

# MAX MIRGOLI

Executive Vice President of worldwide strategic partnerships at Imec

## Paul Boudre, Silian Partner, former CEO of Soitec

We have been through the gold era, the oil and gas era, and now we are entering the semiconductor era, this is a very critical phase and it is going to be here for the next 30, 40 or 50 years. It is clearly an opportunity for governments to also get into the game, as Handel mentioned, but is it really true? Max, what do you think about this?

## Max Mirgoli, Executive Vice President of worldwide strategic partnerships at Imec

First, good morning to you all, *assalamu alaikum*. It is always to be good to be back in the United Arab Emirates and I am grateful to the organizers Mr. de Montbrial, Madame Kwon and the Silian Partner founders Helmut and Paul for allowing me to be on stage with them. It is a distinct honor and a privilege to be here with you.

It is really interesting and I just want to give you some dates as a backdrop to the semiconductor industry. The first transistor, which is the genesis of integrated circuits, was invented in Bell Labs in 1947. 10 years later in 1958, Jack Kilby created an integrated circuit that was basically an assembly of a bunch of transistors to create functions. Over the last 40 years the semiconductor industry has contributed so immensely to the enrichment of our lives and society being the way it is today but unfortunately, most people do not know the contribution it has made. However, the last 40 years and half a trillion dollars' worth of revenue will be dwarfed in the next decades on the contribution the semiconductor industry can make and the economic value it can provide for the countries that participate in the industry and the innovations it brings.

You probably all have a cell phone in your pocket. In the last 40 years the semiconductor industry has transformed the computing and communications industry. Today, you take your phone out, you Facetime your friends and families without even understanding how that has all become possible. Single-handedly our industry owes a debt of gratitude to a gentleman called Gordon Moore, who was the founder of Intel, which you probably all know because of the stickers on your laptop. Gordon Moore's law, which became as Moore's law, dictated that every two years the number of transistors on a chip would double and as such, the semiconductor industry has followed that pattern and created more efficient chips every year at the same or reduced cost. As a result, it has made possible the innovations that have created the communications and computing industry you see today.

Those devices you have generate data and data is the genesis. I hesitate to mention AI again because everybody is talking about it but it is important to understand that AI, as I think the professor before us explained very eloquently, is not new. It is actually a very old idea but the advance of semiconductors and computing architecture available today has allowed AI to flourish. I like to focus on the positives of AI, such as the ability to be able to detect tumors that doctors with 30 years of experience could not.



There are plenty of opportunities and if you look at where the chip industry is today, to give you a frame of reference, which honestly for me and all of us in this industry who have been around for a long time, it is still hard for me to wrap my head around it. Nvidia's AMD and Intel's Ponte Vecchio, each have somewhere between 100 to 150 billion transistors in them. If you look at the genius of these devices, that they are crunching data and the abilities they bring to society, it is mindboggling what will be happening. You saw Handel's eloquent analysis of where the industry is headed and in the last 40 years the industry has become a half a trillion dollar industry and in the next seven to eight years, the industry will double in size to become a USD 1.1 trillion industry.

Why is the Chips Act so important and why is every country and society trying to have control over semiconductors? On one side it is because from advanced agriculture to drones and to computing AI platforms, it is the genesis of the new industrial revolution, semiconductors are what makes it happen. On the other side, it is part of sovereign protection of individual societies where each country needs to have access to the technology for their protection. Therefore, semiconductors have a dual use capability these days and in all honestly, I am so happy that after the pandemic and shortage of cars because of semiconductors, at least now my family know what I do, which they did not up to that point.

### **Paul Boudre**

Thank you. That is true, this is not an industry that is really marketing itself but it is really the foundation for most of the innovations we see today and that are going to spread overtime. We have built this computing capabilities over time, that you talked about Max, and we have also built these communication capabilities that are a real driver with 4G going into 5G and tomorrow it will be 6G. It is a lot of different type of applications but they are needed so the Lego itself, the construction, the architecture is now ready for the next step because we have these high-level computing models that are running with these capabilities. We have this ability to really go fast and move information very fast, but there are still a lot of problems to fix, of which power is going to be one where the industry is going to continue to focus. However, as Handel said, we want to bring these models close to these applications. We want to make sure that whatever we call it, Artificial Intelligence or the ability to do more with less at the point of use, is what the industry will provide in the future. If you think about it, you also understand why the US versus China is happening right now, it is clearly a sovereignty part of the discussion. We understand the policymakers, you guys, are here for and that are so important for this industry.