Please welcome Adam Nair, an adviser of manufacturing for Earth Rise Envoy.

Adam Nair: Hi. Thanks. Okay. Hi, how you doing? A little bit about my background because some of you will probably recognize me because I used to work out here.

When I was really young, my father wanted me to be an engineer. And I wanted to be a photographer. As a result, I became both. So basically my journey brought me through a lot of different things that I've done in both areas, and one of them -- let's see if we can get this -- there we go.

One of them was working for an aerospace company here locally.

And we participated in the Indian River raft race. You probably are all familiar with this.

What does this have to do with innovation? Well, the first year it didn't go so well.

I was the videographer, believe it or not, on this first project.

Didn't have anything to do with the design of the boat.

I thought it was kind of an interesting thing what they were doing.

And so we wound up with a vessel that was kind of interesting. We called it big foot, by the way.

And up the Yeti river without a paddle. The 1992 raft race with a mechanical entry.
The mechanical entry is an interesting thing because it's really big budget stuff for a raft.

You know, some people put a little boat together and away they go out on the river.

But mechanical entry, engineers design and build it. We had all the things we need.

Fit, ample crew, budget, highly trained engineers. Enter big foot.

As you can see, it is not a sleek and nimble vessel.

This was basically the bottom half of an M-1 Abrams tank powered by 2.4 horsepower,

that's what you get out of eight people.

You can imagine the tank with 2.4 horsepower did not if very fast.

And while it was a wonderful looking thing with a really slick paint job, it came in last.

As you can see, we're being beaten right here by a row boat. It was fun.

It was meant to be fun. But we came in last.

And that's the problem because, of course, when we came in last the executives of the company said,

why did you come in last, and we had to explain why the design didn't win the race.

The first part of the problem was politics and group dynamics.
This was a design by committee. If you look at all of the points there,

we wanted to stick to proven methods. Avoid looking foolish at all costs.

Oh, we don't want to do that. Design by a large committee.

We got everybody in the engineering department together, put their two cents in.

So as a result, we wound up with big foot. This giant, hairy yeti that

lumbered around and didn't go very fast. Compromise.

Everybody had their say, nobody wanted to hurt anybody's feelings. As a result, Bigfoot.

And that results in design by dilution. This was the thing that was driving them against doing an innovative design.

The fear of the blank page. Oh, my gosh, we've got a blank piece of paper here.

Let's go find out how other people did raft and just kind of modify it a little and have some fun.

And you know, maybe do a few other things. Well, as we can see, that didn't work.

Eighth place out of eight entries. Really unfortunately angry executives saying that embarrassed our engineering department.

Frank and probing questions about why big fat came in last.
You can imagine the effect that had on volunteers. The next year nobody wanted to touch it.

Desperate times and nothing left to lose the next year.

Executive castigation was so severe, nobody wanted to volunteer. It was a potential for embarrassment.

Everybody ran like heck. The only candidates that were willing to take the challenge were not design engineers in concurrent engineering. I was in photographic high-speed motion analysis.

The guy that was the other engineer on this project, the lead engineer on it, was a guy named Mike Brennan. And he was a range test engineer. So we weren't in the design group.

So if we designed something, oh, those guys aren't designers, if it failed, heck with it.

We were eager to prove that we could do it. This was the things we had to do, use it fast.

elegant, fun, and above all, win the race. This is how we did it. We used the correct materials.

We did a lot of the math. We tested, we threw all the conventions out,

and we just decided to take it from scratch. From that dreaded, blank piece of paper.

This was the result. I wish i could speed this up to show you. This was the test trial.

In a second you'll see it in the actual race. You see that thing's ripping right away.
The competitors that we had in this race were from the other engineering companies.

This is us finishing. And you see one of our competitors briefly there going the other way.

We almost lapped them. Uh-oh, didn't like that. Large groups stifle innovation. They make big foot.

Small, newly empowered groups of fairly effective people, they're a much better choice for innovation.

The kind of people that innovate are not the kind of people that do concurrent engineering.

The kind of people that most managers have a little bit of problem with every now and then,

those are the innovators in your group. And if you identify them and empower them, you will get innovation.

They have different personalities. They don't think like concurrent engineer, they think like innovators.

Micromanagement and instilling a fear of failure will kill innovation.

If you make the consequences of innovating so terrifying that no one will do it, it will not happen.

This is how you kill that innovation yedi right there.

Choose people that speak up, propose bold ideas, don't pollute with conformists and provide sufficient resources.

And that will make you say good-bye to big foot. So that's it. [ applause ]