Please welcome Captain Steve Nakagawa, Commanding Officer for Naval Air Warfare Center Training Systems Division And Naval Support Activity in Orlando.

Steve Nakagawa: good morning.[ applause ] Who's happy to be here? Yeah! I don't want to shoot myself.

[ laughter ] I'm happy to be here because I am from the naval air warfare center training systems division,

TSD, and we're excited for innovation.

When this came up and the fact KSC is excited about innovation, i was all over it, excited to come here.

So there's going to be some splashy pictures. That's not what innovation is about.

It's really the storyline. The military is not known as innovators, typically.

We're thinking 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 quick and easy to say, but that's not going to do it for me either.

I don't get excited for either of those methods. 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, inventors, you have people that have square things, and they want to move big, heavy items. Somebody created a wheel.

That was innovation. And if we don't have innovators like that, we're not going to change the way we do business.

Come up to the 1900s, we've got -- if anybody is Microsoft flight simulator driver, have any hours on those things, this is probably the first beta test version of that.

But in those days just like now, aviation is a dangerous -- inherently dangerous business. So they had to figure out ways to do a little training ahead of time, innovators come up with the half-barrel method.

Move a little bit forward to the 1930s. Link trainers, if anybody's heard of those, we actually have one of these -- we didn't go forward. Okay.
Imagine that you're seeing a different simulator up there. A 1930's version of a simulator.

We call it the blue box because it's painted blue, and it's a box that you actually sat in in the '30s through actually when my dad was a naval aviator, too.

He did initial training in that thing in the late '50s. It's a little box you sit in, they cover you up.

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 of that before.

Someone had to talk to somebody else, come up with an idea, and create innovation.

If we're not going to go anymore forward, you're going to hear me talking a lot. There we go.

That's it, the link trainer. 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 S.E.A.L.S., all sorts of different things, the requirements can be anywhere from, you know, fully immersive fog to suspension of disbelief simulations to something in the 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, the submarine on the airplane. So innovation is -- we have two different mission, right?

Kennedy Space Center, TSD, rockets are kind of one of the commonalities.

You have to create new ways of doing business, rockets back in the old days 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 keep advancing slides. "Apollo 13." so you have astronaut up in space.

You have an incident happen, and if you have innovators that can put their heads together,

something that had not been planned for, they put their heads together,

do simulation on earth, a mock setup of what's going on up in space.

That innovation and that creative energy saves the astronauts and brings them home.

That's the kind of thing we have to prepare for to be able to do by doing learning ahead of time.

New devices, they're coming along. We're past -- we passed the space shuttle picture quickly unfortunately. Sadly.

I would have left it up there longer. I would like to see more and more of those pictures.
We're not going to see them. Those of you around here will fondly remember that system for a long time.

I'm sure. Maybe this one, too. So creation of new devices. Oh, it came back.

Maybe are you going to see it For a long time. US military guys aren't good with pointing.

Okay. So the brain has got gears spinning.

In 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 world, and the connection between what Kennedy Space Center does and

what NOC TSD does is about the spirit of innovation.

We've got all these great, smart people like yourselves.

We're going to harvest your innovative spirit and move forward and create new devices

and new explorations and things like that.

Dr. Peter Sengai is kind of known as the father of the learning organization.

He wrote books, he gives speeches, he's kind of like the -- 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 NASA, represented by NOC TSD and KSC, these are two organization that's have innovated in our past. You saw examples of that earlier. We're trying to move forward.

We have airplanes that you flew out at sea. Put man on the moon. There's things like the modern day fighters that you've never seen before that can do the 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.

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 S.T.E.M. Classes.

Learning is much more than that. So one of our reasons for learning in the navy is we do pretty inherently dangerous things, kinds of like here.

You can't see it too well, but behind the jet exhaust and that f-18 hornet that's coming out,

probably something around 1,200, 1,300 nautical miles per hour,

about six feet on the other side of the flames are people we call troubleshooters or final checkers.

The business is pretty just like i said with the early aviators. It's unforgiving of error.

So we've got to train these guys. We've got to get them to learn and learn like they know it like the back of their hand. There is no room for error.

There are occasions that you have to train for stuff that you don't intend to 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 practiced in a simulator.

There are things that you have to imagine what the impossible is and train ahead of time.

It's those innovative thinkers that are thinking up 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 pause it costs less.

And in fact even our most expensive simulations are much cheaper than doing stuff in a real airplane or real surface ship or submarine or driving tanks and things like that.

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 tax-paying dollars don't have to buy new ones. So innovation gives us new products.

Here's an example. A simulation of a simulator in a virtual world.

And it allows people to get together and collaborate while they're in a virtual role, even when they live in different parts of the world, but they can join forces and learn
things and try out things. This is a simulation of the combat ship.

A whole different way of thinking. We have ships that the plan is that they will sail on deployments that have their crew, they'll come back, there will be a separate crew, shore back in the states.

And when the ship comes back, they'll get on board, they'll be 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 how to control the plane if he loses oxygen.

You lose oxygen, you're going to have a tough time performing most of the time.

Also in the world of medical, we have a partnership with our federal friends and brothers at the VHA, 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. Collaboration started at the research park.

We started there in 1988. And then if you build it, they will come.
You combine the navy warfare center with the UCF institute of simulation and training, and all the other DOD services showed up. We cranked out $5 billion a year in contracts, and all the contractors come. And we leverage the medical modeling and themed entertainment modeling and simulation and the gaming industry.

And you create lots of collaboration, and you make big things happen. The next step is about learning. Learning.

We're taking a big swing at the warfare center with how we're going to become a learning organization. The goal is to do that with what Dr. Sengai talked about. Here's the definition of a learning organization. Really it's about sharing that knowledge, gathering knowledge, and using it to do something special. That's a Garvin definition. The next one is Dr. Sengai. 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 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 different competencies of smarts, you're going to have a hard time creating exciting, new, collaborative items. I appreciate that. That's my story.

If we don't do these kind of innovations here, you're not going to survive.

We don't do it here, we're not going survive.

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 get what they need.

Thank you very much for coming. I appreciate your support. [ applause ]