Keys to Intelligent Industry

with Caroline Segerstéen Runervik and Fredrik Gunnarsson

EP16

Paving the way for quantum development, with Zaid Saeed, CEO of SCALINQ

Capgemini

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00:00:00 [Guest] **Zaid Saeed**

The main issue right now is not that quantum computing will crack these encryptions today. The main issue is the concept of harvest now, crack later, which means that I would collect data that is encrypted today. I know I'm not going to be able to crack it today, but if the data's life shelf is five years or the verge of five years, which is when we believe quantum computing might become a reality, then it's a danger. Then you already now need to re-encode your data so that it's what people refer to as post-quantum safe.

[music]

00:00:38 [Host] **Caroline Segerstéen Runervik**

Welcome to our next episode of our podcast, Keys to Intelligent Industry. And with me, of course, today I have my co-host Fredrik. How are you today?

00:00:47 [Host] **Fredrik Gunnarsson**

Good, very well. We are again in Gothenburg, so sitting here in our office in Brunnsparken, actually. And listening to the tramways going by outside. I don't hope we don't get it on the recording. We'll see.

00:01:00 [Host] **Caroline Segerstéen Runervik**

And for people who have not noticed, you know, Gothenburg seems to be the tech mecca for us, right?

00:01:06 [Host] **Fredrik Gunnarsson**

Yeah, absolutely. Yeah. So great to be here.

00:01:09 [Host] **Caroline Segerstéen Runervik**

And talking about other tech meccas, I had the opportunity to be in San Francisco last week, Fredrik.

00:01:15 [Host] **Fredrik Gunnarsson**

Yeah, I heard that. How was that? Can you share some reflections from visiting some of the tech leaders in San Francisco?

00:01:21 [Host] **Caroline Segerstéen Runervik**

Yes, so. First of all, it's always interesting to be in US because you always feel that you are behind and you need more speed, and you need more acceleration. But it was also, again, very interesting to listen to the largest tech company, CEOs, and their view on the market. And of course, and I'm sure we talk about AI today because you cannot have these kind of podcasts without addressing AI today. It's so clear that the message, one is it's still about the basics, data, data governance, data foundation, architecture. So, the basic challenge is still there, but the other one is it's completely changing the business processes today, right? And I think they were quite clear also to us that if you don't take it and embrace it end-to-end into your own way of working and your end-to-end process, well, in three years' time, I believe you will not do business. And it's a very clear message. And then of course, we can always debate how quick it goes. But it's very inspiring and there are a lot of good things to take away from there. And I also had the opportunity to then meet some of the AI agent startups. And talking about startups, today we're actually going to meet an entrepreneur who is driving a startup, which has already been quite known, within the quantum computing domain. So welcome, **Zaid Saeed**. Did I say it right now?

00:02:56 [Guest] **Zaid Saeed**

You hit it on the spot. Thank you so much. Amazing being here with you guys.

00:03:00 [Host] **Caroline Segerstéen Runervik**

So, and of course, it's super cool today to talk about quantum computing, as we just, you know, got a Nobel Prize connected to the same. Isn't that cool?

00:03:10 [Guest] **Zaid Saeed**

That's amazing. This is what we've been trying to advocate for many years, and it's about time these prestigious and extremely, extremely pioneering people got recognition for their breakthrough work.

00:03:21 [Host] **Caroline Segerstéen Runervik**

So, on the Nobel Prize, because maybe some people missed it, what is it that got awarded?

00:03:26 [Guest] **Zaid Saeed**

On a very broad level, what these three gentlemen demonstrated is that you can have, you can artificially a system that abides by the laws of quantum physics. So, where you can observe the two most fundamental laws, which is quantum entanglement and quantum superposition on a larger scale than small, small, small, infinitely small elements like electrons and light particles. So, they demonstrated that we can create electrical circuits, man-made, basically artificial atoms that abide by the laws of quantum physics.

00:04:05 [Host] **Caroline Segerstéen Runervik**

Very interesting. And we will soon also get to know more about quantum computing because I'm also sure we need to give a little bit of a brief lesson shortly. But first coming to you. When I read a little bit about you, of course went to Chalmers. You have a passion for actually entrepreneurship, but I also saw you have a passion for how do you take research and commercialize it. How do you take the theory and put it into practice and in the end, I suppose, also earn money on it. So, tell us a little bit about your own company, but maybe how did it come about?

00:04:44 [Guest] **Zaid Saeed**

I'm so happy to hear that. I don't know how you found this information or how you could conclude it.

00:04:48 [Host] **Caroline Segerstéen Runervik**

I was digging a bit.

00:04:50 [Guest] **Zaid Saeed**

It's spot on because this is truly my passion in life, going how do I create new value from, you know, fundamentally new innovations or technologies that have yet to see the light of day and deploy it. So going from research-heavy topics, bridging the gap between academia and commercialization. Often case, this presents some exciting challenges because when you're building a venture as an entrepreneur, obviously you need to think about the marketplace you're going into, what problem you're trying to address, and thereby find a suitable solution. But working in this side of things, you start from a solution, and you want to justify that there is enough market to deploy it. But this is where I feel like I have the most passion, trying to fundamentally understand the technology, break it down, and see who else is going to reap benefits from it as well. In this particular case, it was really, I would say, a match made in heaven. I'm no quantum physicist myself, but I am absolutely a tech nerd. When I first came in touch with the research at Chalmers, the integrated research at Chalmers, hosted under the WACT, the Wallenberg Center for Quantum Technology, which is heavily funded by the Knut and Alice Wallenberg Foundation.

00:06:09 [Host] **Caroline Segerstéen Runervik**

A really important initiative, by the way.

00:06:11 [Guest] **Zaid Saeed**

It's an amazing initiative, and I have so many things to say about that down the line, but it really has been instrumental for Sweden's competitiveness in the field. So, this initiative laid the foundation for the wider efforts in Sweden for quantum technologies, and thereby they managed to attract talent globally. And some of this talent is today my co-founders, so people coming from all parts of the world, from University of Oxford and so on. But yeah, so I was on the verge of finalizing my studies, and me and my colleague today, also co-founder Lisa, we were hungry or like, we want to do something that is research heavy. So, what we did was we started looking around. We started researching in patent databases, googling around news articles about pioneering research in Sweden. In one week's, time, and this, why I'm saying this, it goes to convey how innovative of a nation Sweden is. In one week's, time, we managed to find three amazing research groups. All of them were extremely welcoming. In collaborating with us, one was doing inductive chargers for boats, kind of the future of electrification, but in the maritime. Another was managed to develop a new molecule that gelifies and, gel can have multiple different properties, and it could have tremendous application. And then the third group was doing quantum physics at Chalmers. And of course, the nerds in us were like, we're going to do this.

00:07:45 [Host] **Caroline Segerstéen Runervik**

Within one week. That's amazing.

00:07:46 [Guest] **Zaid Saeed**

It was amazing. We did due diligence. So, we did our market studies and, you know, we move fast. We were working around the clock just to keep the momentum, and we wanted to lock in on a project together with the researchers and it just said click when we found the researchers from Chalmers. They were super innovative, extremely ambitious, but they knew their limitations stretches to technology and they wanted to have the complementary part in business.

00:08:13 [Host] **Caroline Segerstéen Runervik**

And maybe also being very open to take on some people who are young come with new ideas, new perspectives. And as we are in Gothenburg, did you go to the Chalmers Entrepreneur School, the entrepreneurship school? So maybe for someone who doesn't know, it's a good initiative that's been going on for many years, right?

00:08:32 [Guest] **Zaid Saeed**

It's a very good initiative. It basically gives you a tool set of... of understanding how you go about when you start from a research point of view and then trying to commercialize it or just simply building ventures, basic fundamentals of IP protection, of governance law within companies and et cetera.

00:08:54 [Host] **Caroline Segerstéen Runervik**

And you also get this really good connection between the academic world and the business side. and which is absolutely critical why we also see a really strong growth potential in Gothenburg still, even if we have some challenges on the automotive side.

[music]

00:09:10 [Host] **Fredrik Gunnarsson**

If we start with the basics, how would you describe the quantum computing in 3 minutes for listeners who haven't worked in this area?

00:09:18 [Guest] **Zaid Saeed**

Three minutes. You know what? I'm happy to get 3 minutes. I usually get less. What we're looking at is a technology that would help conduct mathematical calculation or solve mathematical problems. So that's the common denominator between it and a classical computer in a way, but on completely different fundaments. So, a quantum computer utilizes two principles or two phenomenons that occur in what you would call the quantum realm or the scale in which the quantum physics kick in. So, you have different principles of physics. You have Newtonian physics, and you have quantum physics. To extrapolate and simplify, one can say quantum physics apply for elements of a certain scale, very, very small elements. So, if I were an electron, I would be in the quantum realm and then I would experience certain phenomenons. And one of them is what I alluded to before, which is superposition. And the other is quantum entanglement. So, quantum entanglement means that two elements can have a direct dependency without having any direct link. So, if an electron was on the moon and another electron is on Earth and they have undergone the quantum entanglement, it means that... Whatever we observe, the electron on the moon can indicate what the behavior is on the electron on Earth. So that's one of two. The other is superposition, meaning that an element can be in several different states or positions at the same time. So, if you look at an electron and think of it as a sphere, and it has position where the arrow along the edges of the sphere is pointing on all directions, that's the different states. If it's in superposition, it means that it's pointing at all different states at any given point. So, it can be in different states at the same time. So, human have somehow, amazingly, along with the brilliant Nobel Prize laureates, managed to harness these two phenomenons and control it, and thereby creating an environment where you can process and store and also read out data and thereby creating a machine that could do calculations of a particular nature.

00:11:41 [Host] **Fredrik Gunnarsson**

Yeah. And if I answered correctly, the core sort of component is instead of a bit in a normal computer, you would have a qubit in a quantum computer, which is then not only one and a zero, but following your phenomena can, you know, be in different stages at the same time and be, well, new at it altogether much faster and more advanced than a normal computer.

00:12:04 [Guest] **Zaid Saeed**

No, it's a perfect summary. And just to maybe clarify, a qubit can be, that's the beauty about quantum computers. It can be made in many different ways. A qubit is simply an element that abides by quantum physics and that you have managed to control and confine in such a way that you can manipulate it. So, it can be an electron, an element, a light particle, a photon, an ion, and in our case, an artificial atom, which you call superconducting qubits.

[music]

00:12:33 [Host] **Fredrik Gunnarsson**

So, there's been intense work and discussion about this quantum computer for many years. And where do you believe we are now in the development? How we, yeah, where are we on the curve?

00:12:43 [Guest] **Zaid Saeed**

The curve is really going now from lab to fab. So, the industry is taking on the quest of now taking the concept that has been fundamentally proven in a lab environment and trying to scale it up. So, the stage right now is making sure that the industry is being built around this new technology. So, we're in the stage of upskilling, kind of laying the foundation for a future. Revolution in a way, but the technology itself is not ready for direct commercial value, but it is right now on development. So, one might argue that we're in the stage of... vacuum tubes in classical computing, 50s, 60s, where they were working, but they were extremely prone to error. They were failing. They required a lot of energy. The ENYAC, which was used by Americans, was huge. And it was a very tailor-made machine for particular calculations. This is basically what we want in quantum computing. So, we're looking for our transistor moment right now. And we're on the verge of that. And there's a race to the transistor moment, basically, because there are many evidence showing that we can reach that moment. It's just a matter of making sure we set the right timeline and invest the right resources.

00:13:59 [Host] **Fredrik Gunnarsson**

And what's the prediction when we will get the transistor moment?

00:14:03 [Guest] **Zaid Saeed**

It's a bit difficult to say. Again, as I alluded to before, there are many ways to build a quantum computer. And I believe personally that there will be many transistor moments, depending on which modality you're using, they have their advantages and disadvantages. And those will have different timelines and different use cases. So, saying when will quantum computing in general reach its moment, hard to say. I can maybe allude a little bit to superconducting qubits. There are many leading players claiming to be up there and ready and creating commercial value, in maximum of five years, others say 10 years. So, there is a bit of discrepancy between opinions.

00:14:42 [Host] **Caroline Segerstéen Runervik**

Do you see any industries that are more advanced than others? Which industries are picking this up? Which industries are also investing quite a lot in R&D connected to the same?

00:14:54 [Guest] **Zaid Saeed**

Quantum computing, as it's conceptualized and being developed today, is going to be very advantageous for particular problems, to solve particular mathematical problems. And it's often optimization and simulation. And if you look at which industries often struggle with these things, it's the pharmaceutical industry when they're trying to trial and produce new molecules for whatever reason, if it's for antibiotics or if it's for development of vaccines and et cetera. They need to simulate systems on a molecular level just to see the interaction between different molecules and protein folding. And those systems require a tremendous amount of calculation power. That is almost impossible today. So that's why you use trial and error in classical computing, whilst in quantum computing, the system itself is quantum mechanical. So, you can basically map the same molecules you're trying to simulate on a quantum computer, one-to-one kind of situation. Another industry that's currently investing a lot is financial modeling. You have portfolio optimization and management. You also have material science, how to develop more better batteries, more long-term batteries, and battery cells. And then you can also look into logistics and how you can do logistic planning if you're doing route planning, transportation, third-party logistics. So, a lot of companies, I can name, drop a few, are from different industries looking to reap the benefits of quantum computing for their particular vertical.

00:16:26 [Host] **Caroline Segerstéen Runervik**

And where do you see in the world right now that most investment goes? And is there any market who is more advanced in the type of research or in fact when it comes to actually putting it live into production? Do you see any geographical changes or differences as well?

00:16:47 [Guest] **Zaid Saeed**

It's not hard for you to get public statements from country leaders stating the importance of quantum technologies for them. One such nation is definitely the US. It's been very they've been very outspoken about AI and quantum technologies, particularly quantum computing, as a key strategic area that they cannot fall behind on. So, you look at public grants, you look at private equity, a lot of money's being poured into it. Then you can proudly look at Europe as well. This past summer, just now, I think it was in July, the European Commission deployed a quantum strategy with very, very tangible goals, I would say, to unify the nations and make sure that we have also the means to stand on our own ground and have quantum technologies that we can develop completely and sovereignly in Europe. So, these are absolutely two markets that are investing heavily. But globally, a lot of governments are pouring money because they cannot afford to lag behind in adaptation. So, China is pouring extreme amount of money. Australia, the United Kingdom, Canada, Singapore.

00:17:58 [Host] **Caroline Segerstéen Runervik**

And our own government has said, if it is an area where we could take a leap and be in the front, is this, right?

00:18:03 [Guest] **Zaid Saeed**

Absolutely.

00:18:04 [Host] **Caroline Segerstéen Runervik**

So, and of course, also the Swedish government, right, have said that they also... in the Nordics and in Sweden, we can take a position within this domain. So, are we doing enough from a government point of view? What's your view?

00:18:18 [Guest] **Zaid Saeed**

Here we are with a lot of initiatives from private actors like the Wallenberg family trying to create the circumstances for Sweden to be leading or to have an edge in a vertical. And we're trying from a commercial point of view as well, but so I think it's time for the government to also act on it and support in this endeavor. Sweden has amazing technology, and we are a lot of young companies, a lot of young profitable companies in Sweden as compared to many other nations. So, choose a niche, support that niche, build ecosystem around it, try to create excellence, competence around it, try to create infrastructure that supports the development in this niche so that you can attract funding globally and thereby choose your position in the supply chain, in the future supply chain. You cannot do everything, and you can absolutely not just stand still and look and watch by.

00:19:21 [Host] **Caroline Segerstéen Runervik**

So, it's not about talking that we can take the leading position, it's really to take some concrete actions now, right?

00:19:27 [Guest] **Zaid Saeed**

Absolutely.

[music]

00:19:32 [Host] **Caroline Segerstéen Runervik**

Coming back to where we started on research, university, the entrepreneurship school, do you also see that the only way for these industrial applications to really grow, accelerate, that they need to work continuously, very closely with the universities, with the academia, or can they actually do this themselves?

00:19:54 [Guest] **Zaid Saeed**

The research role and the realization of such young technology is will continue to be fundamental. And often case you see the same researchers that has spun out successful companies are either still employed in academia and in public institutes or universities, or they have fully moved on to the commercial side and tried to replicate the research and build up the same infrastructure they had in academia. You have a lot of fundamental research challenges that you need to overcome. So, it's in your interest to collaborate with academia. And academia are still really pioneering a lot of the advancements. So, a lot of their scientific papers being adapted by the industry, like solutions, are deriving from different universities and institutes around the world. So, one trend that we're seeing is that these industrial players, huge players, have so much capital now, they're actually buying research directly. They're ripping the R&D directly from universities, patents, and so on. So that's probably going to be a common theme, that early research initiatives that show positive results will be acquired quickly.

00:21:05 [Host] **Caroline Segerstéen Runervik**

Because they see it as a competitive advantage, right?

00:21:08 [Guest] **Zaid Saeed**

Absolutely. And a necessity for them to realize their technology.

00:21:11 [Host] **Caroline Segerstéen Runervik**

Yeah. And it's so interconnected with this whole AI revolution in the end. So, AI can be used to find cyber threats, but it can also be one of the main threats to our companies to actually, in the end, create cyber attack, accelerate the threats to our companies. So maybe you want to reflect a little bit upon that and how can our companies protect themselves against this?

00:21:40 [Guest] **Zaid Saeed**

It truly is one of the main concerns that many different ecosystems have. One such ecosystem is blockchain. They are extremely concerned about the reality that quantum computing will introduce for their blockchains. But the main issue right now is not that quantum computing will crack these encryptions today. The main issue is the concept of harvest now crack later, which means that I would collect data that is encrypted today. I know I'm not going to be able to crack it today, but if the data's life shelf is five years or on the verge of five years, which is when we believe quantum computing might become a reality, then it's a danger. Then you already now need to re-encode your data so that it's what people refer to as post-quantum safe.

00:22:30 [Host] **Caroline Segerstéen Runervik**

So, from a national security point of view, from a defense point of view, I would assume this is absolutely super critical.

00:22:38 [Guest] **Zaid Saeed**

Absolutely. That's why you have such an engagement from governmental bodies. You cannot afford lagging behind. You cannot afford not understanding the risk and not being prepared to understand where to go to find the solutions to mitigate those risks.

[music]

00:22:54 [Host] **Fredrik Gunnarsson**

If this takes off, it would mean a surge in demand for certain of those components. How do you think that would play off in terms of politics and export restrictions and the security of supply for geographies or for companies?

00:23:12 [Guest] **Zaid Saeed**

We do have technologies, partly part of our portfolio, but absolutely a lot across the quantum technology field that are already today classified as dual use cases, meaning that you need to have approval before export to certain countries. This is problematic in a way, in a growing field where you're trying to create dependency, trying to create an establishment towards the Swedish brand, the Swedish technologies. But it's also a problem for a thriving company that is trying to grow, to have these limitations. And it's a bit inconsistent, at least on a European

level, because you have certain European countries that have much faster and dynamic approval timeline, whilst you have others that like Sweden that has several months before you get an approval, which basically at the time the customer is no longer interested. So, I expect and hope that we can optimize it, so we don't prevent our companies and our industry from growing globally.

00:24:13 [Host] **Fredrik Gunnarsson**

When this is mature and commercially available, how do you think this will all be set up? Would companies invest in their own quantum computers, or will they access quantum compute capabilities of the cloud? Will they cooperate with the institution? So how do you think the setup would be?

00:24:34 [Guest] **Zaid Saeed**

Depending on where it will become viable and what the price point will be at that point, I think it will influence how one would access it. But the absolute majority of the community agree that it will be in close integration with high performance computing. So, it will be cloud access, cloud based. And then I will refer the question back to you and ask you, if you are a company that needs a GPU center or a large or a small language model, would you build your own center or will you collaborate with a hyperscaler and access it through them? This is going to be quite similar. But one interesting fact to point to is that quantum computing is really directly reaping the benefits of the GPU buildout because the market size of quantum computing is a direct can be directly extrapolated with the number of GPU or HPC centers being built out today. And regardless of how it goes for AI, one can say that the next thing, if there's an AI bubble, which I have my opinions on, that would burst, the investors will want to look to the next technology, which already has an infrastructure built out for it, which will be quantum computing. So, quantum computing person that I see as a hedge, towards AI in a way.

00:25:48 [Host] **Caroline Segerstéen Runervik**

And then I just need to build on that. So, Nvidia and the Wallenberg family and a number of companies decided to do an investment in Linköping.

00:25:59 [Guest] **Zaid Saeed**

Spherical AI.

00:26:00 [Host] **Caroline Segerstéen Runervik**

Exactly. So, when it comes to these investments, do you see this will accelerate then a lot? Because it's in one way it is actually to get access to this compute. From your perspective, is this the right type of investment? Is it the right type of ecosystem to create?

00:26:18 [Guest] **Zaid Saeed**

I love these initiatives. Honestly, I would stand behind it every day, all day, because I think the most value from AI will come from small language models, not large language models deployed for particular use cases. And these companies, especially the ones that are part of, like if we take the spherical AI, for instance, they have tremendous amount of data sets over the years, it's in their interest to train it locally for their particular use cases and not just fall back always on these open models and outsource their calculation power. So that's one aspect of it. The other aspect is that I know the Wallenberg are extremely innovative in their way of perceiving the Swedish public sector. So, they will be interested in leaving flexibility to investigate these avenues or integrating quantum computing with their HPC center. So, I think having this financial power and also innovative thinking, backing up the vision of both AI and quantum computing will only be beneficial for Sweden.

[music]

00:27:20 [Host] **Fredrik Gunnarsson**

If you now go to your company, Scalinq, what you actually do? Can you explain again maybe the three minutes version of your products and your role in the value chains for the listeners?

00:27:29 [Guest] **Zaid Saeed**

I would say we do the picks and shovels, but I would rather use the word shuffle. We use the heavy machinery to dig the gold that people are so desperately chasing. So, we sell enabling hardware, meaning we sell everything that surrounds the quantum processor itself. Think of it as the motherboard, the RAM memory, the hard drive. The processor itself is extremely crucial, but it's nothing without the enclosure, the signal delivery, the signal reading, the filtering, the data storage, and so on and so forth. So, we basically develop, deploy, and innovate on the components that sit around the quantum processor. We decided very early on to choose a niche. We know that the field will only reach breakthroughs and overcome these engineering challenges by diversifying and conquering. And we decided early on that we're going to choose this niche and we're going to be world best at it. So today we have a portfolio of cohesive and complementary products that are all needed to build one system. And we're expanding that portfolio. To summarize a little bit, so a quantum computer, they need certain circumstances, they need to be called down to ultra-low temperatures. We're talking about 10 millikelvin, that is colder than outer space.

00:28:54 [Host] **Caroline Segerstéen Runervik**

That's cold.

00:28:55 [Guest] **Zaid Saeed**

It is cold. Gets you shivering thinking about it. It needs to be an ultra vacuum because air or any molecules really in gaseous form, they transfer heat, and they transfer vibration. And again, as we discussed earlier, you cannot disturb these very sensitive systems. So, you create vacuum in the system, you cool it down to create absolute stillness. You remove; you have these magnetic shields to remove static fields or stray fields because magnetic fields also are a source of disturbance. And then you remove all light, because light is energy. So, you create these enclosures. Basically, it's just the Alcatraz of quantum computing. That's the machines you create today. So, you enclose them in a very densely packed prison so that the only thing they hear or react to is the signals you're sending to them. And scaling is part of sending the signal, purifying, amplifying it, cleaning it, and making sure it's read nicely.

00:29:52 [Host] **Fredrik Gunnarsson**

Really fascinating. So those are the components in that system which you are producing. And who are your customers?

00:29:59 [Guest] **Zaid Saeed**

Our customers are a mix of anything from institutional players, academia, universities, but a lot on the commercial side. Again, there is a momentum going on to spin out from research to industry. And many of those are accepting the fact that you cannot do it yourself. It takes time and it takes resources. Don't reinvent the wheel. Go to the experts and take off the shelf, off the shelf, quote unquote, because we still do a lot of custom work so that we adapt it to the customers. But you will save years and years and you will save also money. But reality is the time is much more important now than the money.

00:30:44 [Host] **Fredrik Gunnarsson**

So, you're focusing on a certain type of qubits or quantum computing. Have you placed your bet on a certain technology or is to try to, yeah, are you very niched in that sense, right?

00:30:58 [Guest] **Zaid Saeed**

As a company, you need to do what you're good at. And we are definitely focusing, laser focusing on what we're good at. We're extremely good at developing cryogenic electronics. So, electronics that sit in very harsh environments. And this is high frequency electronics.

00:31:15 [Guest] **Zaid Saeed**

And there are two modalities that reap the benefit of our skills and our products, which is superconducting qubits and spin, electron spin qubits. And those are the two verticals that we, early on and already from the inception of the company, decided this is where we will excel. And I have many, I did my own market research when I chose to commit my career to this vertical. These 2 modalities have a very heavy background of research and data because they are very similar to the process. They are based on very similar process to how you fabricate semiconductors. So, you're reaping the benefits of an extremely established industry to create these quantum computers, the processes and so on. And it's just simply the vertical that has been researched the most, so over many decades. And you have all the global players around the world, committing to it. So, when you have this much brain power and you've proven the concept that boils down to engineering challenges, you know that it's a matter of time.

[music]

00:32:23 [Host] **Fredrik Gunnarsson**

Practically, the cycle of R&D engineering and production, do you manage it all within your team, your company, including the actual production manufacturing?

00:32:33 [Guest] **Zaid Saeed**

Absolutely. It's been very important for us early on to create solutions that are modular. So, our machinery has from early days been optimized to do R&D and pumping out to production and delivery. So, the whole chain in that sense. And this is something we continue to commit to and continue being a very close part of the industry's development so that when the day comes that we reach volume, proper volume, the standard is ours, then you don't have to merge these two worlds, then you will be able to separate and have standardization and so on. But till then, we believe that the machinery we built going from R&D to production to productification is the way to go.

00:33:15 [Host] **Fredrik Gunnarsson**

And it's all happening here in Gothenburg?

00:33:17 [Guest] **Zaid Saeed**

It's all happening here in Gothenburg across the bridge.

00:33:19 [Host] **Fredrik Gunnarsson**

It's a super high-tech area, large investments building. How do you stay competitive and how do you develop with your team this kind of super advanced competitive product?

00:33:29 [Guest] **Zaid Saeed**

The most important thing is to stay hungry and stay up to date. We have our ears to the ground. We always listen to where the market is heading. And we always try to be, we don't conduct transactional sales, but we engage in collaborations for each order we deliver. We try to build on long-term relationships so that you stay up to date on the market needs and thereby stay up to date on your development plans. So, our roadmap is largely anchored in data. We're very data driven. So that's why I think that's one of the biggest aspects. And also, we have some of the smartest people and most hungry people. Their ethos is that if I'm going to develop something unique, I need to be on top of whatever research is happening within my vertical globally. So, we're always reading research papers and looking into what others are doing, that is in line with what we're doing and how we can maintain, higher performance or better, better, better packaging than they do in a way, package the product better.

00:34:35 [Host] **Caroline Segerstéen Runervik**

By the way, when was the company created?

00:34:38 [Guest] **Zaid Saeed**

2022.

00:34:39 [Host] **Caroline Segerstéen Runervik**

You were a core team then who actually started this whole thing with a number of researchers here in Gothenburg. How have you attracted the talents? Is it because they, you do, you work on the most advanced thing you can work on and therefore they have come to you or have you

found them?

00:34:57 [Guest] **Zaid Saeed**

It's very simple for me. I often say it to myself the same way I say it to my colleagues and newcomers, you don't get the chance in life that often or even if any, to be part of something so pivotal, so fundamentally changing for mankind in general. We're working on a platform technology, meaning that you don't know what quantum computing will be used for and what value it will create for humankind. And here you are, with the ability to create solutions that will directly echo in the global scene, and that will be part of realizing this field. So yes, I think with that, people really just cannot... if you have the right personality, then you'll find that exciting.

00:35:42 [Host] **Caroline Segerstéen Runervik**

Absolutely. And this is part of your sort of leadership motto or because you are leading this company, you are the CEO of this company. So, it's important that you get everyone with you on this journey, right? And I understand part of it, it's because you are, as you said, tech nerds and we actually take proud of having tech nerds in our company as well. It's something which I think is really good. But what is, how do you lead them? How do you lead the organization?

00:36:06 [Guest] **Zaid Saeed**

I always lead by example. So, the expectations I put on other, I double, triple fold it on myself always. And I try to speak their language and not because I think it's necessary, but because I think it maintains passion over time to know what you're doing and what you're representing, and communicate like the small successes ringing bells and saying this delivery resulted in this and now we're collaborating with one of the most exciting players globally and so on. There's a lot of cakes in the office because we try to celebrate as much as we possibly can. And we've taken a lot of time to focus on looking inside because at the end of the day, the company is as good as the sum of the people's input.

00:36:52 [Host] **Caroline Segerstéen Runervik**

I completely agree. You should celebrate, you know, not only the big wins, but really every small step, right? So, but I'm still fascinating. How do you find the time to then being super hands-on, have the time to read these research, at the same time seeing what's happening on the global scene? How do you do that?

00:37:10 [Guest] **Zaid Saeed**

I always listen to podcasts. My morning shower is a podcast, my way to work, and in between meetings and so on. But honestly, it's like I don't see work as work. I guess that's the difference. People talk about work-life balance or work-life harmony. For me, this is a lifestyle. I genuinely have burning passion for technology and what it can entail. I follow a lot of other verticals like AI and so on. I think everything is interconnected and it's just fun to stay up to date with things. I occasionally have lunch with other entrepreneurs from biotech and then we end up talking about, hey, what can quantum do for you? And you know, there is a connection between everything. So, it's just that I try to you just love to do it. Yeah, it's just a lifestyle, really.

00:38:00 [Host] **Caroline Segerstéen Runervik**

And what I hear, I mean, you're curious, right? That's what I understood from this discussion. So where will your company be in two, three years from now?

00:38:10 [Guest] **Zaid Saeed**

Continuing creating waves in the global scene, but also truly living up to the mission of enabling quantum computing. We expect to continue helping our end users push the boundaries of what they can achieve, and thereby also in turn the commercial user, which in this case are their names that I previously alluded to, like AstraZeneca, Pfizer, or JPMorgan Chase, and so on, they will reap the benefits of quantum computing. So, I expect in two to three years, we are continuously a household name in quantum computing. We have a next generation of all our products, which we're actively working on now. And we are continually anchored in Sweden because we take great pride in being a derivative of this ecosystem.

[music]

00:38:57 [Host] **Caroline Segerstéen Runervik**

We always want to ask the people joining this podcast, where do you then see the intelligent industry will be in 10 years from now? It's an eternity for us, isn't it?

00:39:07 [Guest] **Zaid Saeed**

It's many, many years and a lot of ups and downs. Things are happening way too fast to be able to predict this. Who could have thought that within this past year we could have gone from these video generation applications through AI to go from blips to being able to predict the human anatomy and all of these things? I think within 10 years it's probably impossible to say where we're going to be. The sky's the limit, especially if you when you get the introduction of quantum computing to the equation and how it will echo across different industries. But it's absolutely going to be extremely data driven.

00:39:47 [Host] **Caroline Segerstéen Runervik**

So, data is the gold, as we say. And for you who cannot see you now, I see so much energy, drive, and positivism, which is also super important as we're discussing. There is also threats connected to this. But what I see here is is a lot of positive change for our companies and for mankind in a way. So, with that, I'd like to say thank you for actually sharing with us a very, very interesting new technology, which a lot of us yet fully need to understand, but a super important area for Sweden to continue investing.

00:40:22 [Host] **Caroline Segerstéen Runervik**

So, with that, Fredrik and myself wishing you the best of luck to continue growing your company but also adding the value that is needed to our industry companies. Thank you for joining us today.

00:40:35 [Guest] **Zaid Saeed**

Thank you so much for having me.

00:40:36 [Guest] **Zaid Saeed**

Thank you.

00:40:37 [Host] **Caroline Segerstéen Runervik**

Thank you.

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