
EXPLORATION
EXPLORATION
EXPLORATION

1
00:00:01,360 --> 00:00:07,870
\h Please welcome Captain Steve Nakagawa, Commanding Officer for Naval Air Warfare Center Training

2
00:00:07,870 --> 00:00:12,410
\h Division And Naval Support Activity in Orlando.

3
00:00:12,410 --> 00:00:20,810
\h Steve Nakagawa: good morning.[applause] Who's happy to be here? Yeah! I don't want to shoot myse

4
00:00:20,810 --> 00:00:27,590
\h [laughter] I'm happy to be here because I am from the naval air warfare center training systems divisio

5
00:00:27,590 --> 00:00:31,420
\h TSD, and we're excited for innovation.

6
00:00:31,420 --> 00:00:39,870
\h When this came up and the fact KSC is excited about innovation, i was all over it, excited to come here.

7
00:00:39,870 --> 00:00:44,140
\h So there's going to be some splashy pictures. That's not what innovation is about.

8
00:00:44,140 --> 00:00:51,640
\h It's really the storyline. The military is not known as innovators, typically.

9
00:00:51,640 --> 00:00:57,980
\h We're thinking the historical sense of naval warfare, naval warfare and military warfare and things like

10
00:00:57,980 --> 00:01:02,550
\h that, but I'm going to tell you about a different approach that we're using for what i do,

11
00:01:02,550 --> 00:01:06,980
\h which is modeling and simulation for training.

12
00:01:06,980 --> 00:01:13,070
\h Typically in the military, you have people that would say kind of like we heard earlier,

13
00:01:13,070 --> 00:01:17,960

\h I'm in the military, i want you to innovate, go innovate. Is that going to work?

14
00:01:17,960 --> 00:01:25,070
\h I'm not sure that really works. So there's definitions of innovation. And they are quick and easy to say,

15
00:01:25,070 --> 00:01:27,300
\h but that's not going to do it for me either.

16
00:01:27,300 --> 00:01:35,900
\h I don't get excited for either of those methods. What we need to do is figure out ways of taking

17
00:01:35,900 --> 00:01:40,320
\h collaboration and learning and driving that to create innovation in people.

18
00:01:40,320 --> 00:01:47,050
\h Harvesting all the brain power that you all have. We end up with great ideas.

19
00:01:47,050 --> 00:01:55,160
\h So if going back to prehistoric times, you have early innovators, inventors, you have people that have

20
00:01:55,160 --> 00:02:01,490
\h square things, and they want to move big, heavy items. Somebody created a wheel.

21
00:02:01,490 --> 00:02:07,930
\h That was innovation. And if we don't have innovators like that, we're not going to change the way we do

22
00:02:07,930 --> 00:02:14,960
\h Come up to the 1900s, we've got -- if anybody is Microsoft flight simulator driver,

23
00:02:14,960 --> 00:02:19,550
\h have any hours on those things, this is probably the first beta test version of that.

24
00:02:19,550 --> 00:02:25,010
\h But in those days just like now, aviation is a dangerous -- inherently dangerous business.

25
00:02:25,010 --> 00:02:32,980
\h So they had to figure out ways to do a little training ahead of time, innovators come up with the half-barr

26
00:02:32,980 --> 00:02:39,140
\h Move a little bit forward to the 1930s. Link trainers, if anybody's heard of those,

27
00:02:39,140 --> 00:02:44,660
\h we actually have one of these -- we didn't go forward. Okay.

28
00:02:44,660 --> 00:02:49,720
\h Imagine that you're seeing a different simulator up there. A 1930's version of a simulator.

29
00:02:49,720 --> 00:02:54,460
\h We call it the blue box because it's painted blue, and it's a box that you actually sat in in the

30
00:02:54,460 --> 00:02:58,090
\h '30s through actually when my dad was a naval aviator, too.

31
00:02:58,090 --> 00:03:03,880
\h He did initial training in that thing in the late '50s. It's a little box you sit in, they cover you up.

32
00:03:03,880 --> 00:03:09,560
\h What it does is it helps you simulate instrument flight conditions or flying at night so you don't

33
00:03:09,560 --> 00:03:12,800
\h have to do it in the airplane. Nobody thought of that before.

34
00:03:12,800 --> 00:03:18,790
\h Someone had to talk to somebody else, come up with an idea, and create innovation.

35
00:03:18,790 --> 00:03:23,330
\h If we're not going to go anymore forward, you're going to hear me talking a lot. There we go.

36
00:03:23,330 --> 00:03:30,850
\h That's it, the link trainer. We'll keep going. Okay. So fast forward to today.

37
00:03:30,850 --> 00:03:37,250
\h When we're trying to get the military simulation of all the different training things that we got to do and

38
00:03:37,250 --> 00:03:43,400

\h that be, you know, in the navy, flying airplanes, sailing ships, submarines, navy S.E.A.L.S.,

39
00:03:43,400 --> 00:03:48,220
\h all sorts of different things, the requirements can be anywhere from, you know,

40
00:03:48,220 --> 00:03:55,930
\h fully immersive fog to suspension of disbelief simulations to something in the classroom,

41
00:03:55,930 --> 00:04:02,360
\h projected on a wall, doesn't cost much money. But it allows that trainee to really get familiar

42
00:04:02,360 --> 00:04:05,780
\h with that operation without using the real thing.

43
00:04:05,780 --> 00:04:13,280
\h The real ship, the submarine on the airplane. So innovation is -- we have two different mission, right?

44
00:04:13,280 --> 00:04:19,140
\h Kennedy Space Center, TSD, rockets are kind of one of the commonalities.

45
00:04:19,140 --> 00:04:23,910
\h You have to create new ways of doing business, rockets back in the old days here.

46
00:04:23,910 --> 00:04:29,970
\h Moving a little further forward to the "Apollo" program and sending "Apollo" rockets up,

47
00:04:29,970 --> 00:04:35,980
\h putting man on the moon. Then there was -- there was the "Apollo 13"

48
00:04:35,980 --> 00:04:45,270
\h incident where -- I'm going keep advancing slides. "Apollo 13." so you have astronaut up in space.

49
00:04:45,270 --> 00:04:50,340
\h You have an incident happen, and if you have innovators that can put their heads together,

50
00:04:50,340 --> 00:04:53,460
\h something that had not been planned for, they put their heads together,

51
00:04:53,460 --> 00:04:58,310
\h do simulation on earth, a mock setup of what's going on up in space.

52
00:04:58,310 --> 00:05:02,660
\h That innovation and that creative energy saves the astronauts and brings them home.

53
00:05:02,660 --> 00:05:08,490
\h That's the kind of thing we have to prepare for to be able to do by doing learning ahead of time.

54
00:05:08,490 --> 00:05:15,490
\h New devices, they're coming along. We're past -- we passed the space shuttle picture quickly unfortuna

55
00:05:15,490 --> 00:05:19,920
\h I would have left it up there longer. I would like to see more and more of those pictures.

56
00:05:19,920 --> 00:05:24,540
\h We're not going to see them. Those of you around here will fondly remember that system for a long time

57
00:05:24,540 --> 00:05:33,380
\h I'm sure. Maybe this one, too. So creation of new devices. Oh, it came back.

58
00:05:33,380 --> 00:05:43,000
\h Maybe are you going to see it For a long time. US military guys aren't good with pointing.

59
00:05:43,000 --> 00:05:46,470
\h Okay. So the brain has got gears spinning.

60
00:05:46,470 --> 00:05:52,110
\h In the military we're worried about understanding how people think, the science of learning,

61
00:05:52,110 --> 00:05:58,850
\h and using things like intelligent tutors and being Able to harvest brain power to do things like this,

62
00:05:58,850 --> 00:06:03,630
\h explore new world, and the connection between what Kennedy Space Center does and

63
00:06:03,630 --> 00:06:08,220

\h what NOC TSD does is about the spirit of innovation.

64
00:06:08,220 --> 00:06:11,710
\h We've got all these great, smart people like yourselves.

65
00:06:11,710 --> 00:06:16,780
\h We're going to harvest your innovative spirit and move forward and create new devices

66
00:06:16,780 --> 00:06:20,500
\h and new explorations and things like that.

67
00:06:20,500 --> 00:06:26,310
\h Dr. Peter Sengai is kind of known as the father of the learning organization.

68
00:06:26,310 --> 00:06:33,250
\h He wrote books, he gives speeches, he's kind of like the -- if you have a John Maxwell of leadership,

69
00:06:33,250 --> 00:06:36,910
\h he's the John Maxwell for learning organizations.

70
00:06:36,910 --> 00:06:43,780
\h His main point here is that conversation kind of like Mr. Cabana said earlier,

71
00:06:43,780 --> 00:06:47,470
\h conversation is the single greatest learning tool that you got.

72
00:06:47,470 --> 00:06:51,030
\h Not the massive computers and the research that you do.

73
00:06:51,030 --> 00:06:56,820
\h It's all about the people and the conversations and the sharing of that knowledge.

74
00:06:56,820 --> 00:07:05,320
\h So in the navy and NASA, represented by NOC TSD and KSC, these are two organization that's

75
00:07:05,320 --> 00:07:12,160
\h have innovated in our past. You saw examples of that earlier. We're trying to move forward.

76
00:07:12,160 --> 00:07:15,410
\h We have airplanes that you flew out at sea. Put man on the moon.

77
00:07:15,410 --> 00:07:19,660
\h There's things like the modern day fighters that you've never seen before

78
00:07:19,660 --> 00:07:21,760
\h that can do the craziest things in the air.

79
00:07:21,760 --> 00:07:26,370
\h It's amazing, as well as landing something on mars and looking around.

80
00:07:26,370 --> 00:07:29,310
\h These are the kind of innovations that are happening today.

81
00:07:29,310 --> 00:07:35,230
\h What's the next step? The next step is about learning.

82
00:07:35,230 --> 00:07:43,320
\h The next is how do we get from all that greatness from the past, not stop that great learning.

83
00:07:43,320 --> 00:07:47,010
\h So we stop innovation, but figure out ways to keep dreaming and visualizing and

84
00:07:47,010 --> 00:07:53,220
\h imagining what could be next. What the maybe next thing is.

85
00:07:53,220 --> 00:08:00,260
\h So what is next? The next is to start in a journey of learning because in my mind,

86
00:08:00,260 --> 00:08:03,370
\h learning is what enables that innovation.

87
00:08:03,370 --> 00:08:08,690
\h And learning isn't just what you get in a book and just what you get in college or

88
00:08:08,690 --> 00:08:12,480

\h high school or grade school or in your S.T.E.M. Classes.

89
00:08:12,480 --> 00:08:20,040
\h Learning is much more than that. So one of our reasons for learning in the navy is we

90
00:08:20,040 --> 00:08:22,380
\h do pretty inherently dangerous things, kinds of like here.

91
00:08:22,380 --> 00:08:28,360
\h You can't see it too well, but behind the jet exhaust and that f-18 hornet that's coming out,

92
00:08:28,360 --> 00:08:35,240
\h probably something around 1,200, 1,300 nautical miles per hour,

93
00:08:35,240 --> 00:08:40,910
\h about six feet on the other side of the flames are people we call troubleshooters or final checkers.

94
00:08:40,910 --> 00:08:48,680
\h The business is pretty just like i said with the early aviators. It's unforgiving of error.

95
00:08:48,680 --> 00:08:52,620
\h So we've got to train these guys. We've got to get them to learn and learn like they

96
00:08:52,620 --> 00:08:56,450
\h know it like the back of their hand. There is no room for error.

97
00:08:56,450 --> 00:09:02,130
\h There are occasions that you have to train for stuff that you don't intend to do it in real life.

98
00:09:02,130 --> 00:09:09,750
\h For instance, Captain Sullenberger, he did not ever practice that landing in the Hudson.

99
00:09:09,750 --> 00:09:14,000
\h He practiced it not in a real airplane, he practiced in a simulator.

100
00:09:14,000 --> 00:09:18,610
\h There are things that you have to imagine what the impossible is and train ahead of time.

101
00:09:18,610 --> 00:09:25,840
\h It's those innovative thinkers that are thinking up the impossible.

102
00:09:25,840 --> 00:09:32,270
\h So there's more than just great ideas, there's great ideas that get driven by requirements.

103
00:09:32,270 --> 00:09:36,220
\h One of the requirements is our economy and the dollars that it costs.

104
00:09:36,220 --> 00:09:42,370
\h We do simulations partially because it's a great thing to do for training, but also pause it costs less.

105
00:09:42,370 --> 00:09:47,320
\h And in fact even our most expensive simulations are much cheaper than doing stuff in a real airplane

106
00:09:47,320 --> 00:09:52,560
\h or real surface ship or submarine or driving tanks and things like that.

107
00:09:52,560 --> 00:09:56,900
\h We try and save money, and part of the reason is it keeps those airplanes and

108
00:09:56,900 --> 00:09:59,090
\h submarines and surface ships around for much longer.

109
00:09:59,090 --> 00:10:05,450
\h And our tax-paying dollars don't have to buy new ones. So innovation gives us new products.

110
00:10:05,450 --> 00:10:13,070
\h Here's an example. A simulation of a simulator in a virtual world.

111
00:10:13,070 --> 00:10:18,800
\h And it allows people to get together and collaborate while they're in a virtual role,

112
00:10:18,800 --> 00:10:23,930
\h even when they live in different parts of the world, but they can join forces and learn

113
00:10:23,930 --> 00:10:30,210

\h things and try out things. This is a simulation of the combat ship.

114
00:10:30,210 --> 00:10:36,610
\h A whole different way of thinking. We have ships that the plan is that they will sail on deployments that

115
00:10:36,610 --> 00:10:40,820
\h have their crew, they'll come back, there will be a separate crew, shore back in the states.

116
00:10:40,820 --> 00:10:47,250
\h And when the ship comes back, they'll get on board, they'll be trained up and ready to go.

117
00:10:47,250 --> 00:10:52,570
\h This is a simulator that includes the loss of oxygen. So hypoxia.

118
00:10:52,570 --> 00:10:56,380
\h And this person will know much better what it's like in the real world how to

119
00:10:56,380 --> 00:11:00,400
\h control the plane if he loses oxygen.

120
00:11:00,400 --> 00:11:05,720
\h You lose oxygen, you're going to have a tough time performing most of the time.

121
00:11:05,720 --> 00:11:14,150
\h Also in the world of medical, we have a partnership with our federal friends and brothers at the VHA,

122
00:11:14,150 --> 00:11:16,740
\h the Veterans Hospital Administration.

123
00:11:16,740 --> 00:11:23,630
\h And this is why we do things in collaboration because collaboration creates innovation,

124
00:11:23,630 --> 00:11:27,720
\h and it makes things happen that we can't do on our own.

125
00:11:27,720 --> 00:11:33,490
\h Things don't happen in a bubble. Collaboration started at the research park.

126
00:11:33,490 --> 00:11:38,380
\h We started there in 1988. And then if you build it, they will come.

127
00:11:38,380 --> 00:11:43,930
\h You combine the navy warfare center with the UCF institute of simulation and training,

128
00:11:43,930 --> 00:11:46,970
\h and all the other DOD services showed up.

129
00:11:46,970 --> 00:11:51,880
\h We cranked out $5 billion a year in contracts, and all the contractors come.

130
00:11:51,880 --> 00:11:58,080
\h And we leverage the medical modeling and themed entertainment modeling and simulation and the gam

131
00:11:58,080 --> 00:12:10,250
\h And you create lots of collaboration, and you make big things happen. The next step is about learning. L

132
00:12:10,250 --> 00:12:15,580
\h We're taking a big swing at the warfare center with how we're going to become a learning organization.

133
00:12:15,580 --> 00:12:23,370
\h The goal is to do that with what dr. Sengai talked about. Here's the definition of a learning organization.

134
00:12:23,370 --> 00:12:30,310
\h Really it's about sharing that knowledge, gathering knowledge, and using it to do something special.

135
00:12:30,310 --> 00:12:35,920
\h That's a Garvin definition. The next one is Dr. Sengai. Very similar.

136
00:12:35,920 --> 00:12:47,180
\h It's about being together and collectively enhancing what we can do.

137
00:12:47,180 --> 00:12:55,810
\h So the way you make a learning organization happen is you put people together that want to learn toget

138
00:12:55,810 --> 00:12:59,140

\h You end up with an environment where you have processes and procedures that allow

139
00:12:59,140 --> 00:13:04,000
\h you to make sure those people are getting together and learning with each other.

140
00:13:04,000 --> 00:13:13,980
\h You put leaders together that incorporate lessons learned and give people time to reflect and do lessons

141
00:13:13,980 --> 00:13:26,650
\h And then reward innovation. And I'm two slides ahead. There we go.

142
00:13:26,650 --> 00:13:34,920
\h So my story is that collaboration enables learning which fosters innovation.

143
00:13:34,920 --> 00:13:38,720
\h And that's what -- that's what we need to do. You can do all the book learning in the world,

144
00:13:38,720 --> 00:13:43,140
\h but if you don't share that across different competencies of smarts, you're going to have a hard time

145
00:13:43,140 --> 00:13:50,550
\h creating exciting, new, collaborative items. I appreciate that. That's my story.

146
00:13:50,550 --> 00:13:54,340
\h If we don't do these kind of innovations here, you're not going to survive.

147
00:13:54,340 --> 00:13:56,600
\h We don't do it here, we're not going survive.

148
00:13:56,600 --> 00:14:02,030
\h The war fighters are out there taking care of, you know, going in harm's way and taking care