# ARC-I Bill Johnson

[00:00:00] Welcome to acquisition. Talk a podcast on the management technology and the political economy of weapons systems acquisition. I'm your host, Eric Lofgren. You can find this podcast and more information, including links, commentary, and articles on acquisition. talk.com. Thanks for listening.

[00:00:37] **Eric Lofgren:** I'm here today at George Mason university with bill Johnson, who was deputy program manager in Naval sea systems command and was one of the founding fathers of the acoustic rapid cots insertion program or Archie, which is one of the great programs, pioneering open architecture and led to outcomes that were better, faster and cheaper.

[00:00:56] He has an amazing career in uniform and in civilian. So he speaks from a huge deal of experience, bill, thanks for joining me on acquisition talk.

[00:01:03] **Bill Johnson:** Thank you, Eric. I'm glad to be

[00:01:05] **Eric Lofgren:** Thank you. I'm glad you could join. We've had some great conversations, so I think this is gonna be a really good time here, but can you just start us out?

[00:01:12] So there's the ARC-I program that came out in the 1990s. It really was a change in how, the department tends to do business and specifically the Archie was for under C sonar or that's where at least started. So can you just talk about what was the need for driving this change and what was the context of that?

[00:01:29] **Bill Johnson:** Yeah in in the mid nineties, it became apparent to the submarine forest that they're that they no longer had what was termed acoustic superiority. And basically with sonar, we were used to tr detecting and classifying our , adversary and being able to stand off far enough so that they did, they weren't aware that we were there.

[00:01:50] So well, what was happening was that there was some events where secrets were divulged to the Russians, John Walker. This was in the early nineties or late eighties, divulged some communications that the Navy had and sold it to the Russians and all of a sudden. their submarines became very quiet.

[00:02:12] And the result was when we were operating in an area where there was a lot of things going on, we were getting dangerously close. The fear was

we'd collide with our adversary. And that was unacceptable. And so Admiral DeMars, who's a descendant of Rick over.

[00:02:31] He was in charge of nuclear reactors for the Navy. He's the senior submarine. He commissioned a study to look at, what was going on. Why did we lose this superiority and what can we do to fix it? And so he put together a a a review team looking at getting to the details. And the review team was made up of individuals that were necessarily working on submarine sonar, but were smart, knew how to ask the right questions.

[00:02:59] And I think one of the things that really impressed me about this team was that they not only looked at what we were doing in terms of building sonars, but they also looked at how the fleet was using that and what was actually happening, in the forward areas. And they came up with a set of recommendations and the recommendations are, it was a presentation that was about took two hours to give and about a set of slides, maybe a inch thick, but.

[00:03:24] The bottom line of the presentation was that we needed to start collaborating, within the Navy there's other people other than submarines that do sonar. So the surveillance community, the serviceship community, they had sonar too. So how do we collaborate with these communities? We had to get the fleet more involved in the design, how do we give them something that they can actually use?

[00:03:47] And one of the problems with the system that we had out there or so-called legacy system was that the system was a very good system, but there was a lot of capability in there that was going untapped and the sailors didn't necessarily take advantage of everything that they had. And the other part was the technology was fairly old.

[00:04:09] It was technology that we had developed. It was a militarized technology. The gaming industry was taken off on the commercial sector. Computers, processors were getting in widespread use and they needed to take advantage of all the technology improvements and they were, and we weren't, we were stuck with our legacy system.

[00:04:31] So we, I looked at this and a lot of people looked at this as skeptical. We, we had built systems a certain way because these are going on machines that go to war, they had to be survivable. We had to make something that the sailors could use. And I think the big disconnect was, I don't think we really, the acquisition community, when I say we.

[00:04:52] We really had a good feel for what was actually happening on deployments. So this this oversight group, this SSTP, that was put together a submarine, sonar technology panel, they brought some things to light that I think was a surprise to me. And I wasn't that familiar with what the other sonar communities were doing.

[00:05:12] We, we didn't do collaboration. We had assumed that we had the best. We had the best people. We had great people. Our prime contractor was Lockheed Martin at the time. It was IBM. Then it changed the morale then Lockheed, but the same people basically, and they're wonderful people, very smart very accomplished.

[00:05:32] We had a Navy laboratory that was very good. They had. Been around to working in submarine Sonar for a long time. So they knew what they were doing. And I think the assumption was, Hey, we had the best people. We had the best ideas and it turned out, I was convinced that we didn't, there's a lot to learn out there that we don't know about.

[00:05:49] There was a lot of benefit from collaboration with these other communities. I think the other thing that that was evident to me was that the community is broken up into segments. You have one segment that does production. You have another segment that did advanced development, and you had another segment that does closer to the science and technology and those communities, they interacted via memos and reports, but , there wasn't a close, if you're talking about a team, it wasn't a close knit community.

[00:06:20] There was a lot of breaks in there. And so I think one of the things that was evident to me was, Hey, we gotta bring these people together as a team and really focus on this acoustic superiority issue. My job was to feed this team with information, and they started in the spring, the early spring and it finished and reported out in September.

[00:06:40] But by the time they reported out, I was fully on board with their findings, and the problem that I was having was that even though I, I understood their findings and I already had a pretty good idea of how I'd like to attack it. It flew in the face of the business model that knew a CAD or Naval agency warfare system and Lockheed Martin or at those day or at the, in those days.

[00:07:04] IBM. The business model was you had a prime contractor that kind of oversees all the technical work, and if there's a need for a subcontractor, they would bring them in through their umbrella. And you had a division of

responsibilities between the contractor, the prime contractor and the Navy laboratory.

[00:07:22] you know, I, I look at it as we had the range, was divided with a fence and there was a little bit of squabbling on where that fence lied, but basically the territories were all understood. So what my idea was, Hey, let's bring in some other players and those players were academia and small business, and let's put them on an even keel with our Navy laboratory and our prime contractor.

[00:07:46] and I refused to call the prime contractor or prime contractor anymore. I called him a prime integrator because they didn't control all the pieces. And I wanted to have competition continual, not just, compete, like we'd still have Jesse Owens is the fastest man. If we operated with these kind of setup, we have prime contractors that have been there for 50 years, and you look at the department of defense and the big contractors and they've been around for a long time.

[00:08:14] And there's, we talk about competition, but , we haven't infused a way to, to have competition. These small businesses have a, a lot of smart people and The typical reaction from what I call the incumbents that we had, the people that had been working sonar for a long time was that, Hey we can solve this with more money. We temporally had a lot of money, but with the, with this end of the cold war, our R and D profile had been decreased 70%.

[00:08:43] So we had 30% of what we were used to having. And so the idea that I'll just, the general manager at Lockheed Martin told me, or at IBM, I keep saying Lockheed at IBM told me, Hey, He says, we've got deep pockets. We can keep this going while you go get more money.

[00:09:01] And my point was, Hey, we're in this problem. We're part of the problem. We're part of the problem while we have this issue, and I bringing in other people, I'm not getting rid of anybody. I'm not firing anybody, but I want real competition in here and I want more ideas.

[00:09:14] And so we need to have the better ideas we need to get, take advantage. We had, we didn't have the money we were used to when we were building all our own computers and all the militarized things. So we had to leverage, we had to leverage the commercial side. We have to I have to leverage smart people that are working in other communities that do sonar.

[00:09:34] And not just other communities, but also these the advanced development people and the DARPAs, people like that, that are closer to the friend end of science and technology. So how do I get them focused? And so what we did was we set up these monthly meetings where I brought all these different groups in, it was about 20 people.

[00:09:54] And we had those monthly meetings every month for the seven years that I ran this program. And the idea from the monthly meeting was, Hey let's be a team. Let's get together. Let's talk about what our issues are. And everybody had different issues and there were plenty of issues we had to work out, but it was worthwhile having a day meeting, once a month.

[00:10:14] And then we had to, I think, and the meeting wasn't really to do work. It was to just talk, here's what our issues are. Here's what we're trying to do. Here's what my problem is in doing my piece as a place to vet issues, but I think, the idea was form a team, focus on the problem, which was acoustic superiority, and we needed it now, it was not something that we could say let's, take four.

[00:10:39] The typical time for a major change in sonar at the time was four to six years. It could be longer depending on what you were doing. We didn't have that kind of time. We needed it. We needed fixed today. time. And we also didn't have the money that we had before. So this idea of leveraging was very important, leveraging the commercial sector, what were they doing?

[00:11:02] Moving fast, we didn't have, there's a lot of people that had attached themselves to the program that really were no value added, and how do you deal with those people and who are they? So one of the, one of the first things I remember doing was just making a list, who are the people that are gonna be on board with this and who aren't. you know, I had to have a strategy to deal with both sides. , other than the fleet was probably they're my customer, so I had to deal directly with the fleet and I felt accountable to them for doing this, but we had another, probably the second and importance as far as as a critical player.

[00:11:37] This is Congress. . And so I had to develop a way to deal with Congress and make sure that they understood what we were doing. And they were back at us and we had a lot of people over at Congress that were their agenda was to get small business involved. And so that was really helpful to me.

[00:11:53] And although I did deal directly with some of the people over there, I had one of the small businesses that, that we hired had a very close

relationship with people on the arm services committee. I had one of my support contractors, was well known on the hill and could tell me what was going on.

[00:12:10] So I spent a lot of time thinking about Congress and how that they, how they would react to what we were doing. And I wanted to make sure that they were friendly to what we were doing, cuz I knew, I didn't know how much, but I knew that somewhere down the line funding was gonna be involved, and I wanted them to be supportive of what I was doing. So get, so getting the fleet supported the actual operators and the fleet and getting Congress, there was two, two organizations that were really important for this. I think with the assumptions, I talked about that a little bit, the assumptions about how you do business and we've always done it this way.

[00:12:46] That kind of thing. That's a bad assumption. I think that experience is a two edge sword. , you can have a lot of experience doing things the wrong way, or doing things a way that might have made sense, 20 years ago, but that doesn't, don't make sense today.

[00:12:59] And so I'm not saying that was completely, useless, that kind of experience, but it wasn't really particularly helpful in forging a new way. I look at the management of these programs we have I put 'em in two categories, managers, you have one category that's drives trains and there's the track.

[00:13:19] It, they stay on the track, they keep a schedule, they have products that they're moving from here to there. And their job is to keep the train moving in the right direction. And then you have another program manager. he's not dealing with tracks anymore.

[00:13:33] He's on the, he's on the edge of the wilderness. He's got a pioneer and there aren't any tracks out there. And so he's gotta live by his wits. And that's how I felt. I was, I was on the edge of the wilderness. There's Indians out there, people that shoot arrows at you I think anybody who's been a pioneer in this acquisition business is familiar with catching arrows and they come from different directions and unexpected directions.

[00:13:57] I, I think the tendency is to think that the prime contractors of the world are gonna be the worst, the hardest to deal with. They're not the hardest people to deal with. Are people within the government. It's a bureaucracy, it's these people that, want to wanna take credit for anything that happens.

[00:14:13] They're good. And are experts at deflecting credit, taking the blame, they assign, assigned the blame to somebody else. We've got a ton of those

people and this is a culture that has been, that's been there for the 50 years that I've been involved in this business, on the periphery and right in the middle of it, we've got a lot of people that, aren't really carrying their weight, but are in charge, or in the leadership positions.

[00:14:37] And and I think that that needs to change. of There's A lot of discussion and it's, I've heard this discussion over many years about the bureaucracy and we can't get things done. And if only Congress would do this or we, I changed the laws. Everything we did was within the law, we just took advantage of things where it were, people assumed that you couldn't, our program, we had an existing program that needed to change, and, we had an existing set of contractors, but I wanted to bring in new people and we didn't violate any law, and by collaborating with other communities that didn't violate any law.

[00:15:11] And I think there's a lot of skepticism that what we did would work. And one of the things that really helped us was we were going fast, we set it a date, The people that work for me is a small group, and I wanted to get something out there in a year.

[00:15:24] We did it in a year and a half. That's what they thought we could do. And I said, okay let's give the fleet something that'll let us regain acoustic superiority in a year and a half. And, but we're not gonna eat the elephant in one bite, we're gonna take a piece.

[00:15:40] So we, we took the piece of the sonar and we took a piece that we thought would have the broadest benefit to the fleet. That we had a towed arrays, it's long, like a long hose full of underwater hydrophones and the to array system we had on most of the fleet was a TV 23 system.

[00:15:59] It was was, it was a thin line array. There was a longer array was into works. And actually we had deployed on some ships with the old legacy system, so we focused on this TB 23 array for our first phase. So what can we do with that TB 23 array that'll make the system more operable.

[00:16:19] And so we took advantage of an S B I R that the small business had to build a system that was envisioned to be a system they could take to see on a new class of submarines, which became the Virginia class. And if there's, if the regular sonar, if the rye sonar wasn't ready, this cots version of a sonar could at least get 'em through some of their trials.

[00:16:42] And but it turned out that cots version had pretty much everything we needed for that first phase a or CI. And then there was a fight over whose system should we use. And the laboratory had a system and the small business had a system that was already funded.

[00:16:58] **Eric Lofgren:** The system here, you're taking like, an off the shelf array. And then the real problem is data processing and getting algorithm. So that's like, when you say system, it's more about that, part,

[00:17:09] **Bill Johnson:** It's. It's the software that you use to process, the information that, that you receive through these arrays, and it's also the hardware that you put it on, so rather build new hardware or upgrade the hardware we had on our existing system with the militarized hardware.

[00:17:25] We'll just use off the shelf hardware. The question about survivability that hardware, we had to look at that too. And so we came up a way of cocooning that system within a hardened container so that the container would absorb all the shock and stuff. And the the commercial equipment inside would be protected.

[00:17:46] And so our display consoles , the old display consoles had what we call a monochrome display, but was, a black and green kind of display. And there was a lot of ideas coming out about how we could employ a color and used, and actually used larger displays that were survivable.

[00:18:05] So we made changes to, to bring in that new technology. And I think one of the things that we did that was really a benefit was we put together a a team, we call the concept of operations operator, machine interface, team CONOPS OMI team. And these were a collection of Navy chiefs who were, considered experts within the Navy and one of my consultants was a former Navy captain who was one of these guys that had a lot of respect was respected widely within the fleet for his ability to, to drive ships and lead ships. And he helped me pick out these particular sailors.

[00:18:44] And so these guys initially were skeptical because, they were brought into, give their ideas on what they want before. I mean, It wasn't a new thing, but I don't think it was, they were brought into Hey, what do you think? Gimme a thumbs up.

[00:18:58] That kind of thing. We weren't really using their brains. And in this case, no, we, I was really wanting to know what they thought was gonna be useful. So we formed this team and we got their parent commands to allow

them to come to Washington once a month and participate in this session that I had the sstg submarines stone technology group, and, to give us their opinion on what they want to see.

[00:19:25] And they also spent time working at both the prime contractor or my prime integrator, IBM. And with the small business that we had hired, we decided to use their system that was digital systems resources out in fair lakes here. And they spent time working with their engineers and helping them come up with display formats and, how do we make this system something that the operator can use?

[00:19:49] They did all kinds of things that I didn't envision. One of the things they did was they devised the test that they gave to about 200 operators. And the test was a, test their ability to recognize what we were seeing on the screen. What's this, and the average, we had three bell curves.

[00:20:08] If you looked at results of the test and the biggest bell curve was at about 25% on the test, that's getting 25% of the questions. Correct. And that was everybody from. The greenest boots sailor to the E nine S that taught in sub school were in that bill curve. The top bill curve was at close to 80%.

[00:20:31] And that was what they call stick writers. But they're the ones that, that from office of naval intelligence and they would go out and ride on ships, that are on deployment. The Jonesie, if you will, if you remember the hunt for red October. So the stick writers were getting about an 80% and the stick writers in training were getting about a 55% or 50%.

[00:20:52] And so what they were showing me was that we have a huge problem in training. The average sailor is only getting 25% on the test,

[00:21:02] **Eric Lofgren:** But you only discovered this because like you guys actually went out to go test it and you're getting much lower scores than you

[00:21:08] **Bill Johnson:** expected.

[00:21:09] Yeah. And also I training wasn't something that came under my purview. So one of the, one of the problems was that even though training wasn't my, under my responsibility, I think that the typical program manager, wouldn't pay attention to , those kind of scores would never ask for that kind of thing.

[00:21:26] It reminds me of

[00:21:26] **Eric Lofgren:** It reminds me of the Fitzgerald where they introduced a new navigation system. With like new software, they didn't train the guys on it and it ended up in, in catastrophe, but some of the issue was also the thing was just designed, not very user friendly at all. Yeah. But then There's also the training question.

[00:21:44] So

[00:21:44] **Bill Johnson:** absolutely. And so that, that this is one of the things that I learned from our CONOPS group, these chiefs they saw that there was a problem in training. They understood that was gonna happen. It wasn't necessarily something that I would've predicted. I knew that from, my experience, early in my career, I was a Navy officer involved in sous and which was a passive sonar.

[00:22:06] I knew how to read grams. I was a qualified analyst. I knew that how sous people, their capabilities pretty much and how they went about doing it. And from, I spent a lot of time at sea, which is another difference that I think that that the average program manager or assistant program manager or government engineer doesn't do, . I've been to see every time we had a new system or a new change to the system, I would go to see with that and test it. And I'd learned a lot just by looking, watching what, watching what life was like in a submarine. And one of the things I saw was that, I came to appreciate was the fact that these sailors have a lot of things to do.

[00:22:43] Other than if you're a sonar tech, you're not just doing sonar, you're maintaining that ship, and you've got responsibilities that involve keeping that ship afloat if there's a, an issue. So there's safety to ship issues that they all have to deal with. And there's only so much time in the day and most of their time is you, there's no lounging time, really very little time to, sit back with your feet up.

[00:23:04] You're working all the time and. and not all of it is on sonar for the sonar tech. So I think that, how do I make your job easier and how do I set it up? So the machine does a lot of the work for 'em and I think, and that what I'm seeing today is that, as technology has evolved, the machines do more and more.

[00:23:24] And the old systems we would form 52 beams, a beam is, a direction that the sonar is looking and can process information in those directions. And there would be in the newer ones, they were doing, a hundred times more than

that. You're collecting data and there's no way that a human being can analyze all that data.

[00:23:44] So you have to have the machine do some of the analysis. And , I think that The evolution is from to data to act knowledge, how do you how do you get the machine and the system to come up with the knowledge based on what you're seeing, how do you offload the, all this this work that the operator has to do?

[00:24:02] **Eric Lofgren:** It seems like a lot of that you have to put the business rules in there so you have to be pretty close to the operators to have that synergy. I guess in older systems, it's just here's like a mechanical device. And then the human is actually doing most of the thinking and the operating that's required of it.

[00:24:18] But when You need that thinking to be done in the machine. So how did you get closer? Or, you said that there were a lot of poor ideas of what was actually going on in the field. Like, how did you get closer? Was it just, you just said, I'm just gonna go on like the initial deployments of all these.

[00:24:33] upgrades And people don't do that or like, how would

[00:24:35] **Bill Johnson:** I think the what I need to do is get the data. That was what was actually happening at sea, and I needed to collect that data. And so in addition to the sonar system that I put on, I also put the ability to record everything that happened.

[00:24:50] What the button pushes were, I could recreate what was happening at sea, shoreside. And then I set up a group at Johns Hopkins shoreside to do that. And they would analyze, they would get the tapes of what happened at, on deployment and replay it and, , and they could do it at their own speed.

[00:25:10] They didn't have to do it at real time speed, but they could go and see that Hey, here's something here that they missed, where it took 'em, by the time they cognize that it took 'em 20 minutes to attach a, a tracker to it where it was there. It'd been there for 20 minutes so that there.

[00:25:27] And so I was able to come up with a quantitative way of measuring their performance. And in one of the presentations that I gave you, there's a slide that shows one of the initial results, where we went from the looking at the baseline system. And we improved, from the initial system that went out, we improved by whatever percentage that was.

[00:25:47] I think it was like 25%. And then the next iteration, which was what we call an advanced processing build, but a change to that software to, to give, better algorithms, better software improvements that increased again. So you could actually track how the system was improving with real data.

[00:26:06] **Eric Lofgren:** I'll just put in some of these numbers, a 60 fold decrease in real processing costs, a sevenfold increase in sensor performance reduced false alarms by 40%. And there was a whole bunch of other metrics that you guys also had there. But I like that idea, like you said, you just were tracking 'em over time.

[00:26:24] Cuz usually we have, there's a threshold and there's an objective and you don't really deploy or go out and test that until you get to the full solution and then you're able, you go through OT and E and then you're fielded. but It seems like you're more like iterative you're tracking over time showing progress to various metrics that were like determined in the process of actually doing it

[00:26:46] **Bill Johnson:** well in the system, part of the idea was, Hey, let's build a system that we can continually change the hardware. And there's. Reasons why you don't want to do that continually, but in those days I was doing it every year. So , the processing card that goes in there, I could come up with the next one. And I was, my idea was let's follow Moore's law. Let's always give them the theoretical most processing and our ideas to start with.

[00:27:14] And it, we showed it on the graphs, initially we thought that we could increase acoustic superiority by, getting, let's say an inch on the graph, of performance in there, but we had the capability to give, 50 times that, and what we didn't have was, all the software to take advantage of that capacity.

[00:27:33] So we were increasing the capacity of our system. That was one track, but the other track was continually putting in new, soft. So we had what we called the advanced processing build concept, but that was let's plan on. And we did it every year to start with let's upgrade to software every year, and let's make this easy to do so that the person at the other end who's actually using this can do it intuitively you know, that it's not a big deal for them to understand what the new stuff is.

[00:28:03] And I can tell you that the younger sailors didn't have a problem with that. Some of the older sailors did, it's just like today with the, Microsoft makes a change and we're the old guys like me are scrambling to take advantage of it. What, how does this work?

[00:28:16] Why'd they change that, but the newer guys can do it. And I think that's one of the changes, we have to build these systems, so the newer guys can do it so they can use it. And let's build a system so that it continues to take advantage of the new technology. And let's put a logistic set up.

[00:28:32] So we're not making lifetime buys of processors, like in the old days where we have enough, the old processors, sitting on the shelf that were bought for lifetime buys, you could build a whole new submarine for how much it cost to put those processors on the shelf, for spares.

[00:28:49] Now let's just take advantage of, Moore's law and just buy things that we need. And with an open system, the thought was, Hey, we can, it's the plug and play the new technology. Now. It doesn't work quite that simple, but, it's a lot easier than it used to be to put a new piece of hardware in.

[00:29:07] **Eric Lofgren:** Yeah. I wanted to actually, get to open architecture. since, Archie has done a lot of good stuff there, but I wanted to backtrack on that for a second, because you said, you've disaggregated the system. And everything was moving at the pace that technology moves.

[00:29:20] So it seemed like you had software being released on a one year cycle. I think in some of the case studies, they were saying you had hardware released on a two yearish cycle, which kind of matches with Morris' law. When they incrementally released those electronics and then it's all being put onto a submarine.

[00:29:35] That's actually, a bigger platform that has, they're gonna upgrade that, over the course of multiple years or decades. So like we have the system that's been disaggregated, you have different kind of contracts for different pieces of that. And the Navy is in there managing that. At George Mason.

[00:29:50] We just had this acquisition next report. And I think a lot of what you're saying, gels with what we were trying to get at. And I think we actually looked at you guys and said, these are some of the things that worked and that's why we used them. But I want you to just talk about first was that business structure of doing business in a different way, not just having a single prime integrator, just build the thing that kind of the Navy helped design going into this, more disaggregated, different contracts and you guys of managing it was that necessary to get to open architecture and then describe what does open architecture mean?

[00:30:22] How did that actually work and everything,

[00:30:23] **Bill Johnson:** Yeah. So what does that mean? You can easily get caught up in these people that come up with these pictures of, different layers and, what you're trying to do is make change and you wanna set up not just the technical things, but also the business things.

[00:30:37] So that allows you to make change easily. And, in dealing with the the logistics, the actual buy to new stuff and the spares and how it all fits together that was a hard concept to get across, cuz we hadn't done it before. I remember the initial plan that my logistics people came to me, what they had done basically was taken the old system and crossed out the name of the old system and put the new system on there and gave that to me as a plan.

[00:31:05] And I looked at that and said that's not, you're missing the point here. Do it again. And by about the fourth, third or fourth iteration, they can look and throw these things in the garbage, they finally caught onto it. One of the changes was that the logistics and engineering department became a lot closer together.

[00:31:23] So he had the engineers also thinking, in terms of, how do we maintain this with spares? How do we introduce new pieces? How's that gonna be done? And that became one of the jobs that I think that Lockheed did very well for me, by the time we got into the later phases, they had changed from IBM tore to Lockheed.

[00:31:41] But I think that it wasn't the way logistics were done in other systems. It was a way that, that we had to develop. And the idea was we wanna set it up, ideally so every deployer gets the latest system. So there's a lot of moving parts in here. And so our focus was on, working so the deployer gets the most current set of Moore's law capacity and the new software that goes in there. It worked out very well, but it was different. It was certainly different. It wasn't. So people that had were stuck in the old way of doing business had a very hard time with this,

[00:32:14] The, I would say that it was a younger crowd that caught on and had made it work. It's not just for, getting new players new people with new algorithms or new ideas.

[00:32:24] How do I get, bring them on board and get them to play as part of the team, but also how do I get, the team to understand these new concepts across the board? That was one of the the advantages of having these monthly meetings, cuz these new ideas rippled is they're not focused on just production.

[00:32:41] They can influence how people, I remember we had a group from DARPA that were looking at their concept for an idea for combining sonar data, with ESM data. And I remember the guy telling me that if if we implemented that today, we'd have to tow another submarine behind it with computers, just to do this, it was gonna take so much computing, power processing power, but with Moore's law, they could see that at this point in time, we're gonna have the capacity to actually implement these ideas.

[00:33:11] And so they were thinking ahead, Hey, it's a good idea. Let's continue to work on this, the capacity of the receiving systems, not there yet, but it will. Because they have a plan. And one of the things that I made sure was that everybody understood what the plan was and how it was changing and what our roadmap looked like.

[00:33:28] And, I wanted the whole community, not just my own community and the, production, but all the way into the advanced development and science and technology. I wanted all these people to be aware of it

[00:33:40] **Eric Lofgren:** it. You use the word roadmap rather than integrated master schedule. Is there like a difference in the way you managed it versus like regular project management in terms of those tools?

[00:33:49] **Bill Johnson:** Yeah, early on in my career I took a Brookins institution course. We went out to Silicon valley and We were, we wanted to learn, how they were doing things. And I remember we went to Intel, that's one of the places we went and we looked at their roadmaps.

[00:34:04] And the thing that surprised me was that their roadmaps only went out a couple of years, and our, the roadmaps that we had went out many years, sometimes, 20 years. The difference was that, they were looking at the future and they were saying, Hey, a lot of this is unknown.

[00:34:22] We want to be able to prepare for it. And we wanna focus on near term things that get us to what we think the future's gonna be, but we gotta be prepared to change. And I think that's one of the things that we weren't doing in submarine systems. We were looking out too far, and setting up, traditional kind of arbitrary times, based on experience of how long it took to do something.

[00:34:43] And when testing should sure. And we'd come up with these long roadmaps that we'd live by the world's not working that way. There's changes that are coming all the time and we have to be flexible enough to adapt to that change. And we weren't flexible. So I think , one of the benefits of an open

system approach and an open business approach is that adaptability, you can change, you can adapt to a new situation and you can do it very quickly.

[00:35:09] So I'm just looking at parallels with what I'm seeing today, and the Ukraine and Russia, and, the Ukraine sunk those Russian ships, and they came up with an innovative way to do that. Basically overloading them with a lot of drones and things and so you wonder if that happened to us, how quickly could we adapt?

[00:35:25] It's something new that we hadn't encountered on and we need to do that. And I think that's what,

[00:35:30] **Eric Lofgren:** you'd send it to J SIDS, you get a requirement, hopefully urgent within, some days. And then it would take, some years before you get it through the

[00:35:38] **Bill Johnson:** yeah, you, , I think in our case there was lots of requirements and stuff.

[00:35:43] We stayed within them. There was enough wiggle room so that you could do things and meet the spirit of the J CIDS. There's a lot of people that wanna, Wanna be gatekeepers that, that's how they view their value. And

[00:35:55] **Eric Lofgren:** there's actually a guy called like the JCIDS gatekeeper.

[00:35:58] right?

[00:35:58] **Bill Johnson:** Yeah. And I'm saying, no, you're not a gatekeeper, here, our focus was a acoustic superiority. And the guy that I cared about was the fleet guy. one of the most rewarding experiences I ever had was we set up this this event that we did every year.

[00:36:15] And we brought in a sailor, a son tech, one of the senior sonar techs from the fleet to come and talk to us about, Hey, how's the system doing? And initially, when the first time we did this, it was deflated because he was talking about all these standalone systems they had.

[00:36:31] And it wasn't something that we had done, and, but by the time our system was out there and they had experience with it, they'd come back and tell us about how they, how our system or this ACI system played in their everyday work. And it was so we got so much I think the positive, if you're talking about

positive feedback, I think that was the most for me, at least personally rewarding experience.

[00:36:54] I had listening to those sailors, come back and talk about our system and what they could do now that they couldn't do then, back. So how much it improved things. And I think the whole team, not just I'm talking the small business university labs the, the prime integrator the government people, we all took pride in that, Even though you know, you're working together, you're collaborating with people that you can't stand their guts, but that's the way the world is, take a look at any NFL team or, they have, everybody knows their objective is to win the game and

[00:37:24] No matter what their background is or where they're coming from, they have a position to play and they do it and they do it because they wanna win.

[00:37:31] And in our case, it was this acoustic superiority. And so getting that feedback from the fleet on how the system was doing, getting these measurements so we could see the tangible proof that this ch this change we made really made a difference. I think it was important to keeping the team motivated and keeping us focused.

[00:37:52] The thing though that I wanted to get across in this is that. The ability to manage something like this is something that it's, you have to be agile. You have to look at the big picture. You have to one of the things that we did was we had a plan for what we call total ownership cost.

[00:38:08] And the Navy had a initiative, this is 20 years ago, but they had initiative to look at total ownership cost. And I knew what the money that I was spending and I was keeping track of that, but I wasn't keeping track outside of that. We had a plan to, Hey, let's take a see if we can take a look at the whole thing as much as we could.

[00:38:29] And it's difficult to get those numbers, but you learn a lot from this. I wanted to know, how much it costs to train people, when you look at a, at the total ownership cost of the system, it includes not just the hardware and software, but the people too, they're part of the system, and how much did the, cost to groom, these people, and even the number of people you have on a submarine.

[00:38:49] We had 15, so our techs on the submarine, and I remember early on, I was looking at well, can I do the job with fewer sonar techs? And that I got

pushback from, fleet people on that, because, Hey, these guys, aren't just doing sonar, they're doing other things, we don't want you to cut the number of sonar techs on a ship.

[00:39:05] And The more people you have the more cost and there's a lot of cost in people. And there's a lot of the the heuristics for the old system. The legacy systems were that 60% of the total ownership cost was in spare parts and logistics 60%. And a relatively small percentage was in the development of the system.

[00:39:23] you know, we, weren't used to looking at total ownership costs. So I think, having a broader view of what's going on is important.

[00:39:29] I think just to get all these people to play together, there, there's a, I don't know if you know about, remember the Barnum and Bailey circus.

[00:39:36] Gunther Gable Williams. He was in there, he was at lion. He was at, the guy with a whip and the lions, tigers and bears, and he had to be good at his job to have a good show, but these are lions and tigers and bears he's dealing with and they'll eat each other up. It'll be a bad show if he's not good at it.

[00:39:53] And it's the same way with this approach, you've got competitors that are working together, these small businesses and big businesses and university labs and Navy labs and they wanna, they want to eat, you need a ring master and that's what the government should do.

[00:40:09] The government's a ring master.

[00:40:10] **Eric Lofgren:** Program office or the program manager

[00:40:12] **Bill Johnson:** the program manager is, yeah, he is. He's that guy. I think there's too many program manager that wants to just put the prime contractor in charge of the whole thing and sit back and, deal with Congress or yeah.

[00:40:23] **Eric Lofgren:** Were given the baseline plan and it's easiest just

[00:40:26] **Bill Johnson:** yeah, you're that whole thing.

[00:40:27] **Eric Lofgren:** outsource that whole

[00:40:28] **Bill Johnson:** And you're driving the train, I said, no, we're not in that situation now with this world, you're not a train driver anymore. You've gotta figure out you gotta pioneer. And there's a, that

[00:40:37] **Eric Lofgren:** that a general principle or for a massive like submarine build is it still like an outsource model, but like for the subsystem, like where, how general is this?

[00:40:46] principle

[00:40:47] **Bill Johnson:** just sonar. It's just been working on sonar. You, what happened was it's done to some extent in combat control also. I had a Navy a commanding officer of the Asheville assigned to me to learn the ways of Washington CLA called Claude Barron, who became a, the captain now is an SES over at the Pentagon, but he was the one that took the sonar principles and applied 'em to combat control.

[00:41:14] So how do we set up combat control? That's where you do the you interface with the weapon system, you take the sonar data and you come up with localization plans and, it's something that the commanding officer would deal with the system through combat control. And he was the one that took sonar principles and came up with an approach for combat control.

[00:41:37] And I'll tell you, he took a lot of arrows. he took a lot of arrows and a very smart guy and very,

[00:41:44] **Eric Lofgren:** and this was the Genesis of the open systems architecture for Virginia class.

[00:41:47] **Bill Johnson:** Virginia, had an approach, a R C and Virginia kind of evolved at the same time.

[00:41:53] Virginia was initially more of a traditional approach. Let's build off to, the legacy system and a R C came about, at the, started up at about the same time. But we were operating on a different schedule, we had to get something out there right away. We were much quicker to adopt commercial technology.

[00:42:14] I think that event eventually Virginia adopted what we were doing in RCI. But it wasn't, it didn't start at, they didn't do it initially they resisted it because of the change to their program, but I can see other areas that, we haven't, we, it's a frustrating thing for me that to see that the Navy has not

followed through and taken a lot of , these lessons learned that actually implemented them.

[00:42:38] And I think that there's, there's various reasons for this. Part of it is that you have a lot of people that are bought into the, the traditional way of doing it. That's a good business model for them, and I'm not just talking about the contractors I'm talking about on the government side too.

[00:42:52] There's a lot of people that they're just comfortable doing it the same way. And they'll adopt all the new buzzwords and things, but really they don't want to change. And I think the problem is that one of the problems that they have is I don't think they're as connected with the fleet as we were in the submarine side.

[00:43:11] we had a submarine community that knew what they wanted. They knew that they needed to have the acoustic superiority and needed it quickly. And it was a life or death matter for 'em. It was they weren't messing around. I think, what I've seen on the serviceship side for instance is what we want is our current, what we want our system to work.

[00:43:28] We don't want it to break, that's the kind of mentality and I'm saying you've got, all these systems and you've got uh, 1, 1, 1. People I was talking with recently was telling me that there's 400 display formats, that an operator has to sort through Hey, that, to me, that looks like a perfect area for artificial intelligence, have the, have your system sort through those display, pour you can't it's just like in our system, we had, we were expecting an operator to in the old approach to go through all this material on his own and figure it out without all these enhancements, these bell ringers and things we put in the system to focus the operator in the area that you need to be focused on.

[00:44:10] And I think that this open system approach worked out very well for us and I think it ought to be seriously looked at I, the current Admiral. Who's in charge of the acquisition for EIS she's set off an initiative last year to and I was invited to be on this committee looking at how do I adopt the RCI principles Foris and the problem was that they gave it over to Lockheed Martin to be to run the program, to run the study. And they're good people.

[00:44:41] They're smart they work hard and they do a lot, but, they're not thrilled about bringing in small business to, be an alternative for them, it's not her helping their business model. And I think there's this Admiral. Is gonna need a lot of support.

[00:44:54] She's an Admiral, but

[00:44:55] **Eric Lofgren:** To claw back some of , those component pieces. ,

[00:44:58] **Bill Johnson:** or just people that don't wanna change, that like what we're doing, even within the submarine community. I remember in going through my notes preparing for this, there was a Navy captain at the time, that didn't like the fact that we were changing so often he wanted to keep it the same for 10 years.

[00:45:13] So we'd have an opportunity to really learn all the ins and outs of that. The world's not gonna sit still for 10 years, things, the world's changing, we gotta be able to change with it or take advantage of that. You know what we can. And I think there's a, if you're looking for a.

[00:45:29] A nice, smooth easy path. This isn't an easy path, but it's, it is challenging and it's fun. And I think everybody who was involved in the ARCI program, saw that fun and felt the reward for actually seeing it work and seeing their ideas in it. Everybody was accountable, but everybody would get the recognition for something they did and everyone would know it.

[00:45:51] And I think that too often, then these programs, the top guy gets recognition that nobody else gets any . So I think I think this is a way,

[00:45:59] **Eric Lofgren:** You talked about, being there'd be Indians out there, and Taking arrows for this. And there's probably a lot of people listening that want to try this kind of in their own context.

[00:46:07] so can you just talk a little bit about. Who was on board and who wasn't on board ? Because you said, okay well, we had all these good tests and data and we showed Hey we're making improvements. But a lot of people can't even like , in these government program, offices get money or you know, approvals to even start something small enough that they could show progress and bring it out and, like you said, you can't take the whole elephant, but take a piece show improvement there and then build out.

[00:46:34] And, take these innovative approaches. Who was for you? Who was against you? How'd you do that? And What would say to a young contracting officer or a program manager, today

[00:46:42] **Bill Johnson:** Yeah. Initially. I thought that, I looked at the businesses, how am I changing your business model?

[00:46:47] So I looked at our prime contractor that became our prime integrator, and I looked at the Navy lab and, how's this gonna change their business model and are they going to fight it? And I'll tell you that. When in the case of the prime contractor, they didn't like it. They started, and then they tried to convince me that, Hey, let notate this small business, innovative research program to me, let me run it.

[00:47:12] Cuz this is gonna be too, this is gonna be too much for you to do. You know, I expected that and I was right front with him. I didn't mince words. I said, no, you're complicit in this problem that the fleets happen today because we didn't do certain things that we should have.

[00:47:27] I'm complicit because I worked on the government side and I had a lot of assumptions about how things were going, that turned out to be wrong. And we're gonna go with it and, to Lockheed's credit they saw that the Navy really wanted this and in the end they supported it.

[00:47:41] They did an excellent job. They were able to work with these small businesses and university labs and they accepted their role. And so I was very thankful for that. Now Lockheed's a big company. And I had the Manassas sector of Lockheed, which is a relatively small sector within the whole company.

[00:47:57] But they adopted it because they could see that it was working and they could see that the if they were viewed as a naysayer or not complicit it wouldn't look good. It would be exposed people cuz people would know, but also, Hey, the way I saw it if they lay down, if they're not gonna do it, then I'll have somebody else do it.

[00:48:17] When it came time to using this CONOPS team, come up with new display formats. There was the engineer at Lockheed who was, had worked on display formats for his entire career, didn't like it. And he objected vitally. And I said we'll give the display form as the DSR then.

[00:48:34] And people got on board. , there's carrots and sticks. That's a stick way of getting people on board.

[00:48:40] **Eric Lofgren:** How about from the the government

[00:48:41] **Bill Johnson:** The government side? The biggest problem I had was people in leadership positions within the the acquisition community. that you wanted to take credit for it, but weren't really involved in the day to day details.

[00:48:55] **Eric Lofgren:** But did they stop you from, were they trying to like,

[00:48:57] **Bill Johnson:** Oh yeah. Oh yeah. They wouldn't, because they saw that I had such strong support for my sponsor and the fleet. So nobody was gonna mess with it because we were walking the talk and actually walking much better than the talk and we had a day, I remember ,

[00:49:12] uh, you took a lot of arrows, and you can just decide, I had to decide for myself, am I gonna let these arrows, kill me or hurt me or not, you

[00:49:21] **Eric Lofgren:** feel like. it threatened Your career at that point?

[00:49:23] **Bill Johnson:** absolutely. , let me tell you my mentor, Dr. Bob snugs, who was the one that took sonar developed the first digital sonar for submarines and he's an icon in the submarine community.

[00:49:37] He he actually got fired because the Navy laboratory was so upset at him for taking control of the system. And then they put him over in surveillance and

[00:49:48] **Eric Lofgren:** so he, wasn't fired. He was just moved.

[00:49:49] **Bill Johnson:** He was moved, move. Another classic one is moving people up. , into a higher position someplace where they're more, it's more abstract, you know what they do.

[00:49:57] And I've seen that a lot. People get they're taking care of by just , moving 'em out of the way. So they're not in. If you're a threat to actually getting things done, and people are paying attention to what you're doing and you're giving in information. So it's clear to everybody where you are then, people take care of you.

[00:50:15] And that's what happened in our case, and Bob was, this Bob snugs was, came back and helped me on the ACI. . He was in charge of the technical commun surveillance that I got a lot of good ideas from. And so he helped mold the two communities together to, for collaboration.

[00:50:32] And even though our budget had been cut so much, we still had a good budget compared to the budget they had. And the deal that I had was with Bob and his people were that, Hey, any of the development work, we're funding. , but we'll give you the results for free and, for your cooperation, for your, involvement, your smart people getting and helping me get this out.

[00:50:54] And so we had a very good collaborative relationship with that community. Yeah. Can

[00:50:58] **Eric Lofgren:** Yeah. Can you talk a little bit about just how did you actually build that team for a R C I AIE. And was it different than a regular program office structure or if it was what was different about it?

[00:51:10] I think the

[00:51:10] **Bill Johnson:** I think the idea about bringing in all these players was think my best technical support was really these other teams, these other companies that I brought in, cuz they all had a vested interest in this succeeding and this being really open. And if somebody tried to close the system, they would let me know.

[00:51:28] So typically the government would perform that function and not as well, it wouldn't be in like life or just situation , but here I had all these team members looking out for themselves, but also looking out for the integrity of the team. This is towards the end of my time with team submarine, but I was asked all the people at my level were asked to come up with their organization downsized organization.

[00:51:51] And the goal was for the command to downsize by 30%. And my presentation was that , I'm a government person. I have to be a government person, my, my money guy that, the guy that maintains our budget, he needs to be a government person. and everybody else can be a contractor I could do.

[00:52:09] I went from 50 people. I could say I could do it with four people, four government people to run this. people. And of course they didn't.

[00:52:17] **Eric Lofgren:** Yeah. What'd they say to that?

[00:52:18] **Bill Johnson:** What'd they say to that? oh, they they kinda liked it. It was an eye opener. Nobody else was coming up with something like that, but I'm saying.

[00:52:24] **Eric Lofgren:** But you wouldn't need additional budget or O and M money for that. You're saying like, I'll just do it with what I got.

[00:52:29] **Bill Johnson:** Exactly.

[00:52:30] **Eric Lofgren:** . They'll take those people and put 'em elsewhere.

[00:52:32] **Bill Johnson:** Exactly.

[00:52:33] **Eric Lofgren:** And did that actually help you? Cuz like in the history I, I saw like in the sixties and seventies, there's a lot of discussion.

[00:52:38] European design teams were like very small and they only had maybe 10 people in the program office on the government side for us in the us, it was 200, 300, 500 people on the government program office. sides.

[00:52:49] **Bill Johnson:** your grade, there's a function of the number of people you're supervise.

[00:52:53] **Eric Lofgren:** You're Right.

[00:52:53] **Bill Johnson:** That's why I'm saying, you know what? you shouldn't do that. Your importance to the organization has nothing to do with the number of people you're supervising there. Government people. You're what you want to get the job done. It has to do with getting the job done in our, my case, regaining acoustic superiority.

[00:53:11] , if I'm a GS 15, the models, the old models would have, 50 people working for me or whatever the number was. And it's decreased, over the years. But at one time I had 50 people. If I counted everybody I didn't need that. My focus is acoustic superiority and everything else is up for grabs.

[00:53:32] And, and I think that one of the things that helped me was actually acting on my ideas. When I set it up, I set it up well, If I'm doing sonar outta my garage, what would I need? And I set it up that way. That's what I need. And I didn't fire anybody, but I'm saying, this is what I need.

[00:53:51] And if you're not doing your job I'll get somebody that can do that. I think one of the problems I had was the contracts and the people that work in contracts is a separate group. They didn't work for me, but they worked, I employed contracts, people.

[00:54:06] They would they weren't open some of my ideas or they weren't innovative. And,

[00:54:10] **Eric Lofgren:** but they weren't on your team. You, they were matrix from,

[00:54:13] **Bill Johnson:** were matrix from another organization, but I was given a guy who was, I'm not sure how well he was. Viewed within the contracts organization, but from my point of view, he was great.

[00:54:23] He took time to understand what we were trying to do when it came time to putting the contract together. One of the innovative things that, that he did that I thought was a great idea was, we were used to, referred to it as playing volleyball with the contractor. The government guy would get it and write it up and he'd throw it over the net and then the contractor would get it and he'd do that.

[00:54:44] And then he'd throw over the net and play volleyball. He put 'em both on the same side, they worked it together.

[00:54:49] **Eric Lofgren:** To sit in the room with a contractor and just hammer out the proposal.

[00:54:52] **Bill Johnson:** Yes. And a word. Great. Did it very fast much faster than normal.

[00:54:57] **Eric Lofgren:** How long would you get that at? What was the cycle time decrease there?

[00:55:00] **Bill Johnson:** We did it, we had our first it was on the order of a few months as opposed to could be a year or so,

[00:55:06] **Eric Lofgren:** so good savings.

[00:55:08] **Bill Johnson:** Very good savings.

[00:55:10] **Eric Lofgren:** You would you recommend that as like a best practice, but were you in a so you were in a sole source kind of

[00:55:14] **Bill Johnson:** environment. I had contracts in place already. Yeah. I had a contract for a prime contractor, I had a, I was bringing in contracts, SBA, RS, and stuff.

[00:55:25] But what I wanted the contractor to do was to, the prime contractor I didn't want him to fight what we were doing and, I wanted him to be part of the solution. So when I wrote the contract for the small business in this, in our case to start with it was DSR and, I had one for what became Lockheed.

[00:55:40] I put. clause in both our contracts were, is it was award fee that if we're successfully, you get a, you get a hundred percent, if one guy's successful and the other guy's not successful, you both get a zero . So they had to build in an incentive to make sure the other guy was successful. I

[00:55:57] **Eric Lofgren:** And I love that.

[00:55:59] **Bill Johnson:** yeah. And it worked. And with a lot of these things you go into it and you don't know if it's gonna work or not, cuz you're pioneering. You hadn't tried it before, but you go in with a positive attitude and you follow through and you get a reputation for following through and people tend to follow.

[00:56:14] I went out to a going away for what the chief engineer at Lockheed he retired this past spring and the spirit and in that group, there was about a hundred people. There was great. It was, it still maintained, over all those years, , getting along with your competitor and producing value, added to the fleet and late.

[00:56:31] And I really

[00:56:32] **Eric Lofgren:** sounds like Rick over seems had decades long impact on that culture of submarine. So you're saying like, when you like really get this right. That culture persists, it's not just like the individuals involved. You can have that, like a running concern.

[00:56:46] **Bill Johnson:** think you do. I think it, it exists because it's successful. It works. And I think people see that it works and

[00:56:53] **Eric Lofgren:** has it been replicated enough or no, it, it seems like it works and then itself perpetuate within the program, but how about other programs? What happened?

[00:57:00] **Bill Johnson:** It just doesn't, , you need to have somebody that a change agent, if you will, and he's gotta be there.

[00:57:07] He's gotta be persistent for a while. And like, when I were looking at those programs, it's the, those communication programs, they needed to change. They needed to change agents. That's persistent

[00:57:18] **Eric Lofgren:** too. Right. Jazzy.

[00:57:19] **Bill Johnson:** JY too. and you get a general in there. That's nice. But that general he's gonna be gone, and

[00:57:25] **Eric Lofgren:** how long were you there?

[00:57:26] **Bill Johnson:** how were you there? Seven years? I was seven years since we started the program.

[00:57:30] **Eric Lofgren:** And you were in, you were lifelong basically in the community And then For this one position you or, and yeah. you were there for seven

[00:57:36] **Bill Johnson:** Yeah.

[00:57:37] **Eric Lofgren:** Yeah. And then

[00:57:37] **Bill Johnson:** You were there for seven years. Yeah. I was recruited to go into P O I Ws, which was setting up the Navy, how the Navy was gonna do it.

[00:57:45] And I worked for a serviceship captain, a captain, Jim Shannon, who was great. He understood what we were trying to do. He was a ship driver first. Smart guy and he was persistent, and he backed us. And but the problem was that know, we got a lot of documentation guidance document that those type of things signed out by all the way up through the ATL guy, yeah. I forgot who it was.

[00:58:11] **Eric Lofgren:** John. Young at the time.

[00:58:12] **Bill Johnson:** It was John Young and then his F successor

[00:58:15] **Eric Lofgren:** Goler was before him. I forget,

[00:58:17] **Bill Johnson:** Cansler I, I've dealt with one of those guys Cansler and they're all for it. They liked it, but you they're so far removed from the day to day thing. The day to day people can wait 'em out.

[00:58:28] And that happens continually. I think you need to have a way to hold these people accountable at the work, the, what I would call working level leadership, people that are running their program and they need to have

visibility. And when you find people that can do that, you need to reward them and make an example of them.

[00:58:46] And unfortunately, the kind of example that was set with Bob snugs, and to some extent, myself was you do this and you get killed. You get arrow.

[00:58:56] **Eric Lofgren:** arrows, even though you come out with, a superior yeah. And obviously superior product. Yeah.

[00:59:01] **Bill Johnson:** But I've since I've retired I've gone out as, and consulted and things.

[00:59:06] And I've been with the national academy of science and worked with a committee that was set up to improve the prototyping of, things with the air force. And this is at the three star level and the four star level, retired guys and Elon Musk, those, guys that work for him, it's pretty high level stuff.

[00:59:25] And at the high level, they want to do this. And the problem is that they don't know how to get down to the. The grassroots level. And I think the assumption is that, because I'm a general, I'll tell you to do it and you'll do it well, no, not necessarily. You'll they'll go limp or they'll, adopt your buzzwords and not understand really what the buzzword is.

[00:59:44] **Eric Lofgren:** do it, adopt your buzzword, not understanding what the buzzword is.

[00:59:45] We see a lot of that today. Like where's that translational face or is it really just responsibility of an individual, like yourself willing to take that on and do that translation.

[00:59:55] **Bill Johnson:** yeah, if you're breaking new ground, if you're in an area where you really need some pioneer, you gotta pay it real close attention to who your leaders are gonna be, and how do you protect them? How do you reward 'em? What is a plan for re replacing them if you need to, or if you don't need to, if they retire or, move on to something else, who's next in line? What are the the measures of effectiveness that you're gonna, put for these people?

[01:00:19] What's under fitness report, how are you gonna grade 'em and you've gotta be serious about it. some of this stuff that we're doing, I, I'm looking at it from afar now and wondering what are we really trying to do here? Why are we doing this?

[01:00:32] And I can tell you that artificial intelligence, there's two areas. I think that really need to be focused on artificial intelligence and cyber security. Where are we gonna use artificial intelligence? And, you get these blank stares from some people I don't know, but if you get online and you take a look at , some of these people over, over in the orient, they have this game called go.

[01:00:53] And I was watching the they're coming up with somebody's come up with a computer program that will play chess, but play this game go.

[01:01:00] **Eric Lofgren:** Alpha go.

[01:01:01] **Bill Johnson:** I'd never heard of the game. It's a thousand years old or two thou, and they've come up with, over time, computer programs, that'll actually, be able to successfully challenge, even beat some of the, the world

[01:01:10] BAS

[01:01:11] **Eric Lofgren:** and it's much more harder for a computer to do that than just chest is much more constrained

[01:01:15] **Bill Johnson:** Yeah. Yeah. Yeah. And okay, now what are we now? How would we take our problem? We have and apply it to artificial intelligence, and who's gonna do that for us. is it gonna be the people sitting over in the Navy lab that have been working on the same problem for 50 years or even a new problem?

[01:01:31] We've, gone past what we did in RCI. How are we dealing with how are we gonna, how are we gonna harness artificial intelligence and who's gonna do it for us. And what's our plan and what do we need it for? Where is artificial intelligence really gonna help us today?

[01:01:44] **Eric Lofgren:** Isn't it just like people that are experiencing it and doing these programs, for example, you, with the sensors you just have a bunch of data that, you know, because of the context you've been working with these people, there's just too much for them to go through. This looks like a good use case, but it's hard for, some random person in big Navy or in OSD to even know where that problem.

[01:02:05] is. So doesn't it have to be defined? at that level. It does.

[01:02:09] **Bill Johnson:** it does. It does. Somebody's gotta define it for them. , most of the people that are at those high levels, I'm not sure what they define,

abstraction, right? Yeah. Abstraction. I tune into Potomac Institute symposiums or talks, every so often.

[01:02:23] And one of the recent ones had to do with making changes to the way we do acquisition. And they had three people on a, committee. One, one person was a woman that worked for the British embassy. And one person was a former ATL guy. And the other person was the other two were both former 18 older guys.

[01:02:40] The other one was named will Roper.

[01:02:42] **Eric Lofgren:** Yep.

[01:02:43] **Bill Johnson:** Okay. And this guy will Roper looked like he was gonna jump through the screen. He was like sitting on the edge of his chair and, and he clearly was wanted to do things differently, open architecture, the, one of the things that he was advocating. And I'm thinking, I don't know if I agreed with everything he said, he was at least a guy that I thought was gonna make a difference, if given the chance.

[01:03:03] And I don't know if he's, he's not over there anymore, so Nope. He's working a drone business or something. . But the other guys, I

[01:03:11] **Eric Lofgren:** he just left by the way, but so we'll see what's up with the Roper next, but yeah.

[01:03:15] **Bill Johnson:** Yeah. I thought he was interesting, , so I commented and, they have a way to comment and so none of my questions or comments made it to the floor, so I gave comments. And I said, there was a guy I used to work with.

[01:03:28] I, I worked on a program called D two D, which was. the data, two decisions. So it had to do with when you fly over someplace and you're taking a picture of what's going on there and there's all kinds of data, and, but the air force does that. The Navy does it and everybody, how do you get those groups to work together?

[01:03:46] And so this professor at MIT came down to take that job and he wanted me to be on it. And I had retired from the Navy. He had me write the ground rules for this program. basically how do you get these two, three organizations, army, Navy air force? How do you get them to work together on this?

[01:04:04] Anyway, to make a long story short that the program this professor went back to some North Carolina state and took over their computer department.

[01:04:13] And then they always asked if I wanted to come in and run it. And I didn't, wasn't interested in coming back into the government at the time. I probably would've killed myself if I had taken that job because it takes a heavy toll on you , I gained about 50 pounds and my, my hair turned white. I, it just, it's hard.

[01:04:30] It is hard, and it was, that's a 24 7 job. I was working Sundays and I'd be at my desk at six in the morning and, get home at seven or, and then working the evening. So it's a hard job. And you're working with people that they're Indians and but it's fun.

[01:04:44] It's rewarding. It's the kind of job that, I've always wanted to work at a job where I can make a difference. And I think that's how I think everybody on the program was feeling like they were making a difference and they could see themselves in their work. And they were enjoying being accountable for it because they were being given credit for doing good things.

[01:05:02] **Eric Lofgren:** Yeah, I tend to feel like when these organizations get large and programs get stretched out over many years, it's easy for an individual to get lost in it. They can't contribute their creativity or really feel like they can have a big effect on it. So they'll just be like, all right, I'll just go nine to five because I could do what you said and make myself go white.

[01:05:20] But even if I did that, What could I affect stuff? What would I be able to do?

[01:05:24] **Bill Johnson:** That's why I really strongly believe in having a program that, that moves fast and that you have a deliverable that makes a difference fairly quickly. From my case, the first deliverable is a year and a half after the milestone decision was made.

[01:05:39] And the next deliverable was a year after that. And the year after that, and then not just the phases, but also the advanced processing build the software improvements. And, it seems like we were always developing, delivering something new that was making a difference, a measurable difference, and it was done cheaply, , I was doing within the budget, everybody thought I would fail.

[01:05:59] I think there's a lot of people that didn't fight it because they thought I were gonna fail. And, just give 'em time. They're gonna fail. We didn't fail. And we ended showing up a lot of these, the old way.

[01:06:09] **Eric Lofgren:** I think there's a lot of people that didn't fight Do you think the incentives are there?

[01:06:12] A lot of people complain oh government doesn't make, like you're not gonna get equity, like you're at a startup or you're not gonna get these huge salaries. Is that an issue or do you think as long as the people feel like they're close to the mission can have an impact on something important?

[01:06:25] They'll be willing to, take on what you did.

[01:06:27] **Bill Johnson:** I think so. A lot of the people in the government are like that. , you're making a decent salary. You're gonna have a house and you're gonna, beg a vacation and you're not gonna be a millionaire.

[01:06:36] And I think that if that's your objective, then good go, don't do it, but not on this program. and I found that even the people in. And these small businesses and some of 'em did very well, financially, but they had to be on board with the overall idea, and I know several people that have, done very well, not in the government, but I don't know anybody in the government that hadn't done well. They've done even the guys that do nothing do well.

[01:07:00] I think the idea is the spirit you want is everybody on the team looking to win the game. and in our case, winning the game was acoustic superiority. And in our case, everybody understood where, what the position they were in, what position they played and they did it. And if we won, they got credit and we did win.

[01:07:22] There was no question about that and we proved it and, people were afraid to take us on because I could show you my data and let's see your data that shows that we didn't, and they didn't have any, all they had was opinions or they just didn't like it because it didn't fit their ideas on how things should be done for one reason or another.

[01:07:40] But it worked and I think we have areas that like this and I, that don't get the acronym. But this networking issue, getting people on the same,

[01:07:49] **Eric Lofgren:** joint, all domain command and control is the new version of net centric warfare.

[01:07:53] **Bill Johnson:** me what's what, what's your first bike gonna look like?

[01:07:56] **Eric Lofgren:** My first, like a tricycle?

[01:07:57] **Bill Johnson:** No, like bite of the elephant.

[01:07:59] **Eric Lofgren:** Like bite is the .Oh, what's my first bike gonna be. For jazzy too.

[01:08:01] **Bill Johnson:** Yeah. What is that gonna be? And when do we get that out there?, I'm just, this is a hypothetical question, a rhetorical question, but I'm saying that, this is something that you're not gonna throw out one day and it's brand new and everybody's gonna have to deal with it.

[01:08:13] I say, get it out in pieces.

[01:08:15] **Eric Lofgren:** It looks like they're trying to do like a comprehensive, these are gonna be all the standards and this is how we're gonna run it. You need top down and bottom up, but , where's the weight of that?

[01:08:23] Where does the,

[01:08:23] **Bill Johnson:** I think like for ARCI the details were worked out after the contract was let, in the old days we have a big thick specification that would say, put your left foot in front of your life or in front of your left foot, and it'd give,

[01:08:40] **Eric Lofgren:** that's still the modern days for most.

[01:08:42] **Bill Johnson:** Yeah. And I'm saying that doesn't work, yeah. We're trying to do something here. We don't know that detail to take us forever to find out. And then we put it all together

[01:08:49] **Eric Lofgren:** and it might be wrong

[01:08:50] **Bill Johnson:** it might be wrong. Yes. So let's get the people who are gonna build this. Okay. As you do it, document what you're doing, do it so that the other guys can all see it is all done in the open.

[01:09:02] It's transparent, transparency and leadership. Those are the two areas that I would focus on and transparency. How's that transparent? How do I get all the players to understand what's going on? And let's get it down.

[01:09:14] **Eric Lofgren:** going Well, people don't, a lot of times I hear. from officials. They don't actually want that transparency.

[01:09:19] We want give you the standard data sets that you ask for, but like transparency is actually bad for us. Yes.

[01:09:25] **Bill Johnson:** Yes. And I would say, if you don't wanna play, that's fine. We'll find somebody else. And then you find out, yeah, they'll wanna play, they'll start getting on board. But as soon as you develop an alternative, that's getting an alternative is one way to get people on board.

[01:09:40] Cuz they know that I'm not the only game in town. Somebody else could step in and do this. And I did that. I did that with Lockheed. I did that with DSR. I did that with the Navy laboratory. I always had an alternative, and if this was my plan B and if plan B didn't work, what's my plan C and I was prepared to go through of it.

[01:10:00] And

[01:10:00] **Eric Lofgren:** And it's cheaper overall, right? Cuz most people would say like, I don't want to carry two. I just picked the one and then it's cheaper.

[01:10:06] **Bill Johnson:** I would say that when I had these meetings where I, we everybody get together

[01:10:10] **Eric Lofgren:** program management reviews type thing,

[01:10:12] **Bill Johnson:** It was a, I called it a submarine seminar technology worker, S T D WG.

[01:10:17] Anyway, , there was one guy that came initially, one guy that represented the prime contractor would come to those meetings. And his contribution was to tell us as a group that this wasn't gonna work and he did that every month. And then as soon as he say, we can't do that. And then when a guy from the small business over here says, yeah, we can I, I can do that. Throw me in coach. And I would say, okay, let's try him. People were afraid to, to not to no bid it to, they were like, if, they would do it if they really couldn't do it, but if

they could do it, but they just didn't want to do it, I would have an alternative. And that's what open architecture, open business is all about alternatives.

[01:10:58] **Eric Lofgren:** Do these discussions happen enough in government? Cuz it feels like usually it's this is the way it's gonna happen. And this is feasible. and We get everyone to agree that it's feasible. It's almost like the system doesn't accept conflicting opinions and then be like, okay, we can try both of them out and see who's right.

[01:11:13] As opposed to no, we have to come to the single common. Definition of what is right. And then we go do that. Do we need some of that competition within government people with different ideas and just see who's Right. And just accept that.

[01:11:25] **Bill Johnson:** I think you do.

[01:11:26] I think everybody should be prepared to justify what they're doing to begin with and be able to show evidence that, , your position is the right one. And I think that somebody needs to be aware of what's going on and be able to make the call. Okay, you're not in favor of this or you don't want to do it.

[01:11:43] Don't have a plan really to meet the end goal in our case, acoustic superiority. You might have a plan, but it'll yeah. My plan is you gotta give us a lot more money. And I would say that's not starter. There's no more money. Let's make that assumption that we're not gonna get more money.

[01:11:58] What can you do and what are we gonna do in the near term? That's gonna make a difference and demonstrate that, it's worthwhile going this way. And I think that's the essence of what we did and we always delivered, and it always made a difference. And pretty soon people would say okay, it works in submarines sonar, but it won't work here.

[01:12:18] And I, my, my position was I don't know that won't work there and I, but if I had the time, I'd, I'll take a look at it and we'll see. And I think you need people that, that are willing to do that. And I, I think there, the people on top, the people in charge. I think the problem with the fleet people, the people that come in from the fleet through one thinks is that they're not familiar with how the, this civilian sector works and how business works, how this acquisition business works.

[01:12:46] And there are people that are, the Navy has people that are acquisition specialists that have been there a long time and they might know,

how it works. But then one of the things that I've seen in the Navy is that you become a person that is the slave to tradition. So you're afraid, you're unwilling to break tradition how it's traditionally done.

[01:13:05] And I've seen that in a lot of cases where people would come in and they'll wanna be a train driver, not a pioneer.

[01:13:12] **Eric Lofgren:** . They have new acquisition pathways and word on the street. is like a lot of the Traditional stuff is just creeping back in and then,

[01:13:18] **Bill Johnson:** It is, or the new stuff will be just ignored, artfully ignored though.

[01:13:22] . Yeah. You know, we, what, how do you spell that buzzword? Write that down. Yeah. We're doing artificial intelligence, ,

[01:13:28] **Eric Lofgren:** or the new stuff that we just ignore partially. Yeah. How do you spell that? Buzzword intelligence? we're super agile dev sack ops.

[01:13:30] Yeah. That's the way I,

[01:13:31] **Bill Johnson:** Yeah. I mean that not the way I would run it, not the way I would run it.

[01:13:34] **Eric Lofgren:** , we've already talked about why this approach hasn't taken hold elsewhere. There, I think there is that ground swell of, wanting to change.

[01:13:42] How do we just drive this into more acquisition programs? Is it just leadership or can we

[01:13:47] **Bill Johnson:** I think that, there are some young leaders out there that can. That would do this or try it.

[01:13:52] **Eric Lofgren:** What would you recommend to them like to, so that they can take something whether it's like, Hey, Archie did this and they were successful, or do they need examples of success or what resources do

[01:14:02] **Bill Johnson:** they have?

[01:14:02] You need to do an examination of conscience, am I here to make a living, or am I just being a professional engineer or do I build houses? You're building houses. That's what you should be doing. You're not just making a living. You're not being a professional engineer, you're here to build houses.

[01:14:21] That's why the government puts you in this position. And you have too many people that are, I want to be an SES or I want right. And they,

[01:14:28] **Eric Lofgren:** It's about being a rank rather than doing something important. And

[01:14:31] **Bill Johnson:** Yeah. And so you gotta change that, and there's a lot of, I've seen a lot of good people that have just are just whipped, they've come in and they've had big ideas, I would like to do this and boy submarines are neat or whatever it is, they're working on.

[01:14:46] And then they get caught up in a grand. I had a Navy captain once tell me my job was to shovel money to Lockheed . I said, I'll be damned if I didn't go to graduate school at Cornell and electrical engineering and shovel money to Lockheed.

[01:15:00] **Eric Lofgren:** Yeah. That's why I was like if I'm just doing this for two years, and then I get to the next thing.

[01:15:04] I'll shovel some money, but and get that billet. But,

[01:15:06] **Bill Johnson:** yeah. Or, look at all the people that I. I'm in charge of, that's why I deserve to be a, this great. Yeah. Or,

[01:15:13] **Eric Lofgren:** This program spends X billions of dollars that I've been responsible for,

[01:15:17] **Bill Johnson:** So I would say, the people on top need to there's people on top that can change the culture, I think from the top.

[01:15:24] And they do that by understanding, what's really going on here and making people, feel like, they can contribute, but you've gotta be able to revisit your assumptions. You've gotta be able to make a change. You've gotta understand that the world is different now than it was, 50 years ago or 20 years ago, or last week, maybe it's changing fast.

[01:15:44] And so how are you gonna contribute now? And then, you find people that genuinely want to do that and you put them in charge. I like to see a lot of young people in charge, I think that they're not baked in their ways, we have too many the way it was done before, it was a seniority kind of thing.

[01:15:59] And, people get you wonder how some people got to the positions they are. But so I think that I see nothing wrong with shuffling those people out to some other, okay, you're in charge of that playground over there. , you gotta get rid of those people and you gotta make it clear that, it's a risk if you don't make a change.

[01:16:17] That's a bigger risk. And if your job is to provide the fleet in the country with the best possible product as quickly as possible. And you've gotta, and it's not just get 'em of a product it's gotta be maintained, and, or improved, and part of it is sticking to it.

[01:16:32] That's a lot part, you can't sit there and be licking your wounds all the time and complaining about it. You gotta expect that's part of being in the wilderness, there's Indians out there. Yeah. And I'm gonna get shot. Yeah. , I'm here to make the system better, and get it out there fast.

[01:16:45] **Eric Lofgren:** I mean, I guess the worst thing that can happen is they probably move you like, usually folks you're not gonna get fired for taking those risks.

[01:16:52] Is it not as scary? As people might think, if you just go and do it, or your, your whole thing is at risk here, trying

[01:16:59] **Bill Johnson:** Yeah. well, it's a risk and you have to make sure that you've again, who are the people in favor and who aren't, and you gotta get powerful people in favor. Congress is powerful. You get some advocates over there for what you're doing that help for me, it was fleet people.

[01:17:14] Yeah. I had a Admiral G Basani. I dunno. If you remember him, he ended up to be a, the what his title. He was like the second

[01:17:22] **Eric Lofgren:** vice CNO.

[01:17:22] **Bill Johnson:** vice CNO. Vice CNO. No. He was vice chairman the joint chiefs.

[01:17:26] **Eric Lofgren:** Oh, gotcha.

[01:17:27] **Bill Johnson:** And so when I first met him and I gave a brief on the what I call the , submarine, sonar master plan. And the plan was written because Congress was holding up some money unless we had a plan, we could demonstrate, we had a plan for what we were doing with sonar. And this is PREA But so I came up with a plan and I worked with closely with a commander who worked at op nav and one of my peers at Newk and one of my support contractors that had a, had a lot of friends on the hill and we wrote this plan and basically it was showing, here's what we got going on.

[01:18:02] And here's some ideas on what we'd like to do in the future. And I was, we made it 50 pages long secret, so it wouldn't get passed all over the place. And so it got over to Congress and it was one of, they had asked other people for a plan and they said, they, they said my plan was the best plan that they had they received.

[01:18:20] But it, it wasn't good enough, it didn't well it is because it didn't have a lot of details what the future was gonna be, how we're gonna get to that future. We didn't have it, we didn't have the details we had. Yeah. We wanted to get something that's commercial used commercial stuff and we wanted to have it Hatchable and, we had the list of things.

[01:18:38] **Eric Lofgren:** You had the principles and the general direction. Yeah. But that's the thing that it seems like that's happening today with unmanned stuff. You're like Michelle for nosier was just talking about this. The Navy's kind of stuck in a catch 22 where, they. want to Do something, get it to experiment, to figure out the CONOPS and where they need to go.

[01:18:55] And then the Congress is that's not good enough. You didn't say exactly what you're gonna buy, how you're gonna buy it and what it's for. So you don't get any money. So it is just like you get in a weird do loop. How'd you get how'd you get out of that,

[01:19:06] **Bill Johnson:** We got something with the money we had already.

[01:19:08] We had a, we had some money that was had been given to DSR for the S B R program for this backup system that was gonna go on the Virginia class. So we had that, we had some money that the advanced development office AST. Had some money for, future improvements. I had some money for, continuing with the legacy approach.

[01:19:29] I just changed that, that program, we're tying off the legacy system, we're gonna have legacy stuff on, and we've got a lot of spares, but we're not

gonna make any changes to the legacy processing anymore. I'm gonna implement this a C approach in bites if we had four, four.

[01:19:45] **Eric Lofgren:** But that wasn't justified in the budget docs.

[01:19:47] Like you were allowed to go do that. Yeah.

[01:19:49] **Bill Johnson:** It's just a minor technical, just a, just into details,, you know? we had money for submarine sonar. And so I made this a, an ECP.

[01:19:58] **Eric Lofgren:** ECP.

[01:19:58] **Bill Johnson:** you know, Lot, I don't know if Lockheed was on board with it or not. I, when my own feeling was that they were probably afraid to oppose it because it was a real issue with the submariners. They really did have an acoustic superiority problem. So it

[01:20:12] **Eric Lofgren:** sounds like a lot of like your ability to move on things was coming from like the fleet sponsoring your relationship.

[01:20:17] Oh, absolutely.

[01:20:18] **Bill Johnson:** Yeah. I had a very close sponsor. I had a very close relationship. My fleet sponsor. He and me on the same page and we're gonna figure this out. How do we get this to work with the money we got and get it out get tangible improvement quickly.

[01:20:33] And how do we maintain that? And how do we leverage off, where the commercial industry's. And what do we project, the Moore's law kind of thing,

[01:20:40] **Eric Lofgren:** You Didn't have the super detailed plan that Congress is used to seeing, but you were able to assuage them with that kind of yeah.

[01:20:46] **Bill Johnson:** Yeah. Yeah. Like Admiral G and BOSI when he was he moved up pretty quickly from, he was Devon 12 as a captain or Commodore and he made four star, just, but Yeah. <mark>He was over at Congress, taking equipment up there and playing stuff for him, the fleet was squarely in my court</mark> or our court and they were helping and we really need this and look, we've already done this and here's the difference.

[01:21:11] It made, look at this target here that we couldn't see before. Or here's something that some of the stuff we were looking at was stuff we had before screened out because we didn't think it had any value. And we were looking at not just nuclear submarines, but diesel submarines, they became an issue.

[01:21:25] And so we put in this it was called full spectrum processing, but it it was aimed at gaining some information that was in the signature of a diesel submarine. I think the secret. We had good leadership at the fleet, at the sponsor level we had people in the government side that wanted to make it work.

[01:21:45] And we were able to fight, the people that were shooting arrows at it. Once they figured out that, Hey, this is gonna work. And my God, what are we gonna do when this gets over into my pasture, how are we gonna fight it off? It's part of change most people don't want to change.

[01:22:00] They don't. I think people that have been in whatever business you're talking about. If it's been, if they've made a comfortable living and things seem to work, they're not one wanted to change. but in my view, I always thought about these sailors on the, out there and on submarines.

[01:22:17] And when I would go out to see with them and I'd sit down there in the, in the sonar equipment room and sit in the corner and look at these boxes and look at this style and how many meetings went into that, and, or, there's an unbelievable amount of work that goes into putting something like that together.

[01:22:35] And you wonder, the people that are doing this very few of 'em have ever been on the submarine. And a lot of 'em don't want to go on the submarine. I mean, I used to make it a, for my, the people that work for me, I'd give them extra credit in their evaluations. If they went to see in submarine, people don't want it.

[01:22:51] I feel

[01:22:52] **Eric Lofgren:** like people want to do that. If you give them the opportunity. No, there's a lot. People wanna

[01:22:55] **Bill Johnson:** take it. No, they didn't want to go. They had all kinds of reasons. I had. One of the first women ever to go to board to go, to see a submarine worked for me. And I got her on the submarine. I had to go to an Admiral to get that approval for her to get on the submarine.

[01:23:10] But for most of these people and most of some of 'em had done very well, but never went to see. And I, I don't know how I measured, the improve, the value that was for me, but it was a huge value. And you talk to people that have been in harm's way and you talk to people that have been in situations where they had problems and and their life is in danger and it really you feel like it's important work.

[01:23:36] and that feeling of doing something importance, isn't pervasive, in an abstract

[01:23:41] **Eric Lofgren:** people talk like

[01:23:42] **Bill Johnson:** it is and yeah. In an abstract way and they talk that way, but do they really feel that way in their gut? Yeah. It's, it's just, it's

[01:23:49] **Eric Lofgren:** do they have opportunity?

[01:23:50] Like, where'd you find that? Was it just like in your budget? Like I'm just gonna carve out this part of the budget and send people like on the, on this. No, I

[01:23:59] **Bill Johnson:** We'll just take it. I didn't budget for anything. I I mean for that kind of stuff is training, and I figure out our budget was big enough that I, it would be in the noise someplace, but, I saw value to it.

[01:24:11] I wanted people that I think a lot of, one of my most valuable I call him a colleague. He was a retired Navy chief. I don't know, even know he was in long enough to retire, one of the smartest guys, Paul Bruins was his name. I got so much from him because he was a Soman been to see many times and understood what I was trying to do and what they were doing and what they were having to deal with.

[01:24:33] And it was just a dose of reality, and I tended to surround myself with those kind of people. that really understood at a working level, cuz they've done it. What this is and why it's important and what can really be done and what's just a bunch of fluff and, get rid of the fluff.

[01:24:49] I said we can't afford that. You know now, and that's why I say when we set up ARCI it was, my view was, Hey, this is gonna be and made my garage and what do I really need? and it turned out there's a lot of stuff. I didn't need that a normal program manager would've assumed that, I gotta deal with this, these people.

[01:25:10] And I think it's much more so people you're dealing with is a much bigger part of the job, much more important part of the job than actual stuff. The hardware and the software, it's the people. I think they need to groom people with that kind of attitude leaders and they don't.

[01:25:26] **Eric Lofgren:** , let's just talk a little bit and as we close, what is, some of the outcomes, the legacies of this program and, what are some final thoughts you would like to leave? The audience with?

[01:25:36] **Bill Johnson:** I think to me, it's the people that we're involved in.

[01:25:40] It, they all learned a lot. I think everybody did. I think for most people, it's their perception of how things should be done has changed. People have learned as part of the change, things have not gone according to the way they might have planted, so they've taken arrows or they've, their job has changed, how they view the world.

[01:26:01] What I'm most proud of is that everybody, I think. Everybody's got the spirit, got the right spirit. So that came and I'm what I'm hopeful for is that, that all these people, as individuals can go out and, testify that they've actually done it and be advocates for that kind of change and not be afraid to do it.

[01:26:20] When I was in PO I Ws and we were looking at, how do you do this for the Navy? We came up with a a survey and we had 20 attributes. And we asked people to rank those attributes, as which ones you think are the most important players. and so have a clearly defined requirement, might be one and have budget and stuff.

[01:26:42] And we're looking at impediments to change. And so we gave 'em to two general types of people to the people that were on part of the program and people who weren't part of the program. And we compared the two results. And the people that weren't part of the program, the biggest impediments were things like, the Congress, these laws, or, the budget process or, those kind of things.

[01:27:09] And the biggest impediment to change for the people that were involved in a program was fear of change. , that was what I had picked too, when I did it, but it's just the attitude you have is you're afraid to do it. There are so many ways that the organism of the military industrial complex works to.

[01:27:30] Fight off, the white blood cells come out and fight. These changes that you get worn down, and pretty soon either you're worn down, you won't do

it cuz you're worn down or you're killed off or you just don't care. You're in just a make money that you know it doesn't go anywhere.

[01:27:46] To make a change, you gotta have a customer that wants change. and I would say that work for a customer that wants change and that knows what he wants and your job is to produce that change you've got a lot of latitude more than you think you do on what your resources are.

[01:28:02] Maybe your budget says this, but Hey, you're leveraging. Maybe some of those products can be leveraged. Somebody else's paying for it. And maybe it's somebody or another program officer or even in another service. When I was on this national academy of SS academy of sciences for the air force, they had five, five initiatives for the future.

[01:28:20] And if I see if I can remember one of 'em was a hypersonic weapon and I forgot what I, but the one that I remember is directed energy. Yep. So my question was, and I'm sitting around here with a bunch of retired, three stars and the four star, and I'm going well, and we have a, another general or.

[01:28:39] The senior guy for the air force talking about what they're doing with directed energy. And I said the Navy's putting a lot of money in directed energy, too. What are we learning from there? What are the common elements that we could collaborate with the Navy? And he says well, we have a, like a symposium every year.

[01:28:57] and I'm going well, that's okay. You're talking it. But they weren't really, there was no tangible evidence that they were taking a product from one service and giving it to the other on either side, they were doing their own thing in parallel. And I'm like, why don't we collaborate on this?

[01:29:14] **Eric Lofgren:** Is that like the, one of the kind of like budget issues? Cuz you, you said the fact that the budget had crashed so much, you just had to do things differently. If they can just request oh, more money will fix this I'll they can just build their own stove. Talk. Remember

[01:29:26] **Bill Johnson:** the Al gore hammer awards.

[01:29:28] Yeah, we had two of 'em the first one, we got everybody, we had over 500 people who were working on the program between the government and Lockheed and everybody. And we met in the The HT Regency hotel and a big auditorium. I received one and the guy from Lockheed, my counterpart received one and the one from DSR received one and we each had to give a

little pitch and my pitch was, , <mark>if anything, we had too much money and there was an Admiral that stood up and walked out</mark>.

[01:30:00] no way . And the problem was that we were spending money on stuff that, was going to be obsolete soon, or didn't really need to, , we spent it because we had to budget it and somehow it, we never looked at it. And so it was, a little bit here and there, but it ended up to a lot of money.

[01:30:17] And so I say, be thankful for the money you have. And what are you spending money on now that you don't need to spend money on that? We, that's not part of the plan to make acoustic superiority reality.

[01:30:31] **Eric Lofgren:** People always in this debate today, we have that legacy verse, like new modernization.

[01:30:36] And everyone's like in the, up in arms, who makes these trade offs? Shouldn't they be happening at that kind of level? Yeah. Yeah. It should be the initiative of the program office in some respects to it seemed like you guys had like a follow. Like you guys came out of, Hey, we're gonna be like the backup or the follower, but just by having that opportunity, you actually were able to show.

[01:30:56] Yeah. Like with less money I could do

[01:30:57] **Bill Johnson:** better. Yeah. We were, they had another group to look at, the submarine of the future. And I was, I had the legacy and okay. We're gonna be a bank so that the money of the summary of the future can come back and take our budget to pay for something they didn't think of.

[01:31:12] And I'm going, Hey, we're gonna make the, these submarines that we have in the fleet right now, and that we're playing on delivering in the next few years, we're gonna make them relevant and we're gonna make them superior when they get out there in a year and a half, we start that's when it gets out there, we're starting now and we're gonna deal with the money we have.

[01:31:30] , what these future subs, the future sub at that time was the Virginia. They changed their program to to incorporate what we were doing. And I think having that, that legacy approach, I think that was the right place to do it from because I could turn off work and use that money and redirect it.

[01:31:47] So I. Though we said, I couldn't

[01:31:50] **Eric Lofgren:** I'm sure some people are like, wow.

[01:31:52] **Bill Johnson:** They yeah. There are a lot of people there, what are you doing? And I'm going, Hey, that's my

[01:31:57] **Eric Lofgren:** bread and butter.

[01:31:57] **Bill Johnson:** You're exactly right. And that's, so it worked and I think that the government needs to do that.

[01:32:03] I think we need to do that. I think we need to, and we need to look at the future as something that's real. Change, take an honest look at our stuff today and how would we do if we had to fight Ukraine where there's they're, the people in Ukraine are showing what could be done when they're licensed the line, when they're proving that, and I won't stand up for the Russians, I don't know how, what they do to get their ships.

[01:32:28] In place. There's a lot of criticism on that, but I can tell you that they're facing, I think pretty innovative weaponry or, tactics from Ukraine. And I'm my wondering is how would we do against somebody who's equally innovative, and there's a lot of, what's China doing?

[01:32:44] , I don't know. I know that we had two, two Egypt ships. and the south China sees that collided with people. How did that happen with all those sensors we have on EIS,

[01:32:55] **Eric Lofgren:** and they're also pretty frail. I heard one ran a ground several years ago and just because it ran a ground, like the

[01:33:02] **Bill Johnson:** whole system went down.

[01:33:03] Yeah. Yeah. So I'm saying to, to me, those are red flags. Hopefully somebody. somebody's taking action to fix that.

[01:33:11] **Eric Lofgren:** But you're saying also like the, I think the normal tagline from the Navy and otherwise is you gave us a 3% increase and inflation is this. And we need a 10 or a 15 or a 20% increase.

[01:33:22] You're saying. No, there's money there to things that are obsolete or otherwise not gonna be relevant in this fight. You should be making those changes now and proving something will work and then you can show it and

[01:33:35] **Bill Johnson:** expands. Exactly. And the answer's not more money and just gimme another big chunk it's, clean your own house.

[01:33:42] First that's not the normal way of doing business thing, you gotta do it. Somebody's gotta do it. And I think you need smart leaders and you need the people in control. People that are really doing leading and you have, and smart people. There's a lot of smart people.

[01:33:57] I think really, you know what I found. I put myself in this category, you got people that are reasonably intelligent and if given the opportunity could do bet a lot better. And for me that acoustic superiority crisis was a wake up call and it, a lot of things became clear when that happened.

[01:34:17] I wasn't at the point where my thought my job was shoveling money to Lockheed, , I'd made a lot of assumptions about how things work and what I thought I could do at my level. And it wasn't until that crisis came about.

[01:34:30] And I did an examination of conscience and found out, , I'm a big part of this too. And by God, if it's I have anything to do, it's gonna be done different. And I, I started doing things different and I was doing it fast. And there was a lot of people that didn't really understand it, but, because it was such a high priority for the submarines side, they weren't willing to stand of my way.

[01:34:51] And we produced and we did it quick enough that, and we had it documented well enough that nobody could call our bluff and say it doesn't really work. You cook the books or no, it was a fact that we did it. And yeah, there was issues when you do things fast and and I not, everybody's comfortable with it.

[01:35:09] And there's things that go on that you, if you knew about it you'd fix. and so , in seven years, I was the biggest critic of how we were doing things, cuz I saw all kinds of things that, I would change, but if you stand back and take a look at how we did compared to everybody else and we did pretty dag on good, we were running circles around everybody else.

[01:35:29] And so I think , how do we get that spirit in the game? And I think there's a lot of people at top that are, are good at giving speeches and talking abstract fluff and they have you know, impressive titles and they have impressive liturgy of lineage of, all the people that they've worked with and stuff.

[01:35:48] And at the end of the day, they don't have any. Other than talk

[01:35:52] **Eric Lofgren:** that's true. Who does? The planning is incredibly important. We do program planning almost by committee. And it's just what plan is that? It should just be someone who's been thinking about this a long time.

[01:36:02] Who's almost integrated that and able to, through collaboration with others, bring that to fruition. Yeah. Should programs really. Like personality driven almost to an extent as opposed to what

[01:36:14] **Bill Johnson:** it is today. I think if you're in a program where you're going into the frontier of the wilderness, you better be person.

[01:36:20] You better have a strong personality. Yeah. You, and you're gonna have to operate a lot outta instinct and not just, it worked this way in the past, so this is the way we do. You're not, you don't have a train track. You're following there at a schedule. You're out there and you're not sure what you're gonna find, but you know that here's the goal, I better find something that's valuable that shows value that shows value.

[01:36:42] And and you wanna be able to. , look at the sailor or whoever's gonna use this product and look 'em in the eye and feel good about it and not hang your head because you didn't. If only Congress had given me more money or if only if only didn't have this boss or if only if only somebody else had done something, look, and see what you can do for yourself, for us.

[01:37:01] To me, that's what a leader does.

[01:37:03] **Eric Lofgren:** I think that's a great place to wrap up. We're definitely in kind of crisis mode in these years going into the 2020. So I think that's like an amazing thing to really think about all of us have a duty and examine our own conscious.

[01:37:17] And really try to break those barriers. Cuz it takes courage as you've said and. You're gonna take those arrows, but if you push forward with conviction, then you can really have an impact, not just on your life, in the lives of those, around you, but potentially like the course of national security.

[01:37:32] Right? So, Bill Johnson. This has been great. You've given me a lot of information. , if the listeners want to go into, exactly what happened with requirements and, acquisition and funding and all these things there's great case studies. We're gonna put those out on the website.

[01:37:47] So definitely download them there. Bill also has a bunch of great articles on Archie, the a R C acoustic, rapid cots insertion. So if you want to try this in your own program and you need, you. Examples of success that you can take to your leaders and really, build this thing out, definitely come over to acquisition talk.

[01:38:05] We'll post up this this discussion notes and all those types of literature. Have that at your resource, but this has been a great time Bill Johnson. Thanks for joining me on acquisition talk.

[01:38:15] **Bill Johnson:** Thank you, Eric.

[01:38:17] This concludes another episode of acquisition. Talk, if you have comments, interview recommendations, or just want to chat, please contact us@acquisitiontalk.com. Thanks again. And until next time.