Patrick Moorhead: Hi, Jim. It's great to have you back for another Six Five Summit. You've become a staple on here and the winners are the viewers because man, over the last three years, you are making FPGA sexy again.

Jim Anderson: Thanks, Pat. Good to be with you as always. Glad to be here, thank you.

Patrick Moorhead: Yeah, it's super. So we've seen FPGAs and the demand grow over the last couple years, for various reasons. And I'm curious. You know, they say, never ask a question you don't have an inkling of the answer. I have an idea, but I want to hear it in your words. How do you see this trend? Why is this happening?

Jim Anderson: Yeah, we're really excited about the growth. We're certainly seeing really strong growth, especially over the last couple years. Pat, I really think it comes down to a couple things about FPGAs and especially Lattice FPGAs. Number one is flexibility, and number two is adaptability. And I think that's just really critical for our customers right now. If you look at first one, flexibility and I know you know this, Pat, because you're talking to customers all the time as well, but the customer's ability to differentiate their system, to add unique capabilities, to make their system stand out in the market, that's paramount. So the flexibility of an FPGA fits perfectly into that, because basically, you're leveraging a standard piece of silicon, but the customer programs the FPGA for their unique capabilities, their unique features, their needs to differentiate their platform.

And so that flexibility is incredibly important and can be a really key differentiator. And then the second one is adaptability, because the customers know that they're going to want to change those features over time. They may not know what they want to change yet, but they know they're going to want to add new features, add new capabilities, and the fact that you can reprogram that FPGA, change it over time, adapt it, that provides great future proofing for the customers. And so that's, I think, the other big reason that we're seeing this growth in FPGAs.

Just to give you a sense of some of the markets that we serve, that we see this growth, is certainly in communication systems, things like enterprise networking, telecom, 5G wireless infrastructure. Computing systems, definitely, servers that are going into hyperscale cloud data centers or enterprise data centers, client systems like laptops and tablet devices, also industrial. Industrial automation robotics growing very, very strong, and this flexibility and adaptability really important in that market. Automotive electronics, and I could go on and on on the applications. But again, I think it's really around the flexibility and adaptability.

Let me give you one example usage model, just so you get a sense of why we're seeing the growth. Across a lot of those markets that I just mentioned, one of the common usage models now is the customer is trying to add more intelligence, more decision making to their system. They're trying to make their system smarter and be able to adapt to its environment. And so invariably, what they're talking about is adding artificial intelligence processing, or if it's an edge

device, they're talking about inference processing, that's really what they're trying to add. And the Lattice FPGA is just a great device to do inference processing. It maps.

You're the customer. You take your unique AI inference algorithm, and you map that directly onto the FPGA. You customize it for your system. And then you know that that algorithm's going to change over time. It may change every year. It may change every month. You may be adapting your AI algorithm every week. And so you want the ability to adapt and reprogram that device. And so again, FPGA perfect solution for that. So that's kind of what we're seeing in the market. I think that's really fundamentally what's driving a lot of the growth.

Patrick Moorhead: Jim, there also used to be a time to market advantage too, for getting certain functions into your device. I spent 10 years on the system side and 11 years on the host processor side. And there was this benefit with FPGAs that would get me to market a year before let's say an ASIC. Is that still the case?

Jim Anderson: Oh, definitely. That's definitely still the case. That's a big advantage. And then one of the things we've done, Pat, to try to supercharge that is we've been pre-building these application-specific software solution stack. So we've been basically doing some of the software work that sets above our FPGA, some of the programming of the FPGA, we've been pre-building that for our customers to actually make it even easier than in the past to design the products in quickly and help them get to market as fast as possible.

Patrick Moorhead: Yeah. So it's very possible that somebody might choose your FPGA over a controller or something like that, which is sometimes viewed as easier to program, but brings a lot lower power to the table.

Jim Anderson: Yeah. So I think on power efficiency, I think you'll find that we're a market leader on power efficiency, but again, the flexibility, adaptability of the FPGA in combination with that software that we're bringing that's preprogrammed, prebuilt for the customer, that has really made it even easier than ever before to adopt Lattice chips and help you get to market quickly.

Patrick Moorhead: So you talked about just a wide variety of markets you're in, and whether it's the PC space, the server space, industrial robotics, automotive, 5G base stations. It's really broad. So how do you have a unified strategy when it comes to that many different end markets? What's the consistency in the strategy and the approach?

Jim Anderson: Yeah, that's a really good question. And I would call it, we take a solution approach, right, because I was just mentioning software. It's not just about the chip that we're delivering, but it's about the entire solution. So we're always thinking about how do we deliver as complete a solution as possible to those customers across all those different usage models in those different markets. So there's a hardware piece of that, a chip piece of that, and then the software piece of that.

First I start at the hardware level. Our approach on the hardware has always been to innovate around power efficiency, ease of use, small size, and we've been doing this for almost 40 years.

In fact, next year it'll be our 40th anniversary, but it's really always been around those core tenants of innovating around power efficiency, ease of use, et cetera.

I think that's really served as well. That's why Lattice is actually the highest volume FPGA maker on the planet. We ship more FPGAs than anybody else. And power, let's just take one of those attributes, power efficiency. That's incredibly important to our customers. A lot of times when they're designing their systems, the total power budget of the system is the primary design constraint.

So when we're able to bring much more power efficient solutions to our customers, that can be a big win. And if you look at our latest product generation, which is Nexus, we've brought out four different device families to date. That's our newest platform that's ramping right now. And what customers find when they compare that to competitive devices is they're finding up to four X better power efficiencies. So not just like 10 or 20% better power efficiency, but four times better.

And so that's a big deal to them. That allows them to make their system much more power efficient, much more capable. And so that gives you a sense of how we're innovating at the hardware level. And then again, going back to total solution approach at the software level, what we've been doing is building out a portfolio of what we call application-specific software solution stacks. And these are pre-built software tools, libraries, reference designs that do a bunch of the work for our customers already, and that are designed for specific applications or usage models.

First one we brought out was our artificial intelligence software stack. Then we brought out a computer vision software stack, a platform security software stack. Our most recent one is around industrial automation robotics, where we're seeing just tremendous growth. And then the one that we're bringing out this quarter is around 5G O-RAN, Open RAN for 5G wireless network.

All of the software solutions stacks are designed around making it really easy for customers to get to market quickly. And also, by the way, it makes it really easy for them to switch from a competitor's device, either a competitor's FPGA or a competitor's micro controller, switch over to a Lattice device, makes that switching very, very easy. That's really the approach we're taking, that total solution, hardware software approach.

Patrick Moorhead: First off, I'm sure I've been briefed on this, but application-specific software stack?

Jim Anderson: Yes.

Patrick Moorhead: It's just so close to application-specific integrated circuit. I can't stand it. No, I know. I seriously love it and listen, the reputation that FPGA has had where listen, they're great, but they're hard to program. And when I get to, let's say generation or down or the standard gets locked in, I'm going to put an ASIC in there. I've seen so many products that they don't move from a Lattice FPGA to an ASIC, but in other markets, I see that a lot. Why is that?

Jim Anderson: With most of our customers now today, we very rarely see them switch from a Lattice device to a custom chip like an ASIC, a purely custom chip. And the reason that they generally aren't switching is because again, it goes back to those two things I talked about at the very beginning, the flexibility and the adaptability. They're really designing the FPGA in for all the benefits we've already talked about. But again, the ability to leverage a standard product FPGA, but to customize it for their unique capabilities in their system. And again, that adaptability over time, that's a big deal. Let's take industrial, for example.

Let's say you're building an industrial robot. And a lot of times these systems last for five, seven years, maybe ten years they'll produce this industrial robot. Well, they can't redesign the hardware multiple times over that 10 year platform, but they can reprogram the FPGA. So as they want to tweak the system, add new features, add new capabilities, they just reprogram the FPGA. You can't do that with an ASIC. And so there's a lot of benefits just inherent in FPGAs that make it a really good solution.

Patrick Moorhead: I get it, Jim. I think I ask you that every other time.

Jim Anderson: I think you do too.

Patrick Moorhead: That we talk, but I keep saying hey, this FPGA was replaced by an ASIC. I know there are situations where maybe that makes sense, but you've obviously put some magic in there that keeps that happening to you a lot. So let me get the value prop just down to a fine point here. What I'm hearing, Lattice excels over other FPGAs, versus other types of silicon, because of low power, is by the way, super important. Are there other elements where are you more flexible or more adaptable than the other FPGA makers?

Jim Anderson: Yeah, and the answer's yes. It's really the combination of that hardware software. We're really the only FPGA company out there that's doing that unique combination of hardware software, that total solution approach. And I think that provides us with a level of flexibility, but also ease of use that is better than anybody else out there in the market, and is super important to our customers. And there's other benefits.

At the same time, we're delivering four times better power efficiency. We're delivering higher performance than our customers, higher reliability, in some cases up to a hundred X higher reliability. We're a very high volume maker of FPGA, so quality and reliability are absolutely important to us. We've really driven high levels of reliability and quality.

There's a number of other factors as well, but we feel pretty good about the competitive differentiation. I think if you asked our customers, they would say the same thing, the customers are pretty excited about the portfolio that we've got today, but then also really excited about the roadmap in front of us as well.

Patrick Moorhead: One of the biggest differences that I've seen when I look at the market is you actually have new designs. Going into the lowest power area, but now, with your announcement that you made on hitting the midrange, you're now bringing new design to the midrange. And as weird as it might

sound, that's a novel thing in your industry, because given quite frankly, the two other biggest players in the market, they got sucked into bigger companies and they're really interested in being part of a super SOC in a way.

I think the future looks good to it. I do want to reflect back now. You've been at Lattice for four years now and the company is black and white. I think the first analysis that I wrote about you and the company was that your investor day in New York, it's changed financially and strategically. What has changed over the past four years and where do you want to take the company and its growth from here?

Jim Anderson: Yeah, definitely. By the way, I can't believe it's already been almost four years. I think I've aged a lot more than four years over the last four years, but I don't know, maybe we all have actually. But we're pretty proud of the progress that we made to date, but we're way more excited about where we're headed from here. The way we talk about it internally is right now we're in what we call phase two of the company. And in the second half of this year, we began phase three of the company. And let me kind of step back and explain. If you look at the first couple years, I joined in Q3 of 2018, a whole new management team joined in late 2018 and phase one was the first couple years, where I really call that the rebuilding phase.

We were really rebuilding the company, especially rebuilding the product roadmap, the product portfolio of the product company or the product roadmap. Because if you think about it, at the end of the day, the lifeblood of the company is our products. So we totally rebuilt the product portfolio and roadmap, and then also rebuilt customer support and all the other operational activities of the company. That was really the first couple years.

And then we entered the second phase of the company, which we called the accelerated growth phase of the company. And that's where all that good work that we had done on the product roadmap starts to come to fruition in terms of the new products that are coming out. So in this second phase, if you look at the last couple years, the number of new products that we've brought out versus say five or six years ago, what the company was bringing out, it's three times more products.

We're, we've tripled the rate of new products that we're bringing to market versus five or six years ago. That's a big increase with essentially about the same amount of resources, our R and D. We've really rebuilt the product portfolio in this second phase, and we're now seeing accelerated growth. If you look at our most recent quarter, we grew 30% year over year. That's really on the back of the benefits of rebuilding that we did on those first couple years.

So we're really excited about this second phase of accelerated growth. The customer momentum is fantastic right now. And I believe that if you step back and look at the products that we have today, it's the strongest product portfolio and strongest roadmap that we've ever had in the company's almost 40 year history, hands down, and our customers see that as well.

But what we're really excited about is the second half of this year, we start phase three of the company, which is now expansion beyond the portion of the market that we've traditionally

served. And that's with our new Avant platforms. We'll launch our new Avant FPGA platform second half of this year. It increases the capacity or capabilities of our devices by five X. So five X more capability, capacity, dramatically expands the product line, doubles our addressable market.

This is something that our customers have been asking us since basically that was the beginning of when I joined the company in that first year, they started asking us to build this product back in 2019. And so the customers are excited about it and the target customers for this new product line, Avant, 90% of them are already customers of Lattice today. So there are already customers that are using our Nexus devices or pre-Nexus devices, or customers that know and love us already. And basically what we're doing is taking a much wider product portfolio to them. And, by the way, that new product portfolio leverages the software that they're already using today as well. So the software transition is easy.

That's the third phase, this expansion phase that we're entering really in the second half of this year. That's why the company's really excited right now to get into this next phase of expansion for the company. And I know, Pat, you and I have known each other for a long time. I'm sure, as you can imagine, there might be a phase four and a phase five and some longer term plans that we've got as well, which obviously I'll be happy to share when we get closer to that. But yeah, we're pretty excited about the progress we've made in the first couple phases, but super excited about this next phase of the company.

Patrick Moorhead: Yeah, Jim, it's been fun to watch the company and where it started when you took leadership and where it is today, but even more exciting is where it's going. This is hard stuff, and anybody who's been part of this, if you haven't been part of this, it's hard to empathize with how hard it is, but it is. I've been on a couple roller coasters myself. I didn't run the entire company, but I was either running product lines or something different. And it takes a lot out of you. How do you in the executive team keep up this pace?

Jim Anderson: Well, I think that one of the things that really helped is that leadership team that we added in really in the first six months after I joined the company. If you look at that leadership team, these are really deep industry experts. The four people that lead our four operational groups like sales and marketing and engineering and supply chain, all of those leaders have decades of experience in the industry. So they've done this before. They know how to drive product growth, they know how to execute.

So I think that's been a big help, but also the entire company is behind this. Everybody's really excited about this. And we've been growing and adding quite a bit as well. Over those last four years, we've significantly expanded our resources and investment in the product line. So I think the combination of having the right leaders, the right investment, the expanding, growing investment, I think it puts us on a really good path towards continuing to execute really well on our vision.

Patrick Moorhead: Is there a North Star that drives this? One singular thing that's just like okay, this is moving us forward.

Jim Anderson: Of course.

Patrick Moorhead: Jim, most turnarounds or attempts at turnarounds don't actually end up working.

Jim Anderson: Geez, man. Come on, give me a little bit more confidence.

Patrick Moorhead: No, no, no. I'm just saying I had confidence in you, but I've looked at others, and that's why I'm asking. There's a lot of people who are watching, who are like, "How did they do this? How can I replicate this in the industry?" I know it's a convolution of many things, but is there a North Star that took you and the team in a certain direction four years ago?

Jim Anderson: Yeah, absolutely. The North Star is always our customer. Everything that we do day in day out is for the customer at the end of the day. But underneath that is the fundamental North Star is the products. We're a product company, and the entire lifeblood of the company is about the products that we build. So our focus day in and day out is to bring absolute best products, both hardware and software to our customers, and to bring that to them as fast as possible, as reliably as possible, and just to do that day in and day out. So we believe that ultimately we've got to bring great products to the market and have fantastic support for our customers. That's our fundamental North Star.

Patrick Moorhead: Jim, that's not the first time I've heard you say that. In fact, at another company, I think I heard the same thing. So maybe I always had the answer, always had the answer there, but you know I'm biased. I'm a product person myself. I love technology and I love to watch this.

But Jim, hey, thank you so much for sharing not only the benefits of FPGA's holistically and market wide, but also explaining to people how you're optimizing and doing FPGAs differently for the benefit of your customers, first focusing on the lowest power, having these applications specific software stack so it limits reduces their time to market, allows them to have common functionality across platforms, regardless of the host CPU.

Finally, I hope it gives some inspiration to other leaders out there who are maybe in the midst, about to get in a turnaround or halfway through and it's really hard, and get some inspiration out of what you and the leadership team have done.

Jim Anderson: Well, thanks Pat. Really appreciate it. Thanks for the time today. And we still feel like we're early on our journey. We've got a long ways to go in terms of unlocking the total potential of Lattice. So we're still early on our journey, but excited to head down the path and of course, excited to enter that next phase in the second half of this year, our phase three around Avant. I'm sure you and I will talk more about that as we get closer to launch.

Patrick Moorhead: Oh yeah, I'm looking forward to it, Jim. Thanks again.

Jim Anderson: Thanks Pat.


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