The HCLTech Trends and Insights podcast

Nick Ismail
Hello everyone, and welcome to the Chip Chat Podcast Series hosted by HCLTech Trends and Insights. Today. I'm delighted to be joined by Ameer Saithu, the Executive Vice President at HCLTech and we're going to be discussing the future trends shaping the semiconductor industry. Ameer, how are you doing today?

Ameer Saithu
Doing good. Thank you very much, Nick for the introduction. Doing very good. Looking forward to our discussion.

Nick Ismail
Excellent. And just to kick things off, can you give our audience an overview of the semiconductor industry's landscape and its importance in today's technology driven world,

Ameer Saithu
Sure, sure. A few years back, this, this kind of an introduction, was important, extremely important, because very few people knew about the industry. This is an industry that was helping all technology work, but it was in the back background. Nowadays, I think everybody is sort of familiar with the semiconductor industry, whether it is during COVID due to supply chain disruptions or AI and autonomous driving, and pretty much everything that we use to make our lives better is powered by semiconductors. And the way we are looking at it, it seems like that path is going to accelerate, and it is going to be even more going in the future.

Nick Ismail
Sure, it's a fundamental part, really, of how we live our lives, how businesses operate. Looking ahead, what do you think are the key drivers for growth, and how is the demand for semiconductors evolving across different sectors, and what new applications do you anticipate emerging?

Ameer Saithu
The demand for semiconductors is being driven by a few trends in the industry. Of course, the major trend is what you're talking about, which is a lot of applications that are requiring high amount of compute and communication, and hence semiconductors, the chief among them that most of you may be aware of is AI and machine learning. There is a significant amount of compute that is needed to enable various AI use cases, whether it is a conversational ones, where you are on chat GPT, or whether it is image recognition and security kind of use cases that are there. So AI is a very big part of that demand on the communication side too, and the wireless networking, quite a bit of semiconductor technology is going in there, similarly in automotive, autonomous driving, the overall factory optimization and IoT and connected things. So semiconductor is there in all these places and all is all these are driving demand from an end use perspective. But in addition to that, we are also seeing that there is another source for semiconductor demand, and that is from an overall global supply chain resilience that many of our customers and even countries are trying to implement. So you can see that there is in US, Chip Acts and Europe also has got something similar. India has put its plans known so pretty much globally, there are new initiatives that are coming in that is also increasing the demand for the sector.

Nick Ismail

And just so I'm understanding correctly when you say supply chain resilience, there are initiatives, legislative initiatives, being put out there that is putting an increased demand on semiconductor suppliers?

Ameer Saithu

Yes, yes. So two, three ways in which things are happening. One is, there is this idea that, just like utilities, whether it is telecom or electric utilities or water utilities, there is an idea that semiconductor is also something like that for national prosperity and national security. And semiconductor, infamously, has been a highly optimized industry with its supply chain very concentrated on one part of the world, and during COVID, that is when it sort of got exposed with some disruptions, because that part of the world had some challenges, and that led to a cascading impact on rest of us, and that is where the thinking got some momentum. It has always been there that there were people who or some parts of the technology that was always being developed in different geographies for national security concerns, but overall as utility for general public's well being, that idea that it needs to be done locally, whether it is in us or whether it is in Europe or in India or other parts that got quite a bit of steam post COVID. And we see, like you mentioned, Nick, we see a lot of governments trying to support that movement with these legislations and even funding. Of course, China had, for its own strategic reasons, had started funding semiconductors with its own institutional funds that they had set up some years back. And now we have US, Europe, India and others, either through explicit funding for new initiatives or through some kind of subsidization for or some parts of the demand for manufacturing that is being confirmed or guaranteed by the government. So various ways in which governments are trying to support this moment

Nick Ismail

Great, and we're going to get into that just in a minute before we do you mentioned AI earlier, and it feels that you can't really have a conversation in any technical setting without bringing up AI. Now, what role do advanced technologies like AI, GenAI, machine learning, quantum computing play in shaping the future of the semiconductor industry. And are there any advancements that you find particularly exciting?

Ameer Saithu

Oh, absolutely. This is, I mean, I technology industry. We I feel like, every five years or six years, I keep saying that this is the best time to be alive, and this is a, you know, because technology industry has been like that, and right now, AI is truly changing the way we all live in and some of them, we are not even, you know, we use it, but we are not even aware It is, it is AI that is making it happen around on our everyday lives, from from simple automations that used to happen in the past to the way in which today, large, large workforces have been impacted in a very positive way in terms of improving productivity, and we are seeing it in our own industry, in in services and engineering and the product development, wherein we are looking at a quantum jump of productivity of an engineer. There is, of course, there is the the populist side of it, which is the ChatGPT kind of place where, you know, kids are using it to do their homework, kind of, you know, there is that part of AI too, that is capturing the minds of our friends and family. What I am most excited about is the way in which industry structures are changing because of AI there are, and you can see it if you if you look at many of our customers, many of the large enterprises and their, you know their plans and their as they say in their annual reports, you can see that they are all focused on employee productivity in a

positive way, because AI as a tool is a significant multiplier for all our capabilities, especially our thinking capabilities, And that is where we are seeing whether it is in design automation, yield optimization, you know, in engineering, in bug triaging and report preparation, or any, any place where human thinking is involved. AI is becoming that tool it is, it is that Swiss army knife that is helping you multiply your productivity. And once you look at it at such a fundamental level, the all we can say is that we will never estimate the impact that it can have on us. We will underestimate the impact that is all. That is all we can confidently say. But I'm very excited to be at this very beginning of such widespread adoption of AI,

Nick Ismail
Sure. And as you said, it's only really just the beginning with the proliferation of the tech in organizations, in end user organizations, in wider society. Moving back to the legislation around semiconductors, you mentioned the US Chips and Science Act, yeah. Can you talk about why that was a significant move, and how do you think it will impact the semiconductor industry, in terms of innovation, production, global competition, things like that?

Ameer Saithu
Yeah, I do think it is a very significant move. We know. I mean, you know, we are all living in capitalist societies where we we would like most of the enterprise to be private enterprise. So whenever government gets involved, there is a little bit of trepidation amongst everybody in the private sector as to, you know how, whether it is right or not. But it is also true that there are many parts of the industry which is which cannot start bootstrap itself, and that is a very difficult thing to do, especially with the amounts of capital involved, without some help from the government. And I am seeing that that being the role of some of these legislative activities like the US Department, especially if you look at semiconductor manufacturing, it is such a capital intensive sector, some kind of initiation, whether it is in terms of capital or land, or some regulatory improvement of regulatory approvals and things like that. I think that is very useful. And we are already seeing some of the results of this chip act where, whether it is Intel or TSMC or Samsung, and, you know, and Texas Instruments in the US all have announced plans for labs being set up in the US. And these see this is an industry which moved away from all Western Europe and US to Taiwan, and the past few decades, it has been based in Taiwan, and now we are seeing real money being put into build some kind of capability here too. And I think it is, it is good for the world to have a more diversified, you know, from a world's perspective, to have a more diversified portfolio of manufacturing capability, rather than it being concentrated on one, one side of the world, and to make that happen, I think something like chip act is absolutely necessary, and some of my customers, you know, Intel, for example, on the back of such a commitment, even though it is, it is not the actual money and the quantum of the money that is important, but it is about the public commitment to build the supply chain resilience that you know, they are implementing, having are very, very successfully implementing, you know, five nodes in four years, design strategy and on the manufacturing side, they are on track to come out with Intel's 18A which would be the most advanced processing node ever. Similarly, TSMC, which is the clear market leader, has also started its work in for the Arizona plant, you know, expected to be 50k wafers per month capacity. Samsung also has talked about plan to set up a mass production in the US in and then, of course, TI has expanded, so we are already seeing that there is a lot of very good, funded initiatives that are being spurred. And, you know, the funding asset is a small amount, in my view, compared to what is needed for the total industry. But the signaling that it gives, the commitment that it gives, is what is helping the rest of the private sector to come together and

say, Look, we will be part of this moment where we will implement supply chain resilience for this. There's such a critical industry so that we will not be faced with or if we are faced with touch wood, if we are faced with something like this, in future, there will be a backup. There will be some way in which we can get back on our feet much faster. So I think it is a it is a very critical step. And I believe given the early successes that we are seeing of the act itself, I believe. There will be enough support for that to be expanded, and I think that is the right way to do.

Nick Ismail
Sure. And are these policies from governments like the US? Are they helping chip companies realize their vision for the future? And if so, what is that vision, and also, how is HCLTech position to support and drive this vision moving forward?

Ameer Saithu
Very good question. It's see for our customers. If you look at a large you know, the bigger, bigger players in the market, like an NVidia or Intel or AMD Broadcom, they all have their own areas of focus and their own plans for driving value in those areas. From an Intel perspective, what we see is that, of course, the their what they call the Intel product side, which is the fabulous semiconductor part of the business, which is what we know traditionally as Intel, they have a very aggressive plan, maybe, if not so, at least a significant part of the movement to have manufacturing done by done within US and Europe and in a credible way. And they are doing significant investments towards that. That is, that is what is going on with Intel, big customer of ours, we have a strategic role on both sides of the business for them. On the product side, we are helping them in making their roadmap much faster. And on the manufacturing side, we are one of their announced partners who is currently working on a test chip for them to make sure that once 18A is publicly available, they are going into the market with a proven test chip, which will be developed by HCLTech. So there is, you know, we are working on 18A with Intel towards making that a success. The Intel also recently announced that we are one of the six suppliers of the year, outstanding suppliers of the year for Intel. This is an honor that has never been given to any GSI in the past. So we are very proud to be have our association with in depth. Similarly, with NVidia, we are very much in the core of it. Given the sensitive and advanced nature of the type of work that we are doing, we do not really go public with most of the stuff, but we have significantly large engagement, which is helping them fine tune their llms and providing a lot of support in in their good market initiatives. We really don't want to be public with many of the things that we do with NVidia. We are a significant partner for AMD too, both on the IT business services side as well as on the engineering side. So with all these customers, we have a good partnership that is going NVidia. It is extremely exciting because of the way in which, not just that, they took early leadership in AI, now they are expanding AI and be keen key player to enable AI in a much faster manner. And we are very heartened by their partnership model and partnership approach. That is, I think that is the right approach wherein people like us and other technology providers are helping take AI much faster. Something that is interesting for us from a customer perspective, is also, you know, SK Hynix and Samsung, as you know, we we have Korea as a significant focus from HCLTech as a country of focus. SK Hynix is a customer of ours on engineering side, it has got some history with their solid I'm acquisition where solid, we are a key partner of theirs, and with Samsung, especially on their manufacturing side, we are their partner. They have announced us as a partner, and we are looking forward to more customers on Samsung's manufacturing notes too. So. So all in all, we feel very comfortable and excited about all these customers and their plans and how we are contributing to.

Nick Ismail

That's right. And we're involved in quite a few elements of the ecosystem, it seems, based on what you've just said, yeah. So with the explosion of adoption of technologies like AI, that requires a great demand for semiconductor chips, and obviously that has some sustainability implications electricity consumption and production manufacturing. So how is the semiconductor industry addressing these environmental concerns, while continuing to make sure it keeps innovating?

Ameer Saithu

Yeah, it's a great question. The heartening part of it is that you know, pretty much every discussion that I'm having with my customers or some industry forums where we are getting together, sustainability is at the forefront. The you know, the even in policy discussions, especially in the US, when we talk about semiconductor, energy is first or second, probably the topic that comes up, and pretty soon after that, talent shortage comes up. Sustainability, thankfully, has been at the forefront of at least on the agenda for most of the industry. So that is, that is a good part of it, but the core issue, which is energy and water consumption that has not really been solved, and to an extent, greenhouse gas emissions also is an issue that is there. But I think energy water consumption has not really been solved from a technology perspective, but there are some interesting developments that are happening the way in which people are putting in their data centers, you know, closer to energy sources or closer to cooling resources and things like that are are all a good way to address it. But I still think technology solution to water and energy is still pending now. I see TSMC has put in some water reclamation kind of thing. There is wastewater recycling that is going on in UMC in Singapore. There are some strategies like that, that are there, you know, there is this is a real challenge, even not just in the US, even in India, when we are looking at some of these facilities, the water is shortage and how we do this, it needs to be thought through very well. Now, from our perspective, from HCLTech perspective, what we are trying to do is to enable the infrastructure and the plumbing, so to say, to help manage this. So there are sustainability platform solutions that we implement and so that you know what, what can't be measured, can't be managed. So we, we do measure, monitor, manage, and hence, with all the AI models and others, we the insights that come out will at least optimize within the technologies that we have today. We are trying to optimize it within that I you know, so it is a it is a good and a bad kind of a situation. Nick, the good part is that, you know, everybody has that at the top of the agenda, so that is a very good thing. The there is a good part is also that, because of this being in the agenda, there is some funding and there is initiatives that are going on to optimize but the bad part is, I still think the core of water, energy, and, you know, greenhouse gas emissions, is still not really solved. So we are on the way, though, like most of the innovations in the past, I am very confident that will, you know, there will be some solutions that will come and we will be able to get over it. Very good question on an extremely relevant topic.

Ameer Saithu

Well, it's great you've got a positive outcome for it. So before we wrap up, I'd like to ask you just about the challenges and opportunities that are present within the semiconductor industry. First, what are the biggest challenges, and how is HCLTech positioned to overcome them?

Ameer Saithu

If you look at what has changed, and that can give us an idea on more than challenges, you know, I really think these are all. Opportunities for us to grow, but you can term it as challenges I talked earlier in the in this discussion around Intel strategy, around five nodes in four years, that is a significant change of pace in, you know, a node is typically, you know, 18 months or so, but now we are talking about a significant contraction of that and these nodes of manufacturing are also pretty much reached the physical limits that we work with some of the semi equipment providers, where the equipment that we are talking about for making these chips, we are talking about displacing individual electrons from molecules. Those are the kinds of things that these equipment are doing, and the etching and the layouts at that molecular level has reached a place where, you know, it is extremely complicated. I mean, pretty much, you know, like most of the factories are all dark, there is no human involvement. Most of the systems are system of systems, rather than human beings doing the systems. So there is complexity. Technological complexity is, you know, at an all time high, and it is, it is rapidly increasing. So what the result of that is, you know, there is this pressure to constantly innovate, you know, yield improvement for semi chips. And, of course, with this complexity also comes the cost of making. I mean, you know, if you, if you look at some of the equipment that is coming out from a company like ASML or one of our customers, these are, you know, not, not hundreds of 1000s of dollars. These are multi million dollar investments that you need to make for an equipment, piece piece of an equipment. I mean that is, and the associated costs of and hence the outcome that is expected are all at a different level than what we are used to. Now this is on the one side right, which is on the chip development and and hence challenges associated with that. Then there are all these uncertainties that are there. We talked about AML, and, you know, where to put the money. There is a, there is a business complexity that also has increased because there is uncertainty. And hence there is some business complexity, there will be winners and there will be losers. So that is, that is a, you know, the because of the complexity and the speed of change, a set of challenges like that. Then we refer to it earlier. There is a geopolitical challenge also that is going on. There is, you know, COVID was a wake up call for all of us, for most of us, once in a lifetime, first in a lifetime, definitely occurrence where, if you look back, we have a lot of learnings in our first reaction to it, first policy reaction to it, societal reaction to it, technology's reaction to it, all of them we were learning on the go. One of the things that came out of it is supply chain resilience. Saying, look, it doesn't make any sense that all your eggs are in one basket. Let us have at least some backups, right? And so those kinds of things are definitely something that is happening. The supply chain disruption is also not just because of such things, but also because of the demand. Demand side of it. I while science fiction had imagined autonomous driving a long time back, the the speed at which things have improved, especially in the last few years, is incredible. So there is, there is, again, some kind of disruption that is happening because of that. So that is the second kind of challenge that I want to highlight. The third kind of a challenge or an opportunity, is look all these changes at this speed means we all will need to change. Talent needs to change. And that is probably the most exciting part for me, because we are, at the end of the day, we are a people company, and our the problems that we solve are about, how do we improve human lives, by changing people and by training, retraining and growth associated with that. So there is a there is a whole topic. You can call it as a challenge by saying it is a talent shortage or a skill gap kind of thing. That is a one way to look at it, the other way to look at it is that there is a transformation that is needed for each of us, for the whole talent in the workforce. And that is where I think the. In my view, amongst all of them, the biggest unknown, or the or the place where maybe as much focus has not gone it, I would say, is in that, and that is probably the next

phase of it, where we will need to really fundamentally relook at, how are we developing code? How are we designing a chip? How are we improving customer experience? How are we tuning an LLM, all of these are going to be requiring new skills that are not there, and that is, that is what is happening in the industry, in my view, for the next 18 months, that would be the biggest challenge, and we are very excited about it, because at HCLTech, as a people provider, and the biggest change that is happening in talent, we are there to lead that change. So we are extremely excited about being in this position, in this sector,

Nick Ismail
Sure, so it's a challenge and an opportunity, and I suppose it's also looking at how we can enable technology to augment humans to do their jobs better, to do them faster, more efficiently, things like that.

Ameer Saithu
Yeah, absolutely, absolutely, yeah, great, yeah.

Nick Ismail
As we wrap up, Ameer, what advice would you give to the new engineers, this new generation of talent and companies looking to make their mark in the semiconductor industry?

Ameer Saithu
So first, what I would recommend is be very aware of a lot of folks talking about, you know, jobs disappearing because of AI. I say be aware of it, but not be afraid of it. The reason I say that is it will inform all of you on where to put in your time. I don't believe that jobs are disappearing. I think there will be more jobs, more meaningful jobs, because of all these changes. This is not my idea, but the you know, I think it is the Google chief Pichai once mentioned, it is not about what you know. It is about your skills of learning a new skill. That is the only thing that is important. So for the next generation who is coming into the industry, I think the insight remains the same, that, look, you need to be open. You need to be open to learning new things, and you need to keep honing your skills to learn new things. We are. We are not in a stable phase. Maybe if we had a sustained, stable phase of 2030, years. And in some industries that is there, that is not the case in technology that is not the case in semiconductor there, the key is to be adaptable. The key is to be able to pick up new skills. That would be my input to somebody who is looking at a career in this industry, sure.

Nick Ismail
And to a degree. Do you think organizations like HCLTech or even the end users they can foster that adaptable, continuous learning mindset with the right culture in place, right?

Ameer Saithu
It's, it's an amazing question that you asked. It is not about whether they can. I really think people who do not foster it will not survive, especially this. Is this, I'm coming at it from a Gen Z culture, kind of perspective, the labor work also has changed. Workforce has changed significantly in terms of attitude towards work. I saw it. Saw that change accelerating post COVID too. And I think the concept of longevity, loyalty and longer term association with work is now more associated with longevity and loyalty to a work culture, rather than a specific organization. I think it is up to the organizations to make sure that the culture is a progressive one, which helps people move, which helps people gain new experiences. Part of it is in in the

business itself. Like you know that that is a great help. So what I'm saying is, if you if the company is working on 18A and three nanometer, most likely the type of work that will come up will be helping somebody experience new technology. So that is a that is a great part. But it goes beyond that, because lot of us in these organizations. And especially senior leaders, whether we like it or not, we have been trained in an older world and our own retraining to be more in tune with the need for need of the market that itself is a challenge, and that is, and you know, the senior leadership who rises to the challenge will be leading organizations that will survive rest of the organization, which do not provide that kind of work culture that you refer to Nick they will have a very difficult time survive, because this is a people business. What we what we are at the core of it, while we are the intercept looks like we are serving our customers and improving productivity customer experience and all that, what we are inherently doing is providing opportunities to people and helping them grow in their lives. And if you cannot do that with the right work culture, frankly, there is no reason why companies like that should exist. So on a positive side, I truly think people who have the right work culture will come out on top. I believe that we have that in HCLTech, or at least we are in a continuous improvement mode to improve that there are many parts where we still need to work on. But you know, we keep listening and we keep improving on those. It is, like I mentioned during the sustainability discussion. It is, again, not a solved thing, but at least it is the highest on the agenda to make sure that we provide such a work environment.

Nick Ismail
That's great. It's always good to end on a positive. Ameer, thank you so much for your time discussing the semiconductor industry, the challenges, the opportunities, legislation, innovation going on behind the scenes. We really appreciate your time.

Ameer Saithu
Absolutely. Nick, it's always great to talk to you. Thank you. Thank you.