

EU CHIP CHRONICLES

BRIDGING THE SKILLS GAP

From industry insights to collaborative initiatives, here's how the semiconductor sector can overcome its greatest challenge

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ISSUE

2

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Foreword



Welcome to the second issue of the **EU Chip Chronicles** magazine, the quarterly publication providing stimulating stories on the world of European semiconductors by the ALLPROS.eu project - a coordination and support action funded by the European Commission Digital Europe Programme to enhance **Europe's digital sovereignty in the chips industry** through the consolidation of the community and empowering it through the creation of a knowledge platform.

This issue's focus is on tackling the skills gap in Europe, a challenging issue that is currently projected to only get worse with time¹. With this issue, we will spotlight some of the initiatives and collaborative approaches that European players can draw from to take the sector forward into a competitive global market.

We open with our post-event takeaways from our roundtable discussion ALLPROS.eu organised at the Chips JU Launch event on December 1st 2023. The Launch event was a significant milestone in the evolution of the European strategy on semiconductors and we were proud to participate in such a momentous occasion, facilitating a discussion between **industry players, academia, and the European Commission**.

We then have the return of the Vox Populi, our stakeholder outreach article in which we asked a selection of experts in the field about their thoughts and experiences in dealing with the current skill shortage. This is where you can learn about how this issue is challenging the European sector directly from those working in it!

The following section spotlights the European Chips Skills Academy, the exciting new initiative spearheaded by SEMI Europe, funded under the ERASMUS + programme of the European Commission, that aims to setup an ecosystem offering career paths in the microelectronics industry that are attractive and accessible to all talented people in the entire EU, facilitating the entry into the sector of a new skilled workforce.

Next up is our **exclusive article "Closing the Skills gap together"**, in which we provide an overview of the current challenge, what initiatives are doing to address it, and how European players can come together to move the industry at the forefront of an increasingly demanding global economy.

Finally, we spotlight the Edu4Chip initiative, the new project funded under the Digital Europe programme with the aim to design and implement master's study programmes that will prepare students to become part of a new, **top-level skilled workforce**.

To conclude we delve into the tools that ALLPROS.eu has been busy working on amalgamating the community of stakeholders through a technologically focused Radar that monitors market readiness and tracks the evolution of new technologies, the Observatory which allows the community to keep track of what's new and what's generating discussion, and the Marketplace which allows semiconductor companies in Europe to spotlight their excellence in products and opportunities. All of these together form the ALLPROS.eu Suite of Tools, which provide a vibrant ecosystem for anyone looking for the latest insights and opportunities in semiconductors.

ALLPROS.eu is currently facilitating the delivery of a Blueprint to provide concrete examples on how to bridge the skills shortage in Europe. Should you have some concrete examples that work in your country, we'd love to read about them and we would invite you to contact us so we may learn more.

I hope you will find this issue as interesting and timely as we do and hope you will enjoy this issue. If you would like to share some of your stories with us we would be happy to include them in our future editions.

Silvana Muscella

ALLPROS.eu Technical Coordinator

¹ Strategy& estimates a 350,000 skilled worker shortage by 2030, if current trends hold. Source: <https://www.strategyand.pwc.com/de/en/industries/telecommunication-media-and-technology/bridging-the-talent-gap.html> (2023)

Post-event takeaways from Allpros.eu Round table discussion in Chips JU Launch event

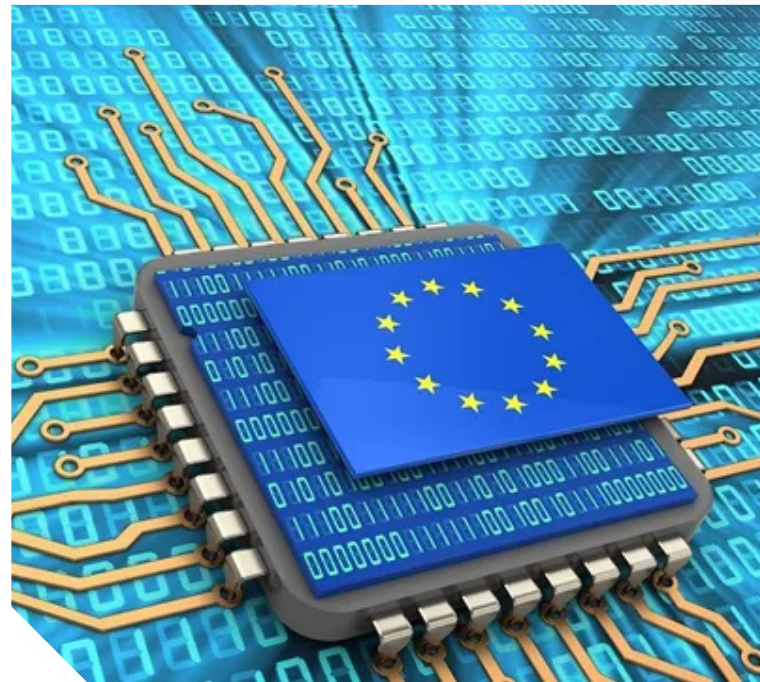
By Lottie Boas and Konstantina Mataftsi (White Research)

On December 1st last year, ALLPROS.eu organised a round table discussion titled “Supporting the next generations in the European semiconductor industry”, alongside the Chips JU for Europe Launch event. The objective was to catalyse the collaboration among academia, industry and research – the triple helix – to address the prevailing skills gap in the European semiconductor industry. Moderated by [Silvana Muscella](#) from Trust-IT, coordinator of ALLPROS.eu, the event gathered representatives from leading companies such as imec and Bosch GmbH, who shared their findings and insights on the matter. This article encapsulates the main takeaways and innovative solutions to navigate the skills gap in Europe.

Acknowledging the skills gap

The session began with [Stefano Selleri](#) from the European Commission, representing the DG CONNECT Microelectronics and Photonics Industry Unit, underscoring the evolving landscape of the semiconductor industry. With projections indicating a demand for up to 600,000 new workers by 2030, Stefano stressed the need for a proactive response from the EU. While the European Commission has initiated various programs, the magnitude of the challenge necessitates a united effort.

[Giorgio Micheletti](#), Consulting Director at IDC, subsequently presented statistics emphasising the urgent skills shortage, highlighting the industry’s



pressing need for specialised talent. Key findings from surveys among manufacturers and end-users painted a stark picture: a clear skills gap exists, exacerbated by fierce competition for a limited pool of resources. Moreover, the absence of internships and



Skills shortage – Reality or speculation?...Reality!



- **The skills shortage is a reality for both manufacturers and end user companies of semiconductors.**
 - Over half of respondents from both surveys claim to have had **difficulties recruiting specialized staff**.
 - A shortage of applicants and lack of both **in-depth practical knowledge and work experience** were the main reasons for end user companies and manufacturers on why it is difficult to recruit.



upskilling programmes, coupled with the prolonged time required to bring new workers up to speed, further compounds the challenge.

Insights from the round table discussion

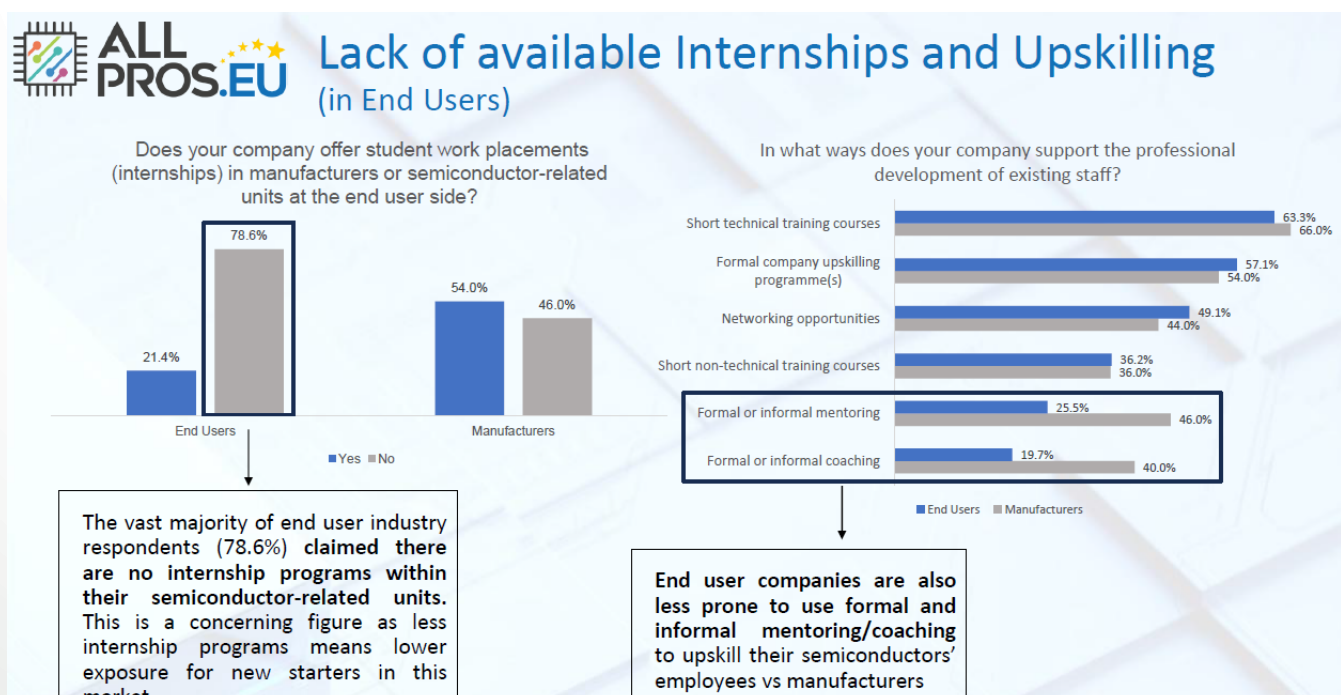
The following representatives participated in the round table session: [Victoria Cummings \(SEMI\)](#), [Emir Demircan \(Infineon Technologies\)](#), [Janine Dobelmann \(NXP Semiconductors\)](#), [Christopher Frieling \(SEMI\)](#), [Romano Hoofman \(imec\)](#), [Matthias Illing \(Robert Bosch GmbH\)](#), [Roger de Keersmaecker \(imec\)](#), [Salvatore Moccia \(EIT Digital\)](#), [Cosimo Musca \(STMicroelectronics\)](#), and [Stefano Selleri \(DG CONNECT\)](#).

Creating Opportunities through Internships and Training Programmes

The representatives' insights revealed a consensus on the lack of training and awareness programmes on microelectronics, prompting discussions on initiating a transformative shift in curricula. According to representatives [Romano Hoofman](#) and [Roger De Keersmaecker](#), Strategic Development Director and former Senior VP of Strategic Relations at imec respectively, imec already implements robust internship programmes catering to a diverse range

of students and professionals. With an incubation period of 4 years, imec roughly introduces 200 new professionals into the market each year. In response, Bosch GmbH Coordinator of Public Funding Projects [Matthias Illing](#) pointed out that there appears to be a growth challenge, requiring not just enhanced skills but an increase in the number of individuals interested in the sector. While more internships are beneficial, these alone do not address the underlying numerical shortage.

[Emir Demircan](#), Director of Public Policy at Infineon Technologies, emphasised the importance of exposing students to the industry at an early stage, for instance by further adoption of dual studies and accelerated industry-education collaboration with the help of EU programmes. EU funding instruments in the field of education, such as Erasmus+ and Digital Europe Programme, should support formal learning programmes, in addition to informal learning. Moreover, EIT Digital head of Education and Skills, [Salvatore Moccia](#), who has been analysing the dropout rates across various academic disciplines, also agreed that polytechnic universities tend to cut too many students. He also recommended that the importance of close collaboration with industry experts to align educational curricula with the evolving requirements and trends of the sector is key.





Retaining and Attracting Talent

To retain and attract talent, innovative programmes such as shadowing initiatives and reverse mentorship were proposed by [Janine Dobelmann](#), Head of Government Affairs EU at NXP Semiconductors, and [Emir Demircan](#). For example, NXP Semiconductors implements successful shadow programmes facilitating the knowledge transfer and expertise from seasoned professionals to emerging talent. In a similar vein, Infineon Technologies offers reverse mentorships where a young starter guides a more senior colleague. SEMI likewise implemented the EU Chips Skills Academy to transfer knowledge across different regions, ensuring the retention of valuable talent throughout the process.

Raising Awareness Among Younger Generations

Raising awareness among younger generations emerged as another crucial focus point, with participants emphasising the need to connect the existing initiatives and transfer them into an overarching marketing campaign. According to [Roger](#)



[De Keersmaeckers](#), there is an “image problem” in Europe’s technology sector, due to the lack of major technology companies. “We need to engage younger generations by showcasing the industry’s potential in addressing global challenges like climate change.” To do so, collaboration between industry and universities, along with increased budget allocation to communication and dissemination efforts, was deemed crucial by the participants.

In conclusion, addressing the challenges in the semiconductor industry requires a multifaceted approach. European Initiatives should be connected and transferred into a mass awareness campaign to make the industry more attractive to the younger generation. ALLPROS.eu is already setting up a Skills

Thematic Working Group between industrial players to further drive initiatives. While increased access to scholarships and mentorship programmes in microelectronics is crucial for attracting talent early on, close collaboration with industry players is important to ease the transition into the job market. Together, these measures can drive the European semiconductor industry forward.

Vox Populi on the Skills Gap

🗣️ Giovanni Agosta, Professor in Department of Electronics, Information, and Bioengineering at **POLIMI** (Politecnico di Milano)



The European Union must prioritise investment in Research and Innovation (R&I) to prevent inefficiency costs from impacting final products, a concern that will only intensify over time.

The shortage of skilled professionals in the semiconductor industry can be at least partially alleviated by addressing the mainstream perception of the industry, affecting particularly the female population.

On the other hand, industry must take the lead by developing a robust upskilling strategy and outlining specific needs. While online education alone cannot cultivate a well-educated and proficient workforce, it is a valuable tool for upskilling existing workers. Based on industry upskilling needs, the academia can design targeted and up-to-date courses, ensuring a workforce equipped for the demands of the evolving landscape.

🗣️ Tobias Proettel, Administrator and CEO at **World Semiconductor Trade Statistics**



Information is crucial to address challenges like the skills shortage. A deep understanding of the Value Chain is essential to identify gaps and determine the specific skills needed at different stages.

To strengthen the Value Chain for Semiconductors, Europe must develop expertise not only in chip manufacturing but also in crucial areas like packaging. This comprehensive approach ensures a well-rounded skill set across the entire value chain. Organisations like the World Semiconductor Trade Statistics are

valuable in helping policymakers identify bottlenecks for different semiconductor market segments and the required resources for resolution.

🗣️ Alessandro Dondo, **Micon-Global**, Region Head, Europe



Our company and all the partners we represent are affected by the difficulty to hire personnel skilled in semiconductors and electronics, which slows down potential business growth. I believe that we give more chances to high school students to fall in love with technology, with initiatives such as dedicated programs and seminars in the schools. That might help to increase the rate of STEM graduates. In the long run, it generates a new wave of technicians, engineers and managers. That said I encourage all youngsters to have an experience abroad, and bring back expertise and skills. That's what I did too.

🗣️ Marielle Campanella, **Pôle SCS**, head of European projects



Pôle SCS is a deeptech cluster, based in France. Our members are working together to develop and market products and innovative services to generate growth and jobs in high growth markets.

The skills shortage in the microelectronics sector is a strong issue within our ecosystem. The capacity to locally recruit new talents is a key factor for the development of the companies in the sector, of any size, and also for the implementation of new companies.

On one hand, the growth of the microelectronics sector is important, being at the industrial and

technological core for the twin transition (digital and green). On the other hand, the sector is suffering from a lack of attractiveness.

In this context, Pôle SCS is involved in a number of activities and projects, both at national and European levels, aiming at reinforcing the attractiveness of the microelectronics sector. Two examples are ECoVEM and I-NOV MICRO, that aims at establishing a network of Centers of Vocational Excellence in microelectronics and that will develop a new training offer to meet the recruitment needs and the skill development in the microelectronics sector, focusing both on production and on design and R&D.

Georgios Fagas, PhD
MBA, Head of CMOS++
and EU Programmes,
Tyndall



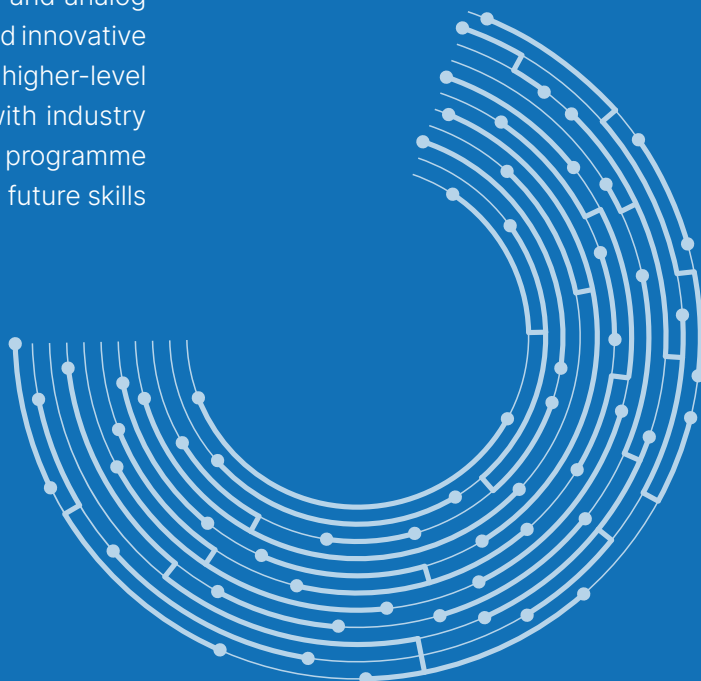
The entire semiconductor industry relies heavily on highly talented people with imagination, ingenuity and innovative instincts. Innovation will flourish where the talent is. Companies will grow and go where the skillful workforce is. The widening gap between supply and demand of people with technical skills in semiconductor development and manufacturing limits our capacity for innovation and the industry's ability to respond to societal and market needs. Urgent action should target supports for the university system to increase the staff-to-student ratio, and to attract and educate more people on processing and manufacturing, digital and analog design, heterogeneous system design, and innovative materials formulation. A holistic view of higher-level qualifications is needed that is in sync with industry needs and incorporates an up/re-skilling programme along with outreach elements to ensure a future skills pipeline.

Nathalie Martin-
Hübner, Vice President
Governmental Affairs at
Robert Bosch GmbH



At Bosch, we remain firm in fulfilling our founder's commitment to assume social responsibility and have taken the skills shortage as an opportunity to strengthen our talent partnerships and lead through challenges by example. Building on our extensive networks, we reinforced our engagement and commitments to universities, scientific and civil communities extensively - making sure that even more young talents have the means to achieve their full potential. Critically, starting 2024, Bosch has committed to increasing the number of apprenticeships at several locations, taking on more than 1,500 new apprentices in Germany alone.

Looking ahead, to tweak corporate "talent strategy" screws to fix the shortage of professionals across the semiconductor industry is simply not enough. To turn the tide and build talent sustainably, the EU Member States must act jointly with the industry on the transformation of education ecosystems and infrastructures. This requires not only modernization of training equipment and facilities, but also deployment of agile, rewarding STEM academic growth paths that foster entrepreneurial mindset and yield incentives ahead of future employment – sustaining from early-on career motivation among the next generation of semiconductor industry professionals.



Discover the European Chip Skills Academy

 By Ola Adach (OpenForumEurope)

With the rise of data-intensive technologies like AI, 5G and edge computing, semiconductors have emerged as the drivers of conversations around EU's digital sovereignty and strategic independence. In order to ensure that data sensing, processing, and storing is secure and that critical products remain, the EU launched a series of initiatives that support the bloc's semiconductor industry. The [European Chips Skills Academy](#) (ECSA) emerged as a project aimed at reskilling and upskilling the workforce to meet the growing demand for high-skilled workers in Europe's microelectronics industry.

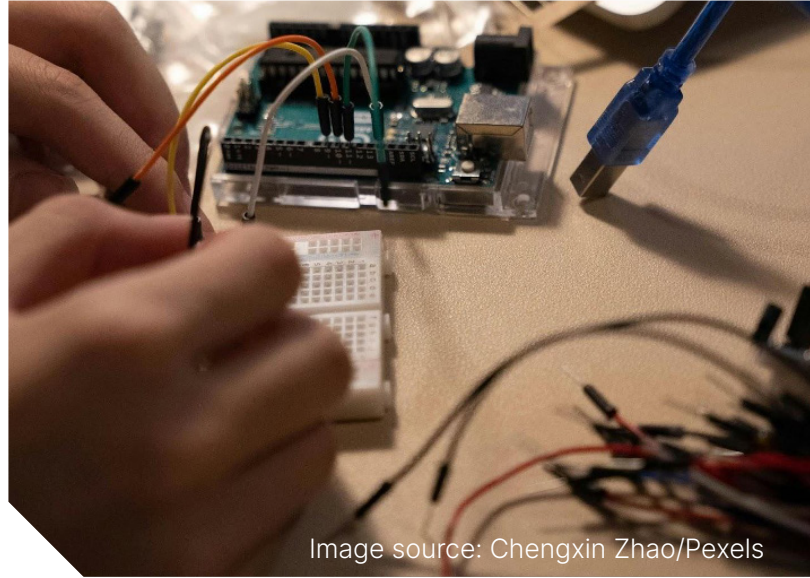


Image source: Chengxin Zhao/Pexels

ECSA's objectives and partners

The initiative is spearheaded by SEMI Europe, the leading industry association serving the global electronics design and manufacturing supply chain. As set out in SEMI's [vision paper](#), by 2030 the Academy will “*have set up an ecosystem offering career paths in the microelectronics industry that are attractive and accessible to all talented people in the entire EU regardless of their gender, belief, age, nationality, or background.*”

With ECSA, the EU will be able to both futureproof its workforce and anticipate the growing demands for advanced skills in the design and manufacturing of microelectronics components and systems. The Academy kicked off in October 2023 and is set to receive up to €4 million in funding over four years from the European Commission through the Erasmus+ Programme. This transformative venture is a result

of a collaboration among 18 partners¹, including research organisations, vocational and education training (VET) providers, certification agencies, and industry stakeholders from 12 European countries. The diverse and robust group of stakeholders aims to address workforce development challenges by providing strategic foresight to the evolution of professions and skills in the industry.

ECSA constitutes a Working Group of the European Chips Skills Alliance, which builds upon the success of the [Microelectronics Training, Industry and Skills](#) (METIS) project. METIS was a private-public consortium funded by the European Commission whose main work programme concluded in October 2023; it aimed at fostering collaboration between the microelectronics industry and education providers. The European Chips Skills Alliance emerged as a continuation of the METIS alliance by setting out a long-term action plan for the skills development

¹ Partners include SEMI Europe, AENEAS, Asociación Nacional de Centros con Certificados de Profesionalidad (ANCCP), Budapest University of Technology & Economics (BME), DECISION Etudes & Conseil, TU Dresden, TU Graz, Infineon, Information Centre on Academic Mobility and Equivalence (CIMEA), Innovazione Apprendimento Lavoro Friuli Venezia Giulia (IAL-FVG), imec, Knolyx, Melexis, Okmetic, Platform Talent voor Technologie (European STEM Coalition), Silicon Saxony, Technical University of Ostrava, and Tyndall National Institute.

of the microelectronics industry that is driven by industry and academia.

Besides the Alliance, ECSA is also strategically aligned with the [Pact for Skills for microelectronics](#) and the [EU Chips Act](#), envisioning comprehensive support for the microelectronics ecosystem in Europe. Thus, the Academy will serve as the educational and training arm implementing the Pact, in addition to underpinning the implementation of the EU Chips Act. The Academy will play a pivotal role in attracting and nurturing new talent, delivering targeted training in key microelectronics fields such as automotive and additive manufacturing.

Overall, the European Chips Skills Academy stands poised to usher in a new era of collaboration, innovation, and skill development in Europe's microelectronics sector and facilitating the achievement of the Chips Act's objectives. As [highlighted](#) by [Lucilla Sioli](#), Director of Artificial Intelligence and Digital Industry at the European Commission's DG CNECT, the Academy aligns with the Commission's vision to enhance skills through sectoral cooperation, thereby contributing to the semiconductor skills shortage and attracting new talents to the industry. Once operational, ECSA will be the first decentralised microelectronics skills provider in the EU that focuses on overcoming the skills gap, thus setting the stage for sustained growth and competitiveness in Europe's microelectronics industry.

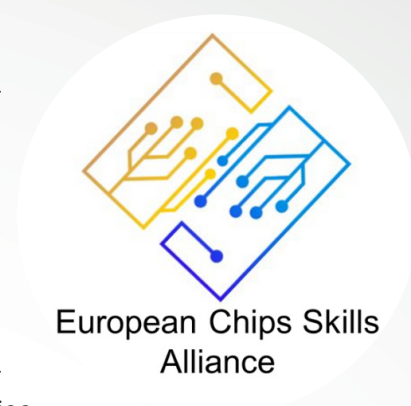
How will ECSA achieve its goals?

ECSA activities focus on work-based learning to combine practice with theory – this will be achieved through placements and internship programs that bridge the gap between education and employment. Thus, the network will provide scholarships, apprenticeships, laboratory access, and a combination of vocational and online training across a European-wide network of universities and training centres. The Academy will offer specialised microelectronics upskilling and reskilling programs, accredited at various levels (EQF 3 to 8).

The Academy also foresees the development of professorship guidelines to expand teaching opportunities. By offering a wide array of educational in-

itiatives, the Academy will facilitate accessibility to pilot lines and industry infrastructure for apprentices, as well as give training institutes and universities access to manufacturing technologies. Overall, the partners will develop curricula, in addition to offering training content, courses, internships and a summer school covering the key topics in microelectronics that will help to bridge the chips skills gap.

Industrial companies, universities and VET providers, national competence centres and other actors in the field of education and training related to microelectronics interested in joining the Academy can express their interest on the Alliance's signup page. Join the efforts to address the skills shortage and strengthen Europe's competitiveness in the microelectronics sector!



“Quote by **Victoria Cummings**:

The European Chips Skills Academy builds on the best practices of previous projects like METIS to first accurately quantify the skills gap and then use this data to develop a wide range of educational opportunities through the Academy platform. This is really the key philosophy of the project - we need to zoom in on the critical needs of this growing industry and craft fit for purpose programs to support learners of all different levels.

Beyond the training aspect, this project aims to establish an enduring network through the European Chips Skills Alliance that will connect actors from across the entire talent pipeline. By tapping into the insights of everyone involved - from educational providers, to industry, and all the stakeholders in between - we can ensure that training provided through the Academy is addressing critical skills gaps and the needs of learners.

Chip Summer School

Join us from August 18th to August 23rd, 2024 at the University Residential Centre of the University of Bologna in Bertinoro, Italy, for an immersive journey into the world of microelectronics. Organized by the European Chips Skills Academy (ECS) in collaboration with Aeneas, Inside, and EPoSS, this Summer School offers undergraduate students a unique opportunity to explore the intricate processes and vast possibilities of Integrated Circuits (ICs), commonly known as chips.

The School will focus on four main topics: Semiconductor technology, Integrated circuits design, Digital systems and Embedded Intelligence, and Integration. Led by experts from leading universities, research institutes and companies, the program will showcase the diverse opportunities offered by the semiconductor sector and the wide implementation of microelectronic devices.

Eligibility criteria: the Summer School is open to undergraduate students from all fields of STEM (Science, Technology, Engineering, and Mathematics) in universities based in the EU or associated countries. Applicants should be either preparing to select a major for a graduate degree or considering pursuing a Masters degree. Proficiency in English is mandatory, as all interactions will be conducted in English.


Deadline for application: April 30th, 2024, 17:00 CEST

Selection process: Applicants will be evaluated based on their CV, statement of purpose, recommendation letters (up to three), and academic transcript. Gender and geographical balance will be taken into account to ensure a diverse cohort. Lodging and food will be provided free of charge and travel costs can be reimbursed (based on receipts) up to 600€.

Don't miss this opportunity to expand your knowledge, network with industry experts, and get a headstart in the dynamic field of microelectronics. Apply now at <https://chipsacademy.eu/summer-school/> for this unique opportunity and take the first step towards a rewarding career in the semiconductor industry!



Closing the Skills gap together

 by Matilde Castleberry and Diego Domenici (Trust-IT)

The semiconductor industry is set to continue to grow at an accelerated rate due to increasing demand for innovations in other sectors. The expected growth is for a market doubling and an increase in revenue of about *100 billion dollars*, heralding an age of innovation and expansion for this crucial sector.

However, the industry is facing a major challenge that is set to worsen in the coming years: it simply **does not have enough skilled workers** to go around.

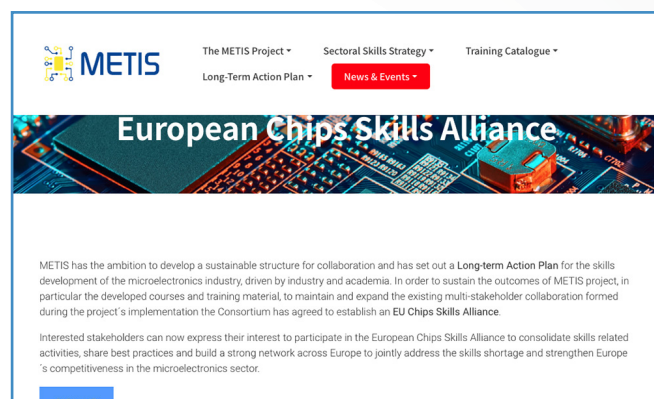
Already the talent supply cannot keep up with the talent demand, but with the evolving necessary skill set and the great expected increase in demand, according to current projections Europe is set to find itself with a massive *350 thousand* worker shortage in 2030.

The painful truth is that the majority (70+%) of chip manufacturing is still in Asia, mostly in Taiwan but also China and South Korea. Even though Europe has decided to invest time and attention in strengthening its semiconductor sector, it still is currently very much behind USA and Asia investment levels and planned fabs. To truly tackle this existential challenge to the European semiconductor sector, we need to invest in the skilled professionals of tomorrow by cultivating a collaborative environment for industry and academia to give students and workers the knowledge and training they'll need to not only close the gap but propel this sector into the future. For that, we should take inspiration and build upon successful education and training initiatives that are already underway.

Worth mentioning in particular are the following:

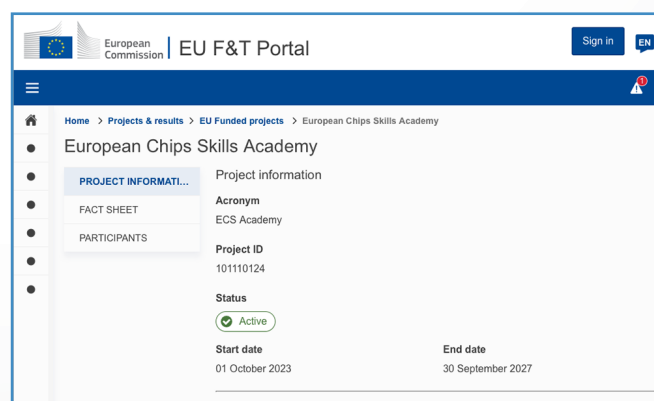


European Chips Skills Alliance



The European Chips Skills Alliance, an initiative organised under the METIS project and coordinated by SEMI Europe, was established in 2019 and came to an end in November 2023, aimed at strengthening the European semiconductor workforce. The initiative - consisting of 18 consortium partners and driven by industry and academia, offered curricula and training content. It had a fundamental role in promoting collaboration between academia and industry and served as a platform to track the evolving need for skills in the microelectronics industry by fostering educational sector adjustments. Held its concluding event in November during the Chips Ju event.

EU Chips Skills Academy



The European Skills Academy, also coordinated by SEMI Europe and started in October 2023, is the

successor of the METIS project and will be putting into action the Pact for Skills. It will promote skills development in the European microelectronics area by creating a pioneering decentralised academy for microelectronics, connecting industry, research, higher education, and vocational education and training, which currently operate independently. Finally, it will develop physical and virtual curricula to meet the evolving skills demands of the sector.

Joint Education for Advanced Chip Design in Europe (Edu4Chip)



The "Edu4Chip" project enhances chip design expertise in Europe by implementing standardised study programs across top universities. Students undertake full chip design processes, from conceptualization to manufacturing and testing, supported by experts from research and industry ensuring quality education and specialisation options in areas like low-power design and AI-centric design. The project targets over 150 European and 100 non-European students annually, preparing them for careers in chip design. Participants in the programs will also be able to focus their studies on specific areas of chip design, such as low-power design to promote sustainability, secure hardware design, or AI-focused design.



European Centre of Vocational Excellence in Microelectronics (ECovEM)



The ECoVEM project brings together various stakeholders to tackle challenges like digitalization, AI, green technologies, gender equality, and migrant integration. It enhances VET systems across Europe by implementing innovative instructional methods and fostering lifelong learning. ECoVEM networks Centers of Vocational Excellence, develop tailored VET curricula for Microelectronics and promote achievements in the field. Among its objectives, it aims to disseminate microelectronics industry achievements to raise its attractiveness through open days, international schools, and competitions.

GreenChips-EDU



The "GreenChips-EDU" project, led by TU Graz, with funding from the European Commission and the Austrian Research Promotion Agency, focuses on training about 600 students for Bachelor's or Master's programs to become specialists in sustainable and energy-efficient microchip development. Partnering

with seven European universities and eight industry and research partners, “GreenChips-EDU” seeks to accelerate the training of skilled workers in microelectronics. Industry partners are actively involved in providing teaching assignments and cooperating on Master’s theses.

I-NOVMICRO



The I-NOVMICRO program is committed to developing and promoting the microelectronics sector in France’s southern regions such as Provence, Alpes, and Côte d’Azur. The high-level training offered by the project revolves around two main themes which are production and Design, and R&D. The school is equipped with innovative devices and represents a training ecosystem for various audiences from students to workers and job seekers.

Fascinating Electronics for a Cool World - 2023 Summer School Edition



The AENEAS, EPoSS, and Inside Industry Associations, launched a Summer School named ‘Fascinating Electronics for a Cool World’ in August

2023. The School aims to attract young talents - namely students who have been enrolled for at least two years of undergraduate studies in a STEM field, in the European Electronics Components and Systems community. The main goal is to introduce some of the possibilities offered by the present and future applications of microelectronic devices through lectures, demos, and interactive activities. This year’s edition, which you can find later in this magazine, is organised in collaboration with the EU Chip Skills Academy.

From ADVERSITY to PROSPERITY

The European semiconductor industry is set not just for an expansion, but for a real, systemic evolution, brought about by new technologies and industry innovations such as Edge and AI. This represents a major challenge, yes, but also a great opportunity for Europe to leverage its unique expertise in these fields.

The semiconductor sector is increasingly interconnected, which aligns with European interests in building a collaborative ecosystem and integrating value chains with foreign companies, but it also means that localised vulnerabilities and crises will hit the entire market, so Europe must not rely exclusively on foreign entities for any single resource.

The EU needs to invest in its unique strengths, not just the material ones (mentioned above) but also the social and cultural aspects: we have a rich history of collaboration and integration that can be leveraged to create a unique, attractive ecosystem capable not only of talent retention but also talent attraction. This new ecosystem must be future-proofed by allowing it to be both adaptable and resilient, which means investing in long-term resources and collaborations (something individual companies tend to de-prioritise in favour of short-term, individual gains).

The ALLPROS.eu project has proposed the implementation of a triple-helix approach as a winning line of action to close the skills gap affecting the semiconductor industry, a framework that will be developed further in a Blueprint coming out in Q2 of 2024. This methodology aims at having industry, institutions, and academia all working in synergy

to fight structural unemployment and skilled labour shortage. Specifically...

...**industry** must be able to provide their current and foreseen needs for skilled professionals and collaborate with academia to devise programs that can service those needs, as well as providing expertise for training and reaching out to students throughout the entire education system.

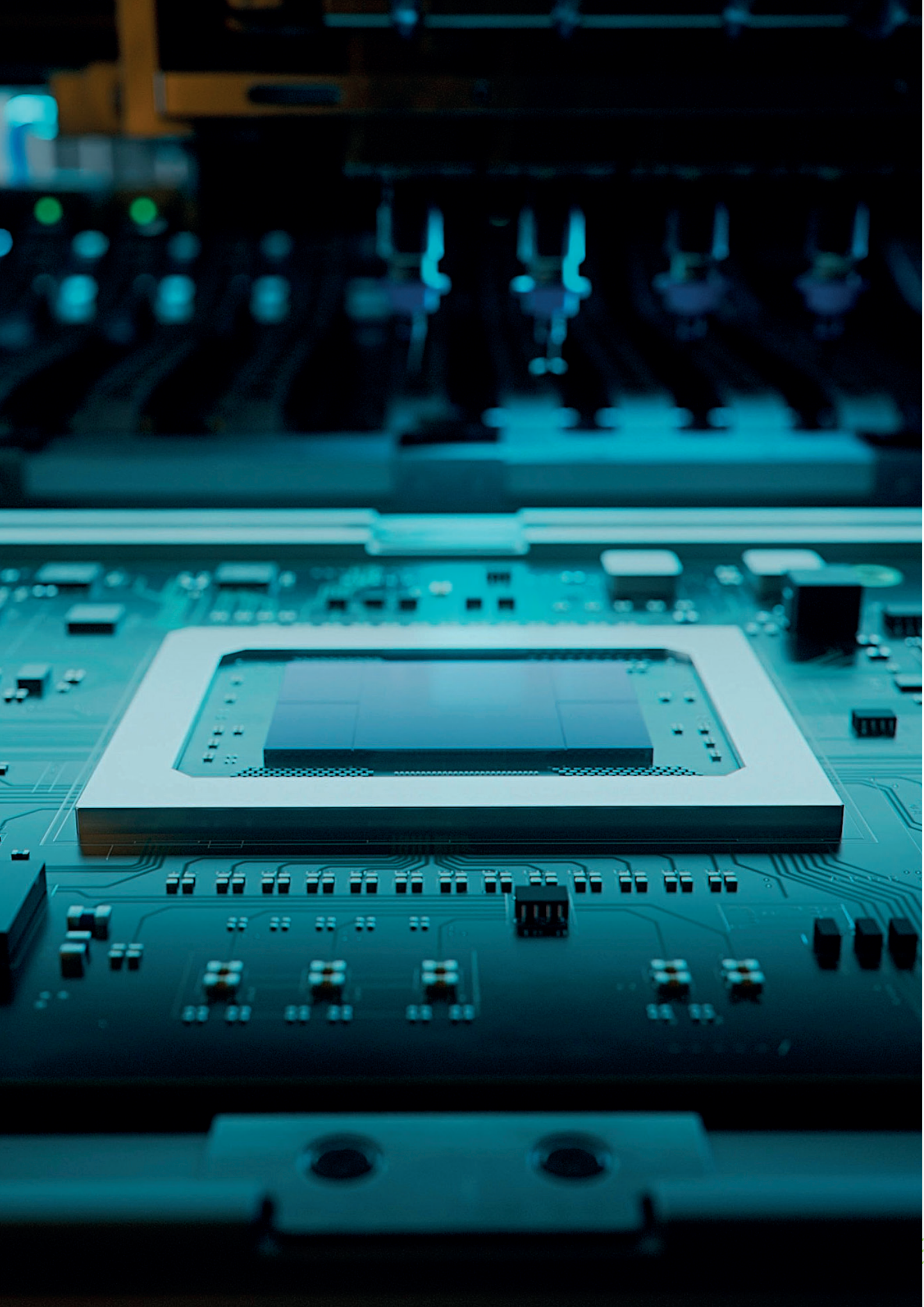
...**institutions** like the European Union through the commission and its EU-funded projects, must then act as a guiding and connecting body between industry and academia fostering collaboration and development. Extensive funding - which the EU Commission already allocated and promises to allocate in the following years - will be required to build a strong and reliable workforce. Moreover, stability is a crucial characteristic of a durable value chain therefore to keep the workforce circulating and advancing within the EU borders it is fundamental to also ensure future perspectives to those taking part in it.

...**academia** will, drawing from the industrial feedback and institutional funding and coordination, organise new courses and restructure obsolete ones by updating them based on what the development of technology and the needs of the field are. They must jointly organise with industries tailored curricula, hackathons, and training platforms.

The commitment by industry, institutions and academia must be complemented with targeted and effective communication aiming at attracting tomorrow's professionals to the industry. At the moment there is little awareness among the younger generations about the opportunities that the semiconductor industry is opening, especially among undergraduate students. To attract the younger generation, however, temporary economic opportunities might not be enough therefore, the sector must become more appealing by guaranteeing professional growth perspectives and stability.

In making the sector more appealing, the gender gap must also be tackled. Now more than ever, in a moment where we crave resources, talent irrespective of gender, should be the only element of progress, we cannot allow for any discrimination or social barrier to hamper growth.







Discover the ALLPROS.eu Suite of Tools for the Semiconductor Industry

Europe's strength lies in collaboration and innovation. With the recently launched Suite of Tools, ALLPROS.eu strives to showcase the best practices in the semiconductor industry and offer new opportunities for synergies.

The ALLPROS.eu Suite of Tools includes three instruments:

1

Marketplace of Synergies → a platform that offers semiconductor companies the space to promote their products, events and collaboration calls

2

Radar → high-level overview of the companies registered in the Marketplace based on their areas of expertise

3

Observatory → a dynamic overview of the most relevant news and events in the European semiconductor landscape

Marketplace of Synergies






Connect with semiconductor companies operating in Europe

The semiconductor industry in Europe is constantly growing. Our goal is to provide an opportunity for more visibility to every single start-up, SME and large company that brings innovation in the field.

By applying to join the Marketplace, European semiconductor companies obtain access to a one-of-a-kind community to create new synergies with other organizations. As our goal is to support the strengthening of the semiconductor industry in Europe, we are confident that showcasing a broad range of products and companies will incentivize new partnerships and help boost the discussion around the most pressing issues for the industry.

Joining the Marketplace is free of charge and allows to:

-  Promote your products and services across ALLPROS.eu channels
-  Discover relevant companies and launch your own calls for partnership
-  Become part of a European community and raise your visibility among industry and policy-makers



Radar



Get an overview of the cross-sectoral representation of the semiconductor companies in the ALLPROS.eu Marketplace.

To better assess the European semiconductor sector and understand the potential gaps, ALLPROS.eu has recently launched a Radar that will provide a high-level overview of the companies registered to the Marketplace. The Radar leverages the ALLPROS.eu Platform's visualization capabilities to showcase the distribution of the companies by technological areas and their position within the value chain. The Radar allows to compare the number of companies specializing in robotics, nanoelectronics or the automotive industry, while also obtaining an understanding of what value chain segment they represent.

With the increasing number of companies registered to the Marketplace, the Radar aims to provide a comprehensive representation of the semiconductor landscape in Europe and help to identify gaps in the value chain.

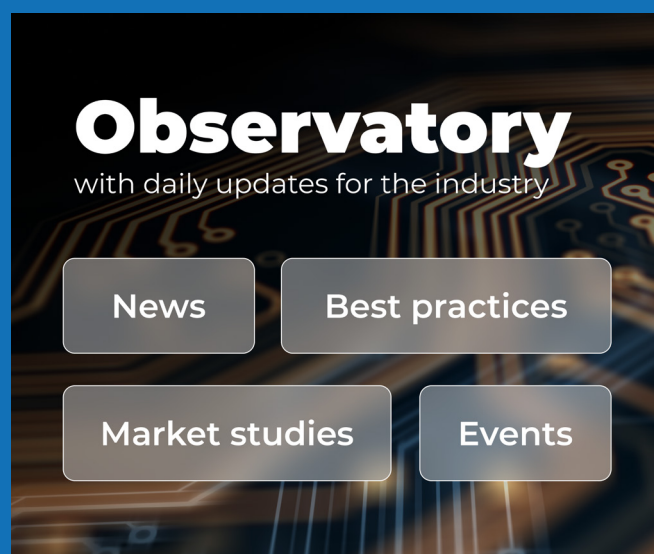


Observatory



Get regular updates on everything that is happening in the semiconductor sector in Europe

The Observatory is a dynamic list of events, calls for collaboration, news and much more to bring together industry, academia and policy-makers. ALLPROS.eu collaborates with numerous companies and initiatives in Europe to ensure the prompt promotion of opportunities for all the stakeholders working on strengthening the semiconductor industry. Furthermore, companies that joined the Marketplace benefit from an additional promotion on the Observatory, which highlights the most recently added products and organizations.



Visit the ALLPROS.eu website to discover more about the Marketplace and other tools for the semiconductor industry.

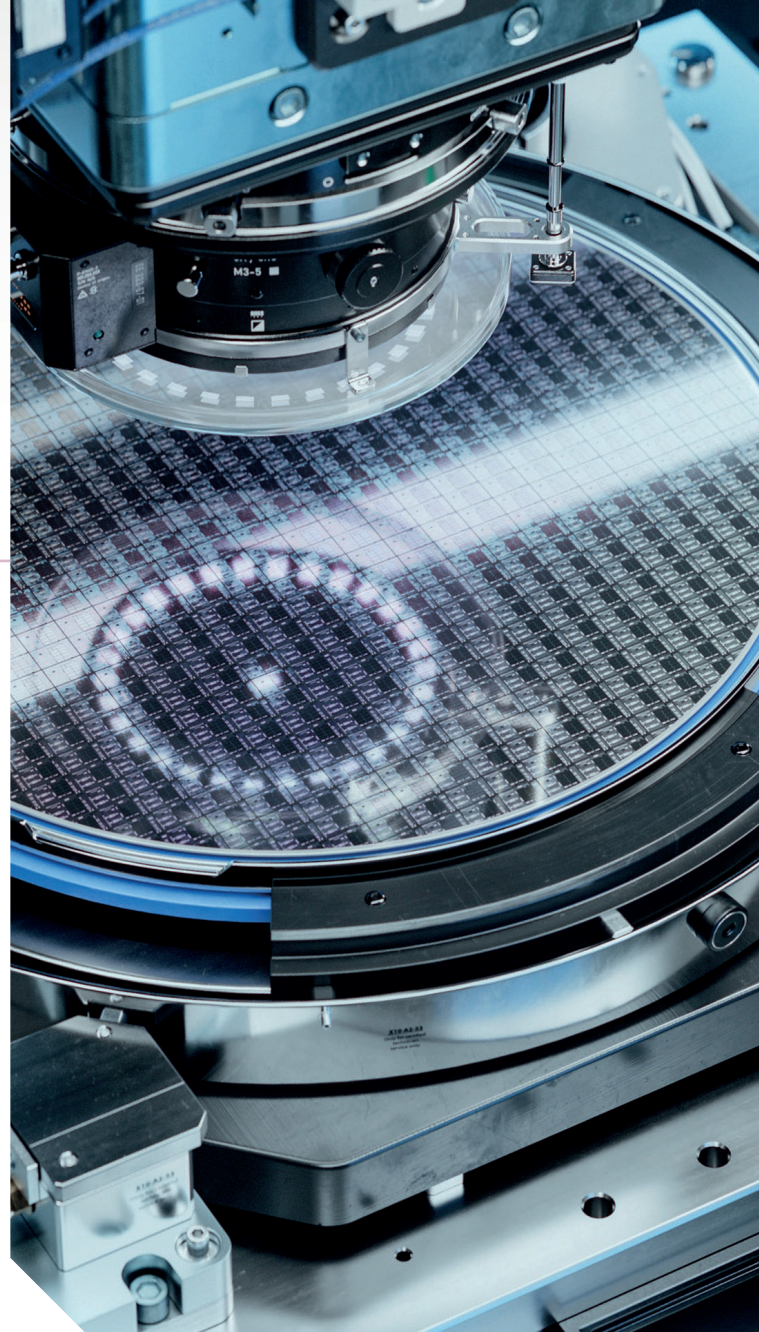
Unveiling the Edu4Chip Initiative

 by Lottie Boas and Konstantina Mataftsi (White Research)

In the wake of the global chip shortage, Europe finds itself confronted with the pressing challenge of dependence on external sources for chip production. Over the past years, economic shifts have led to a scenario where most of the chip manufacturing now occurs beyond Europe's borders, leaving crucial European industries vulnerable to the fluctuations of global supply chains. Recognizing this vulnerability, Europe has embarked on several strategic initiatives to address the issue head-on. Notably, the [European Chips Act](#) stands out as a beacon for promoting the European Union's autonomy in chip design and manufacturing, bolstering the region's resilience in the face of supply chain uncertainties. Complementary to this legislation, national efforts have also been made to actively foster their chip design capabilities.

Nevertheless, the success of these endeavors hinges on a crucial factor often overlooked – the **availability of skilled professionals in the field of chip design**. Without a proficient workforce, the ambitious goals set forth by the European initiatives may prove elusive. This realization has given rise to the [Edu4Chip](#) (Title: Joint Education for Advanced Chip Design in Europe), a pivotal Digital Europe project designed to bridge the skills gap and ensure that Europe's semiconductor industry thrives in the pursuit of self-sufficiency.

Edu4Chip: A Strategic Response to Europe's Semiconductor Challenges



What is the objective of Edu4Chip?

The objective of the EU Chips Act is to enhance Europe's autonomy in chip design and production. To realize this objective, there is a pressing need for more skilled professionals in the field of chip design. Aligned with the aspirations of the EU Chips Act, the Edu4Chip initiative, initiated in October 2023, plays a pivotal role in addressing this demand and contributing to the Act's overarching goals.

Nine European partners¹, under the coordination of [Munich's Technical University](#) have joined forces in Edu4Chip to enhance chip design capability in Europe. The goal is to design and implement **master's study programmes** that will increase the number of industry-ready chip design experts in Europe. More

1 Tampere University, Technical University of Munich, Technical University of Denmark, KTH Royal Institute of Technology, Institut Mines-Telecom and Fraunhofer, as well as SME partners MINRES Technologies, Logiq Works, and SyoSil Aps

specifically, Edu4Chip's objective is to develop and implement standardized study programmes at top-tier universities across Europe to grow the pool of chip design experts.

What makes the Edu4Chip programmes a standout?

The unique characteristic of its new Master's programme is that it will cover the complete chip design flow. Students will carry out a complete chip design, starting from the high-level description of the hardware and ending with the actual manufacturing (i.e., tape-out) and test of their chips. The project benefits from the guidance of experts, from both research institutes and industry, ensuring comprehensive support for the education of aspiring chip designers.

Notably, the programmes are meticulously crafted for compatibility, facilitating seamless student exchanges among European countries. Complementary to this, the project incorporates **lifelong learning modules**, catering to on-the-job training and lateral entry employees. Edu4Chip has set an ambitious target, aspiring to train over 150 European and 100 non-European students annually, preparing them for

rewarding careers in the European chip design industry. The initiative's close collaboration with industrial partners not only ensures high-quality education but also facilitates a smooth transition for students into the European job market.

Moreover, participants in this programme have the unique opportunity to **specialize in specific subfields of chip design**, such as low-power design for sustainability, secure hardware design, or design for artificial intelligence (AI). This approach adds a valuable layer of specialization, aligning education with the diverse needs of the evolving chip design landscape.

What is the link with the SoC Hub?

In Tampere, Edu4Chip is set to build upon the successful collaboration between academia and industry established through the SoC Hub initiative since 2020. The System-on-Chip (SoC) Hub, a collaborative project between Tampere University and various companies, has been dedicated to designing innovative SoCs for applications like 6G, AI, imaging, and security. This initiative facilitates cooperation



among stakeholders, promoting innovation in areas such as intelligent machines and edge computing. It enhances SoC design expertise across the entire spectrum, from application requirements to chip development, thereby strengthening embedded systems and microelectronics proficiency in Finland.

The first concrete step at Tampere University is a new [System-on-Chip design master's study module](#) that will begin in autumn 2024. The program aims to provide students, as well as industry experts, with practical, hands-on experience in the complete process of SoC design, aligning with specific objectives supported by key companies in the Tampere region.

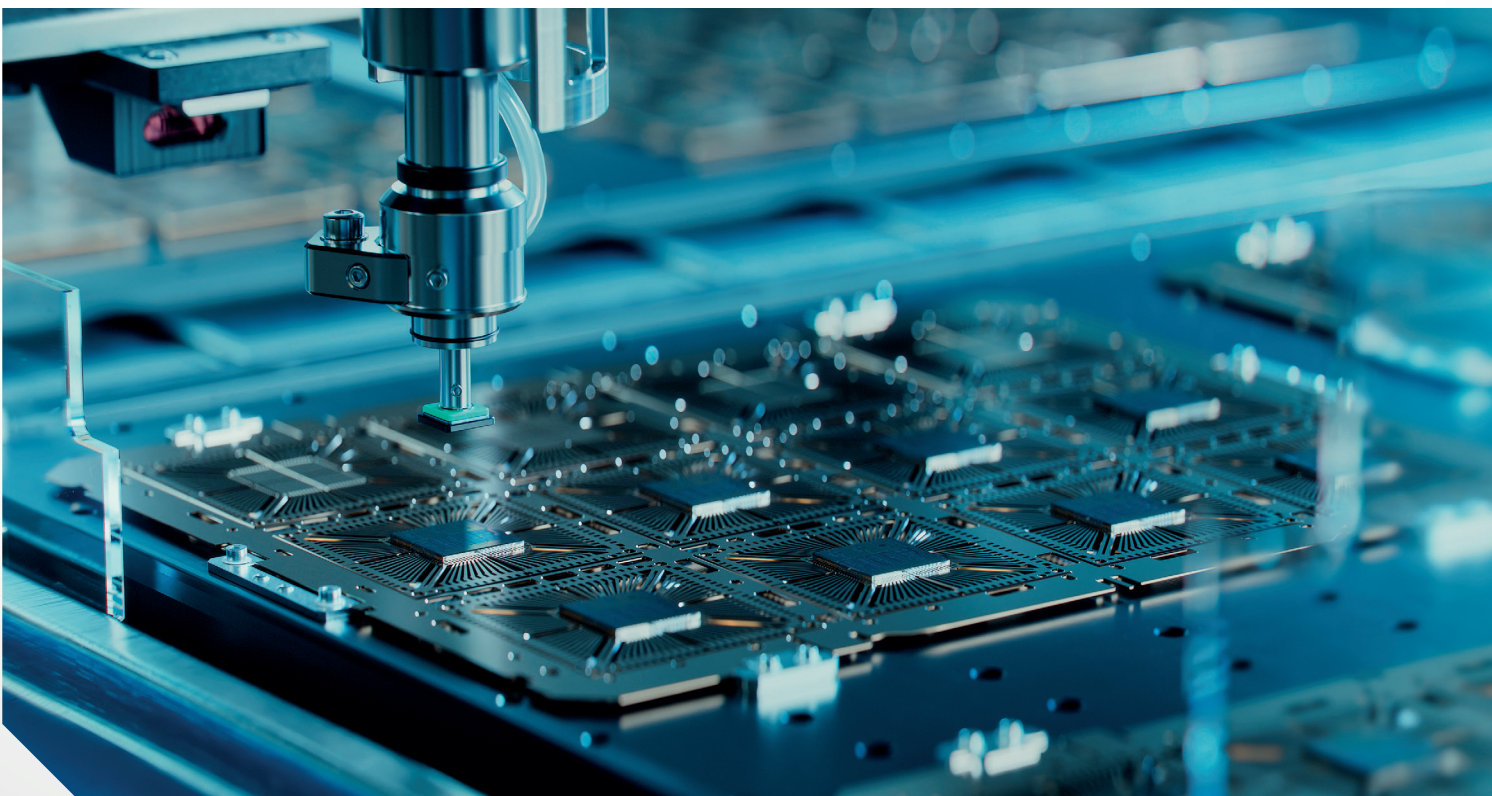
Vision and future steps

The European Chips Act, the [European Chips Skills 2030 Academy](#), the Edu4Chip project as well as other initiatives serve the vision of a 2030 Europe having a highly skilled and well-trained European workforce in the area of microelectronics design and manufacturing, end-user applications and new markets, with attractive job environments and career tracks, including new entrepreneurs and start-ups. All these initiatives, including Edu4Chip, aim to close

the gap of skilled people needed to achieve goals set by the European Chips Act and support the European ambitions on microelectronics design and manufacturing to double Europe's market share by 2030.

In unlocking the potential of aspiring chip designers, Edu4Chip's distinctive feature — the hands-on experience of designing a complete chip from inception to tangible manifestation — marks a paradigm shift in chip design education. This innovative pedagogy not only sets these programs apart but also lays the foundation for a new era of skilled professionals ready to meet the challenges of an ever-expanding industry. The collaboration with both research institutes and industry experts ensures a holistic educational experience, aligning the curriculum with the practical demands of the field.

The Edu4Chip initiative does not only serve as a solution to the current shortage of skilled professionals, but also lays the groundwork for a robust and innovative future for Europe's semiconductor industry. Edu4Chip is not merely an educational endeavor; it is a transformative force, propelling Europe into a new era of technological prowess and self-reliance.



ALLPROS.eu Reports

The ALLPROS.eu project gathers key players in the industry, bringing forward ideas that can help address the challenges of the European semiconductor sector.

Have a look at some of the latest reports you may have missed.

Find them all here: <https://zenodo.org/communities/allpros-eu>

Competence Centres for Semiconductors: Considerations from Users

Following the online workshop on Competence Centres in Semiconductors held on 18 April 2023 in cooperation with KDT JU, ALLPROS.eu released the post-event report summarising views from a wide range of representatives from the semiconductor industry in Europe on expected services, specialisations, and conditions offered by the Competence Centres.

Learn more: <https://allpros.eu/node/109>



Bridging the Skills Shortage in the EU Semiconductor Industry

The post-event report on Bridging the Skills Shortage in the EU Semiconductor Industry showcases views from industry experts and leaders, policymakers, academic leaders, and industry associations on the link between gender inclusion and the skills shortage in the semiconductor field.

Learn more: <https://allpros.eu/news/post-event-report-bridging-skills-shortage-eu-semiconductor-industry>



The EU Chips Chronicles is the quarterly magazine of the ALLPROS.eu project showcasing views and exemplary stories from across the European semiconductor community.

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