

WHITE PAPER

The State of the Semiconductors Market in Europe and in the World

IDC ITALY

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CONSORTIUM



DISCLAIMER

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SUMMARY

The webinar hosted by IDC in the context of ALLPROS.eu discussed the state of the semiconductor market in Europe and globally. The webinar highlighted the European Commission's semiconductor policy, emphasizing the role of the Chips JU initiative in bolstering Europe's design capacity, particularly for small and medium-sized enterprises. The initiative prioritizes the development of new pilot lines, including ventures into quantum chips and skills expansion. The webinar also discussed the challenges faced by the semiconductor industry in terms of skills development and the strategies and initiatives aimed at resolving industry challenges and optimizing supply chain operations.

The speakers highlighted the importance of forecasting industry trends, fostering business trend awareness, and presenting an overview of industry leaders' strategies. They also emphasized the need to address the talent gap in the semiconductor industry, with initiatives like the Competent Centers network playing a significant role. The discussion also touched on the broader context of the Economic Security package, which aims to safeguard and advance Europe's economic interests, particularly in critical sectors like semiconductors.

Furthermore, the speakers discussed the current investment trends in the semiconductor industry, highlighting the growth cycle and the key takeaways for the industry. They emphasized the importance of the semiconductor market in terms of technology and its increasing importance across various industries. They also highlighted the potential growth areas in the semiconductor industry, such as the data center, automotive, and industrial markets.

In conclusion, the webinar provided valuable insights into the current state and future trends of the semiconductor industry, emphasizing the importance of strategic planning, skills development, and supply chain optimization in driving industry growth and competitiveness.

SYNOPSIS

The webinar discussed the state of the semiconductor market in Europe and globally, focusing on industry trends, business trends, technological advancements, skills-related challenges, and supply chain best practices. It highlighted the European Commission's semiconductor policy and the role of the Chips JU initiative in bolstering Europe's design capacity. The webinar also emphasized the importance of addressing the talent gap in the semiconductor sector and the need for collaboration to navigate challenges and ensure Europe's economic prosperity and technological leadership.

KEY TAKEAWAYS

- » The European Commission's semiconductor policy, particularly the Chips JU initiative, is crucial for technological advancement and economic competitiveness, aiming to enhance Europe's design capacity and develop new pilot lines.
- » Addressing the talent gap in the semiconductor sector is vital, with initiatives like the Competent Centers network playing a significant role in fostering skill development and industry-university collaboration.
- » The Economic Security package, recently ratified by the Commission, aims to safeguard and advance Europe's economic interests, particularly in critical sectors like semiconductors, through five key initiatives.
- » The semiconductor industry is expected to double over the next decade, driven by emerging technologies like AI, with a significant shift towards the edge and a growing importance of the supply chain.

IDC'S RECOMMENDATIONS

- » Bolster Europe's design capacity, particularly benefiting small and medium-sized enterprises (SMEs) by offering accessible virtual design platforms.
- » Prioritize the development of new pilot lines, including ventures into quantum chips and skills expansion through competent centers.
- » Foster awareness of the business trends propelling silicon content forward, including the impact of emerging technologies like AI.
- » Present an overview of industry leaders' strategies and initiatives aimed at resolving industry challenges and optimizing supply chain operations.

In this White Paper

The present White Paper highlights the insights from the [The state of the semiconductor market in Europe and the world | ALLPROS.eu](#). Anielle Guedes, IDC's analyst responsible for ALLPROS.eu market research, organized and moderated the webinar, bridging different stakeholders in the semiconductor industry to address common challenges and move the ecosystem forward.

The webinar provided a comprehensive exploration of the semiconductor market, both in Europe and globally, focusing on the state of the industry and the European Commission's semiconductor policy. It particularly highlighted the pivotal role of the Chips JU initiative in enhancing Europe's design capacity and fostering technological advancement and economic competitiveness, as explained by European Commissioner Stefano Selleri from DG Connect. The webinar discussed the challenges faced by the semiconductor industry in terms of skills development, brought by Martina Wolfgruber from Infineon, as well as the strategies and initiatives aimed at resolving industry challenges and optimizing supply chain operations, brought by Richard Barnett, from SupplyFrame's Siemens.

A significant portion of the webinar was dedicated to forecasting industry trends, fostering business trend awareness and presenting an overview of industry leaders' strategies, by Mario Morales, Group Vice President from IDC. The importance of addressing the talent gap in the semiconductor industry was emphasized, with initiatives like the Competence Centers network playing a significant role in skill development and fostering collaboration between the industry and universities. Silvana Muscella, technical coordinator of ALLPROS.eu, highlighted the importance of a project in the area of skills development and explained how interested parties can engage with ALLPROS.eu.

The broader context of the Economic Security package presented by the Commission, aimed at safeguarding and advancing Europe's economic interests, especially in critical sectors like semiconductors, was also discussed. The webinar highlighted the current investment trends in the semiconductor industry, emphasizing the industry's growth cycle and key takeaways for strategic planning and competitiveness.

The session also highlighted the role of emerging technologies like AI in driving silicon content growth, especially in sectors such as automotive. Addressing skill development challenges, ongoing projects showcased collaborations between universities and industry. Attendees also learned about supply chain best practices from industry leaders' initiatives.

The webinar offered valuable insights into the current state and future trends of the semiconductor industry, emphasizing the importance of strategic planning, skills development, and supply chain optimization in driving industry growth and competitiveness. Recommendations included bolstering Europe's design capacity, prioritising the development of new pilot lines, fostering awareness of business trends, and presenting an overview of industry leaders' strategies for resolving challenges and optimizing supply chain operations. These recommendations aim to navigate the semiconductor industry's challenges effectively and ensure Europe's position as a leader in technological innovation and economic competitiveness.

European Commission's Semiconductor Policy and Economic Security Measures

✂ By Stefano Selleri, European Commission, DG CONNECT

Stefano Selleri emphasized the European Commission's strategic vision during the webinar, focusing on advancing technology and bolstering economic competitiveness, notably through initiatives like the Chips Act and the Chips JU initiative. He highlighted Chips JU as a crucial operational component aimed at driving actions in the semiconductor sector, with key objectives including enhancing Europe's design capacity, making the industry more accessible for SMEs, and developing new pilot lines, such as ventures into quantum chips. Stefano also pointed out a recent call for pilot lines as evidence of the Commission's commitment to establishing a cutting-edge European infrastructure for testing and experimentation, emphasizing its proactive stance in strengthening Europe's position in the global semiconductor landscape. Moreover, he underscored the importance of skill development, citing initiatives like the Competent Centers network, which address the talent gap within Europe's semiconductor sector. He stressed the significance of collaboration with organizations like EPMA in tackling skill development challenges, aligning with the Commission's broader goals.

Regarding the Economic Security package, Stefano highlighted its alignment with these efforts, aiming to safeguard and enhance Europe's economic interests through various initiatives such as foreign investment screening, export control, and investment in security research. He emphasized the necessity of collaboration among EU member states and institutions to effectively navigate these challenges and uphold Europe's prosperity and technological leadership. He also discussed the role of the Chips JU initiative in democratizing the semiconductor industry, focusing on bolstering design capacity, developing new pilot lines, and enhancing skills through competent centers. He noted that a recent call for pilot lines, targeting critical areas like FDSI technology and wide-bandgap semiconductors, reflects the Commission's aim to establish a state-of-the-art European infrastructure for semiconductor technologies, promoting collaboration and innovation across the continent.

Furthermore, the Commissioner delved into the Competent Centers network and its role in addressing the talent gap, recognizing collaboration with organizations like EPMA within the future Industrial Alliance. He contextualized these initiatives within the Economic Security package, highlighting key initiatives such as foreign investment and export control regulation. In summary, Stefano's presentation underscored the Commission's proactive stance in addressing immediate challenges and long-term strategic goals within the semiconductor industry and broader economic interests. He stressed the essential role of collaboration among EU member states and institutions in navigating these challenges and safeguarding Europe's prosperity and technological leadership.

... *"The Chips JU initiative serves as a pivotal operational component within the broader strategy, aimed at driving current and future actions in the semiconductor sector."*

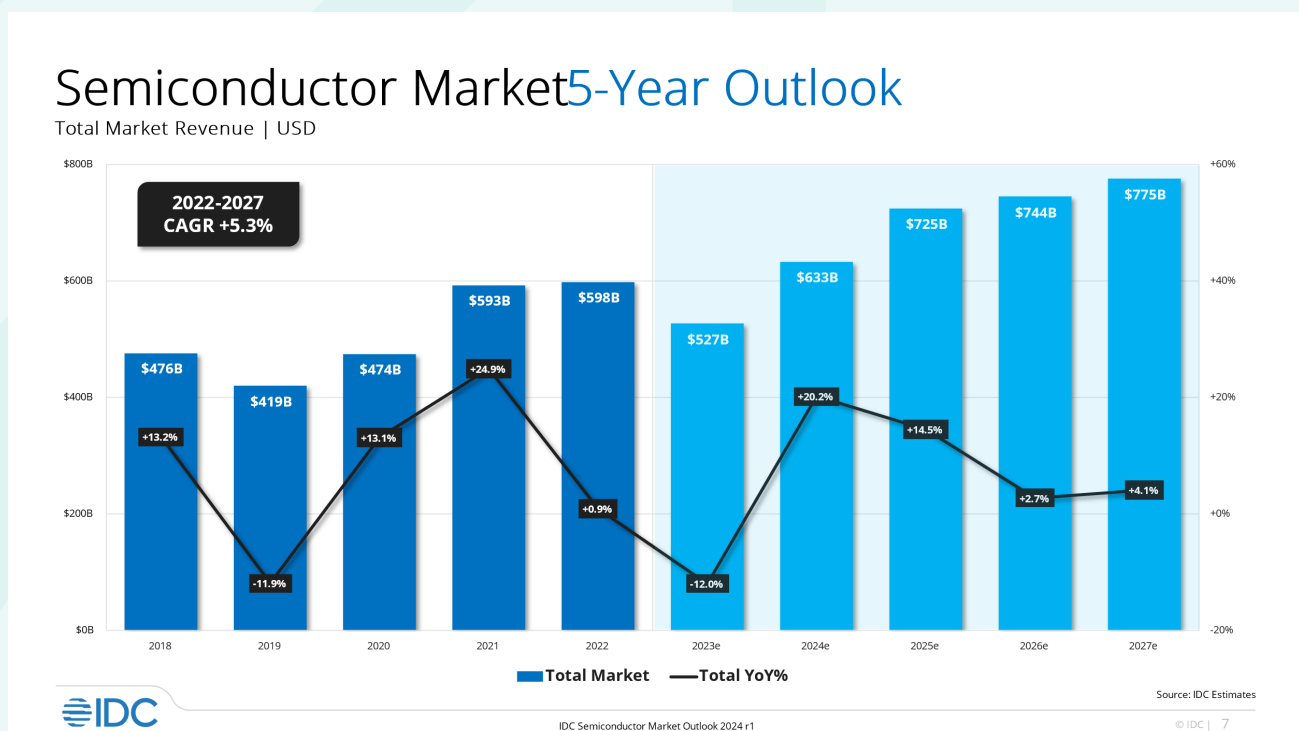
... — Stefano Selleri

Navigating the Semiconductor Industry: Trends, Challenges, and Opportunities

✍ By Mario Morales, Group Vice President, Enabling Technologies and Semiconductors - IDC

Mario showed that in the current phase, there is a notable rise in global investments, indicating a shift towards growth after a prolonged correction period of around 20 months. As the semiconductor industry enters its earnings season, marked by reports from major players like TSMC and Intel, Mario highlighted a noticeable uptick in momentum, especially in resilient sectors like automotive and industrial. This resurgence suggests a positive outlook for the industry, underlining its foundational role in today's technology landscape. The semiconductor content is expanding across various sectors, with markets such as servers and data centers expected to surpass \$100 billion in revenue soon. Conversely, traditional sectors like PCs and smartphones are gradually being overshadowed by emerging segments, with automotive and industrial markets projected to account for a significant share of the semiconductor market in the coming decade.

Figure 1
IDC Semiconductor Market 5-Year Outlook – Total Market and YoY%



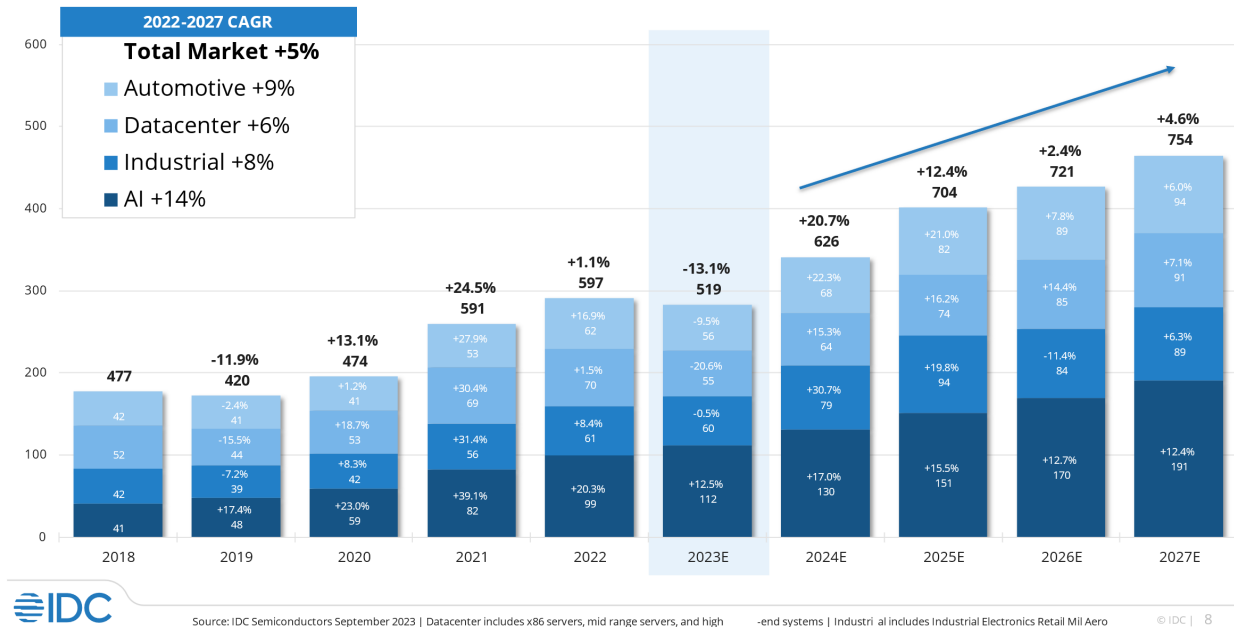
Source: IDC Semiconductors Group, 2024

Moreover, Mario's insights project an optimistic outlook for the industry, projecting a doubling of the semiconductor industry by 2032 with a compound annual growth rate of approximately 5.3%. He anticipates a significant industry shift driven by artificial intelligence (AI), with AI inferencing spreading further across the edge, similar to the transformative impact of cloud and mobile technologies. According to him, investments in the semiconductor industry are evolving rapidly, presenting both complexity and opportunities across Leading Edge and mainstream nodes. He stressed the paramount

importance of ensuring a resilient supply chain, especially amid the global shift towards technological advancement.

Figure 2:
IDC Semiconductor Market at \$100B: End-User Segments and YoY% Outlook

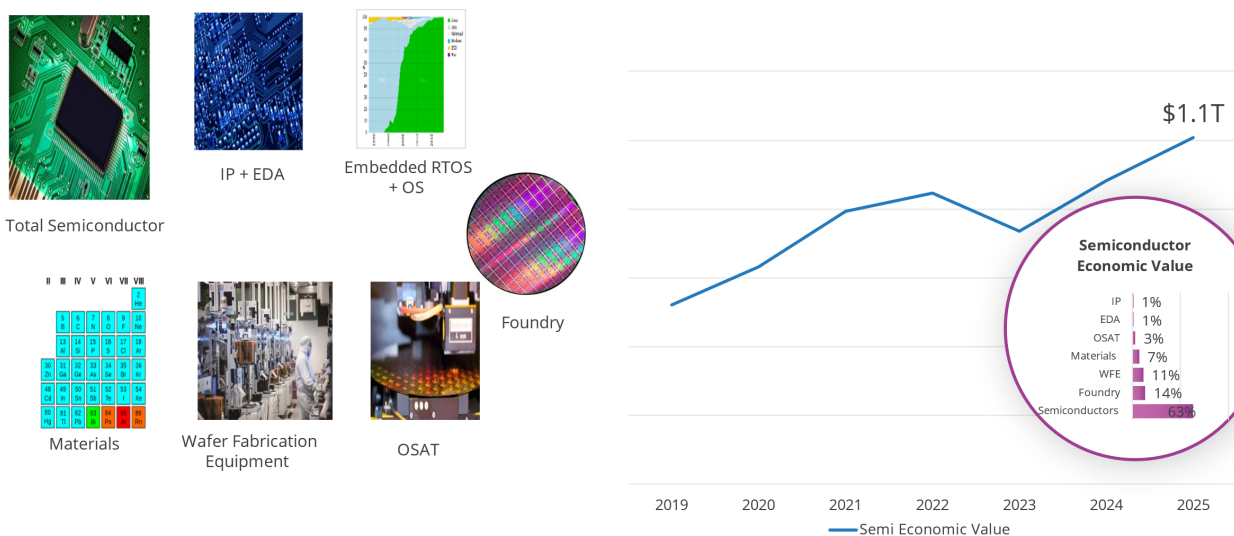
The Next \$100 Billion Semi Markets



Source: IDC Semiconductors Group, 2024

Figure 3:
IDC's Market Forecast of Supply-Side Segments

Semiconductor Economic Value



The speaker highlighted that the pandemic has underscored the criticality of supply chain resilience, emphasizing the need for strategic investments across various segments, including materials, design, assembly, and testing. Initiatives in these domains are crucial for sustaining growth and innovation within the industry, ensuring its continued evolution and success. Mario also emphasized that Europe, with its robust technological position, stands ready to capitalize on these opportunities, despite faster growth rates in sectors like AI accelerators or GPUs. Sectors like power, analog, and microcontrollers are experiencing accelerated growth as markets electrify and integrate these technologies further. In conclusion, Mario's insights underscore the evolving landscape of the semiconductor industry and its broader implications for technological innovation and enterprise strategies. He emphasized the need to balance new approaches with established models to ensure sustained growth and success in the semiconductor industry, prioritizing innovation while maintaining effective supply chain frameworks.

Figure 4:
IDC's Worldwide Server GPU Forecast: the GenAI effect

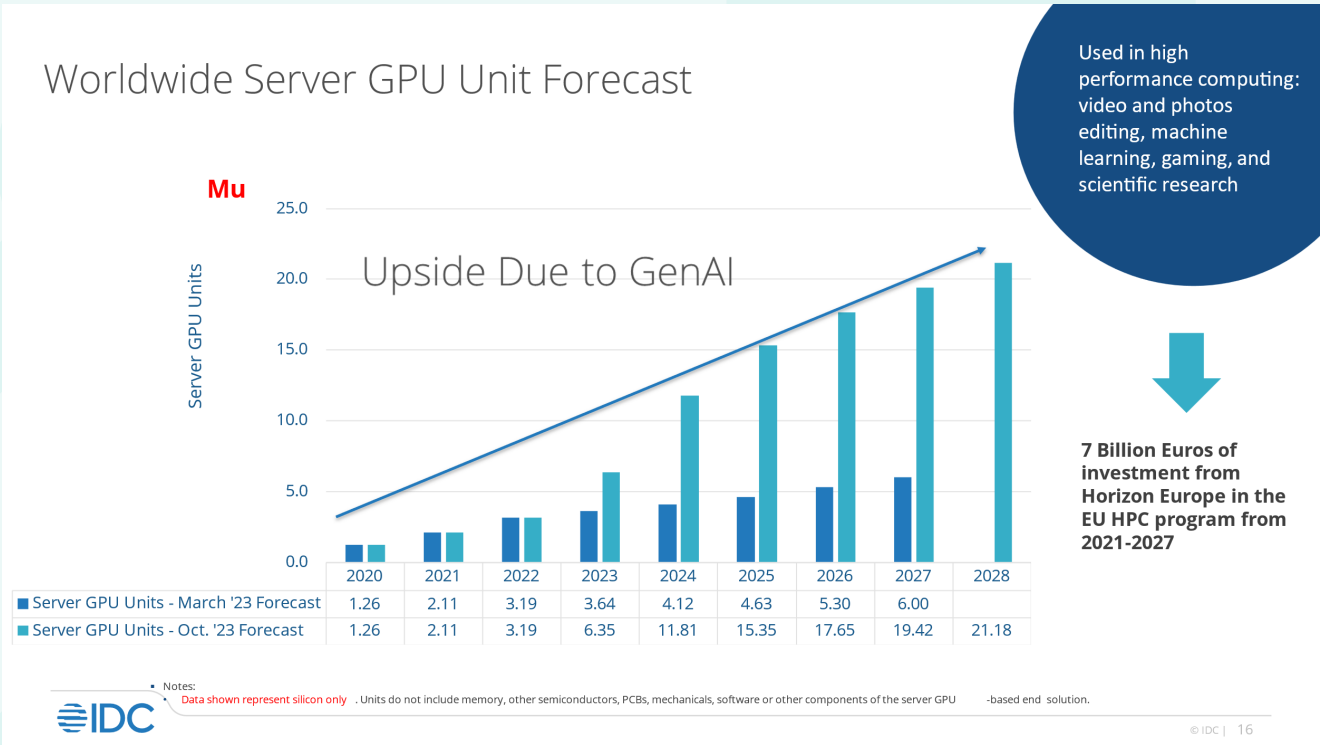
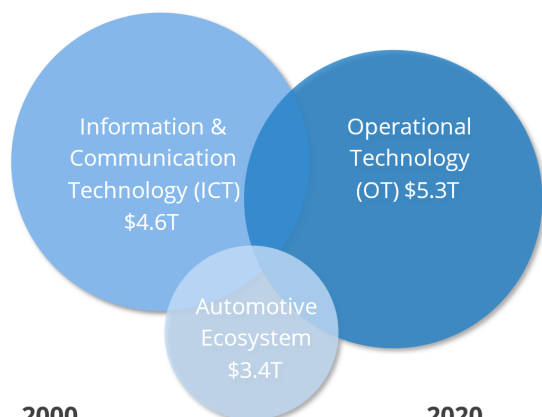


Figure 5:
IDC's Market Sizing for ICT, OT, and Automotive Ecosystem

2024 Technology end markets become more interdependent



2000

- OT: 1.2 T
- Auto: \$1.0T

2020

- OT: 4.3 T
- Auto: 2.8T



IDC Semiconductor Deployment Landscape Taxonomy 2023

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Source: IDC Semiconductors Group, 2024

"In the semiconductor space, significant growth is forecasted, with expectations of reaching approximately 720 billion euros by 2027, with an annual compound growth rate of approximately 5.3%."

— Mario Morales

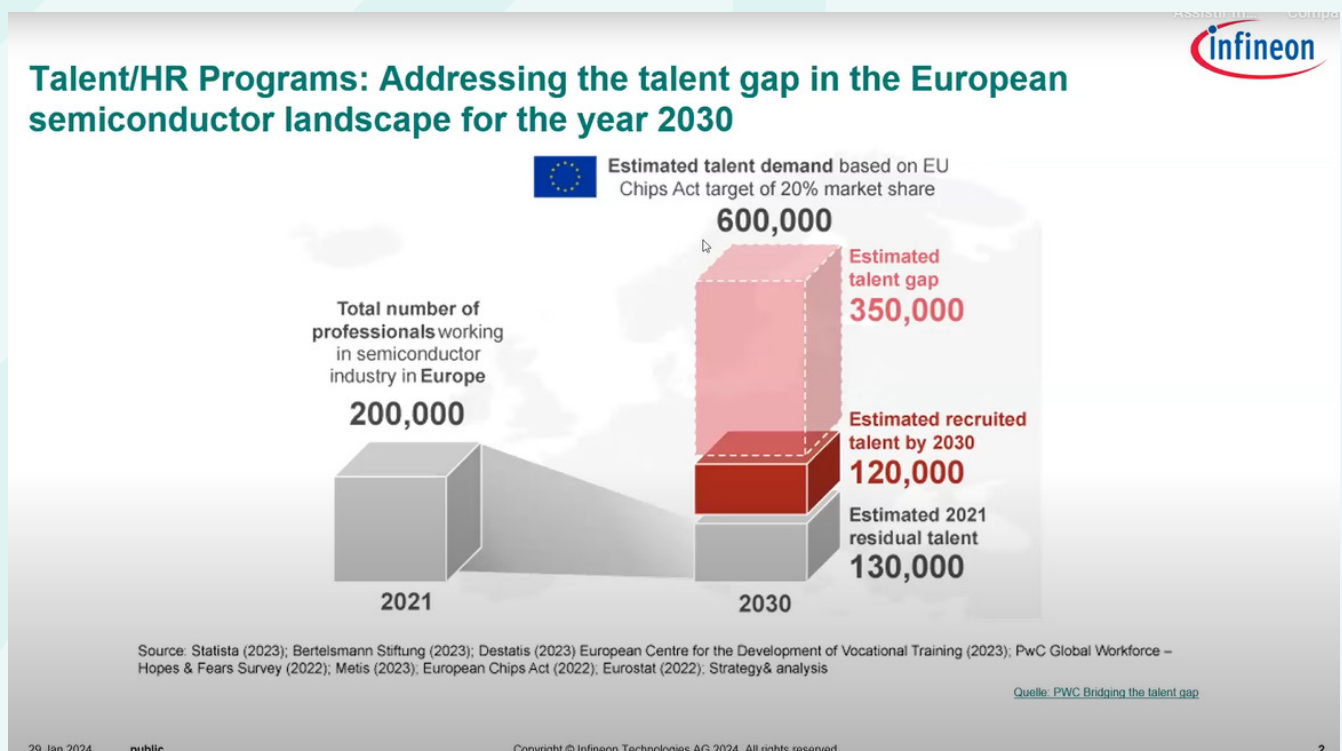
Talent Collaboration and Bridge Initiatives in the Semiconductor Industry

✍ By Martina Wolfgruber, Head of Talent Funding & Collaborative Projects - Infineon Austria

Martina highlighted the proactive measures undertaken in response to the looming talent gap in the semiconductor industry. Demographic shifts and mismatches between industry needs and educational qualifications exacerbate the challenge, prompting Infineon to pioneer initiatives aimed at nurturing future talent. By transforming classrooms into innovation hubs and engaging educators and parents, a solid foundation is laid for talent development.

Despite technological advancements, traditional job perceptions persist, hindering alignment between career aspirations and industry demands. Martina emphasized that collaborative endeavors are essential to dispel these misconceptions and foster interest in technology careers. Immersion in the target demographic's environment enables initiatives to illuminate the diverse opportunities within the semiconductor realm, emphasizing its pervasive presence in daily life.

Figure 6:
Talent/HR's role in addressing the semiconductor talent gap in the EU



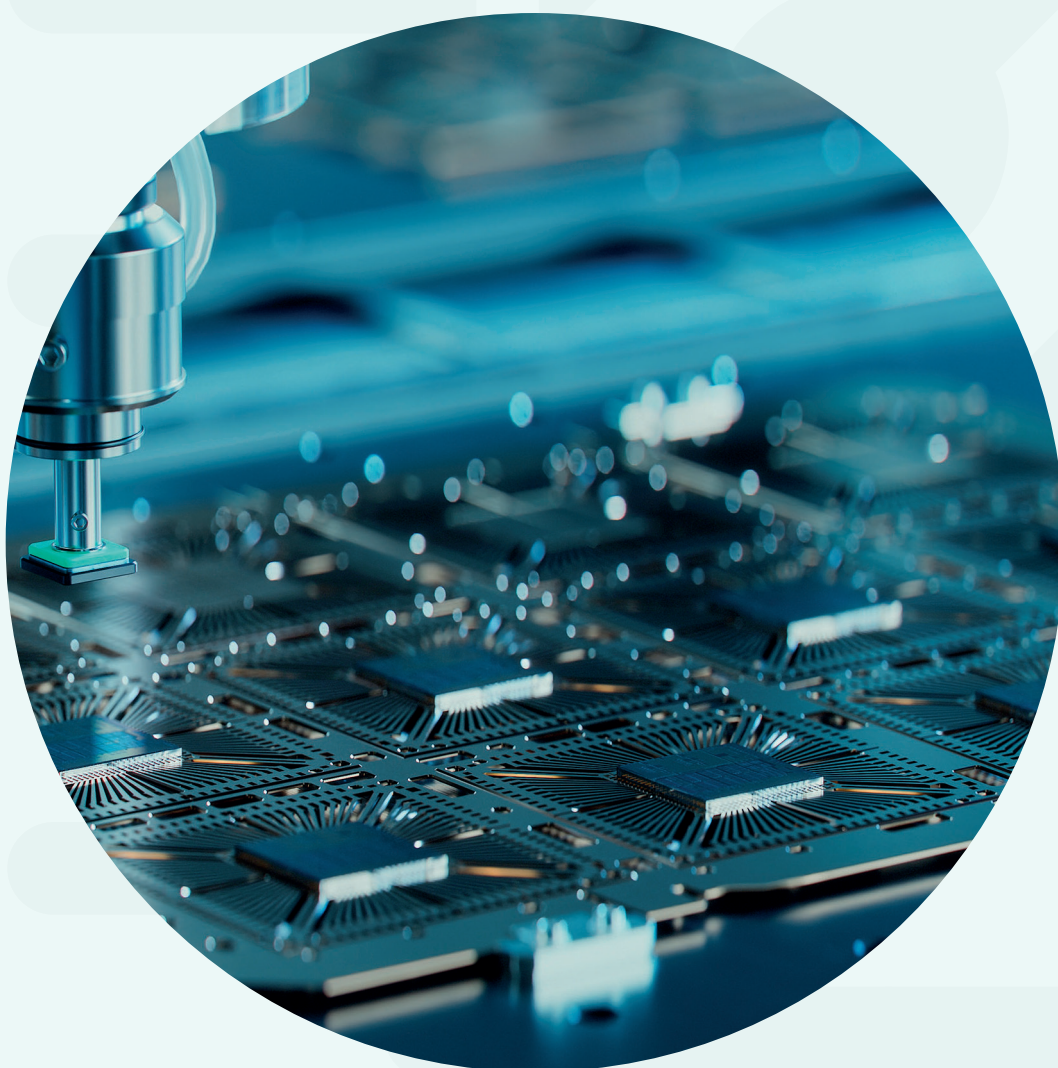
Source: Courtesy of Infineon, 2024

Moreover, Martina pointed out that efforts extend beyond students to encompass educators, parents, and educational institutions at large, guiding individuals through career pathways within the semiconductor industry. Strategic partnerships with universities and innovative programs like the PhD community and startup ecosystem further facilitate groundbreaking research and innovation. Projects like MAES exemplify a commitment to nurturing talent, offering diverse courses and reaching aspiring professionals. Looking ahead, Martina emphasized that sustained investment in collaborative initiatives is crucial towards realizing the vision of a skilled workforce

empowered by semiconductor technology. By fostering a deeper understanding of industry dynamics and career opportunities, these efforts are instrumental in shaping the future skills landscape and bridging the talent gap in the semiconductor industry.

..... *"Collaborative efforts are essential to dispel misconceptions and foster interest in technology careers, ultimately bridging the talent gap in the semiconductor industry."*

— Martina Wolfgruber

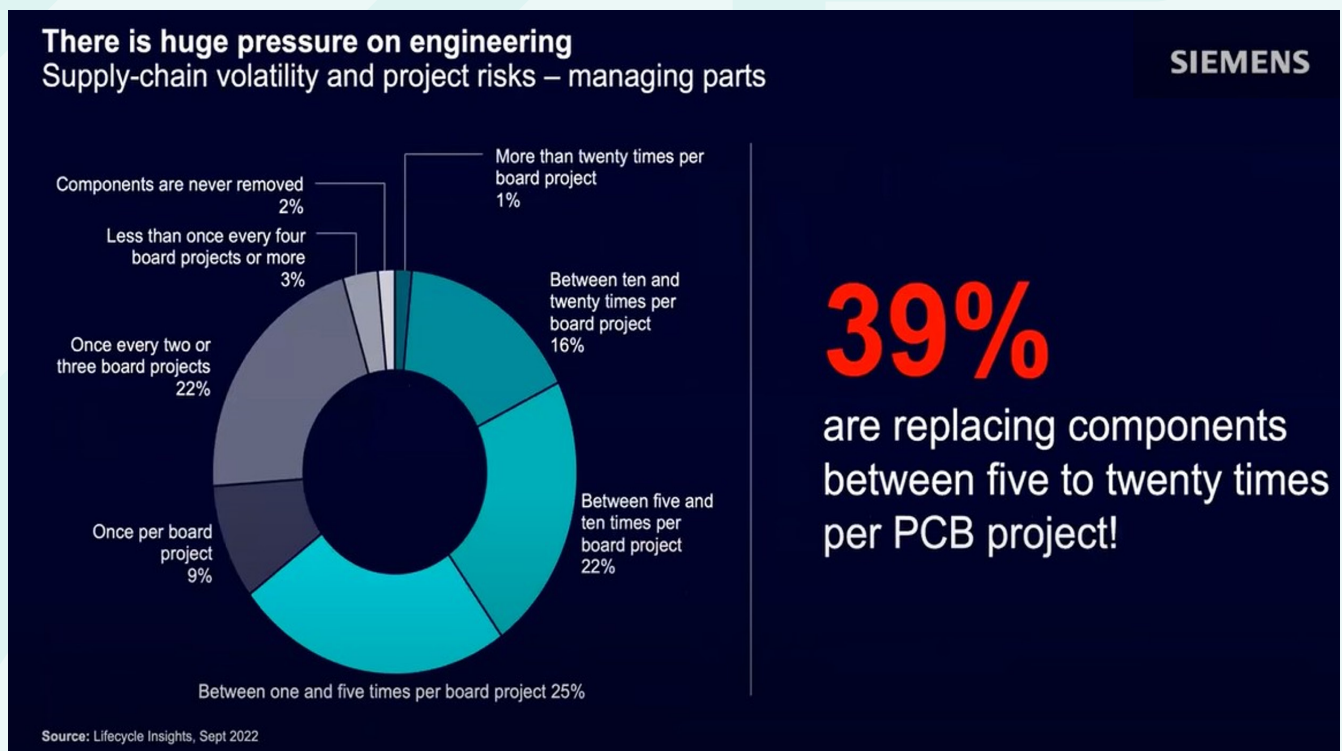


Navigating Supply Chain Challenges: Insights from Siemens and Europe's Semiconductor Strategy

✍ By Richard Barnett, Chief marketing officer and SaaS sales leader – Supplyframe, a Siemens company

Richard underscored the global surge in electrification and digitization across various industries, highlighting both opportunities and risks, particularly for products and services reliant on electronic components like semiconductors and ICs. He noted that investments in semiconductor foundry fab capacity, IP innovation, and talent development are underway globally, including the EU and the United States. As a Siemens company, Richard emphasized that Supplyframe's focus is on supply chain challenges and resilience opportunities, leveraging insights into market trends garnered from Supplyframe's extensive involvement in the electronics value chain over the past two decades.

Figure 7:
Supply chain risks and volatilities



Source: Courtesy of Supplyframe/Siemens, 2024

Europe's strategic focus on security and impact encompasses aerospace, defense, automotive, and industrial sectors, according to Richard. He pointed out that this reflects the region's emphasis on sustainability and innovation amid market volatility. Richard highlighted prevalent challenges such as demand fluctuations, inventory buildup, and supply chain complexities, necessitating agile decision-making to optimize trade-offs across cost, risk, and product life cycles. Initiatives like the European Chips Act aim to bolster digital sovereignty and reduce supply chain risks by localizing sources of supply.

Richard emphasized that major EU automotive players like Volkswagen Group and Stellantis are reassessing multi-tier supply chains, seeking visibility into embedded content and board designs to mitigate risks and align with the rapid pace of electronics design innovation. Despite near-term demand ramp-downs in the Eurozone, recovery is anticipated, with healthy design activity exceeding pre-pandemic levels. However, Richard pointed out that competition for common components and ICs among industries intensifies, leading to uneven growth trajectories.

To address these challenges, Richard suggests that companies must adopt agile, collaborative approaches and leverage shared ecosystem intelligence to navigate redesign cycles effectively. He emphasized the importance of cross-functional orchestration and long-term agreements with key suppliers, with a focus on skill set shifts to empower teams with strategic trade-off analysis capabilities. He also stresses the significance of "Shifting Left" within enterprises, prioritizing resiliency in design early in the development cycle, for long-term resilience. In summary, Richard highlighted that configuring products, automating changes, and fostering collaboration across the ecosystem are pivotal strategies for establishing secure and resilient supply chains across the product lifecycle, aligning with Europe's vision for sustainable innovation and economic stability.

"Europe's emphasis on security and sustainability in industries like aerospace and automotive calls for agile, collaborative approaches to address supply chain complexities and foster innovation."

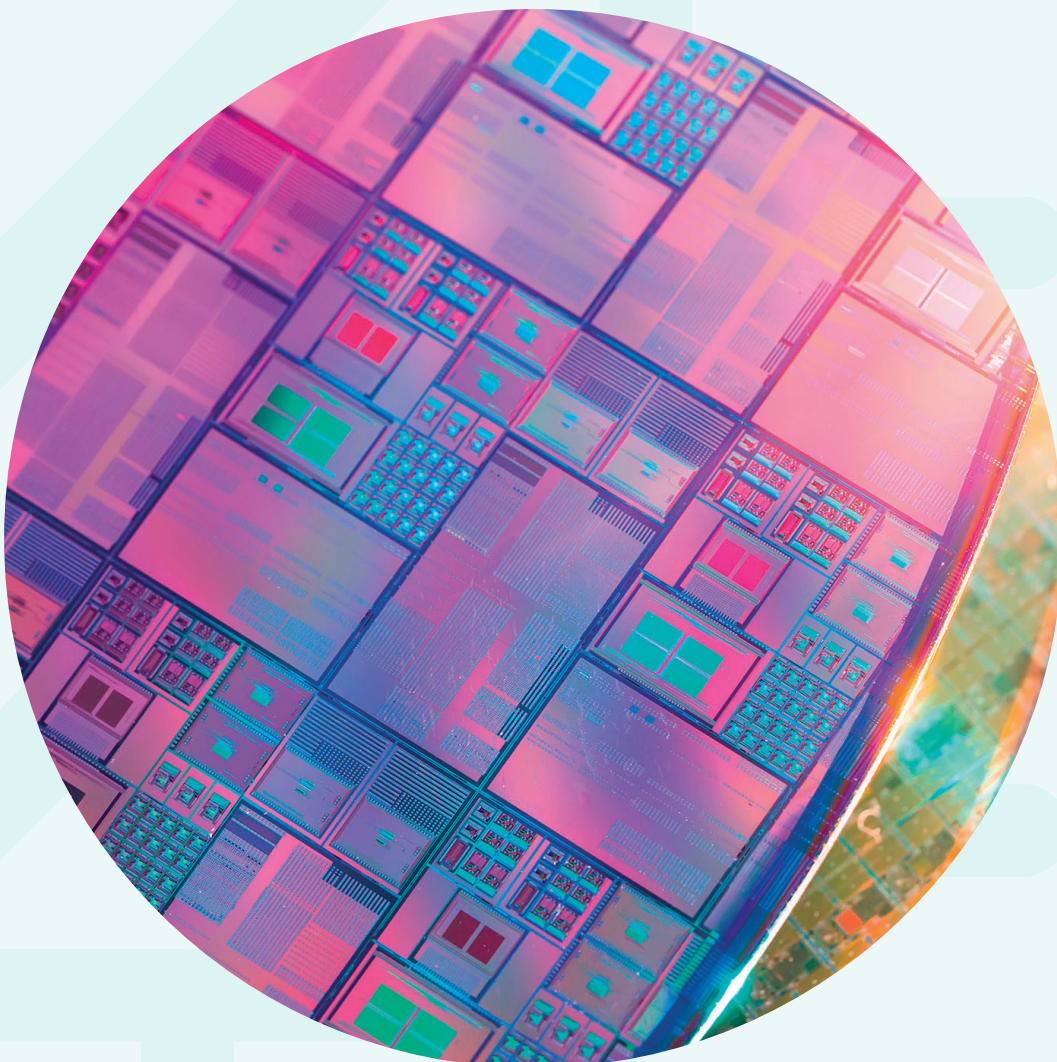
— Richard Barnett

Bridging the Semiconductor Skills Gap and Strategic via ALLPROS

✍ By Silvana Muscella, CEO of TrustIT and the technical coordinator of the ALLPROS.eu project

The focus of ALLPROS.eu aligns closely with the recently announced Economic Security package, emphasizing R&D coordination and support, notably through initiatives like the Chips Act, which aims to establish 14 Fabs. Over the next 24 months, ALLPROS.eu will prioritise upskilling and bridging the skills gap within the semiconductor industry.. Silvana invites those with expertise in the semiconductor field to participate in the newly launched Marketplace, providing a platform for collaboration and innovation. Additionally, a thematic working group dedicated to addressing the skills gap in the semiconductor sector is currently being initiated. Organizations keen on contributing to this endeavor are encouraged to join. For those interested in engaging with or providing insights to the Thematic Working Group on Skills, ALLPROS.eu welcomes their participation and input.

To access the ALLPROS.eu platform and the webinar recording available online, go to: [The state of the semiconductor market in Europe and the world | ALLPROS.eu](#)



ABOUT IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. With more than 1,300 analysts worldwide, IDC offers global, regional, and local expertise on technology, IT benchmarking and sourcing, and industry opportunities and trends in over 110 countries. IDC's analysis and insight helps IT professionals, business executives, and the investment community to make fact-based technology decisions and to achieve their key business objectives. Founded in 1964, IDC is a wholly owned subsidiary of International Data Group (IDG, Inc.).

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