Constellations Podcast

Episode 107 – Broadening Accessibility, Demand for Commercial Space Solutions, and America's Tech Workforce

Speaker: Mandy Vaughn, CEO and Founder, GXO Inc. – 22 minutes

John Gilroy: Welcome to Constellations, the podcast from Kratos. My name is John Gilroy, and I will be your moderator. Our guest today is Mandy Vaughn, CEO and Founder of GXO.

John Gilroy: Navigating the divide between military requirements and its commercial resources is a challenging hurdle in the space industry. The demand for greater space accessibility as a whole and the drivers influencing that pressure compound the problem. Mandy Vaughn, former President and CEO of VOX Space and current CEO and Founder of GXO, transitioned from a military tech leader to a facilitator in working to bridge that divide. Listen to this podcast as she shares her insights on the expanding role of commercial entities in space, the obstacles of meeting current needs and growing America's tech workforce, which is the foundation for continued momentum and success.

John Gilroy: Mandy's space-centric career spans nearly two decades. She began as a developmental engineer for the U.S. Air Force and moved on and key positions for commercial big hitters in space projects like General Dynamics, Virgin Galactic and Virgin Orbit. She is also a member and advisor of various associations and organizations whose mission support the continued growth and expansion of domestic space projects.

John Gilroy: Okay, Mandy, if you look at the space industry here, it looks like there's been some diversity and maturation and technology that has made space more accessible to a wider range of players. So in your opinion, what are the main technology drivers facilitating the demand for expansion in space accessibility?

Mandy Vaughn: Well, first, thanks for having me. It's an absolute privilege to join you all this morning and I'm excited to be here so thank you for the opportunity. Great first question, I think it's just such an exciting time to be in the space industry, just in general. And in terms of this diversity of maturation and technology, I think one of the foundational things that has really changed to allow this increased access to space is the commercialization and the increased accessibility of launch. So between Space X and this whole smaller launch market that is really coming to the market now, we've just got so much more accessibility to space. So any company that now thinks, "Okay, I have a mission I want to deliver, I have a product I want to provide", that whole element, the barrier to entry in that regard has come way down.

Mandy Vaughn: So, a new-start company can really have a lot more control of their own fate in terms of their schedule, when can they tell an investor that they can meet a technical milestone and show revenue projections. So that is one huge element that I think has totally changed the marketplace along with the real bang for the buck that now you're getting in these much smaller satellites. So, 20 years ago, when people thought the small satellite revolution was going to happen, it didn't quite happen, but it's certainly happening now. So when we have that combination of much better computing power, sensor technology, comms packages on a small satellite coupled with this almost ubiquitous schedulable access to space, it just allows all sorts of business models and companies to have access that may not have in the past. It's super exciting.

John Gilroy: You mentioned launch and I wrote down the word ho-hum. It's almost like a daily thing. Oh yeah. Another launch. It's like baseball scores or something. 5, 15, 20 years ago, it certainly was not like that at all. So when it comes to this new world, what are the most daunting challenges to strengthening relationships between commercial and government entities in space?

Mandy Vaughn: It's a great question. And this is a big part of the reason why I founded GXO, to focus on this. Because on the one hand, you've got this burgeoning ecosystem and all these fantastic companies really trying to do good things that have kind of an underlying natural dual-use capability, they have fantastic commercial application, but certainly can support national security objectives too. So how do we change and really make more of this public-private partnership work across all segments of the industry? NASA's done a great job, really leaning forward in terms of what does that look like for the space station and for the moon, but how do we really make that a broader statement from a national security perspective? So it's a policy issue. It's a knowledge issue. It's an education issue. And a lot of it too is an organizational trust and comfort issue.

How do we get the U.S. government, the Space Force, the Air Force, to operationally accept a lot of these commercial services, increase the aperture in terms of how do they meet their overall mission objectives, and really change the architecture of what is the national security space posture, and how can it leverage these commercial things that they don't necessarily own or control on a daily basis. So, there's a whole lot of nuance in there in terms of policy, but a lot of it is also cultural and doctrine that I think is going to take a little time. But there's great elements to show that we're heading in that right direction to where I think both sides, both the commercial and the government entities, can really benefit from this.

John Gilroy: Mandy, when it comes to the government using commercial organizations, what do you believe are the biggest commercial barriers to entry? And what are some of the mechanisms to help bridge that gap?

Mandy Vaughn: Gosh, especially in the space sector and in this new space entrepreneurial set, some of the barriers to entry from the company side is there's kind of this, we've all heard it in the past before, this valley of death, which used to talk about technical readiness. But now, it's really more about how does a new company with a new technology get into a no-kidding program of record. We have all of these fantastic things to do between AFWERX, SpaceWERX, and Pitch Days that certainly generate excitement and get people talking about it. But how many of those companies and contracts then can actually pull a company through from a seedling/early stage to a no-kidding, robust company that can really be part of this partnership with the government? So, it's more of an innovation and maturation valley of death, more so than a technical valley of death. So I think that's one of our biggest barriers at this moment on how do we help kind of sherpa and shepherd these companies through to the other side where they can have the level of robust business and technical practices to be there for the long run haul.

John Gilroy: You mentioned AFWERX and SpaceWERX. There's also a thing called Kessel Run going on. And so there's a lot of innovation that started in the federal government. So what's working and what's not working for these different efforts in the Department of Defense?

Mandy Vaughn: I think some elements of what's working is what I just mentioned there in terms of the excitement of it. And we are starting to see an increase in participation with more companies in those sorts of things, which is good since that can be a feeder back into colleges and high schools to say, "Hey, look, you can do this. If you have an idea, you can either join one of these companies or go start your own and give it a shot." So, I think that cultural change is working very, very well to generate that excitement. The challenge I think we all have as a community is how do we keep that momentum going and again get that through to the other end where it's like, okay, these are then not just stunts or pieces of theater, but these are actually meaningful capabilities that the Space Force and the Air Force and others will rely on for the next couple 3, 5, 10 years, and help that become the basis for what is the space economy to come.

John Gilroy: Mandy, when it comes to commercial involvement in space programs, there are some organizations and nonprofits working on nurturing and developing this. So, I think you participate in a couple of these, what are these organizations talking about?

Mandy Vaughn: I am happy to see that a lot of these organizations are discussing this. How can they increase the discussion, the pace, and the touchpoints with these companies? So a couple of notable ones like DIU, the Defense Innovation Unit. Fantastic group, where I think part of their model for success is that it is an ongoing dialogue with the companies in this part of the ecosystem through the development or delivery of a prototype, which is exciting. But then part of

where DIU I think is really successful is they take it upon themselves to go teach and mentor some of the other government offices. So you'll have an agreements officer or a program manager from DIU that can go meet with a contracts officer from one of the centers and really help kind of explore how can we all improve our levels of efficiency. So I think DIU is a great one.

Mandy Vaughn: There's facets of other awesomeness within some of the centers like SMC and their special projects office with Space Safari that they've just stood up to say, "Hey, we know we need to be able to respond quickly." That's super exciting. The portfolio architect groups there too, to be able to say, "Hey, how do we take these innovation showcases like Pitch Days and AFWERX? And how do we start to link that through partnerships to the program offices and actually change their mission concept?" So I think those guys have been doing a fantastic job.

Mandy Vaughn: So there's pockets where I'm happy to see great people in these, in these offices that are starting to gain some traction and have more influence across more of the legacy systems, if you will. And the Space Force has a lot of work to do. They're still a nascent and small service, but it's thrilling to see that this is part of the discussion as they're starting to grow and create their foundation as a new force.

John Gilroy: I think there's a nonprofit called the National Security Space Association and I think they're focused on this topic we talked about, the commitment to prolonging long-term government and industry cooperation. And I'm pretty sure you have a seat on the board of advisors for this group. So what are some of the key ideas that might help commercial startups work together with government entities in meeting the current needs in space?

Mandy Vaughn: Yes, the NSSA is a great group, been around since 2018 and have a very active board of advisors and board of directors, which is just awesome. And so you've got a fun blend of people from former NRO directors and tower directors all the way to other new space CEOs. So it's a great snapshot of kind of that diversity of breadth within this ecosystem. So this group I think is expressing some good thought leadership in terms of what can both sides of the equation do to help each other, trying to kind of help also connect new commercial companies with some of the more classic primes where opportunities make sense.

Mandy Vaughn: Because that's one area where a Lockheed or a General Dynamics, there's some good natural synergies there too to say, "Hey, how can Lockheed Martin work with a company like Tyvek," for example, to say, hey, this makes a lot of sense. It helps accelerate their entry into the small satellite market and it can help tie back with reach back into some services and government processes that they may not have the in-house ability to support yet. So, the NSSA helps kind of with

that mentoring as well, which I think is a very unique environment, a very active group, and the meetings can be fun. So, come join, that way you can participate.

John Gilroy: You know, Mandy, thousands of people from all over the world have listened to this podcast, go to Google and type in “Constellations Podcast” to get to our show notes page. Here, you can get transcripts for all 100+ interviews. Also, you can sign up for free email notifications for future episodes. Whenever I get in discussions about public-private partnerships, everybody always says, "Well, give me an example. Give me an example of this." Well, I guess there was a recent article in breakingdefense.com. The U.S. Space Force is reported to be considering buying commercial satellite ISR in an effort to, and I quote, "expand acquisition of commercial space services from satellite communications to include intelligence, surveillance and reconnaissance data and analysis."

John Gilroy: Well, it sure looks like the military attempts to tap some of this budding commercial resource, it’s starting to catch on now. So what are your thoughts on how this military can tap into some of these new and upcoming commercial space technologies in a more efficient manner?

Mandy Vaughn: I think that article is a great one, as well as one of the most recent. I think the entire issue of Space News was on procuring BLAP as a service, whether it's launch, data, satellites as a service, comms as a service, just it's all there. So, a lot of it is, I think one of the areas where the Space Force needs to kind of evaluate themselves is, "Hey, just buy it." So rather than going out and serving these commercial industries to say, "Where do I need to make tweaks on what I can buy," I think it needs to kind of look at it the other way round. I'm going to buy what's out there and then what do I need to do on the Space Force side to be able to efficiently ingest it rather than driving change to that commercial offering. So I don't think we're quite there yet. Of course, you might always need to make a little change, but we need to look at little changes, not like 20% changes, to really make this efficient. I think there's definitely a military attempt to tap into this and let's go. Just buy it.

John Gilroy: Mandy, you've been involved in some startups and the challenge always is getting good people and trying to get people to work for your company. So how would you describe the current state of the American workforce when it comes to tech jobs just in general?

Mandy Vaughn: Oh, just in general, man, we got a lot of work to do. I was just in a fabulous call the other day with Eileen Collins and I'm still supporting the Users Advisory Group for the National Space Council. And we got a briefing from the Challenger Center, just a fantastic organization, they're in 30 states, to really give an immersive teaching approach to young kids. And they were really showing how in the middle school level, about 50% of our school kids kind of shrug their shoulders at going into a STEM-related field at all. So, we have a problem there

just in general that, have we really lost the ability to tap into half of our workforce by then?

Mandy Vaughn: So it's a problem and I wrote an op-ed on this. It's like, there's a million different ways to skin this cat. But there's programs all over the place that are successful between Challenger Center, Space Camp, Young Eagles programs for aviation fellowships, and NSSA, we're standing up some of our own too. It's something that I think everybody in this industry needs to take as part of their job, to say "How do we encourage students to want to go into any kind of tech field?" Whether it's space or not or even if it's a policy or business job, into this sort of let's go make something since we're graduating fewer college grads than China is engineers. So, we have a dearth of people coming into this sort of workforce and in this sort of sector all over the place whether it's shipbuilding or space. So it's something we all need to take seriously as part of our day jobs I think.

John Gilroy: Mandy, I'm going to bounce back to the National Security Space Association and the workforce itself. Providing a suitable workforce is a barrier to our ability to support space programs across all markets. It was announced in January that you would share the Education Workforce Development Center for the NSSA. So what are the general goals to overcoming that barrier that you're going to work with at NSSA?

Mandy Vaughn: I think part of NSA's value is we have all of these industrial partners. So what we're trying to do is really partner with our government, the National Security Government Community, the NRO, and the Space Force primarily, to say, "Hey, what do you need? What are you doing? How can we combine forces with you to work outreach?" How do we identify students in universities, both that are maybe obvious feeders into this ecosystem and maybe some that aren't, and get the word out and attract talent and attract students into these sorts of jobs? Whether it's to be put on a uniform and become a guardian or come join a company like a Lockheed or Boeing or GXO? Or you guys putting this podcast out to say, "Hey, this is what's going on. And this is where you can have a role and a career in this."

So we're rolling out a program called Cleared for Success next fall, where we want to help match up undergraduate students with companies to try to help people learn about the National Security Space Community, as well as start the clearance process. So if they're interested in having a clearance by the time they graduate, maybe they're closer through the pipeline, which can open the aperture of possible jobs. So we're actively rolling that out now. There's a lot to do.

John Gilroy: Well, you see the problem and you personally are getting involved and trying to come up with a solution with this Cleared for Success program. It's better than just sitting back and moaning and complaining, but you're actually doing

something which is really a great sign. So, what are the thoughts that you have on these public and private sectors and how can they help support a workforce for this rapidly growing and evolving space industry?

Mandy Vaughn: I think both sides. There's a lot of companies that already have internship programs or co-ops in the public sector in terms of what is the architecture and how do we keep people excited and motivated. There's a lot of good facets there. So, I think where some of the orchestration is just how do we kind of coordinate some of the messaging just to build off of each other's strengths and kind of how do we all help each other accelerate faster in this goal right?

So I think it's a clear mission and a clear vision and helping the Space Force really get their feet under them to hit the ground running in their second year of being an armed services is a huge opportunity for all of us as well as NASA. All of this activity is so exciting. I mean, we've got Blue Origin flying next month with people on board, which will be really exciting. Inspiration4 is coming and Axiom is coming. Getting the word out of these activities and trying to help increase the footprint that we can all see this and participate in this.

John Gilroy: Mandy, you seem very enthusiastic about this whole topic. What are you most excited about when envisioning America's future in space?

Mandy Vaughn: I think for the next few years it's, oh gosh, the pace of change is only increasing, which is really exciting. So I think in the next few years, it's still going to be that a lot of activity is really centered in LEO and GEO and all of our space activities are geared towards improving life on earth, which is awesome. And in that ecosystem, it's like, oh my gosh, when we have ubiquitous data and ubiquitous comms, what on earth can we do? As if we're not already connected enough. But then past that point, I think is where the economy really changes, that then we're going to have commercial missions on the moon regularly. What does that mean? And then now we're going to have more of an in-space economy that comes out where it's like, "Hey, we're building things in space. So we got to get materials up and down and cislunar and beyond."

Mandy Vaughn: There's so much activity on Mars right now. It's like, oh my goodness, we've got rovers and orbiters and landers and helicopters. So we're going to have just more of this footprint, that's not just in the classic orbital regimes, creating their own value, which really changes what is space, where it becomes just part of our overall existence. When you're ordering something from Amazon, it might come on a plane, or it might come on a ship. Who knows where it's made. Now, we may be ordering something and it's made in space. So I think that's going to be the change we see here very soon.

John Gilroy: Well, Mandy, I'm going to steal a word from you. I'm going to say this interview is sheer awesomeness.

Mandy Vaughn: Sweet!

John Gilroy: What you've managed to do is you've given our audience ideas for breaking through the molds in accessibility and applying commercial space solutions, even expanding diversity in the workspace.

John Gilroy: I'd like to thank our guests, Mandy Vaughan, CEO and founder of GXO. Thanks, Mandy.

Mandy Vaughn: Thank you.