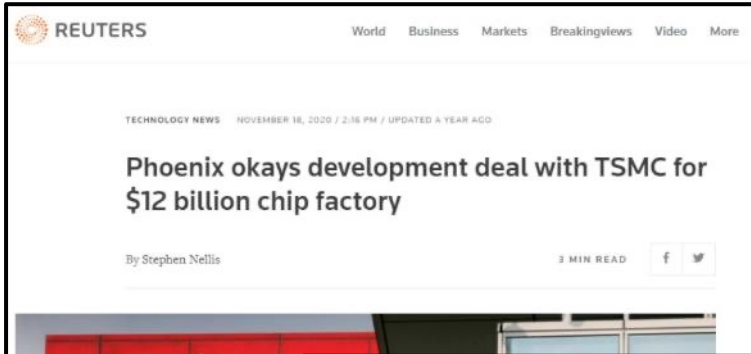




# Workforce Development: Microelectronics Industry

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# Billions in Upcoming Capital Investments



**REUTERS** World Business Markets Breakingviews Video More

TECHNOLOGY NEWS NOVEMBER 18, 2020 / 2:16 PM / UPDATED A YEAR AGO

## Phoenix okays development deal with TSMC for \$12 billion chip factory

By Stephen Nellis 3 MIN READ



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## Samsung says it will build \$17B chip factory in Texas

November 24, 2021 12:40 AM ET

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TECH

## Intel to Invest at Least \$20 Billion in Ohio Chip-Making Facility

Company will make cutting-edge processors at new site near Columbus, creating around 3,000 permanent jobs



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# Matching Workforce Investments are Necessary

## Existing talent concerns

- 84,000 current positions in the last 12 months across SEMI member companies in the US
- Talent needs expand across various job functions
- A 2021 report released by Eightfold states that finding talent to capitalize on federal investments remains the most critical issue facing the industry

## Upcoming talent concerns

- 13 new US fabs starting production between 2022-25
- Thousands of employees per fab and a corresponding increase in the number of non-fab employees needed across the supply chain

**At least 40,000 new employees needed in upcoming fabs**



# Industry Workforce Development Challenges

- Invisible industry
- Image of industry
- Greying workforce
- Great resignation
- Diversity
- Pathways to hire







## Diverse teams lead to better outcomes...

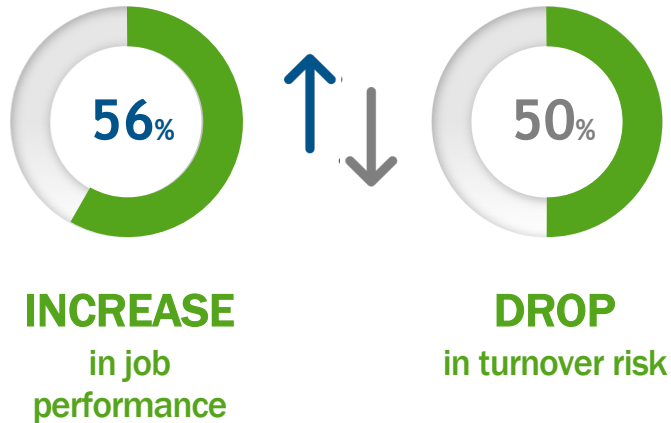
**75%** Of organizations with frontline decision-making teams reflecting a diverse and inclusive culture will exceed their financial targets  
- *Gartner*

**+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*

# ... 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*

## Ecosystem and Investment

Billions in upcoming capital investments and SEMI is ready with a strong, well-positioned portfolio  
Goal: Partner with federal and state governments to support WFD and DEI

## SCAN

New breakthrough workforce programs like SCAN are positioning the industry to find the next generation of talent  
Goal = 500+ apprenticeships complete by 2024

## Veterans

A powerful base of skills and an affinity for the industry. Deepening our relationships and depth of programs  
Goal = 10,000 veterans reached in 2024

## Education

Expanding relationships with universities, community colleges, and K-12 educational institutions  
Goal = 25,000 students reached through programming

## Image and DEI

Continued focus on enhancing industry image, building awareness, and improving diversity, equity, and inclusion practices  
Goal = 125,000 users, 7,000 job seekers by 2024

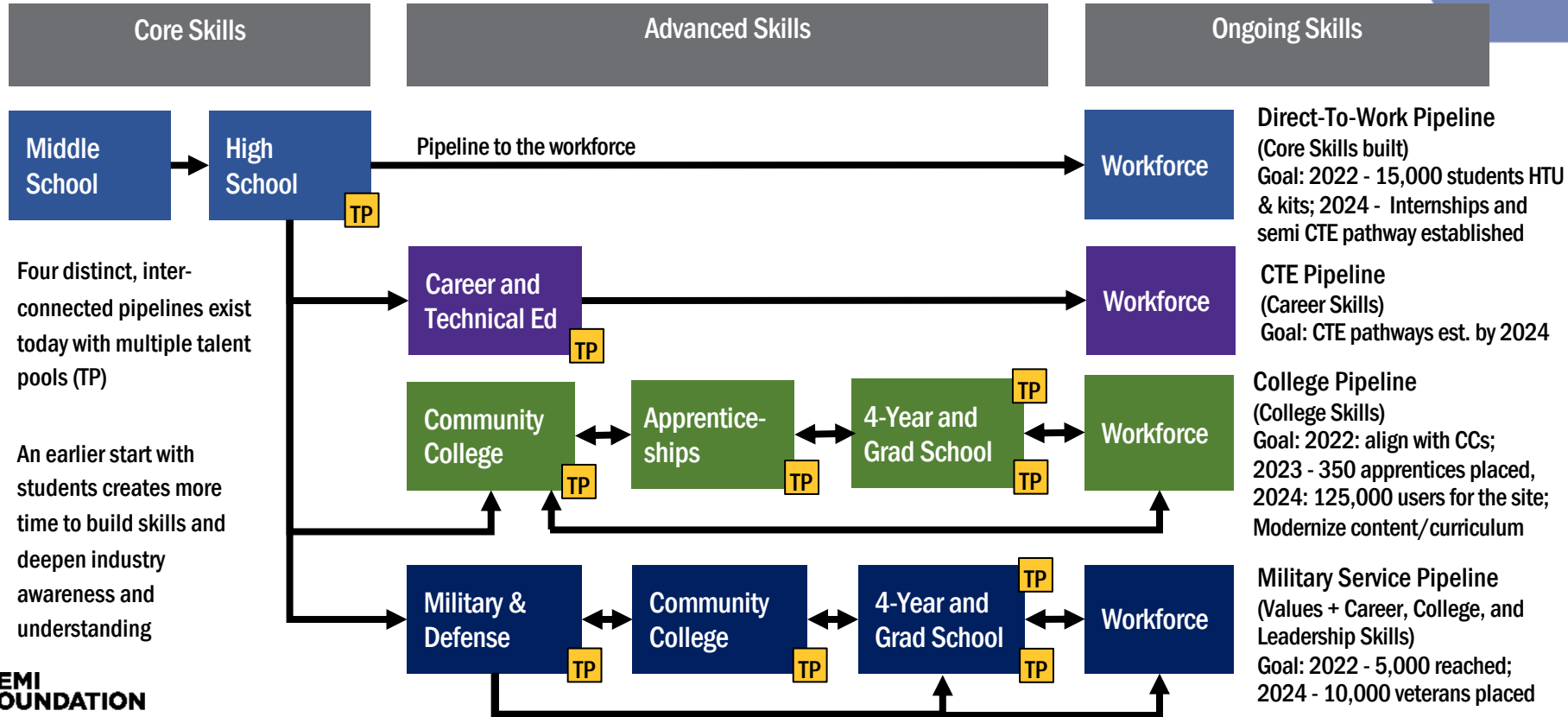
## Funding and Impact

Team focus on funding every program and driving greater impact for members  
Goal = \$5M raised to support the work by 2024

**Major progress over the last 2+ years - SEMI portfolio, new hiring methods with SCAN, moves toward LMS and certification, value of ASA partnership, potential funding from COMPETES Act and multiple state governments to support new fab development with TSMC, Intel, SAMSUNG, etc.**

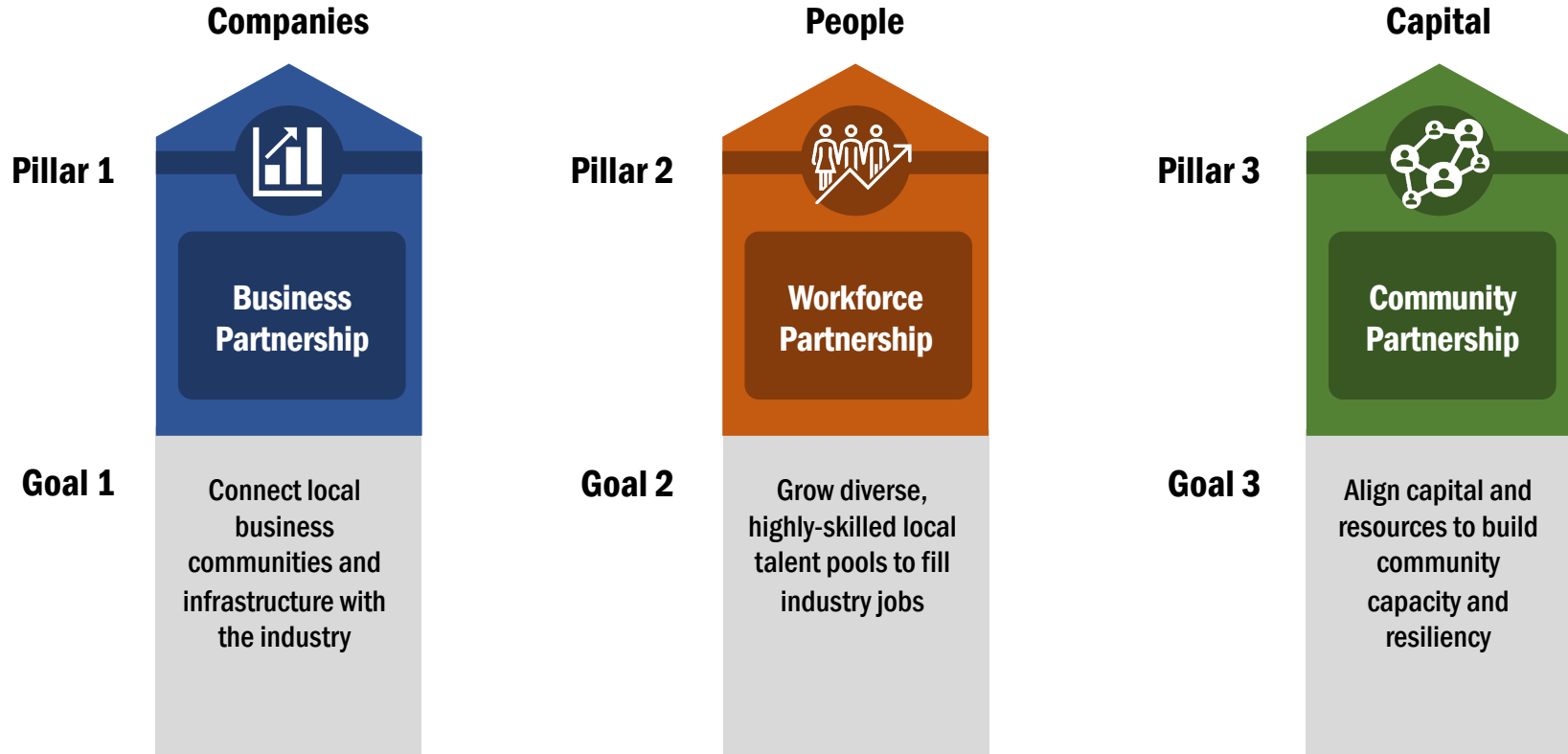


# The Workforce Ecosystem - Talent Pipelines and Pools



# Vision: Economic and Workforce Development

Navigating a complex workforce ecosystem



# A Custom-Built SEMI Foundation Portfolio



# Building a strong, well-positioned portfolio



## Delivering

Convening national and global partners, shaping public policy, raising industry awareness, supporting trainings and education, expanding the workforce pipeline

## Raising

Raising profile of the industry's workforce needs with testimony to Congress, advising on workforce legislation, co-chairing national coalitions, and receiving state and federal funding

## Growing

Dramatically expanding programs for women, veterans, people of color, and others throughout the workforce pipeline



# SEMI Career and Apprenticeship Network

## Expand industry participation

Build industry-led workforce development networks across the U.S. Expand access and adoption of apprenticeships 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 network and 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

**25 founding member companies**

**Dozens of workforce partners**

**15+ colleges and universities**

**Interest from multiple states**

**DOL and DOC partnership**

**Testimony to Congress**

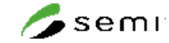
**\$1M CAI grant awarded**

**\$1.4M Michigan grant awarded**

**\$7.5M Good Jobs Challenge grant submitted**

**\$8M Dept of Labor grant submitted**

# SCAN Network: CA, AZ, MI, and TX



<p><b>SEMI Members, Industry Partners</b></p>	<p>Applied Materials Intel          Brewer Science Tokyo Electron          FormFactor Edward Vacuum</p> <p>Lam Research Samsung          Advantest TSMC          Westerwood Global</p> <p>IBM KLA          onsemi VAT US          X-Fab</p> <p>Polar Semi Qorvo          Renesas Seagate          Skyworks</p>	<p><b>Education</b></p>	<p>Mission College Foothill College          Cañada College Arizona State University</p> <p>American Semi Academy (ASA)          TX State University Michigan Education Partners</p>
<p><b>Government</b></p>	<p>CA Division of Apprenticeship Standards          CA GO-Biz City of Phoenix          AZ@Work</p> <p>AZ Commerce Authority          TX Business Leadership Council          Michigan Econ. Dev. Corp.          MI. Dept of Labor          CA Workforce Dev Board</p>	<p><b>Workforce Development</b></p>	<p>NOVAworks Work2future          BAGJPE App. Building the Bay          Michigan Works! Workforce Intelligence          Network Michigan</p> <p>AZNext ASU Knowledge Enterprise          AZ Future 48/ACA Workforce Solutions          Capital Area</p>
<p><b>Organized Labor</b></p>	<p>CAL Labor DL 190 CA          IAMAW, AZ</p>	<p><b>Training and Pre-Apprenticeship</b></p>	<p>JobTrain Ignited SME</p>
<p><b>Advisors</b></p>	<p>Katy Crist TEL, Employer          Matthew Waltz CAEL, RAP          John Brauer CAL Labor, Labor</p> <p>Raghu Santanam ASU, Education          Lena Levy First Station Media,          Mar/Com</p>	<p><b>Data Analysis</b></p>	<p>QA Commons</p>

Community Based Organizations

Support Service Providers

External Evaluation: CAEL

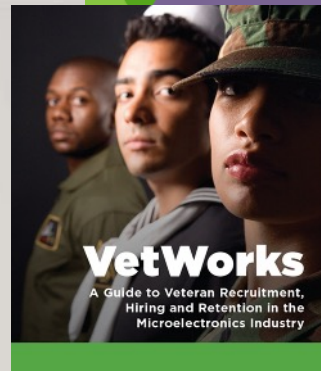




## SEMI VetWorks

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

- 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 GEN Funk and Army TRADOC (Training and Doctrine Command) on outreach to nationwide TAP (Transition Assistance) offices



**5,000 vets reached in 2022**

**VetWorks Guide published**

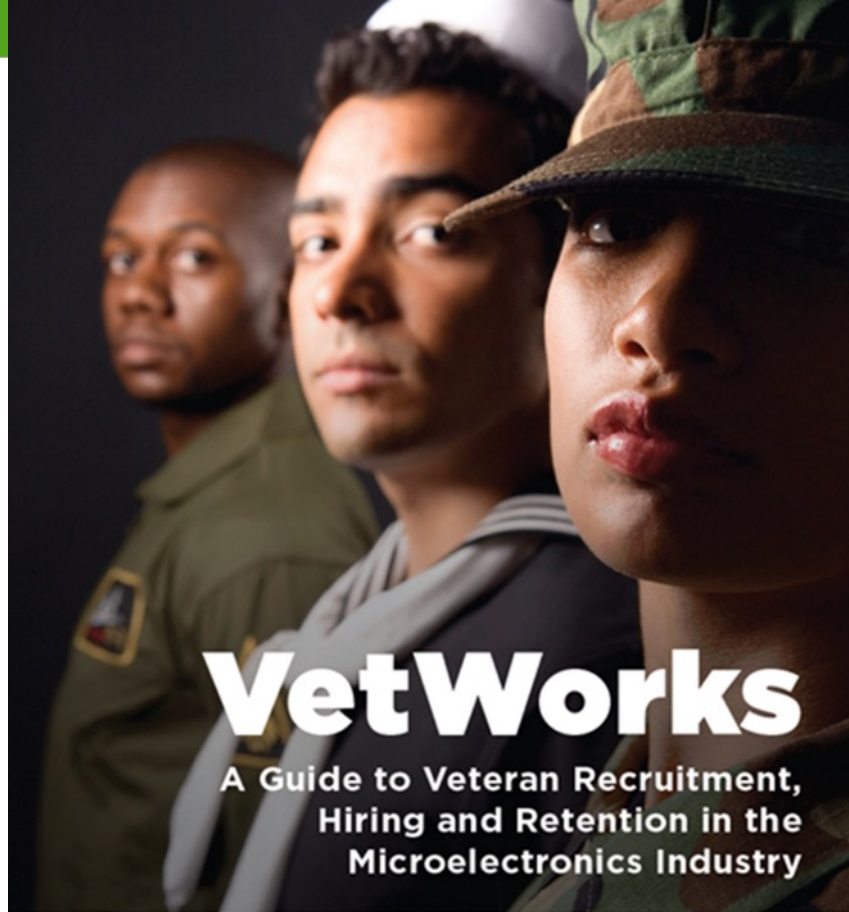
**Events – Heroes Connect, annual panel at SEMICON West**

**Resume-sharing with member companies**

**Curriculum share from TEL and potentially other members**

**Crosswalk built from Image and Awareness site**

- Steps to becoming Veteran-ready employers
- Recommendations on how to engage, hire, retain transitioning military, veterans and reservists
- Testimonials from veterans and active reservists
- Creating welcoming employment and careers
- Resources





# Partnership with American Semiconductor Academy Initiative



**American Semiconductor Academy (ASA)**  
200+ Universities and Colleges



400+ U.S. Corporate Members spanning the microelectronics ecosystem

## Academia

Rigorous degree-oriented education

Broad and diverse network of universities / community colleges

Comprehensive curricula spanning multiple disciplines and degree levels

Facilities for hands-on training

Government support of research and education programs – driving innovation

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

## Industry

Rewarding professional careers

Deep industry connections

Complementary workforce training initiatives and expertise – non-degree continuing education

Government connections

Proven ability to effectively administer U.S. federal grants

**Three workshops completed**

**Countless ideas in partnership**

**Joint RFI submitted re: WFD**

**Community college workshop**

**Governing Council includes ASA and SEMI representatives**

# University Connections



## SEMI Mentoring Program

SEMI provides online and in-person platforms for mentoring, matching and connecting university students to established professionals. This program helps students overcome challenges, develop as leaders, and explore career opportunities.

> 750 students and professionals engaged



## SEMI Professional Development Seminars (PDS)

SEMI organizes seminars in regional clusters, partnering with local universities to reach numerous college students and inform them regarding career opportunities in our industry. The seminars provide valuable, practical information that helps students plan their career trajectories, such as a day in the life of an industry professional, industry trends, and panels on skill sets sought by companies.

> 250 university partners throughout SEMI programs



## Workforce Development Pavilions

SEMI brings students to our annual industry events, SEMICONs, to see demonstrations, attend programs, and interact with exhibitors and hiring managers. During the day, students have tailored experiences learning about the industry and exploring various career opportunities in semiconductor manufacturing.

> 15,000 students participating  
> 1,150 jobs posted



## Industry Image and Awareness Campaign

SEMI promotes the powerful story of our industry and its crucial role in the world, with upcoming campaigns reaching of upwards of 50 million viewers in 2022/2023. Instructional materials and interactive content have also been created to illustrate the fascinating journey of sand to silicon that our members and educators can use to engage students. These materials have also been used at job fairs to educate students on the numerous opportunities within our industry.

Expected reach >100,000 students/year

# High Tech U

To increase the reach and impact of our educational efforts, we are building a scalable version of HTU that can be implemented in any classroom

## Enable experiential learning across K-12

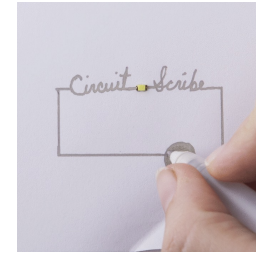
Provide teacher resources for hands-on, industry- and career-focused STEM experiences

## Increase industry presence & visibility

Lowers the barrier for members and schools to engage in purposeful industry partnerships

## Impact in numbers

Pilots reaching 2,000+ students in this school year  
76% low-income population, 40% English learners





# Image and Diversity efforts make progress

Industry-wide initiatives designed to dramatically affect our workforce pipeline

## Image Campaign Phase 1 complete

- Discovery sessions
- Steering committee meetings
- Industry interviews
- Website wireframes developed
- Student focus groups



## Phase 2 (Launched July 2022)

- Content creation
- Data collection
- Complete website build
- Roadtrip Nation video work
- [Preview](#)



“These are complex challenges that our industry faces, but kudos to you and SEMI for delving into the big issues and formulating a way forward to raise visibility and elevate perception for the next generation of leadership!”

## Strategic Partners







## SEMI DEI Roadmap and Toolkit

- Support member companies on their Diversity, Equity, and Inclusion journeys
- Big-picture perspectives
- Real-time tools for members
- Support regional offices on specific plans to support DEI work
- [Available online now!](#)



# Thank you!

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