



Episode 48 – Explosion in VC Funding, The Year of Commercial Space Travel and Earth Observation for Everyone

Guest: Chad Anderson, CEO, Space Angels– 29 minutes

John Gilroy: Welcome to Constellations, the podcast from Kratos. Today we have Chad Anderson, CEO of Space Angels, one of the most active investors in the space industry. Space Angels’ portfolio of companies includes a who's who of the emerging new space industry, and includes a number of companies who have been featured on this podcast, on the Constellations podcast. They include HawkEye 360, Made In Space, and Analytical Space. During this episode we're going to talk about big four topics here, we're going to talk about how the space industry is changing, how the investment in the space industry is changing, we'll talk about key investment trends, and look at maybe the key attributes to separate the winners from the losers. So Chad, are you ready to roll?

Chad Anderson: I am. Thanks for having me.

John Gilroy: Let's talk about all the change that's happening in the space industry. I noticed on your website that your portfolio is exclusively focused on the space industry. How did the idea of Space Angels come about? And, why?

Chad Anderson: That's right, yeah, space is all we do all day every day. And we are early stage investors, so we focus on seed and Series A investments, and so that means that we're often the first check-in to a company. I joined and took over Space Angels in 2012. It was actually around for a few years before me, before there was a lot of entrepreneurial activity in space to speak of. Saw that in 2007 as an informal network of investors really getting together talking about what was happening in the industry, and pulling some important groups together. When I joined in 2012, I basically re-founded the company and turned it into the fund that it is today, which we're operating a 15 million dollar angel fund, and a 25 million dollar venture capital fund that co-invests together.

And so I joined really because I was reading the tea leaves, and seeing what was coming down the pipe. In 2012, there still wasn't a whole lot of entrepreneurial activity to speak of. If you look back, and you think of what was happening at this time, 2012 was when SpaceX first worked with the International Space Station, which was a key milestone in the industry.

The previous key milestone was in 2009 when they successfully launched their first customer. They brought the price down of launch, which I think everyone is really familiar with, but they also published their pricing and brought transparency to the market for the very first time. This allowed for

The logo for "Constellations Podcast" features the word "Constellations" in a bold, black, sans-serif font. A yellow arc with a blue star at its end curves over the top of the letters. Below "Constellations" is the word "Podcast" in a smaller, black, sans-serif font.

Constellations

Podcast

entrepreneurs to enter the space market for the first time, and allowed them to understand the cost of it would take for them to build a business plan, and allowed them to go out and raise funding and start businesses for pioneering companies like Planet and others that were using small satellites to disrupt the satellite market, and on and on. But that was really the genesis of it.

Yeah, and Space Angels has really just identified this trend early on, recognized that there were a lot of new companies that were starting up and needed funding. There was a huge opportunity here to not just disrupt the large 350-400 billion dollar space economy that existed, but also with this increased access to space also to play an integral role in the new markets that we're developing, so that's the idea.

John Gilroy: Yeah, no, when I was a young guy someone told me that, "Invest in land, they're not making anymore." When I go to your site, what I see is that, "Hey, there's never been a better time to invest in space." It looks like you got in early, and you got in at the right time, and maybe it is the right time to invest in space.

Chad Anderson: Yeah, that's exactly right. Like everything in life, timing is everything. We were certainly early. Even in 2012 we were still certainly early, and it took some vision, and getting investors to put money into space companies back then was still, it took quite a bit of selling in terms of helping them to understand the opportunity that was emerging, to help them understand the real risks. Sure, it's rocket science in a lot of cases, but they face a lot of the same business challenges that most other companies face. It is business. We are investing in businesses at the end of the day. So I think we did a lot of work educating the market, helping them to understand what was happening, helping them to understand the trends, and the fact that barriers had come down, and that the paradigm had shifted, and that there was an opportunity now for them to play a part in the new entrepreneurial Space Age.

John Gilroy: I'm thinking of an investor with a couple dollars in the bank, and he's looking at investing in different options here, maybe land, and they go to your website, and you talk about meaningful impact and a 30x return, so there's a certain appeal to what you're offering here, isn't there?

Chad Anderson: Absolutely. I mean I think if you look back on all the most successful entrepreneurs that have built really valuable businesses that have made a lot of money, a lot of times the founder has a big vision for how they're going to change the world. And it's these entrepreneurs that are really successful in business because they have a vision, an inspiring mission to rally around. And if they're able to really articulate this vision they're able to attract the best talent, get the right people involved and the best talent in the world to rally around your cause, and if you do that, you find yourself in a really great position as a business.

The logo for Constellations Podcast features the word "Constellations" in a bold, black, sans-serif font. A yellow arc with a blue star at its end curves over the top of the letters. Below "Constellations" is the word "Podcast" in a smaller, black, sans-serif font.

Constellations

Podcast

Especially in space, there's only so much talent, technical talent to go around, and so it's often the entrepreneurs with the biggest, boldest vision, the most interesting imagination that are the most successful because they're able to get these people involved. It works from the employees at the company to the board members to the advisors to the investors, and on and on, right? So if you assemble the right team, there's no telling what you can accomplish.

John Gilroy: Now you have to assemble a team to just look at which opportunities to invest in. In fact, you talk about only 5% of the space investment opportunities are even considered, so that's a pretty small market you're even looking at out of the space market is just 5%, and you must have some specific criteria for that.

Chad Anderson: Yeah, the number is actually more like 2% as of the end of Q1. We run this number quite often, and we really see every space company that's looking for funding at the early stage no matter where they are on the planet know to come to Space Angels first. This has to do with the fact that we're sector specific, this is what we do, we have a great portfolio, and we've got a good reputation. So yeah, I mean I think last year we saw 500 companies we looked at, 500 space companies that we looked at, and we're investing in about 2% of them.

So yeah, I mean it's a little bit nuanced in that if you think about where we are in the company's life cycle, and at seed and Series A, right? At the first check-in at seed a lot of times it's a lot more art than science than if it was Series C or D later stage deal private equity getting involved. They do a lot of analysis on discounted cash flows. And if you have revenues, and you have expenses, and they are recurring, you can do some math to be able to back into what you think the value is, how risky you think the investment is, and put a value on that company.

The earlier you are in the company's life the more art it is. Now what I mean by that is that you don't have it all figured out. You maybe do have a big, bold vision, and you have a general idea for how you're going to carry that out. You've done a lot of homework, and you understand the input cost, and what you think you can get it for, what the market looks like, what the competitive landscape looks like, all that stuff is really important, but it's all kind of table stakes.

In the end of the day, it really boils down to the team, and who is the team that you're investing in? Do they have the right vision in the first place? Do they have the necessary skill set on the technical and at the business side to be able to handle the unexpected situations that will inevitably occur? Do they have the right temperament? Are they coachable? Are they the type of people who go out and seek advice from more experienced advisors for members, investors, that sort of thing? Are they intentional about the way that they think about how

The logo for 'Constellations Podcast' features the word 'Constellations' in a bold, black, sans-serif font. A yellow arc with a blue star at its end curves over the 's' in 'Constellations'. Below the main title, the word 'Podcast' is written in a smaller, black, sans-serif font.

Constellations

Podcast

they're building the business? And are they realistic in their key assumptions? That's really what we're looking for.

I got to tell you when you see as many business plans as we do, you would be surprised at how many come across our desk where just the basic physics don't close. You got to get the fundamentals right first. But assuming that we can get past that, I mean generally speaking because this is what we do, and we're living and breathing space every day, we're able to identify the gaps in the market. We see a company that fits that gap, they understand the market, great, we take a look at their technology. Is it feasible? In broad brush sort of initial assessment. Yes. Then we move on to the team and start to build that relationship. And we'll welcome back to the technology and verify it all as well, but it really does ... The earlier you are, the more important the team is, and their ability to navigate uncertainties.

John Gilroy: I'm going to drill down a little bit more on space investment opportunities here. You have spoken about the satellite value chain, and maybe because you can see it so well, why don't you explain that for some of our listeners. What exactly is the satellite value chain?

Chad Anderson: Yeah. So if you think about GPS, and I'm going to start here, and then move onto some more contemporary topics, but GPS, I don't know, started in the '70s. It was purely commercial, or sorry, government initiative, and it was transitioning to the private sector. People were going to panels, space conferences and things, and they were talking about, they were saying, "Oh, this is fantastic that GPS is going to be ... There's going to be commercial applications, but like what are you going to use it for?" These panelists that were experts in their field would struggle to answer this question because the use cases are infinite.

And so you really struggle to put your finger on one, or the key one, or what's the one that I can say in a sound bite? And so they would struggle to answer this 'cause they would say, "Of course, it's going to be used in everything." You can see today that it is in all the location based services that we use, on our phones every day whether it be Lyft or Uber, or food delivery, you name it. So GPS is a great analogy for what's happening in Earth observation at the moment.

So affordable launch, transparent pricing allowed pioneering companies like Planet and now others to use the small satellite platform to have a distributed network, a constellation of satellites to generate an unprecedented amount of new data. Instead of having one monolithic satellite that's very capable, a lot of your listeners will now know that Planet is operating 180-plus satellites, largest constellation in the world, and they're taking an image of every corner of our planet on a daily basis. This going to increase over time, right? This is a great start, but we're going to even have more data going forward, and different types of data that fill different needs. So we've got all this disruption and all

The logo for Constellations Podcast features the word "Constellations" in a bold, dark blue font. A yellow arc with a small blue star at its end curves over the top of the letters. Below "Constellations" is the word "Podcast" in a smaller, dark blue font.

Constellations

Podcast

these new, innovative things happening on the data sourcing hardware side of things.

Then, how do you bring this unprecedented amount of new data down to the ground? Right? And so now there's some innovation happening on the ground segment front in terms of commanding and controlling all of these new satellites, mission control services, downloading that data to the ground and getting it to where it needs to go. And then that's where a lot of VCs and a lot of investors have gotten to. But then if you go a layer deeper, there's an opportunity really for a data aggregation and distribution platform that's source agnostic that's not just one company trying to sell their own data, but instead it's looking out to the customer's question, and trying to fulfill that question with an answer supplied by whatever is the appropriate data to answer that question.

So the customer says, let's say they're in shipping and they want to know how many ships were in port in Singapore yesterday, and they want to know how that compares to a week ago, and two weeks ago. Actually, why don't you just tell me what that looks like every week going forward for the next six months, right? Then you can take that query, and you can use a platform, and you can go out to market, and you can see which companies are able to source, have the right data to fulfill that need.

Chad Anderson:

It might be optical imagery. It might be very high-resolution, low-resolution might work. It might be night time, so you need radar, or there might be cloud cover, so you need radar. And then you can even go past that, right? And then so if that data is accessible now through an API, now you can get into the end customer solutions, which would be essentially a Google search for the physical world where the end customer doesn't have to be an organization or someone with a lot of capital, they can be somebody who wants to hop on the internet, and do a quick search, and say, "Hey, I'm doing a project for school. What is the corn stock in the Western United States today versus six months ago?" Or some sort of like basic language question, and an answer will pop up for you, and it will do so with a little bit of advertising, and it's free to the end user.

You see where I'm going with this, right? We're finally getting to this place, and we're investing way down deep into that value chain as well, which there's some really interesting things happening at the moment.

John Gilroy:

I'm taking notes here, data aggregation, you're going down a lot of roads here, and I think there's people may want to have some piece of paper or something. You guys have some report comes out, a quarterly, is that right? Like the 2019 report. Or what's that all about?

The logo for Constellations Podcast features the word "Constellations" in a bold, dark blue font. A yellow arc with a small blue star at its end curves over the top of the letters. Below "Constellations" is the word "Podcast" in a smaller, dark blue font.

Constellations

Podcast

Chad Anderson: We do. So back when I re-founded the company in 2012, again, we were doing a lot to educate the market, and help people to understand the trends, and what was going on in space, why was today different than the last 60 years, and the way that we did that was with data. And so we began pulling together all of the transactions, private transactions into space companies to get a sense of what was getting funded, who was funding them, what types of investors, what types of companies were getting investment, and what was happening, right? And so really to put some data behind this anecdotal story we knew was happening, but needed this piece, and so that has now evolved.

We released in 2017, we released this to the public for the first time. Now on a quarterly basis we release what we call the Space Investment Quarterly, and it goes through a lot of the numbers behind a lot of the stories that we've been saying so far, the key milestones in what we call the Entrepreneurial Space Age from 2009 until present. It shows how we've gone from a dozen or so privately funded space companies globally in 2009 to now 435 as of today that have received over 20 billion dollars in investment during that period. We've got annual investments. What regions of the world are getting that investment? Year to date, what types of industries within the space economy like satellites are launched? Where is that money going? And also is it going to early stage companies, late stage companies? What does it look like quarter-over-quarter? How many venture capital funds are involved? And what are they investing in? And how are things comparing year-over-year and quarter-over-quarter?

John Gilroy: That's interesting. You pick up the newspaper you see Falcon Heavy, you see this, you see that, it almost has to be a quarterly report because there's just too much going on. I mean it's just like 10 years ago it was a year of information. Now, it's a quarter. Everything is happening so quickly now.

Chad Anderson: You've got that exactly right. And even just this first quarter alone, Q1 2019, we've seen 1.7 billion dollars invested, which is a little over half of all that was invested in 2018. So if Q1 is any indicator, 2019 is shaping up to be a very big year for private space investment.

John Gilroy: I think this whole demographic of investors in space has changed 'cause everyone knows the iconic figures, Jeff Bezos, and Branson, and Elon Musk, and that kind of is transitioning now to these new venture firms where initially, 20-30 years ago, it was a government, then it went to the unicorn guys, I guess, and then new venture capital, so even the type of investors has changed.

Chad Anderson: Absolutely. Things have really accelerated since 2015. We've seen a tremendous amount of investment pour into the space economy over the last four years alone. Almost 80% of that 20-plus billion was invested between 2015 and Q1 of 2019.

Constellations

Podcast

To your point, it's really interesting to see the investor mix and how that's changed. In 2016, it was primarily corporate investors. So basically those, the incumbents that had been in space the last few decades. We're noticing this new crop of new entrants and wanted to get involved in what was happening, they all set up corporate venture funds and began deploying capital. We saw a lot of that in 2016.

In 2017, we saw a lot of it driven by individuals. So Jeff Bezos now famously revealed that he would sell a billion dollars in Amazon stock each year to fund Blue Origin, that particular year he sold two billion, and we're seeing a lot of that translate into development over the last couple of years. And then in 2018, we saw investment driven by private equity and retail investors, a lot of them flocking to SpaceX for the success that they've seen in their Falcon Nine reusability, the Falcon Heavy, and the potential there, and also in the Starlink constellation.

I think this is what you would expect to see in any new market you'd see government investment transitioning to private investment. The first investment in it is that of the incumbents that know the space well and are looking to get engaged in the new entrance, individuals, and angels, and venture capital funds, and then private equity and retail investors coming in later. But it's just amazing to see how fast it's all starting to come together in space really over the last three or four years.

John Gilroy: You know Chad, thousands of people from all over the world have listened to this podcast Constellations. And if you're listening now, and want to get alerts when episodes come up, maybe another interview with Chad, you don't know, just go to Google and type in Constellations podcasts, click Kratos, and sign up. We'll shoot you an email when the next one comes out.

John Gilroy: So if you were pretty good at predicting things in 2012, here we are in 2019, so what are the key investment trends that you see happening here in the next few years?

Chad Anderson: Yeah. So we predicted that 2018 would be the year of small launch, and it was incredible to watch that prediction come true. Last year, we saw the first small launch vehicle begin operations, and a number of others reached advanced stages of technical development, and over a billion and a half of equity investment into the launch industry helped to fund these companies.

So far in 2019, we've seen small launch continue to grow and mature, and we're going to see some more small launch vehicles coming online, but with multiple crew space craft coming online this year, 2019 will undoubtedly be the year of commercial space travel, and we said so in December of last year. In fact, with

Constellations Podcast

SpaceX, and Boeing, Virgin Galactic, and Blue Origin all inching closer to make history as the first privately funded space companies to launch commercial passengers into space, we definitely think that this is going to be true. In our latest quarterly report we included an infographic that highlights a lot of the details of each of these programs, so that's last year.

And our outlook for this year, looking forward there's a lot of really interesting things happening. In communications, we've seen OneWeb is launching hundreds of satellites to provide internet to remote areas. We have a few other ones. The big name one obviously is SpaceX's Starlink launching thousands of satellites in lower orbit to be able to provide access, connectivity to every place on the planet. Of course, recently over the last few weeks we've heard Amazon is getting into the game as well planning to launch 3000-plus of their own satellites for the same purpose.

And so that's a very interesting area to watch Starlink. OneWeb has launched their first satellite. Starlink has launched their first satellites, and they're going to be launching more later this year. I think that we've heard about Amazon's, I think that they've probably got some development already underway if we're hearing about it now, so I would expect to see them making some headlines in the very near future, so that's very interesting. There's lots of ways in which you can play and the value created there.

John Gilroy:

I'm just taking notes on it. The hardware is not the hard part anymore. I mean we have a lot of hardware up there. Now the hard part may be back to this data aggregation. And when you said Amazon that's exactly what I wrote down is that look at Amazon web services, the amount of data storage they have, and artificial intelligence, I mean maybe that's the company that's going to dominate in the long run, something like Amazon that's got all of that experience with handling the data.

Chad Anderson:

I've got to tell you, I mean they've certainly got a leg up in a few different areas. One of which is a commonly owned company can launch it, they have a lot of experience handling the data, and they can also price in the revenue that they're going to get on the consumer side from just their commerce business, their bread and butter business, they can price that into the cost of the system as well. So Amazon's got a lot of advantages in this case.

But I think you're exactly right is that there's a lot of software solutions now when it comes down to intelligence and information, space situational awareness is another great example of new companies coming in and doing things that were historically done only by governments. They're able to do it for a fraction of the cost, and much, much higher fidelity. We're seeing some companies really start to shape that. That's really important as well knowing where things are in space is key when you're talking about going from 1500

Constellations

Podcast

satellites in orbit today to tens of thousands in the very near future, right? But I wouldn't say the hardware is all the way out. With NASA's push back to the moon, and their commitment to work with new commercial partners on programs like Commercial Lunar Payload Service I think there's a lot of opportunity also there.

We've made some investments in lunar transportation. I think a lot of other investors are going to start to see that opportunity as well when this starts to materialize.

John Gilroy: It looks like that's the area that NASA is going into, public-private partnerships where they're providing the best practices and know-how, and trying to pick partners that will be able to take advantage of some of the knowledge that they have, that, and NASA is just up the road from us.

Chad Anderson: Yeah. I mean I think that they've found a lot of success with commercial cargo and now commercial crew. I think it's becoming incredibly obvious with commercial crew, they made a safe bet in the contractor that they knew in Boeing, and they made a risky bet in a relatively new up-and-comer when they invested in and they pre-purchased flights with SpaceX very early on, and I think we're starting to see that materialize now with SpaceX being months ahead of schedule and doing it for a fraction of the cost. I think that this is really starting to inform some opinions that it's really difficult to think anything else that you shouldn't do this type of partnership going forward.

The Eclipse Program that I mentioned earlier looks very similar to commercial cargo and commercial crew, which for us is very encouraging to see that, that they see the value in these types of partnerships where NASA is acting as a customer versus a benefactor or a development funder, is now acting as a customer to purchase its services from private customers, and allowing them to come up with the solutions, and do so at high quality and a low cost.

John Gilroy: Well Chad, I'm going to put you on the two-minute drill here. I want you to give us in two minutes here, what do you look at the groundbreaking technology is going to come up in the next four or five years? Is it going to be the laser communication with satellites? Is it going to be something to do maybe with ground systems? Or maybe it's data aggregation? What do you think the groundbreaking technology is going to be?

Chad Anderson: I mean that's the golden question and that's what we're doing every day is trying to figure that out.

John Gilroy: You spend every day trying to figure that out too, don't you?

The logo for 'Constellations Podcast' features the word 'Constellations' in a bold, black, sans-serif font. A yellow arc with a blue star at its end curves over the 'o' and 'n'. Below 'Constellations' is the word 'Podcast' in a smaller, black, sans-serif font.

Constellations

Podcast

Chad Anderson: That's the answer we're looking for, but I think we've got a pretty good idea, and it's really in this area that I've been talking about a lot in the satellite value chain, and the EO, Earth observation side of the house. I think that we're going to see that incorporated into our everyday lives on a scale similar to GPS, and that's going to happen very soon, year and a half, two years type of time scale, so that's very exciting.

I'm excited about what happens on the lunar side. Again, all of this initiative, and all of this push, and all of this ambition to get back and working with private companies I think we're going to see some interesting things come out of there.

With all these new satellites in orbit I think we're going to start to see a lot more networks, constellations, and the efficient way to do that, the most feasible way to do that, optimal way to do that is through a mesh network with laser links. I think we're going to start to see a lot more optical come into play, intersatellite links and also to ground links. It's just a better way, a lot more efficient. And when you're talking about the sums of data that we're talking about I think there's a lot of opportunity there, but we've still got a bit more work to do.

John Gilroy: This is great. Unfortunately, we've run out of time. I could keep this going on and on, but I got to respect the time in your day too. I'd like to thank our guest Chad Anderson, the CEO of Space Angels. Thanks a lot for a great interview Chad.

Chad Anderson: My pleasure. Thanks very much.