# EUROPEAN CHIPS SKILLS ACADEMY DEI (DIVERSITY, EQUITY AND INCLUSION) ACTIVITIES

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***Abstract*– This paper provides a comprehensive analysis of the European Chips Skills Academy's (ECSA) Diversity, Equity, and Inclusion (DEI) framework and the European Chips Diversity Alliance (ECDA), a €1.5 million programme funded by the EU EACEA (2024–2027). The present study employs a mixed-methods approach, integrating a survey of 74 industry and academic stakeholders, executive interviews, and focus groups, in order to identify the primary motivators for DEI adoption (namely, talent retention, recruitment, reputation, and regulatory compliance), the key priority dimensions (i.e. gender balance, age, skills, and racial/ethnic diversity), and the pivotal enablers and barriers to implementation. The work delineates three distinct project stages: firstly, a baseline assessment, followed by tool and training development, and finally pilot deployment, which is supported by continuous monitoring through an Excel-based DEI matrix and automated dashboards. The findings indicate a strong engagement in gender equity and employee experience initiatives. Nevertheless, the report also draws attention to the fact that there are still significant challenges in relation to goal-setting, resource allocation and data analytics. The paper concludes with strategic recommendations to scale DEI practices, including annual role model updates, expansion of the Spark Excellence Awards, integration of operational toolkits into curricula, and policy advocacy to institutionalize sustainable DEI practices across Europe's microelectronics education and innovation ecosystem. This study emphasises the pivotal function of systematic DEI strategies in fortifying women's leadership, promoting gender equity, and cultivating inclusive talent development within the domains of STEM and microelectronics.***

***Keywords--** Microelectronics · diversity · inclusion · equity · gender balance · DEI metrics · skills pipeline.*

## I. Introduction

Diversity, Equity, and Inclusion (DEI) are essential drivers of innovation, resilience, and competitiveness in the microelectronics sector[1]. Europe faces a critical skills shortage in this field, exacerbated by underrepresentation of women, ethnic minorities, persons with disabilities, and other marginalized groups. The European Chips Skills Academy (ECSA), funded under the EU Chips Act, has embedded DEI at the core of its mission to cultivate a robust skills pipeline that meets industry and societal needs.

ECSA's DEI framework is structured around three pillars: role model promotion, institutional commitments, and collaborative alliance-building. First, showcasing diverse role models helps to challenge stereotypes and inspire the next generation of microelectronics professionals. Second, alignment with national and EU Diversity Charters institutionalizes non discrimination and accountability across education and industry partners. Third, the European Chips Diversity Alliance (ECDA) operationalizes these commitments through data-driven research, toolkits, and engagement programmes, fostering systemic change.

This paper provides a holistic overview of ECSA's DEI activities and presents ECDA as a case study in large scale DEI implementation. We outline the mixed methods research design used to assess baseline conditions (survey, interviews, focus groups), describe the co creation of operational tools and training modules, and report on early pilot results. By synthesizing quantitative and qualitative insights, we identify critical success factors, persistent challenges, and strategic pathways for embedding sustainable DEI practices within Europe's microelectronics education and innovation ecosystem [2]. These initiatives not only address skills gaps but also foster a culture of equity and leadership development for women and other underrepresented groups in science, technology, engineering, and mathematics (STEM).

### I.1 Methodology

The study employed a mixed-methods design, integrating quantitative and qualitative approaches to obtain a comprehensive perspective on Diversity, Equity and Inclusion (DEI) practices within the European microelectronics sector. The data collection phase was conducted between June and September 2024, encompassing a total of 74 participants drawn from the European Chips Skills Academy (ECSA) network. This included representatives from academic institutions,

training centres, and industrial partners across ten European countries.

The quantitative component of the study consisted of an online survey distributed to partner institutions in order to gather baseline information on DEI priorities, motivators and perceived challenges. The qualitative component of the study was designed to complement the quantitative data, and comprised executive interviews and focus groups conducted with project coordinators, HR managers and academic leads.

The survey results were analysed using descriptive statistics in order to identify trends and rank key drivers of DEI adoption. The transcripts of interviews and focus groups were reviewed manually in order to extract recurrent themes and qualitative evidence that would support the quantitative findings. This triangulation facilitated the research team's identification of the most influential motivators, including talent retention and recruitment, and the main barriers, such as limited resources and inconsistent data collection across partners.

## II. Role Models and Gender Equity Initiatives

Promoting diverse role models and advancing gender equity are foundational elements of ECSA's DEI agenda. This section details the mechanisms and outcomes of these initiatives.

1. European Women in Microelectronics Network. Established in 2023[3] [4] [5], the network aggregates profiles of outstanding female professionals across academia and industry. Each partner submits candidates via a standardized Role Model Template, capturing career trajectories, challenges overcome, and actionable advice. Profiles are published on ECSA's Role Models Page, updated quarterly to maintain relevance and visibility.

2. Outreach and Engagement Activities. To maximize impact, ECSA organizes themed webinars, panel discussions, and masterclasses led by role models. In 2024, the "Women in Chips" webinar series reached over 1,200 students and early-career professionals, with post-event surveys indicating a 45% increase in participants' intent to pursue microelectronics careers.

3. Mentorship and Ambassadorship Programmes. Leveraging the role model network, ECDA piloted a mentorship scheme matching 50 junior participants with senior female leaders in 2024. Key performance indicators include mentee satisfaction (mean score 4.6/5), mentorship retention above 80%, and a 30% rise in female internship applications among participating organisations.

4. Gender Equity Metrics and Reporting. Partners commit to annual reporting on gender representation across student enrolment, recruitment pipelines, and leadership roles. An Excel based DEI matrix tracks metrics (e.g., % female students, % women in technical roles). The 2024 baseline reveals an average of 25% female enrolment in microelectronics courses, with targets set to reach 35% by 2027.

5. Best-Practice Exchange and Charter Alignment. Through regional workshops aligned with national Diversity Charters, partners share successful policies such as gender-neutral recruitment guidelines and flexible work arrangements. Benchmarking data informs continuous refinement of templates and outreach strategies.

6. Gender-Equality Training Courses. To translate policy frameworks into actionable skills, ANCCP has created the blended course "Effective Equality for Women and Men in the Workplace" (See Figure 1). Grounded in the EU Gender Equality Strategy 2020-2025, the course enables HR professionals and line managers to design, implement and monitor company-level equality plans. The syllabus is structured in two units: Unit 1 – Regulatory framework on gender equality at work (with the Spanish system as a detailed case study), and Unit 2 – Guidelines and tools to carry out an equality plan in a company. Learning outcomes include: (i) understanding EU and national regulations on equality plans; (ii) identifying the phases of an equality plan and the composition of an equality commission; (iii) selecting appropriate measures to foster equality; and (iv) applying diagnostic and monitoring tools. A small-scale pilot edition (Q2 2025) is currently underway with 5 participants drawn from ANCCP staff. The focus is on refining content, testing assessment instruments, and validating delivery logistics. Once finalized, the course will be rolled out to partner institutions in successive cohorts from 2026, with a cumulative target of 850 trained professionals by 2027.

***Figure 1.*** Collaborative learning and teamwork during the pilot course "Effective Equality for Women and Men in the Workplace".

## III. European Diversity Charters and Commitment

Commitment to Diversity Charters at both national and EU levels ensures that DEI principles are formally embedded within partner institutions. ECSA partners are encouraged to:

1. Pledge to National and EU Diversity Charters. As of July 2025, 75% of ECSA partners have signed at least one Diversity Charter, including the EU Platform of Diversity Charters and equivalent national initiatives in Spain, Germany, France, and Italy[6].

2. Benchmarking and Reporting Tools. Through the EU Platform, partners access interactive benchmarking dashboards that compare DEI performance across industries and geographies. Annual reports generated via the platform inform gap analyses and priority-setting processes.

3. Workshops and Peer Learning. ECSA facilitates bi annual workshops in collaboration with national charter offices. Topics include policy design, inclusive recruitment, and accessibility standards. In 2024, 120 HR representatives participated, reporting an average 20% improvement in charter compliance metrics year on year.

4. Charter Endorsement Campaigns. Coordinated social media and on-site events are used to raise awareness and encourage sign-ups to Diversity Charters. Activities include online campaigns through LinkedIn and X and thematic events within ECSA partners to promote commitment.

5. Integration into Funding and Accreditation. Charter alignment is now a criterion for ECDA pilot selection and ECSA grant applications, incentivizing partners to maintain active commitments and transparent DEI policies.

## IV. European Chips Diversity Alliance (ECDA)

The European Chips Diversity Alliance (ECDA) serves as ECSA's operational arm for advancing DEI objectives, structured as a consortium of academic institutions, industry partners, and diversity experts.

### A. Governance & Advisory Council

An ECDA Advisory Council, convened under the EU Pact for Skills, provides strategic oversight. The Council includes representatives from five European countries, ensuring balanced regional and sectoral perspectives.

### B. Objectives & Scope

ECDA's primary objectives are to:

- Monitor DEI trends and publish bi-annual reports detailing sectoral progress.
- Develop and disseminate operational toolkits and training modules aligned with EU DEI standards.
- Pilot engagement programmes—mentorships, ambassadorships, and the Spark Excellence Award—to foster community-building and recognition.

### C. Funding & Consortium Composition

Co-funded by the EU Education, Audiovisual and Culture Executive Agency (EACEA) with €1.5 million (2024–2027), ECDA unites 12 partners: seven universities, three multinational corporations, and two DEI consultancies. ANCCP participates as ECSA's DEI office, ensuring alignment and synergy between ECSA and ECDA activities [7].

### D. Key Activities & Outputs

1. Research & Baseline Assessment: Stage 1 delivered a comprehensive survey and qualitative insights (June–Sept 2024) to establish benchmarks across skills gaps and DEI priorities.

2. Toolkits & Training: Stage 2 focuses on co-creating five customizable toolkits (e.g., inclusive recruitment, accessibility guidelines) and rolling out modular training programmes including the "Effective Equality for Women and Men in the Workplace" course, currently in a 15 participant pilot phase with the ambition of reaching 850 participants by 2027.

3. Engagement Programmes: Stage 3 involves piloting mentorship and ambassadorship schemes, initiating the Spark Excellence Award, and launching peer learning cohorts. First award cycle completed in July 2025 with 30 nominees and 5 laureates.

4. Reporting & Dissemination: ECDA publishes the first DEI report in October 2025, hosts a public webinar series, and contributes policy recommendations to the EU Chips Act evaluation.

## V. Monitoring and Tools

To ensure accountability and measure progress, ECSA employs a multi-layered monitoring system combining structured data collection, automated analysis, and stakeholder reporting [8].

1. DEI Excel Matrix. A standardized spreadsheet captures partner-level metrics, updated quarterly by each institution. Key fields include:
   - o Country and organization name
   - o Diversity Charter status and signature dates
   - o Number of role model profiles submitted
   - o Participant counts in webinars, mentorships, and workshops

o Gender, age, ethnicity, disability, and neurodiversity breakdowns across student enrolment, internships, and staff roles

o Spark Excellence Award nominations and awardees

2. Automated Dashboard. Data from the Excel matrix feeds into a Power BI dashboard, refreshed monthly. Visualizations track trends in participation, demographic splits, and initiative outcomes. Custom alerts notify the ECDA management office when any metric deviates more than 10% from expected quarterly targets.

3. KPI Definitions and Targets. ECSA defines clear targets for each metric to drive continuous improvement:

o Increase female enrolment by 3% per year.

o Achieve minimum 50% Diversity Charter signature rate among partners by 2026.

o Secure 80% satisfaction rate in mentorship programmes.

o Nominate at least 25 candidates annually for the Spark Excellence Award

4. Reporting Cadence. Quarterly summary reports are distributed to the ECDA Advisory Council and published on the ECSA intranet. Annual DEI reports (October 2025, July 2026, March 2027) include comprehensive analyses and case studies.

5. Data Quality and Governance. A centralized data steward role ensures consistency, validates entries, and conducts bi-annual audits. Standard operating procedures govern data handling, privacy compliance (GDPR), and access control.

## VI. Key Findings

Quantitative data were analysed using descriptive statistics (mean importance scores, standard deviations, and ranking of drivers), while qualitative transcripts were processed through thematic analysis to identify recurring patterns related to motivators, barriers, and enablers of DEI implementation. Based on the mixed-methods research, the following key findings emerged:

Primary Motivators:

Talent Retention (90% importance score) and Recruitment (85%) are the top drivers of DEI initiatives, reflecting organisations focus on securing and sustaining skilled personnel.

Reputation Enhancement (75%) and Regulatory Compliance (65%) also influence DEI investment decisions.

Initiative Priorities:

Current Focus: Employee experience programmes (e.g., inclusive culture workshops) and strengthening the talent pipeline via mentorships and role-model campaigns.

Future Shift: Emphasis on inclusive recruitment practices and leadership development aimed at diverse representation in decision-making roles.

Diversity Dimensions:

Gender Balance remains the highest priority, with age and skillset diversity following closely.

Racial/Ethnic Diversity and Disability/Neurodiversity are increasingly recognized, with emerging initiatives to support these groups.

Successes:

High engagement in mentorship and webinar series, evidenced by a 45% increase in career intent among participants and 80% mentorship retention.

Effective use of role-model profiles to increase visibility of underrepresented professionals, contributing to a 30% rise in female internship applications.

Challenges:

Data Quality & Measurement: Inconsistent metrics across partners and limited analytics capacity hinder precise tracking of progress.

Resource Constraints: Budget and time limitations affect the scope and frequency of DEI activities.

Goal Setting: Few institutions have clearly defined, measurable DEI targets beyond gender, impacting accountability and long-term planning.

Beyond the descriptive results, the data reveal that DEI adoption in the microelectronics sector remains largely compliance-driven rather than strategically embedded. While talent-related motivations dominate, the relatively lower scores for regulatory factors suggest that many organisations still lack formal accountability frameworks. This imbalance indicates that without binding policies or performance-linked incentives, DEI initiatives may struggle to sustain long-term behavioural change.

These findings inform the strategic design of ECDA's toolkits, dashboards, and engagement programmes, ensuring targeted support for areas of greatest impact.

## VII. Limitations

While this study offers valuable insights, several limitations warrant consideration:

Sampling Bias: The survey sample (74 participants) overrepresents senior managers (50%), potentially skewing perspectives toward strategic rather than operational challenges.

Self-Reported Data: Reliance on self-reported metrics (e.g., satisfaction scores, webinar intent) may introduce positive response bias, limiting objectivity.

Geographical Scope: Although covering 10 European headquarters countries, the study excludes smaller regional partners, which may face unique DEI barriers.

Short-Term Pilot: Early pilot outcomes are based on a limited timeframe (2024–2025); long-term impacts and sustainability remain to be validated in subsequent cycles.

Tool Adoption Variability: Deployment of toolkits and dashboards varies across partners, affecting comparability of usage and outcomes.

Addressing these limitations will be crucial in refining future research phases and enhancing the robustness of DEI assessments.

## VIII. Visual Summary of DEI Participation

To complement the detailed findings, Figures 2 and 3 provide visual insights into the priorities identified by 74 European stakeholders.

As illustrated in Figure 2, respondents were invited to rate the four primary drivers of Diversity, Equity and Inclusion (DEI) initiatives as "Very Important". The radar plot demonstrates a pronounced emphasis on talent-related factors. Talent retention (47.95%) and talent acquisition (42.47%) emerge as the predominant motivators, followed by reputation and brand (43.84%) and, to a lesser extent, regulatory requirements (32.88%). The findings suggest that, within the European microelectronics ecosystem, DEI initiatives are not regarded as mere compliance obligations but rather as strategic investments aimed at attracting, developing, and retaining qualified professionals. There is a broad consensus among academic and industry participants on the necessity to establish inclusive environments that encourage competitiveness and innovation.

The central theme of Figure 3 is the single driver, entitled "Finding Talent". In this instance, 42.47% of respondents assigned a rating of "Very Important" and 41.10% assigned a rating of "Important," indicating a robust consensus on its pertinence. The remaining categories – Moderately Important, Slightly Important, and Not Important – collectively represent less than 17% of responses, thereby underscoring the perception among stakeholders that DEI is a pivotal mechanism for expanding the talent pool and enhancing organisational competitiveness, as opposed to being regarded as a mere symbolic gesture.

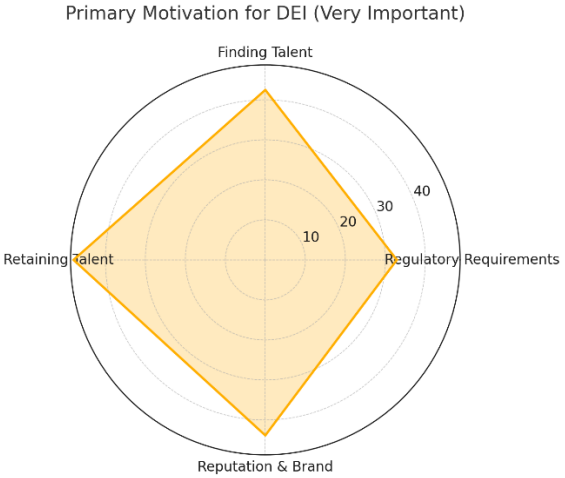


***Figure 2***. Distribution of "Very Important" ratings among the four main drivers of Diversity, Equity and Inclusion (DEI) initiatives according to 74 European stakeholders. The radar plot highlights that talent retention (47.95%) and talent acquisition (42.47%) are perceived as the most critical motivators, followed by reputation & brand (43.84%) and regulatory requirements (32.88%).

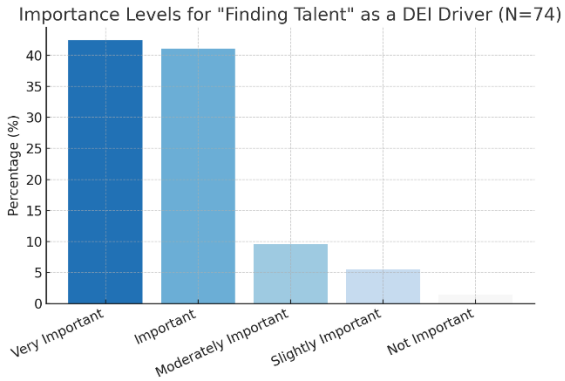


***Figure 3.*** Importance levels assigned to the driver "Finding Talent" (N = 74). Results indicate that 42.47% of stakeholders consider this factor "Very Important," closely

followed by 41.10% as "Important," with only a small proportion assigning lower levels of importance.

## IX. Conclusions & Future Directions

ECSA's integrated DEI framework—anchored by role models, charter commitments, and the European Chips Diversity Alliance (ECDA)—demonstrates a replicable model for embedding equity and inclusion in technology education and workforce development. The mixed methods baseline assessment revealed significant engagement in gender equity and employee experience initiatives, underscoring strong institutional buy in. However, persistent challenges around data quality, resource allocation, and measurable targets indicate the need for enhanced governance structures and funding mechanisms.

The ECDA's pilot programmes, particularly mentorship schemes and the Spark Excellence Award, have shown promising early outcomes: high participant satisfaction, increased visibility of underrepresented talent, and strengthened peer learning networks. Automated dashboards and the DEI Excel matrix provide real time insights, enabling responsive adjustments to interventions and transparent reporting to stakeholders.

Critically, although the mixed-methods design offered rich insights, the integration of qualitative and quantitative strands could be strengthened by cross-validating survey data with interview narratives. Some discrepancies such as the optimism of managers versus the operational barriers reported by staff highlight the need for deeper triangulation in future iterations.

Looking forward, strategic efforts should focus on:

- Scaling and Sustainability: Expand toolkits and training modules to all ECSA partners and integrate DEI metrics into accreditation processes for microelectronics programs.

- Data-Driven Decision-Making: Enhance the dashboard's analytical capabilities by incorporating predictive analytics and longitudinal tracking to forecast trends and identify emerging gaps.

- Policy Integration: Leverage bi annual DEI reports to inform EU Chips Act evaluations and national skills strategies, advocating for policy levers that mandate DEI as part of funding criteria.

- Community of Practice: Establish a permanent DEI Community of Practice within ECSA to facilitate continuous knowledge exchange, update role model repositories, and coordinate annual Spark Excellence Award cycles.

By institutionalizing these recommendations, ECSA and its partners can ensure that DEI principles become enduring components of Europe's microelectronics education and innovation ecosystem, ultimately contributing to a more diverse, equitable, and competitive sector.

## X. Acknowledgment

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