

The Museum of Flight Oral History Collection

The Museum of Flight
Seattle, Washington

Jason Clark

Interviewed by: Dan Hagedorn

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Abstract:

Boeing executive and engineer Jason Samuel Clark is interviewed about his career in the aviation industry. He discusses his 20+ years at The Boeing Company, beginning with an internship in 1992, as well as his involvement with various development projects related to the 747, 767, 777 freighter, and 777X. Topics discussed include his personal and educational background, his experiences with Boeing aircraft, Boeing's evolution and future as a company, and his business and customer service philosophies.

Biography:

Jason Samuel Clark is a Boeing executive and engineer whose career with the company spans 20+ years, beginning with an internship in 1992. He was born on February 4, 1970 in Seattle, Washington, to Francha and Maurice Clark. Clark grew up in the Maple Valley, Washington, area and attended school through the Tahoma School District. He developed an interest in engineering at a young age and studied engineering technology at Western Washington University (WWU). He graduated in 1993.

In 1992, while still attending WWU, Clark was selected to intern at Boeing's fabrication division. He focused on the manufacturing, research, and development aspects of the fusion bonding and superplastic forming process. While an intern, he was formally hired by Boeing. In 1993, Clark left Boeing to join a small start-up firm developing aviation and ground-based electronics technology.

From 1994 to 1997, Clark attended Washington State University, where he earned his first master's degree in business administration with a focus on finance. From 2003 to 2005, he earned two additional master's degrees: one in engineering and a second MBA, this one in general management.

In 1997, Clark returned to Boeing as an engineer for aircraft development. Over the course of his career, he has participated in the development of the 767-400ER, the 747-8, the 777 freighter, and the 777X. At the time of this recording, Clark is the Director of Engineering at Boeing.

Biographical information derived from interview and additional information provided by interviewee.

Interviewer:

Dan Hagedorn served as Senior Curator and Director of Collections at The Museum of Flight from 2008 until his retirement in 2016. Prior to his tenure at TMOF, he was Adjunct Curator and Research Team Leader at the National Air and Space Museum in Washington, D.C. Hagedorn is

a graduate of Villa Maria College, the State University of New York, and the Command and General Staff College, and served in the U.S. Armed Forces for almost three decades. He has written numerous books and articles about aviation history in general and Latin American aviation in particular. For his work in documenting Latin American aviation history, he received the *Orden Merito Santos-Dumont* from the Brazilian Government in 2006. Since his retirement in 2016, Hagedorn has served as a Curator Emeritus at the Museum.

Restrictions:

Permission to publish material from The Museum of Flight Oral History Program must be obtained from The Museum of Flight Archives.

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Jason Clark

[START OF INTERVIEW]

00:00:00

[Introduction and personal background]

DAN HAGEDORN: It's Monday, December the 7th, 2015, the 74th anniversary of the Pearl Harbor attack by the forces of the Empire of Japan. We are here today in Everett, Washington at the Boeing BOMARC Office Complex with Mr. Jason Clark. And it's our honor to include Jason in our formal Oral History Program at The Museum of Flight. First of all, I'd like to ask you, Jason, some general questions. We would like to ask you first to state your full name and then spell it for us.

JASON CLARK: Okay. Jason Samuel Clark, J-A-S-O-N, S-A-M-U-E-L, C-L-A-R-K.

DH: And we do also have to ask you—we even ask the ladies this—what's your date of birth?

JC: February 4th, 1970.

DH: And where were you born?

JC: I was born in Seattle, Washington.

DH: Very good. So you're a native Washingtonian.

JC: Absolutely.

DH: You grew up and probably were educated here as well. Where did you go to elementary, high school, and secondary school at?

JC: All in Maple Valley, Washington, up through the Tahoma School District.

DH: I happen to be a resident of Maple Valley, as a matter of fact.

JC: Oh, good for you. I grew up in Hobart, which is a little bit of an outlier there.

DH: I know exactly where it's at. One of my wife's best friends lives in Hobart, as a matter of fact. So you went to high school through the Maple Valley High School system, Snohomish—

JC: Tahoma. Yeah.

DH: Oh, that's right.

JC: Tahoma School District, yes.

DH: And I gather from some accoutrements that are in your office here that you had a collegiate experience of some kind as well.

JC: I did. I did.

DH: Where was that?

JC: I did my undergraduate work at Western Washington University in engineering technology and then went to Washington State University where I got my first MBA, focused in finance.

DH: So you have one MBA. That suggests that you have a second.

JC: I do have a second MBA, which is more in the general management and strategic. So you can focus on certain elements once you get through the core suite and so the one MBA in finance because, at one point in time, I thought I'd want to be an investment banker. I kind of went that route and really enjoyed it, and it's been very helpful in my career so far. But it was never kind of planned as a Boeing-type degree. And then when I came back—when I came to Boeing, I went and focused on my general management and strategic knowledge. So I got my MBA in general management and a master's in engineering.

DH: Very cool. And what year was that?

JC: So that would have been 2003 to 2005 for the second two and then 1994 to 1996 for the first master's.

DH: Very good. Very good. I mentioned to you earlier that we aspire to be the foremost educational air and space museum in the world. One of the reasons we like to do this is because we like to hopefully inspire younger folks to pursue careers in the sciences, technology, engineering, and math. So we always ask someone, what do you feel in your educational experience brought you to the position that you have today?

JC: Yeah, so the—it actually, I think, started pretty young. I've always been mechanically inclined. At one point in time I kind of thought, you know, hey, I wanted to be a mechanic—a car mechanic because cars were always super cool and it was kind of fun to work on it. And then as I started to get into my drafting classes in high school, I wanted to be an architect. I wanted to be—I loved working and understanding mechanisms, taking things apart and putting them back together, having them run differently, things of that nature. That's what really got me into the engineering forum.

One of the things that really differentiated it, though, was I'm a hands-on type engineer. I like to think of it as an applications-based engineer. I like the science and the technology, but I also like to get in there and fiddle, change things, make it work better, you know.

Just understand how it works sometimes. So that really got me going on it. And really, what got me into looking at aerospace was, you know, early in my undergraduate career, started looking—because of the locality to Boeing—started looking at how the aviation industry worked. And we got a lot of little grants and other things that came through the program where we would talk about this type of, you know, material change or this type of aviation-type mechanical difference or a low-cost activity like robotics or something like that would really change the way the industry works. And it really got me going on how does aerospace work as we started to tour plants and see things of that nature.

DH: I'm willing to bet that your parents had some hand in this direction that you decided to take. Describe your parents. What were their names? Do you have brothers and sisters?

JC: I do. So my parents, Francha and Maurice Clark—both also born and raised in Seattle—and they really pushed me. The first thing they always pushed me on is get your education. It's hard. Life gets in the way. Things start happening when you get out of high school. Go focus on your education first. They instilled that into me very early. Do it in a field that you have a great deal of passion for. And I was lucky enough early in life to know some of the things that interested me. I didn't know exactly what it was, but it was something that had to do with that, you know, how things work. I knew that was at the core of it.

And then as we started going on, my father, who is a financier and a stockbroker whose background wasn't necessarily in engineering—he was what you would call kind of a, you know, at-home-handyman-type engineer. He was always tearing—doing the same thing. He was an engineer; he just didn't know it. And he went a different career path. Because he was always tearing things apart, right, and always getting into it and fixing this or changing that. And so that was one of my key inspirations.

And then my mom, of course, was just that backbone of support, just always there to make sure that, you know, I was on the right path. She didn't know what the path was, but she was always there to make sure that I was on the right path. So—and then my brother, also very entrepreneurial. His name's Mica Clark and, you know, runs a few different businesses up out of North Bend. Also mechanically inclined. Started, actually, as an automotive mechanic and has moved up since then up to the point where he started buying his own businesses here in the Puget Sound.

DH: Did you build models, by any chance, when you were young?

JC: I did.

DH: Airplanes or rockets?

JC: Yes. So the airplanes were always the favorite. I had a few of the car models and those were kind of neat, but the airplanes were always the cool ones because you could hang them on the ceiling. And like any kid, I had a whole bunch of airplanes on the ceiling that I'd, you know, change, modify. I'd get into those absolute where I'd take one down and I'd do a little different change to it—some way change the paint, do something a little different until I had it just perfect, the way I wanted it. And then, of course, the rockets. Who can't have fun when you're putting something together, you know, and basically lighting it off and, you know, recovering it and lighting it off and recovering it and over and over? It just goes to the core of who we are, you know, so...

00:07:50

[First job and thoughts on internships]

DH: Absolutely. So what was your first assignment when you came to work with the company? I assume this was your first job.

JC: Well, it was. It's actually a fairly interesting story. So I came to The Boeing Company as an intern in 1992. And that was the—I couldn't have been more proud. You know, I came in and I went into the fabrication division but in a specific role in manufacturing, research, and development. And it may bore the bejeebers out of some folks, but it was on a process called the fusion bonding and superplastic forming, which are known throughout the industry now for deep draw, hard metals, you know, tough metal-type deformation.

And it was a dirty lab. You know, we had a lot of stuff going on. We were just in the starts of the qualification of it. But it was so cool because we were doing something The Boeing Company had never done before. And we were changing a process, and it just—it was so inspirational. And you had—you know you had to understand how the material worked, where it was going to fit inside the airplane, how important it was to the airplane. And it was just—it was so absolutely inspirational that we went through it.

DH: How many people were in your internship class? Were—was it—were you selected? Did you have to compete?

JC: Yeah, we had to compete. We had to submit a proposal, basically a project-type proposal. Then we had to go through an interview process. I was down-selected as two out of, I think, a pool of 150. And by the way, the other person that was selected, she is still here as well and works in our CAD Department, so—

DH: Do you know if they still have that program?

JC: They do. They still work very closely with The Boeing Company, and it's grown actually fairly significantly.

DH: Have you had the opportunity to perhaps engage some interns yourself?

JC: I have. So as a—I've been the executive for both University of Michigan and for Washington State University. I've also done a lot of work with collegiate of art and sciences at Western Washington. I've met several of the interns. And what's really inspirational is when Boeing comes and sees it—and I don't—I remember this completely—when the Boeing executives would show up on the doorstep and come into the classroom. And it was just this bigger-than-life figure, you know, of who it was. Didn't really matter who it was but was just this bigger-than-life because they were representing so much of what the Puget Sound is and what it was growing up in the Puget Sound with having Boeing as part of our background.

DH: So were you hired directly out of the internship program then? Your first—

JC: I was and that's part of the interesting aspect of it. So I was hired in '92. I went and finished my last year of school. Then in that transition in 1993, we were—the company was making some changes. I decided that maybe I was going to take a little bit of a pause, and I went and joined a small start-up firm that basically was developing a new technology for aviation and ground-based electronics. And I did that for four years and grew the company, which was just an absolutely fantastic foundation for me. Because I knew I had that innovative spark and spirit and I knew that I could do this in multiple different places. I saw it at Boeing. I knew what it was. I went out and did it outside the company, and then about four years later I came back to the company a much better engineer for it.

DH: So I think it's safe to say that you feel that your educational background actually prepared you for the position that you arrived at.

JC: Yeah, couldn't have done it without it. It is an absolute foundation in the process, and it's—although a lot of people can learn elements of developing new products and new, big packages and changes within the aviation industry, you got to have the foundations, the analytics, the expertise. How do the physics work? How does the design work and inter-relate with one another? What is the mechanism and the mechanics of it? That is really important as a foundation element.

00:12:10

[The 767 Program]

DH: Absolutely. I know that the 767 program probably predated your experiences with the company, but you must have been involved in that at some level along the way.

JC: It was. So I'd say—yeah, when that airplane was rolling out, I was nine or ten years old, you know. And although I may have seen it in the sky, I didn't know a 67 from a 37 back

then. But the piece that I came in on as—it was when I came back to the company—that was my first job. It was the 767-400ER. And it was my first airplane development. My exposure to Boeing to that point was about kind of the grassroots, the manufacturing, research, and development, fabrication technologies, things of that nature. This was really my first venture into assembly and installation-level qualification, certification, airplane flight characteristics, the larger manufacturing process and how that works and how technically in-depth that process is. That was the first product that I'd actually got to see it on.

00:13:18

[Transition points]

DH: I think I mentioned to you that we talked to Dick Taylor. And as you probably know, he's widely regarded as the father of ETOPS [Extended-range Twin-engine Operational Performance Standards].

JC: Yes, he is. Yes.

DH: How did you fit into that whole scheme of things? Did you become involved in any of the evolution of that entire—?

JC: On the '67, not as much. I got my first exposure. So my first role as an engineer on the 767-400ER was really in the development of the integration for flight test for all of the activities and some of the qualifications. So my exposure to ETOPS and understanding what it was to get that twin-engine certification was on that program as we were trying to extend the range associated with ETOPS. My next really big exposure to it was on the 777-300ER, when we were going to the next large [scape?] on the ETOPS capability so we could do more direct flight that didn't require a bearing route over the Pacific. So very important element of that twin aisle.

But I did get to watch—this was a really cool part—got to watch the strategy and the evolution from a four-engine environment, kind of a 707-era environment, to large trans-Pacific and Atlantic capability and global capability, to a twin-engine and with all the different aspects of what that brings. You know, as you're still producing a large 747 with four engines, obviously, you're promoting new twin-engine operation that has an efficiency gain that is just phenomenal compared to it. And it's—watching that dynamic play out on the world stage, it was just absolutely intriguing and really started to drive me towards the, “What do we want to do in this industry and how do we start shaping it differently?”

DH: I often refer to, in my own work as a curator, that there are certain transition points in aviation history. I think we'll look back upon that as one of those transition points. It definitely is.

JC: Yep. Well, and you've watched the entire industry make the transition.

DH: Oh, absolutely.

JC: You know, it was for a while—and I remember very tough marketing campaigns from our competitors, you know. And it was—it played on the emotional aspects, which is not what we're about in aviation. We're about producing the safest, most capable products out there. And it doesn't matter if you're Airbus or Boeing or, you know, who it might be. That is always your base and core. And watching those I thought really kind of detracted from where are we going. Now we're all going in the same direction.

DH: Absolutely. The 747, of course, the Dash 8 has been a—and the whole program has been a long-lived program for Boeing and I think, on balance, a very profitable one for the company. What do you feel led to the decision after more than forty years to expand the program line and to take on a new big challenge?

JC: Yeah, it's the—you know, it's—when you look at that product and the first thing that comes to mind when you think of it is just how absolutely iconic it is. Even as a kid, you know, I don't care where you were. You can recognize that airplane, that 747. It's just—it's a trademark of the sky, you know. And whether it's monikered as a queen or it's monikered as anything, it is just an absolutely gorgeous airplane and it's such a tangible part of our aviation history. So I think the very first one is how do we create that continuum of that glory of flight, you know? Of what it always was, the Pan Am era and the early days of United and all of those, because it really was a change agent in that.

The second piece that I think that was really there as we started to look at is how do you ensure that we are producing products for the aviation industry, our customers, the airlines, you know, the folks that fly those airlines, that are going to provide all the comfort, all the efficiencies that are required? Do those specific routes that they need—and even though that airplane has become more of a niche player maybe then what it used to be, it is still a very tangible part of that ladder of payload-range airplanes that fit the requirement.

And then I think that last part is just the competitive nature. You know, part of the fun is always having that dog in the fight. You know, you're always going to be in that element of your competitor. You're not here because, you know, you want to just be good and—it's because you want to do better. You want to make something bigger, better than what it was before. The 47 just fit that niche really well: new wing, new set of engines, an interior that's just drop-dead gorgeous, you know, new avionics packages. Yet it

maintains the same basic flight characteristics as the original so the crews can fly it the same way. It's a real part of our total offering to the airlines.

00:18:41

[The 747-8 Program]

DH: Absolutely. What was your role in the 747-8 program? Were you involved in that?

JC: I was, yeah. So I was the Chief Engineer and IPT [Integrated Product Team] Leader for all the interiors and interior systems. And part of that is that wonderful—you're part interior designer, part engineer. And I think some of the coolest things you just ever learn. Because these are the touch points of the flying public, right? Yep, they see the outside of the airplane. They see the gateways as they enter the airplanes and as they embark. But when they sit down and what they see and how they interact with the airplane, whether it's a galley or lavatory or a passenger seat, how their bags fit within the stow bins, took another element of engineering that I had, which tended to be more structural, more systems type background, into a, "Wow, you've got to really understand how people think and how people operate." To be a 50th-percentile female trying to close a stow bin, right? Well, that's part of the understanding that you have to have and how do you make it easier for them to be successful at what they're trying to do. You know, the comfort points.

The changes in in-flight entertainment, has just been an unbelievable journey to watch. As we watch folks that used to fly and you'd fly a six- or an eight- or a nine-hour, 12-hour route and you had a book and magazines. Now you think of the way the world is, and you've got, you know, 23-inch screens in front of you with full media capability and broadband that connects you from around the world real-time while you're flying at 40,000 feet, you know, at 600 knots. It's a completely different paradigm than what we're used to. And then, of course, what the flying public thinks? When it doesn't work. Right? Because now they're used to it. They're used to what they have in their homes, and they want that in their experiences when they're flying. And so it's the quality has just improved dramatically over the last decade. It's fun to watch that part.

00:20:45

[777 freighter]

DH: Speaking of the flying public and the average person on the street, I think most people would be surprised to know that there is a 777 freighter.

JC: Yes.

DH: How did Boeing's decision to expand the 777 family of airplanes with a freighter version come about, in your opinion? Were you involved in that at all?

JC: So I wasn't involved with the decision-making process. I was involved in the implementation and the development of the aircraft itself. But I know the folks that were involved in that. And when you really look at it, with most airplanes and airframes, there's a natural progression of the airplane that occurs. You work on that first model. You enter it into service. You kind of work out some of the bugs and make it just the best product out there. Then you do a couple derivatives, mainly for that passenger set.

Then there's this kind of natural transition that says, "Boy, should we do a freighter?" And when you look at it, in the timing of the freighters, there was a transition occurring. The bulk carriers—the FedExes of the world, the UPSs—were really starting to get into a, "We need better efficiency." They needed to change their route structures. They work in a hub and spoke, where whether you're flying into Memphis or you're flying into some other local area and then you distribute from that center, you need longer legs. All of a sudden, Memphis to, you know, Alaska because you've got to refuel doesn't look as attractive as direct flight from Memphis to Shanghai or to Tokyo. Now you can make that leg. That's what the new product has to offer.

The other part that really started to demonstrate was the typical makeup of the freight industry was to take an airplane that had been in service as a passenger for a period of time and modify that airplane into a freighter. You know, take the windows out. Put a big door in. Put a cargo handling system—you know, you basically strip it down to its bones and build it back up again. And it's a great industry and those products do very well. But those—the airplanes are a little more tired, and it's harder to keep them—higher maintenance. I think what we were starting to see as an industry is that transition that, actually, a lot of the cargo carriers and freight carriers wanted something that was more reliable, but nobody was offering that. And Boeing really kind of stepped into that with both feet, into that industry.

DH: I think that's really transformed the entire air freight industry.

JC: It certainly has. Yeah, and it's also brought a lower cost factor to it that really helps the industry. Because it's hard when you've got to transport flowers from, you know, up north, Mount Vernon, to Dubai, right? That's an overnight operation, and you needed to do it in a climate-controlled environment that a retrofitted, you know, MD-11 or MD-10 may not have the capability of doing.

[The 777X Program]

DH: Well, that brings us to the 777X, which I, as an aviation historian, find a fascinating airplane. How and when did the proposal for that design come about and what was your role in all that?

JC: Yeah, so I was the Director of Operations at the time as it started to come about. And it was an interesting set of dialogues. You know, this is in that kind of 2010 to 2012 timeframe. And I think we always knew there was a next family member to the 777. It's just such a glorious platform, and it does so remarkably well in service. And it's just—it's one of those airplanes where people look at it kind of in that iconic structure where you go, "Wow, I just flew a 777, and it was fantastic," you know. The airlines absolutely love it because of its performance, its maintainability. It brought in a new era of design philosophy with digital design.

So we always knew there was some other family member sitting out there. But when you're working in an industry and you're weighing what your competitors are doing and what we're doing, there's always a little back and forth. What should it be? Should it be just kind of a basic upgrade, new avionics, maybe some—a re-engine, those type of things? Because sometimes that works really well in industry. Or should it be something big? Re-wing, you know, all new interior, all new control systems. You know, different package completely, longer airplane, more seats, whatever it might be.

That combination of dialogue took a period of time. And when you watched the dynamics back and forth of what the industry was—and it was a lot of working together, going out and talking to the airlines. "What do you guys need," you know. And that, I think, has been one of the fundamental shifts I've seen in aviation. Used to be very much the, "Let me push you what I think you need." I think all the OEMs—and it's made Boeing a much better competitor—have really recognized it's, "You got to understand your customers and your customers' customer to truly make a difference."

DH: And you used—you use an acronym, I need to ask you to define it—

JC: Okay. Oh, I'm sorry

DH: ...for those of us who don't understand the language. "OEM."

JC: Oh, yeah. The Original Equipment Manufacturers.

DH: There you go.

JC: Right. So those Original Equipment Manufacturers like the Boeings and the Airbuses and, you know, the new entrants that we're starting to see into the market which makes us that much more competitive. You know it—I think the realization is that what makes

them competitive isn't pushing technology. We could always push technology. It's knowing what combination of technologies, new engineering capabilities that are going to fit their needs. And that is really a transition that The Boeing Company has made in strides. The involvement of the customers in our development of these new products—and I've watched it on the 747-8, the 777 freighter, the 767-400ER—they're right there with us. We're hip to hip as we're developing these and we're understanding their needs and how they're going to consume the product and how their customers are going to interface with the product. And it has made us that much better.

DH: This may seem like a little bit of a strange question, but how do you and your fellow executives refer to the airplane? What do you call it?

JC: Oh, as far as the airplane goes? We call it the boss, right? You know. And so it is kind of funny because when we look at it—and, you know, you could call it the queen of the sky and you can call it all these great things because the 777 has just got a remarkable set of legacy. But when we recognize it, we look at it and say, you know, "It's not a person who's our boss, right? It's not, you know, an organization that's our boss." When we truly look at it, it's that airplane. It's that combination of three million parts all flying together as a series of compromise to fulfill what it is that our customers need. That's that—that's our driving passion. And when you remove all the organization and the leadership and the management, what you really have is, when you're focused on that one platform, people become very, very committed to that product.

00:28:07

[Relationship between 777X and 777]

DH: Absolutely. So I think you probably answered the question already, but how important is the 777X and what is its relationship to the basic model 777? What—how—can you describe that relationship?

JC: Well, its—I like to talk of everything like a family. Because, you know, it's—I mean, The Boeing Company was founded on family—a family principle. It really was. And when you look at it, an airplane is just as much a part of a family as any human in the equation. And I think we all look at the airplane as it's that next, you know, little brother, that sibling, that little sister that we're coming into is going to be that much better. And when you look at it, it's still going to be an airplane. It's going to look like a 777. It's going to have a little bit different wing look. But the overall aspects of it, it's a 777.

When you walk inside, it's going to blow your doors off because of the new aesthetics that are in there and what we've learned about designing interiors for the flying public so they feel better, they feel rested, they feel like they're doing something different. Brings that inspiration of youth. The first time you fly an airplane—and we say it all the time

and some people might think it's almost cliché, but it's not. Everybody remembers the first time they flew on an airplane, whether it was a little single-engine Cessna or it was a big airplane at the airport, whether you were a kid or an adult, it doesn't matter. You remember it. It has that much of an impact. People that have been flying, the million-mile guys, the million-mile folks out there, are going to walk onto this airplane and know that they're on something different, a different type of experience. That's what we're aspiring to.

00:30:00

[First aircraft flight]

DH: And that reminds me of a question that I failed to ask you earlier. What was your first aircraft flight?

JC: My first aircraft flight was a 737 flight to Disneyland on Alaska Airlines.

DH: That's a pretty good destination and a pretty good airplane to go there on.

JC: Yeah, wasn't bad and I remember it clearly. I was 14, and it was spring break. Yep. That was my very first time I could get on an airplane. Yep.

00:30:22

[Reflections on Boeing's future]

DH: Very cool. Boeing is now 100 years old. There are very few aircraft manufacturing companies that can make that claim. You've worked with them for nearly 20 years. I know this is a—none of us are soothsayers, but what do you see as Boeing's future and your future role with the company?

JC: I think with Boeing's future it's unbelievably bright. One of the things I've seen in my 20 years—because when I came into the company, it was a little pre-merger with McDonnell Douglas. You know, we that kind of—it was a twinkle in the leadership's eye, and they kind of had an idea of how it was going to work. The competitive horizon was different. You know, there was just a few folks in it, and then we had this little up-and-comer, you know, OEM, the Original Equipment Manufacturer, Airbus. And the language was very much, "Oh, they really don't know how to build airplanes or design airplanes or things like that." And what we found very quickly is the realization that they did. They knew how to market. They knew how to put product into that market. They knew how to design and were learning very rapidly. And what it did is it made us better.

That was the first indication that I knew that this company was going to be a long-lasting company. Being the learning organization, taking on the new ideas and kind of bringing those forward and then really evolving them into something that is viable for the market

space, is what our foundation is. We're engineers. We're mechanics. We're supply chain management. We know how to do these things. And what it did is it made us better.

Then as I look forward and as I look to where we've come, even from that original merger and that really competitive evolution of our main competitor, I see more opportunity. We've got new entrants coming in. And there are some people that it might scare them. It excites me because I know that what it does is it puts it into a competitive nature. We've got to be more aggressive. We've got to get out there with better product. We've got to differentiate differently. We've got to do it more rapidly. We've got to do it at a much lower cost. These are all the language sets that come into any aviation industry. Whether you're making small airplanes or large airplanes, it's the thing that excites.

People always say it's a 100-year-old company and it's stodgy, you know. And it's just—it's one of the old blues, you know, and it's always been on the Dow—it's like, no. I look at it as a very young company. We are in a competitive nature that doesn't reflect an old, stodgy company. We are competing as though we were starting up. And it's how do you move this really big company of ours into a new position that really allows us to compete.

So I start seeing what we're investing in. And even though my background has been primarily in the development of new products, whether it's been in manufacturing engineering or design engineering or that, the lot of my latest ventures have been in how do we change the production system and the supply chain to be something different. And I often use the analogy of, you know, we've changed the design of the product over and over again and really brought it up to speed and really taken it forward. It is just an unbelievably competitive product.

Not all the variables are the same for our production system and for some of our supply chain because some of those are 60, 70 years old now, right? They really are. And when you look at that, here's our opportunity. For the first time in our history, we're seeing more automation, more automotive-based, lean approaches, more innovation when it comes to how do we assemble, how do we fabricate, how do we work with our supply chains, right? It is so exciting because what it feels like is a new startup company with a huge horizon in front of us as we define what our future market's going to be. I think our next 20 to 30 years are going to be unbelievably bright.

00:34:43

[Favorite airplane]

DH: Fantastic. Now I'm going to put you on the spot for a minute.

JC: Okay.

DH: This is a question I ask every one of our narrators and you're going to be no exception.

JC: Okay.

DH: What's your favorite airplane and why?

JC: What's my favorite airplane?

DH: I bet I know the answer to that question.

JC: Yeah. So my favorite airplane hands down is the 777. And although I love all of the products that we have, it's a love of labor. You know, I've come through this piece where I've worked my tail off to make the airplane better, whether it's in production or in design. And then when it—when that love of labor turns into a labor of love, where it's just—you look at it and it surrounds you, it's one of those type of things where you really do recognize what this thing can be.

Like the 47, the 777—somebody 40 years from now is going to say, “What's the next family member of the 777?” Because that's not the way it always was. It used to be, you know, after 20 years you retire something. I think we've learned a lot in this industry, and it's the price we've paid for being a 100-year company. We can recognize that sometimes the best airplanes just need to be updated. Sometimes the airplanes need a new wing, you know. It's just different technology, but it's just—it's founded on an absolutely fantastic airframe. And when you look at the 37, the 777, and the 47, they all live that legacy.

00:36:22

[Words of inspiration for young people]

DH: Very cool. I mentioned to you when we came in that we aspire to be the foremost educational air and space museum in the world. But we also place a lot of stock on inspiring young people. If you were given the opportunity to communicate to the young folks who will be following in your footsteps, what would you tell them?

JC: It's the—you know, one, it's a fantastic question. You know, everybody is inspired a little bit different. But when you look at it—when we take the STEM processes, the STEM knowledge sets, the science technology, the engineering, the mathematics, and we create a core, one thing we create within that is this desire to innovate. “There's something I want to go do.” And when you talk to young people, they just—they so want to do something. They want to contribute, and they want to be important to something that exists. They want to be recognized for that. Because that's that joy of being young. You're constantly driven to see the world because every day is seeing something new—is when you start going down that, it's that dare to dream.

Somebody dreamt at some point of putting someone on the Moon. Somebody dreamt at some point of flying. Somebody dreamt at some point of flying at higher levels and higher speeds. Somebody dreamt all of those things that will really make a difference to somebody, right? The aviation industry is an unbelievably exciting industry because it's not, you know, the next generation of, you know, I—the soap products or, you know, all the things we use in our daily lives. It's something so highly unique because it can take you from this part of the world to that part of the world in the factor of hours. To be able to fly from Seattle to Dubai, to do it and watch your favorite movie or, you know, Skype with your closest friends, to enjoy a good meal while you're doing it or the interaction with a colleague or a friend when you're flying is unbelievable.

Something that used to be months, you know, to be able to do—if not years, in some cases—is now done in what can be considered minutes and hours. Higher, faster, more capable, different. This isn't cornflakes, and it's not soap. It's an airplane. It's a rocket ship. And it's what's going to connect us to Mars. It's going to connect us to the Moon, and it's going to connect us to our friends and family around the world.

00:39:25

[Inspirational mentors at Boeing]

DH: Well said. You mentioned earlier that you'd been an intern. Somebody recognized something in you. If you were to be challenged to ask yourself who inspired you—was there someone that was your mentor that you look back upon as being central in having reached the position that you have at Boeing—could you name that person?

JC: I don't think there's ever just one person. And there is a name. But one of the things I've also learned is that you're inspired by so many different people for so many different reasons. You know, when I look very early in my career, I began my interaction with folks like Pat Shanahan, who had this drive to change the industry. And it was intoxicating. I mean, it really—just an absolute drive. Alan Mulally, who had all this charisma, you know, just really—when you look at him and he could engage you as though you were his best friend from the moment you met him. The technical capability of someone like a Lars Andersen, who as a retiree still sits, you know, two corner offices down the road here, because he is so passionate about where we're taking the industry that he wants to be involved with it even as a retiree, right? When you look at that technical capability and understanding, the folks like Paul Nguyen, who's now a retiree but drove the backbone of what the production system is.

But the one person that throughout my whole career is the one thread is John Tubbesing. And he's been there since the get-go. And as an intern, he was my first line manager. As I came back to the company, he was my first line manager. Throughout the careers where we've been tied together, he's always inspired me to push harder, to drive harder, to learn

more, to get more. Really taught me how to—don't just focus on the one thing. Look at all of the variables, right? He's now the vice president of our Boeing Research and Technology for a reason: because he inspires. He really promotes those around him, and he gives the opportunities and puts you into situations that really challenge you. And that's what he always did to ensure that. And so if I were to link it to one person, I can link it to that one person who has always been there as that champion, that mentor, that friend and brother through the entire process.

DH: Very cool. Jason, this is wonderful.

JC: Thank you.

DH: We thank you very much for being with us today. This has enriched our program.

JC: Good.

00:42:18

[END OF INTERVIEW]