please welcome Captain Steve Nakagawa

commanding officer for naval air warfare center training systems division and

naval support activity in Orlando good morning who's happy to be here I don't don't want to shoot myself um I'm happy to be here because i am from the Naval Air Warfare Center training systems division knock PSD and we're excited about innovation and so when this came up and the fact that KSC is excited about innovation I was all over it I was excited to be able to come here so there's going to be some splashy
pictures that's not what innovation is

about it's really the story line the

military is not known as innovators

typically we think in the historical

sense of naval warfare naval warfare and

military warfare and things like that

but I'm going to tell you about a

different approach that we're using for

what I do which is modeling and

simulation for training typically in the

military you have people that would say

kind of like we heard earlier I'm in the

military I want you to innovate go

innovate is that going to work I'm not
sure that really works so there's

definitions of innovation and they are

very quick and easy to say but that's

really not going to do it for me either

so I don't get too much excitement from

either those methods so what we need to

do is figure out ways of taking

collaboration and learning and driving

that to create innovation in people

harvesting all the brain power that you

all have we end up with great ideas so

if going back to prehistoric times you

have early innovators early inventors

you have people that have square things

and they want to move big heavy items

00:01:57,450 --> 00:02:03,118
somebody created a wheel that was

00:02:01,319 --> 00:02:05,129
innovation and if we don't have

00:02:03,118 --> 00:02:07,978
innovators like that we're not going to

00:02:05,129 --> 00:02:11,359
change the way we do business come up to

00:02:07,978 --> 00:02:13,889
the 1900s we've got if anybody is a

00:02:11,360 --> 00:02:16,170
microsoft flight simulator driver

00:02:13,889 --> 00:02:17,909
or have any hours on those things this

00:02:16,169 --> 00:02:20,939
is probably the first beta test version

00:02:17,909 --> 00:02:22,919
of that but in those days just like now

00:02:20,939 --> 00:02:25,259
aviation is a dangerous inherently

00:02:22,919 --> 00:02:27,389
dangerous business so they had to figure

00:02:25,259 --> 00:02:30,509
out ways to do a little training ahead

00:02:27,389 --> 00:02:33,329
of time innovators come up with the half

00:02:30,509 --> 00:02:37,649
barrel method move a little bit forward
to the 1930s link trainers if anybody's heard of those we actually have one of these look we didn't go forward okay imagine that you're seeing a different simulator up there a 1930s version of a simulator we call it the blue box because it's painted blue and it's a little box that you actually sat in in the 30s through actually my dad with a naval aviator too he did initial training in that thing in the late 50s so it's a little box you sit in they cover you up and what it does is it helps you simulate instrument flight
conditions or flying at night so you don't have to do it in the airplane

nobody thought that before someone had to talk to somebody else come up with an idea and create some innovation and if we're not going to go any more forward you're going to hear me talking a lot there we go that's it that's the link trainer and we'll keep going okay so fast forward to today when we're trying to get the military simulation of all the different training things that we got to do and that be you know in the Navy flying airplanes sailing ships
submarines Navy SEALs all sorts of different things the requirements can be anywhere from you know fully immersive fog of war suspension of disbelief kind of simulations down to something that's in a classroom projected on a wall doesn't cost much money but it allows that trainee to really get familiar with that operation without using the real thing the real ship of the submarine or the airplane so innovation is we have two different missions right Kennedy Space Center knocked ESD rockets or kind of one of the commonalities you have to
create new ways of doing business

rockets back in the old days around here

moving a little further forward to the

Apollo program

and sending Apollo Rockets up putting

man on the moon then there was there was

the Apollo 13 incident where I'm going

to keep advancing slides Apollo 13 so

you have astronauts up in space you have

an instant happen and if you have

innovators that can put their heads

together something that had not been

planned for they put their heads

together they do a little simulation on

earth a mock set up of what's going on
up in space and that innovation and that creative energy saves those astronauts brings them home that's the kind of thing we have to prepare ourselves for to be able to do by doing some learning ahead of time new devices they're coming along we passed the Space Shuttle picture quickly unfortunately sadly because I would left up there longer I'd like to see it more and more more of those pictures we're not going to see them but we can those of you around here will finally remember that system for a long time I'm sure and maybe this one
too so creation of new devices oh it

came back maybe you are going to see it

for a long time s military guys aren't

good at pointing ok so the brain has got

gears spinning and the military we're

worried about understanding how people

think the science of learning and using

things like intelligent tutors and being

able to harvest brain power to do things

like this explore new worlds and the

connection between what Kennedy Space

Center does and what knocked ESD does is

about the spirit of innovation we've got

all these these great smart people like
yourselves we're going to harvest your innovative spirit and we're going to move forward and create new devices and new explorations and things like that.

Dr. Peterson gate is kind of known as the father of the learning organization. He wrote books he gives speeches he's kind of like the let's see if you have a John Maxwell of leadership he's the John Maxwell for learning organizations his main point here is that conversation kind of like mr. cabana said earlier conversation is the single greatest learning tool that you got not the
massive computers and the research that
you do it's all about the people and the
conversations and the sharing of that
knowledge so in the Navy and at NASA
represented by Nocti SD and KSC these
are two organizations that have
innovated in our past you saw examples
of that earlier and what we're doing is
we're trying to move forward we have
airplanes that we flew out at sea you
put man on the moon there's things like
the modern-day fighters that you've
never seen before that can do this
craziest things in the air it's amazing
as well as landing something on Mars and
looking around these are the kind of innovations that are happening today but what's the next step the next step is about learning the next is how do we get from all that greatness from the past not stop that great learning so we stop innovation but figure out ways to keep dreaming and visualizing and imagining what could be next what the maybe next thing is so what is next the next is to start in a journey of learning because in my mind learning is what enables that innovation and learning isn't just what you get in a book and just what you get.
in college or high school or grade

school or in your stem classes learning

is much more than that so one of our

reasons for learning in the Navy is we

do some pretty inherently dangerous

things kind of like here you can't see

it too well but behind the jet exhaust

of that f-18 Hornet that's coming out

that probably something around you know

twelve thirteen hundred nautical miles

per hour about six feet on the other

side of those flames are a bunch of

people we call troubleshooters or final

checkers the business is pretty just
like they just like to side with the early aviators it's it's it's unforgiving of error so we got to train these guys we got to get them to learn and learn like they know it like the back of their hand no room for error so there are occasions where you have to train to stuff that you don't have a plan to ever do it in real life for instance captain Sullenberger he did not ever practice that landing in the Hudson he practiced it not in a real airplane he practice it in a simulator there are things you have
to imagine what the impossible is and

train ahead of time so it's those

innovative thinkers that are thinking of

the impossible so there's more than just

great ideas there's great ideas that get

driven by requirements one of the

requirements is our economy and the

dollars that it costs we do simulations

partially because it's a great thing to

do for training but also because it

costs less in fact even our most

expensive simulations are much cheaper

than doing stuff in a real airplane a

real surface ship or submarine or

driving tanks and things like that so we
try and save money and part of the reason is it keeps those airplanes and submarines and surface ships around for much longer and our taxpaying dollars don't have to buy new ones so innovation gives us new products here's one of the examples this is a simulation of a simulator in a virtual world and it allows people to get together and collaborate while they're in a virtual world even when they live in different parts of the world but they can join forces and they can learn things and they can try out things this is a
Simulation of the littoral combat ship

The tour combat ship was a whole different way of thinking we have these ships that the plan is that they will sail on deployments they have their crew.

They'll come back there'll be a separate crew ashore back in the States and when that ship comes back they'll get on board they'll be all trained up and ready to go this is a simulator that includes the loss of oxygen so hypoxia and this person will know much better what it's like in the real world in an airplane how to control his plane if he
loses oxygen you lose oxygen you're going to have a tough time performing most of time also in the world of medical modeling and sin we have a partnership with our federal friends and brothers at the VA che the veterans hospital administration and this is why we do things in collaboration because collaboration creates innovation and it makes things happen that we can't do on our own things don't happen in a bubble so collaboration started at the research park we we started there 1988 and then
if you build it they will come you

272
00:11:38,009 --> 00:11:43,338
combine the Navy Warfare Center with UCF

273
00:11:41,159 --> 00:11:46,259
Institute of simulation and training and

274
00:11:43,339 --> 00:11:47,970
all the other sir DoD services showed up

275
00:11:46,259 --> 00:11:50,220
we cranked out you know five billion

276
00:11:47,970 --> 00:11:52,230
dollars a year in contracts and all the

277
00:11:50,220 --> 00:11:54,180
contractors come and we leverage the

278
00:11:52,230 --> 00:11:55,560
medical bottling and Sam and the themed

279
00:11:54,179 --> 00:11:58,289
entertainment modeling and simulation

280
00:11:55,559 --> 00:12:01,169
and the gaming industry and you create

281
00:11:58,289 --> 00:12:05,069
lots of collaboration and you make big

282
00:12:01,169 --> 00:12:10,649
things happen so the next step is about

283
00:12:05,070 --> 00:12:12,540
learning learning we're taking a big

284
00:12:10,649 --> 00:12:13,620
swing at the warfare center with how

285
00:12:12,539 --> 00:12:17,789
we're going to become a learning
organization the goal is to do that with

what dr. sangai talked about here's a definition of a learning organization

really it's about sharing that knowledge
gathering knowledge and then using it to do something special that's a Garvin definition the next ones dr. sangai it's very similar it's about being together

and collectively enhancing what we can
do so the way you make a learning organization happen is you put people together that want to learn together

they share ideas you end up with an environment where you have processes and
procedures that allow you to make sure those people are getting together and learning with each other you put leaders together that incorporate lessons learned and give people time to reflect and do lessons across other teams and then reward innovation and I'm two slides ahead there we go so my goal might my story is that collaboration enables learning which fosters innovation and that's what that's what we need to do you can do all the book learning in the world but if you don't share that across all
different competencies of smarts you're gonna have a hard time creating exciting new collaborative items so I appreciate that that's my story if we don't do these kind of innovations you don't do it here you're not going to survive we don't do it here we're not going to survive and the war fighters are out there taking care of you know going in harm's way and taking care of our freedoms every day are not going to be able to get what they need so thank you very much for coming appreciate your support