

Adapting microelectronics training to real-world barriers

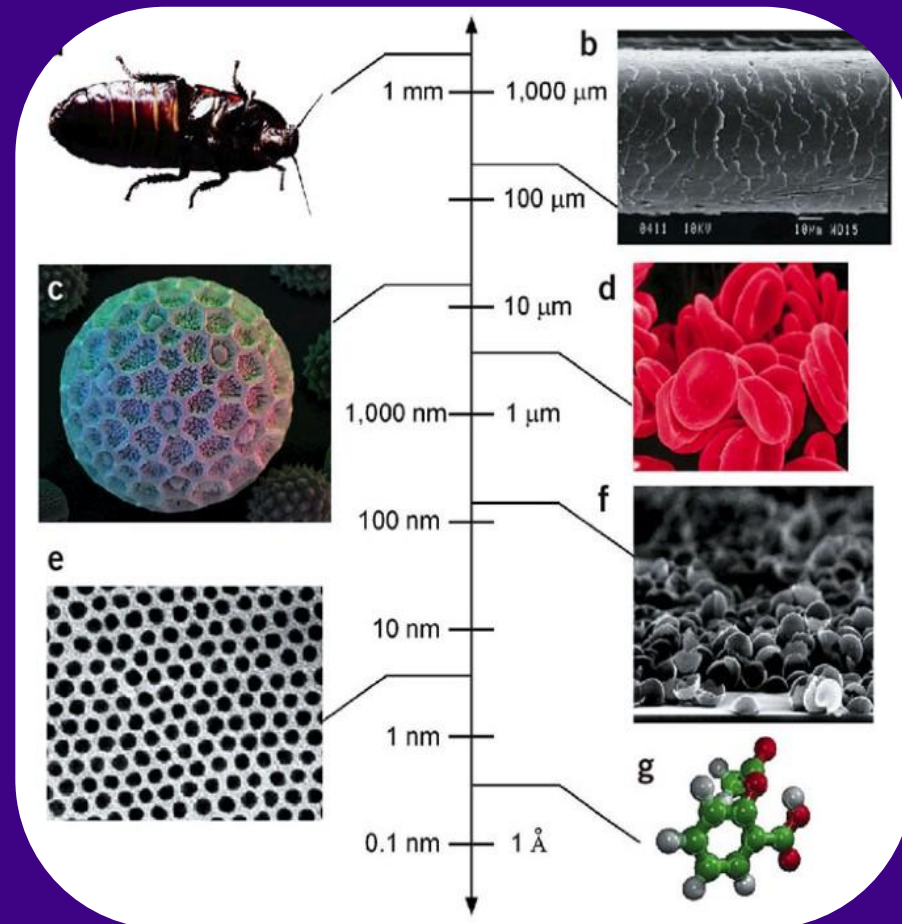
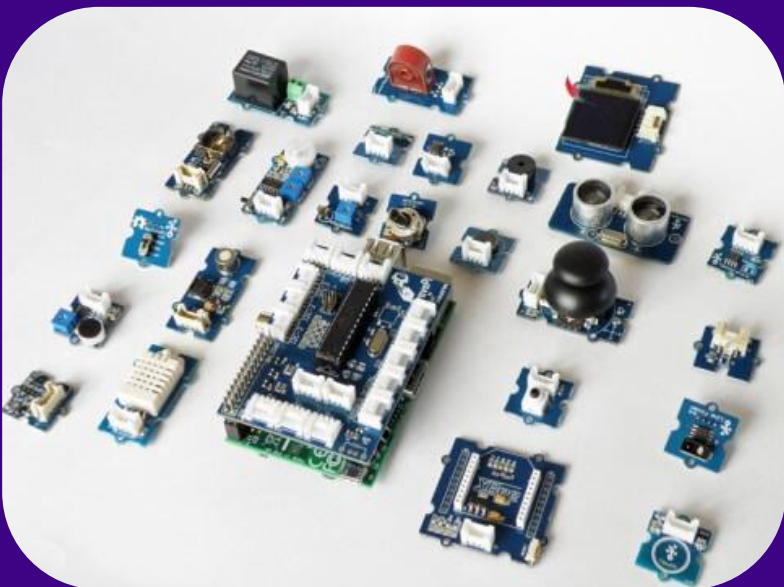
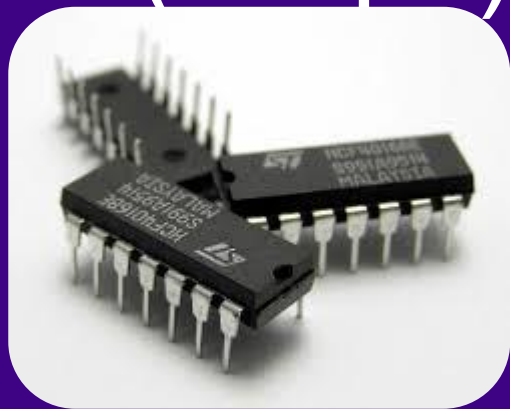
Dr. Richard Harte – UX/UI Specialist



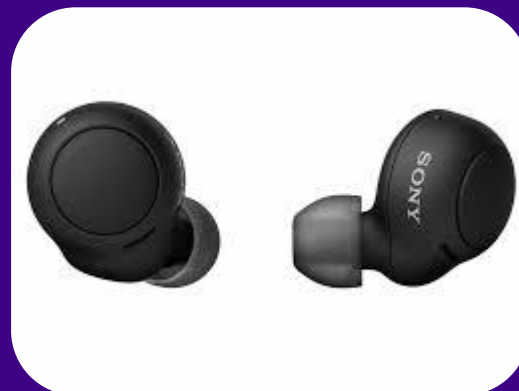
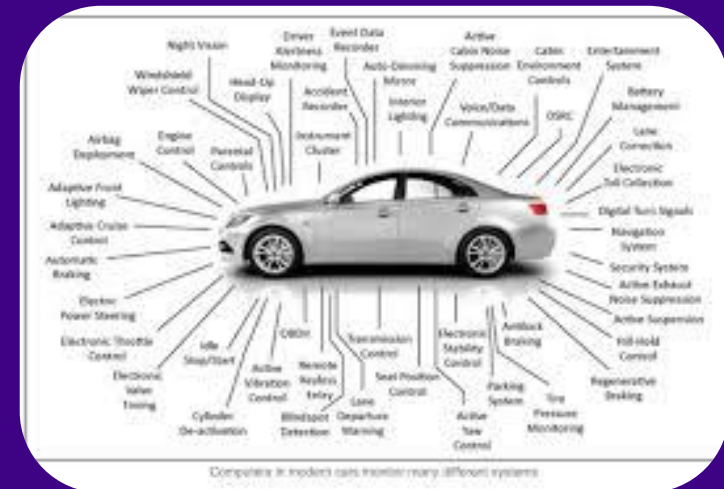
Co-funded by
the European Union

The European Chips Diversity Alliance has received funding from the European Education and Culture Executive Agency (EACEA) under project No 101140006.

What even are Microelectronics (Chips)???



They are everywhere....



How are they made?

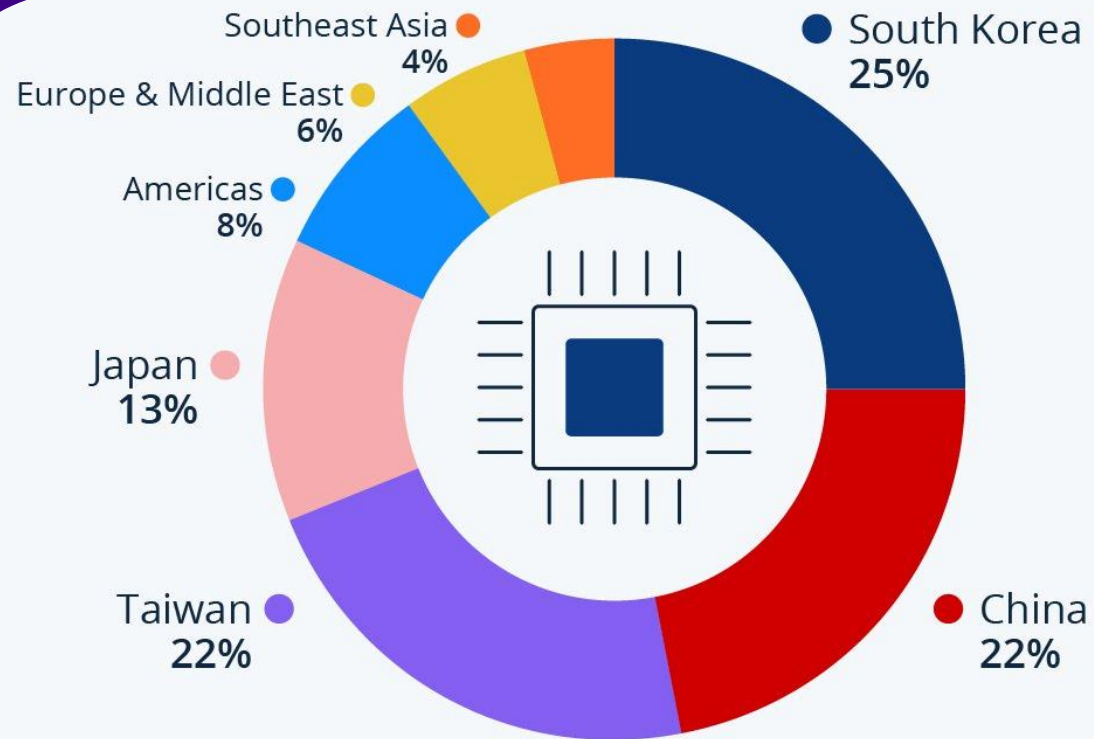


 ANALOG
DEVICES

 intel®



Did you know?



* 300mm fabs

Source: SEMI 300mm Fab Outlook to 2026



statista

Taiwan, China, Japan and Korea represent 80% of total global chip manufacturing

Did you know?

Due to supply chain crises as a result of COVID19 and geopolitical events, chips shortages cost the European automotive industry €100B in 2023.

Europe's semiconductor supply



Design, production, assembly, testing and packaging of microchips typically takes place in different geographical zones across the globe. Production involves more often crossing international borders over 70 times before reaching end-customers. Due to the pandemic, there is an unprecedented shortage of chips, disrupting EU production (e.g. of cars). An expected 'EU microchips act' proposal aims at strengthening the European chips eco-system.

EPRS | European Parliamentary Research Service • More information: <http://eptwitter.eu/EPRS-Semiconductors> • 21/01/2022

How the Russia-Ukraine conflict is impacting supply chains

Taiwan quake: Europe trembles over semiconductor supply

Supply chain issues and autos: When will the chip shortage end?

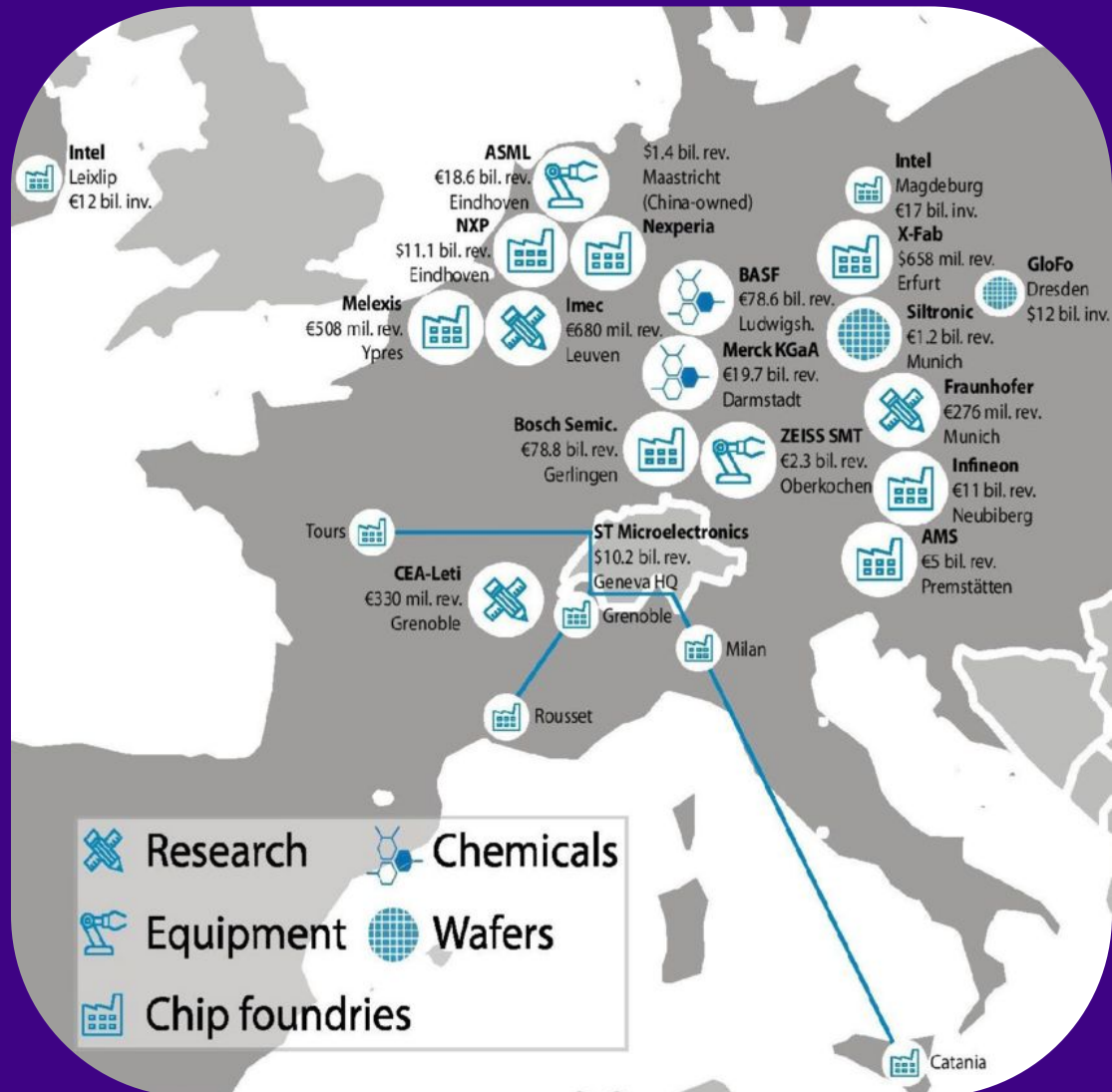
April 18, 2023

Supply chains: Still vulnerable

October 14, 2024 | Article

Chip shortage: auto industry calls for more EU-made semiconductors

Did you know?

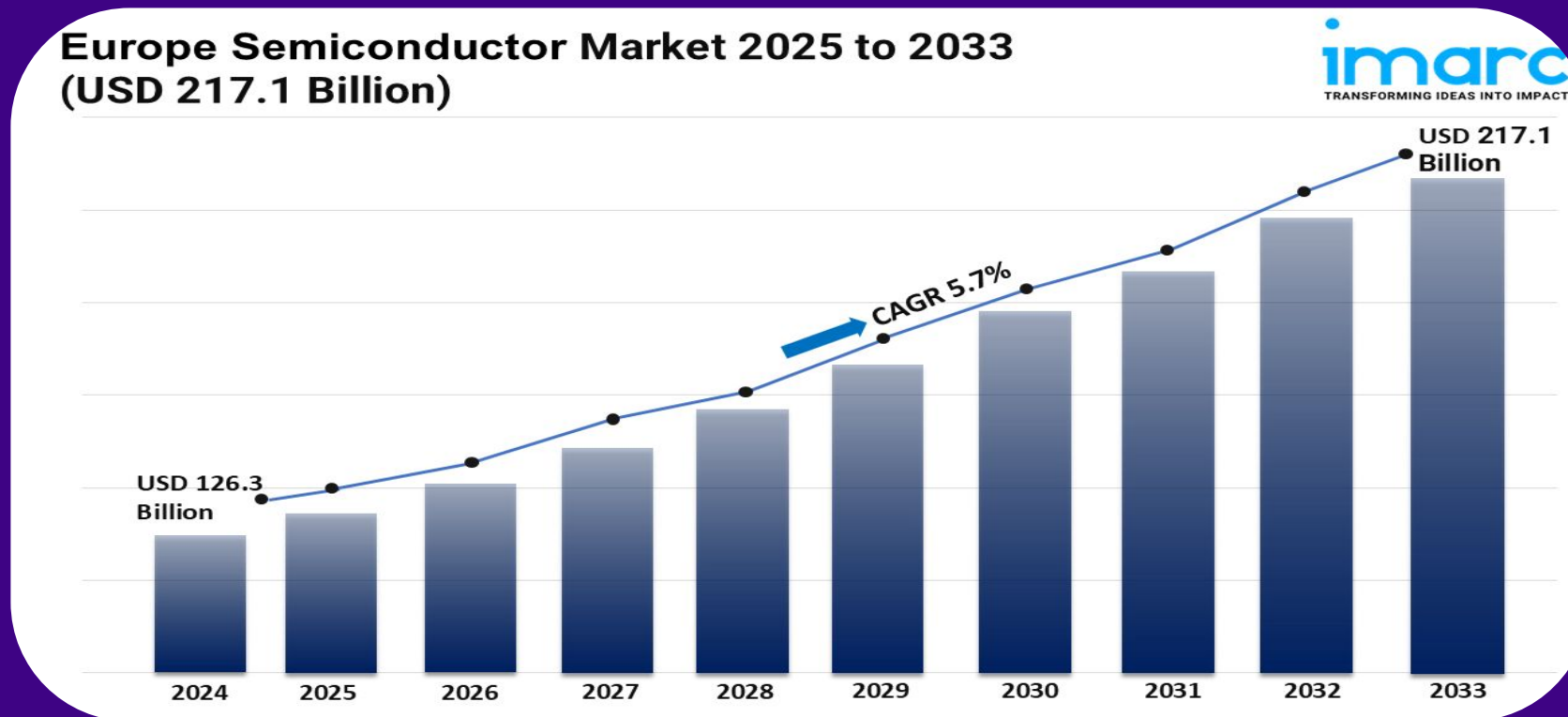


Europe accounts for under 10% of global chip production.

It a specialised, but small, industry.

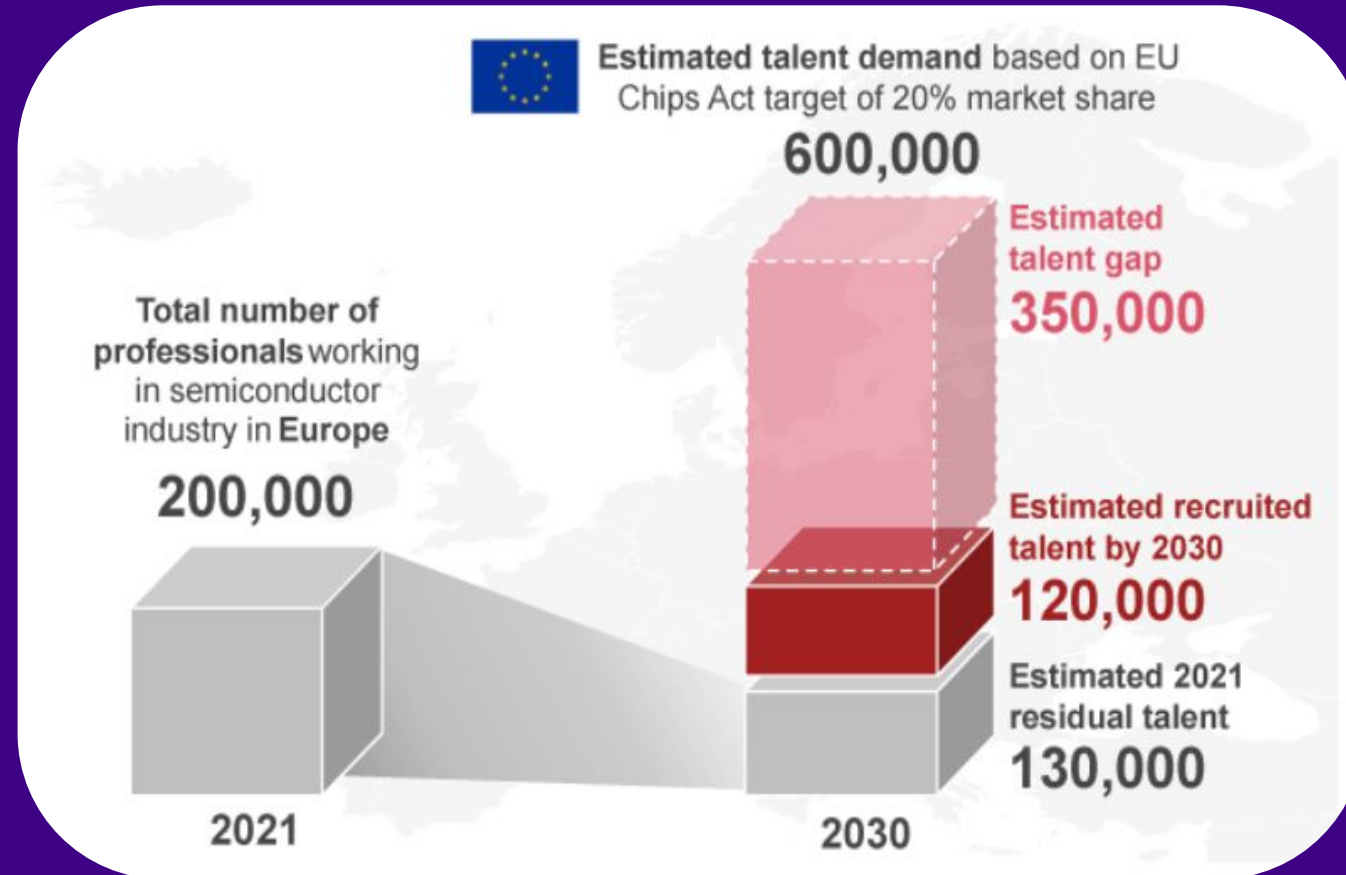
Did you know?

The EU Chips Act aimed to double the share of the European contribution to world production by 2030, bringing it to 20%.



Imarc Semiconductor Market Size, Share, Trends and Forecast by Components, Material Used, End User, and Region, 2025-2033 (2023)

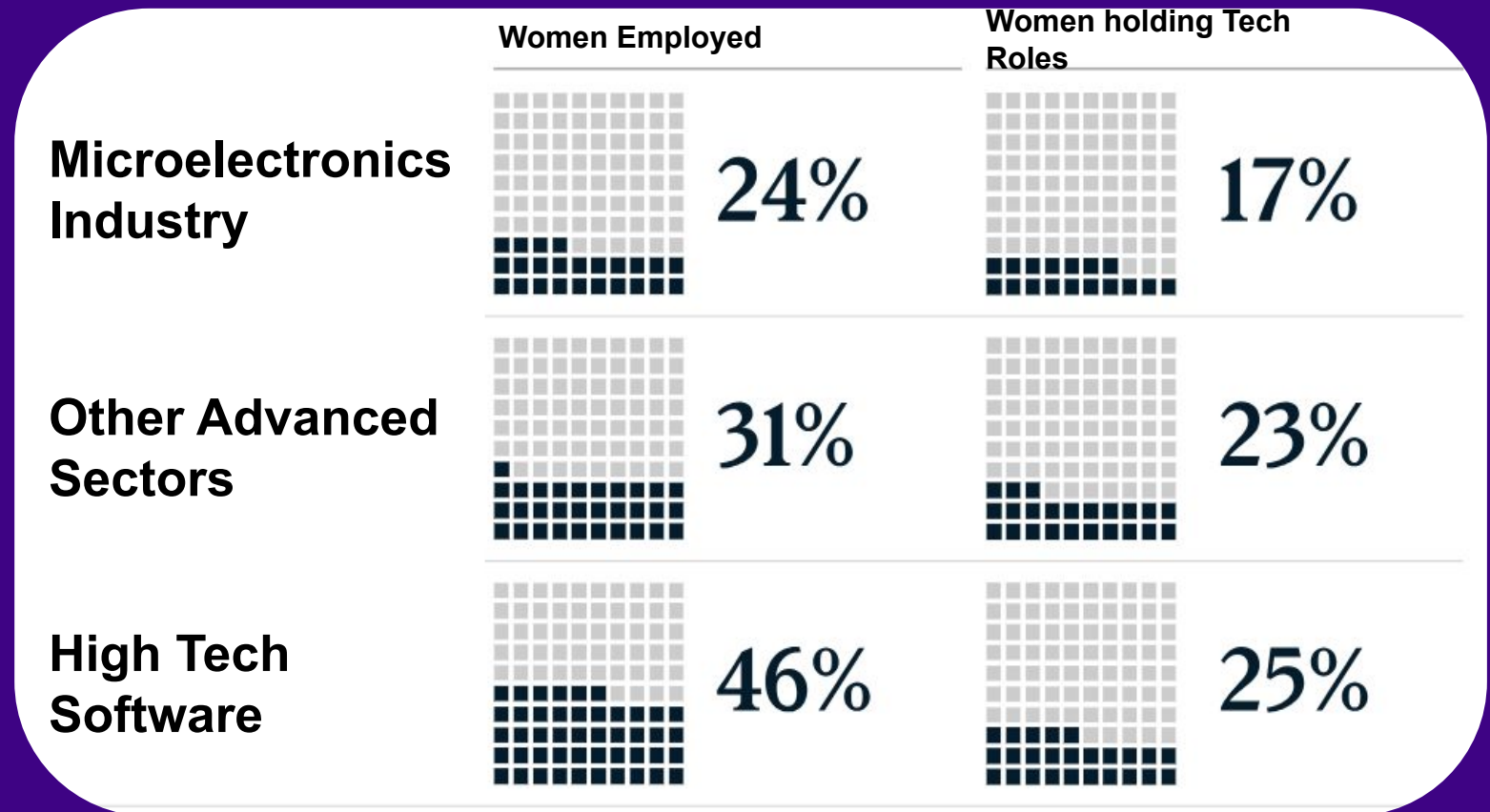
Problems to Solve



McKinsey reports a looming semiconductor talent gap of over 100,000 engineers in Europe by 2030 if the sector doesn't attract more workers, with a similar shortage anticipated in the US.

Problems to Solve

Employment statistics provide a gloomy picture of gender balance and other diversity dimensions in the microelectronics sector, with trends and dynamics that are far from encouraging (McKinsey, 2024).



Problems to Solve

The microelectronics/semiconductor industry is seen by many as having a weak public image and brand awareness compared to other higher-profile tech sectors (McKinsey, 2024).



Problems to Solve

Poor Employee Experience leads to issues with retention; with culture and values, and work-life balance highlighted as major factors (McKinsey, 2024) (Semiconductor-Digest, 2024).

Average employee satisfaction score, scale of 1 to 5

● Semiconductor companies¹

● Tech companies²

● Automotive companies³



What should be done?

*To address the attractiveness of the industry, chip makers should completely **rethink their talent strategies** (Accenture, 2023) (CTG) and ensure the **solid incorporation of Diverse and Inclusive approaches** which are paramount to elevating the employee experience (Deloitte, 2025).*

European Chips Diversity Academy (ECDA)

Aims to establish a robust and durable alliance between educational systems and industry to lower barriers to participation for those under-represented groups that represent the **MISSING TALENT** for the competitiveness and growth of the European chips sector.



European Chips Diversity Academy (ECDA)



ECDA Objectives

Goal 1

Bring together industry and education to align talent development

Goal 2

Develop methods to gauge DEI trends and dynamics in the Chips sector

Goal 3

Formalise the DEI Advisory Council

Goal 4

Produce DEI Reports and vision papers to inform industry about best practice

Goal 5

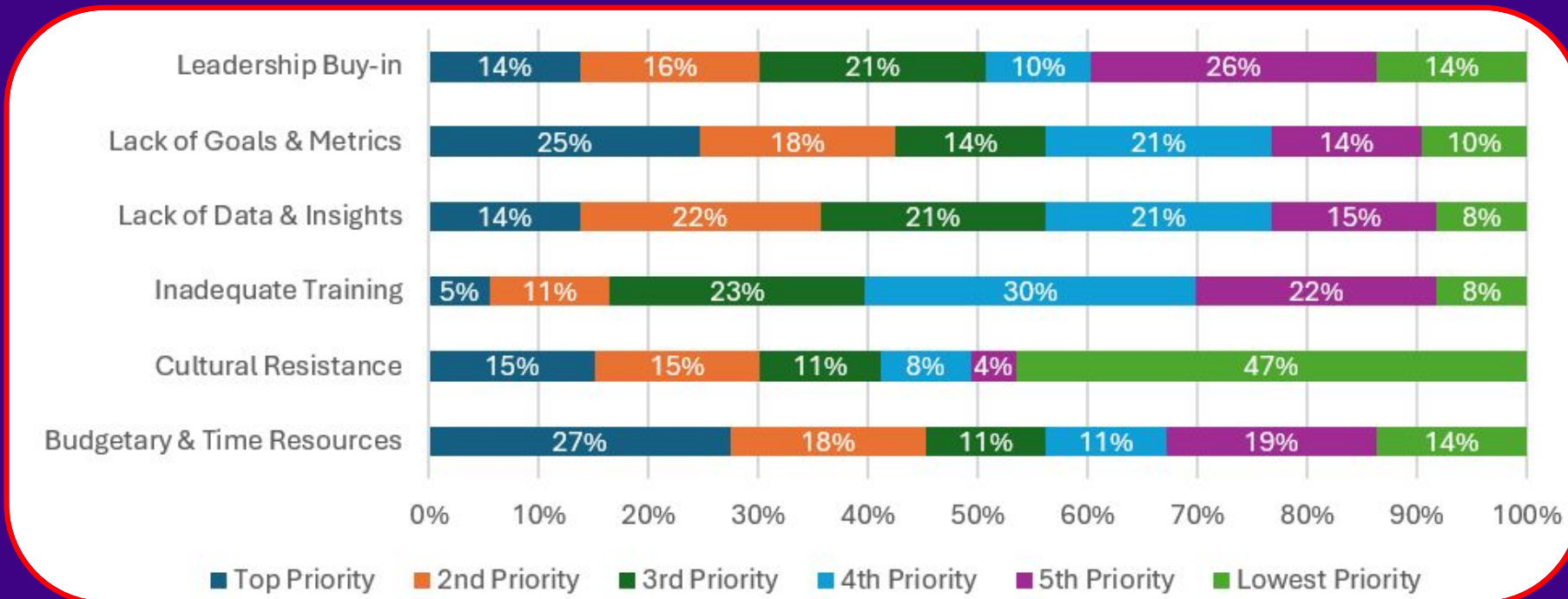
Develop innovative training and operational tools to improve practices in the sector

Goal 6

Develop mentorship, ambassadorship and pioneer award programs

Industry and Academic Research

- **A survey of 73 professionals** which provided sector-wide quantitative insights.
- **Interviews with 17 executives** which captured strategic perspectives.
- **A focus group with 12 early career professionals** which revealed daily workplace realities.



Learner Persona Development

Creation and validation of learner personas which represent stakeholders across industry and academia



This group includes high-level executives and leaders within the semiconductor industry who play a critical role in shaping organisational culture and driving DEI initiatives. They are decision-makers with significant influence and are often pressed for time, requiring tailored, concise, and impactful learning experiences.

The key characteristic of this group include:

- **Time-constrained:** Leaders have demanding schedules, so training should be brief, focused, and flexible to accommodate their availability.
- **Strategic focus:** They need a high-level overview of DEI concepts with a focus on business imperatives and strategic implementation.
- **Interactive & Blended Learning:** A combination of online and in-person sessions with hybrid options is preferred for flexibility and engagement allowing for them to engage in social learning and providing opportunities to develop a community of practice.



This group includes employees in middle management in organisations operating in the semiconductor industry, specifically those in product team leadership positions. The focus is on managers who have direct reports, who are ambitious and driven by productivity, and who may be sceptical of DEI initiatives if they do not have direct impacts on their productivity.

The key characteristic of this group include:

- **Time-constrained:** These professionals have limited time for training.
- **Majority group dynamics:** Many learners belong to dominant demographic groups in the workplace and need relatable yet insightful DEI training.
- **Practical orientation and Outcome Focused:** They prioritize actionable content; learners want to see evidence that this learning is needed. Interested in the engineering perspective of DEI.



This group includes employees in professional roles involved in HR and L&D, especially in talent, operations and performance management. The focus is on the professionals in SME companies with limited resources for developing and implementing DEI strategies.

The key characteristic of this group include:

- **Resource-constrained:** These professionals have limited resources for creating and delivering training. Content must be efficient and practical.
- **Practical orientation:** They prioritize actionable content such as toolkits, step-by-step manuals, and tips to implement DEI initiatives effectively within constrained budgets.
- **Outcome-focused:** Learners need to balance short-term performance metrics with the long-term outcomes of DEI implementation.
- **Sector-specific needs:** Need to support talent teams in creating learning resources for delivering effective outreach programmes.



Age: 32

Job Title/Role: Technician (Manufacturing/Production Support)

David and DEI Sees DEI as an HR thing, Feels he doesn't need DEI training personally, see DEI as important for hiring fairness and for reasons

Current Priorities Getting his work done
Keeping his team leader happy and meeting production targets

Current Challenges Time: Balancing work and study
Relevance: Feels some learning doesn't impact his daily job
Bias Blindspot: Believes in workplace equality but may not see subtle biases in promotions, team dynamics, or workplace culture.

What does he need? Short, Practical, and To-the-Point Learning
Concrete Examples Instead of Theory
Making It About Teamwork & Respect, Not Just Policy
Avoid a "You Need to Fix This" Approach – Focus on self-awareness, teamwork, and leadership development.



This group includes managers, educators, and career advisors in Higher Education (HE) and Vocational Education and Training (VET) institutions, primarily within STEM fields, crucial for shaping the workforce in the semiconductor industry by bridging academic learning with industry needs.

The key characteristic of this group include:

- **Knowledge multipliers:** They influence diverse student populations, making them potential multipliers of DEI principles in education.
- **Responsibility for inclusive learning environments:** They provide specialized training to design inclusive curricula, foster safe and engaging learning environments, and address inclusion barriers.
- **Variable knowledge of business environment:** The target group may be partially familiar with the specifics of the workplace and processes in the business environment, especially in an 'up-to-date' sense. However, they may also have a unique insight into the bridge between academia and industry through the experiences of their students.



Age: 19

Job Title/Role: University Student in an Italian University

Amelia and DEI Supports DEI in theory, more interested in career opportunities than DEI messaging – would respond better to career-focused diversity efforts than abstract DEI discussions.
May see DEI as a secondary issue – If outreach feels too focused on DEI and not enough on career opportunities

Current Priorities Ensuring she gets a good result in her current year of study
Enjoying college life and making friends
Choosing the 'major' that interests her the most but also that gives her the best chance of getting a good career
Interesting jobs, good salaries, exciting workplaces where she gets to meet interesting people, the chance to travel

Current Challenges Lack of Awareness: Doesn't know what career paths exist in microelectronics, doesn't see the exciting side of microelectronics
Gender Representation Concerns: Wonders if women are welcome and successful in the field.

What does she need? Real-World Impact Stories – Examples of how microelectronics is shaping the future.
Hands-On Experiences – Lab tours, workshops, or hackathons to

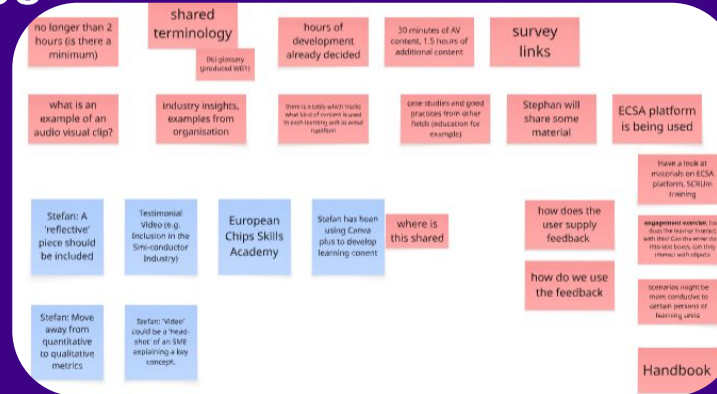
DEI Intelligence



- ❑ ECDA seeks to generate **DEI intelligence** such that it is well-equipped to develop effective strategies and policies that drive lasting progress towards a more diverse, equitable, and inclusive microelectronics sector.
- ❑ Our DEI reports and vision papers analyse key drivers, inhibitors, and recommend concrete actions for improvement, which can be utilised by all stakeholders.
- ❑ Strategies informed by a DEI advisory council made up of industry and academic representatives

Learning Needs Analysis

Working groups and workshops to map out learning needs based on primary research data, personas and DEI intelligence.



Section	Slide Headings	Example of Content
Learning Unit Introduction (Section 0)	<ul style="list-style-type: none"> Slide Slide of Learning Unit Intro Slide with abstract description Why is this Topic Important (relevance to Microelectronics Industry) Who is this Learning Unit aimed at? Learning Unit Outcomes Learning Unit Structure (outline of the different sections and how long they will take) Enjoy and Begin (Instructions to the learner to click on Section 1) 	
Section 1: Introduction to Inclusive Learning Environments	<ul style="list-style-type: none"> Cover Page with Section Title Section Contents What is an Inclusive Learning Environment? (Basic Definition from a reputable source) UNESCO Benefits of Inclusive Learning Environments Context for the Microelectronics Definitions of Associated Terms Universal Design for Learning UDL BOE-Tool, why not take a test 	
Section 2: Designing an Inclusive Learning Environment	<ul style="list-style-type: none"> Cover Slide Introducing Section Where do you begin? Case Studies of good and bad Checklist for Inclusive Design How does this apply to microelectronics What are the specific challenges in micro-electronics Let's hear from educators in micro-electronics 	
Section 3: Scenarios/ Assessment	10 question assessment? Built in or external platform?	
Section 4: Takeaways, Conclusion and Summary	What are they key takeaways	

Heading	Guidance	Learning Unit 4
Title of the learning unit	Designing inclusive learning environments (in microelectronics Education)	Designing inclusive learning environments (in microelectronics Education)
Short annotation	Provide a brief annotation (150 words) of the course. Annotation should outline about course objectives, learning outcomes and topics covered.	<p>This learning unit focuses on the principles and practical strategies for designing inclusive learning environments in microelectronics education.</p> <p>Learners will explore key concepts of diversity, equity and inclusion (DEI) and how these intersect with teaching and learning in the field.</p> <p>Through a series of activities, learners will gain a deeper understanding of the challenges and opportunities associated with creating inclusive learning environments in microelectronics education.</p> <p>By the end of this unit, learners will be able to:</p> <ul style="list-style-type: none"> Identify key concepts and benefits of inclusivity in learning environments. Recognize barriers to inclusivity in learning environments. Design strategies to address diverse learner needs, including gender diversity, disability and neurodiversity. Apply inclusive practices in teaching, training, and curriculum design (e.g. UDL). Engage learners and colleagues in discussions about DEI in microelectronics. Create action plans for inclusive environments in academia or industry. Design/develop activities to accommodate diverse learning styles, designing inclusive equipment and membership plans.
Learning objective	Define the main objective of the learning unit	<p>Equip learners with the knowledge and skills to design and implement accessible learning environments in microelectronics education.</p> <p>Equip learners with the knowledge and skills to design and implement accessible learning environments in microelectronics education.</p>
Target group (s)	Indicate the main target group and level of their knowledge.	<p>Educators (microelectronics and related fields)</p> <p>Policy makers involved in education and training frameworks.</p> <p>Industry representatives engaged in workforce development and upskilling (or who are collaborating with education)</p> <p>Basic understanding of DEI concepts is helpful but not required.</p>
Number of learning hours	Indicate what is the maximum required time (in training hours, 1 training hour = 40 minutes) to deliver the learning hours in the training activity.	While the maximum requirement is 2hrs, we think 40 minutes is an appropriate time for this unit.
Expected learning outcomes		<p>Identify key concepts and benefits of inclusivity in learning environments.</p> <p>Recognize barriers to inclusivity in learning environments.</p> <p>Design strategies to address diverse learner needs, including gender diversity, disability and neurodiversity.</p> <p>Apply inclusive practices in teaching, training, and curriculum design (e.g. UDL).</p> <p>Engage learners and colleagues in discussions about DEI in microelectronics.</p> <p>Create action plans for inclusive environments in academia or industry.</p> <p>Design/develop activities to accommodate diverse learning styles, designing inclusive equipment and membership plans.</p>
Content of the learning unit	Describe (in bullet points) what should be the topics covered by the training activity.	<p>Introduction to inclusivity and DEI principles.</p> <p>Challenges of inclusivity in microelectronics education.</p> <p>Strategies for designing inclusive curricula and learning environments.</p> <p>Case studies and best practices from the semiconductor sector.</p> <p>Tools and resources to support inclusive teaching and learning.</p>

Learning Suite and Operational Tools

Creation and piloting of **five open modules** which cover areas such as Democratic recruitment & building inclusive hiring processes, Leadership development & self-awareness and Designing inclusive learning environments.

7 operational tools are under development, these include a Student career checklist to semiconductor opportunities, A guide to fostering industry-academic relations and a Leadership Re-Engagement Toolkit



Don't:

- make jokes or comments based on stereotypes (e.g., "That's such a girl thing", "You're too sensitive", "Men are naturally better at math", "That's so gay")
- use outdated or disrespectful terms such as "the disabled employee," "handicapped," or "Oriental"
- assume gender in speech or writing (e.g., "he" as a default, or starting emails with "Dear Sir")
- use diminutives or overly familiar nicknames in professional settings (e.g., calling a colleague "sweetie" or "girl")
- make vague or biased judgments (e.g., "She's just not leadership material", "He's not technical enough")
- use cultural references that exclude international colleagues

Career fairs and further academia events

- Attend academia career fairs and semiconductor-specific events to get in touch with students and faculty and to promote job opportunities.
- Participate or sponsor for example panel discussions, workshops, or seminars with relevant topics for your organization.
- Use networking events to build relationships with students, student organizations, alumni and faculty.

Try Out Industry Programs

Apply to relevant industry initiatives such as:

- [Summer School](#)
- [ChipQuest](#)
- Become a [Student Ambassador](#) and grow your experience.

Use Campus Resources

- Professors aren't just teachers - they often have strong ties to companies. They can offer career guidance. If you show interest and initiative, they might think of you the next time an opportunity comes their way.
- Visit the career centre for help with CVs or interviews.

Engagement Initiatives

Ambassadorship Programme to recognise and empower a cohort of passionate DEI advocates in the European microelectronics industry, who will serve as role models, extend the reach of ECDA, and foster grassroots DEI engagement across companies, universities, and regions

Creation of an accessible, and community-driven **platform that connects mentors and mentees** across Europe's microelectronics sector to support personal growth, professional development, and increased DEI in the industry.

Spark Excellence Award programme that recognises individuals who have made significant contributions to advancing diversity, equity, and inclusion in the European microelectronics industry.



That's it for now! Get in touch... get involved!



Visit the ECDA Website
(<https://diversityinchips.eu/>) to
find out more

Follow the project on LinkedIn
[@ECDA](#) to stay updated on
results, events and new
initiatives.





Thank you!