

**EPISODE 454****[INTRODUCTION]**

**[0:00:00.5] JM:** In 2003, Paul Martino cofounded tribe.net, one of the earliest social networking sites. Tribe had significant traction with hundreds of thousands of users. In the early 2000's, hundreds of thousands of users were enough traffic to pose a company with engineering challenges. Paul had studied computer science and was able to use his knowledge of high-performance computing to write an efficient graph database and solve the other technical puzzles that the company faced, but the business ultimately did not work out. The failure of tribe made the founders of tribe even hungrier for success and it taught them lessons that they carried into subsequent businesses.

Paul went on to start aggregate knowledge, a marketing technology company that sold for \$119 million. His tribe cofounder, Mark Pincus, went on to start Zynga, the multibillion-dollar gaming company. Another tribe employee cofounded Yammer, which sold to Microsoft for a billion dollars.

Since his exit from aggregate knowledge, Paul Martino started Bullpen Capital, which makes post-seed investments. The Bullpen Capital portfolio is appealing to me partly because of the number of Internet gambling companies. Paul and I talked about gambling and other taboo business sectors as well as what makes a good investment in the post-seed category.

I enjoyed speaking to Paul because he has a straightforward and no-nonsense way of talking about things, it's very charismatic and uncommon and you'll see what I mean when you hear him talk. We've done some great episodes with other engineering investors, like Chris Dixon and Adrian Colyer, and you can find these old episodes by downloading the free Software Engineering Daily app for iOS and for android.

In other podcast players you can only access the most 100 recent episodes, and in these apps you can access all of our old episodes. You can search over it. You can get recommendations based on the content that you've listened to, and they're open sourced at [github.com/](https://github.com/)

softwareengineeringdaily. If you're looking for an open source project to get involved with, we would love to get your help.

A shout out to today's featured contributor to the Software Engineering Daily open source project, Kurian Vithayathil. He has made significant contributions to the Software Engineering Daily android app, and all the users of the Software Engineering Daily android app I'm sure appreciate his work. Thanks again, Kurian, for all your efforts.

Now, let's get on with this episode.

[SPONSOR MESSAGE]

**[0:02:41.8] JM:** DigitalOcean Spaces gives you simple object storage with a beautiful user interface. You need an easy way to host objects like images and videos. Your users need to upload objects like PDFs and music files. DigitalOcean built spaces, because every application uses objects storage. Spaces simplifies object storage with automatic scalability, reliability and low cost. But the user interface takes it over the top.

I've built a lot of web applications and I always use some kind of object storage. The other object storage dashboards that I've used are confusing, they're painful, and they feel like they were built 10 years ago. DigitalOcean Spaces is modern object storage with a modern UI that you will love to use. It's like the UI for Dropbox, but with the pricing of a raw object storage. I almost want to use it like a consumer product.

To try DigitalOcean Spaces, go to [do.co/sedaily](https://do.co/sedaily) and get two months of spaces plus a \$10 credit to use on any other DigitalOcean products. You get this credit, even if you have been with DigitalOcean for a while. You could spend it on spaces or you could spend it on anything else in DigitalOcean. It's a nice added bonus just for trying out spaces.

The pricing is simple; \$5 per month, which includes 250 gigabytes of storage and 1 terabyte of outbound bandwidth. There are no cost per request and additional storage is priced at the lowest rate available. Just a cent per gigabyte transferred and 2 cents per gigabyte stored. There won't be any surprises on your bill.

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[INTERVIEW]

**[0:04:59.7] JM:** Paul Martino is the manager of Bullpen Capital, which he founded. He also founded and ran Aggregate Knowledge, he started computer science at Princeton and he's started some other companies. Paul, welcome to Software Engineering Daily.

**[0:05:13.0] PM:** Glad to be here.

**[0:05:14.3] JM:** Let's go back a little bit to Tribe. In 2003, this was a social networking site. What was the engineering stack of a social network in 2003?

**[0:05:26.4] PM:** Yes. That's a really interesting question. I had an architect named Brian Lawler who ended up been going to Cisco for many years, and I was a high performance computing guy, and so when we had seen sites like Friendster and we'd seen the scalability issues they had, we realize that we basically needed to separate the stack into two halves. We needed a very traditional what I would call web stack for front and all that, and then the social networking functions we needed, to some extent, an HBC stack.

I, from scratch, designed a C-based set of libraries that got called by the web stack to do things like compute social distance, maintain the social network. We had user IDs for example that were just integers sitting inside of a graph database 100% custom code. 100% custom code. Brian Lawler, basically I exposed an API to him to call over a socket and he would then integrate to all the social networking features, and his stack then look like a very traditional lamp-ish stack. It was a Java stack, but nothing that looked unusual.

There's this one proprietary box that you call over the socket that's all the cool stuff I do. I'm not a web developer at all, so I don't understand squat that Brian's doing. He doesn't understand

squat of what I'm doing, but that actually made it perfect, because the separation of responsibilities between the two things.

As Tribe grew and while it never got as big as some of the other ones, we never had the scalability problems of other people, because we separated — We understood that there would be massive difference in the scalability of social networking functions from traditional web development functions. If you try to do things like compute social distance inside of your database or inside of your web stack, you knew you were screwed. So we took all that out and we really never had scalability problem a day of the company.

**[0:07:20.6] JM:** Do you had to write your own graph database?

**[0:07:22.0] PM:** Yeah, wrote it from scratch. That's my background. I was perfectly equipped to do that. My work at Princeton was in high-performance computing doing things like a graph database are the kinds of things that I built from scratch for my Ph.D. work. Designing one of them, brushing off some stuff that was kind of five-ish years old from my work there and applying that to a social network situation, that was a slam dunk.

**[0:07:48.4] JM:** It sounds like that was a great fit for you, that position. I saw an interview where you said that one of the mistakes that the company made, Tribe, was an inability to focus on what was most important. What was the particular mistake in focus? What should you have been focused on and what were you focused on?

**[0:08:11.0] PM:** There were two mistakes, and Pincus and I and Val Simon and the whole gang, Chris Law, we talk about this off and on for the decade that has gone by since. There were two fundamental mistakes we made. Let's start with the one user one and then the kind of one focus one. The user one was that we didn't pay any attention to curating who our initial user base was, and so Friendster at the time was going through a purge of all the burning men people, and guess what? All the burning men people came over to Tribe and we had the most alternative post yourself naked crowd anywhere.

We never thought this was a problem because a social network should take all comers, right? A guy named Zuckerberg shows up a couple of years later and starts with a highly curated,

desirable audience called Harvard and slowly expands it by schools. The fundamental problem with us as a social network is we didn't understand how important the core audience that we started with was and how the users themselves set the tone for your site. It was out of your control once a certain group basically took over your site. It's not that we didn't love those people. It's that they were not mainstream enough to cross over to make it be the big side. That was problem one and kind of 1.a.

The problem two was the [inaudible 0:09:20.8] thesis of Tribe was not to be a general-purpose social network. It was to try and do the socially networked classifieds. Pincus's vision was to use social networking as a way in which you know who's on the other end of a Craigslist style transaction.

The focus problem was every day you'd come into the office, are we building a social network or are we building a Craigslist killer? That is a very tough company to work for, because one day you're doing listing functionality on the other day you're doing social network features. And Elliott Lowe who was our designer who went on to do Yammer, he once said — He says, "Here's the probable we got at Tribe," "Hey guys, let's all go hang on our social network so we can do classifieds." You don't all go in a room together so you can sell your used card to your buddy. You go hang out with your buddies so you can play a game of poker or something, which by the way became Zynga.

We kind of all learn from our mistakes. We really get a lot of introspection about what went wrong, and aggregate knowledge was a byproduct of that. Zynga was a byproduct to that. Yammer was a byproduct to that. It was kind of cool that that team went on to do such interesting things immediately thereafter even though we got that one wrong.

**[0:10:29.1] JM:** What was the way in which the lessons from Tribe led you down the idea maze to aggregate knowledge?

**[0:10:37.5] PM:** That one was straightforward. We knew that the data exhaust coming off a social network was going to be super productive for everything that you'd want to do, whether it'd be ad targeting, whether it'd be fining you another friend, etc.

Even though we were at Tribe and Tribe was failing, I kept telling Pincus and the gang. I'm like, "Dude, the data exhaust coming off this thing is just mind-boggingly awesome. No one's ever had a data set like this. What if I brought a kind of data collection in a box service to a bunch of big companies, let them do that to do product recommendations, ad targeting, retargeting, and those were the thinkings behind aggregate knowledge. Aggregate knowledge end up being a very successful company as a result of that, so I have that insight.

Pincus has the insight which is, "There's nothing else to do on your social network once your friends are there, so let's give them something else to do." Quite simply stated. Let them play poker. Elliott, by the way, he teams up with Dave Sachs, he does this thing called Yammer which is, "Why don't we kind of do this social networking thing for the enterprise?" All three of those companies almost certainly don't turn out the way they do unless we were all driving it.

[SPONSOR MESSAGE]

**[0:11:55.0] JM:** Spring framework gives developers an environment for building cloud native projects. On December 4<sup>th</sup> through 7<sup>th</sup>, SpringOne Platform is coming to San Francisco. SpringOne Platform is a conference where developers congregate to explore the latest technologies in the Spring ecosystem and beyond.

Speakers at SpringOne Platform include Eric Brewer, who created the CAP Theorem; Vaughn Vernon, who writes extensively about domain-driven design, and many thought leaders in the Spring ecosystem. SpringOne Platform is the premier conference for those who build, deploy and run cloud native software.

Software Engineering Daily listeners can sign up with the discount code `sedaily100` and receive \$100 off of a SpringOne Platform conference pass while also supporting Software Engineering Daily. I will also be at SpringOne reporting on developments in the cloud native ecosystem. I would love to see you there and have a discussion with you. Join me, December 4<sup>th</sup> through 7<sup>th</sup> at the SpringOne Platform conference and use discount code `sedaily100` for \$100 off of your conference pass. That's `sedaily100`, all one word, for the promo code.

Thanks to Pivotal for organizing SpringOne Platform and for sponsoring Software Engineering Daily.

[INTERVIEW CONTINUED]

**[0:13:26.2] JM:** There was some moment in aggregate knowledge where the business was not working and you had to essentially look at your resources, evaluate what was working, evaluate what was not working, do some tweaks and pivot, I guess is the word you would use. I have heard you talk about this in a number of different contexts, both specifically about aggregate knowledge and more generally like the strategies for pivoting. Can you take us to that moment when you had to reframe the company and talk about the lessons and how that might generalize to people who are in a similar state of mind?

**[0:14:11.1] PM:** Yes, I'm happy to talk about it, but I don't think it's a very reusable story, and you'll see why.

**[0:14:16.0] JM:** Okay.

**[0:14:16.7] PM:** This is an unusual — This was no pivot. This was no — This was a, “Oh my God! We have \$25 million in the bank and the business we think we're in doesn't exist. What the F are we going to do?” This was a very, very unusual situation.

We started as recommendations as a web service. Remember, the big idea is kind of data collection in a box, cut-and-paste JavaScript, turn your website into a data mining effort for your company, and the first product is recommendations as a service, which is a very logical way to use that data.

Out of the gate we started making a couple million dollars. We get this big contract with overstock. We got the Washington Post. To some extent, “Wow! This was a little too easy.” We go from zero to a couple of million dollars in revenue overnight. Everybody and their brother is trying to throw us money, and so we raised a \$20 million round.

About six months into \$20 million round with \$25 million in the bank, because we didn't really touch any of the 20 million bucks, a bunch of these copycats show up. A bunch of other guys are doing cut-and-paste JavaScript ad, recommendations as a web service, and we're down one year into our first contracts and no one wants to renew and they want to pay us 1/10 of the price and they — All of the things that you sit there and go, "Oh my God! We don't have a business."

I remember the board meeting clear as day, it was January of '08. I walked into the board meeting and I go, "Guys, we got \$25 million in the bank. The business that we're in is not a business. We need to figure out what else we're going to do."

Randy Komisar from Kleiner — Bless him, and we've best friends ever since. He looked at me and he said, "You know, Paul, you got a great team here. You've built an interesting piece of core technology. I think 9 out of 10 people in my position would fire you right now. But you know what? I'm going to do something different. You got six months to figure out what else the hell you're going to do with this."

Oh! By the way, that was then the luckiest break of my career. About two months later, a guy named John Donahue calls me up cold from Omnicom Media Group. Omnicom Media Group? What's an ad — I don't even really know what ad companies are. I'm selling enterprise software to big guys. He says, "Paul, I know one of the backend systems you use at Aggregate Knowledge is this thing called Aster Data, which is one of your data warehouse. We were Aster Data's second customer. Aster went on to become part of Teradata."

He calls me up because he's doing a reference call. He said, "Paul, I want to do this nonlinear analysis. I want to do all these cool attribution. I want to tell my customers why people are buying Chef Boyardee in the morning and why college kids eat at Cold." Like, "Dude! Aster is a database. Could you tell me again what you're trying to do?"

He's like, "I'm trying to build basically a multipoint attribution system to tell advertisers why people are doing what they're doing." I'm sitting there and I'm going, "Shoot! That's what our underlying core technology was built for." What is a recommendation? A recommendation is a composite score of the thing you'll probably be interested in based on your past behavior. If you



turn your head 90°, this attribution thing that this crazy guy named John Donahue who I've never met my wife is asking for is exactly what we built, but I'm not an ad tech guy. There ain't a single ad tech person in the company.

I called up John, I go, "John, could you come over to our office and maybe tell us a little more about what you do?" That's March. January is the board meeting, and by June Omnicom is going to invest in the company. John Nelson, the CEO of Organics is going to join the board. This guy named Steve Katelman's in our product advisory group and we figured out that the business is to actually apply this core tech into this multipoint attribution problem. This became known as the first DMP. Aggregate knowledge, because of that reference phone call from John Donahue, created the industry of DMP.

We actually already built it, but no one knew we had built it because we used it for the wrong damn thing.

This is what I'm saying. The story I don't think is tremendously reusable. It's not a lot of times that a CEO walks into a board meeting and says, "I need to find a new business." A doesn't get fired. B gets enough time to figure it out, and then C gets the lucky reference phone call that is the new business literally land in his desk. That was a crazy six months of endeavor.

**[0:18:27.0] JM:** Why was the recommendation system as a service the first — That first idea. Why was that such a commodity business? That sounds like a business where you could build a mode by having a recommendation as a service, this 10X better than everybody else.

**[0:18:40.2] PM:** You can't. It turns out that the 80-20 rule applies here very badly not in your favor. The very simple thing gets you 80% of what you want. I mean, really, it's just a simple — Yes, our system could get you — If you did the Netflix price, which was going on at the time. The best systems were a 10 point percent lift.

The thing you could build over a weekend would get you 6 to 8 points. If the thing you could build over the weekend internally get you 6 to 8 points of lift in, say, product views or cross sell, why are you going to pay me 100,000 to a million dollars incremental to get you from 8% lift with your metric to 10%? The 80-20 rule totally screwed you, and we thought we could make it up in

volume. We fought by having the aggregated databases across all other customers. We would get essentially unified knowledge, hence the name of the company, aggregate knowledge. We would learn patterns, etc., off the data from others, but gave such incremental additional lift that it didn't matter.

I think that's why — By the way, 10 years later, name me that great recommendation company that went public. So I feel good about what we did because of that. If on the other hand there are five public companies, and that's a huge category, like search or what I write, go, "Man! We screwed up."

The fact that the market has spoken, there is no big awesome public company in that product. We were just either early enough or dumb enough to call the ball that that didn't work and look for the new business.

**[0:20:10.5] JM:** It's funny, because that problem is not dissimilar from search.

Recommendations are not dissimilar from search, but I guess there is something different about search that makes it —

**[0:20:23.1] PM:** The ability to monetize is significantly different. Recommendations are in the discovery category, which is when you don't know what you're looking for but are open to a suggestion. Search, on the other hand, is directed and has much more monetizable intent, because right now I need blank.

Don't get me wrong. The discovery thing is awesome. By the way, the web discovery is still broken. Mobile discovery is still — More than a decade after the formation of aggregate knowledge, which we called ourselves the leader in online discovery. The discovery problem is still awful. There's still could be a great company to go be the discovery company, but since the intent is not so directly monetizable, you don't have those economics of something like search.

**[0:21:02.5] JM:** What mistakes have you seen founders making since the days you started as an entrepreneur? You worked at Tribe, you worked at aggregate knowledge. First one was maybe a failure, but not really, because it led to such successes later. Aggregate knowledge was a definitive success, and now you work at Bullpen Capital. You've had a lot of really smart

investments. You've got a really differentiated investment thesis. You've kind of seen a lot of stuff. What are the mistakes the you see people continuing to make that you saw even from the early days people making?

**[0:21:37.6] PM:** There are a bunch of them, but I think — Let me go through the ones that are my pet peeves to some extent. Not understanding the competitive landscape of what you're going into. This one always makes me crazy. I'm going to just go build the best product. I'm not going to pay any attention to what anybody else is doing.

Will I mean an entrepreneur who does that? It speaks to intellectual laziness that bugs me, and I call him out on it. I'm like, "No. You're not the first person to do blank; photo sharing, ad targeting, etc.." You have to be a student of the business that you're going into. You need to study from the failures of the people before you and you need to look at what's in the market now to inform your decision about what you're doing and how it can be differentiated.

When the answer comes back kind of like, "Oh, dude! But what I'm doing is so awesome and so cool, like everyone will love it." I'm like, "Yeah, maybe, or maybe what you're doing is an exact copy of 37 things before you that failed."

When I have an entrepreneur come in to my office and kind of talk about their product like they're the only person who's ever thought of or conceived of this, I view that as a really self-inflicted wound on the part of the entrepreneur. Be a student of the business you want to run. Be a student of the category you're going to disrupt. Show me that you have commanding knowledge of both the successes and the failures and why what you're doing is really different where the time is right.

I see all too frequently people get too lazy about this part of the problem and go, "I'll just build a better product," and that's their answer to all of those question. That is certainly one.

Another pet peeve I guess I would describe is people who view that fundraising is beneath them, meaning let me get back to building my product. That's all that matters. No, dude. You're the CEO of the company. Not running out of money is part of your job.

How can you come in to my office now I'm on the other side of the table, of course, but even when I was an angel or advisor? I'd go, "No. You can't just spend 99% of the day building your product. You need to hire people. You need to grow your management team. You need to raise money. You need to get an office. You need to scale. If all you want to do is be the product person, great! Go fire yourself the CEO and become VP of product. Please bring in a CEO who's capable of wanting to raise money and do all the stuff that they need to do."

**[0:23:54.4] JM:** Is this serialization of building versus raising money necessary? Because you hear some people that say, "You should block off three months and spend that time completely focused on fundraising."

**[0:24:07.5] PM:** Nope. I totally disagree. I actually wrote an article on Tech Crunch a couple of years ago called *Seed is a Process*, and the basic thinking is that logic of monolithic fundraising was correct maybe 10 years ago when I was doing aggregate knowledge, but as the fundraising has become more continuous, multiple cap notes, rolling notes, a seed, a post-seed, a pre-seed all before you get to an A. If you take 10% of your time all the time fundraising, you actually have a much more healthy balance as the CEO by the way. You're now not out of the office for three months and everything might go to hell, because it's a 10-person company.

Let's say 10% of your time all the time. That's a way more healthy thing for both of your business, and oh by the way the ecosystem supports that now, because fundraising is a more continuous process where as it was so dang discreet in the mid-00s.

**[0:25:01.6] JM:** And the pool of people is bigger, because 10 years ago there was the risk of you shop around for two months and then everybody's heard about you, and if you still haven't raised money, there's some risk there that you've poisoned the well, but there's so many people now that there's much less risk and there are so many deals.

**[0:25:18.8] PM:** And you're just talking to those people continuously and you're getting lunch with somebody when you're not in market, and someone might preempt you when you're not ready. It is so much more awesome to be an entrepreneur in this ecosystem of always be raising seed as a process, even though that article is a couple of years old, I'd probably refer an entrepreneur to that article two, three times a week, not because I wrote it and I want to get my

views up, but because the content of that article really describes a change in mentality that happened this decade versus the last decade that I think every once in a while I see an entrepreneur who raise money a decade ago, was at a big company for decade and then comes in to this world. I'm like, "No. It's all difference." Seriously, forget what you know when you raise money in '05 and '06, because it's like a tectonic shift happened.

Once First Round Capital, who I really review was the true innovator on this, went out and did their model, First Found started '04 and then really hit stride called '07, you get past the economic crisis of '08. You're raising money on the backside of '08, the rules are all different, because you have this massive proliferation of seed, you have higher volume investors, you have all these incubators. It's just so cool what happened.

**[0:26:34.4] JM:** You founded Bullpen Capital, and the investment strategy is to put in money after a company has proven product market fit as a sideline to a milestone and has a strong syndicate of existing investors. You call this post-seed. Briefly explain why this is a specific set of characteristics that make for a good investment criterion, and then we can talk about why that is different and why it is good.

**[0:27:03.1] PM:** Bullpen Capital got started as a math problem. I'm the high performance computing geek as evidence by most of what we're talking about right now. A guy named Mike Maples calls me up in '09, end of '09, says to me basically, "You know, Paul, the whole venture ecosystem is restructuring. Your buddy Josh Kopelman figured out the seed thing and there's this guy Jeff Clavier over at SoftTEch, they're all of your buddies. I'm an early LP in First Round." He's like, "You realize the way that people are investing in seed now is different. It's more checks, fail fast, don't invest in every round unless you go a winner."

Venture up to that point in time was invested in every round, invest before the product is there, have huge ownership targets. Mike and Jeff and Josh, in my mind, three of the real innovators of this, figured out a kind of different way to play once it got so cheap to start a company.

If on the left in the early stage you have lower ownership targets, higher volume fail fast, and on the right lifecycle, need to invest in every ground, got to own 20%. Isn't it a certainty almost like the whole hawking radiation thing that there must be an event horizon in between those two

business models? Aren't the business models of traditional venture and early-stage venture now incompatible?

We literally did the math on it. We spent a lot of time. We did a roadshow, Duncan Davidson and Rich Melman and I sat at the whiteboard for six months figuring out that the new ecosystem would lead to downstream opportunities including what we now call the post-seed opportunity, which is extending the seed mentality to the series A round. Then today, the post-seed round is a small A. It's a \$4 million round now. It used to be \$2 million. Now it's \$4 million.

When you were raising money back in '05, you raise a series A. It was 4, 5 million bucks. That's what you did. We have a joke in our office to make venture great again. The reason we use that joke is because our product is the product that we knew was the series A product 12 years ago, because the series A product now has become this 12, 15 \$18 million dollar thing, because the later stage funds got the front of the funnel stolen by all of the new kids and had to write bigger checks later.

We're playing this kind of fundamental long-term structural arbitrage between the two venture business models. What's cool about that is the math told us it exist, but guess what? No one told us how to pick the companies. We had a half a loaf of bread. The math problems said, "Go swim in this pool." A great lesson I learned from Mark Pincus. Tribe was a failed social network, but we were swimming in the right pond. We know we're swimming in the right pond, because the math has told us the event horizon between seed and A is going to have massive opportunity.

We started figuring out, it was capital efficient companies that had already gotten product market fit. We're a year away from making the big funds, want to dump a lot of money. Hence, this kind of bizarre thing you see on the website of the characteristics of what we're looking for.

**[0:30:07.4] JM:** Right. Early-stage investors, like the really early stage. We've been talking about Angel or the seed round. They're often looking at the founders, they're looking at the markets that they think will develop. They're maybe looking at her very raw prototype, and that's how they make their decision to put in. If it's an angel round, they're putting in \$100,000 to \$250,000. If it's a seed round, maybe they're putting in 500,000 to 1.5 million, and then the

growth stage or the late stage or series A, series B, they're putting in, like you said, 10 million or \$20 million or \$30 million or something and you're talking about this round that is somewhere in between. What are the data points the you're looking at or what are you looking at during the diligence process? How does your diligence process and what you're examining differ from what the people in the rounds on either side of you are looking at?

**[0:31:04.8] PM:** The main difference is that we invert the pyramid with a very money-ball style approach, just like what Billy Beane does with the players. Of course, I care if the team is awesome. Of course, I care if the market is big. But shouldn't I look at the raw numbers of the business first before I invite you into the office?

Most venture firms; is it a category I like? Did the kid go to a school with great resume? Is it out of a company I like? That's the first screen. That's our last screen. Our opening screen is, "Is the company in a half-million to a million in revenue? Did raise no more than and three million bucks? Is their burn rate no more than a 100K?"

We start with all the money-ball in the front and we don't even invite you to come into the office unless you're through the money-ball. Once you're through the money-ball, then we do all of the founder got the chops. Is the market big enough? Is the team going to get there?

But we have a massive hack that makes use of our time and our partnership so much more efficient, because we use an analytics-based screen on the frontend of the process that the later stage firms do, the private equity firms do this, but the vast majority early-stage investors don't, because they start with kind of the raw materials. This leads, to some extent, difficult and arduous diligence process if you start in the softer factors, but letting the softer factors be the second half of our diligence process instead of the first half leads to a really different experience.

By the way, if you're an entrepreneur and you talk — Even CEOs who get nos from us, they'll tell you, "Well, talking to Bullpen was really different. I went in there and we went through a spreadsheet and they said, "here's three reasons while I'm not the right person for you. By the way, in six months I might be, so come on back," and the feedback was super analytical, super focused and actually super useful, because they have such a clearer thing that they do as

supposed to, “Well, you know, if you wore a nicer time with your suit, maybe — If you got a founder who went to a school that was little sexier than —” You know what I mean? You get this feedback a lot of times in venture ecosystems that’s kind of not really directionally useful.

I think our no’s are among some of our best marketing message. I don’t say that viciously —

**[0:33:15.9] JM:** Because it’s numerical, a numerical criterion.

**[0:33:18.1] PM:** Yeah. I’m like, “Look. You’re a 10,000 month as a SaSS company. I need you to be at 50 to 100, and here's why, because the next fund after me wants you to be at 400. If you grow it 4X a year and I go through the man,” they’re like, “Wow, dude! This is kind of cool. You really showed me how the ecosystem worked.” I’m like, “Yeah, because you know why? I am a student of the venture industry the way I want you to be a student of your business.”

I think is why going back to my earlier question about my pet peeve. How many venture people do you meet that you’d really say, “They’re a student to the venture business.” Where you walk in and go, “Do really wake up in the morning and ask yourself, “How can I innovate on venture?” Do you wake up in the morning and say, “What does everybody else doing so I can be smarter?”

The vast majority of people in venture lose that Jean even if they were former entrepreneurs and they just go, “My brand is better. I’m better looking. Come in and do a deal with me,” and that bugs me. Guys like Kopelman, etc., continue to innovate, and they’re my heroes.

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**[0:34:23.4] JM:** The octopus, a sea creature known for its intelligence and flexibility. Octopus Deploy, a friendly deployment automation tool for deploying applications like .NET apps, Java apps and more. Ask any developer and they’ll tell you that it’s never fun pushing code at 5 p.m. on a Friday and then crossing your fingers hoping for the best. We’ve all been there. We’ve all done that, and that’s where Octopus Deploy comes into the picture.



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[INTERVIEW CONTINUED]

**[0:35:55.2] JM:** I hear a lot of phrasing that is opaque or touchy-feely, and you're laying out, like you said, the Money ball, the very numerical-driven approach, and maybe we'll talk about this with poker later on, but I remember back when I was playing poker fulltime, there were people who would succeed at high-stakes and would have very fuzzy reasoning for why they made a certain play. Often times that fuzzy reasoning was an abstraction over some harder numbers that they probably had internalized. Maybe they couldn't express it externally, but the people who were extremely successful were always the ones who could communicate using numbers and probabilities and very tangible reasoning why they made a decision, and became much easier to communicate with those people and share information also. That's probably another reason why they thrived, was because they could put things numerically. It sounds like that's a position that you like to take with the —

**[0:37:00.7] PM:** That's absolutely right. By the way, the intuitive investor is very successful in venture. We see the same thing in venture. There are truly gifted people at looking at a website or a mobile app or an entrepreneur for five minutes and knowing if they're going to be a winner. That is a unique untrainable, unlearnable skill in my opinion. You are born with that or not.

If you're one of those savants, if you're one of those style of poker players, great! Build your brand. Go get those people to come into your office. You're going to continue to pick them well. If you're kind of not and you're more a numbers geek who used to be a high performance computing guy, this is probably what you're going to go do. This model matches the temperament of its founding team and of the people who are now here. In many ways, I think

we're demonstrating that there is a metrics way to go after some aspects of venture that were touchy-feeling.

**[0:38:02.9] JM:** Speaking of gambling, Bullpen has made a lot of investments in gambling, and I find this a really interesting topic. I have always been fascinated by gambling Internet companies, because it's a thing that gambling is taboo and it's a thing that I don't think should be taboo. I wish there was less taboo with it, but it's refreshing to see somebody the that makes a lot of investments in the intersection of gambling and the Internet.

I actually think there's a lot of utility potentially if the taboo were moved and you can gamify all these things in the real world with gambling elements, that would be great, but it's not going to happen for a while until taboos kind of disappear. What do you see is happening at the intersection of gambling in the Internet today in 2017?

**[0:38:50.2] PM:** It's even slightly broader. Our fund is not afraid of not just gambling and gaming, it's not afraid of legal and regulatory risk. We have two cannabis companies and an alcohol delivery company in addition to seven companies broadly speaking in gaming. We have a fantasy company. We have a lottery company. We have a horseracing company, and I'm very proud of that aspect of our portfolio because the vast majority of these deals are deals that are just too frightening for the rest of the venture ecosystem to contemplate, but we've now developed quite a reputation as having understanding and a lack of fear of potential liability legal and regulatory framework. We work a lot with a guy named Bradley Tusk who did this for a company called Uber back in the day.

We've found that there's real alpha here. There's money to be made by saying, "I raise my hand. I'm not scared of this stuff. I want you to come in here." It is nice, because for the prior two years when I got asked that question, I would get asked, "Martino, you're going to do cannabis deal, aren't you?" I would say, "Yes. I think it is inevitable."

So then a year or two later we now have done two. Of course, we've done two, because we're not going to be afraid. We didn't have the right ones come in at that point in time. Most of them were saying the actual growing side, which didn't seem to be a venture style business, but we get into a cool company called herb.co up in Canada. It's the largest information portal about

cannabis anywhere. We sit there and go, "That's the kind of bet we can make," and we get excited about that. We kind of say we get quite a bit of vice exposure, and vice is not necessarily so bad.

**[0:40:33.3] JM:** Are there taboos or vices that you would not put money into even if they fit the criterion of Bullpen?

**[0:40:41.1] PM:** That's too abstract a question we really be able to answer. Yes. I'm sure — Let's put it this way. We had an LP who invested in us a very, very important, very big endowment invest in us and they basically said to us, "You know, we like that there's risk in your portfolio. This is good." I think the phrase was something like, "You know, if you're giving handguns, probably we'd be upset with that." The example was so over the top insane. If a company comes in and says, "Let's give six-year-olds guns. You probably wouldn't do that, right Paul?" I'm like, "Yes, of course," but it's an abstract question and that's why the example was so off the beaten path.

It's not like we have a list of things on the wall. No, we won't invest in this or this or this. If a company comes in that's pushing a boundary that makes us uncomfortable, there's no way we're going to invest in that.

**[0:41:33.9] JM:** Do you think kids should gamble?

**[0:41:36.0] PM:** No, I think that's a big problem. I actually think the age verification and KYC requirements. I think those things are required, because there is a certain emotional intelligence required even if you the mechanics of the game down.

My six-year-old son is a competent poker player. We play poker for a half-hour every night before going to bed. He can play exotic varieties of poker, like Badugi and the Daily. Seriously, this is a six-year-old kid.

**[0:42:02.9] JM:** Totally.

**[0:42:05.0] PM:** We also will bet \$20 a game on one football game every Sunday, and I actually have taught him how to understand lines, scores, win-loss rates, etc. He has an algorithm he follows to pick the one game to bet every week.

**[0:42:19.8] JM:** You would agree, that's going to be extremely useful to him as he grows up.

**[0:42:23.0] PM:** I think that he is so awesomely positioned for the new data economy that we're in, but does my son have anywhere near the emotional intelligence around spending money, around the, "I got to pay my bills." He's six. No. I think there has to be a regulatory framework around things like not letting six-year-olds actually log in to the poker site. Doing a friendly wager with dad and playing the game and understanding the mechanics so that when you turn 21 it'll be the greatest day of your life, which we joke about.

My daughter, by the way, she also plays. I did my 40th birthday in Atlantic City. My mom has a little slot machine in her house, and I think one of the proudest days of my life is the following; we walked in, we're at the Brugada going into my dinner. Of course, the kids are allowed to go to the restaurant. She walks up to one of the slot machines and start trying to play with it. I told her, I said, "No, Vanessa. You're not allowed to play with the slot machine," and she burst out into tears. She burst into tears, and I say to myself, I'm like, "No, Vanessa. You're not allowed to play until you're 21," and she does the math in her head. She's like, "That's a long time from now, Daddy," and she just keeps crying. It's right. It needs to be something that your six and eight-year-old aren't, but her understanding the mechanics of how the slot machine, that's good for the rest of her life.

**[0:43:46.3] JM:** Don't you feel like something gets lost there, though? Because I played when it was gray legality, or it's definitely like — It was definitely illegal to play under a job, but I played some underage. If people are listening to this and they come after me, then maybe I'll get some of my money taken away. I played when I was like 15 or 16 online, and it was so useful to me. Those nights where you lost a couple of thousand dollars and you're a teenager and you go to — And it's hard to go to sleep and it's painful, but it builds up emotional calluses, and it's so useful today. It was freaking painful back then, but now I look back on them and I'm like, "Man! I have such an edge on a lot of people, because they have not had that kind of traumatic financial experience." I don't know. I almost wish more people were exposed to it.

**[0:44:45.3] PM:** I will posit something slightly different, and I'll tell this to almost like a Zen master who, Randy Komisar, would do this. I had a ninth grade science teacher who was my biggest mentor and every once in a while he would give you an assignment and you kind of would think about it for a minute and you go, "He doesn't really want us to do this assignment. Does he?"

You'd go, "Why did he asked us to do that? He kind of smirked a little bit," and you started figuring out after a couple of these assignments, he wanted you to kind of do this subversive thing that he wasn't asking you to do so that he could teach you that sometimes not paying attention to authority was an important thing.

Now, later in life, him and I have become personal friends. My kids go over and swim in his pool. It must have been 20 years later my life I finally got to ask him. I said, "Tom —" His name is Tom Kram. He was literally my ninth grade science teacher. I said, "We always thought that he said, "You're damn right that's what I was doing. We de-teach you smart kids that sometimes not paying attention to authority and doing the opposite of what was asked is the way to become a better person. It's a way to become a thing like an entrepreneur, which is what you've done."

Let me take that story and posit something else. Yes, you learn life lessons around winning and losing money that were important, but you also learned about pushing a boundary and doing something that was technically illegal. I'll be in some ways you got more out of that than you did out of the, "I learned how to deal with the money."

Okay. I'm not supposed to do that, but I'm going to do that anyway and I will deal with the repercussions if I go to jail. There's a certain thing about that that me and my wife struggle and ask ourselves with, "How do we teach that right to your kids?" Because you can't just be frontal about this. You can't just come home and go, "Kids, I want you to go break the law tomorrow."

The same point in time, you kind of want them to push the boundary to do exactly what you did when you were 15 and 16, like "Yeah, I don't doubt it. I'm actually positive." You're partly the person you are because you did that when you're 15 and 16. If the equivalent thing happened in my son's life at 15 or 16, I might spank him, but it'd sit there and go, "I'm proud of him."

I think our society does a very, very bad job of promoting this subversive gene or whatever you want to call it. The original codename, by the way, of Bullpen, was Subversive Ventures. It was a running joke that we would do something subversive. That's a very proud statement.

I would love to see a way to institutionalize in a smart way getting kids to the have that edge that you learned, very hard to do, don't have an answer, but I'll bet the edge of the pushing the boundary taught you a lot more too.

**[0:47:39.0] JM:** Yeah, absolutely. When it comes to companies being subversive, what are the thoughts that you have on that today, because there's — You think about kind of the consequences of an Uber or a Zenefits being a little bit too subversive in how they approach the law, but there are other companies that's taking an advantage to pushing the gray area in a certain direction. Maybe you could even say like the companies that are doing ICOs right now, that could work out very well for them. I don't know. How does this apply to the advice that you give to companies?

**[0:48:22.5] PM:** We actually are pretty clear about this with our companies. Going into areas that are black, we're never going to support you on, never. Pushing the boundaries on stuff that's gray? Yeah, we got your back. Let's go get an informed legal. Let's go get an informed legal opinion. Let's analyze the risks. Obviously, doing stuff in the white, we all do.

A CEO walks into our office and says, "Here's this thing I want to go do that is kind of patently illegal." We're going to holler at them in the same way anybody should holler at them. A CEO walks in and says, "It is unclear if this framework applies to what we're going to go do. Let's go do it." We're going to pat them on the back almost every time.

I think that there is an informed thoughtful market understood way to go into gray areas that we're quite comfortable with and it requires real thinking, forethought opinions planning. We have a company right now considering an ICO right now. We're doing the same thing with that company. That company is a perfect fit for an ICO due to the nature of its underlying business, but we're pushing — I'm asking that CEO questions to make sure he understands what the downstream risks are to doing such a newfangled thing. He's taken it. He's become a student of

it. His grasp of it is tremendous. God bless you. Go do it. On other hand, I'm going to cavalierly do this. Oh! Everyone's doing it. Oh! It's cool. Never going to support that.

**[0:49:51.5] JM:** Yeah. Okay. Coming back to poker, did you expect to see computer beat a human in heads-up no limit hold 'em?

**[0:50:01.5] PM:** Yeah. That's an interesting question. I'm not familiar enough with how that system was built to really answer that question. I spent a lot of time understanding how AlphaGo really work when it went at OneGo. I spent a tremendous amount of time looking at that particular actual implementation, an equivalent type system. I actually sat down and read the code of a couple of systems. I was so intrigued by it, and I still actually — I'm a pretty proficient C++ high-performance coder if I really need to break that out. A lot of these systems are still in that language, by the way.

Am I surprised? Now. The heads-up realm has got — To some extent, it's information theoretically constrained enough that it's not super surprising. There's nuanced that the multiplayer game has that are different. Is it conceivable that that would also be "solved"?

The other question is; what does it truly mean to be solved in the context of an imperfect information game? Does it mean I win most the time when I sit down? It's still a probabilistic game.

**[0:51:08.2] JM:** The thing about poker is its only 52 cards. Even if it's imperfect information, it's pretty easy to enumerate. I mean it maybe a takes up a lot of space, but you can enumerate it.

**[0:51:21.9] PM:** Yeah. There's a Shannon's law reason why it's not super and surprising.

**[0:51:26.2] JM:** What's Shannon's law?

**[0:51:27.0] PM:** Shannon's law is just an information theory. The way you kind of figure out the debt. There are many aspects of it, but one of the ways that you basically figure out what the density of information is. You can analytically look at a problem and go, "That's going to be

solvable or not, because from an information theory standpoint there's only so many answers, so I could just enumerate them all.”

At some point if you can just enumerate them all, it can't really be that hard. You can apply information theoretic filters on a problem to see which problems will or will not — Which is why people were so dang surprised that AlphaGo one, because people viewed that from an information theory standpoint as too unconstrained a problem to ever be able to do something via any aspect of enumeration, which of course that's not the way it was done. But people thought that problem might be decades away from solving.

**[0:52:19.3] JM:** It was done by — I guess, it was reinforcement learning, right? It wasn't really like enumerating all the decisions —

**[0:52:28.7] PM:** In no way shape or form. The fact that the pruning of the space could be done so efficiently I think maybe is still a surprise. I'm not an AI guy. That's not really my back — I am an HPC guy. I get HPC part of it really well. I don't get the AI part of it near as well. You'd have to talk to somebody else on that one.

**[0:52:51.5] JM:** Okay. You have played a lot of poker. What are the parallels between poker and venture capital?

**[0:52:58.5] PM:** They're both involved embracing an understanding risk. I've said this many times in interviews. One of the things I've learned being both a poker player, a CEO, and now an investor is the vast majority of people you meet do not understand and do not embrace risk in any way, shape or form with any aspect of their life. Walking across the street to taking out a bank account to the job they take.

If you line up a hundred people and ask them about aspects of their life, you will find that the risk level in — 90% of them is zero. It's not even like one on a one to ten. It's truly zero. I think this ability to embrace quantify and live with the risk is the unifying aspect of all of those items and it's an ability or a skill or an insanity few of us actually have.



By the way, it's also kind of funny. You see thrill seekers who are skydivers, etc., frequently don't understand risk either, which is this — I'll talk to them about risk in kind of like, "Oh, dude. It's exhilarating. Let's go jump out of an airplane." I'm like, "Okay. Let's talk about risk. What's your day job?" Then you realize, it's weird, "That guy jumps out of a plane?" He doesn't understand risk in any way, shape or form.

I am continually surprised by how many people I engage with on a daily basis in spite of the business I'm in that know a damn thing about what risk is.

**[0:54:35.5] JM:** Like venture capitalists? They're not making expected value calculations on a regular basis?

**[0:54:39.1] PM:** I still don't think the vast majority of them understand what risk is. My brand is awesome. I will find big companies. Good things will happen. Okay. What are you risking then? What's on the line? Hey, big fund with brand. What's on the line? Oh! You might not have future carry and a big outcome? Okay. How about we play a different big fun? If you lose the money, I come and take your house?

I'm not saying it would work that way. I am not saying that that would be the way to run a venture firm, but imagine how you'd make decisions if the risk reward ratio were set up more like that? Which by the way is the way it is when you are a starting entrepreneur and you've not had a big exit, right? I think there are ways in which the venture business even insulates itself from risk in an unhealthy way.

**[0:55:32.5] JM:** Interesting. Okay. It's late 2017. You started Bullpen in 2010. What has changed in the funding landscape since that time?

**[0:55:42.5] PM:** The biggest one is very simple. The milestones requirements and sizes of the downstream funds from us have gone from high, to crazy, to obscene at this point. When we started the fund, the round after us is a 5 to \$8 million round for a company doing a million in revenue. Seven years later the round after us is a \$20 million round in a company doing 5 to \$10 million in revenue. This is a very important lesson for entrepreneurs listening. It means that the milestones required to get these rounds done might be way higher than you're really

contemplating when you look at your use of proceeds off your million or \$2 million of seed money you got. Those funds, they don't want to write a \$5 million check anymore. That fund used to be a \$200 million dollar check writing \$5 million checks? That's now an \$800 million fund writing \$20 million checks. Since they're not down with the risk, guess what? You'd better show them a hell of a lot more before you ask for their money.

**[0:56:38.6] JM:** Last question. What are the trends in computer science and software engineering that you're most excited about right now?

**[0:56:44.9] PM:** You know, it's funny. I'm not qualified to answer that particular one right now. Actually, we are involved in a couple of core technology investments. We're in a data center acceleration layer. We're not afraid to go in the coretech. We actually have this conversation actually over the summer. We do not have anything in our portfolio that I would describe in the software engineering stack. There are no doctors. There are, "What's my thesis on containers?" For whatever reason, we have not seen any of those companies in our office. We have seen coretech though. It's not like we're only going to do direct to consumer fluffy stuff. Don't get me wrong.

We haven't seen that part of the stack in our office. I think it's because that part of the stack is very sexy. To some extent, Bullpen is always investing in the categories that are a little bit unsexy. Once software stack becomes unsexy, which everything cyclic it will. Maybe I'll have a deep thesis on that, because we're in a bunch of companies doing that. Right now, those companies are getting bid up to crazy prices and entrepreneurs with those backgrounds are raising money before products are built. Guess what? The money ball guys are probably not going to be in that category right now.

**[0:57:55.6] JM:** What about scientist data?

**[0:57:57.1] PM:** Again, a really core technology piece, a low level fundamental piece of a data base technology. I wouldn't call it the software stack. When I really think about the product development lifecycle, the efficiency as an engineer, having a badass database at the bottom feels like an infrastructure piece that we kind of get.

**[0:58:21.5] JM:** Okay. Paul, thanks for taking the time. It's been great talking to you.

**[0:58:24.7] PM:** Awesome. Thanks for the time.

**[0:58:26.6] JM:** Okay. Wonderful.

[END OF INTERVIEW]

**[0:58:30.0] JM:** At Software Engineering Daily we need to keep our metrics reliable. If a botnet started listening to all of our episodes and we had nothing to stop it, our statistics would be corrupted. We would have no way to know whether a listen came from a bot or from a real user. That's why we use Encapsula, to stop attackers and improve performance.

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