# From BigFoot to Big Win

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00:00:01,650 --> 00:00:07,800
\h Please welcome Adam Nair, an adviser of manufacturing for Earth Rise Envoy.

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00:00:07,800 --> 00:00:12,980
\h Adam Nair: Hi. Thanks. Okay. Hi, how you doing? A little bit about my background because some of you

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00:00:12,980 --> 00:00:15,850
\h probably recognize me because i used to work out here.

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00:00:15,850 --> 00:00:22,990
\h When i was really young, my father wanted me to be an engineer. And i wanted to be a photographer.

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00:00:22,990 --> 00:00:32,540
\h As a result, i became both. So basically my journey brought me through a lot of different

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00:00:32,540 --> 00:00:40,760
\h Things that I've done in both areas, and one of them -- let's see if we can get this -- there we go.

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00:00:40,760 --> 00:00:46,510
\h One of them was working for an aerospace company here locally.

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00:00:46,510 --> 00:00:52,870
\h And we participated in the Indian River raft race. You probably are all familiar with this.

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00:00:52,870 --> 00:00:57,740
\h What does this have to do with innovation? Well, the first year it didn't go so well.

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00:00:57,740 --> 00:01:02,130
\h I was the videographer, believe it or not, on this first project.

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00:01:02,130 --> 00:01:04,540
\h Didn't have anything to do with the design of the boat.

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00:01:04,540 --> 00:01:08,260
\h I thought it was kind of an interesting thing what they were doing.

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00:01:08,260 --> 00:01:19,430

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

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00:01:19,430 --> 00:01:27,200
\h And up the Yeti river without a paddle. The 1992 raft race with a mechanical entry.

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00:01:27,200 --> 00:01:35,250
\h The mechanical entry is an interesting thing because it's really big budget stuff for a raft.

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00:01:35,250 --> 00:01:39,810
\h You know, some people put a Little boat together and away they go out on the river.

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00:01:39,810 --> 00:01:46,970
\h But mechanical entry, engineers design and build it. We had all the things we need.

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00:01:46,970 --> 00:01:53,560
\h Fit, ample crew, budget, highly trained engineers. Enter big foot.

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00:01:53,560 --> 00:01:57,870
\h As you can see, it is not a sleek and nimble vessel.

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00:01:57,870 --> 00:02:02,620
\h This was basically the bottom half of an M-1 Abrams tank powered by 2.4 horsepower,

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00:02:02,620 --> 00:02:05,850
\h that's what you get out of eight people.

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00:02:05,850 --> 00:02:10,790
\h You can imagine the tank with 2.4 horsepower did not if very fast.

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00:02:10,790 --> 00:02:21,560
\h And while it was a wonderful Looking thing with a really slick paint job, it came in last.

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00:02:21,560 --> 00:02:30,480
\h As you can see, we're being beaten right here by a row boat. It was fun.

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00:02:30,480 --> 00:02:35,420
\h It was meant to be fun. But we came in last.

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00:02:35,420 --> 00:02:42,540
\h And that's the problem because, of course, when we came in last the executives of the company said,

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00:02:42,540 --> 00:02:49,390
\h why did you come in last, and we had to explain why the design didn't win the race.

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00:02:49,390 --> 00:02:52,650
\h The first part of the problem was politics and group dynamics.

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00:02:52,650 --> 00:02:59,660
\h This was a design by committee. If you look at all of the points there,

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00:02:59,660 --> 00:03:05,190
\h we wanted to stick to proven methods. Avoid looking foolish at all costs.

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00:03:05,190 --> 00:03:08,640
\h Oh, we don't want to do that. Design by a large committee.

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00:03:08,640 --> 00:03:11,550
\h We got everybody in the engineering department together, put their two cents in.

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00:03:11,550 --> 00:03:15,640
\h So as a result, we wound up with big foot. This giant, hairy yeti that

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00:03:15,640 --> 00:03:21,060
\h lumbered around and didn't go very fast. Compromise.

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00:03:21,060 --> 00:03:28,060
\h Everybody had their say, nobody wanted to hurt anybody's feelings. As a result, Bigfoot.

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00:03:28,060 --> 00:03:37,010
\h And that results in design by dilution. This was the thing that was driving them against doing an innovati

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00:03:37,010 --> 00:03:41,100
\h The fear of the blank page. Oh, my gosh, we've got a blank piece of paper here.

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00:03:41,100 --> 00:03:47,460

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

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00:03:47,460 --> 00:03:55,100
\h And you know, maybe do a few other things. Well, as we can see, that didn't work.

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00:03:55,100 --> 00:04:01,980
\h Eighth place out of eight entries. Really unfortunately angry

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00:04:01,980 --> 00:04:06,460
\h executives saying that embarrassed our engineering department.

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00:04:06,460 --> 00:04:10,640
\h Frank and probing questions about why big fat came in last.

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00:04:10,640 --> 00:04:18,440
\h You can imagine the effect that had on volunteers. The next year nobody wanted to touch it.

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00:04:18,440 --> 00:04:22,900
\h Desperate times and nothing left to lose the next year.

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00:04:22,900 --> 00:04:31,850
\h Executive castigation was so severe, nobody wanted to volunteer. It was a potential for embarrassment

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00:04:31,850 --> 00:04:38,220
\h Everybody ran like heck. The only candidates that were willing to take the challenge were not design

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00:04:38,220 --> 00:04:45,800
\h engineers in concurrent engineering. I was in photographic high-speed motion analysis.

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00:04:45,800 --> 00:04:51,820
\h The guy that was the other engineer on this project, the lead engineer on it,

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00:04:51,820 --> 00:04:58,950
\h was a guy named Mike Brennan. And he was a range test engineer. So we weren't in the design group.

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00:04:58,950 --> 00:05:05,120
\h So if we designed something, oh, those guys aren't designers, if it failed, heck with it.

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00:05:05,120 --> 00:05:13,580
\h We were eager to prove that we could do it. This was the things we had to do, use it fast,

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00:05:13,580 --> 00:05:24,010
\h elegant, fun, and above all, win the race. This is how we did it. We used the correct materials.

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00:05:24,010 --> 00:05:28,910
\h We did a lot of the math. We tested, we threw all the conventions out,

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00:05:28,910 --> 00:05:34,920
\h and we just decided to take it from scratch. From that dreaded, blank piece of paper.

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00:05:34,920 --> 00:05:43,140
\h This was the result. I wish i could speed this up to show you. This was the test trial.

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00:05:43,140 --> 00:05:50,920
\h In a second you'll see it in the actual race. You see that thing's ripping right away.

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00:05:50,920 --> 00:05:56,480
\h The competitors that we had in this race were from the other engineering companies.

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00:05:56,480 --> 00:06:02,700
\h This is us finishing. And you see one of our competitors briefly there going the other way.

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00:06:02,700 --> 00:06:20,040
\h We almost lapped them. Uh-oh, didn't like that. Large groups stifle innovation. They make big foot.

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00:06:20,040 --> 00:06:29,590
\h Small, newly empowered groups of fairly effective people, they're a much better choice for innovation.

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00:06:29,590 --> 00:06:33,660
\h The kind of people that innovate are not the kind of people that do concurrent engineering.

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00:06:33,660 --> 00:06:37,630
\h The kind of people that most managers have a little bit of problem with every now and then,

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00:06:37,630 --> 00:06:42,970

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

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00:06:42,970 --> 00:06:49,110
\h They have different personalities. They don't think like concurrent engineer, they think like innovators.

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00:06:49,110 --> 00:06:54,470
\h Micromanagement and instilling a fear of failure will kill innovation.

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00:06:54,470 --> 00:07:01,310
\h If you make the consequences of innovating so terrifying that no one will do it, it will not happen.

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00:07:01,310 --> 00:07:09,200
\h This is how you kill that innovation yedi right there.

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00:07:09,200 --> 00:07:16,770
\h Choose people that speak up, propose bold ideas, don't pollute with conformists and provide sufficient r