INTERVIEW

Interview with Carlos Lee,

Director General of EPIC, European Photonics Industry Consortium

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What was your professional background before joining EPIC?
I have worked for 16 years at SEMI, the global association representing semiconductor equipment and material suppliers. SEMI has been around for more than 50 years, that was my first job and where I gained significant experience in the sector working on standardization, advocacy, lobbying, and technology and executive-level events.

When did you join EPIC?
After 16 years at SEMI, I joined EPIC 13 years ago. My departure from SEMI was not due to dissatisfaction but rather an opportunity to bring the experience I had gained in a mature and well-structured industry into an emerging one. Technologically, there is significant overlap between semiconductors and photonics. If you look at a pure semiconductor chip, you need photonics to make it work. However, the key difference is that the semiconductor industry is highly consolidated, well-organized, and supported by market statistics, technology roadmaps, and industry standards—something that the photonics industry lacks. My ambition was to transfer best practices from one industry to another and contribute to the growth of photonics.

What have you learned from your experience at SEMI?
During my 16 years at SEMI, I gained valuable insights into what drives industrial success. One key takeaway is the role of industry in shaping a thriving ecosystem. While universities and research institutions are crucial for innovation, they do not necessarily translate into industrial success on their own. I have seen that having strong academic research does not automatically lead to the creation of a sustainable industry. A compelling example is the semiconductor ecosystem in Dresden. When AMD, the chip manufacturer, established a factory there in 1996, it required suppliers for equipment, materials, gases, and wafers. This led to the development of a full industrial ecosystem around it. Once such an ecosystem exists, it makes sense to have universities, training programs, and internships to support it. In other words, a strong industry attracts talents, research, and further innovation. This is why I strongly believe that industry is the true driver of technological progress. Academia is essential, but for a sector to thrive, it needs a solid industrial foundation. This perspective has shaped my approach at EPIC, where we focus on strengthening the industrial landscape for photonics.

What motivated your transition from semiconductors to photonics?
My main motivation was the frustration of seeing strategic industries disappear from Europe. The photovoltaic industry is a prime example. At one point, Germany led in solar photovoltaic energy, with most of the machines coming from German manufacturers. Europe had leading research institutions, and the market was thriving. Yet, within just a few years, the photovoltaic industry in Europe collapsed between 2010-2015. Today, there are no major solar manufacturers left in Europe. The same happened with the lighting industry—Philips was once a dominant player, but it no longer holds a leading position at a global level. To be provocative, I would even argue that Europe is not a major player in the semiconductor industry. The only reason I believe that Europe is mentioned in global discussions is because of ASML. Without it, I am not sure Europe would be considered a dominant player in semiconductors at a global level. We lost these industries not solely because of competition under fair market rules, but due to other factors. If we do not learn from these past experiences, the same could happen to photonics. That is why I joined EPIC: to help safeguard the European photonics industry before it reaches the same level of importance as those other sectors and risks being lost.

What are the challenges in building a strong photonics industry in Europe?
Both semiconductors and photonics are key enabling pervasive technologies. If the photonics industry continues to grow as we ambition, I am concerned of Europe losing competitiveness in this market unless we take proactive measures. Governments have not effectively protected previous industries in my view. They did not prevent the decline of photovoltaic or lighting, and they are too slow to react and anticipate. Additionally,

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decisions made by authorities can be influenced by external political pressures. In general, regretfully, the photonics sector is too small to be *a priori*ty for public authorities. As a result, we cannot solely rely on governments to ensure the competitiveness of our industry. We need to take matters into our own hands and strengthen the industry from within.

How can photonics become more competitive?

A competitive industry operates in a continuous cycle: companies develop products, sell them, generate revenue, reinvest in R&D, improve their products, and keep innovating. This leads to job creation, further investment, and growth. Some companies get acquired, some merge, and new startups emerge, maintaining a dynamic ecosystem. This is the model of a sustainable and competitive industry. Unfortunately, this cycle did not happen in solar, lighting, or even semiconductors in Europe. Since we cannot depend on governments, my vision for a competitive European photonics industry is based on fostering strong collaboration. Europe has around 1,000 photonics companies, and 86% of EPIC members are small businesses, typically with 30 to 50 employees. The legal definition of an SME sets the threshold till 250 employees, but in photonics, a company with over 100 employees can already be considered large.

What is your strategy to increase the competitiveness of the photonics ecosystem?

My strategy is simple: these 1,000 companies need to know each other, understand what each one does, collaborate effectively, and build a strong ecosystem. We work directly with CEOs and CTOs, as they have the best overview of their companies' capabilities. Our goal is to connect these key decision-makers, fostering trust and cooperation, which will ultimately drive innovation and competitiveness in European photonics.

Can you describe some of the key initiatives launched by EPIC?

EPIC has spearheaded several impactful initiatives to support the photonics industry. Among them are:

- The Day of Photonics – an international event to raise awareness about photonics and its applications;
- The Photonics Index – a stock market index dedicated to photonics-related companies;
- The Photonics Sustainability Awards – recognizing efforts toward sustainability in the industry.

As an agile, privately funded organization operating through membership, EPIC has the ability to explore diverse activities and innovate. We experiment—if something works, we pursue it; if not, we move on. The key is always prioritizing what benefits the industry. Some organizations are reluctant to collaborate, preferring to maintain their own "kingdoms," but EPIC believes in fostering openness and innovation. For example, we have built the largest photonics employment website, with over 12,000 job listings, simply because we identified the need and took action.

What are the next steps for EPIC?

One of our primary objectives now is to engage more deeply with end-users. Over the years, EPIC has earned the trust of the photonics community and built a stable, actively engaged membership. Now, we need to extend that engagement to the integrators and end-users of photonics technology. If we want photonics to spread into more applications, we need to listen to end-users—understand their needs, challenges, and aspirations. My goal is to convince them that EPIC provides a trusted environment where they can openly share their requirements, enabling the photonics community to collaborate and develop solutions that enhance their products and manufacturing processes.

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Do you make actions at a global scale?
Yes, global engagement is another focus area, particularly in an increasingly complex geopolitical landscape. We are organizing more international events, strengthening our relationships with key markets such as China, Korea, Japan, India, Singapore and broader Asia. While we already have strong ties with the US and Canada—partly due to language and established leading events—our outreach to Asia is about ensuring that European photonics companies understand these markets, their competitive landscape, and potential collaboration opportunities.

Why is it important for EPIC to connect with Asia?
Our engagement with Asia is not about expanding EPIC's membership—it's about supporting European companies that want to operate in those markets. EPIC never dictates what companies should do. Instead, we provide strategic support by building a network of trusted partners to help companies navigate new markets, understand technology trends, and explore partnerships. Whether a company chooses to engage with Asia is up to them, but if they don't, they risk missing revenue opportunities and losing awareness of the competitive landscape. Our role is to ensure they have the necessary connections and insights to make informed decisions.

Would EPIC aim at becoming a global association?
There is sometimes confusion about EPIC's global strategy. Let me be clear: EPIC will always remain a European-oriented organization. Unlike some associations that claim to be global but remain centered in one region, EPIC's primary mission is to serve European industry. In fact, 90% of our members are headquartered in Europe, with only 5% being global corporations and another 5% being non-European entities carefully selected for their added value to our network.

How is EPIC's relationship with academia?
Although EPIC is primarily an industry association, we also count research organizations and universities among our members. It is essential for academia to engage with industry to ensure that research aligns with real-world needs and industrial applications. Collaboration helps research institutions stay connected to market demands rather than working in isolation.

What message would you like to convey to public authorities?
Public authorities must recognize photonics as a key enabling technology and accurately assess its competitive landscape, future opportunities, and challenges. Policymakers often decide which industries to prioritize, but waiting until a sector is struggling before providing support is a mistake in my view. Many industries receive massive funding with questionable impact, while a modest investment in photonics—say, 1 billion euros—could have a transformative effect on Europe's competitiveness.
It is personally frustrating to see decision-makers act too late. Photonics is already strong so my message is "support us now, not when the industry is being challenged". Once a strategic industry is lost, reviving it is much harder, if not impossible. Governments need to act proactively to maintain Europe's leadership in photonics and high-tech manufacturing.

How does EPIC manage to stay so dynamic and innovative?
EPIC has always been inspired by the photonics industry itself, which is highly innovative and entrepreneurial. By spending so much time with the industry, listening to advice and guidance, we're motivated to constantly try new things and come up with new ideas. We've been fortunate to have the support of our members when we try these new ideas. For instance, during COVID, we launched the Photonics+ online platform when in-person meetings were impossible. While the platform didn't succeed, our members were supportive, and I think they appreciate that we're willing to try and sometimes fail. Some of our initiatives have been extremely successful, and others not as much, but that's part of the journey.

What would be EPIC's greatest achievements over the last 13 years?
One of the biggest achievements of EPIC is that it has become a sustainable organization. When EPIC was founded in 2003 by Tom Pearsall, it was a very small organization, with only two employees. When I joined 13 years ago, we had 80 members, and we were still not financially stable. Now, EPIC has grown to over 800 members and has a stable team of technology managers and support staff. I'm proud that we've reached a point where the organization doesn't rely on one individual anymore. If I were to leave, the COO and the 12 member team we have now could keep everything running. We've achieved financial stability, and we're guided by an experienced board of directors. It's been amazing to see the evolution of EPIC from a small startup to a stable organization with a long-term vision. I'm confident that EPIC will continue to thrive for the next 20 years. ●

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