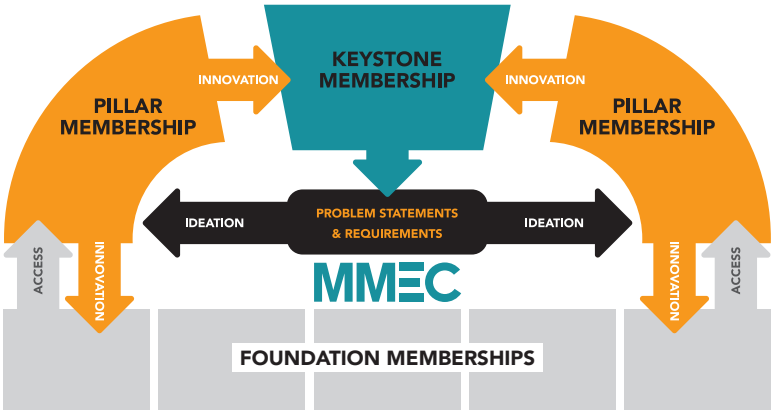
MMEC NO EXCUSES ROADMAP

BACKGROUND: Through a national network of regional hubs, Microelectronics Commons is creating a direct pathway to reduce the country's reliance on foreign microelectronics and safeguard the nation from supply chain risks. As part of this network, The Midwest Microelectronics Consortium (MMEC) is focused on accelerating Lab-to-Fab-to-Mission & Market microelectronic innovation through a deliberate "No-Excuse" approach to technology transition.

APPROACH:

MMEC has a full-lifecycle approach to accelerating microelectronic innovation.



1) Role Based Membership: Leverage strengths and clearly define roles and responsibilities in every aspect of technology transition to create a bridge of opportunity:
   - Keystone Members: Product and Mission System owners that integrate and/or commercialize capability and help shape requirements.
   - Pillar Members: Engineering R&D teams, small business/startups, and creative problem solvers. Technical talent and competency to know the realm of the possible, disrupting the status quo to deliver prototype solutions and capability.
   - Foundation Members: Core manufacturers, test facilities, tool and IP vendors that provide critical infrastructure.
2) Transparent Communication: Open communication and ideation through a robust governance structure, including a diverse member-based steering committee charged with maintaining a mission and market aware Technology Roadmap.
   - Problem Definition: Define business-oriented DoD and Commercial market problem statements including Keystone member requirements. Address boundary conditions for non-dilutive venture, small business, and private capital to support sustainability and economic development.
   - Solution architecting: Utilize a comprehensive member mapping to quickly identify technologies and capabilities that produce rapid technological advantage with favorable metrics related to timelines, cost, and measurable power, performance, integrity, and security results.
3) Productization Ownership and Collaboration: "Technology, however good, is not enough"- G. Heilmeier
   - Identify win-win-win role-based teaming opportunities that facilitate equitable partnership for members and stakeholders. Commit human capital, co-investment, and establish incentives and revenue structures (license, etc.) as early as possible.
   - Address logistics, security, tools/equipment, reference flows, and legal frameworks for producers and consumers of data and IP from R&D to commercialization to allow seamless transfer between Foundation and Pillar organizations and transition via Keystone members.

4) Streamlined access to "Common" infrastructure to reduce risk:

- Lower and remove barriers at Foundation/Pillar and Pillar/Keystone member interfaces through established and professionally managed access models to existing infrastructure, facilities, design tools, and process/IP frameworks.
- Address gaps and standardize tool sets through targeted digital and physical infrastructure investments including dedicated ramp lines for manufacturing maturation and qualification and a full lifecycle digital thread for technical data and IP capture.

5) Proactive and Persistent Awareness:

- Targeted Working groups: World class and expert led to inform and update the cross-cutting Technology Roadmap with milestone driven on and off ramps to quickly identify and resource emergent capability.
- Robust talent pipeline: Member-network product, technology, and infrastructure informed workforce development gap analysis. Skills and needs assessment with forward looking curriculum, training, internships, and apprenticeships.

6) Systems Engineering Product Lifecycle Management (PLM):

- Foundry Enablement and Process Feedback: Use of robust modeling, simulation, emulation, development and delivery of PDKs, compact models, and process monitors for Pillar/Foundation design and manufacturing proof point validation.
- Stage gate project execution: Detailed technical project plans encompassing schedules, resource allocation, and risk management trade analysis. Incremental Go/No-Go criteria to drive stage-gate specific project technology and scalable manufacturing maturation objectives. Active participation by all project member roles in each gate review.
- Delivered Quality: Independent compliance reviews, digital models, meticulous data capture and characterization demonstrating at-scale cost, performance, yield, reliability, and assurance goals for expedited integration/ transition.

EXEMPLAR RESULTS:

- Cross-hub digital infrastructure framework with access to secure flows for EDA, data management, and IP repositories.
- Member portal with knowledge management ontology representing Keystone, Pillar, and Foundation capabilities.
- Commercial Leap Ahead analog/RF PDK enablement and Quantum Technology in-situ common toolset gap analysis.
- Foundation member teaming in prototype projects as equitable partners vs. receivers of fees and returners of wafers.

SUMMARY:

The MMEC member ecosystem, with regional execution and national reach is positioned and ready to deliver on the promise of accelerating domestic lab-to-fab-to-mission & market innovation. Through a "No-excuse" approach to technology transition, the Midwest Commons ecosystem is being built to deliver a sustainable, lasting, microelectronics innovation pipeline for the warfighter and nation.