Game Changers Series: Episode 2 – Artificial Intelligence

Speaker: Melissa Quinn, Managing Director, Slingshot Aerospace UK – 8 minutes

John Gilroy: Welcome to Constellations Game Changers, a limited series of short podcasts, each focused on a pivotal new technology or trend for the satellite industry. Our guest today is Melissa Quinn, general manager of Slingshot Aerospace UK. And the topic we've chosen for Melissa is artificial intelligence. Melissa, I have three questions for you and my timer set for 10 minutes. Are you ready?

Melissa Quinn: Yeah, let's do it.

John Gilroy: Okay. So could you set the stage and explain what you and the team at Slingshot mean when it comes to AI in space?

Melissa Quinn: Yeah, I mean, I never imagined I'd be working with something so futuristic sounding, but that is exactly what we're doing at Slingshot. We are a data software insights and hardware company based out of the U.S. and we are very much here for space sustainability, space safety and space security through space domain awareness and space traffic management. So there's a lot going on at the minute in this area of the industry and for us AI is really exciting because we're looking at how we can use it, capitalize on it for driving more reliable decision-making processes for our operators, for mission management and optimizing missions out there in orbit. So for us, we're doing this in three different areas at the moment. We're using AI for identifying outliers. This is one of our most exciting things that we're doing in space. It's called Agatha and it basically is taking huge constellations of satellites where there are millions, if not billions, of pieces of data coming back to us on earth.

Melissa Quinn: And we are putting that through our AI system and what we are able to do is identify very small, slight anomalous behavior in this constellation. So if you were a nefarious actor in space, trying to hide your satellite amongst a constellation, pretending to be another small satellite spacecraft yourself, we're able to spot that using AI and no human eye could pick these things up. So that's one area for us and that's something that's becoming even more important as more constellations start to go up with more maybe questionable behaviors happening. So that's one area, so around outliers. It's called Agatha. We're working with DARPA over in the U.S. on this at the moment. Our second one that we're around working with AI is pattern of life and maneuverability. So we are ingesting so much data, as I just discussed, at the moment, from our optical sensor network, from contextual databases, from owner operator data.

Melissa Quinn:	And we're using all that data, we're putting it through our AI software and what's coming out is starting to be able to predict where spacecraft might be moving. And that's obviously very important to avoid collisions in the first place, but it's also important to highlight maybe, again, where any nefarious activity is happening. We did this most recently at the end of last year and actually beginning of this year with Luch 2, the spacecraft, and we were able to identify and predict where it was going to move out into geostationary orbit and a very critical spacecraft that it was saddling up next to. And we were able to do that much further ahead of time than we would've before AI was a thing. And then building on that, our third thing that we're using AI for is around threat training.
Melissa Quinn:	And so we're able to use AI as part of our training and education tool laboratory and it's basically creating a physics true simulation environment for the operator to be able to play around with how they would handle a certain situation. And so all that data, again, that we're ingesting, we're able to put that into a simulation environment, use our AI tools to predict maneuvers, counter predict other people's maneuvers and really provide that real time simulation environment for people like the space guardians around the world. So again, it's providing that mission critical training tool that is really difficult to get at the moment out there in the industry. So those are three areas that we're working with AI.
John Gilroy:	Wow, nefarious actors. I thought those were all in Hollywood, but maybe they got them up in the sky, too, huh?
Melissa Quinn:	Yes.
John Gilroy:	Well, this is called Game Changers, so tell us what the impact is on the industry.
Melissa Quinn:	I think for the industry, AI is, as it is with pretty much every other industry, it is game changing because it is adding kind of this layer of ability to provide reliable and impactful, in our case, data fidelity, data integrity and that's the difference. I think there's been a lot of questions around AI and it needs that high level of quality of data to input into it. And the more it ingests, obviously the better results you get out the back. And I think now we're at a place in the industry where that's starting to pay off and we're definitely seeing that. The beauty of the space industry and what goes up into space is it's there for everybody to see with a big enough telescope at the moment or sensor. And so being able to have that is fantastic, but where we're missing it is we're getting so much data and it's just so hard to understand in those pieces of data where the real nuggets are.
Melissa Quinn:	And that's the game changing element of AI. It's able to do what humans just cannot do and process just huge amounts of data to be able to give us the insights we need to make decisions much quicker and more reliably than ever

before and share that data with our allies around the world much quicker as well. So it really is life saving type technology that's now happening. If we can avoid a collision, if we can avoid an explosion in space because of AI, it means that as we saw with CrowdStrike recently, it doesn't take much to kind of collapse our modern way of life at the moment and that was just the tip of the iceberg. If a really critical spacecraft went down, we could lose our access to our financial institutions, emergency services, environmental monitoring very, very quickly. So for us to be able to protect those assets in space through AI, that's game changing.

John Gilroy: I know that phrase, data fidelity, is going to resonate with everyone interested in AI right now today. So in your opinion, what will be the impact of your company over time?

Melissa Quinn: I think going off of what I was just talking about with the data, bringing in that level of fidelity and integrity to data to be able to make these quick decisions with more reliability than ever before, I really truly believe that, and not just in AI space technology, but across a lot of different technologies in space, is there's going to be a crossover to go beyond just our industry. And so actually already some of the technologies we're developing for AI in space, we're being asked for that to support maybe cybersecurity or to support homeland security in different ways as well. So I think there's applications and, again, this is always my frustration with space, is we think we're this unique little industry doing our own thing, but actually space crosses all industries and can support and make other industries so much more efficient and effective as well.

Melissa Quinn: So I really think that the future of AI and space is the future of lots of different industries as well. So for me, I think that's one area. The second area is I really believe that if we crack AI in space, then we can keep space more sustainable to use for the future. So if we avoid those collisions, if we stop that bad activity, that dubious activity, that could cause something like a Kessler type syndrome effect and wipe out whole orbits. That means it's sustainable for future generations to benefit from and so my hope is that AI for the future and space keeps it there for others to use. So those are kind of my hopes for the future of AI and space.

John Gilroy: Thank you, Melissa, for being our guest in this short episode. Constellations is partnering with Novaspace to bring you exclusive content leading up to the World Space Business Week. Hear more from Melissa at the event and we hope you enjoyed this episode in the meantime.