



Game Changers Series: Episode 3 – Direct-to-Device

Speaker: Scott Wisniewski, President and CSO, AST SpaceMobile– 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 Scott Wisniewski, president of AST Space Mobile. The topic we've chosen for Scott is direct-to-device or direct connection. Scott, I've got three questions for you and my timer set for 10 minutes. Are you ready?

Scott Wisniewski: Let's do it John.

John Gilroy: Building a global cellular broadband network and space that will operate directly with everyday mobile phones, has been at the heart of many conversations lately. So tell us why this is so important.

Scott Wisniewski: John, thanks for having us. For those of us who have spent our careers in and around space, we know how hard it is to build networks in space, and there's been a number of companies that have been very successful over the last couple of decades building businesses that service sat phones, that service specialized devices, that service dishes and other markets for us. We have built a business over the last seven years with proprietary technology, over 3,400 patent and patent pending claims that goes directly to regular unmodified cell phones. And we've proven this in orbit with our satellite over the last couple of years. We're public, traded on the NASDAQ and raised over 1.5 billion to date. But this is important to nearly everyone in the world because there's over 5 billion phones in circulation courtesy of the wireless industry. They are standard based on 3GPP, and we've built our business to work with those phones.

So this helps address the global need for connectivity, which we all understand very well. But around the world needs vary a lot. And we know that there's a lot of folks that remain unconnected either to cellular, to broadband in general, and that we know when they're given connectivity this brings them into the digital world. It increases their access to economic opportunities and dramatically improves their life. So for those of us who have phones and use broadband, we still experience gaps in coverage as we live, work and travel. But on top of that, there are still billions of people around the world without cellular broadband. And if there's a simple offering that's affordable, we and our partners, over 45 of the top wireless companies, mobile operators in the world, with over 2.8 billion subscribers amongst them, we think that this service would be very valuable to many of their subscribers. So we started with a very attractive technical solution. We've gone through the R&D phase, vertically

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integrated our company, and we're now just days away from being on the launch pad to put our first five commercial satellites into orbit.

John Gilroy: Boy, days away, that's exciting. So Scott, how can all this be achieved?

Scott Wisniewski: Well, it's a complicated problem, and it's one we've been working at for seven years with over 600 employees, many partners around the world, and it's like most of the LEO constellation efforts, many of which have been unsuccessful, a few who have been. It is a challenging problem and we further complicate it by going after existing devices, which is a great simplifying tool for building the constellation, but required a number of important leaps which we were able to achieve. And like I said, we've proven last year with our satellite in orbit, we've shown 4G, 5G connectivity over 20 megabits per second to the cell. In doing that, with the largest ever communications array and lower orbit deployed commercially. There are a number of very important technology, regulatory, partnership, business model questions, even separate from capital and time required to build out a service like this, not just in one country but in many globally.

And so for us, we're technology first. We're now vertically integrated over 95% to build these one-of-a-kind satellites ourselves and fast. And doing that requires a totally different approach to building satellites. We have built satellites today that are over 700 square feet in size. These satellites, like I said, are the largest ever deployed in low earth orbit. They facilitate many different frequencies in low band, they drive higher throughput because they're large in size, and we've built them with identical or nearly identical microns, active payloads that we make tens of thousands of times over and stack them up. So we've been able to capture really attractive unit economics, build these satellites much cheaper than you would typically be able to build satellites that are larger than a thousand kilograms in size and do this in a way that it can be packed and stored in today's fairings so it can't get to orbit efficiently.

There are a lot of technical leaps, a lot of regulatory leaps, a lot of partner and business model leaps. But we believe we have a great solution and we're really, like I said, eager to start putting our commercial satellites out there. Our partners are investors. They are the leading wireless companies around the world. In the US We're partnered with both AT&T and Verizon. Globally we're partnered with Vodafone and Rakuten and many others. Bell Canada is an investor. American Tower is also an investor. So we view ourselves as the industry choice for going after this new and attractive market and that we have the technology that is well suited to integrating with wireless networks on the ground and works well with the wireless operators. And so that's really our strategy. That's been our approach from day one, and it's one that's really key to the company and our success to date and our planned success for the future.

John Gilroy: So Scott, what's next for D2D? What would the future look like?

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Scott Wisniewski: Well, I come from a background in telecom broadly, not just satellite connectivity. And I can tell you that the demand drivers, the trends supporting the need for more connectivity are very strong. They have been for a long time. The wireless companies built this global network that 5 billion phones can go in and out of and work interchangeably with. It's quite amazing. It's transformed all of our lives and being able to adapt satellite to wireless and work together with wireless has been a huge goal for a long time for both industries. And they have worked together well in the past, but with perhaps limited benefit. And so going direct-to-device, working with their standards, with their phones, with their devices that are already in their customer's hands is very powerful. And we believe that this is an amazing tool that helps the wireless companies address one of the two key pillars of connectivity, which is coverage.

Scott Wisniewski: So for the 90% of the earth's service that's not covered by wireless terrestrial infrastructure or the moments where you have dead zones or gray spots or dropped calls, having a layer that provides base-based coverage directly to the 5 billion phones that already exist is a very powerful tool for the operators. Our system in particular allows multiple frequencies to be delivered anywhere within each geography for each operator. And we change those frequencies as we move over geographies because frequencies are not globally aligned. So this is a very powerful tool for the operators. This is why we've had such success bringing them over to our side. Just recently, the head of AT&T network, Chris Sambar joined our board after they invested. He's been a long time supporter of ours. Johan Wibergh, former CTO of Vodafone just joined our board. So we have really put together a solution we think that is valuable and useful to the wireless operators.

And that's what D2D represents. It's standing up another leg within the space-based telecom business. Today you have satellite phones and specialized narrow-band devices. You have broadband to a dish or specialized devices, and now you can have broadband to a phone. And so going direct to device is standing up a whole new leg of the stool. And we are very excited about that market and our partners are very excited about what that market means for their consumers because we know for all of us who own a phone, that moment that phone is not useful it becomes very heavy in our pocket. And maintaining connectivity not only improves our life, but might be the difference between life and death on certain occasions. So we think this is a very valuable service. We believe it solves the end of the coverage problem for the operators in a way that they'll never be able to do terrestrially.

John Gilroy: Thank you, Scott, 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 Scott at the event, and we hope you enjoyed this episode in the meantime.