121

00:54:23,830 --> 00:54:21,400

discussion about the kinds of databases

1122

00:54:26,200 --> 00:54:23,840

and data management systems that

1123

00:54:28,750 --> 00:54:26,210

astrobiology needs this is also an

1124

00:54:33,700 --> 00:54:28,760

ongoing conversation in other parts of

1125

00:54:36,430 --> 00:54:33,710

the scientific world because we have Jia

1126

00:54:40,690 --> 00:54:36,440

Greta your chemistry databases like Pico

1127

00:54:47,230 --> 00:54:40,700

dimo we have molecular biology databases

1128

00:54:48,790 --> 00:54:47,240

like the PVV we have other databases for

1129

00:54:51,160 --> 00:54:48,800

other kinds of information but we have

1130

00:54:55,660 --> 00:54:51,170

no database system or even approach that

1131

00:54:57,940 --> 00:54:55,670

links geochemistry biology paleontology

1132

00:55:00,000 --> 00:54:57,950

links them all together in one way and

1133

00:55:01,960 --> 00:55:00,010

so that's definitely something that

1134

00:55:04,120 --> 00:55:01,970

astrobiology probably needs right now

1135

00:55:12,930 --> 00:55:04,130

and something that Mary and I are going

1136

00:55:18,670 --> 00:55:16,000

welcome okay lost lost two or three

1137

00:55:21,940 --> 00:55:18,680

minutes of our current session if anyone

1138

00:55:24,010 --> 00:55:21,950

wants to type a question or if anyone

1139

00:55:26,980 --> 00:55:24,020

wants us to unmute the phone line and

1140

00:55:29,620 --> 00:55:26,990

you actually ask a question obviously

1141

00:55:33,940 --> 00:55:29,630

you can carry on the discussions on the

1142

00:55:36,520 --> 00:55:33,950

website and there is a home for each of

1143

00:55:38,830 --> 00:55:36,530

these particularly say if it relates to

1144

00:55:40,750 --> 00:55:38,840

Michael's presentation then you can just

1145

00:55:46,030 --> 00:55:40,760

take your question on to the discussion

1146

00:55:48,660 --> 00:55:46,040

throughout their apart from that I think

1147

00:55:51,240 --> 00:55:48,670

we're probably done at this stage so

1148

00:55:55,930 --> 00:55:51,250

thank you very much to our presenters

1149

00:56:00,520 --> 00:55:55,940

our next sessions will be wednesday and

1150

00:56:02,320 --> 00:56:00,530

thursday of next week and that assuming

1151

00:56:04,120 --> 00:56:02,330

it's going to work for everyone's

1152

00:56:06,400 --> 00:56:04,130

calendars those will be the days that

1153

00:56:09,720 --> 00:56:06,410

will be using every week for these slots

1154

00:56:13,510 --> 00:56:09,730

we will sort out a calendar that you can

1155

00:56:15,970 --> 00:56:13,520

import and also all of the dates will be

1156

00:56:20,500 --> 00:56:15,980

published on the astrobiology website

1157

00:56:23,650 --> 00:56:20,510

along with the dial-in information that

1158

00:56:25,420 --> 00:56:23,660

i think is about it so thank you very