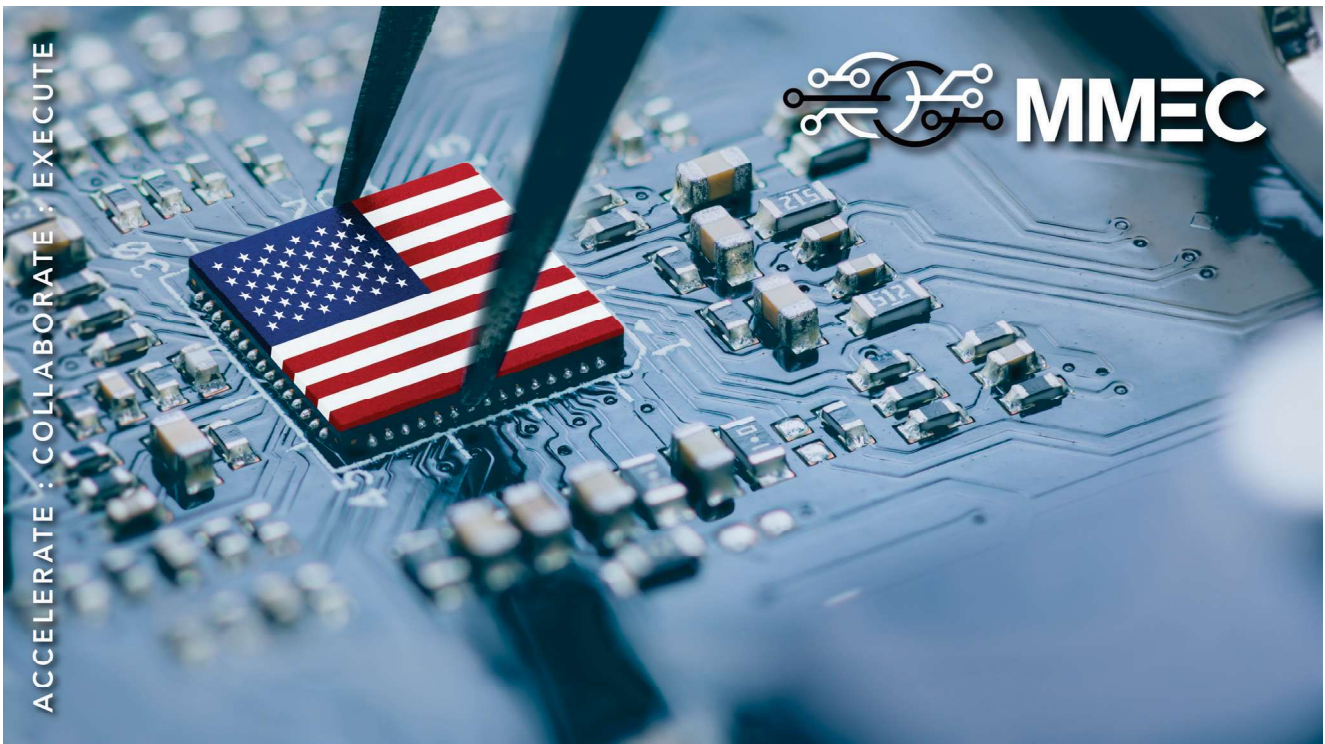


LEADING THE CHARGE IN BUILDING TODAY'S MICROELECTRONICS WORKFORCE

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In just a few short years, the MMEC has delivered measurable national impact through an ecosystem that rapidly connects innovation, expertise, tools, and talent to mission needs.

INTRODUCTION

The microelectronics industry is one of the most powerful engines driving technological advancement, economic growth, and national security. It powers nearly every aspect of modern life—smartphones, cars, the internet, medical devices, artificial intelligence systems, and satellites just to name a few.

It is also at the center of a global technology race. Nations are investing billions to secure leadership in semiconductors and related technologies. Yet the U.S., at one time the undisputed leader in semiconductor manufacturing, has seen its share of global production decline

over the past three decades. The U.S. has responded with initiatives, such as the CHIPS and Science Act, to rebuild domestic manufacturing capacity, strengthen research, and reduce dependence on vulnerable supply chains.

But technology alone isn't enough. To lead in microelectronics, we must also lead in talent, and that is one of the biggest challenges. The estimated numbers are sobering:

- The U.S. semiconductor industry will need tens of thousands of new skilled workers in the next decade.
- Many experienced professionals are nearing retirement, and replacing their decades of expertise will take time and training.

- The specialized skills needed such as semiconductor design, process engineering, and compound semiconductor fabrication are not widely taught in standard STEM programs.
- Rapid technological change means the skills required today could look very different five years from now.

Without a robust workforce, innovation will slow, production will lag, and the U.S. could lose its competitive edge.

“WE’RE NOT JUST TRAINING FOR TODAY’S JOBS; WE’RE PREPARING A GENERATION TO LEAD IN TECHNOLOGIES THAT HAVEN’T EVEN BEEN INVENTED YET.”

ERROL FLYNN, MMEC WORKFORCE DEVELOPMENT DIRECTOR



MMEC’S MISSION: CLOSING THE GAP

The Midwest Microelectronics Consortium (MMEC) was created to bring groundbreaking microelectronics innovation into scalable commercial production for the benefit of national security and economic dominance. As one of the nation’s Microelectronics Commons Hubs, MMEC serves as a collaborative bridge between government, industry, and academia. Our mission is to accelerate the commercialization of advanced microelectronics and build the workforce to support it.

For workforce development, this means more than just training, it’s about building an entire talent pipeline, from inspiring middle school students to upskilling seasoned professionals.

BUILDING EDUCATION AND TRAINING PIPELINES

MMEC partners with universities, community colleges, and technical schools to align curricula with the real-world needs of microelectronics companies. This means:

- Embedding semiconductor-focused content into engineering and technical degree programs.
- Creating apprenticeships and internships where students work on live projects in design labs and fabrication facilities.
- Sponsoring capstone projects that give students direct exposure to the challenges industry teams face.

For example, MMEC is working with University of Southern California and Northrup Grumman to incorporate GaN device fabrication modules into electrical engineering programs that will ensure graduates are ready for high-demand power electronics roles on day one.

EXPANDING VOCATIONAL AND CERTIFICATION PATHWAYS

Not every role requires a four-year degree. Many high-paying jobs in semiconductor manufacturing, packaging, and testing can be filled by skilled technicians with the right training.

MMEC is building short-term training programs and certifications in partnership with industry. These include:

- Semiconductor Manufacturing Technician Certification: covering cleanroom protocols, wafer handling, and process monitoring.
- Advanced Packaging Skills Modules: training on 2.5D/3D integration, heterogeneous integration, and advanced interconnects.
- GaN and SiC Device Processing: specialized courses for compound semiconductor manufacturing.

Making these certifications portable and recognized across the industry gives workers career mobility while helping employers find talent faster.

RESKILLING AND UPSKILLING THE CURRENT WORKFORCE

Technology moves fast, and skills must evolve to match. MMEC is creating continuing education programs so current professionals can pivot into emerging areas.

For instance: Process engineers can train in AI-driven design automation; RF engineers can expand into wide-bandgap power devices; Maintenance technicians can learn predictive maintenance with IoT tools.

By partnering with companies to co-develop these programs, we ensure the skills taught directly match market needs.

LEVERAGING PUBLIC-PRIVATE PARTNERSHIPS

We believe no single entity can solve the workforce challenge alone. MMEC is a catalyst for partnerships between industry, academia, and government. Industry provides real-world projects, mentorship, and funding support. Academia supplies research expertise, facilities, and student talent. And government can offer incentives, grants, and policy support through CHIPS Act initiatives.

As an example, MMEC collaborates with defense contractors, state governments, and regional economic

development agencies to create innovation areas where R&D, prototyping, and workforce training happen in one ecosystem.

INSPIRING THE NEXT GENERATION

Workforce development doesn't start in college, it starts much earlier. MMEC participates in STEM outreach across the Midwest, engaging K-12 students with hands-on activities, lab tours, and mentorship.

We know the moment a young person sees how semiconductors make satellites communicate, cars drive smarter, or medical devices save lives, something clicks. That's when microelectronics becomes not just a subject, but a career dream.

“TECHNOLOGY WITHOUT TALENT IS JUST POTENTIAL. TALENT TURNS IDEAS INTO IMPACT.”

JACKIE JANNING-LASK, MMEC CEO



THE ROLE OF ADVANCED TECHNOLOGIES IN WORKFORCE STRATEGY

MMEC's workforce programs are closely tied to our technology focus areas, including:

- GaN and SiC power electronics—driving efficiency in defense, aerospace, and renewable energy systems.
- Advanced packaging—enabling higher performance and smaller form factors for next-gen computing.
- Secure microelectronics—ensuring trust in defense and critical infrastructure applications.

ABOUT THE AUTHOR



Errol Flynn is the director of workforce development at MMEC. The MMEC is the premier collaborative, public-private ecosystem, that engages broadly across innovative partners in industry, academia, and government to rapidly advance defense and commercial applications. This unique environment empowers members to discover new technologies, share capabilities, develop a skilled workforce and launch groundbreaking innovation into scalable commercial production for the benefit of national security and economic dominance.

By aligning workforce training with these strategic areas, we ensure our programs deliver mission-ready talent for national priorities.



The MMEC leads the acceleration of microelectronic technologies and delivers solutions to establish a trusted and resilient domestic supply chain.

STORIES FROM THE FIELD

At the University of Dayton Research Institute, MMEC-supported interns are working alongside engineers to prototype RF GaN amplifiers for defense applications. At the same time, community college students in Illinois are earning MMEC-linked technician certifications while already being recruited by semiconductor fabs.

These are more than training programs, they are launchpads for careers that will sustain America's technology leadership.

THE CALL TO ACTION

The U.S. cannot afford to treat workforce development as an afterthought. It is the foundation of our microelectronics strategy.

At MMEC, we are calling on:

- Industry to engage in curriculum development, internships, and mentorship.
- Educators to incorporate microelectronics into STEM pathways at every level.
- Policy leaders to maintain funding and incentives for skills development.

The next decade will define the global technology balance. With the right people in place, the U.S. can lead it.