

Making the Invisible Threats Visible

1

00:00:07.160 --> 00:00:09.300

All right. So, next.

2

00:00:12.640 --> 00:00:13.860

Okay, next is Martin.

3

00:00:15.560 --> 00:00:19.020

So Martin is a five-decade pilot,

4

00:00:20.980 --> 00:00:23.580

and is now the CEO of Presage.

5

00:00:25.420 --> 00:00:28.940

So we are talking about psychology of non-compliance in flight

6

00:00:29.080 --> 00:00:29.740

operations,

7

00:00:30.720 --> 00:00:31.040

which

8

00:00:31.900 --> 00:00:34.620

I'm looking forward knowing more about that.

9

00:00:34.740 --> 00:00:38.440

I guess everyone wants to understand better what you're going to

10

00:00:38.840 --> 00:00:40.720

talk about. So the floor is yours.

11

00:00:41.040 --> 00:00:42.020

Perfect. Thank you.

12

00:00:45.620 --> 00:00:48.300

Thank you. Pleasure to be here.

13

00:00:49.580 --> 00:00:52.620

Let me see if I can tee this up.

14

00:00:57.020 --> 00:00:59.360
I see it there. I don't see it

15
00:01:00.420 --> 00:01:01.040
there.

16
00:01:05.340 --> 00:01:06.280
Work with me, Jack.

17
00:01:07.120 --> 00:01:07.330
You're good.

18
00:01:09.200 --> 00:01:09.440
Okay.

19
00:01:10.300 --> 00:01:10.620
Awesome.

20
00:01:11.840 --> 00:01:15.120
So, okay. Marty Smith, CEO of

21
00:01:15.160 --> 00:01:16.420
Presage. Just

22
00:01:17.520 --> 00:01:20.800
to give you the word on Presage, literally Latin for

23
00:01:20.820 --> 00:01:24.460
presage, early wisdom, early knowledge. Okay?

24
00:01:25.060 --> 00:01:28.100
So we're into predictive analytics at Presage.

25
00:01:30.520 --> 00:01:30.840
So this

26
00:01:32.540 --> 00:01:35.580
presentation is really talking about the perfect storm

27
00:01:36.500 --> 00:01:39.240
and how it applies to your world, your landscape.

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00:01:39.940 --> 00:01:42.800

We're going to talk a bit about brain function. Okay?

29

00:01:42.860 --> 00:01:44.240

Some basic neurology.

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00:01:45.120 --> 00:01:48.960

Personal biases, personality, and when they collide

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00:01:49.020 --> 00:01:52.180

with safety and risk management, that is a perfect storm.

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00:01:53.330 --> 00:01:56.680

These are the invisible threats that hopefully we're going to make a little more

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00:01:56.720 --> 00:02:00.620

visible for you, put it on your radar, develop a sensitivity on

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00:02:00.660 --> 00:02:03.580

a very personal basis and on a team basis.

35

00:02:05.400 --> 00:02:08.900

So, this is going to be an interactive presentation.

36

00:02:08.961 --> 00:02:12.800

So whoever's got the microphones, I might need you to prime the

37

00:02:12.840 --> 00:02:13.720

pump, get ready.

38

00:02:14.560 --> 00:02:16.880

Survey here, just show of hands right now.

39

00:02:17.760 --> 00:02:17.980

Okay?

40

00:02:18.800 --> 00:02:22.780

How many of you during the flight testing program wished that you had spoken

41

00:02:22.860 --> 00:02:24.220

up but didn't?

42

00:02:25.460 --> 00:02:29.200

So if you look around, that's probably 90% of you.

43

00:02:29.460 --> 00:02:32.500

So I think the other 10% are lying.

44

00:02:37.320 --> 00:02:39.260

Could this have happened more than once?

45

00:02:39.860 --> 00:02:43.380

A few times perhaps, show of hands. There we go.

46

00:02:44.340 --> 00:02:45.020

Definitely.

47

00:02:46.460 --> 00:02:46.720

Okay.

48

00:02:48.060 --> 00:02:52.000

Now, was the reason you didn't speak up because of your personal

49

00:02:52.010 --> 00:02:55.840

makeup, your personality traits perhaps, or your

50

00:02:55.880 --> 00:02:58.980

personal biases? Just show of hands, please.

51

00:03:01.620 --> 00:03:04.580

Yeah. Well, we've got some head noddors. Okay.

52

00:03:06.820 --> 00:03:10.780

So that's certainly the minority of the case, but, I am

53

00:03:10.820 --> 00:03:13.190

going to focus on those anyways because they're

54

00:03:15.100 --> 00:03:17.820
certainly a risk in the operational environment.

55
00:03:17.940 --> 00:03:21.520
Okay.

56
00:03:22.240 --> 00:03:25.800
Oh, he's going to set the mood lighting for this. I love it.

57
00:03:25.840 --> 00:03:27.000
Thanks, Jack. Okay.

58
00:03:28.300 --> 00:03:32.200
So maybe some of you have seen this, the little brain experiment, right?

59
00:03:32.660 --> 00:03:36.600
And even if you have seen it, it doesn't matter because the basic

60
00:03:36.620 --> 00:03:39.300
neurology is you're going to surrender to this.

61
00:03:39.460 --> 00:03:40.820
There's no way around it.

62
00:03:41.740 --> 00:03:45.600
Okay? So this is 40 seconds long. I'm going to ask you

63
00:03:45.640 --> 00:03:48.180
to start with just staring at the center dot.

64
00:03:48.780 --> 00:03:51.080
It's going to fade from green to red.

65
00:03:52.380 --> 00:03:55.880
But I also want you to keep the sensitivity to what's happening on the

66
00:03:55.940 --> 00:03:58.580
margins, on the yellow dots. Okay?

67
00:03:59.420 --> 00:04:02.480
So here we go. And I'm going to kind of talk through this.

68

00:04:04.040 --> 00:04:04.180

So

69

00:04:05.300 --> 00:04:07.340

just stare for a moment at that center dot.

70

00:04:09.380 --> 00:04:09.580

So

71

00:04:12.260 --> 00:04:15.360

as you fixate on that, what's happening to the yellow dots?

72

00:04:17.280 --> 00:04:18.820

They're disappearing. They're disappearing. Okay.

73

00:04:20.760 --> 00:04:23.500

Okay, so in reality, they're not disappearing.

74

00:04:24.400 --> 00:04:27.900

They are still there. Now, shift around.

75

00:04:27.940 --> 00:04:29.580

Take a look at some of the yellow dots.

76

00:04:31.720 --> 00:04:32.000

Okay.

77

00:04:33.580 --> 00:04:36.220

And what's happening to the other dots you're not fixated on?

78

00:04:37.640 --> 00:04:38.300

Disappearing.

79

00:04:40.380 --> 00:04:44.040

So imagine if you're fixating on the center dot, and that's your speed

80

00:04:44.140 --> 00:04:45.340

tape, okay,

81

00:04:46.540 --> 00:04:49.760
and the yellow ones happen to maybe localize or sink right,

82

00:04:50.760 --> 00:04:54.700
glide slope, dot left or right, dot above or below.

83

00:04:55.380 --> 00:04:59.260
Okay, they're falling off your field of vision, right? They're no longer there.

84

00:05:02.320 --> 00:05:06.240
So this is a classic example, if you would, of just

85

00:05:06.260 --> 00:05:09.300
basic brain neurology. Okay?

86

00:05:10.260 --> 00:05:11.260
Human perception.

87

00:05:12.110 --> 00:05:12.750
And this is

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00:05:13.980 --> 00:05:15.900
attentional bias, selective bias.

89

00:05:15.940 --> 00:05:17.150
There's different names for it,

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00:05:17.960 --> 00:05:21.500
but it's a very real phenomenon. It's

91

00:05:21.540 --> 00:05:25.320
neurologically based. You can't think your way out of this,

92

00:05:25.820 --> 00:05:26.080
okay?

93

00:05:27.060 --> 00:05:28.480
It's just simply going to happen.

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00:05:29.920 --> 00:05:33.340

So like we do in aviation, we always have a mitigation for this kind of stuff,

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00:05:33.420 --> 00:05:37.240

right? We develop SOPs, you get scans, you get flows, you

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00:05:37.280 --> 00:05:40.820

get triggers that say defocus and

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00:05:40.880 --> 00:05:44.180

reprioritize. It's going to get you out of this loop.

98

00:05:45.260 --> 00:05:48.940

Okay? Most of the time, it's going to get you out of this

99

00:05:49.020 --> 00:05:49.320

loop.

100

00:05:50.800 --> 00:05:54.780

Let me give you a real-world example of this

101

00:05:54.860 --> 00:05:57.060

in the aviation space. So

102

00:05:58.900 --> 00:06:02.490

the number one risk, this is for fixed wing folks, so I apologize to you

103

00:06:02.600 --> 00:06:05.360

rotary folks. I don't have an example,

104

00:06:05.520 --> 00:06:09.468

butSo in the commercial civil space, the pretty much number one

105

00:06:10.108 --> 00:06:13.867

risk to the industry is going to be runway excursion, runway overruns.

106

00:06:14.948 --> 00:06:18.708

So the good news is we have a policy to mitigate that risk. Okay?

107

00:06:20.048 --> 00:06:20.118

It's

108

00:06:21.768 --> 00:06:23.548
called a stable approach policy.

109

00:06:25.128 --> 00:06:29.098
And it's pretty good. It tells us what to do at 1,000 feet configured,
and

110

00:06:29.368 --> 00:06:32.128
500 feet when you, energy and profile, everything.

111

00:06:32.828 --> 00:06:36.328
All the parameters need to be all lined up, in sync, okay?

112

00:06:36.868 --> 00:06:38.388
So the aircraft is stable.

113

00:06:39.308 --> 00:06:43.248
And there's about 12 parameters that are in play for this stable

114

00:06:43.328 --> 00:06:44.308
approach policy.

115

00:06:45.498 --> 00:06:48.968
So any one of those 12 is not

116

00:06:49.048 --> 00:06:52.968
aligned, so it's out of tolerance, past the limit, you initiate a

117

00:06:53.028 --> 00:06:55.508
go-around. Pretty simple, right?

118

00:06:56.548 --> 00:07:00.088
So the good news is, in the industry, we have a 97%

119

00:07:00.648 --> 00:07:01.928
stable approach rate.

120

00:07:02.748 --> 00:07:06.468
So 97% of the landings are stable.

121

00:07:06.768 --> 00:07:07.248

That's great.

122

00:07:08.368 --> 00:07:09.928

3% are not.

123

00:07:11.168 --> 00:07:15.028

Okay? So that translates in the commercial business, civil world

124

00:07:15.088 --> 00:07:18.588

to hundreds of thousands of landings land

125

00:07:18.708 --> 00:07:21.808

unstable. Okay? It's just 3%.

126

00:07:23.468 --> 00:07:26.828

So 97%, I should say, of

127

00:07:26.908 --> 00:07:30.428

those 3% that are unstable

128

00:07:30.588 --> 00:07:34.108

continue to land. We have a 3% compliance

129

00:07:34.248 --> 00:07:34.588

rate

130

00:07:35.768 --> 00:07:39.428

to the stable approach policy. So this is a great

131

00:07:39.448 --> 00:07:41.448

example that

132

00:07:42.468 --> 00:07:45.718

how can it be the number one risk to the industry,

133

00:07:46.488 --> 00:07:46.748

okay,

134

00:07:48.288 --> 00:07:50.488

in terms of unstable approaches, if

135

00:07:51.408 --> 00:07:55.228

3% of them, 97% of those continue to land?

136

00:07:56.188 --> 00:07:58.028

This is part of that reason.

137

00:07:58.988 --> 00:07:59.168

Okay?

138

00:08:00.728 --> 00:08:01.728

Are you with me on that?

139

00:08:05.348 --> 00:08:09.308

Before maybe I move on, this might be a good

140

00:08:09.368 --> 00:08:13.108

opportunity to get a case study. Can somebody

141

00:08:13.188 --> 00:08:16.168

here volunteer an example of when

142

00:08:17.267 --> 00:08:21.008

you went down this rabbit hole, you got fixated on something,

143

00:08:21.528 --> 00:08:25.248

and you lost the other operational parameters

144

00:08:25.328 --> 00:08:25.888

around you?

145

00:08:26.968 --> 00:08:27.128

Okay?

146

00:08:28.708 --> 00:08:30.768

Can I get a volunteer?

147

00:08:34.708 --> 00:08:36.608

I promise our love is unconditional.

148
00:08:36.989 --> 00:08:39.428
There'll be no prejudice, no bias.

149
00:08:41.088 --> 00:08:41.369
Okay?

150
00:08:43.108 --> 00:08:44.148
Some-- Yeah. Okay.

151
00:08:44.228 --> 00:08:45.168
A story from our company.

152
00:08:45.528 --> 00:08:45.788
Okay.

153
00:08:50.428 --> 00:08:50.868
There you go.

154
00:08:52.588 --> 00:08:52.948
There you go.

155
00:08:55.668 --> 00:08:59.648
So, a story from our company is, because we've had recovery chutes on our aircraft,

156
00:08:59.688 --> 00:09:03.028
and we've had a few instances where we've used them before my time.

157
00:09:03.768 --> 00:09:05.388
One of them was wind-up turns

158
00:09:06.248 --> 00:09:07.908
in a Spatial D.

159
00:09:08.388 --> 00:09:08.508
Yep.

160
00:09:08.988 --> 00:09:11.728
And they were doing a high altitude wind-up turn,

161

00:09:12.748 --> 00:09:15.068
and ended up over-banking and getting into a spiral.

162
00:09:15.968 --> 00:09:18.108
And getting so fast they had to blow the recovery chutes

163
00:09:19.088 --> 00:09:22.308
and lost like 20,000 feet or something like that.

164
00:09:22.328 --> 00:09:26.168
And the best theory is that the person

165
00:09:26.208 --> 00:09:29.288
became so fixated on trying to get the G just right,

166
00:09:29.988 --> 00:09:33.488
completely lost track of all airspeed and altitude awareness,

167
00:09:34.148 --> 00:09:38.048
and before they knew it, they were past VD, MD, and had to use recovery

168
00:09:38.108 --> 00:09:41.948
chutes to get out of that. So I think it's a classic example of fixation
on

169
00:09:42.088 --> 00:09:42.888
one parameter.

170
00:09:42.988 --> 00:09:45.208
Absolutely. It's a great example of that.

171
00:09:45.588 --> 00:09:49.528
Okay, so this is out there. This can be very, very unforgiving when it

172
00:09:49.568 --> 00:09:52.088
happens. I have interviewed pilots.

173
00:09:53.468 --> 00:09:56.788
So if you look at the FOQUA data, GE has it.

174
00:09:57.888 --> 00:10:01.828

On those 12 parameters that I mentioned, okay, all you need is one to

175

00:10:01.888 --> 00:10:04.328

trigger a go-around, okay, if it's out of limit.

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00:10:05.028 --> 00:10:08.428

Their data would say that if seven of those 12

177

00:10:08.468 --> 00:10:11.628

parameters were out of limit, okay,

178

00:10:12.408 --> 00:10:15.948

so the aircraft is clearly unstable, and it's below 1,000 feet.

179

00:10:17.328 --> 00:10:21.048

If you have seven, 100% of those aircraft

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00:10:21.168 --> 00:10:22.408

land unstable.

181

00:10:23.568 --> 00:10:24.548

100%.

182

00:10:25.407 --> 00:10:28.728

So you have an egregious situation of seven variables,

183

00:10:28.808 --> 00:10:32.528

parameters are not within tolerance or limits. Okay?

184

00:10:32.748 --> 00:10:36.088

This is it. Classic example. Very unforgiving. Okay?

185

00:10:36.988 --> 00:10:40.908

Pilots have said to me in interviews that they believed

186

00:10:41.248 --> 00:10:45.048

they were stable. Seven or eight parameters out of tolerance.

187

00:10:47.048 --> 00:10:47.508

This is it.

188

00:10:49.988 --> 00:10:53.388

So we want to talk about-- Now we're going to change gears and just put this in a

189

00:10:53.428 --> 00:10:57.288

very personal way for you, and map it to personality

190

00:10:57.308 --> 00:10:58.548

and personal biases.

191

00:10:59.548 --> 00:11:03.468

So Eric did a great job of giving us the ecosystem for your world,

192

00:11:03.988 --> 00:11:05.988

what it looks like. This is a summary.

193

00:11:06.678 --> 00:11:10.228

The key takeaway, though, is this is an ecosystem that is

194

00:11:10.328 --> 00:11:13.688

highly integrated. It should be seamless, right?

195

00:11:13.748 --> 00:11:16.648

From the design engineering right through to testing, et cetera.

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00:11:17.268 --> 00:11:20.888

This is a village, if you would. Every part

197

00:11:20.968 --> 00:11:24.868

matters. Okay? Every part is part of the safety

198

00:11:25.408 --> 00:11:25.988

program.

199

00:11:28.188 --> 00:11:32.108

So let your eyes kind of settle in on this for a moment.

200

00:11:33.248 --> 00:11:35.988

This is the Presage conceptual model.

201

00:11:36.448 --> 00:11:38.828
This is our intellectual property.

202
00:11:38.888 --> 00:11:40.568
Decision making in the moment.

203
00:11:41.568 --> 00:11:45.288
We're north of seven million data points on this particular

204
00:11:45.348 --> 00:11:45.668
model.

205
00:11:46.668 --> 00:11:50.028
So when I had an opportunity to go to school,

206
00:11:50.908 --> 00:11:54.608
I'd left the flight line, and I was very interested in human

207
00:11:54.648 --> 00:11:56.138
factors. This is back in the early

208
00:11:57.268 --> 00:12:00.078
'80s, so that tells you how old I

209
00:12:00.108 --> 00:12:03.668
am. And I was very interested in situational

210
00:12:03.728 --> 00:12:07.648
awareness. Pilot loss situational awareness. There was an event. Okay?

211
00:12:08.128 --> 00:12:10.908
Didn't satisfy me. It was like grabbing air. Okay?

212
00:12:11.508 --> 00:12:15.260
Not sufficient. So-13 years later, I wrapped up my

213
00:12:15.280 --> 00:12:18.220
doctoral thesis studying pilot decision-making in the moment.

214
00:12:18.300 --> 00:12:22.240
This is what it looks like, these nine individual constructs.

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00:12:23.420 --> 00:12:27.020

From a social science point of view, the beauty of this

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00:12:27.060 --> 00:12:29.820

conceptual model is each of these

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00:12:29.880 --> 00:12:33.660

constructs is unique. It's separate from one another.

218

00:12:34.200 --> 00:12:38.020

They're autonomous and independent, which means you can measure

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00:12:38.060 --> 00:12:42.020

them, you can quantify them. And if you can do that, you can manipulate

220

00:12:42.060 --> 00:12:45.750

them. Okay? The manipulation is on the mitigation side,

221

00:12:45.860 --> 00:12:47.500

changing policy and procedure.

222

00:12:48.700 --> 00:12:52.320

But the way this works in real time, and the reason I'm showing you this is

223

00:12:52.340 --> 00:12:56.060

because in the moment of your experience in the field, in the

224

00:12:56.140 --> 00:12:59.560

operational field, this model is in play. Okay?

225

00:13:00.380 --> 00:13:01.600

And it begins with this.

226

00:13:03.720 --> 00:13:05.120

There's an abnormal condition.

227

00:13:06.040 --> 00:13:09.820

Okay? Obviously, you're testing stuff, so abnormalities are going to

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00:13:09.840 --> 00:13:13.800

be part of that landscape. But even something that is

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00:13:13.880 --> 00:13:17.600

extraordinary, you had accounted for certain things, but this doesn't

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00:13:17.680 --> 00:13:21.240

fall in that envelope. Okay? The first

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00:13:21.860 --> 00:13:25.800

event the body has is this gut feeling for threats or

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00:13:25.900 --> 00:13:27.100

affective awareness.

233

00:13:28.370 --> 00:13:31.760

That's naturally going to trigger, now I'm looking at the

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00:13:31.820 --> 00:13:35.800

instruments. Okay? I'm anticipating what's going on

235

00:13:35.860 --> 00:13:38.320

here. So that triggers...

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00:13:39.400 --> 00:13:42.960

Okay, now I'm on the instrument, functional awareness. What are they telling me?

237

00:13:43.040 --> 00:13:45.220

What's the information? What's the feedback?

238

00:13:45.860 --> 00:13:49.800

That's quickly going to my experience, my recent experience.

239

00:13:49.860 --> 00:13:52.400

What's the conversation I had with the team? Okay?

240

00:13:53.000 --> 00:13:56.320

That critical awareness is going to inform

241

00:13:56.380 --> 00:13:59.520
possibly a conversation real time. Okay?

242
00:13:59.620 --> 00:14:01.060
That's keeping each other safe.

243
00:14:02.150 --> 00:14:05.940
Then there'll be a mitigation strategy, adjusting to the threats.

244
00:14:06.800 --> 00:14:10.180
This happens very rapidly. Okay?

245
00:14:10.660 --> 00:14:13.940
So very normal for you folks. You can all identify with this.

246
00:14:14.610 --> 00:14:17.670
This conceptual model was developed by pilots, so it's

247
00:14:17.680 --> 00:14:21.050
bottom-up. It speaks to your experience in the flight deck,

248
00:14:21.640 --> 00:14:25.100
but it also speaks to anybody who's in the food chain here,

249
00:14:25.820 --> 00:14:28.620
anybody who's part of this ecosystem.

250
00:14:29.240 --> 00:14:33.120
Doesn't matter where you are. The aerospace engineerings have a

251
00:14:33.160 --> 00:14:36.980
gut feeling for things. Debriefing sessions become

252
00:14:37.160 --> 00:14:40.980
very important. It can trigger a, "Hmm, that doesn't feel

253
00:14:41.060 --> 00:14:41.320
right."

254
00:14:42.200 --> 00:14:45.820
So let's unpack the gut feeling for threats, because

255

00:14:45.900 --> 00:14:49.220

that's the first line of psychological defense.

256

00:14:49.940 --> 00:14:51.980

It's kind of the seat-of-the-pants experience.

257

00:14:52.800 --> 00:14:56.640

In the most extreme form, it's going to be that startle effect, that kind of

258

00:14:56.700 --> 00:14:58.420

fight, flight, freeze.

259

00:14:59.280 --> 00:15:03.040

But in most cases, it's simply going to be that knowing something

260

00:15:03.100 --> 00:15:04.660

isn't right. Okay?

261

00:15:05.460 --> 00:15:07.760

It's the first line of psychological defense.

262

00:15:07.980 --> 00:15:11.460

It's an early warning detection system. It can be tactile.

263

00:15:11.500 --> 00:15:15.260

It's that sensory experience of perceptual, auditory,

264

00:15:15.860 --> 00:15:18.030

olfactory. What is that smell?

265

00:15:19.360 --> 00:15:21.760

It's often pre-verbal, pre-conscious, okay?

266

00:15:22.020 --> 00:15:24.020

It has a lot to do with pattern recognition.

267

00:15:26.660 --> 00:15:29.820

So typically, there's a fork in the road.

268

00:15:30.880 --> 00:15:34.870

When you experience that, you have about two seconds to, "Okay,

269

00:15:34.920 --> 00:15:37.120

what am I going to do with this?" Right?

270

00:15:37.820 --> 00:15:41.350

And that fork in the road is I can unpack it, I can

271

00:15:41.420 --> 00:15:44.580

investigate it, I can explore it, or I can

272

00:15:44.620 --> 00:15:45.700

rationalize it.

273

00:15:46.600 --> 00:15:50.220

Okay? In many, many cases, the rationalizing

274

00:15:50.420 --> 00:15:53.620

makes sense. Okay? We can very quickly

275

00:15:53.780 --> 00:15:57.480

validate and explain away why I'm having this

276

00:15:57.540 --> 00:16:00.880

sensory experience. Okay? In the

277

00:16:00.890 --> 00:16:04.000

testing world where the envelope is

278

00:16:04.080 --> 00:16:07.980

exploratory in nature, this becomes very critical,

279

00:16:08.000 --> 00:16:11.560

the sensitivity to the gut. We don't have time to get into

280

00:16:11.600 --> 00:16:15.300

unmanned vehicles and things like that, and dissociation from the

281

00:16:15.400 --> 00:16:15.720

body.

282

00:16:17.340 --> 00:16:20.780

So let's explore if you are going to confirm it, if you're going to

283

00:16:21.420 --> 00:16:25.400

essentially unpack what this feeling might be.

284

00:16:25.460 --> 00:16:29.450

So some basic things. This has come up in the last-- Yesterday, a

285

00:16:29.479 --> 00:16:30.750

few people spoke to this.

286

00:16:31.580 --> 00:16:34.710

As you're exploring the gut, first thing you're going to do is stabilize the

287

00:16:34.760 --> 00:16:37.200

aircraft, simplify tasks.

288

00:16:38.020 --> 00:16:41.170

You want to manage the cognitive workload, task

289

00:16:41.240 --> 00:16:42.660

saturation. Okay?

290

00:16:43.720 --> 00:16:47.600

And above all, you really want to examine the concept of

291

00:16:47.660 --> 00:16:48.860

a shared mental model.

292

00:16:49.800 --> 00:16:53.720

Okay? Are the people with me, the PM, all of the people in

293

00:16:53.760 --> 00:16:56.999

the backdrop that are looking at this, sharing your

294

00:16:57.060 --> 00:16:58.560

experience virtually,

295

00:16:59.420 --> 00:17:03.260

do we have a shared mental model? It's a great question to

296

00:17:03.400 --> 00:17:07.381

ask. Okay? Someone gave a great example yesterday of an

297

00:17:07.460 --> 00:17:11.060

opportunity to have a shared mental model and chose not to.

298

00:17:11.560 --> 00:17:11.840

Okay?

299

00:17:13.060 --> 00:17:14.641

It's so critical.

300

00:17:17.020 --> 00:17:20.860

So years ago, in light of this whole gut thing, and

301

00:17:20.921 --> 00:17:24.869

we could see in our data, and we've been doing this for 25 years,

302

00:17:25.280 --> 00:17:26.550

the gut as the first

303

00:17:27.460 --> 00:17:30.520

psychological layer of defense and action.

304

00:17:31.360 --> 00:17:35.080

We needed to generate a model for our customers

305

00:17:35.140 --> 00:17:38.560

that they could actually put into play, and it looks

306

00:17:38.640 --> 00:17:40.280

something like this.

307

00:17:41.180 --> 00:17:44.600

Okay? And it applies to everybody in your village, in your

308

00:17:44.680 --> 00:17:47.999

ecosystem. Okay? Not just the people in the flight deck.

309

00:17:48.760 --> 00:17:52.680

But you want to listen to the gut, first thing. You want to acknowledge it.

310

00:17:53.380 --> 00:17:57.070

Okay? You want to investigate it. In the flight deck, now you're on,

311

00:17:57.300 --> 00:17:59.800

again, the instruments, your scan, your flow.

312

00:18:00.740 --> 00:18:03.300

You need to validate it. There needs to be a confirmation

313

00:18:03.400 --> 00:18:06.920

mechanism to do this, and you need to

314

00:18:06.980 --> 00:18:08.960

communicate it. You need to express.

315

00:18:09.070 --> 00:18:12.540

So this LIVE model, it's very simplistic.

316

00:18:12.620 --> 00:18:16.400

It's very easy. It's ready to hand, but it gives you a pathway

317

00:18:16.460 --> 00:18:20.236

for confirmation and validation. But

318

00:18:21.216 --> 00:18:22.856

s**t gets in the way. Okay?

319

00:18:26.636 --> 00:18:30.156

And here's one of these. We just saw that example of the

320

00:18:31.116 --> 00:18:31.976

brain function.

321

00:18:32.836 --> 00:18:34.716

You're going to surrender to it every time.

322

00:18:34.796 --> 00:18:38.036

If you get in that rabbit hole and you get fixated,

323

00:18:40.636 --> 00:18:43.436

it's going to be a problem. It's absolutely going to be a problem.

324

00:18:44.496 --> 00:18:48.296

The fixation in the brain, the way it's

325

00:18:48.316 --> 00:18:50.036

designed neurologically is

326

00:18:51.736 --> 00:18:55.596

under time compression and space compression, the brain sheds

327

00:18:55.656 --> 00:18:59.456

information. Okay? And that's why this stuff on the margin,

328

00:18:59.576 --> 00:19:01.176

those yellow dots drop off,

329

00:19:02.176 --> 00:19:06.056

because in time and space, when it's compressed, the brain, and this is

330

00:19:06.136 --> 00:19:09.816

survival, basic evolutionary biology,

331

00:19:10.736 --> 00:19:14.576

it's going to fixate, and it's going to naturally prioritize what it

332

00:19:14.696 --> 00:19:17.456

believes to be the necessary thing to do.

333

00:19:18.236 --> 00:19:20.516

The margins fall away. They shed.

334

00:19:21.396 --> 00:19:25.356

Okay? Again, the problem with that tunneling effect is you're going to

335

00:19:25.416 --> 00:19:29.216

miss the early signs and the signs on the margins that

336

00:19:29.226 --> 00:19:32.496

support and inform what's really going on.

337

00:19:35.076 --> 00:19:38.956

So biases, and I put them in here under threat and error management

338

00:19:39.016 --> 00:19:39.456

because

339

00:19:41.216 --> 00:19:44.856

for us, on the psychological level, decision-making in the moment,

340

00:19:45.516 --> 00:19:49.496

biases can be a very real threat in the moment of

341

00:19:49.556 --> 00:19:50.516

decision-making.

342

00:19:51.896 --> 00:19:52.876

Now I've

343

00:19:54.336 --> 00:19:57.596

added a few here. Attentional, confirmation,

344

00:19:57.756 --> 00:20:01.316

continuation, expectation, normalizing,

345

00:20:02.076 --> 00:20:02.976

overconfidence.

346

00:20:04.156 --> 00:20:07.616

Cultural biases, we've talked a lot about that.

347

00:20:08.116 --> 00:20:08.336

Okay?

348

00:20:10.656 --> 00:20:14.196

In our model, one of those nine constructs is the culture of

349

00:20:14.296 --> 00:20:15.976

safety and risk management.

350

00:20:16.956 --> 00:20:20.836

Culture trumps everything, as you all know.

351

00:20:22.696 --> 00:20:26.406

So just in terms of biases, is there anyone

352

00:20:26.456 --> 00:20:29.516

here that can share a story of when, oops,

353

00:20:30.276 --> 00:20:34.076

my personal biases got in the way

354

00:20:36.256 --> 00:20:39.036

of the event, and that led to

355

00:20:40.316 --> 00:20:43.236

a more extreme abnormal condition? Okay.

356

00:20:46.256 --> 00:20:46.716

Anybody?

357

00:20:50.356 --> 00:20:53.156

Nobody's-- oh, perfect. Colonel. Thank you.

358

00:20:59.016 --> 00:21:00.516

My name is Hans, and I have a problem.

359

00:21:04.396 --> 00:21:06.856

All right. So a couple of years ago in the F-16 at Edwards,

360

00:21:08.436 --> 00:21:11.656

trucking down the airspace there, we lost the motor.

361

00:21:12.096 --> 00:21:13.596

There's one of those in the Viper. So,

362

00:21:14.636 --> 00:21:16.956
the task now is to land the airplane.

363

00:21:18.516 --> 00:21:21.516
The barrier for me was that I knew how much our wing

364

00:21:22.716 --> 00:21:24.356
pylon stores cost.

365

00:21:25.256 --> 00:21:29.176
So I knew that I was looking at several million dollars worth of stores
that if we

366

00:21:29.196 --> 00:21:32.676
hit the emergency jettison button, how much that is going to

367

00:21:32.736 --> 00:21:33.196
cost.

368

00:21:33.636 --> 00:21:33.666
Ah.

369

00:21:34.156 --> 00:21:38.116
And so my bias was not to lose three-plus million dollars worth

370

00:21:38.136 --> 00:21:38.705
of stores,

371

00:21:39.796 --> 00:21:43.676
but that's a barrier to us landing safely, which is the higher priority
task.

372

00:21:44.876 --> 00:21:48.716
And so fortunately, the IP in the back seat, he would not let go of that.

373

00:21:48.756 --> 00:21:51.696
He's like, "Jettison the stores. Jettison the stores."

374

00:21:52.256 --> 00:21:54.145
If you don't, I'm going to jettison the stores."

375

00:21:55.576 --> 00:21:58.836

So I talked him into getting over past the populated

376

00:21:58.936 --> 00:22:01.736

area, and we jettisoned the stores and landed

377

00:22:01.776 --> 00:22:05.756

uneventfully. But I think my bias towards trying to

378

00:22:05.796 --> 00:22:09.376

save the stores put us at risk of losing the airplane. Over.

379

00:22:09.836 --> 00:22:11.996

Great example. Absolutely great.

380

00:22:12.786 --> 00:22:15.076

These permeate consciousness. They're out there.

381

00:22:15.616 --> 00:22:17.556

They can be very real, very threatening.

382

00:22:18.176 --> 00:22:21.076

Fail-safe is the bottom line on biases.

383

00:22:23.476 --> 00:22:26.436

Personality, it's a threat as well. Okay?

384

00:22:27.596 --> 00:22:30.876

Know your personality type. Know its strengths and weaknesses.

385

00:22:31.676 --> 00:22:35.056

Know that under stress, personality traits

386

00:22:35.256 --> 00:22:38.516

change. Okay? Trait

387

00:22:38.696 --> 00:22:39.676

amplification,

388

00:22:40.696 --> 00:22:44.556

are you familiar with that term? Someone touched on it yesterday,

389

00:22:44.596 --> 00:22:48.456

that we tend to default to our more primitive kind of existential

390

00:22:48.496 --> 00:22:49.676

normative behaviors.

391

00:22:50.476 --> 00:22:50.716

Okay?

392

00:22:51.576 --> 00:22:54.996

So the autocratic leader can become more

393

00:22:55.036 --> 00:22:58.416

demanding, more rigid, unbending. Okay?

394

00:23:00.436 --> 00:23:02.916

The introvert can become more invisible.

395

00:23:05.136 --> 00:23:08.676

These are not the times you want these traits showing up when there's an abnormal

396

00:23:08.796 --> 00:23:10.996

condition in flight testing. Okay?

397

00:23:12.976 --> 00:23:16.796

Anybody want to share a story of where their personality got in the

398

00:23:16.836 --> 00:23:17.026

way?

399

00:23:20.496 --> 00:23:20.656

Hmm?

400

00:23:21.956 --> 00:23:23.536

Again, our love is unconditional.

401

00:23:29.136 --> 00:23:32.876

Okay. No worries. I'm going to get the master caution light here in a

402

00:23:32.996 --> 00:23:33.836
second anyway.

403

00:23:36.776 --> 00:23:38.416
So some mitigation strategies

404

00:23:39.616 --> 00:23:41.056
at the organizational level,

405

00:23:41.956 --> 00:23:44.836
and others have spoken to this topic as well.

406

00:23:45.796 --> 00:23:49.676
The psychological safety net for everyone in the ecosystem, you've got to
be able

407

00:23:49.686 --> 00:23:52.596
to protect that. That's James Reason's cultures.

408

00:23:53.036 --> 00:23:53.716
All five of them.

409

00:23:54.536 --> 00:23:57.816
You've got to make it safe for people to have a voice to speak up.

410

00:23:58.896 --> 00:23:59.656
Non-punitive,

411

00:24:00.556 --> 00:24:02.716
the whole unconditional love stuff. I mean it.

412

00:24:05.556 --> 00:24:09.456
In order to do that, you need that kind of level playing field.

413

00:24:10.136 --> 00:24:14.116
Now we just heard a really good presentation on the vertical

414

00:24:14.176 --> 00:24:17.766
nature of an organizational structure and how that

415
00:24:17.816 --> 00:24:21.336
vertical has different expectations, different demands,

416
00:24:22.116 --> 00:24:26.095
and they can cascade down in very

417
00:24:26.696 --> 00:24:30.026
crippling, oppressive ways.This

418
00:24:30.086 --> 00:24:32.406
ecosystem really has to be horizontal

419
00:24:33.226 --> 00:24:36.866
and lead from the bottom up. Everyone has a

420
00:24:36.906 --> 00:24:37.306
voice.

421
00:24:38.366 --> 00:24:41.846
The idea of that culture of servant leadership is really

422
00:24:41.886 --> 00:24:44.946
the felt obligation I have for others.

423
00:24:46.386 --> 00:24:50.206
My stuff can't get in the way of safety or risk management.

424
00:24:50.806 --> 00:24:54.286
I have to self-regulate, self-monitor, and empower

425
00:24:54.366 --> 00:24:54.926
myself

426
00:24:55.746 --> 00:24:59.046
that I don't get in the way of everybody else's safety.

427
00:25:02.025 --> 00:25:04.766
The organization has to find a way for empowering and

428
00:25:04.806 --> 00:25:06.956

facilitating voices,

429

00:25:08.486 --> 00:25:11.726

and it's really important to identify the organizational

430

00:25:11.926 --> 00:25:14.406

biases. They can range from financial,

431

00:25:15.666 --> 00:25:16.026

speed

432

00:25:16.906 --> 00:25:17.406

is life.

433

00:25:19.006 --> 00:25:21.826

Those are going to be a real issue in the next few years.

434

00:25:21.866 --> 00:25:25.686

We're starting to see it in our organization and with our customers, the

435

00:25:25.726 --> 00:25:27.086

whole paradigm shift,

436

00:25:28.546 --> 00:25:31.866

as it affects human decision-making with automation,

437

00:25:32.526 --> 00:25:36.106

AI, detachment from the real aircraft,

438

00:25:36.286 --> 00:25:40.256

unmanned vehicles. These will have

439

00:25:40.306 --> 00:25:42.976

implications on human decision-making in the moment.

440

00:25:43.536 --> 00:25:47.446

The organization has a responsibility

441

00:25:47.466 --> 00:25:50.946

to be in front of this, to know its own biases and limitations.

442

00:25:54.326 --> 00:25:56.726

Just a couple more slides, and these are just strategies.

443

00:25:56.786 --> 00:25:59.786

Again, put in your back pocket on personal biases.

444

00:25:59.866 --> 00:26:03.486

Know them, name them. At our organization, we're a

445

00:26:03.626 --> 00:26:07.506

small outfit, 18 people, but we know one another's biases.

446

00:26:08.146 --> 00:26:11.946

Intimately, we know them, and we call them out.

447

00:26:13.126 --> 00:26:16.346

My staff will call me out all the time. Well, yeah. All the time.

448

00:26:18.306 --> 00:26:21.386

You want to be able to put them in context, too.

449

00:26:23.386 --> 00:26:26.506

So people can naturally be very territorial.

450

00:26:26.526 --> 00:26:30.046

If this is your test card and you just spent six months developing it,

451

00:26:31.046 --> 00:26:33.546

and somebody's going to put up their hand, "Wait a minute."

452

00:26:34.506 --> 00:26:36.126

There's a natural defensive,

453

00:26:37.146 --> 00:26:39.205

egocentric ownership over this.

454

00:26:40.006 --> 00:26:41.806

It's very natural, very normal.

455

00:26:43.326 --> 00:26:47.226

In the same breath, you need to be able to surrender to the voice and inputs

456

00:26:47.266 --> 00:26:47.806
of others.

457

00:26:49.726 --> 00:26:53.656
These biases, if you're able to communicate them to the team members, by all means,

458

00:26:53.766 --> 00:26:54.646
please do.

459

00:26:55.926 --> 00:26:58.486
And have them communicate theirs to you.

460

00:26:58.746 --> 00:27:02.506
This is the reciprocity thing. This is just sharing

461

00:27:02.606 --> 00:27:04.125
openness, transparency.

462

00:27:07.086 --> 00:27:10.486
And I would really give yourselves permission

463

00:27:11.226 --> 00:27:14.946
to hold one another accountable. It's got to be

464

00:27:15.026 --> 00:27:15.686
unconditional.

465

00:27:17.306 --> 00:27:18.736
And if you can park them

466

00:27:20.066 --> 00:27:23.766
in some kind of a checklist format, not a bad idea. It's really not.

467

00:27:26.706 --> 00:27:29.606
And the same thing with your personality traits. Know who you are.

468

00:27:29.686 --> 00:27:31.646

Know your strengths. Know your weaknesses.

469

00:27:35.286 --> 00:27:39.236

There is a certain Tom Cruise kind of public consciousness about

470

00:27:39.286 --> 00:27:40.026

test pilots.

471

00:27:42.506 --> 00:27:43.766

Not real.

472

00:27:44.806 --> 00:27:47.886

But there are moments where you do need armor.

473

00:27:47.926 --> 00:27:51.646

There are moments where you need to be able to balance the

474

00:27:51.686 --> 00:27:55.396

anxiety, the unpredictability, the unknown with

475

00:27:55.446 --> 00:27:59.206

confidence in self. It's a real balance

476

00:27:59.866 --> 00:28:00.526

to know that.

477

00:28:01.386 --> 00:28:04.646

In my world, the perfect personality

478

00:28:05.866 --> 00:28:09.346

balance equilibrium is when you, in this

479

00:28:09.426 --> 00:28:13.406

village, in this ecosystem, understands

480

00:28:13.466 --> 00:28:16.366

the emotional quotient, emotional intelligence.

481

00:28:16.506 --> 00:28:18.346

What do we need intellectually as a group?

482

00:28:19.986 --> 00:28:22.406

RQ, which is the relational quotient.

483

00:28:22.995 --> 00:28:24.666

What does my team need from me?

484

00:28:25.606 --> 00:28:29.386

And EQ, the emotional quotient, which is,

485

00:28:30.106 --> 00:28:33.426

have I created the safety net? Am I

486

00:28:33.486 --> 00:28:36.046

unconditionally accepting of the words of others?

487

00:28:36.486 --> 00:28:38.586

Can I be empathic when necessary?

488

00:28:39.506 --> 00:28:43.326

That's a three-legged stool. If those three are intact, you're good to go.

489

00:28:44.046 --> 00:28:46.586

And if that's through your membership, more power to you.

490

00:28:49.086 --> 00:28:52.806

All righty. I think I'm out of time. So thank you.

491

00:28:52.846 --> 00:28:56.046

Appreciate that. Thank you for sharing, those that did. Thank you, John.

492

00:28:57.056 --> 00:29:03.656

Thank

493

00:29:03.746 --> 00:29:05.346

you, Martin.

494

00:29:05.846 --> 00:29:06.326

You're welcome.

495

00:29:07.846 --> 00:29:11.826

And I guess we are ready to take a few questions before we go for

496

00:29:11.886 --> 00:29:14.306

a well-deserved break.

497

00:29:15.926 --> 00:29:16.266

So...

498

00:29:19.886 --> 00:29:20.566

Yeah. This is

499

00:29:20.576 --> 00:29:25.626

true.

500

00:29:26.326 --> 00:29:30.166

So you talk about personality traits and

501

00:29:30.526 --> 00:29:34.286

biases. What are ways to help discover those in yourself?

502

00:29:34.366 --> 00:29:38.306

What tools exist out there so you can-- because we're terrible

503

00:29:38.326 --> 00:29:42.016

at judging ourselves, so what objective tools could be used to figure out what

504

00:29:42.026 --> 00:29:42.326

those are?

505

00:29:43.926 --> 00:29:47.576

So that is a great question, and certainly

506

00:29:48.826 --> 00:29:52.476

men, by definition, struggle with introspection,

507

00:29:52.926 --> 00:29:55.186

self-regulation, self-identification.

508

00:29:56.346 --> 00:30:00.286

And in your workforce here, as I said a few moments ago, there is

509

00:30:00.326 --> 00:30:01.786
a need to deny some of that,

510

00:30:03.026 --> 00:30:06.466
to keep you in the flight deck or wherever you are in this ecosystem.

511

00:30:07.746 --> 00:30:11.226
There are some good online tools to

512

00:30:11.236 --> 00:30:15.026
answer certain questions that will give you insight on your

513

00:30:15.066 --> 00:30:18.986
character. My preference, though, is to go to your team.

514

00:30:20.466 --> 00:30:23.256
Really. They know you intimately,

515

00:30:24.106 --> 00:30:28.046
and they know how your personality changes under stress.

516

00:30:29.246 --> 00:30:32.386
And what's most important is to know-- Here's a good example.

517

00:30:34.686 --> 00:30:36.026
We have

518

00:30:36.966 --> 00:30:39.106
surveyed and quantified,

519

00:30:41.286 --> 00:30:45.086
best way to put it is behavioral risk profiling in the flight

520

00:30:45.146 --> 00:30:48.926
deck. And there are accident enablers

521

00:30:49.006 --> 00:30:50.866
based on their personality types.

522

00:30:51.706 --> 00:30:53.946
There are extreme introverts

523

00:30:55.626 --> 00:30:59.086
that when they enter the flight deck, are quite extroverted.

524

00:31:00.566 --> 00:31:03.246
They have a different persona in the flight deck.

525

00:31:03.286 --> 00:31:07.146
It's very, very interesting. So one of the questions you want to

526

00:31:07.286 --> 00:31:11.036
ask your team member, "How am I after 5:00

527

00:31:11.066 --> 00:31:14.986
p.m. and we're in the parking lot going home?" Versus, "How am I

528

00:31:15.106 --> 00:31:17.506
in the flight deck under stress?"

529

00:31:18.726 --> 00:31:20.806
The persona may be very, very different.

530

00:31:21.426 --> 00:31:24.666
And the one in the flight deck under stress, your operational

531

00:31:24.706 --> 00:31:27.606
landscape matters. It really, really matters.

532

00:31:28.346 --> 00:31:32.066
And if they can tell you, give you honest feedback, and you

533

00:31:32.126 --> 00:31:34.536
can characterize that as

534

00:31:35.346 --> 00:31:39.106
your sense of urgency, it stops you from listening, you

535

00:31:39.426 --> 00:31:43.326

become much more shut down, rigid, whatever, they'll give

536

00:31:43.366 --> 00:31:44.226

you the feedback.

537

00:31:45.406 --> 00:31:49.306

And if you can make that dialectic, and we have facilitated

538

00:31:49.346 --> 00:31:53.186

this in our company, is just the ability to speak openly

539

00:31:53.246 --> 00:31:56.996

with one another and confirm what about my characteristics

540

00:31:57.266 --> 00:31:58.086

and traits

541

00:31:59.086 --> 00:32:02.946

support safety and risk under pressure, and what about my

542

00:32:03.026 --> 00:32:03.826

style does not?

543

00:32:09.486 --> 00:32:10.286

Any other questions?

544

00:32:13.426 --> 00:32:13.726

No?

545

00:32:14.066 --> 00:32:15.346

All right. Thanks again, Martin.

546

00:32:15.386 --> 00:32:17.966

No, thank you, everyone. Appreciate the opportunity. Thanks.