Commercial Space for Defense with Jordan Noone and Jenna Bryant

[00:00:00] Welcome to acquisition. Talk a podcast on the management technology and the political economy of weapons systems acquisition. I'm your host, Eric Lofgren. You can find this podcast and more information, including links, commentary, and articles on acquisition. talk.com. Thanks for listening.

[00:00:36] **Eric Lofgren:** I'm pleased to have on Jordan noone, general partner of embedded ventures and former co-founder of a space launch company, relativity space, as well as Jenna Bryant, who is also a general partner and CEO of embedded ventures. And she's been an investor in team builder before that. Jenna Jordan, thanks for joining me on acquisition talk,

[00:00:56] **Jordan Noone:** thank you so much for having us.

[00:00:58] Thank you.

[00:00:59] **Eric Lofgren:** Awesome. So let's, just dive right into it. Why start embedded ventures? What's the thesis behind it and what are you guys doing there?

[00:01:05] **Jenna Bryant:** Very few venture capital. Focus on early stage, deep tech even fewer take actionable steps towards learning how to work with the government.

[00:01:14] So the startups in their portfolio can have the best opportunity to become dual use. Most investors actually pass on the startups we'd be excited about, but cut to the moment the startup gets industry hype or customer traction they'll line up to participate. So the firms that have taken chances on this more complex and difficult to understand group of technologies have needed to lean on technical experts.

[00:01:39] They know an industry to help them evaluate investment opportunities, because it's difficult to do this with limited hands-on technical depth. So we've. Seen successful software founders transition into the investor role and bringing an entirely new perspective to the VC community. So what happens when the deep tech ecosystem makes that same shift and puts technologists and operators in the driver's seat instead of bankers? It will allow

the VC firm with that experience to understand the potential of those deep tech startups years ahead of others.

[00:02:14] So that's the approach we've taken here at embedded. We look at those more complex and difficult to understand technologies and say, Hey, we want to be the first check in these companies in order to see these sectors thrive or even exist in the first place. Many of them are the first checks and sectors that don't even exist today.

[00:02:33] **Eric Lofgren:** you know, It makes sense. Okay. So you guys are going to be investing in these T deep tech firms and you are also on the. space industry, the future of space, but not in launch. So can you talk a little bit about what kind of focus areas do you guys have or is it really pretty broad?

[00:02:48] You're just like anything deep tech that, we think we have the expertise to evaluate we'll go for it.

[00:02:54] **Jordan Noone:** That's a great question. And the focus right now is very much on space. And you nailed it there as far as the way we phrase it as beyond launch. So looking at the commercial launch ecosystem, we're very lucky how the last two decades have played out really spring the innovation in commercial launch and then making commercial launch a reality.

[00:03:13] But it's something where now you see so much capital, Jenna hinted at this in various ways chasing launch, chasing the launch sector. But not necessarily fueling these areas that happen as launch costs come down dramatically, right? You see significantly more going into the launch companies, then the applications, and we think that's fairly skewed.

[00:03:31] A lot of that is, again, echoing on areas that Jenna talked about is, nervousness within the investment community and entering new sectors, they look at launch, they look at a track record there, they look at a model of what works within launch investing. But what happens when there's a new sector in space, a space sector that doesn't exist.

[00:03:49] And we can talk about those more more in detail. But that's where we look as beyond launch, companies that are enabled by dramatic changes in kind of the base economics of launch enabling disruption, enabling markets that didn't or that couldn't exist today were not commercializable.

[00:04:04] And then using the expertise of the team here, ranging between, the talent building the founder evaluation, the deal flow government affairs,

government sales and then the space tech development side to really find those companies that'll be good investments as first movers in their spaces.

[00:04:19] **Eric Lofgren:** Yeah. So one of the things, people in government keeps saying this to me, they're like venture capital, they do all sorts of things, they're not going to be interested in something if it won't get to market in 18 months and start, pulling some money and for government contracting, if you can get money in 18 months in any reasonable size, that's like outside of the SBIR, Then you like that is a severely compressed timeline.

[00:04:41] So are you guys unique in this, way? Or is that just a misperception that certain folks have about the timelines that venture is really looking at?

[00:04:49] **Jenna Bryant:** Venture capital traditionally works on a seven year exit timeline, which actually does overlap with some government opportunities for deep tech, which we focus on exit timelines are actually longer.

[00:05:01] So we look at opportunities on a ten-year exit timeline, which is more than satisfactory for almost all government opportunities, especially in the innovation side of defense.

[00:05:11] **Jordan Noone:** Yeah. And to jump in there and add a bit more as well. And echoing with Jenna said, there are things within the venture capital community, I'd say as a whole that are misconstrued from a government perspective, right? As far as room for collaboration embedded, I'd say very much, goes in a positive direction on wanting that collaboration to exist.

[00:05:30] We have longer exit timelines, as Jenna said that align even stronger with, collaboration with the government, but that education opportunity bi-directionally is huge. And that goes into some of the unique partnerships that we formed as embedded then we can expand on those in a later here, but we wanted to see that opportunity where those misconceptions were educated through and bi-directionally overcome because there's misconceptions on both sides about, how the other side works.

[00:05:57] **Eric Lofgren:** So what are some other things. Folks in government might not understand about Silicon valley or just like tech investing in general that you've seen pop up or just misconceptions that we might have. Are there any others?

[00:06:07] **Jordan Noone:** That's a great question. One of the areas, really to highlight is some of the synergy that you see trying to come together in some of

the groups that are deploying stratify opportunities are deploying other opportunities where the intent is to attract, let's say on a co-investment side, DoD deploys money into a company, through a grant with the intent that that brings up.

[00:06:29] Follow on venture investment. And that's sometimes tricky in the sense where, the groups aren't talking is that happens. They have an intent to work together. They have a desire to work together. But when that capital is deployed, is that deployed in a way that is actually attractive to venture investment following on?

[00:06:45] Or is that money that is sent out with the hope of attracting venture investors, but it isn't actually going to bring them on. And I can go into more specific s, if you want.

[00:06:54] But it's something where, the collaboration opportunity is strong where the let's say government side has an expectation of follow on investments. And thinking that , these companies are venture backable w when they're not. And that is, but one of the biggest pain points is lack of alignment in those dollars being spent.

[00:07:13] And what the kind of follow on intent is of those dollars being deployed.

[00:07:17] **Eric Lofgren:** can you get a little bit into that? What would it be that is venture backable? Is it because you often hear things like this needs to be able to change the world or be like a $10 billion business or something, or else it's just not worth it.

[00:07:28] Is it something like that? And some of these applications are pretty military unique and niche, and so they don't have that potential or, can you get a little bit more into, what was that like? I got a, let's just say a $10 million STRATFI from AFWERX. And that's like that next phase.

[00:07:42] And it looks like I'm like government might be starting to adopt. What, what would venture be looking at and say I don't know if I want to talk.

[00:07:49] **Jordan Noone:** One of the, one of the great areas to talk about on it is on, let's say defensibility, like market defensibility, tech defensibility, then the example I'd use and we'll get fully into specifics on this.

[00:07:59] One is on, let's say the space tug market, right? People who were making, satellites, kind of space systems for doing a mission extension for doing orbit transfers. That's what I mean by saying kind of space tugs there. And you see a lot of government interest right now in funding space tug companies, and you see some venture investment going into this space tech company.

[00:08:21] So it's very similar to what I remember in the launch market, four or five years ago where there was just a hundred different companies on paper doing launch like relativity. My my old company used to be one of those paper companies, just two founders, in a garage. And then we broke out from the rest of the pack on being just a paper startup. The challenge in the space tug market.

[00:08:42] From our perspective, looking as venture investors is it's great to see government dollars flowing into this space. It's great to see the desire for, kind of government working with these space tug companies. But the question we ask is how can we make an educated bet on these companies? When there is very little defensibility, how can we make a thesis around which one of these will be a market winner, right?

[00:09:03] Get a majority of that market when it is easily commoditized. When the customer doesn't really care about the differentiation that these customers provide, they don't care about, specific your, they don't care about your satellite architecture. They don't care what propellant your thrusters use.

[00:09:19] They don't care on a lot of things. They care if you happen to be in the right orbit at the right time with the amount of propellant needed to do what they need. It's is there a taxi nearby with enough gas to get you where you need. And a little bit of sensitivity on price, but more for convenience.

[00:09:35] And that's generally when it's really commoditized. And that's what I'm getting at here is the space tug market is being backed by the government sector it's being looked at by the government sector, us as venture investors, find it as a fairly uninvestible sector because there is no way to build defensibility because it's a commodity there.

[00:09:55] And, we as embedded, we don't have a space to investment. We've looked at, a hundred different space companies out there. And there's a chance. One of them's a winner. We can't build an intelligent thesis around how to predict what that winner would be. Which again is one of those things where, for us, we don't see the ability to do venture investment as follow onto some of

these government opportunities because of the way the market is expected to lay out.

[00:10:17] Does that make sense?

[00:10:18] **Eric Lofgren:** Yeah. The government itself has taken this kind of defensible investment thesis because if space tug, there's all these companies doing things. And it seems like it could be relatively easily commoditized mentioned like for government, for example, be investing in something where it finds that will have a strategic advantage against a competitor, like China, and then just wait for the space tug market to develop itself.

[00:10:43] And then they'll just buy that asset service or however it's going to be, priced and offered, but it seems like that capability will be there. So you think, DOD needs to think in this way as well, or is that the wrong way of thinking about it?

[00:10:55] **Jordan Noone:** I'd say in some cases, yes.

[00:10:58] It's one of those things where they have their success criteria for that capital being deployed. And that's often, strategic developments it's you hear this phrase of building the industrial base, quite a. And within the government sector and deploying and working with startups and part of the goals there, and that is where it does tend to break down, from our perspective, because of a lack of kind of collaboration, communication with the actual venture investors and like many of these people deploying capital into startups and within DOD have never had a deep conversation with a venture investor before. It surprisingly lacks on communication between the two sides .

[00:11:34] So when it's one of these things where us looking at that sector, if the DOD wants to see venture following investment to help grow and scale these solutions or funding in the early. We don't see ourselves being able to back that because us as investors and we have to see returns and, target, thousand X ideal kind of outcomes on each of these companies in order to highlight a, a balanced and successful portfolio here when you're not defensible, there's no way to build that thousand next thesis there.

[00:12:03] So as least our goals of building those moonshots and the government goals of building that industrial base, if they want to venture investors to help build that industrial base in a specific sector, the contractual mechanisms, the defensibility, the venture interest, all of that has to align in a way where again, space tugs because of the commoditization just doesn't match.

[00:12:23] So deploying government funds with a intent or a success metric of follow on venture investing in a market that isn't venture investible is something where it can lead to negative optics or capital that gets deployed that isn't viewed as not attractive. And that can reflect very poorly unfortunately, on these organizations within the government that are making progress on working with startups, but have yet to fully prove themselves.

[00:12:47] **Eric Lofgren:** . This kind of gets to something for me, I think there's two views of government in a way, right? One where government and DOD is like the customer who's going to go out and buy this delivered capability. And to a degree, they might have a responsibility with the industrial base to make sure that there's enough capacity or whatever it is to make sure.

[00:13:05] It's onshore to the United States and maybe that's a little bit more traditional, but then there's also DOD as this kind of like partner who takes risks and provides R and D dollars to help along the development. I think that's particularly important. A lot of these deep tech areas, hardware and kinetic areas that the fence has to live in.

[00:13:25] So it's has like these two motions, these two aspects of it how do you think about DOD in that respect? Do you want them to be more of one than the other? Or, how do you play both of them? Beneficially, to both sides.

[00:13:37] **Jordan Noone:** Yeah. Th that's a super good question. And I like what you're getting at here. It's synergetic on all fronts, right? Because we're all trying to get these companies to exist. These solutions to exist. These kind of markets do exist and work on that. Together. And one of the areas that I like to talk about as far as how that synergy works together is on ==mutually solving each other's valleys of death==.

[00:13:57] You hear valley of death a lot in the government markets. You hear it a lot in the venture markets, but they're very different valleys and it's something where, there's opportunity. And we'll expand on this. As, as we talk about some of our unique partnerships that we have as a fund.

[00:14:11] And and we go into detail on those, one of the things that we see as far as how those ecosystems can co-exist then is, the venture investment market, we're really good at evaluating which companies are in a strong position to scale who has the right founders, who has the right skill sets, who can build the right teams.

[00:14:31] This is the right kind of technical. But we don't necessarily know how markets will play out. We're trying to predict when there'll be big customers, when there'll be big economic shifts that enable, technologies to be commercializable. And for the government side, they're often very good at knowing long-term needs, especially within DOD.

[00:14:47] They know what they want to be a big customer on. They know what they want to buy and do they know which startup with it's two, kids in a garage is going to be the right company to try to get to exist. That will deliver that solution at scale in five to 10 years, they know what they need.

[00:15:02] They have a lot of capital to deploy, , and in unique ways they can deploy that. But they can't evaluate the early stage companies that are good to grow, but they know where the markets are going. Can they can move the entire market. So it's that combination and synergy where for us as early stage investors, we know how to evaluate and grow company.

[00:15:19] They know long-term needs and they can deploy capital then for those long-term strategic needs, how do we bring those together in a way where, again, for us, we can understand markets, which can often be the valley where companies can scale, but the customers and the revenue's not flowing right yet because the market timing is off.

[00:15:37] And where is the government trying to make their own bets to get a technology to exist. They want to be the customer, but they can't find the company that will actually develop that solution and bringing those together.

[00:15:48] **Eric Lofgren:** Yeah. And one part here is like that. That's also confusing to me is you guys, as venture investors get equity stake in these companies. And you're taking a lot of risk right at upfront. But the government comes in and when they do research and development, they often ask for, government purpose rights to intellectual property, that results.

[00:16:07] And so it gets like murky and that kind of can be a disincentive to some firms, to, to wanting to do business with government, not knowing what will happen to their IP, especially if government just gives a small contract and then expects, IP rights to, to like the whole kit and caboodle.

[00:16:21] Are there ways that, government can get capital to these firms early in that valley of death stage without, necessarily getting into these fights or issues? Or have you seen this been an issue in your, in the companies you've been talking with?

[00:16:35] **Jordan Noone:** It's definitely an issue. And it's something where.

[00:16:38] There is a greater transformation. You can see it. One of the phrases that we really used in the commercial launch sector and this you can see happening live over the last 20 years with space X entering the national security launch market. That's one of the greatest examples I'd say of, new entrance in a very large scale for national security innovation and especially with the space alignment here.

[00:17:02] And and the example I'd use is this transition from, prescriptive requirements to performance-based requirements. You'll hear that phrase a lot being used. It's not very widespread, to the point of, to the startups that we see today, are they effected by those prescriptive requirements and, to expand on that a bit on prescriptive versus performance.

[00:17:22] It's prescriptive is when you have lists and lists of which specifications to follow, what types of connectors to use. A lot of things that can sometimes be very relevant, but often have a basis in some heritage issue or some technology stack that's decades old, right? Or some supply chain that is extremely limited where there's actually a more modern solution, ?

[00:17:43] In things like space avionics, white rocket electronics, there's actually more used today within the launch sector. And that's automotive based electronics rather than the quote unquote space rated electronics because automotive is made. So in bulk has been innovated upon so many times have quality, constraints that are related to let's say like onboard car electronics that are very regulated and certified where, in most companies now the quote unquote automotive electronics.

[00:18:14] Are viewed as higher quality and higher performing than the space electronics because of space electronics are 30 years old, 40 years old, and they haven't changed and there's not market pressures to create innovation there because such a closed ecosystem. And that's what I mean by performance versus prescriptive is you'll see a space government contract that says it must have electronics that are made with these 30 to 40 year old specifications and technologies rather than modern electronics that are made in bulk made for safety critical applications have been innovated on for decades and the direction, where these contracts need to go.

[00:18:50] And you do see a little bit of it now, then is where rather than saying, this must be a space rated. With 30 to 40 year old heritage on it, it says the performance requirement, it must compute at this frequency. It must deliver this

result. It must stand up to this level of radiation and how you achieve that result is not prescribed.

[00:19:10] It's a performance requirement, which allows that room for innovation, for new entrance, for adopting technologies that aren't required to be used or required out of, heritage reasons. And and that drive is massively necessary. If we're going to expect an active commercial ecosystem, an innovation ecosystem and a free market around who is providing defense solutions.

[00:19:33] In summary, you see some opportunities driving towards performance-based solutions. Those are not the majority. They're nowhere near, even approaching a majority by far the government solutions out there are prescriptive based solutions, which highly limits, not only what technologies can be applied, but who can even enter those because they're so burdensome or so restrictive.

[00:19:55] **Eric Lofgren:** When you get like whole teams of different functional people coming together. And you get all the good idea fairies and it's sometimes hard not to, it's hard to realize when you're letting your previous biases on what you used to be doing seep in. Remember there was a big one, I think NASA on their Artemis program, they had a requirement that was like, you must have three stages, to get to the moon, which kind of assumed like the Orion solution.

[00:20:22] Space X had like their star ship, which was noncompliant because it was like a two-stage solution. So they had to like, get that whole requirement change just so they could compete on the thing. But to their credit, I think they changed the requirement, but I think you make a good point there.

[00:20:38] If we can open that aperture and department of defense it allows that solution space, but then the other part of it is we like high TRL solutions. We don't want to go ahead with a program until we think we know exactly what we're going to get. So there's a weird balancing act that it feels like always pushes towards that over definition phase so that you can justify the funds that you want to go spend, rather than say here's a billion dollars to go solve a hard problem.

[00:21:04] Here's the specification of the problem, but we don't really have a clear plan of exactly what that will look like. That can be a hard sell sometimes to stakeholders .

[00:21:12] **Jordan Noone:** That, that Artimus example is is really important. And to highlight very relevant as an example on that prescriptive based.

[00:21:19] And it's a good point that I didn't bring up, which was, sometimes it's for heritage technical reasons. Sometimes it's really unknown. Sometimes it is based on Y contractor heritage and significant attempts to try to stay with certain programs. Like you mentioned with a Ryan with certain solutions that do have heritage, but are unfortunately blocking innovative, cheaper commercial solutions and highlight some of the worst on cost overrun that can happen.

[00:21:47] And you see a lot of this in kind of competition with startups and companies that are eligible for government contracts. There is an area, I'd like to highlight here where we often see startups that, before they even can compete. They run into issues where they can flip themselves.

[00:22:05] And I'd love for Jenna to hop in here. Cause I know she's really passionate on this as well for some of the startups we see and some of, even the embedded backstory for the ecosystem we're in where many companies end up conflicted before the, yeah.

[00:22:17] **Jenna Bryant:** So I haven't seen any companies walk away from government business, but I've definitely seen them simply choose not to work with the government.

[00:22:25] Especially in the early years of a company founders often don't even know where to start when it comes to working with the government actually cold outreach Jordan for this very reason. And that's how we got to know each other. There are so many decisions that companies need to make in order to quality.

[00:22:41] For collaboration opportunities with the government. And I really wanted to know how to help my portfolio companies navigate decisions while keeping in mind what outcome would set them up to have the opportunity to work with the government, whether now, or in the future. Even startups who do have a desire to work with the government often conflict themselves without even knowing it by taking dirty capital.

[00:23:05] **Eric Lofgren:** I want to talk about your embedded ventures. You guys have a new agreement with the space force. It's a cooperative RD agreement before we get into that. Can you just set us up on that background

and then, and how you got to, to that agreement with the space force and what you're trying to

[00:23:20] **Jenna Bryant:** do there.

[00:23:21] So we've taken a next gen approach to investing, of course, but also to working with the department of defense before we both dive into specific. It's just, I have to say it's really fulfilling to have the opportunity to help provide emerging technologies to our active service members and why, for me, it's really because it's key that they have technologies that work and can be updated quickly.

[00:23:44] My brother is a Marine Corp V 22 Osprey pilot currently based in Okinawa. So it really adds significance to everything that we do here at embedded and our short and long-term goals. And our partnership with the space force through our Creda will w will last five years, we intend to make this the first of many for our collaboration with the department of defense and the rest of the U S government while attempts to tie the DOD and VC community together have been attempted many have stagnated or not achieve measurable results.

[00:24:17] So we really intend to define what success means as part of this.

[00:24:23] **Jordan Noone:** The direction with, the CRADA and I had hinted at this earlier is, you know, among many goals with it is finding those opportunities where the collaboration has worked, highlighting those finding ones where the attempts to work together has to what Jennicet has failed or has not achieved the results that it's wanted to often credited, from our perspective to just lack of governance, opening the door between the two groups, or wanting to wait for a financial relationship where the venture funds are paid by the government to, have these conversations to provide this feedback or to even attempt. Going to deploy capital on behalf of the government. There's been attempts to do that of, private venture funds, not government venture funds, but private venture funds deploying government capital on behalf of government goals.

[00:25:07] There's been multiple attempts to do that. Even chasing back to the 2001 Rumsfield report and, the desire for faster paced innovation post nine 11. And there's been some highlights of what's came out of that. But I'd say significantly more failures than highlights have, unfortunately came out of that.

[00:25:24] And even the last, it's been 21 years since that report came out which is interesting to to look back on. But as far as the, the source of the cradle, the backstory of the crate uh, Jenna had mentioned that she cool reached out to me back in 2019, Jen and I started to get to know each other.

[00:25:43] I was still full-time at relativity. She had reached out to me and then wanting to know more about how relativity built such a healthy us government relationship. You see so many startups that have scorched earth policies with the government. They don't have, an open healthy conversation.

[00:25:59] And it's something that Jenna noticed that she wanted as part of her portfolio. As far as her portfolio, she was a partner at another fund here in Los Angeles at the time pre embedded. And she wanted to see those startups having a strong success with the government and relativity to have kind of anything and everything on a partnership side with the us government.

[00:26:17] So she invited me to an event series. She was hosting at the time she still has a version of it today, then underground series where she was bringing together venture backed founders and DOD innovate. And then an actor, the first guest on that first event, fast forward three years later to where we are now was a signatory on the credo that we signed.

[00:26:37] But we didn't really realize at the time where everything would go with those early conversations, but it's how do we actually get these tangible, measurable results from bringing together DOD innovation and venture backed founders? Because there's been a lot of lip service, a lot of vanity, a lot of virtue signaling, but, had it actually delivered a solution to the war fighter.

[00:26:58] And the answer was really an honest, no, there, as far as that innovation, that there were some small, like cherry picked. But many things would stagnate at a point where, venture investors would love having government interest as a market signal. And then as those companies grew, it would be easier to deliver a commercial solution than a government one.

[00:27:17] So government opportunities were ignored or dropped over time. There's examples of that then, which are very disappointing because this, the DOD internal teams have put, their blood, sweat, and tears into making those opportunities exist and move mountains to make those opportunities exist. And then they're just leveraged for, commercial growth and investment.

[00:27:34] And which is, not ideal. And then you see examples of, startups that want to work with the government, but they can't access these government

organizations. When they're, two people, they don't know who to talk to the public affairs office limits the routes that these government employees can advertise themselves.

[00:27:50] They can put their contact info, right? You go to the websites of the innovative groups that are making as much progress as they can. They have amazing staff like AF works and space works and DIU. They tend to not have contact pages because the PA office has stopped them from having public contact info.

[00:28:07] And these organizations that are meant to be doing outreach and networking with the greater community, can't be reached out to from the general public of startups. And that's a huge blocker to success here. But those were the conversations we'd have, internal to that room that Jenna put together, which was not the public talking points, not the vanity or the lip service, it was what do we actually need to do together to move this.

[00:28:29] And that started what was it's all kind of parting ways. Jenna was a partner at her fund. I was at relativity full time or a space force and, or they were all at forks at the time Affleck's contacts were still doing their day job. We weren't in touch with them at a higher level, with what eventually became the Creda, a year later I stepped out of relativity my full-time role there.

[00:28:50] Jenna recruited me into embedded first as an advisor to help build the fund that I would've wanted backing me. That was her secret ploy to recruit me in full-time. Then once we had started building that up as an advisor, she asked if I wanted to come on full-time and bring our skill sets together in a, in an extremely complimentary way to build that fund up and, everything we wanted to see.

[00:29:10] But then we went back to the space works specifically with what eventually became the. Uh, We went to space works because we had seen some of these opportunities for collaboration between the government and venture capital. We were a fan of seeing that happen. But they kept having too much red tape, again, things on bringing back to my commentary earlier on performance versus prescriptive, right?

[00:29:34] There were prescriptive requirements on how these funds needed to be set up in order to how they work in order to work with the government here, in order to deploy government capital. And from our perspective, those prescriptive requirements would hamstring the fund on a staffing side and the day-to-day operation side so far that it would never be successful.

[00:29:52] We couldn't work with them on this there's examples like that. Similarly, within DOD, DOD has a venture fund that was appropriated those capital literally, appropriated within the NDA and a legislature there for it to be deployed through private venture capital partners. Us as investors.

[00:30:10] That can evaluate startups can work with the startup community or accessible to the startup community, then deploying capital on behalf of government goals. And that's something that has never been seen before in industry. Examples like the CIA's venture fund, which is government employees deploying government capital with government goals. and they have their own challenges, all being government employees on incentive structure on alignment, on flexibility, and then into tells, had some very strong successes, but those successes have been despite a lot of pressures against them because of their organizational structure within the government.

[00:30:46] So this continuation of the lessons from in-QTL that could have happened where the DOD could have provided the private investors, the private venture capital investors capital to deploy. As freely and Fastly as they can, as long as it's matching those government goals that was an amazing opportunity and that unfortunately lost momentum and was reworked as a program despite having legislature for the first time ever allowing defense to deploy capital through venture capital funds because of hesitancy because it looked too risky because of political waves within DOD that were against working with new acquisition methods, such as venture.

[00:31:22] One of the biggest disappointments, it's not highlighted a lot because the line item was sufficiently small and it was during the administration change. But I'd say probably one of the biggest disappointments I've ever seen in my career coming out of DOD was not activating that line item Which said, deploy through venture capital and partner with the private venture investors. An extremely disappointing opportunity. And after we watched that and this is a little bit of long story long, me and Jenna went to one of our advisors at embedded. Her name's Mandy Vaughn.

[00:31:50] She sits on the national space council. She was president of Virgin orbits government division vox space, extremely tenured, extremely successful on a government partnership, government collaboration side. We recruited her in as a embedded advisor as well. And then she's now an operating partner with us.

[00:32:06] She's out of her full-time role within the Virgin group. She's an operating partner for us here at embedded. But we went to her and we were, and

this was mostly Jenna and Mandy. I'm just, paraphrasing what happened here. Jenna went to Mandy. And asked, these opportunities to formally work through the government with these contractual mechanisms that have taken, half a decade to get in place.

[00:32:25] And I'm referencing that NDA blind item again, half a decade to get in place had the highest potential of anything to be transformative and demonstrate of results on an acquisition side. All of a sudden fell down and because it was in the middle of an administration change and the, the committees all changed majority, no one was willing to stand up for this and stick their neck out for what was such a small line item.

[00:32:47] So it just died after half a decade, it just died. And we were like, why wait for these is capital's never going to be in a way where we can access it where we can. In a collaborative way with a contract that has dollars on it. And Jenna was like, can we do something without money on it? Where we just open that door?

[00:33:06] We talk, we educate, we find opportunities to collaborate find where things haven't worked, right? The examples I've used on, capital being deployed with an intent for venture follow on in a non venture investible market. How do we have those conversations on what's worked and what hasn't, if there's no, if there's no door open between the groups and Mandy said, that's a CRADA , that's a collaborative R and D agreement, no capital deployed, goals, synergies, collaboration, is in the name where we can just open that door at work together for mutual goals, communicate, educate, plan this stuff out in a way where everyone wins and rather than accidentally stepping on each other's toes or trying to play chess in a way where you're working towards the best intent of the other party and that falls flat.

[00:33:49] How do you get past. And after a, what was, six or seven months of negotiation, it was a first of its kind contract. So it did take a lot of crafting, but thankfully extremely strong support from all parties within air force and space force, then that looked at it. We got it through by beginning of Q4 of last year.

[00:34:08] Would that initial conversation being in January of 20 21 regarding how to get past the capital constraints in the failure of that specific program. And that's where that was. So again, long story long. Hopefully I touched on a couple of points there, but it came out of, strong synergy between myself and Jenna on goals.

[00:34:25] What we'd seen in our former lives desire to see something new watching the government, unfortunately falter in implementing a new solution there and accepting that we had to do that on our own. If the current mechanisms and appropriations weren't sufficient, then we'll drive the private capital into those companies.

[00:34:40] If the government can't drive that capital in a as effective manner.

[00:34:43] **Eric Lofgren:** Awesome. , it took you almost a year to get no money from the government, but these creators are really important though. They do give you access to government users requirements, test facilities, labs and stuff like that.

[00:34:58] And they also I believe they can get you security clearances to. Needing to get those like that process then

[00:35:04] **Jordan Noone:** on the securities clearance side. Yes, we are. There's items and work there. Not only for, how do you get, the venture investment side, more up to speed. That is a challenge as well.

[00:35:15] That, that is highlighted through the creative specifically, but as a greater goal, as, the create goes through its five years here, which is how do we improve investor visibility into opportunities that need security clearances to see, right? How do you drive those opportunities?

[00:35:30] And there's the same challenge actually. It's one that is less less talked about uh, at least in our investment circles, but we find highly relevant, which is on new graduates from college, right? Our most innovative minds, our most modern educated workforce. They don't have access to the country's most structured.

[00:35:48] They have to work at a big company for five years, to get that security clearance. It's these people who are very entrenched that see the most innovative needs, and that's something that is very disappointing to see. There's no solutions. The group that I've seen make the most progress.

[00:36:03] And I'm very proud of the progress they've made is a group at Cal poly SLO Cal poly San Luis Obispo. Then that is very much in collaboration. It's public. You can read on it for, to get their new graduates, to have security clearances upon graduation so that there is an opportunity for them to start a company to work at a startup that needs national security needs, that there isn't

this lag between, new graduate innovation and energy and access to national security projects.

[00:36:30] It's a major limiter to the ability for the U S to be competitive.

[00:36:33] **Eric Lofgren:** Yeah. The space arenas, especially. And we've been hearing about this recently, like even officials are now talking about how it's way over classified and that's actually damaging, not just from, an investment in getting new companies, onboarded, but being able to deter the enemy by letting them know.

[00:36:50] I also sometimes wonder it's does the enemy already know, like how much does their intelligence not know? Maybe it's a lot of that, but um, . What kinds of, I guess advice would you give for startups thinking about approaching customers in DOD?

[00:37:03] Like what does that kind of go to market look like? In the second

[00:37:06] **Jordan Noone:** that's a great question. I guess my first piece of advice would be talk to us in the space works team, but as far as on, on opportunities, cause we do have a very strong passion there. We help companies that we invest in.

[00:37:17] We help companies that we're not investors in. We're a huge fan of that sector existing. I think there should be more champions within the private investment community that are not just chasing consumer tech that are not just chasing tech regardless of who's working on it, where it is, who's controlling it.

[00:37:35] I do think there should be more steering towards, a national security relevance within those. and again, we can't. We help champion that with our position and our position with space works. But otherwise on opportunities there, it's really looking for that synergetic alignment.

[00:37:49] And the example I like to use there is NASA and what they did with commercial cargo and then eventually commercial crew, where there was an opportunity for the government to present a bucket of money long-term for standing up a sector standing up commercial launch with a focus on new entrance.

[00:38:06] That's something we'd love to see within the space force, right? What, within the space architecture, all of this desire for commercialization of the space, defense infrastructure, what of that is actually carved out

intentionally for a new entrance to enter and win, right? Because once that bucket of money is there and again, commercial cargo commercial crew is the example I like to use here.

[00:38:27] You can stand up the whole industry. You can do, from our perspective what the role of government is in this, which is be the catalyst and tipping point for making a sector commercializable. What is next in space that needs

[00:38:38] **Eric Lofgren:** wait. So do you think that the, like the program itself from the outset, like the requirement is almost like commercial, right?

[00:38:47] Commercial space. Who's going to be competing and what the outcomes are expected there. You think like you have to look at whatever. You're trying to get done and say, this part will be, traditional and this part will be commercial or new entrance.

[00:38:58] **Jordan Noone:** exactly there where that desire for new entrant, and again, it's not just blocking the older players, it's not blocking like the usual suspects or the primes. It's something where the ability to compete to bid, to present an argument there is is open and competitive, right? It's not based on a prescriptive requirements where only one company happens to fit those because it's built on an architectural requirement that it's outdated and requires 30 years of heritage to have actually had that solution present.

[00:39:27] That's something where that level of prescriptive solution, you have billions and billions of dollars of bloat and spend because you're not driving towards innovative solutions. You're not driving towards modernization. You're not even having a free competitive market. And you often get stuck with, government being a very large.

[00:39:44] Player on a design side, a contracting side, which is, bordering on areas where the government is competing with commercial industry, right on these, which is there's directive against that. It's a very difficult area where these areas are blocked out from, commercial operators, commercial designers, commercial entrance, by the design of the appropriations, by design of the contracts, by, unique relationships that drive some of these opportunities. And who loses that the country loses after that.

[00:40:15] Because that innovation does not apply. That's very relevant today. You see this in the conversation on hypersonics. there's been a very kind of public commentary, surprisingly public commentary on this upcoming meeting

between the secretary of defense and these what has been quoted as like very large aerospace players.

[00:40:35] And, the question I'd like to ask is who's responsible for the lack of innovation. Who's responsible for programs that have failed there it's these same large players. Why are you going back to them? What about all these new entrants that are fighting to the death to get high-speed aircraft high-speed space planes, things like that out there, you've seen multiple startups that will do anything to provide a solution for the government.

[00:40:57] And other players that have spent decades dragging their feet, doing cost plus programs, not delivering functional solutions, having failures of programs that are highlighted for having been failures that make it look like all the spend is bloat. They're the ones invited to talk to the secretary.

[00:41:12] Where are the startups, where are the innovative players? Where are the people that want solutions, not just going to cost plus contracts here, they're not even invited. And that's very disappointing to see the snub on innovation that, the administration has put on some of these opportunities .

[00:41:25] But to answer your question fully it is that very much drive towards just competition, right? Like space X had to Sue and it's sometimes highlighted in a negative way. They had to Sue the government. Not because they lost contracts, not because they wanted , you know, to appeal, they sued to compete.

[00:41:42] They sued for the opportunity to compete and submit a counterbid. And that's something that doesn't get highlighted enough that you've had to have these new entrance literally suing, the air force suing the U S government in order to submit a bid, to give them a piece of paper that says, Hey, I'm here.

[00:41:57] And that is just, something that should be so frowned upon within the defense acquisition industry, that they won't even listen to the new entrance. Sure. You don't have to accept them. You don't even have to look at them perhaps, but at least have the door open that they come in and can tell you what they have to offer.

[00:42:12] Because it's something that is just one of the worst examples of how stagnated and closed door the industry has become. And I think I went on a little bit of a tangent from your original question. I'll pause it there and ask for what you're thinking.

[00:42:26] **Eric Lofgren:** Well, I guess I pivoted you away from what you, the story you were telling, which was, what does a startup really need to do next to get it, get towards customers in the department of defense, and be, get towards

[00:42:36] recurring revenue.

[00:42:37] **Jordan Noone:** No, that was your original question.

[00:42:39] And no, the direction I'd recommend, this is talking to the groups that are responsible for being that innovative front for for the department of defense. Those are groups like AtWork space works DIU. The Jake does joint AI center and there's a number like Naval X as well, just depending on your branch here and and start a conversation there.

[00:42:59] Because those are the groups that are formally responsible for having those connections. And the areas that expand on top of there, which is the usual suspects, which is, talking to those innovative entities and the innovative fronts for these groups is understanding who all the regulatory players are, who all the senators are that are responsible for this.

[00:43:17] It's something where, you know, on the relativity side and all references, we had our earliest government affairs conversations. Our first DC roadshow, when we were think three or four people were, we were less than a year old as a company. And it, it took some searching. It took a lot of, getting in the door and finding the right contacts that would work with us to help to get in those doors.

[00:43:37] Right, the right government affairs team for us as a company. But focusing on that early, focusing on that early before, there's an ask before there's a contract before, there's an emergency that needs a regulatory miracle to solve, build that relationship or. ' cause you'll see nothing, but thanks.

[00:43:52] When you go and talk to these people and you say you want to build a relationship for the sake of longterm ease, low friction collaboration with these regulatory bodies, with these entities. And it's not because you have an emergency ask and you need to have a conversation with a Senator to have a committee meeting, right?

[00:44:09] That's the last time you should be asking for their help when it's an emergency and they don't even know who you are, right. There's a lot of slow term, relationship building that has to happen there in order to have a healthy relationship, right? You can't just wish them to respond faster.

[00:44:24] You can't just wish them to be less busy or focus on this. You have to work with them, get to know them and and build that relationship where they see you from, your what I call you is like a toddler of a company, two or three people then to the point you grow up. And when they know you, you're not the startup that has scorched earth.

[00:44:40] They don't trust you. They've never seen you before. They're just heard the bad. And then you knock on their door, having an ask, why should they be responsive to you? Like, why should they help solve your need? And again, it's that where it's not just these groups that are, the ones directly responsible, like the app works in space works, isn't co but this is a huge ecosystem of regulators, of policy, makers, of decision makers and drivers that should be hopping in here and hopping into early startup conversations.

[00:45:07] And I will say they are open to it. You just have to find them. And that is some amount of work, but find the right government affairs firm understand the ROI that comes from that as an early startup. And then it is a decent burden but pays going to leaps and bounds long-term as as those companies get stood up.

[00:45:22] That's the second area, and then I'll wrap up pretty quickly. The third area is understanding what capital you can take, what capital you can't take. Jenna mentioned the dirty money. As far as what what has relevance on ITR? What has relevance on Syphius? What has relevance on, ER, restrictions then where the traceability of the control, the traceability of the capital is an extremely relevant conversation where you do see almost , predatory antics with it, where us investors are nearly entirely consumer focused.

[00:45:53] They're not defense focused, right? They're not national security focused. And you see a hole where these companies that do want to provide national security defense solutions. Then these companies taking money from hard tech investors that are willing to invest in defense that are willing to invest in national security and hardware, but who owns those funds, who backs those funds?

[00:46:14] There's dozens of examples. Almost a majority of examples of these funds that will trace and we'll chase down. Startups that are working on national security solutions, where those are foreign controlled adversarily controlled funds. And these startups don't even know it when they start and it catches up to them later.

[00:46:31] And then, because it's not obvious who are the backers to specific venture funds out there, there's very poor visibility and traceability on that side. And then, CFIUS calls you three years later and they say, Hey, you're out out of the runnings for something, because of that, it's a very tricky situation that startups do not realize on day one.

[00:46:50] And there's not enough kind of education around.

[00:46:51] **Eric Lofgren:** Yeah, that's a good one. We haven't really talked too much about the exportability and some of those other things on podcasts, but yeah, that's a whole amazingly complex world in of itself. And when you were talking a little bit earlier about, how it's difficult sometimes for government, they overprescribe things.

[00:47:08] They rely on legacy architecture. And it feels that's not just unique to government, I think it's hard for people to be emotionally adaptive in that way because they honestly disbelieve things. And I think you made a good point that if you engage earlier and you show them, you know what you're doing and then show them that you can execute on what you were saying.

[00:47:27] Maybe they, they can build that trust earlier. Potentially earlier than the government was able to build trust with space X though, it seemed that NASA was able to get there pretty quick. But you, I think on a different podcast, you mentioned, you know, at relativity, you guys were really trying to take additive manufacturing and apply that to the launch area and building rockets themselves.

[00:47:51] And you said that, the industry was really resistant to this idea that you could 3d print parts for rocket engines. And, I was just thinking. First was that includes spacex and like blue origin, even the new companies were, resistant to these types of changes? And second, what does that even say about, the ability for large organizations , to have these kinds of changes in fundamental shifts on a regular basis?

[00:48:15] **Jordan Noone:** No, th that's a great question. And it is something that you know we haven't touched too much on the relativity kind of founding story here much. Circa kinda, early 2010s was really when there was this big push in metal, additive manufacturing, and some adoption of it around that time, space X and the super Draco engine.

[00:48:33] There was one of the first examples of real success on a application side for metal 3d printing. And that was around the time that I started at

relativity or at CESA, sorry, I started at space X in 2014. And so around the time that super Dragon was getting certified for flying on the spacecraft the crew spacecraft there.

[00:48:52] And but it's one of the things where there's so much inertia. Whether it's within designers, within manufacturing floors. Manufacturing is something people hold very close to heart, it's their identity can be how they make things, entire kind of trade arts or on how people make things.

[00:49:08] So changing how they make things can be a very kind of emotional thing. It's surprisingly like high inertia in like companies and how they make things in getting things changed. And it's something where for a couple of reasons, I'd say there was not a desire to have 3d printing further. In a sense, one was, it was a very kind of linear way to think about it, which was taking parts that had designed constraints that were directly solved in their traditional design.

[00:49:35] By 3d printing and the example of forces combustion chamber, where there's internal cooling channels. It's a very difficult to make part and 3d printing makes internal channels extremely easily. So it's a direct drop and you just literally take your engineering design from your traditional manufacturing and you put it in the printer, no changes, no customization.

[00:49:54] It's a one-to-one drop-in and you'd just make it easier. But that is a very linear way to think about it. And that's where we really differentiated on the relativity side is not just to the, what parts can you drop in? Cause if you just take every traditionally manufactured part and you put it in the printer, it would be much slower in certain , places, lower quality, lower performance then because it's designed for different manufacturing process.

[00:50:18] And again, there's not a lot of kind of innovative thought of this surprisingly little. And especially at that time and how this would play out, and where me and Tim being my relativity co-founder the way we thought about it was well, what if you designed parts of differently when they go into the printer?

[00:50:32] What if you designed parts that rather than just this giant mechanical assembly, you eliminate the bolts. You add internal routing, you add internal cavities. You add surfaces you couldn't have, otherwise you add complexity that would be impossible to manufacture traditionally, right? You get all of this extra.

[00:50:49] You can turn those what used to be detriments on lower performance, lower quality. You can custom tune it. You can add complexity, you can lower part count. You digitize the manufacturing so that there's no tooling. You can push it to the manufacturing floor through software, and then you get digital feedback because it's a digitally native process.

[00:51:09] When you don't have engineer hands touching it nearly as much or technician hands touching it nearly as much. And all of a sudden. You get all these benefits, not these detriments. And again, so many people are still in this head space where there is a negative view on the printing and these requirements and restrictions and these challenges where if you just, you do it at scale, you learn all the lessons, you get all the data, you can understand quality, you can understand requirements.

[00:51:34] You just have to scale at first, but that's a two-step process of if you scale it, you'll be able to understand quality. You'll be able to understand performance. But they view it in this one-off sense where it's oh, traditional manufacturing. We have all this data and known methods and specifications.

[00:51:48] We can't try printing because we'll only have a one-off. Well, it's what if you make it a hundred times and you'll have enough data, it's a very like linear way to think.

[00:51:54] **Eric Lofgren:** Yeah. And the department of defense, we love our linear processes. And I think that gets to a lot of why we like to lock down designs, avoid manufacturing changes. And that's built into the core defense acquisition where, we want to make sure a lot of times there's lots of quotes where people are saying we locked down things so early, because we think any kind of change. Like even if it's still on paper, has all these repercussions.

[00:52:17] So a lot of the things we do, we like to lock it down, make sure we have a full rate production decision or something, and then have a stable specification going forward. But were talking like very interesting about like how 3d printing actually shifts the manufacturing sector towards more of this kind of continuous improvement, the way software defined processes that have been working.

[00:52:41] So it can be like, Start moving into this fast iterative world where that's not just for software anymore. It can you can have lower costs and higher quality and changes along the way without really having to create new tooling and all of that kind of stuff. Can you talk about how, 3d printing might be

actually shifting that paradigm to where, even hard hardware problems can be solved through these kinds of like software defined processes.

[00:53:07] **Jordan Noone:** as far as on the digital workflows, those software workflows, that is a huge area for for innovation. It is a big chunk of the the embedded portfolio, including one of our companies, kitty cat, that we incubated within the fund.

[00:53:21] And my background in that, on a digital workflow, kind of digital automation side very much has that trace to the manufacturing floor in 3d printing. Where 3d printing, being this fully digital process, right? You get all of the process data, you get a ton of information back, a ton of feedback. It's fully digitally controlled being in a digitally controlled machine.

[00:53:42] And so the 3d printer is less of just this one-to-one drop-in of kind of manufacturing technology, whereas this an alternative. It's how do you get the hardware iteration loop to have something on the shop floor, the compliments at the speed of software, and by having all of that feedback, all of that data, taking the uncertainty of human interaction with the designs, right?

[00:54:04] It's something that is one of the largest, if not the largest causes of rocket failure is human error, things not caught in quality issues or things that are too expensive to check or to inspect because of the human labor involved, put that all in the machine, it's digitally controlled, it's free to automate it's automated by nature, then being a digitally controlled 3d printer.

[00:54:26] And so by doing that, you get the feedback, you get the ability to iterate the ability to improve the ability to understand where in traditional, like rocket manufacturing, especially. You have tons of paperwork, tons of QA, tons of inspection in order to get the same results, but a very distributed and large then.

[00:54:42] So that's what led to that insight. And, the industry is slow to pick up on it, but we very much are fans of where that goes is, once you add that digital nature to it, you can add anything you want on automated checks on verification and improvement. And that extends even to what we're doing again with with kitty CAD within the fund, which is, relativity with solving it on a manufacturing floor.

[00:55:03] The question we ask is how do you solve it on a design side design iteration side? Okay.

[00:55:08] **Eric Lofgren:** Yeah, it's very interesting. I think it's just the natural place that, you know, department and, others are going to have to go. So definitely being able to pick up the kind of processes that are in the software world and start to adapt those to the hardware world seems like it's going to have a lot of fruit that will be.

[00:55:25] Are there any other areas that you're interested in?

[00:55:27] **Jenna Bryant:** While we're, in this direction, I'll share a little bit about the origin story of kitty cat, the company that is, using the digital engineering buzzword. And so one of it, it all began because one of our advisors Jesse , who's the co-founder of oxide computer company and is absolutely adored as one of the top engineers thought leaders.

[00:55:49] And she's famous on Twitter. But she came to Jordan with a problem she was facing at oxide where she kept hiring more and more mechanical engineers to do design changes that she wished she could instead solve through code. And in talking with Jordan, seeing that even relativity had the same problems and saunas solution.

[00:56:07] They built a thesis around what a winning investment would look like in the digital engineering space that solved the issues. They felt firsthand at their companies. And we the three of us actually searched high and low to find a company matching that thesis. And there, there was nothing. So not seeing anything, I suggested that we tried building the company ourselves and recruiting on the founding team.

[00:56:27] And with that kitty CAD was born.

[00:56:29] **Eric Lofgren:** Yeah. That's awesome. There's a, digital engineering is definitely a buzz word in department of defense. And a lot of people are like there's nothing new about it, but it looks like you guys are saying like, , there's definitely an opportunity that hasn't been done.

[00:56:42] There's new areas there. What exactly is what was lacking before and the digital engineering like tool space, you said it had to do with coming in and doing, modification.

[00:56:52] Design modification,

[00:56:53] **Jordan Noone:** the area with kitty cat, that we wanted to drill down on.

[00:56:56] And where we really noticed the gap was you see in the software and in the greater industry where software is eating into it, where software is enabling scripting automation, tying of toolkits and anything and everything together in new and unique ways.

[00:57:11] That's that software, a flywheel, you hear about which is this unstoppable momentum that builds up once you start introducing, the scaling and leverage of software and automation and kind of digital linkages there. And, bringing that back to the relativity side, we saw that flywheel happening by digitizing the manufacturing floor through software and 3d printing.

[00:57:31] But when it comes to mechanical design, designing the engineering infrastructure around making a hardware product, which has all of these designs, all of these work instructions, supply chain constraints, the manufacturing floor, the machines that run all of this, all the tools that design and analyze various elements.

[00:57:49] There's this huge amount of infrastructure out there that is all talking to each other, not through code, not through automation, not through scripts, but by engineers clicking on a screen mechanical engineers, clicking on a screen. And that's the example that Jenna brought up, which was, justice project at oxide where, she needed to change the location of a PCP in a server rack.

[00:58:09] And all of our engineers would be clicking in gooeys, redesigning bolts, redesigning brackets, redoing engineering drawings, calling machine shops, getting things made slightly different, manually adding tolerances, manually changing supply chain needs, going and other software packages.

[00:58:24] Translating that all into them. It wasn't automated. You couldn't do what you can do in modern software. And, change some code automatically have a test itself. If it works, it pushes it to production. And it's automatically running that what's called continuous integration, continuous deployment in software.

[00:58:41] Where, you make a change, everything else really compiles, it pushes to production. And that's all automated. You build the automated infrastructure to test, to deploy, to run, to verify it's performing well. And you can't do that in hardware because you don't have the infrastructure to do so. you, you can't say what your requirements are. Write a script to design a part off those requirements. Cause it's normally an engineer clicking on a screen, your classic computerated design engineer lifestyle there, where they're just clicking

to draw the same bolt that they've drawn a thousand times, 90, 95% of that work is repetitive labor.

[00:59:15] That should be automated, tap into the creativity of the engineer so that they can write a. To design a park they would want and then use that script, reuse that script, have someone else use that script, sell that script, whatever it is. It's a very different ecosystem. Once you have that that digital infrastructure where you can script, you can automate, you can make things modular, you can build on top of tools.

[00:59:37] And again, that's just very missing in the mechanical engineering world where you're extremely limited to clicking on a screen. And that's the only option for interfacing with your designs

[00:59:46] **Eric Lofgren:** and , does that eventually almost get to like an open source mentality for hardware in the future, if that succeeds or is that like a key enabler?

[00:59:54] **Jordan Noone:** Yeah, there's an element to it of open sourcing. A lot of it is more, it's more flexible and more portable where You can write a script to create a part.

[01:00:02] You can write a script to change a part. You can give someone else access to a part. You can revoke access to the part. You can access metadata about the part and build downstream workflows, downstream checks. But, there's this ecosystem we see standing up where, in when you kind of the examples I used there, it's current engineering workflows, where it's an engineer replacing a part design with a script, passing requirements.

[01:00:25] And then that script building it rather than every time doing the CAD from scratch. In 90, 95% of that is repetitive, right. How much can the engineer just, do final elements that do need engineering creativity and not tap into the rest. But we do see a future where there are new and unique ways that this hardware interacts with the rest of the ecosystem.

[01:00:45] New kinds of companies stood up. No. If you're a company that does mold making and you have all of this kind of unique know-how on how to make molds and that's your value add? You can't write a script that does that today and have it automatically design a mold for your customers.

[01:01:00] they send you what they want. You're clicking on your screen. Can you turn that into code? Can you turn that into a script that someone can just

ping and you can stand up a server or a website where it does hardware design as a service, where rather than an engineer contracting shop, it's a server that has all that bespoke knowledge on mold, making toolmaking, whatever it is turned into code.

[01:01:20] And now there's companies stood up that are automatically designing things based on requirements. Not that they're punching into their CAD, but someone's pinging a server and it's shooting back and completed. And they're their own company and kitty CAD, the infrastructure under that. So there's new and unique ways on all of that.

[01:01:35] We, we see it all coming together. Once you have that underlying digital infrastructure, that kitty cats developing

[01:01:41] **Eric Lofgren:** well, it sounds like you're lowering the costs of making requirements changes or continuous upgrades. And the government always has a problem with requirements creeps. A maybe you're letting them do the thing that they do naturally into a respect, which might be lowering the cost for bespoke things or the ability to change things without having to completely, have all these engineers go back through and rebuild something out.

[01:02:04] **Jordan Noone:** It's exactly that

[01:02:05] **Eric Lofgren:** interesting. That's very awesome. I really appreciate you guys coming on. Is there any last thought that you wanted to leave her

[01:02:11] **Jordan Noone:** on? I think we covered quite a bit. We stressed on a lot of topics. I think Jen and I both got animated on a number of areas that were animated on.

[01:02:20] You can tell we're both really passionate on this and we're excited to spend the last hour and a half with you. This was really fun.

[01:02:25] **Jenna Bryant:** Thank you so much for having us

[01:02:26] **Eric Lofgren:** awesome. Jordan Noone, Jenna Bryant, thanks for joining me on acquisition.

[01:02:30] **Jordan Noone:** Thank you very much, Eric. Thank you.

[01:02:32] This concludes another episode of acquisition. Talk, if you have comments, interview recommendations, or just want to chat, please contact us@acquisitiontalk.com. Thanks again. And until next time.