Space Capital Podcast S2E09

Diligence is back in vogue, and I have to say that it is a welcome change of pace.

Welcome to the Space Capital Podcast. I'm your host, Chad Anderson, Founder and Managing Partner at Space Capital, a seed-stage venture capital firm investing in the space economy. We're actively investing out of our third fund with $100 million under management. You can find us on social media @SpaceCapital. In this podcast, we explore what's happening at the cutting edge of the entrepreneurial space age and speak to the founders and innovators at the forefront.

This is the Space Capital Podcast. And today, we are introducing Space IQ, our quarterly review of startup activity and investment trends in the space economy. We're going to walk through the results published in our Q3 2022 Space Investment Quarterly, explore current market dynamics, and deep dive into specific themes with industry leaders in satellite communications and geospatial intelligence.

Chad Anderson:

Hello, everyone, and welcome to Space IQ, our quarterly webinar, where we review startup activity and investment trends in the space economy. This quarter, we're taking a closer look at investment in Q3, which saw significant declines across the space economy. We'll examine which industries are most affected and which are best positioned to weather the storm.

Expectations for Q3 were high, with hopes that the Fed would tame inflation and investors would get back to deploying capital. Economists were forecasting the US headline CPI to slow in August, signaling a June peak. Instead, it rose with stubbornly high rents and food prices. The Fed responded in September with another 75 basis points rate increase, resulting in the fastest rate height cycle since 1988, which is putting pressure on equity and debt markets, both broadly ending down to the quarter.

And these macroeconomic factors directly impact venture capital and private markets, making it harder for startups to raise money. As legendary venture investor Bill Gurley said. "Silicon Valley is more correlated with NASDAQ than anyone admits." And at the same time, venture fundraising set a new annual record with $151 billion closed through September and nearly $300 billion of dried powder on the sidelines.

Many, including us, expected that VCs would get back to investing after Labor Day. And anecdotally, from the front lines, valuations are normalizing and we're beginning to see deal activity ramp up. However, that's not yet showing up in the data. PitchBook shows fewer deals closing in Q3, when compared to 2021, and less total capital deployed. This can be explained, at least in part, by a renewed focus on diligence and price control as BVS shift away from pure momentum investing. Diligence is back in vogue and I have to say that it is a welcome change of pace.

In this risk off environment, VC investment volume in space, particularly infrastructure, has fallen significantly more than the broader market. In fact, Q3 is one of the lowest quarters for private investment in the space economy over the last five years. We began publishing the Space Investment Quarterly in 2017 with the aim of uncovering insights about investing in the space economy. We published our Q3 report yesterday, which is available on our website and in the links below.

Now, by our accounting, with another $3.4 billion invested into 79 space companies in Q3, there's now been $268 billion of equity investment into over 1,700 unique companies in the space economy over the last 10 years. The US and China account for a full 77% of total investment over the last decade. And while launch and emerging industries get most of the media coverage, they only account for 11% and 1% of total investment, respectively. We expect the macro environment will disproportionately affect funding for these capital-intensive companies for the foreseeable future, while companies that are providing data and insights and critical services to enterprises and governments will be better situated to grow revenues in the near term and, therefore, better positioned to raise additional funding.

And that's where most of the capital has gone. 88% or $237 billion of total space economy investment has gone to the satellites industry, but none of these industries were spared from the macro-market pressures. The risk off environment has meant that VCs are refocusing on enterprise SaaS and deep tech is feeling the pain as investments decrease across quantum, robotics, and space infrastructure. Total investment year to date saw a steep decline versus Q3 last year. In Q3, VC investment volume in space was down 44% versus the broader market, which was down 31%.

Infrastructure during Q3 was $2.5 billion, largely driven by growth rounds in SpaceX and several others. By our accounting, SpaceX and Blue Origin now account for a third of total investment in space infrastructure over the last decade. Since 2013, the United States has led global investment in infrastructure, representing a full 67% of the total. In Q2, we broke out emerging industries for the first time as a subset of infrastructure. And I think this data really highlights the irrational exuberance of 2021.

Our data shows that a little over $3 billion has been invested into these emerging industries over the past decade, with nearly half of that total invested in 2021 alone. This record level of investment last year was driven by venture capital firms, many of whom, in the height of market mania, were investing in the category for the first time. So when you hear investors say that the space economy is in a bubble, you may want to look at their portfolio and see if they're merely describing their limited experience with this 1% subset of the highest risk business plans. It's not enough to nearly identify a market opportunity, you also need the category knowledge and the experience to pick the winners.

And overall, we expect that the macro environment will continue to disproportionately affect funding for companies with high upfront capex, including launch and emerging industries. But again, companies providing data insights and critical services to enterprises and governments will be better positioned to grow revenues in the near term and have a higher likelihood of raising growth rounds in a more selective market environment. Over time, as the markets begin to differentiate, we believe the value of deep technical expertise and strong fundamentals will be rewarded, and our firm continues to invest accordingly.

So we've talked through how the macro market is affecting venture, particularly deep tech, but investors can be irrational and markets tend to over-correct. What may get lost in the noise is that space technologies are playing an increasingly important role in the global economy. For example, with the iPhone 14 launch, Apple announced its partnership with Globalstar to provide emergency communication services to its one billion users. While this service will only offer text messagings to start, this initial step to integrate SATCOM into mobile devices has significant implications.

And Apple is no stranger to innovating with satellite capabilities. In the GPS playbook, we explore how Apple's integration of GPS into the iPhone 3G helped fuel the rise of location-based services and companies like Uber, Lyft, and Snap, what we call the applications layer of the satellite industry. Apple wasn't alone in their SATCOM announcement this quarter. T-Mobile and SpaceX also announced plans to bring persistent ubiquitous coverage to US customers, using Starlink to provide satellite to cellular service.

Regardless of who comes out on top, this convergence of terrestrial and satellite communications networks provides tremendous opportunity to rethink how our data is captured, routed, stored, and utilized. The SATCOM playbook unpacks the innovations driving these changes and what it could mean for our day-to-day lives.

Chad Anderson:

Additionally, it could mean for our day to day lives. Additionally, record revenues for remote sensing companies are demonstrating how the space economy is both counter cyclical and resilient to macro market conditions. In September, Planet announced a 59% increase in fiscal year Q2 revenue year over year with net dollar retention of 125%. This performance was driven by growth in both enterprise and government customers, existing and new, whose operations rely on critical data and insights from satellites.

The global geospatial market is expected to grow from $63 billion to $148 billion in the next five years. The ability to collect process and analyze endless amounts of geospatial data is creating powerful new applications that are helping to reshape how the largest global industries operate. Now, to help us get our arms around these counter cyclical investment opportunities and what all this means for companies operating in these markets, we're going to be joined by a couple of guests, each of whom are market leaders in SATCOM and [inaudible 00:09:03]

First we're going to speak to Anand Chari, who's co-founder and CEO of K4 Mobility, a digital technology and internet services provider for off-grid communications. We invested in K4 earlier this year. Anand has built an incredible career in telecoms, including 15 years as co-founder and CTO of Gogo, where he developed and deployed two generations of air-to-ground networks, expanded the company globally using satellite technology, IPOed at a billion and a half market cap, and continued to grow the company to over 1,000 employees and $800 million in revenue. Anand, it's great to have you with us. Thanks for joining.

Anand Chari:

Thanks for having me Chad.

Chad Anderson:

So first off, can you tell us a little bit more about K4 and what it is the company does?

Anand Chari:

Sure. We are a technology startup based out of Chicago. We develop network management solutions for enterprises. We started in maritime in super yachts, but we are now expanding within maritime and beyond maritime. We started with super yachts just to get direct feedback from the customers and fine tune our software. Our early adopters are those businesses that have numerous mobile and remote locations or nodes.

As you can imagine, if you have numerous mobile and remote, wireless is you have internet choice, often using satellites or cell tower based technologies. But when a business has many locations, in each location, they have a choice of wireless networks, satellite providers, and cell tower providers, and they have many endpoints. Sensors, devices, people at each location, whether it's a ship, plane, retail location, that want to connect with the internet. The enterprise's challenge is really managing this many to many, the many endpoints, many locations, many networks, and K4 develops the software that helps an enterprise get visibility, gets control, have security in all these locations. That's what we do.

Chad Anderson:

Very interesting. Okay. Can you tell us a little bit about your product, K4 Hydra, your first go-to-market product and how you integrate 4G, 5G, and satellite connectivity?

Anand Chari:

Yeah, absolutely. Much like most of the modern products, our K4 Hydra has three pillars. An edge, cloud and app. Edge is the software running on a piece of hardware. That hardware could be a K4 hardware or third party hardware that is at the remote location, whether it's a ship or a plane or a store. And the cloud has much like iCloud, all the intelligence to control and orchestrate the edge as well as do data analytics. And the app is where all the power is.

We bring a consumer-like experience to an enterprise, the IT department or the apps department of a business using a mobile app or a web browser now can get visibility to all the locations. You can do easy troubleshooting by clicking on the app. A single connect gets you into any one location. You have secure access. You could have different levels of access to different employees. That's the product. It's a common software platform across all industries, but depending on the industry, the hardware that the edge runs on will differ, but the cloud and the app is a software only product that's applicable to many industries.

Chad Anderson:

What do you make of these SATCOM and terrestrial announcements of the last quarter of the Apple, Globalstar and SpaceX and T-Mobile?

Anand Chari:

Look, it's really a great idea and it's a great service and I believe it's the start of many things to come in the future. In some ways I see it as a culmination of all the innovation and evolution that has been taking place in the wireless communication over the last three decades, I would say.

Three things I would name. One is the smartphone itself, and the smartphone is such a powerful device now that we have it, such announcements and service is easy because it supports multiple bands, it supports multiple protocols. The second enabling factor is nationwide availability of a mid-band spectrum, the one to six gigahertz spectrum. In the nineties I was in the cellular industry, there was no such spectrum available. Of course, regulatory bodies throughout the world have made the spectrum available and that's what Apple, SpaceX, T-Mobile and Globalstar are planning and using.

And the third is really cheaper satellites. The cost to launch a Starlink satellite probably sits at about the same cost or lower cost than erecting a cell tower and putting all the electronics. When you combine these three things, cheaper satellites, nationwide mid-band spectrum, a smartphone like powerful device, now you can enable a service like this. It makes all the sense in the world. The cell tower should be 500 miles tall and sitting and covering a vast space of earth. That's the best way to provide off-grid connectivity. I think we are going to see more innovation like this coming in the future.

Chad Anderson:

That's great. Earlier this year at the big satellite conference in DC there was a panel of satellite executives and they predicted that 5G based networks would combine with satellite and terrestrial infrastructure would combine and be available in the next five to 10 years. And that satellite mobility providers expect to offer customers seamless transitions between terrestrial and satellite networks within a decade. It seems like things may be moving faster than that. What's your take on that?

Anand Chari:

It's a little bit of a mixed bag. Definitely things are moving faster with the Starlink T-Mobile announcement and the Apple Globalstar announcement. The traditional legacy players trying to have a unified 5G framework for satellite, what they call is, a non-terrestrial network using 5G. I still think it's on a slower track.

I hear a couple of flavors of it. One is use of 5G over the air protocol and the second flavor is use 5G core network protocol, but continue to use some legacy modem and technologies and so on. I think the faster the working group and this initiative gets a real proposal, a real framework for standards-based approach, it's good for everybody, because standardization is going to bring many players in the industry. It's going to ease the adoption of the technology. It's going to, in fact, expand the total addressable market.

I think the satellite industry for a long time has been playing what I call is the zero-sum game. They perceive their win as competitors loss. Or competitors win as their loss. That they build proprietary systems, they increase the switching costs for everybody to go from one network to the other, and that viewpoint has to change.

Anand Chari:

And I hope one network, the other, and that viewpoint has to change, and I hope this 5G initiative is the right step in the right direction. It just needs more muscle behind it, more financial muscle, more technical muscle to bring it [inaudible 00:16:14] make it a reality, otherwise even after five, 10 years, it could still be a working group item that is designed to a few intellectuals.

Chad Anderson:

I'm glad you brought that up 'cause I wanted to ask you about that. Our research shows that customers are demanding this now as well, that they're looking for interoperability and the ability to buy an antenna that can speak to multiple different systems, terrestrial when it makes sense, satellite when it makes sense, optimizing for the capacity and the price point and the latency, which is what you refer to as intelligent orchestration. So customers want this, K4 is working towards this. What do you think is the thing that's going to enable this? What's going to help make it easier for these customers to go out into the market and be able to buy an antenna that speaks to the best system available?

Anand Chari:

Yeah, no, there are two layers of enablement, and we are doing one of them right now, which is offer a network management platform that is neutral to all networks that allows customers, like you say, they're all looking for faster and cheaper connection. And it is available in the form of LEO's terabyte per second satellite constellations 5G. So we are making it easy for them by giving them a network management layer that is not network specific. So now, they could easily switch, upgrade to new networks. The second layer of enablement is what you are talking about. I think the industry should speed up interoperability, whether it's at a modem level, at an antenna level. So you need those multi-band antennas, you need those multi-constellation antennas and modems that are standards-based, so it could go across terrestrial and satellite networks, and across a variety of satellite networks. So the second stage, or the second layer of enablement could take some time, but we are enabling the first layer right now.

Chad Anderson:

That's great. Then last question for you, we have serious capacity coming online with Starlink and Amazon's Kuiper, OneWeb, et cetera. How do you think about this new capability? What's on the horizon? How will SATCOM continue to evolve in the next few years?

Anand Chari:

Yeah, no, we welcome it. In fact, if there is a one pain point that industry has faced over the last couple of decades, it's that the bandwidth is expensive and slow. So all these new bandwidth and new capacity solves that problem. Now it's a matter of, how do you get fast adoption? And I think the way to get fast adoption is. Make it super easy for them to upgrade and switch to these networks and make it easy for the businesses to manage such upgraded networks, or a mix of some legacy networks and new networks. And of course, the more interoperability we drive into these innovations, the more interoperable these capacity becomes, the adoption is going to increase, much like smartphone revolutionized the world for consumers. I believe this new capacity is going to revolutionize the connectivity or the connected world for the businesses.

Chad Anderson:

Anand, that was great, super insightful. Thanks again for taking the time to join us.

Anand Chari:

My pleasure. Thanks, Chad.

Chad Anderson:

Okay. Next up, we're going to be speaking with James Slifierz, founder and CEO of Sky-Watch, a company that's enabling a new era in geospatial intelligence by providing developers the tools they need to efficiently and cost-effectively integrate Earth observation data into their applications and workflows. We first invested in Sky-Watch's Seed Round back in 2018, and have invested several more times over the year since. James, thanks for joining us.

James Slifierz:

Chad, thanks for having me.

Chad Anderson:

For those who aren't familiar, can you introduce Sky-Watch and your value proposition?

James Slifierz:

Certainly. So we are the market-leading distribution platform for Earth observation. So to give you a semblance of what that means, we have nearly 400 satellites in space in orbit going nearly 8 kilometers a second that have cameras on them of all different types owned by dozens of different companies, organizations, and governments around the world, and then we have the millions of people on the planet that we think could benefit from this data. And Sky-Watch's job and its mission is to connect those two things, to help the people here on the planet benefit from all the interesting data that we are capturing in space. So we do that primarily through two products. We have EarthCache. EarthCache is our API for satellite data. You can think of it as analogous to something like Twilio or Stripe, just a few lines of code. Our customers can easily integrate satellite data into their software, their applications or workflows, et cetera.

They can tell us what they need imaged. We work with the satellite operators. By the way, they tell us programmatically what they image, and we work with the satellite operators to make sure that those needs get scheduled, captured, and then delivered back to our customers. And then we also serve a product called TerraStream into the satellite operator space. And you can think of TerraStream as a Shopify for space companies pulling together all the downstream infrastructure that they need while providing excellent data management and distribution capabilities so that they can focus on serving customers, generating revenue, and building a profitable company once they're able to get their asset up into space.

Chad Anderson:

Love to hear the way that you're talking about this. Traditional EO is very vertically integrated. It's built kind of for a big, monolithic government customer. Your model is very different, and it's helping to create an entirely new customer segment on the commercial side that a lot of people have talked about, thought about, imagined and hoped for. Who are your customers? Where are you seeing the greatest adoption on the commercial side?

James Slifierz:

So I'm proud to say that Sky-Watch has one of the largest customer bases in all of Earth observation. So we are just passing the 800-customer mark. Those customers are across 50 different countries in over 25 different verticals, so it's a real true horizontal go-to-market play. We'd like to say that the value proposition is that a satellite is the fastest and most affordable way of getting information about any location of the planet. So if you are in a business in which you need information about some location, so whether you are monitoring an oil pipeline, a railway, you're monitoring deforestation, you're monitoring the climate, if you can observe it from space, you can do it through Sky-Watch. Most recently, we're all familiar with the events happening in Eastern Europe between Russia and Ukraine, and the BBC had cited Sky-Watch at the time... in fact Sky-Watch and one of our customers being months ahead of the rest of the world in identifying what was about to take place there, and a lot of that was enabled through satellite imagery.

Chad Anderson:

Amazing. So you talk about the opportunity here, and you often say that it's as big as GPS. We tend to agree with you, but I'm curious, can you talk us through your thinking, help us understand what you mean by that?

James Slifierz:

Certainly. So GPS largely started to get its commercial traction in the early 2000s against a lot of skepticism, but we often like to site GPS as having grown as fast as it did due to three core attributes: affordability, accessibility and standardization. And when you look at Earth observation, it has held the inverse of all three of those attributes. It has been unaffordable, inaccessible and very fragmented industry. And it's a shame because we believe, to your point, the potential can be much larger than GPS because the reach is broader. The amount of verticals we're seeing adopt this technology is stronger, and then the depth in which you can help these industries with this data is stronger as well because, different from GPS, which is primarily location data, Earth observation provides very rich contextual information about what is happening in those locations. And so, we see it as our mission to make Earth observation standardized, accessible, affordable, and to enable the type of market growth that we hope rivals...

James Slifierz:

And to enable the type of market growth that we hope rivals GPS over the next couple of decades. So right now, Earth observation, if we were to compare it to GPS, it is about 2002 or 2003 right now.

Chad Anderson:

I love that analogy. I mentioned earlier that the space economy, particularly geospatial intelligence, is counter cyclical and resilient to these macro market conditions. Are you seeing the market demand for earth observation data increase as the world becomes more dynamic and uncertain?

James Slifierz:

Yeah. It's very interesting. You wouldn't tell by traction and developments in the market that we're going through a down market of any type. Just for example, within our customer base, growth continues to be 3X year-over-year across all major KPIs. And part of that is driven by, you say it's counter cyclical, people aren't trying to find more efficient ways of doing things that they already do. So if you ask me, "Who are some of your early adopters?" A lot of them are creating new use cases, but a lot of them are just figuring out how to use space technology to do something they already solve inside their business, but more efficiently and more affordably. And it goes back to that value proposition, that satellite imagery is the fastest and most affordable way to get information about any location on the planet.

And then, on the satellite side, as capital has become more expensive over the course of 2022, I think more companies are trying to figure out how to get into orbit more efficiently and reach customers more profitably. And so, with our TerraStream product, we've seen just a tremendous uptick in adoption there over the last nine months as companies realize that they don't necessarily want to deploy the capital to build this type of infrastructure themselves, which is primarily how companies have gone to market in this space for the last 20 years. So there's things that are shifting really favorably, and the point you made in your Investment Quarterly, if you're not a CapEx business, and if you are a CapEx heavy business, if you can convince investors that you have a path to market and a path to customers that is efficient and competitive with what everyone else is doing, I think you put yourself in a favorable advantage.

Chad Anderson:

Okay. So this growth is not going to notice big tech Cloud providers have gotten into the game, AWS, Microsoft Azure. Are these competitors or partners? Or how do you view their entrance?

James Slifierz:

They are certainly partners in the truest sense. We've announced partnerships with Amazon Web Services, particularly their AWS space and ground segment business line, as well as having announced agreements and partnerships with Microsoft Azure Orbital. And the goal there, and I think what they want to enable and what we want to enable, is they identify how fast this market is growing and how lucrative it's going to be over the next 10 to 20 years. And they're trying to position themselves as the infrastructure to support the massive amounts of data that are going to be transmitted and processed in this ecosystem. And they see us as an enabler of that.

The companies we work with, both the customers and the satellite operators, because we're right in the middle of the market, they trust us tremendously. So if they're looking to use a ground station or looking to use a Cloud provider, they come to us first. And the Cloud providers want to partner with us as well as the other big tech companies because they know that we are an interesting and reputable insight and

window into where the market is going, and they can help us better serve our customers through highly scalable computing infrastructure and hopefully continually decreasing down linking costs.

Chad Anderson:

Okay. Last question for you. As you think about this macro market that we're in, what's on the horizon? How will geo ed continue to evolve in the future?

James Slifierz:

What we try to push here in our organization is to continue think about a programmatic world where so many of these interactions are machine-to-machine. We don't talk enough, I don't think, about sort of the weather industry or weather vertical, and how space-enabled that is. And a lot of that is purely programmatic. And look what it's enabled in terms of applications and insights around the world.

Within Earth observation, and I would say geospatial and geo in more broadly, just like every company became a technology company and soon every company will become a space company, we fundamentally believe that every company in some sense will be a geospatial company as well, in that they need to manage geospatial data and infrastructure. And we see a world in which we are the back end of all of that and enabling that. And so, in order to make that vision and that world come to fruition, costs need to come down, infrastructure needs to be built, and we'll continue to push on that mission and that vision.

Chad Anderson:

It's a great note to end on. James, very interesting stuff. Thanks for coming on.

James Slifierz:

My pleasure. Thank you.

Chad Anderson:

We'll include this in the show notes, but make sure to check out the Space Investment Quarterly Report with even more insights, including our interactive data set, where you can explore the growth of investment in the space economy over the past decade.

Thanks for tuning into the Space Capital Podcast. If you enjoyed this episode, please leave us a review and subscribe to make sure you never miss an episode. And if you're interested in learning more about investing in the space economy, I invite you to visit our website, spacecapital.com, where you can get access to more industry leading insights and learn how you can join the entrepreneurial space age.