

David Bach of Optios

Hall T Martin: [00:00:04] This is the Investor Connect Podcast Program, I'm Hall T Martin. I'm the host of the show in which we interview angel investors, venture capital, family offices, private equity, and many other investors for early-stage and growth companies. I hope you enjoy this episode.

Hall T Martin: [00:00:23] Well hello, this is Hall Martin with Investor Connect. Today I'm here with Dr. David Bach of Optios. Optios is a neuro-performance company that uses proprietary, state-of-the-art neurotechnology to unlock the brain's potential and optimize performance. Their Human 2.0 brain optimization methods are based on rigorous science. They deliver exceptional results that elevate, optimize, and transform the human experience. Their leadership team includes top neuroscientists from DARPA and senior business executives who previously built five very successful companies. David, thank you for joining us.

David Bach: [00:00:55] Hall, it's a pleasure.

Hall T Martin: [00:00:56] Great. So, what was your background before joining Optios?

David Bach: [00:00:59] Not only did I join Optios, I was the founder, so I was the first employee of the company. But I'm kind of a classic serial entrepreneur, the guy, you know, if you look up the definition of a serial entrepreneur, I'm kind of a perfect fit for that. My original training was as a scientist and as a physician. So I went to Harvard College and I went to Harvard Medical School and I spent a number of years just practicing medicine and doing research. And then at some point, I decided that I really didn't like the practice of medicine and I went into the business world at a really good time, just as healthcare was starting to take off as an industry. So, I've spent the last 25 years of my life on the business side of healthcare. I was originally a management consultant and then I got a job at a private equity firm in Boston called TA Associates. So, I spent a number of years investing in healthcare tech companies. And then I left, became an entrepreneur, and Optios is my fourth company all around the intersection between healthcare technology in the commercial space.

Hall T Martin: [00:02:09] And so, what led you to start work in the neuro-performance space?

David Bach: [00:02:13] Yeah, it was actually a cool journey. So, I retired after the sale of my last company, it was a big success and I got kind of more money than I needed. And, so I spent, like a lot of entrepreneurs, I spent two or three years just in that retirement lifestyle and like a lot of serial entrepreneurs, the itch came back and I said I just want to get back in the game and I really wanted to do something with my life where I could make an impact. Now, over and above the bio I told you about, I've also been what they call a "biohacker" for the last 15 years or so, so I've spent a lot of time studying my own brain and body, and looking at my brainwaves, and trying out various diet regimens, and doing all sorts of crazy stuff, you know, and it's had a really powerful impact on me; I'm happier, I'm smarter, I'm healthier than I would be otherwise. And so, when I decided to go back into the entrepreneurial world, I got very interested in whether there might be a commercial opportunity in this personal-growth realm. And so, then I and a couple of other people spent about a year doing market research - and this is three and a half years ago now - just asking where there might be an opportunity in this intersection between the personal-growth world and the commercial marketplace. And, the first thing we discovered is that this industry, this whole quantified self using technology to make yourself better, this industry was about to explode. And as we dug deeper, we came to believe that there was just an exceptional opportunity to focus in the neuroscience realm where what you're doing is you're building technology that's not just making the human better, but really focused on the brain. How do you measure, how do you optimize your brain to improve performance? And, we ran focus groups, we hired some market research firms, actually, the head of one of these market research firms said she wanted to be the Chief Marketing Officer just because we knew we were on top of something which was just going to be a huge wave. And sure enough, now, three years later, you know, the space is exploding. And so, that's how it came about. And so, we went through a bunch more diligence to see what's our product and go-to-market strategy and then launched the company about two and a half years ago.

Hall T Martin: [00:04:38] So what's your advice for people investing in the neuro-performance space? What do you tell them to do before they write that check?

David Bach: [00:04:44] So, you know, for those of you listening, Hall sent me the questions and I unfortunately looked at it just a couple minutes before, so I've just been thinking about it for a few minutes. You know, what I would say is when you, and, you know, because I've been an investor for a long time, you have to have a kind of philosophy of investing and this space is at a particular stage of development. Michael Porter came up with a model for how industries evolve with five stages and we're at the second of those stages where the thing is starting to take off. So, we've moved past the point of early entrance where they kind of stumble and now you're getting very experienced management teams coming in with serious capital. And so, the industry is growing really rapidly, but it's still very much like the Wild West. And so, there's the opportunity to make massive amounts of money at this stage of the industry, but it's still a much-less-evolved industry than it's going to be in three or four years. And so I think the first thing to do if you want to invest in the space is to say, "OK, I want to be an investor in this sort of Wild West thing based on a thesis around what it is", and then you got to just pick your bets and you're going to, I mean, I'm probably selling from an external perspective. You basically bet on the management team and you bet on the science and you say, "OK, I believe the space is taking off and if I can time it right and I get the right team and I get the right science, they'll figure out how to create commercial opportunity in the space". And actually, you know, when I was a venture capitalist, we were investing at the time when the search engine world was just evolving and it was exactly that, you know? There were eight major players and then ultimately Google won, Netscape made some money, and it was just a matter of picking the right team. So, I think it's the same thing here. But certainly, there is massive wealth to be created because the industry is taking off and if you pick the right team and you pick the right scientists and we believe we are that, you know, you can get really outsized returns compared to what happens three or four years from now when the industry has started to shake itself out, the valuations are going to be a lot higher, but it'll be a little less risky.

Hall T Martin: [00:07:05] So, how is the industry evolving? Where do you see it going?

David Bach: [00:07:08] Well, the first thing to say is it's very, very active at the moment. And so, when we've looked at the trajectory of investment dollars going into this phase and we started two and a half years ago, at that point, the total investment from Silicon Valley in the space was like \$34 million, last year there was a billion dollars that went into the industry. So it's very hot right now and certainly, this neuro-performance human

augmentation is a hot sector. You're starting to see really compelling exits. And so, there was a startup pre-revenue neuroscience company called Control Labs that was sold to Facebook for something between half a billion and a billion dollars, you know, a huge return in a really quick time. Elon Musk now has a company in the like. So the first thing I'll say is the space is hot and there is a lot of investment dollars and today, unlike two years ago, you're getting really solid management teams coming in. When you look at where the capital is going, you can kind of predict where the market's going because two or three years from now, we're all going to be releasing products and I think you're going to see companies speaking to, well, let's start at about what kind of the customer value proposition is, right? So, forget what the product is. The brand promise here of the industry is we're building technology that allows you to monitor and optimize your brain in a way that matters in your life, right? And so, for example, nowadays, people are wearing Fitbits, and they're wearing Apple watches, and so they can track their heart rate, and they can track their respiration, and so on. It's two years until - maybe three years until - you're going to be able to, you know, with headphones, track your brain state, and then through a series of training tools, be able to actually put your brain into an optimal state for things that really matter in your life. So, you know, organically, that's the kind of key customer need that's being met. And again, like I told you when we did market research, the interest in this, partly just because people have ADHD and they have trouble sleeping, the interest is just huge, right? So then when you think about just one step down - and then I'll talk about the products_____ - you know, the use cases, there's going to be a consumer application and then they're going to be specific applications in particular arenas. So right now in the video gaming world, you know, this technology is making its way in really, really quickly. And so, it's going to be certainly integrated into the headsets for virtual reality games and the like within a matter of a couple of years. You're going to see it affecting certain verticals where it can make a huge impact, and so already today, this has become a competitive necessity in the sports realm. So in professional basketball, people are using this today to make themselves process information more quickly and get themselves in the zone when they're about to shoot a free throw or the like. And so, in places like that or flight simulation training - or we can talk about what we're doing in financial trading - these are places where this technology offers such a profound competitive edge, it's just going to become a competitive necessity in those industries. And so, when you then think about the companies - and they're probably, you know, let's say 25 companies in the space today - we're the leader in one segment of the market, but you're seeing a lot of

companies in the hardware space trying to figure out what's the right form factor for people to be wearing. So, like Elon Musk has a company doing that. You've got a bunch of people around, sort of how do you actually measure this stuff? What's the right way to do it? And how do you integrate that? And, of course, then there's all the brain optimization tools. And then, so those are sort of the three main things that companies do. And then, of course, there's all sorts of ancillary stuff where you're going to take this technology and then blend it and integrate it with other stuff. And so, that's where you start to integrate it into, you know, let's say you're doing golf training, can you look at how your brain is doing? Or let's say you're a financial trader, can you track how your brain is doing and make sure you're in a good state when you're trading? That kind of thing. So, that's a long answer, but that's kind of where the industry is going and three or four years from now, there's going to be some huge players, you know, like the Googles and Amazons in this particular space.

Hall T Martin: [00:11:48] So, it's taking off. What is the growth rate of this sector?

David Bach: [00:11:51] Oh, it's insane. I mean, you know, you think about \$35 million to \$1 billion of investment over the course of three years. I mean, we and everybody else in the industry as a serious player, is facing radically more demand than we're able to satisfy. So, I mean, this is the Michael Porter moment, right? In that growth phase, what happens is people have viable commercial technology speaking to an important need. The amount of demand for the thing is so huge compared to what the market can supply. For the next two or three years, it's not a competitive market. It's not like we're going to lose a sale to somebody else because we all have 30 customers who are going to be trying to buy the same product. So, for the next two or three years, it's going to grow as fast as companies like mine are able to ship product and sell it. And then, I would say the shakeout will probably begin in three years and that'll be the point when you start to have competition, and that's when some companies will compete against others or buy others or whatever. And so, you'll see M&A activity and that'll be when the, you know, kind of like the tide goes out and you'll figure out who is actually wearing clothing or not. But right now, the growth rate is insane.

Hall T Martin: [00:13:11] And how many companies are engaged in this space right now?

David Bach: [00:13:14] Well, I think it depends on how you count it, right, because some of the larger companies have neuroscience divisions, right? So, you know, Microsoft is doing stuff here, and Facebook is doing stuff here, and Google is doing stuff here, but just in terms of companies who are specifically devoted to the space, I would say 25, and most of them are not going to be around in two years. There's a lot of sort of small-time players who are going to come in where they're either going to die or just be acquired by the bigger players. But right now, if you want just pure neuroscience - and by the way, that's not including healthcare - if you're in the healthcare world, the number gets a little bigger.

Hall T Martin: [00:13:57] And so, what are the challenges in this space that companies face when they go into neuro-performance?

David Bach: [00:14:03] Well, you know, when you create a new industry, you face a classic set of challenges that you don't face in established industries, right? So, let's say you want to open up a restaurant, you know, you open a Chinese restaurant. The thing is, the market is quite evolved and you try to figure out your competitive differentiation but the challenges there are known. You have a ready market, you know what the customers want. Here, as the market is evolving, it's a much more exciting thing because you get to make much more money and create a lot more value, but you have a set of strategic options available to you which are broader than what are available to people who are in more evolved spaces. And so, you know, the simple like, who should my customer be? How do I design the product? How do I price it? Those are important strategic decisions and, you know, we've got technology that can make the human brain dramatically better. You know, if you think about it, there's like 50 verticals where this is theoretically applicable. So it's important for someone like me to be able to be discerning to say, "Here's the right verticals, and far more importantly, what are the verticals I'm going to say no to?" Because if you do too much you always die. There are definitely going to be challenges around how you design the technology and how you create a consumer experience so it's really seamless and enjoyable. And so, the science at this point is solid. And so there's no question that this works, you know, but making sure that for your customer, you're integrating with their workflow the way that their life works so that they have an incredibly positive experience is really going to be critical. And then, longer-term you've got all sorts of issues around managing data, and ethics issues, and protecting privacy and the like. So, I mean, we could spend the entire

podcast on that topic kind of at the 100,000-foot view. I think if you talk to the CEOs of all the good companies, we'd all kind of come up with that same list. Getting sales is not the problem, like everybody wants to buy this stuff. So, it's really just figuring out how you kind of work into the customer's ecosystem in an effective way.

Hall T Martin: [00:16:29] Great. Well, so how does Optios fit into the overall neuroperformance landscape? Where is it positioned and what are you guys doing there?

David Bach: [00:16:37] So we, let me see if I can, I'll answer this in three ways. I'll give an example of one of the things we're doing just to kind of give you a sense of it, and then we'll talk about how with that capability we fit into the broader landscape. So, you know, I think, as you know, one of the things we are doing with our technology is using it to make financial trading firms more profitable. So, as we were developing our technology, we did a study where we took proprietary financial traders and we wired them up to our system, so we monitored their brains while they were trading. So at the end of the study - and now we've done this three times - but in the first study after 10 weeks, we had data on tens of thousands of trades and we had thousands of hours of brainwave recording. So we took our machine-learning platform, because we've got a machine-learning platform to sort of read the brain, and we said, "See if you can identify a brain signature, an individualized brain signature for each of these traders to predict that a trade is going to be profitable or not", right? And the results - and to use the neuroscience lingo - are just mind-blowing. After 300 trades, we've been able to find an individualized brain signature for each of the traders that accurately predicts in advance whether any individual trade they make is going to be profitable or not. We've now reproduced this in different market conditions with lots of different traders and the thing works incredibly well, right? And if you think about just the economic opportunity, if you can predict in advance whether a trade is profitable, it's worth a lot of money, right? I mean, in the billions, because you can use it to resize trades and say in advance, "I know this is going to be a good trade", so it gives you a very profound edge, right? And, you know, if you think about it, actually, this technology has much broader applicability than in finance because we've got this proprietary technology for taking traders or taking anyone's brain and having them run through a series of decisions and think, "This is what your brain looks like when it's at its best". And then we have other technologies so we can rewire your brain to be at that optimal state on a much more consistent basis.

So, we're sitting on top of something really exciting. So now let's zoom back to that 100,000-foot view and say, "Well, how do we fit into the general landscape?" And so, what we are doing is we're really building the operating system for this neuro-performance industry, and it's kind of a funny thing. If you look at the billion dollars of money, most of it's going into hardware. And so, Elon Musk has a company Neuralink, they're building some really cool hardware for measuring the brain, there's a great company run by Bryan Johnson called Kernel, it has a brain-monitoring system with magnets, right? We're not looking at that. We are agnostic to the hardware for measuring the brain, what we care about is the software. How do you actually run the algorithms? And it's funny, it kind of reminds me of this story of what happened back when the personal computer industry was starting. You know, back then, just as it became clear that PCs were going to be important, IBM went into the space. And when they built their first personal computer, they needed an operating system for the PC. So, they call up this guy nobody'd ever heard of named Bill Gates, who at the time had a few employees and say, "Hey Bill, can you build us an operating system for the PCs?" And very famously he said, "Sure, I can build it. By the way, do you mind if I retain ownership of the intellectual property here?" Right? And IBM said, "Oh, yeah, yeah, that's fine. There is no value in that. All that matters is the form factor". Of course, the rest is history. And it turned out that sure enough the way the industry evolved is that the hardware became a commodity, but people centered around just a very small number of operating systems. And so, that's what we're focused on. We're really a data company. We want to own the core algorithms that drive the industry so that we have all the data in the system, so we know this is how you can interpret your brain to figure out when it's at it's best. These are the training tools to get you there to essentially own that operating system to be able to define the space and to rely on our data as the source of competitive advantage. And so, I mean, that's how we're kind of positioning ourselves. And so, when we started the company - you know, just to kind of take you back in time - two and a half years ago, I and my colleagues, we said, "OK, this is a huge opportunity. What are we going to do?" The next thing we did is we just opened our checkbooks and started buying intellectual property. So, we own the IP that represents \$300 million in research dollars all around that kind of operating system question, how do you measure the brain? So we've got these huge databases, and systems, and machine-learning platforms, and patent portfolio all around what we believe will be the core operating system governing the neuro-performance industry. And so, that's what we want to do, is kind of be what Microsoft used to be for this industry.

Hall T Martin: [00:22:06] That's great. Well, in the last few minutes that we have here, what else should we cover that we haven't?

David Bach: [00:22:11] You know, I'm going to close with a story that I've told you already. 14 years ago - at this point, I was just starting my first company as a technology-enabled Medicare HMO, which actually did pretty well - I had the opportunity to go to a conference in Silicon Valley where you're just talking about the future of technology, and I'll never forget this. The guy who presented is one of the leading lights in the Silicon Valley investment world. He got up on the podium and he said, "Ladies and gentlemen, ten years from now, mobile technology is going to be pervasive. Every one of you is going to carry around a little device in your pocket that you use for making phone calls, and searching the web, and the like", right? And he said, "It's going to foundationally change how the world operates." And Hall, I remember sitting in that audience and I was just rolling my eyes saying, "I don't know what this guy is smoking, but there's no way this is happening, and one thing I can guarantee you is I am NEVER going to search the web on like a telephone!" And, you know, sure enough, 10 years later, there's more computing power in an iPhone than existed back then and everybody relies on this. And the same thing is happening in our industry. And the reason he knew that this was happening is because he understood the consumer, he understood the technology, and he recognized that this was an inevitability, right? That simply, there was so much demand, there was so much power. We are in the same position. We are sitting here with science, which is so powerful, upgrading the human condition for understanding and upgrading the human brain. It is an inevitability that our industry is going to create pervasive technology which everyone is going to be using; it will be part of your day. You go into your car, it'll be part of your driving experience, of course, you won't be driving then and the like. But, you know, people are going to be using it for playing video games, and they're going to be using it when they're doing financial trading, they're going to be using it when they go to sleep and when they wake up. And so, if there is kind of a key message it is, if y'all want to be in a hot sector, there's probably, there's only really a handful of technological spaces right now that represent something revolutionary, maybe a dozen. But it is absolutely clear that the neuro-performance space is one of them and it's meeting a huge need where it's actually going to have a meaningful impact on society. And so, that's how I would want to close.

Hall T Martin: [00:24:54] Great. Well, how best for listeners to get back in touch with you?

David Bach: [00:24:57] My email address is david@optios.com. So, David is D-A-V-I-D, and then Optios is O-P-T-I-O-S.com, and people can always write to me directly or check out our website, but we would love to talk and share more. I get calls all the time from people just about the whole neuroscience space and I love to talk about it.

Hall T Martin: [00:25:20] Great. I'll put those in the show notes. I want to thank you for joining us today and hope to have you back for a follow-up soon.

David Bach: [00:25:20] Thank you so much.

Hall T Martin: [00:25:28] Investor Connect helps investors interested in startup funding. In this podcast series, experienced investors share their experience and advice. You can learn more at Investorconnect.org.

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