



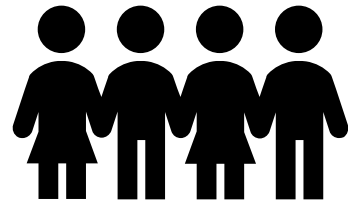
Workforce Development And Diversity, Equity, Inclusion in the Microelectronics Industry

SEMI Foundation
Shari Liss, Executive Director
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September 21, 2023

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- Outdated microelectronics curricula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

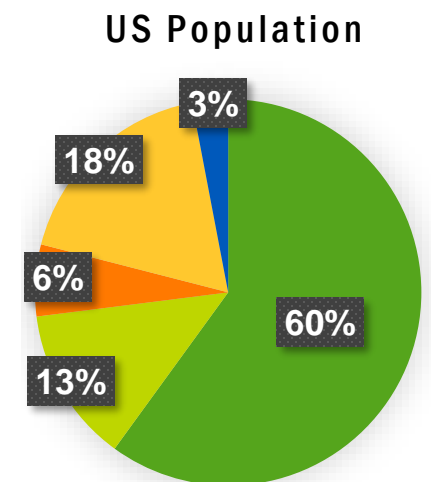
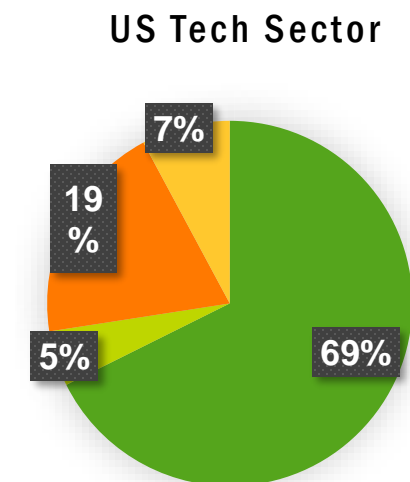
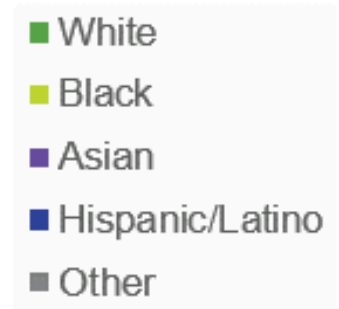
\$16 Billion

Women:

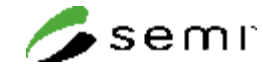
- Only 25% of computing-related jobs (with just 3% of those jobs held by Black women)
- Only 14% of our engineering workforce.
- Only 22% of C-Suite leaders are women.

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

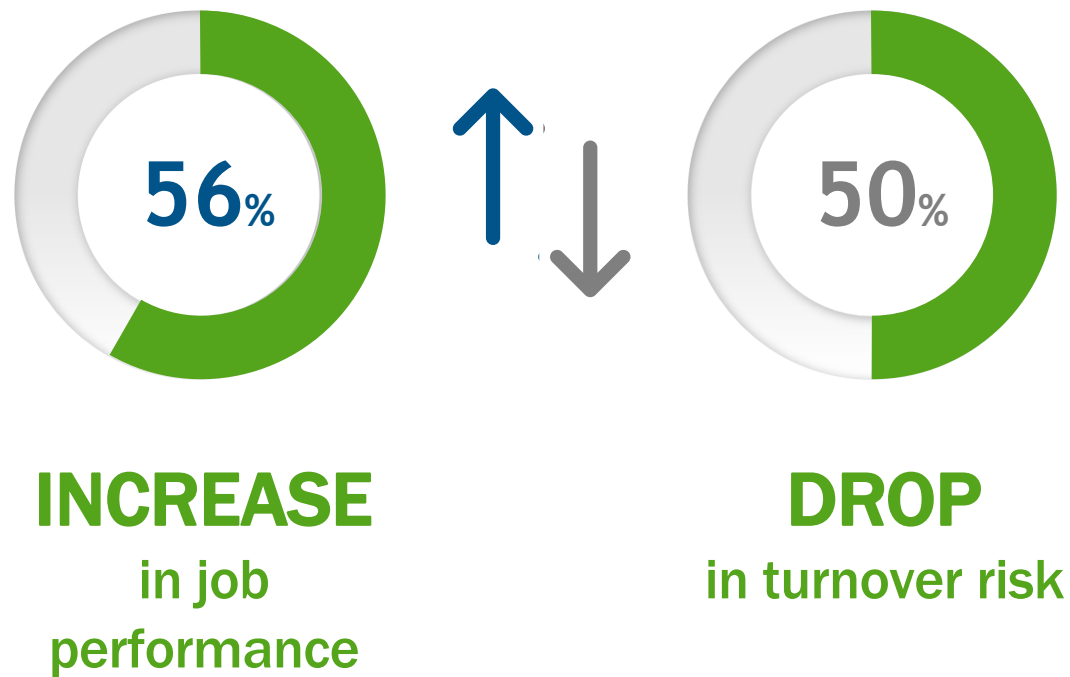
Among groups where original members didn't know the answer, adding an outsider versus an insider actually doubled their chance of arriving at the correct solution

- Harvard Business Review

These teams need to be managed carefully to encourage inclusive collaboration

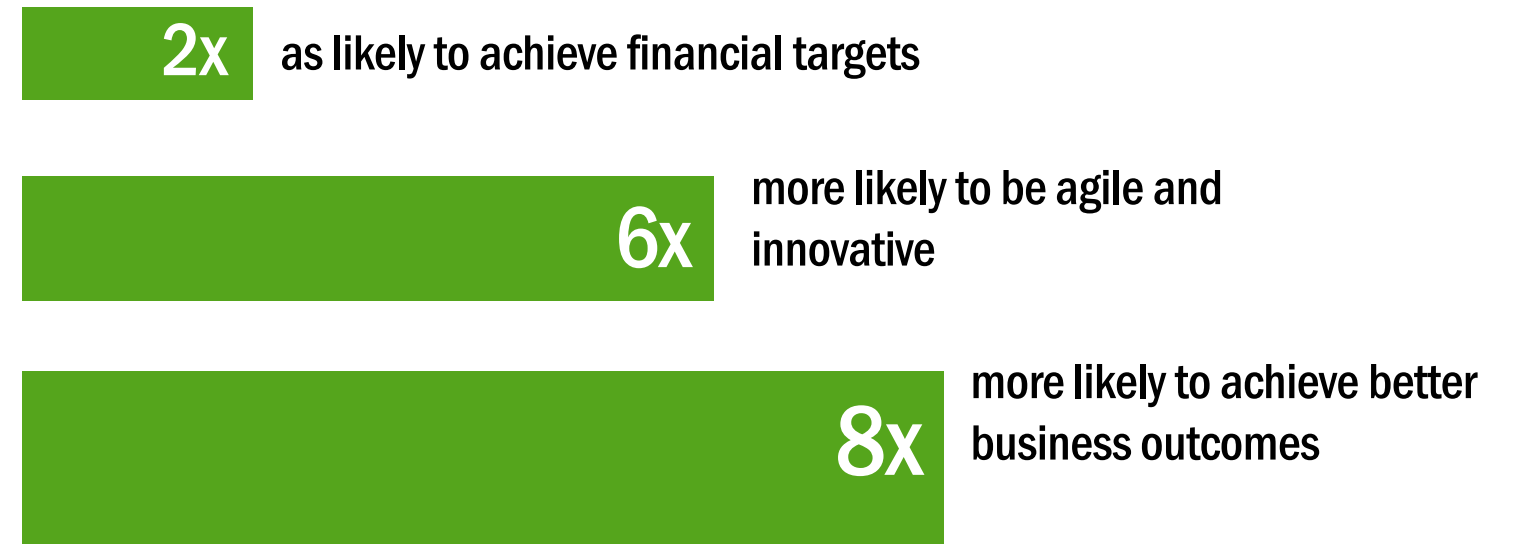
... and inclusion benefits everyone

High feeling of belonging was linked to...



Source: HBR, 2019

Organizations with inclusive cultures are...



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

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

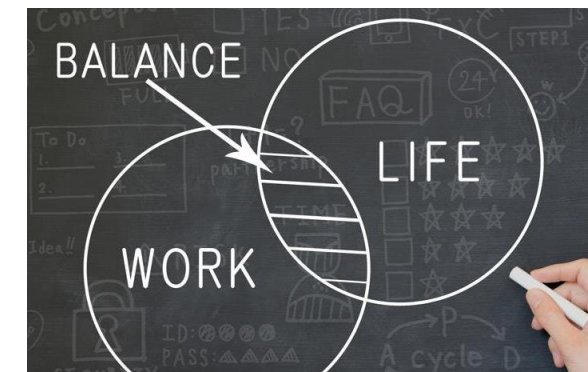
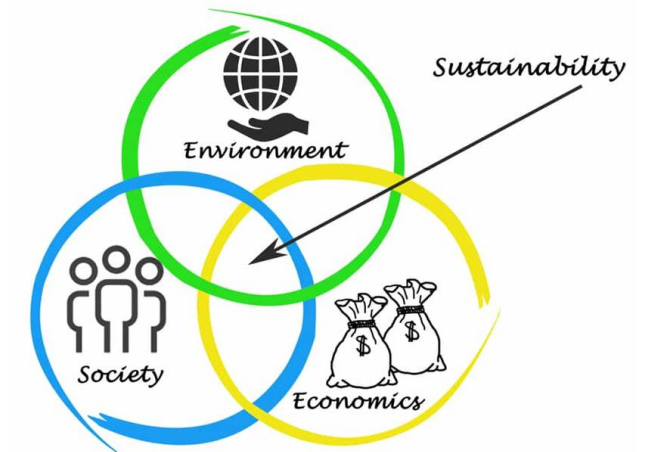
Growth – pathways to success, training, mentorship/sponsorship

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

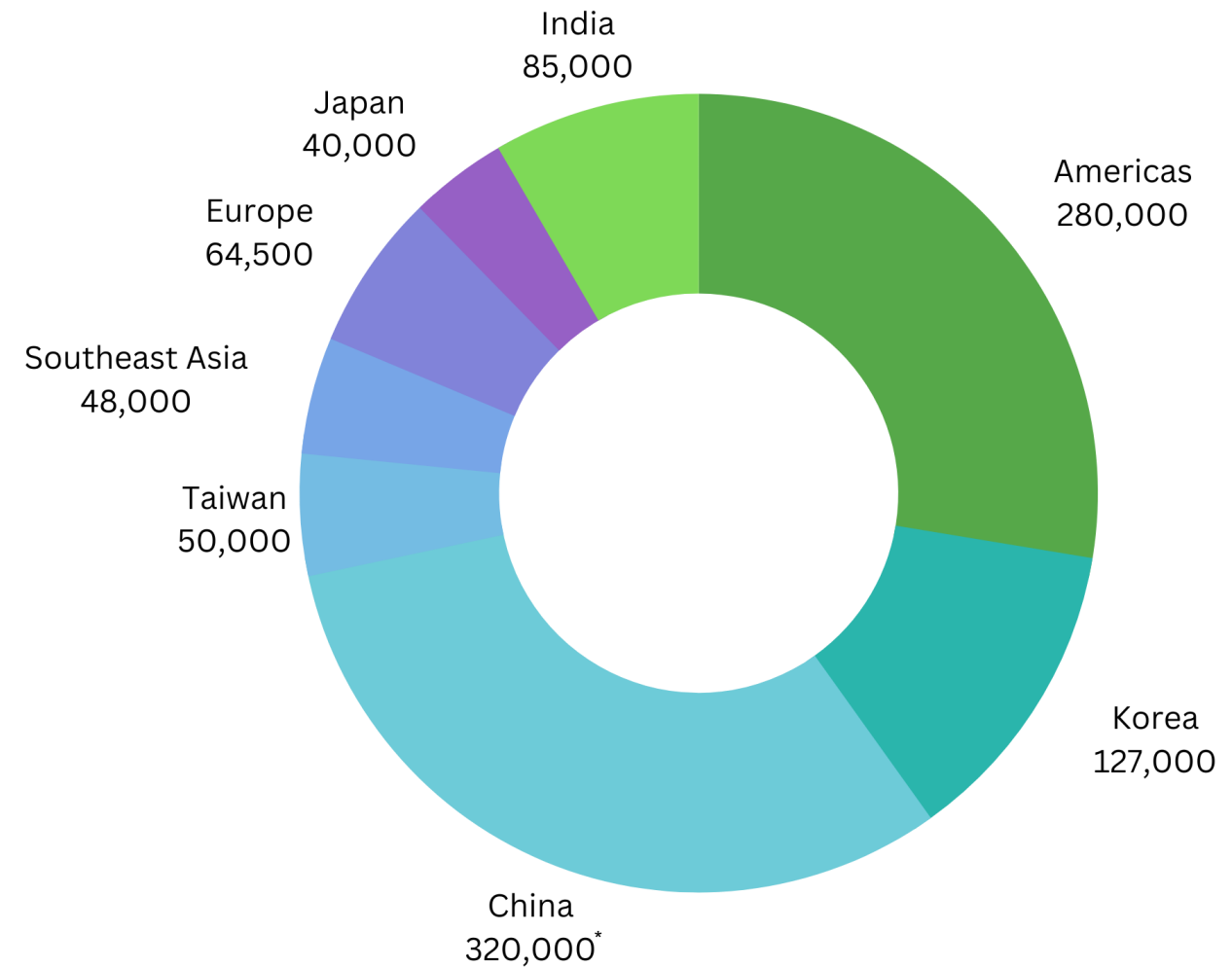
Globally, production and engineering occupations are identified as high-need

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



Primary School

High School

Community College

University

Certifications

Re-Skilling Returning Workers & Veterans

Career & Beyond

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 to recruitment, hiring and retention

VetWorks

Supports pathways to recruitment, hiring and retention

SEMI University Online Learning Platform Launched in February 2023

*Excite and inspire early...
...3rd grade onward*



*Attract and motivate ... K
12-college*



*Pathways to professional
careers*



Continuous learning

Widening the talent pipeline

Strengthen the foundation
(7-15 years)

Mid-term
(2-6 years)

Near-term
(0-2 years)

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

CHIPS Support



- Application Support
 - Pre-application/application planning framework
 - Regional demographic reports to support narratives
 - Good Jobs Principles case-making
 - Language describing education and training programs
 - Guidance on cross-cutting principles in workforce plans
 - Proposal editing and recommendations
- Programmatic Support
 - Backbone organization support
 - K-12 Outreach & Engagement
 - Industry image and awareness services
 - Veteran outreach, hiring, and retention services
 - DEI Toolkit and Initiatives
 - Mentoring services

*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**.*

SEMI HIGH TECH U IN THE CLASSROOM

Iterations include:

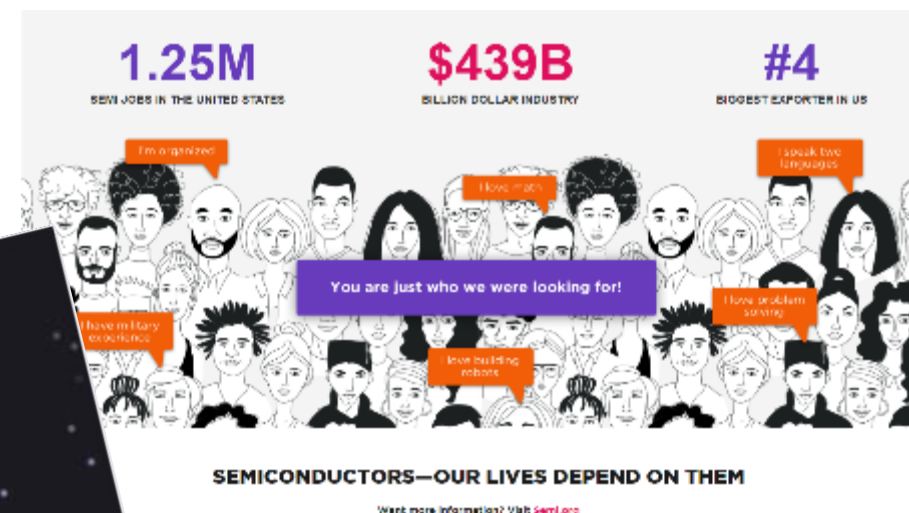
- Kits for a district after-school program receiving ongoing support from a member company
- Implementation through STEM coordinators at a K-8 school, using the kits grade level by grade level
- STEM component of a summer program
- Individual teacher outreach and implementation
- Extending student learning 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



**Senior Public Relations
Manager @ Lam Research**

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.

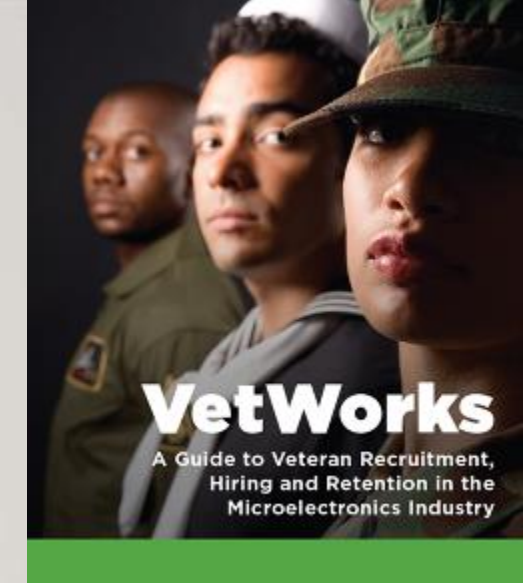


**Facility Maintenance
Technician @ TEL**

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

American Semiconductor Academy (ASA)



2600+ Member Companies

Academia: Rigorous education

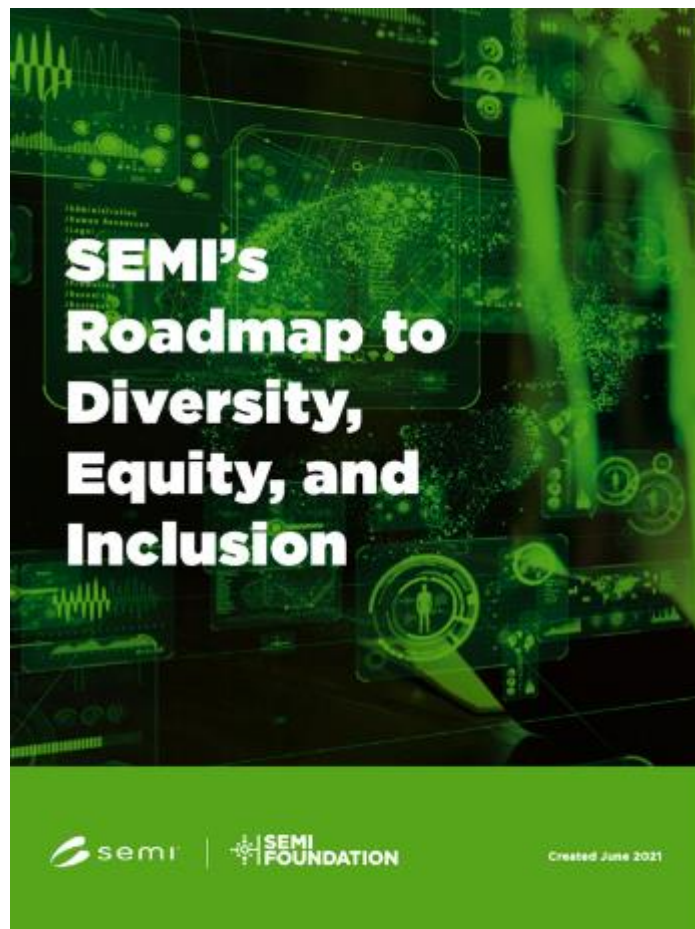
- ✓ Broad and diverse network
- ✓ Comprehensive STEM curricula
- ✓ Facilities for hands-on training
- ✓ Research programs – driving innovation

Outreach and Diversity, Equity, and Inclusion (DEI) initiatives

Industry: Rewarding careers

- ✓ Deep industry connections
- ✓ Complementary workforce training
- ✓ Government connections
- ✓ Proven ability to effectively administer U.S. federal grants

Diversity, Equity, and Inclusion Resources




SEMI's Diversity, Equity, and Inclusion Toolkit

SEMI is the broadest tech-focused industry association in the world, providing services and support for more than 2,400 microelectronics companies worldwide. Part of our work is to support the industry in building more equitable and just workplaces, particularly as we continue to navigate the effects of COVID-19.

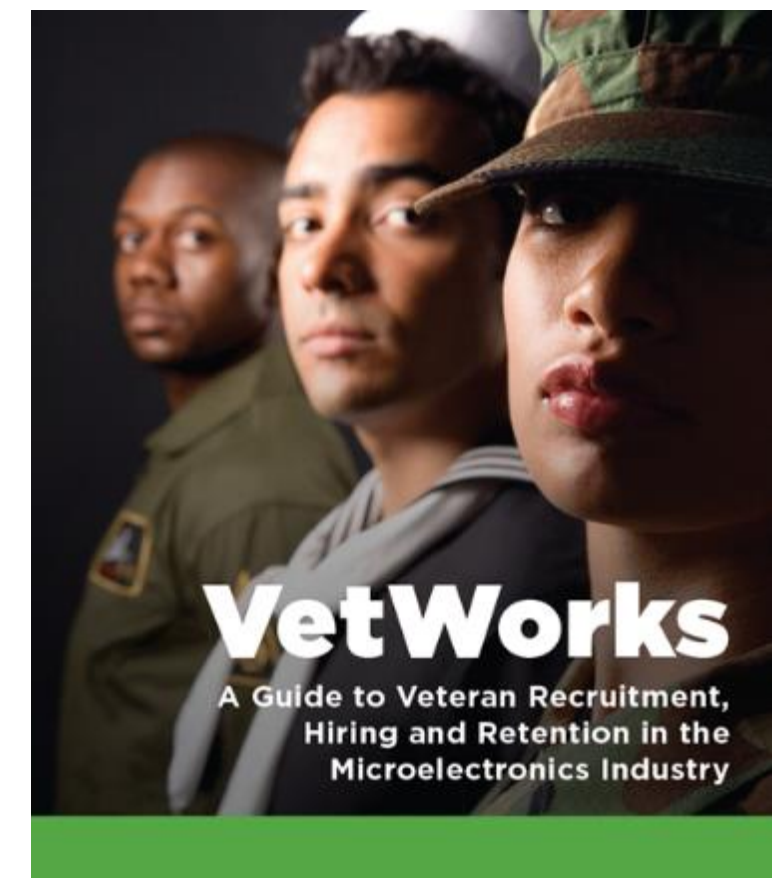
Even before the pandemic, our industry faced a critical shortage of workers to fill all levels of sector jobs. It is with this in mind that SEMI is focusing on numerous initiatives to expand the workforce pipelines.

Our industry faces serious equity issues. There are long-standing practices that contribute to inequities across our sector. This is hurting our companies, and our industry. Inclusive workplaces tend to have higher retention rates and better recruitment rates, and companies with diverse leadership are 50%

more likely to outperform their peers. While this lack of diversity undercuts our industry's capacity for innovation, creativity, and productivity, it is, more importantly, unjust. It is time for the microelectronics sector to acknowledge the disparities and to redesign our systems and practices to create a more equitable future for our industry.

To that end, we have created this Diversity, Equity, and Inclusion (DEI) Toolkit, which is a companion piece to SEMI's Roadmap to DEI. The Roadmap is an in-depth DEI framework and guide derived from resources in this toolkit and includes specific initiatives and activities that will further our own DEI journey. It is a resource for any company to adopt and employ.

This Toolkit is a list of assessments, resources, and research designed to illuminate current thinking and practices in DEI. It also includes SEMI's DEI

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.

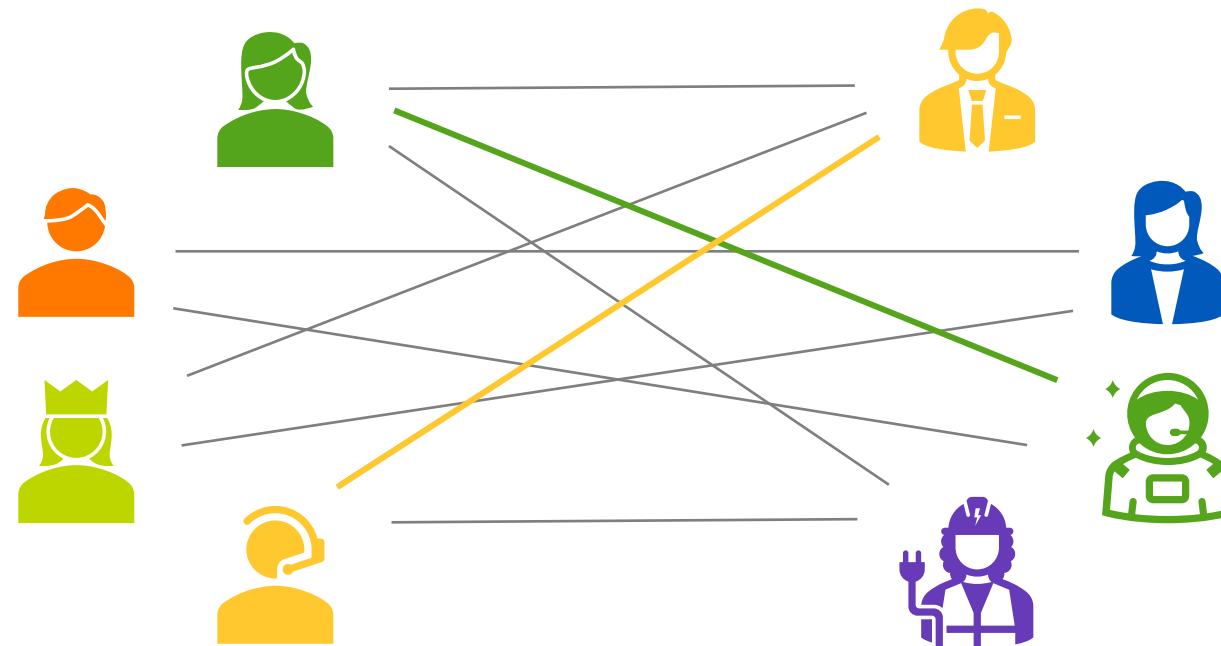
Benefits:

- 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

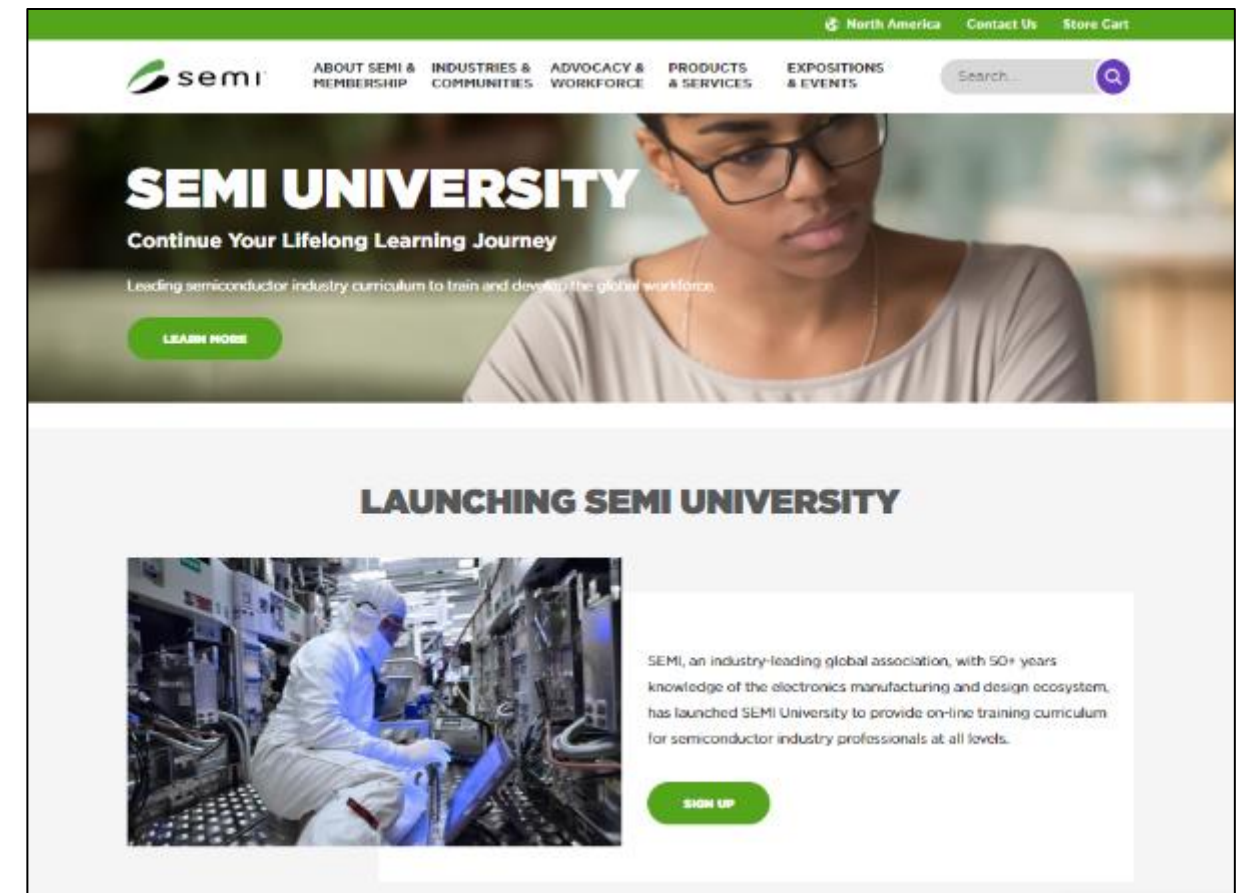
Content/curriculum created in alignment with member needs

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
Shari Liss, Executive Director
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