



## Episode 157 – Space investors, the Emergence of ChatGPT and the First Open-Source War

Speaker: Matt O’Connell, Operating Partner, DCVC – 29 minutes

John Gilroy: Welcome to Constellations, the podcast from Kratos. My name is John Gilroy and I will be your moderator. The past two years have been rocky for space investors as evidenced by the severe drop in space investment in 2022. To help us understand what we might expect in 2023, we have as our guest, Matt O’Connell, Operating Partner at Data Collective Venture Capital. Prior to joining DCVC in 2020, Matt held numerous leadership roles in the satellite, digital mapping, and intelligence industries as managing partner at Seraphim Capital and CEO of OneWeb. Today, Matt will give us some insight on what the current investment landscape looks like, as well as on the exciting new tech investors have had on their radar. We’ll also address some questions specifically for the space entrepreneurs listening to Constellations on what makes the best investment pitches.

So let's jump right in here, Matt. Private equity projects have grabbed most of the headlines in recent years and as we're recording this from Washington DC, public sector interest has grown as well. What do you think that interest will lead to increased spending, and if yes, what do you think will be the drivers?

Matt O’Connell: Well, John, first, thanks for having me. It's great to talk to your audience. The recent headlines have all been about Ukraine. Ukraine has been called the first open-source war and it really is. You can see imagery, I'm chairman of a company called Capella, which has small radar satellites. The Russians don't move their tanks during the day because we can see them, they move them at night. Ah, fooled you. We gave the intelligence community night vision goggles, so now we know where they're moving. Maxar has put out a lot of images of the Russian deployments. So the intelligence and defense community is using open-source imagery a lot. Look at how the coalition forces are communicating. They're using SpaceX, Elon Musk’s’ Starlink, they're using ViaSat. Both of those companies, in fact have been threatened by cyber-attacks by the Russians. So there has been a lot of talk about how much the commercial industry can add to supplement our government capabilities. It's not going to replace them, but it's a huge addition and it's also harder to attack all of us. When you think about it, you got one big battleship size star Galactica satellite from the U.S. government. As a general said to me years ago, "Matt, they can't afford to shoot all your satellites now."

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John Gilroy: I never thought about that. Well, Matt, you pick up the phone, you look at the So how is all this financial news impacting space investment from an investor's perspective?

Matt O'Connell: Well, I think the newcomers, John, are probably a little put off by it, but experienced investors think it's good because we're winnowing out the weak companies and frankly, from an experienced investor's point of view, a market dip is a buying opportunity. The old saying, buy low, sell high. So look at me. I took two broken satellite companies. One was called Orbital Imaging, one was called Space Imaging. I put them together and sold them 10 years later for a billion dollars. I mean, I'd love to do that every day. So for the experienced investor, this is a buying opportunity. You just have to buy the right things and you have to understand the fundamentals of the business and not buy on trends. I think part of what went wrong a couple years ago, John, was we had SPACs and they got inexperienced investors excited and some at a billion dollar valuation for a space company that had never gone to space. I thought that was a little optimistic.

John Gilroy: I was preparing for this interview, I was reading quotes from Warren Buffet, you could buy do that for eight hours a day and never run out of quotes. But I think you stole that from Warren Buffet. He said, "This is a time when bargains are available," isn't it?

Matt O'Connell: Oh, absolutely true. And I was very interested in his recent statement. He said, "I really haven't batted a thousand, but I've made one very, very good decision every five years." That's kind of the way venture works. We figure we'll lose money on three, break even on three, make money on three, but then you have one runaway success. That's how we make money and how we tend to make a lot of money and it's good for our investors. So I was interested to hear Buffet talk that way because he's not a venture guy, but he seemed to be saying that that sort of business model works.

John Gilroy: Yeah, well I tell my students that in order to be terrific, you got to be specific. So I'm going to pop in some specifics here and dazzle you with big numbers. Space investment plummeted from its 2021 high of \$47 billion to \$20 billion 2022. Do you think it'd ever recover as rapidly as it fell?

Matt O'Connell: Well, it will recover. Space is an industry that's here to stay. I mean, I was explaining to my Uber driver, I said, "Well, you're using space right now. You're using a GPS based system on your phone to navigate to take me to the Palo Alto Sheraton." So it's here, it will continue to grow. A lot of people use Dish TV. I explained to the cab driver, I said, "When you go to the gas station and plug your credit card in, look at the top of the building, you'll see a very small U-shaped antenna. It's called a VSAT. It goes up 22,000 miles and back in 45 seconds." He said, "It can't." I said, "It does." So people don't understand how much space is part of our business and how it will continue to grow.

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Will it come back as rapidly as it has? I'm not sure it'll come back as rapidly. But as I said, for those of us who are experienced, DCVC runs, I don't know, upwards of \$3 or 4 billion. We just raised a \$750 million fund. We see this as a buying opportunity. And again, you go back to what I did, I took two broken companies and put them together. So I think a lot of people are looking at consolidation. You've got the big satellite operators. I've been saying for years publicly, I grew up doing M&A on Wall Street, so I've been saying for years we got to consolidate some of these GEO operators. We got to consolidate some of the LEO operators. I think you'll see a lot of consolidation. And as I said, it worked well for me. I just came back from the intelligence mapping conference and this guy called me with an idea. The guy took me aside and said, "How about we put A and B together?" And I said, "You know, there's always old saying in M&A, 'if you put enough dogs together, you can sell it as a kennel.'" But I said, "You got to be careful trying to make money that way. That's not actually a good business plan."

**John Gilroy:** There's a young fella, he talks about investing every now and goes by the name of Charlie Munger. Him and others use his term "dry powder". And so it's used a lot in the investment community. Could you explain what that means and tell us where you think investors will spend it?

**Matt O'Connell:** Well, we are an early stage fund. We go into the seed or series A. We have actually written the first check for a couple companies. I think we were very early into Rocket Labs and Planet Labs. But then we follow. The first check might not be that big. Maybe \$3 million, \$5 million, but then we follow and we can put in up. We've put in some companies up to \$50 million over time as we've watched them grow. We watched Capella grow and we kept writing checks. So that's what dry powder is. It's not just the first check you put in, it's how can you support your companies?

Now about a year ago, remember I took over a satellite company, Orbital Imaging, right after 9/11. It was a terrible time to raise money. So I've seen the worst. I had done restrictions on Wall Street. I took over Orbital Imaging, put it in the bankruptcy. Once you've seen how bad it is, once you've had to live by eating bark from the trees, then you're careful with your cash. A lot of young entrepreneurs grew up in a time of abundant capital and they think money grows on trees. Not quite true. So I think that people are going to have to be disciplined in this time of economic constraint, if you will. And I think investors are preferring to double down on their winners and maybe not follow up on people who weren't showing as much strength.

**John Gilroy:** I have to admit, the image of eating bark from a tree is kind of appalling. Well your investment in DCVC focused on investing in early stage deep tech entrepreneurs, you just mentioned in startups. So what does constitute deep tech and why do you see it as an important area to invest capital and see returns? What is deep tech?

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**Matt O'Connell:** Well, deep tech to us, we look for entrepreneurs who are targeting trillion dollar sectors and trying to disrupt them using data and computation. Trillion dollar because you want to have a big opportunity. As an old venture capitalist said to me once, "If it's not a billion dollar opportunity, don't even go for it because you're only going to get a little piece." Computation and data is important to us. Our name, as you said, we were originally called Data Collective Venture Capital. We've kind of just gotten known in the market as DCVC as we added fund after fund and building after building. So we're just DCVC, but our first name literally is data. The advantage there is that hardware, it's hard to scale hardware. It's hard to get the same margin and it's hard to make it grow to a venture size return.

Remember my business model lose three, break even on three, make money on three, and then hope for one Bluebird. Well, to get that Bluebird, you've got to have really big markets and you've got to spread this thing out big. It's much easier to do that with software and data and computation. So that's what we look for. Somebody came to me at the intelligence mapping conference and said, "I have the perfect nozzle that will allow refueling of satellites and space." I said, "That's great. Someone's got to do that. If we're going to have a sustainable space economy." That's not what we'll do. There's a phrase in venture, a fast no is better than a slow maybe. I said, "We won't invest in your company. We just don't do flat out hardware. If there's no data or computation, we won't do it because it won't give us the yield that we see."

**John Gilroy:** No, when you said the word trillion, I wrote down another T word, TAM, total addressable market. I think that that's what Munger, Buffet and you look or go after something big. If you get 2% of that, you're going to win. If you get 90% of something small, it's not worth any of your trouble.

**John Gilroy:** So, let's talk about picking up the phone and reading the news, a lot of financial uncertainties. Washington D.C. stuff going on. We have no idea what's going to happen to some of these changes, some of these ideas here. So what about the savvy space investor? That should be on your t-shirt by the way, savvy space investor here. So what do you look for when you look at a space investment?

**Matt O'Connell:** Well, I'll tell you what gets my blood pumping in the morning. Over Thanksgiving, the kids said, "Dad, why are you working so hard? You've sold a company for a bunch of dough." And my wife said, "Your father believes that he is personally helping to defend Ukraine." And I believe that we are. We have Capella taking pictures of the Russians at night. We have another company that has autonomous drones that sense incoming Russian drones, go up and catch them. What's not to love about that? We're protecting old folks homes and nursery schools. That's great. Bad news in the world is good news for the defense and intel sector. So we have been very active, all those companies I talked about. The ones I mentioned just now, but also Planet and others in Ukraine, Sudan, Taiwan. I wish the world was a happier place, but there is no

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looming outbreak of peace. And until peace is widespread, we like to think that our companies are helping defense and intel people making faster, smarter decisions.

And if you can do that, I mean it's documented that increased awareness of what the Russians are doing has helped the Ukrainians. So I get very excited at all the new technologies that are coming out to help the defense and Intel people. But I mean, here's another one, John. We have a company that has made security gates smarter. Instead of one person at a time, when you go to see the giants here in San Francisco, you walk through this area, you don't know it, but two panels are measuring 12 people at a time. And they can detect a gun, they can tell, oh, that's a gun, that's an iPhone. We are working for large amusement parks, the Smithsonian, stuff like that, the Metropolitan Museum of Art. It's anything that we can do to make the bad actors in this world have a tougher challenge, that gets me really excited.

The other thing is that there's so much data pouring in. We have to standardize it, synthesize it, and share it securely. Now those three things, standardize, synthesize, and share securely, easy to say, hard to do. But we want to share it so that people can hear about it. I salute you guys for having this kind of podcast because we want people to be thinking about these kind of subjects because a rising tide lifts all boats and makes the world a better place for all of us.

John Gilroy: Now, Matt, listen to your voice and talking about podcasts, savvy space investor, it'd be a pretty good name for a podcast that you could run. You'd be great at it.

Matt O'Connell: Thank you, John.

John Gilroy: Well, now we have the mandate here. We have a federal mandate that was released this morning, have to use artificial intelligence at least once in every podcast. And so artificial intelligence is coming up here. It's getting lots of attention. We know that. I mean, I was at an event yesterday, I think half of the speakers brought in artificial intelligence for something or other. It was a conference about data, data management. It's getting lots of attention every industry and they call it game-changing technology. Well, I've got to imagine you're getting a lot of pitches like John Gilroy and I got AI for space applications for this and that. So what are your thoughts about AI for the space industry? Are there areas where it's applicable and areas where it's not so applicable? Where do you think it's fitting in?

Matt O'Connell: We're very excited. My wife is very excited about it. She said, "If you don't get some artificial intelligence, you're not going to have any intelligence at all." But I think that, and further to your story, a real story, my next door neighbor's son was boasting about fact that he wrote his best man's speech for his brother's

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wedding using ChatGPT. And my reaction was I didn't even notice that it was better or worse than any other slightly inebriated young guy's best man speech. But there was a lot of talk about that at the intelligence mapping conference that I just went to. And here's what we all think. Short term it, it's a lot of hype. I mean really when you try it, what you get back, one of my partners said, "It sounds like the standard babble you get from a salesperson that has been machine translated from a foreign language."

It says things like, "Well, there are many dynamics and many variables and that can lead to different outcomes." It's just not that useful. But the head of the National Mapping Agency, Admiral Woodworth, said, "We got monitor this stuff." Can't rely on it now, five years from now, it probably should help us with some analysis. Here's an easy thing for you, John. 60% of the world is water. So you could sound like AI by saying, "Oh, well I can tell you if you want trouble over land, I'm going to get rid of 60% of the imagery right now." And they say, "How do you do that?" And you say, "Well, 60% of it's water." So there are some things that AI can do for us right now. I will say that I had a off the record conversation with one of the top leaders in the intel part of our government, and he said, "Got to look at it. Got to pay attention to it. Yeah, we get asked about it in Congress, but it's going to be at least five years before I make a life or death decision based on AI."

Still, I think it is going to help. I'm now switching to my voice, this is not the quote. I think it is going to speed up some analytics. But as that general said to me, "I think before people make major decisions like big investment decisions or military commitments, I think people are going to want a human in the loop to say, 'This doesn't make any sense at all. Did someone check the variables here?'" And by the way, we have studied this in our firm quite a lot and checking the model and doing ... Not everybody's doing quality control in AI yet. A lot of them are just building it as fast as they can, but not taking the time to do quality control. Without a separate engine doing quality control, the AI can just generate bevel.

John Gilroy:

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There's a guy who lived in DC for a while, a guy named Mark Anderson. And I think he's living out where you are at now in California somewhere. But he has got a lot of quotes too. Charlie Munger isn't the only one with good quotes. So this guy, Mark said, "Software is eating the world." So it seems like selling software, more help wanted for software engineers than traditional engineers. At the same time we're seeing space tech companies adopt advanced concepts

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from IT. They're steel and IT stuff like cloud native applications, automation, network management, and software defined everything. So what are the big trends you're watching in terms of software taking over space and how do you view the convergence between IT and the space world?

Matt O'Connell:

Well, I think it's been brewing for years. I started in my satellite company, GOI in 2001. And about six months after I arrived I said, "Whoa, whoa, whoa, wait. So you just have a box up there and it's basically a box that holds 45 different software systems." And they said, "Yep, that's about it." Software is taking over everything. I remember we launched a satellite and we had trouble geo-locating the information because the rocket sciences had put in last year's star model, not this year's star model. By the way, my wife just got a fancy new stove from Belgium, paid a lot of money, and they put in the wrong software package. I said, "An oven has software?" Everything has software. So everything does have software. We are very interested in software that improves the accuracy of image capture.

But we're also interested in software ... You're asking me specifically about space. I mean this company, DCVC, we are a deep tech company so everything we look at basically is software. But if you're asking about space, we are very interested in cyber security for space. We are interested in software that can reduce the size of image files in space or do some processing in space so that you're not sending petabytes back and forth in every shot. So software's going to continue to grow both in space and on the ground. And as I said earlier, we like software because the margins are just better than hardware.

John Gilroy:

Let's go from 22,000 miles up down to the ground here. And universities, all the country have these pitch contests. You've seen them. Georgetown has them, Stanford has them, all kinds of pitch contests. So let's look at it from that side. So what can companies seeking investment do to make their presentations motivate investors to invest to motivate you? So what kind of pitch do you like, Matt? It's true secrets here.

Matt O'Connell:

Yeah, true secrets. Now I'll tell you, again, we were fortunate we raised 750 last fall. So we're in good shape. But at the time, the two founders of our firm, Matt Ocko and Zach Bogue said, "Hey guys, we have a lot of dough, but we're going to be just as careful with this dough as we were with the last dough. And be very discerning as you look at things. If people don't show us a clear path to profitability or an exit, we're not interested." So I have to say that a young guy came up, I was speaking at a conference, a hybrid space conference. Guy came up and said, "Hey, we're going to go to the moon. We'd like some of your money." And I said, "How are you going to make money going on the moon?" He said, "We have some really great tech."

I said, "How are you going to make money going on the moon?" He said, "We also have a really great team." I said, "I want you to talk to my friend from

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Seraphim Capital here, Mark Bagas from Seraphim, and he'd love to talk to you." And Bagas looked at me and crossed his eyes, "Why did you stick me with this kid?" But we applaud people who are doing what we call science experiments. I recently joked that I thought the word cis-lunar was the biggest buzzkill in the English language. Cis-lunar means beyond the moon. That will make money at some point for someone doing something. But our funds go for generally about 10 years. But think about seven years. You have a pension fund and it's invested in a bunch of stuff. One tiny piece of it is invested in alternative assets. And you want to get a return in that and preferably in about seven years. So stuff that is not going to generate a return in seven years is going to be hard to finance in this current climate.

John Gilroy:

Yeah, that's the right question. Yeah. The Tom Cruise question, show me the money. Yeah, that kind of boils it down. A lot of companies are out there, and you've seen them, I've seen them, and they all think they have the next greatest thing. So what separates these entrepreneurs from those that aren't able to get financing? Focusing on the return on the investment and immediately instead of the fascination with technology. Now, I know a lot of software developers that can talk code and dazzle you with all kinds of code and artificial intelligence and everything else and open-source software. And so what you're saying is you got to focus on the financial return or the practical application for your company. Is that what you're saying then?

Matt O'Connell:

Well, I want to qualify that, John. That is what I said, but they have to have a really good idea attacking a big problem. Larry Page from Google says, "Think of the toothbrush, something you use at least once a day. Hopefully you use it twice a day, but something that you use all the time. That's a good idea, attacking a common problem." So we want people who are really serious about their problem. I mean, I got into this satellite mapping thing because I was working for a venture firm in New York and unfortunately one of our guys went to the tower on the wrong day. He went to the World Trade Center, and that was bad. I realized that my wife, my daughter and I were all working in Manhattan and I thought, "Boy, we are an easy target." I had found this little satellite company that did mapping and was failing. It was teetering on the edge of bankruptcy.

And I thought, "We got to fix this. We got to make America smarter." I was also terribly frustrated that the people in State knew some people were bad guys, but didn't tell the people in customs so the bad guys came in the country. Let's share this information. So you've got to care about your idea. I don't like guys who come in and say, "I want to get rich and here's how I'm going to do it." Some young guy was going to go see a venture capitalist I know. And he said to me, "I'm going to explain to him, I want to do this quick and then buy my ranch in Montana." I said, "You say that and the interview will end right there." So the guys I think who win, I left Wall Street and worked for the fellow who founded HBO, a guy named Chuck Dolan.



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And Chuck had some crazy ideas. I mean, back then the idea that you could have television without ads, people thought it was crazy. The idea that you could have TV in a city delivered by cable, my father said, "Don't leave Wall Street. You need that for the mountains, Matt. You don't need that for New York City." What Chuck had was he had two things. He was amazingly persistent, amazingly persistent. I used to listen to that song, I Get Knocked Down and I Get Up Again. I literally would listen to it every Monday and every Friday. And well, he had three things. Persistence, incredible courage. He did stuff. People would say, it's not going to work. I remember the founder of Google Earth and I were talking to a guy and we said, "You're not going to use a Rand McNally map. You're going to have a little TV in the dashboard of your car." And the guy said, "What happens when the battery dies?" I said, "When the battery dies, you're actually not going anywhere. So you got big problems."

But the third thing Chuck had, and he identified that I had this too, is he was half German and half Irish. So I have the same thing. When I'm looking for an idea, I'm totally ADD kind of Irish. When I get the idea and want to make it work, I become German. Chuck was the same way. "Ah, I'm going to have a cable system in the city." He told me to create a company called American Movie Classics. The second we all heard it, we thought, "Oh my gosh, Carrie Grant, Gary Cooper, you could see that this thing was going to win." So you have to care about your idea. You have to be persistent, you have to have courage, but you also have to blend optimism and vision with granular execution.

And I think too many young guys get carried away with their idea. And finally, the other thing is they have to listen more than they talk. They don't listen to their customers because they unfortunately saw Steve Jobs and they say, "Well, Steve Jobs didn't listen to the customer." He said, "I'm going to do this." And I said, "Yeah, but you ain't Steve Jobs."

John Gilroy:

No. In Washington DC here, there's a popular baseball player named Juan Soto. He's in town, he works out in the west coast of San Diego now. And even as good a player as he is, no one bats a thousand. I mean, he's not batting a thousand, he's having a tough year this year. And so I imagine investors like you don't bat a thousand either. And so I imagine that you look in your little calendar there and you go, "Well, you know, you must have passed on some exceptional technologies." So did you ever think about the one that got the home run you didn't hit?

Matt O'Connell:

Well, look, I'll tell you about a couple. One, back when I was in cable, somebody came in and said, "We want you to invest in something called The Weather Channel." Now, I looked at it and it was really dopey back then. It was almost like early Pong, if you remember that Atari game. It was a green screen, blah, blah, blah. So the Weather Channel was not much better. And I said, "Who's going to watch weather all day?" But then it got better. We put it into our lobby at Cable Vision because we realized you don't want news because first of all, are

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you going to have a Democrat channel like CNN? Are you going to have a Republican channel like Foxy? Too many decisions. We had the Weather Channel on, and people weren't mad about being late for their meeting. They'd sit there and just Zen out watching the weather.

So I missed that one big time. The other thing I'll tell you, congratulations to a friend of mine, Chuck Beams, who started York. I said to him, "York is in a good position building small satellites for small companies. How are you really going to scale that?" Well, Chuck got the Air Force and the Space Development Authority to buy a series of small satellites. And then he sold the thing to a group for a billion dollars. I mean, God bless him. He's a good friend. I wish him well. So no, you don't bat a thousand. But then for every one of those, you think, "Oh yeah, but I avoided that stinker over there."

John Gilroy:

Yeah, that's good. Matt, we're in the middle of a tough investment climate here, and I just want to thank you for giving our audience a leg up on investing in space, especially from a company whose first name is Data. I'd like to thank our guest, Matt O'Connell, operating partner at DCVC.

Matt O'Connell:

Thank you, John.