MDRC

Michigan Defense Resiliency Consortium

MAGMA Advisory Board Meeting

March 15, 2024

Agenda:

- Introductions - Sarah Tenant
- Defense Manufacturing Community Support Program Designation - Stephanie Ludwig
- MDRC Overview - Stephanie Ludwig

Pillars of Work:

- Asset Mapping Project - Stephanie Ludwig
- Company Technical Assistance Project -Stephanie Ludwig
- Technology Acceleration Project – Chad Darr
- Workforce Project - Elizabeth Melville and Angela Accurso
- Q&A

Office of Local Defense Community Cooperation (OLDCC)

MISSION & HISTORY

Since its creation in the early 1960s, the Administration and Congress have looked to the Office of Local Defense Community Cooperation to assist states and communities hosting installations dealing with a changing Department of Defense presence.

- Defense manufacturing and supply chains are agile, resilient, adaptive and responsive to defense needs
- Communities can support their local military installations through sustainable economic development and other civilian activities that are compatible to the Department's current mission and adapt to changes in mission requirements.

U.S. Department of Defense
Office of Local Defense Community Cooperation

https://oldcc.gov/mission-and-history

Office of Local Defense Community Cooperation - Programs

- **Community Noise Mitigation Program:** The Community Noise Mitigation Program is designed to address communities impacted by military fixed wing aviation noise for the purposes of installing noise mitigation at covered facilities. Covered facilities are hospitals, daycare facilities, schools, facilities serving senior citizens, and private residences.
- **Defense Community Infrastructure Pilot Program (DCIP):** Funds community infrastructure to support defense personnel and families
- **Defense Manufacturing Community Support Program (DMCSP):** Supports long-term community investments in national security innovation and defense manufacturing industrial ecosystem capability expansion (i.e. funding research and development in defense-critical technologies).
- **Installation Resilience Program:** Funds state and local government improvement of installation sustainability (i.e. resilience against natural disasters or adverse environmental changes such as climate change and pollution). Delivers grants to states, private landowners, and others and drafts plans and provides assistance in finding solutions to light pollution, urban sprawl, endangered species management, energy security threats, etc.
- **Public Schools on Military Installations (PSMI)**: An invitation only program based on a Deputy Secretary of Defense prioritization ranking for installations; Funds construction, renovation, repair, and expansion of public schools located on military bases. Despite their location, these schools are operated by local education agencies.
- **Mission Realignment Program:** After base closures or reductions, deploys project managers to select local redevelopment authorities (LRAs) to represent community members to local, state, and federal agencies. The project manager and LRA develop plans to revitalize the local economy, seek private and public investment, and support affected workers and businesses.

https://oldcc.gov/program-overview

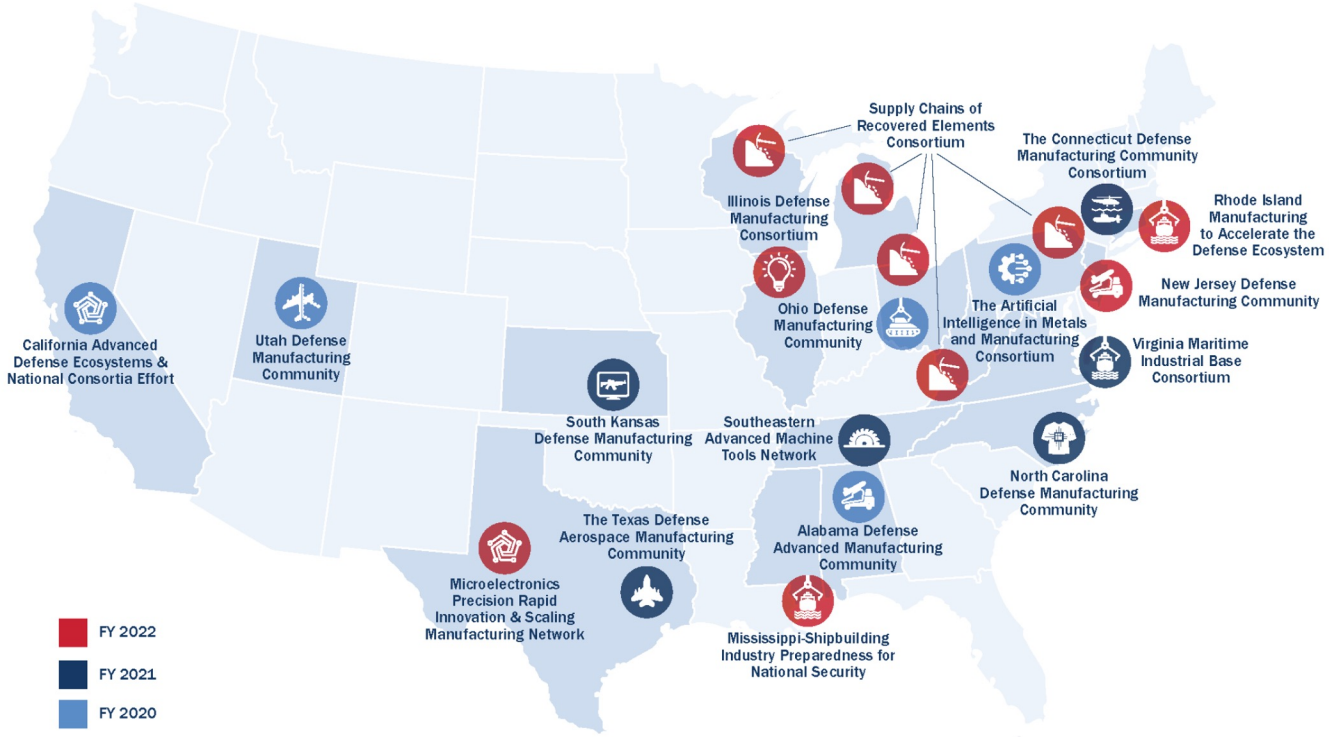
Defense Manufacturing Community Support Program (DMCSP)

The Defense Manufacturing Community Support Program is designed to support long-term community investments that strengthen national security innovation and expand the capabilities of the defense manufacturing industrial ecosystem.

https://oldcc.gov/program-overview

DMCSP Eligible Activities:

- Equipment or facility upgrade
- Workforce training, retraining, or recruitment and retention, including that of women and underrepresented minorities
- Business incubators
- Advanced research and commercialisation, including with Federal laboratories and depots
- Supply chain development
- Small business assistance



Aerospace & Composites
Aerospace Defense
Artificial Intelligence
Castings and Forgings, Energy Storage
Critical Minerals
Machine Tooling
Microelectronics, Space, 5G
Missiles and Munitions, Castings and Forgings, Microelectronics
Parts/Assemblies
Shipbuilding
Submarines, Vertical Lift
Vehicles, Aviation & Missiles
Weapon Prototyping
Wearable Textiles

For more information on the Defense Manufacturing Communities Support Program, visit https://oldcc.gov/defense-manufacturing-community-support-program or scan the QR code below.

2023 Designations:

- Michigan
  - Energy Storage and Batteries
- Missouri
  - Castings and forgings
- New York (2)
  - Microelectronics
  - Space
- Pennsylvania
  - Shipbuilding
- Texas
  - Castings and forgings
  - Digital manufacturing

Consortium Requirements for Defense Manufacturing Program

Consortium Composition:

- Academia Defense industry and association-led organizations
- Non-profit organizations
- State and local government organizations

Demonstrated Capabilities:

- Regional collaboration capabilities
- Technological and/or industrial base supply chains critical to national security

Lead Organization and Eligibility:

- Institute of Higher Education
- State, local, or tribal government organizations
- Non-profit or private non-profit institutions

Economic Growth Institute

Vision: *Equitable Economic Growth*

Mission: To leverage the University of Michigan and other public/private resources, research, technologies, and expertise to foster innovation and equitable economic growth.

ECONOMIC GROWTH INSTITUTE
UNIVERSITY OF MICHIGAN

Consortium Makeup & Leadership Structure

MDRC members have decades of combined experience supporting the defense industrial base on a local and global scale. The majority of the members have managed federal programs and grants for the last 30+ years through coordinated efforts and partnerships.

Executive Committee

Manufacturing, Mobility & Technology Experts

- Economic Growth Institute, University of Michigan
- MD
- Michigan Manufacturing Technology Center
- Centrepolis Accelerator at Lawrence Technological University
- SAE Government Technologies, An Affiliate of SAE ITC

State Agency Partners

- Michigan Defense Center, Michigan Economic Development Corporation
- Michigan Office of Future Mobility & Electrification

Additional Members

Workforce partners

- Semca Michigan Works!

Defense partners

- NAMC, National Advanced Mobility Consortium

Regional Defense Corridors

- Macomb County Planning & Economic Development
- Oakland County, Michigan, Economic Development & Community Affairs

Supporting Organizations

- NDIA Michigan
- State of Michigan, Department of Military & Veterans Affairs
- GEM, Global Epicenter of Mobility

Consortium Management

Economic Growth Institute, University of Michigan

MDRC

Michigan Defense Resiliency Consortium

MDRC is an active network with a mission of creating the critical foundation for energy storage and battery manufacturing that is necessary to support the DoD's rapid transformation from Internal Combustion Engines (ICE) to Electric Vehicles (EV) and beyond. MDRC has a vision that Michigan (MI) will lead the US in the transformation of technology, talent, and manufacturing to set the foundation necessary for the DoD to achieve its goal to "go electric" leveraging public and private sector resources.

MDRC Grant Award

- Create the critical foundation for energy storage and battery manufacturing necessary to support the Department of Defense's rapid transformation from internal combustion engines to electric vehicles and beyond by leveraging federal and state investments, and providing a series of technical assistance, technology acceleration, and workforce training initiatives.

- **Timeline: September 1, 2023- August 31, 2026**
- EGI is lead organization with 4 sub-recipients and 3 additional match providers
- Received $4,997,965 in federal funding - match required $1,305,000

FOUR PILLARS POWERING MICHIGAN'S ELECTRIC FUTURE FOR THE DoD

Leverage Michigan Assets

Identifying & mapping battery and energy storage resources in Michigan

Technology Acceleration

Providing technical assistance and R&D for innovative technology

Company Assistance

Offering $75K in cost-share assistance for technical assistance projects

Workforce Development

Creating an EV hiring guide, community equity plan, & battery standards certifications

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CENTREPOLIS Accelerator
at Lawrence Technological University

MICHIGAN MANUFACTURING TECHNOLOGY CENTER

MD Learn

SAE GOVERNMENT TECHNOLOGIES
An Affiliate of SAE ITC

MDRC

Michigan Defense Resiliency Consortium

Leverage Michigan Assets

MDRC will identify and map advanced battery assets within Michigan for current and future applications, that the DoD may look to leverage to resolve critical gaps in their needs around energy storage and battery technologies.

- Partner with industry and academia
- Public/private sector investments
- Research and Development
- Aligning with DoD priorities

ECONOMIC GROWTH INSTITUTE

Efficient & Effective Production - Technical Assistance

MDRC will provide technical assistance to those SME's in the DIB or those preparing to diversify into the energy storage and battery supply chain to support the development of reliable production processes and ensure they have the cash flow to support the up-front investment DoD contracts often require.

MDRC Provides:

- Deep Dive Company Assessment
- Company Valuation
- Development of Opportunity Plan
- Up to **75K in cost-share funds** for technical assistance projects for qualified companies

Eligibility Requirements

1. Located in Michigan
2. <500 employees
3. Financial Stability
4. Demonstration of their critical potential to address a particular need in the defense energy storage and battery supply chain.

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MICHIGAN MANUFACTURING TECHNOLOGY CENTER

To learn more about MDRC and the company program- check out our website:

https://economicgrowth.umich.edu/michigan-defense-resiliency-consortium/

or contact me at

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phone: 810-922-6374

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UNIVERSITY OF MICHIGAN

CENTREPOLIS Accelerator

at Lawrence Technological University

Defense Hardtech Accelerator

March 7, 2023

Chad Darr

Director, Defense Hardtech Accelerator

AGENDA

Centrepolis Accelerator Overview

Defense Hardtech Accelerator

- Overview
- Mission
- The Problem
- Focus Areas
  - Supply Chain
  - Technologies
- Objectives

CENTREPOLIS Accelerator at Lawrence Technological University

Centrepolis Accelerator Overview

The Centrepolis Accelerator, located at Lawrence Technological University, is a SmartZone established in 2018.

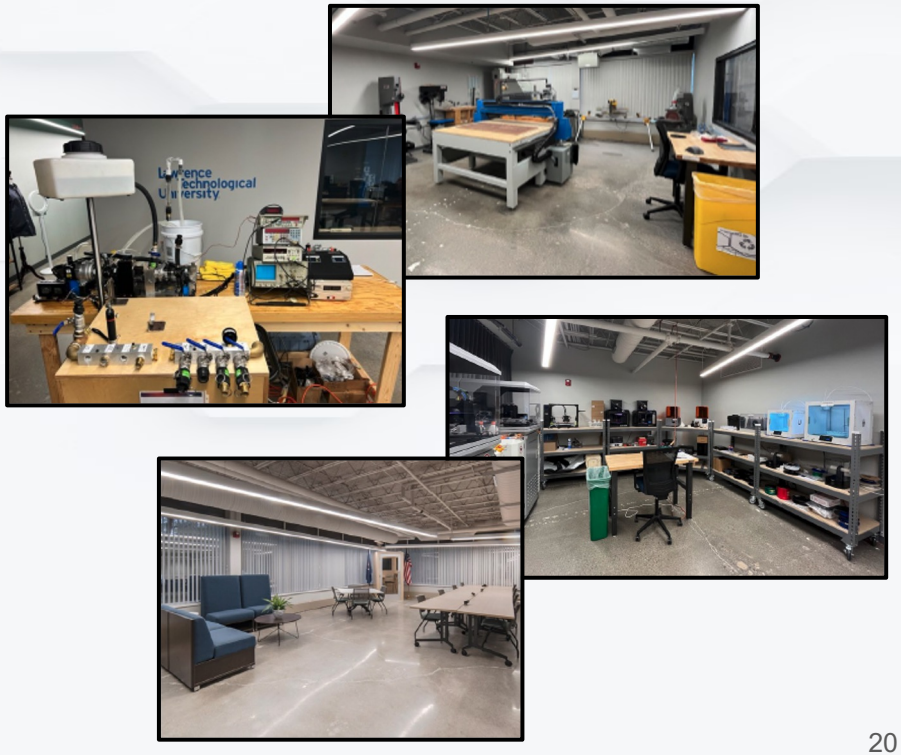
- Focus is on maturing hardware technology to help companies with promising solutions to advance their product's technical maturity from early demonstration to readiness for manufacturing
- 320 companies supported to date
- Helped commercialize 209 products under 458 contracts to suppliers valued at $142M.

CENTREPOLIS Accelerator at Lawrence Technological University

CENTREPOLIS Accelerator at Lawrence Technological University

IN-HOUSE DESIGN, ENGINEERING & PROTOTYPING

- Product Design & Engineering (CAD, FEA)
- Prototyping Machine Shop
- Hardware in the Loop Testing
- 3D Printing & Additive Manufacturing
- Scanning Reverse Engineering
- Co-working Space



CENTREPOLIS Accelerator at Lawrence Technological University

ACCESS TO MANUFACTURING EXPERTISE

Our Experts-in-Residence provide over 25-years of experience in product design, engineering, prototyping, tooling, materials, manufacturing, supply chain, IP, business strategy, industry connections, marketing & sales.

Defense Hardtech Accelerator - Overview

Centrepolis Accelerator at Lawrence Technological University, in partnership with the US Army Ground Vehicle Systems Center (GVSC), is now launching the Defense Hardtech Accelerator to increase domestic product development and manufacturing and address supply chain gaps. Focus of the effort is on the following activities:

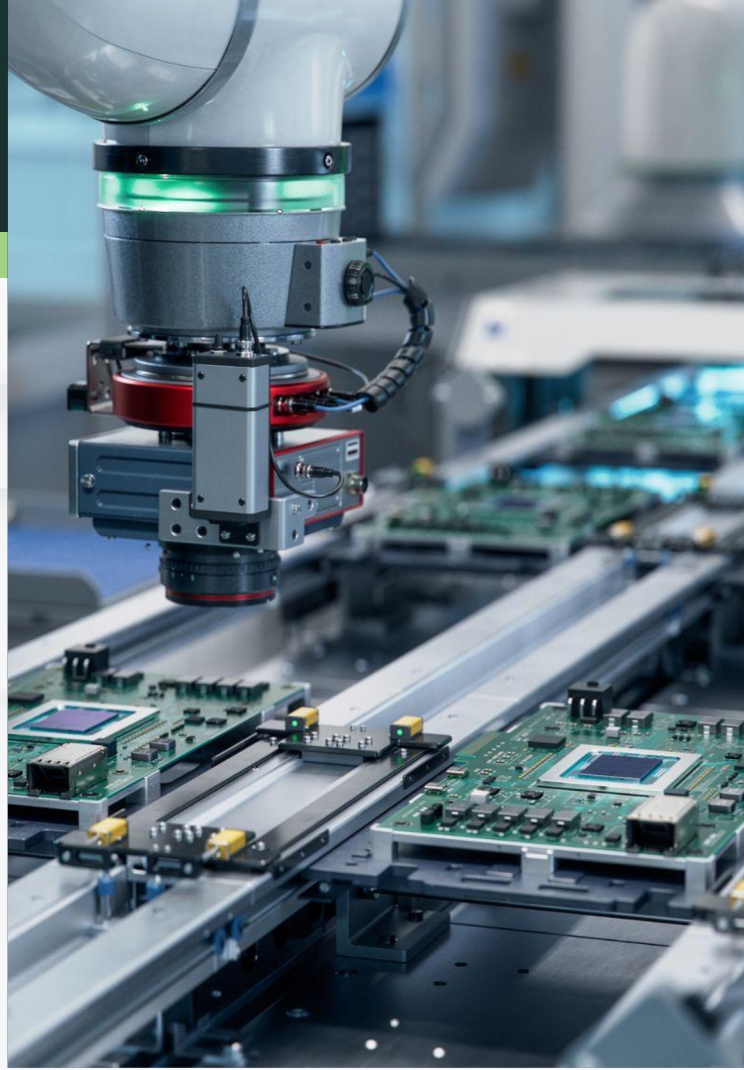
- Identify hardtech innovations that support GVSC problem statements and innovation R&D roadmaps
- Support internal innovations developed by GVSC staff
- Work with existing GVSC IP to find ways to commercialize or transfer these technologies to industry

CENTREPOLIS Accelerator at Lawrence Technological University

THE MISSION

The mission of the Defense Hardtech Accelerator is to commercialize “dual purpose” technologies with both commercial and military applications, and deliberately design, engineer, prototype and manufacture these products domestically to positively impact national security concerns and supply chain gaps.

CENTREPOLIS Accelerator
at Lawrence Technological University



THE PROBLEM

The number of small businesses doing work for the military as subcontractors and suppliers has **shrunk by over 40% in the past decade.** According to a 2022 Pentagon report, without action, **the Defense Department could lose an additional 15,000 suppliers over the next decade.**

CENTREPOLIS Accelerator at Lawrence Technological University

THE PROBLEM

DOD funded/supported early-stage technologies have **limited success with commercialization.**

CENTREPOLIS Accelerator
at Lawrence Technological University

THE PROBLEM

The future of the military is electrified and autonomous. Globally China leads the US in:

- Battery Manufacturing Capacity
- Clean Energy Material Processing
- Mine Production of Rare Earth Materials
- Semiconductor Fabrication (along with Korea, Taiwan and Japan)

CENTREPOLIS Accelerator at Lawrence Technological University

CRITICAL SUPPLY CHAIN GAPS

- Hypersonics & Kinetics
- Batteries & Energy Storage
- Semiconductors & Microelectronics
- Casting & Forgings
- Power Electronics
- Advanced Materials
- E-Motors

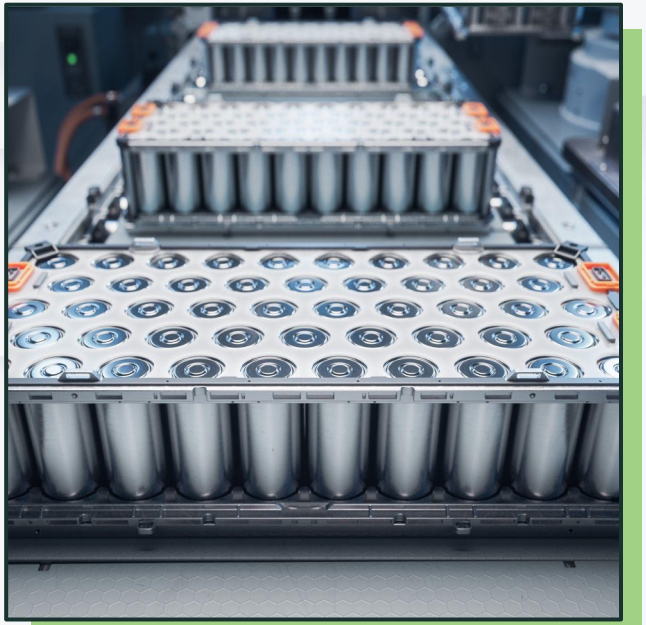
CENTREPOLIS Accelerator at Lawrence Technological University

TECHNOLOGY FOCUS AREA: ELECTRIFICATION

- Batteries including the cells, modules, packs, BMS, thermal management

- Electric drive and power electronics systems such as e-motors, gearbox, traction drive inverters, DC-DC converters, onboard battery chargers, electrical wiring, and off board EV charging systems

- Fuel cells and electrolyzers



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TECHNOLOGY FOCUS AREA: MOBILITY

- Physical systems that enable these such as powertrains and sensors (radar, lidar, cameras, ultrasound)

- Control systems that enable these sensors to integrate into the vehicles chassis, steering and braking systems

- Fuel cells and electrolyzers

CENTREPOLIS Accelerator at Lawrence Technological University

Hardtech Accelerator Objectives

- Advance critical defense technologies with dual purpose deployment from TRL 5-9, fast tracking testing and validation for both commercial and defense applications
- Commercialize 100+ hardtech technologies that address domestic supply chain gaps and national security concerns by 2030

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THANK YOU

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Workforce Pillar

Michigan Defense Resiliency Consortium

Elizabeth Melville, Director of Learning, SAE International

SAE International and ITC Government Technologies

Information products & services

A wide range of resources to create knowledge, including SAE Mobilus®, technical papers, EDGE Research Reports, journals, and books.

Technical standards

44,000 aerospace and ground vehicle standards that drive innovative, safe, and reliable products for society

Membership & engagement

Over 140,000 members worldwide advancing our mission and leveraging exclusive benefits to advance personally and professionally

Professional development

More than 300 classes delivered through a portfolio of eLearning and classroom courses on an individual and corporate level

Engineering events

Over 30 global technical events annually for the aerospace, automotive, and commercial vehicle sectors

Pre-professional education

A full continuum of pre-K, primary, and secondary school outreach programming inspiring over 100,000 students a year

SAE Media Group

Industry-leading publications and events serving over 500,000 technical professionals across aerospace, defense, automotive, electronics, medical, and other key fields

SAE Foundation

Influencing a new generation of innovators through funding of STEM programs, awards, and scholarships

SAE GOVERNMENT TECHNOLOGIES™
An Affiliate of SAE ITC®

Mission:

to advance mobility knowledge and solutions for the benefit of humanity

By the Numbers

6,000,000+ Students reached

300,000 Technical papers

200,000 Engineers & experts

44,000 Standards

191 SAE sections & chapters

100+ Events

Expertise

- Advanced manufacturing
- Advanced materials
- Advanced propulsion
- Automated & unmanned
- Blockchain
- Cybersecurity
- Connectivity
- Quantum computing
- Electrification
- Workforce development

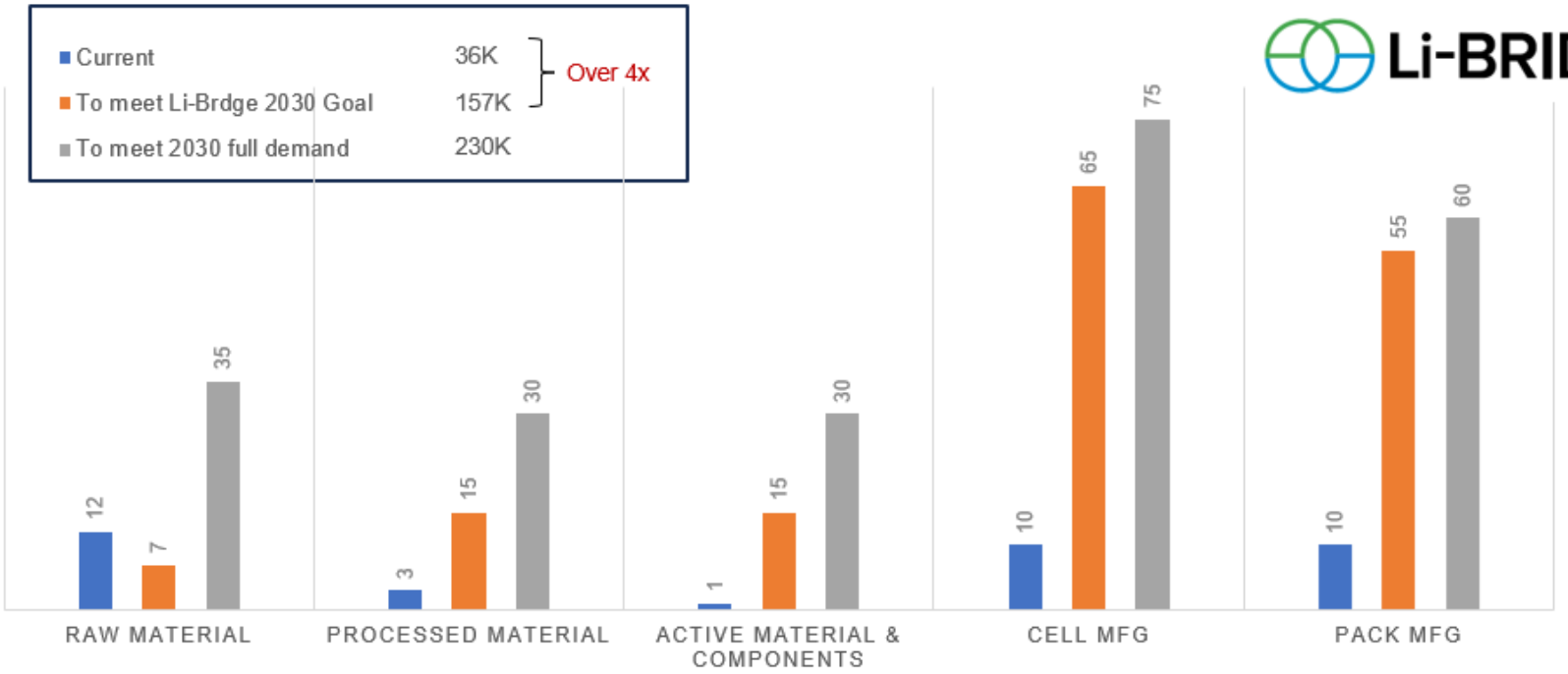
Outcomes

Information
SAE International's collection of standards, papers, journals and books constitutes an integrated set of information resources that help engineers—and the people who serve them—be more successful at work, at school and in life.

Networking
SAE is where industry stakeholders come to openly discuss precompetitive issues and implement common solutions.

Training
Through professional and STEM education programs, SAE is dedicated to building and training the mobility workforce of the future.

Demands for a Well-Trained Workforce



Li-BRIDGE

The current workforce must grow ~4x to meet 2030 potential state workforce needs

Workforce Development Pillar

Scope:

Develop an industry-informed best practices to support roles and responsibilities in the battery manufacturing supply chain, derive associated training and curriculum to implement practices, and personnel certifications formalizing and creating an industry-adopted certification program for key roles.

Best Practices

Curriculum & Training

Certifications

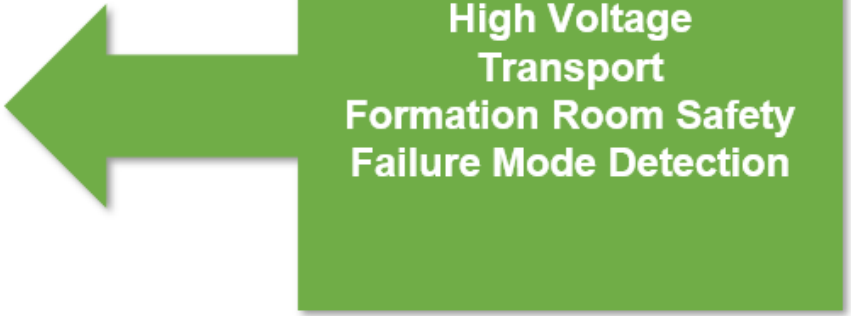
Korea 2022

California 2023

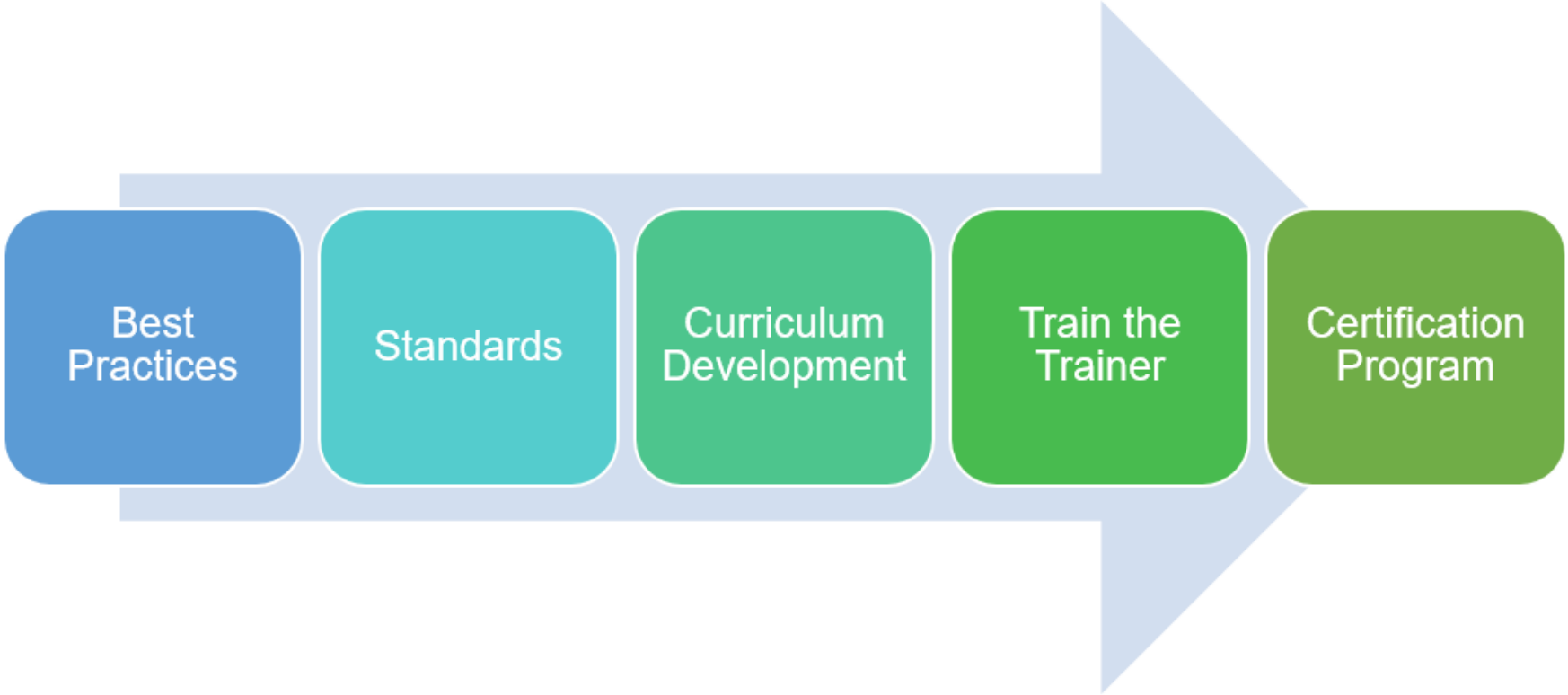
Safety First

Safety Considerations

- Battery Assembly Technicians
- Battery Safety Engineer
- Test Technicians
- Calibration Technicians
- Cell Assembly Technicians
- Control Systems Engineer
- Quality System Engineers
- Test Engineers



Next Steps



What is MxD Learn ?

Led by Industry

If pathways to employment are the goal, employers must be at the table every step of the way; and must be invested in the development, success, and sustainment of each program

Driven by Community

Good programs in silos will not succeed. Success comes from a collaborative effort where an entire community is involved in the development and progression of learning pathways

Focused on Under-Engaged

With an anticipated 2.1M U.S. manufacturing job openings by 2030, it isn't enough to reach the current base – programs must target those who have traditionally not been served

MxD Learn **fosters collaboration** across **industry**, **academia**, **government**, and **non-profit** leadership to ensure the **current and future workforce** are **connected** to the roles and competencies needed for **digital** and **cybersecurity manufacturing** applications.

MxD Learn

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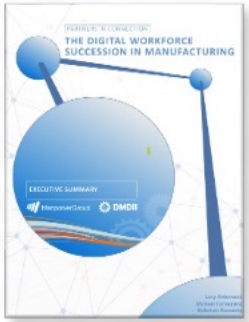
DEFINE

Identify the Future of Work



DEVELOP

Create the Training Programs

Cybersecurity for Manufacturing Operating Technology Curriculum Program

Digital Design & Advanced Manufacturing Curriculum Program

DMCSPs and MEP Partnerships (NC, IL, RI, CT)

CAPITAL: Curriculum and Pathways Integrating Technology and Learning

DO

Provide the Hands-On Learning

MxD Learn Virtual Training Center (VTC) Platform

A white label, Open edX, virtual platform for recruiting, training, and securing the manufacturing workforce.

Workshops

Leveraging Technology to Increase Accessibility:
a look at how manufacturers can diversify their workforce and address manufacturing skills gaps

Cybersecurity for the Blue Economy:
a look at the intersection of water in manufacturing, cybersecurity, and workforce needs

JDMC 2023

MxD | MDRC

Project Pillar #4: Workforce Development

Deliverable 1: EV Hiring Guide:

- MxD is developing an Electric Vehicle (EV) Hiring Guide that outlines the knowledge, skills, and abilities necessary to be successful in roles in the EV supply chain—with a section focused on roles in energy storage and battery supply chains.

Deliverable 2: Community Equity Plan

- MxD will also develop a Community Equity Plan to highlight pathways for underserved communities in Michigan to leverage the investment from the DMCSP program and participate in working and fulfilling skills in the EV sector. The Community Equity Plan will acknowledge the transition from Internal Combustion Engine (ICE) manufacturing to EV manufacturing and how current ICE workers can reskill to join the EV workforce.

Moderated Questions

Sarah Tennant, MEDC