Workforce Development And Diversity, Equity, Inclusion in the Microelectronics Industry

SEMI Foundation
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Industry Workforce Development Challenges

- Invisible industry
- Aging infrastructure and faculty/instructor population
- Lack of alignment between industry & education
- Outdated microelectronics curricula
- Talent retention (leaky pipeline)
- Greying Workforce
- Image of industry
- Great resignation
- Pathways to hire
- Pipeline inequality, limiting the size and strength of the talent pool
Lack of inclusion in the tech industry

The Cost

$16 Billion

Women:
- Only 25% of computing-related jobs (with just 3% of those jobs held by Black women)
- Only 14% of our engineering workforce.
- Only 22% of C-Suite leaders are women.

BIPOC Populations:
- Black people comprise between 1-5% of the tech workforce
- LatinX people make up only 7%
- Zero Black CEO’s among Fortune 500 tech companies.
Diverse teams lead to better outcomes...

75% Of organizations with frontline decision-making teams reflecting a diverse and inclusive culture will exceed their financial targets
- Gartner

+33% According to a 2018 study, ethnic and cultural diversity resulted in a 33% increase in performance
- McKinsey

x2 Among groups where original members didn’t know the answer, adding an outsider versus an insider actually doubled their chance of arriving at the correct solution
- Harvard Business Review

These teams need to be managed carefully to encourage inclusive collaboration
... and inclusion benefits everyone

High feeling of belonging was linked to:

- **56%** increase in job performance
- **50%** drop in turnover risk

Organizations with inclusive cultures are:

- **2x** as likely to achieve financial targets
- **6x** more likely to be agile and innovative
- **8x** more likely to achieve better business outcomes

Source: The diversity and inclusion revolution: Eight powerful truths: Deloitte Review Issue 22, Deloitte Insights, January 22, 2018

Source: HBR, 2019
What are students or potential employees looking for?

- Diversity/Inclusion – representation in company, leadership
- Sustainability – impact on community, society, world
- Transparency – expectations, salary, expected travel
- Work/Life balance – quality of life, remote work
- Growth – pathways to success, training, mentorship/sponsorship
- Impact – cutting edge technology for good
- Equity – recruit for potential, especially for women, under-represented populations (promotion rates)
- Autonomy and Trust – not slackers, will do hard work and want to be trusted to do so, don’t require micromanagement
- Continuous feedback and coaching – informed if work falls short, want coaching to improve
Global Talent Shortage: more than 1 mil by 2030

Worldwide, an estimated more than 1,000,000 positions will need to be filled by 2030

Significant talent shortages already exist in each of the regions, with public investment adding increased urgency and demand

Globally, production and engineering occupations are identified as high-need

Systemic challenges seen globally include falling enrollment in STEM education

Talent shortages in the Americas, Europe, and Japan led by re-shoring efforts and lack of educational investment

Other regions (China, SEA, Korea) talent shortages driven by strong worldwide semiconductor demand

In India, MEITY has projected 85000 by ‘26. ELCINA-ESSCI WFD report has bifurcated this into 25000 manufacturing #s (direct 10000, indirect 15000) and balance 60000 is Design

*Estimate through 2025
Our Mission and Vision

The **mission** of the SEMI Foundation is to support economic opportunity for workers and the sustained growth of the microelectronics industry.

We accomplish this through creating pathways and opportunities for job seekers, and tools and systems for semiconductor companies to attract, develop, retain, and advance a diverse and skilled workforce.

Our **vision** is a thriving microelectronics industry with a highly diverse, skilled workforce in all levels of leadership and management. We accomplish this by:

- Advocating for more equity, diversity, and inclusion in the workplace
- Supporting science, technology, engineering and math (STEM) programs for all students
- Supporting pathways for underrepresented people to enter the industry
- Advocating for robust workforce development funding, policies, and programs – regionally, nationally, and globally
- Connecting employers, training providers, worker representatives, and communities to solve workforce challenges and support economic equity
SEMI’s Holistic Workforce Development & DEIB Plan

**CHIPS Application Support**
Providing application and programmatic support to members

**SEMI High Tech U**
Connects industry professionals to middle and high school students, demonstrating educational and career paths in STEM

**Industry Image and Awareness Campaign**
Attracts talent with CAEL career exploration site and Roadtrip Nation documentary

**ASA Partnership, Mentoring & University Connections**
Creates formal partnerships with universities to provide industry access and collaboration opportunities

**Apprenticeship Initiatives - SCAN**
Collaborating with federal & state agencies to provide earn-and-learn models that fulfill entry-level workforce needs

**High Tech U in the Classroom Kits and Curriculum**
Provides experiential learning that engages K-12 students and promotes STEM careers

**Community College Program**
Aligns industry workforce needs with community college program offerings

**Global Workforce Development Pavilions**
Connects employers and talent at all SEMICONs

**SEMI / IEEE Joint Certification Program**
Provides access to training to ensure competency

**SEMI University Online Learning Platform Launched in February 2023**

**VetWorks**
Supports pathways to recruitment, hiring and retention

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**D i v e r s i t y ,  E q u i t y  a n d  I n c l u s i o n**

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Excite and inspire early... 3rd grade onward
Widening the talent pipeline

Attract and motivate... K-12 college
Strengthen the foundation (7-15 years)

Pathways to professional careers
Mid-term (2-6 years)

Continuous learning
Near-term (0-2 years)
CHIPS Support

Applicants are also encouraged to identify a neutral, trusted, and credible intermediary that convenes and serves as a liaison between businesses and the full range of partners, also known as a backbone organization.
Iterations include:

- Kits for a district after-school program receiving ongoing support from a member company
- Implementation through STEM coordinators at a K-8 school, using the kits grade level by grade level
- STEM component of a summer program
- Individual teacher outreach and implementation
- Extending student learning through site visits or a larger “industry day”
- Career exploration activities in the SEMI career exploration website: careers.semi.org
Industry and Image Awareness Campaign

- 40M viewers
- 100,000 users

http://careers.semi.org
SEMI Stories: More than 1.5 million students engaged!

SEMI Stories Videos

- Created with Tiggbee, our video partner
- Feature veterans, women, and other professionals
- 1,511,012 viewer participants
- 80% youth of color
- 49% female

HEAR FROM A VETERAN

Katie Maloney of Edwards Vacuum discusses her journey from high school to college, to the U.S. Navy, to the semiconductor industry. Learn how the microelectronics industry provides opportunities for growth and success.

LIBRA WHITE
Senior Public Relations Manager @ Lam Research

KATIE MALONEY
Business Life Manager @ Edwards Vacuum

MICHAIL FACTOR
Facility Maintenance Technician @ Tokyo Electron Limited

Facility Maintenance Technician @ TEL
SEMI VetWorks

Tapping a significant portion of the 200K/year transitioning US military, veterans to our industry by:

• Partnering with members and universities to offer Hiring Events for members and the veteran community

• Offering an industry guidebook to help companies attract veterans

• Partnering with Heroes MAKE America – a DoD approved Skillbridge program

• Providing early access to resumes for SEMI members

• Collaboration with Army TRADOC (Training and Doctrine Command) on outreach to nationwide TAP (Transition Assistance Program), PaYS and Soldier for Life

• Partnering with Vet S.T.E.P. to scale training country-wide and connections to members

Hiring Events launched  
VetWorks Guide published

Events – Heroes Connect, annual panel at SEMICON West  
Resume-sharing with member companies  
Curriculum share from TEL and other members  

Crosswalk built from Image and Awareness site
SEMICON Workforce Pavilions

- Career Fair (expanded)
- Flash Mentoring (two days)
- Internship match-making
- Student tours/introductions (show floor)
- Diversity Day (incl. Women in Semiconductors)
- Onsite Interviews
- High Tech U for Students
**Partnership between the American Semiconductor Academy (ASA) Initiative & SEMI**

<table>
<thead>
<tr>
<th>American Semiconductor Academy (ASA)</th>
<th>Outreach and Diversity, Equity, and Inclusion (DEI) initiatives</th>
<th>2600+ Member Companies</th>
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<tbody>
<tr>
<td><strong>Academia:</strong> Rigorous education</td>
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<tr>
<td>✓ Broad and diverse network</td>
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<td>✓ Comprehensive STEM curricula</td>
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<td>✓ Facilities for hands-on training</td>
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<td>✓ Research programs – driving innovation</td>
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<td><strong>Industry:</strong> Rewarding careers</td>
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<tr>
<td>✓ Deep industry connections</td>
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<td>✓ Complementary workforce training</td>
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<td>✓ Government connections</td>
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<td>✓ Proven ability to effectively administer U.S. federal grants</td>
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Diversity, Equity, and Inclusion Resources
SEMI Mentoring

Objective:

Drive more connections between ASA college and university students and industry professionals at SEMI member companies through an on-demand, online flash mentoring program.

When users complete their profile, the platform will match users based on their expertise and interests.

Benefits:

• Raise industry visibility and awareness
• Increase brand presence within upcoming talent
• Help students explore a diverse set of career pathways

The SEMI Foundation also offers company-specific mentoring tracks for your early-career employees to connect with company veterans.

Our Member Company Mentoring track has grown by 125% year over year.

Participating mentees representing various backgrounds, majors, interests, geographical locations, and education levels

Participating mentors representing various companies, backgrounds, functional areas, skills, and expertise
SEMI Career and Apprenticeship Network (SCAN)

**Expand industry participation**
- Build industry-led workforce development networks.
- Expand access and adoption of apprenticeships, earn and learn models, and customized trainings, to employ a wide diversity of people in rewarding roles and are part of talent strategy in top markets.

**Recruit more people of color and women into the industry**
- Partner with K-12 school districts, community colleges, workforce development boards, government agencies, military programs, community-based organizations.
- Mobilize their networks and resources for program recruitment and retention.

**Launch a national apprenticeship/earn and learn model**
- Create a competency-based program that includes professional and technical skills for high-demand jobs identified by companies.
- Promote SCAN through SEMI’s Industry Image and Awareness Campaign.
- Pilot in key regions; scale nationwide.

**Provide stackable industry credentials recognized nationwide**
- Improve the long-term career opportunities, pathways to management, and overall industry retention for graduates.

**Support from MI and CA**
- Asked for proposals from TX, AR, OH, IN, CO
- 40+ member companies
- Dozens of workforce partners
- 15+ colleges and universities
- Interest from multiple states and global regions
- Content/curriculum created in alignment with member needs
- Testimony to Congress
- Media campaign
SEMI University

- SEMI University is online learning for and about the semiconductor industry designed by experts
  - Meets education and training needs of SEMI members and new industry entrants
- The curriculum reduces the need for members to acquire or develop their own education and training
  - Targeted to employees ranging from new operators to experienced technicians to non-technical staff
  - Content will include courses about the Semiconductors industry, business content and more
- SEMI University is affordable and supports multiple languages
  - Subscription or à la carte pricing
  - Content in English, Japanese and Chinese
Get Involved
Numerous opportunities to join and leverage SEMI's ongoing initiatives

Accelerate Growth
Experience the benefits of SEMI involvement and prepare your workforce for industry needs
THANK YOU

SEMI Foundation
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