



Strengthening Your Operation

Advanced Manufacturing and Supply Chain Resiliency With VMEC



VMEC: Strengthening & Empowering Vermont Manufacturers



Advanced Manufacturing & Automation



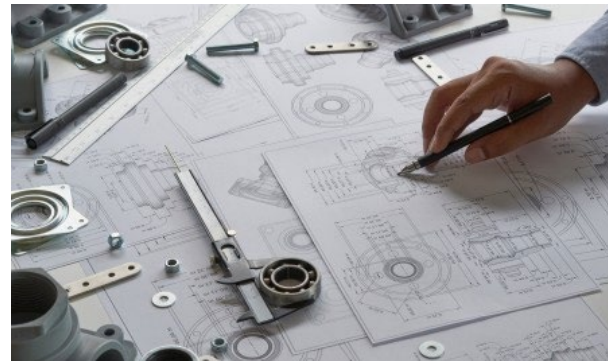
Operational Excellence



People Development



Quality & Compliance



Innovation & Growth



Cybersecurity & Supply Chain

Agenda

Supply Chain Risk Management

Supply Chain Optimization & Intelligence Network (SCOIN)

CONNEX

Cybersecurity

Advanced Manufacturing

Background

- OEMs and Primes looking for domestic sourcing
- Resiliency – Supply Chain Risk Management (SCRM)
- Small & Medium manufacturers more vulnerable to supply chain disruptions



Resilient Supply Chains



- Lower costs for American Families
- Strengthen U.S. economic competitiveness
- Protect U.S. national security
- Create good jobs and broad-based economic opportunity

Supply Chain Optimization & Intelligence Network

- NIST grant of \$20MM to develop programs to make domestic supply chains more resilient and efficient
- Nationwide coordination of:
 - Supplier Scouting
 - New service offerings to improve existing supply chain networks
 - Filling gaps – connecting OEMs with SMMs
 - Create map of U.S. supplier capability and capacity
- An investment in building a national ecosystem to address supply chain resiliency and capacity.
- Requires each MEP to dedicate one staff member to initiative

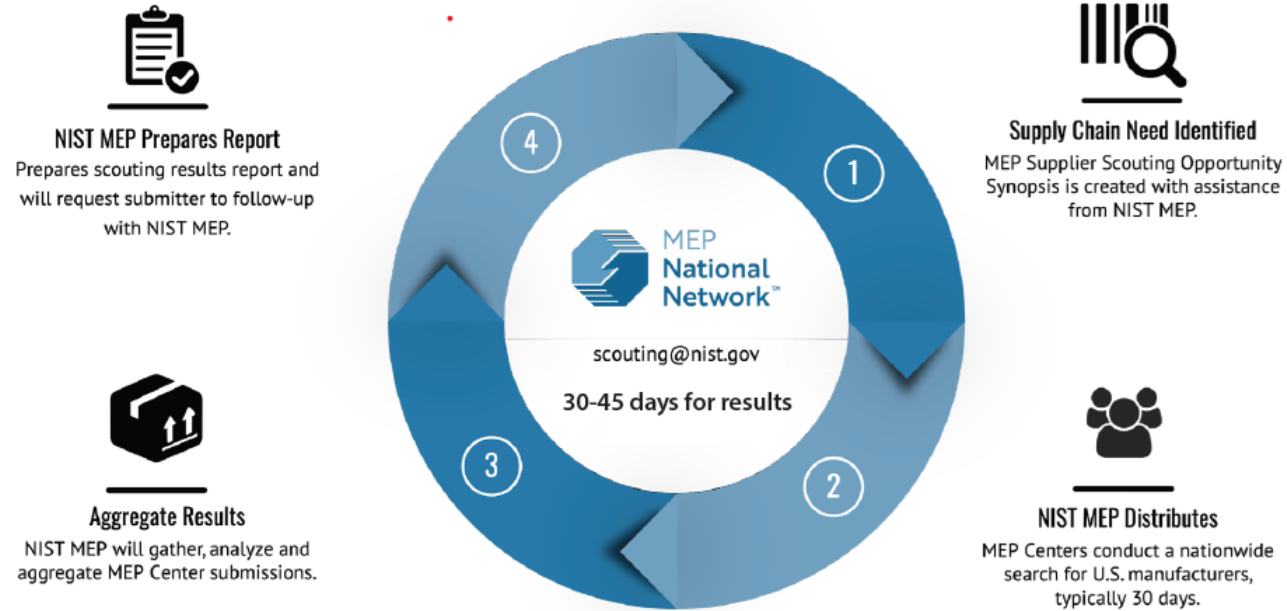


SUPPLIER SCOUTING



The MEP National Network (MEPNN) Supplier Scouting leverages the Network's extensive relationships and knowledge of U.S. manufacturing capabilities and capacity to identify manufacturers across the country that can meet supply chain needs of commercial entities and government agencies.

MEP Supplier Scouting Process



The MEP National Network is Uniquely Positioned to Assist You

New Service Offering: CONNEX

- Online SaaS platform to connect manufacturers and suppliers
- Created by i5 Services
- Focused on building long-term relationships
- Search for suppliers; filter for specific needs
- Licensed by VMEC
 - Free access for all VT manufacturers
 - 90-day free national access promo



For Buyers and Suppliers



OEMs and Primes

- Find a qualified supplier
- Post RFPs/RFIs/RFQs
- Filter by certs, SBA status, capabilities
 - Materials, equipment, processes
- Supply Chain risk visualization
- Communicate directly

Small & Medium Manufacturers

- New opportunities with new industries
- Showcase capabilities, certs, equipment, processes....
- Receive RFPs/RFIs/RFQs
- Alternative sourcing for parts and supplies

Supplier Chain Visibility



- Using CONNEX to visualize supply chain
 - See entire supply chain
 - Identify supply chain risks
 - See suggested alternate suppliers to mitigate risk
 - Information remains confidential to your organization



Cybersecurity

- According to the U.S. Department of Homeland Security, the manufacturing industry is the second most targeted industry based on the number of reported cyber-attacks
- NIST SP 800-171
 - Controlled unclassified information
- CMMC 2.0
 - 3 levels based on sensitivity



Protecting control systems against cyberattacks

Cybersecurity Components



- Safeguarding of digital information
- Authentication & access control
- Threat Intelligence
- Intrusion Detection Systems (IDS)
- Secure Sockets Layer (SSL)/Transport Layer Security (TLS)
- Encryption
- Firewalls and antivirus

Partnership With NUARI

VMEC has partnered with Norwich University Applied Research Institutes to provide subject matter experts in cybersecurity for Vermont manufacturers.

- Cybersecurity Compliance Plan Development
- Compliance Monitoring
- SOC Monitoring
- Training and Mentoring for cybersecurity professionals.



NUARI

NORWICH UNIVERSITY APPLIED RESEARCH INSTITUTES



Advanced Manufacturing

**Accelerating
Manufacturing Capability
in the U.S.**

Advanced Manufacturing

VMEC committed to helping companies with advanced manufacturing

Chris Coulter, Advanced Manufacturing Technology Advisor

- Mechanical Engineering background
- Product Design and Manufacturing Engineering
- Vermont Manufacturing Collaborative
- Automation and Industry 4.0 technology

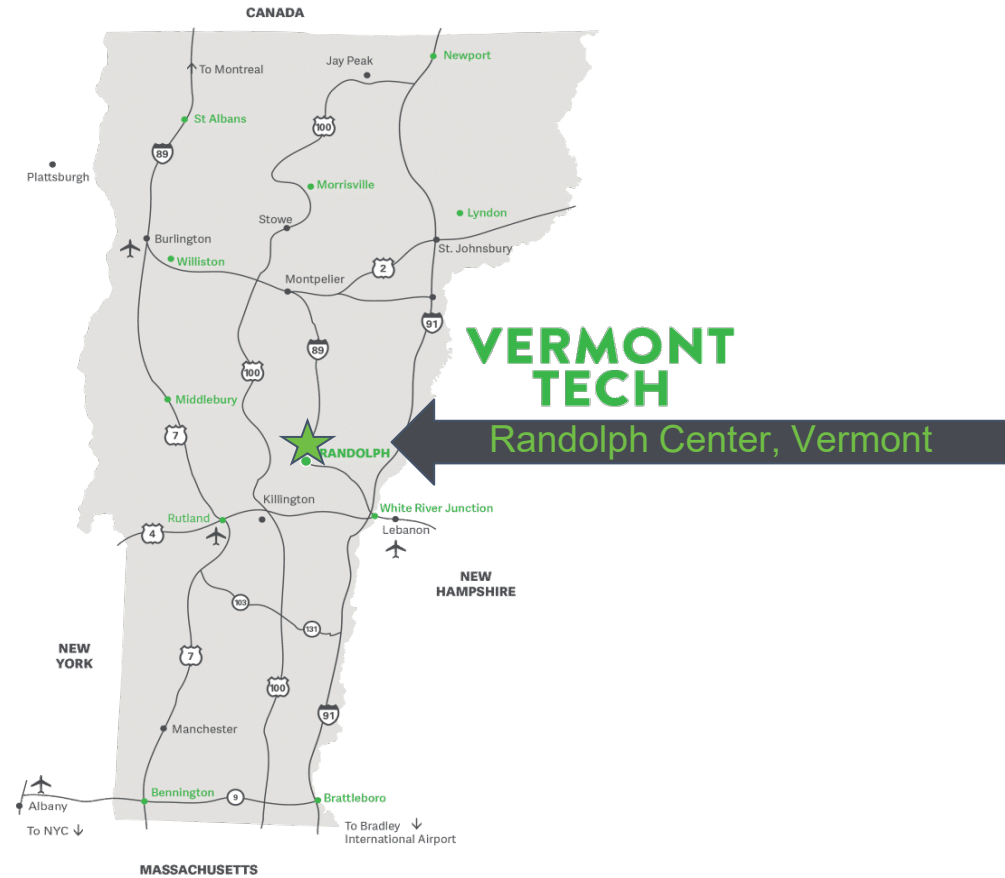


Advanced Manufacturing

- Global assessments show that US manufacturing is lagging in technology integration and workforce availability.
- A DoD IBAS National Imperative Industrial Skills Initiative was implemented, offering funding for solutions.
- A collaboration proposed a solution and secured a contract to: Demonstrate accelerated manufacturing capabilities from a small rural community.



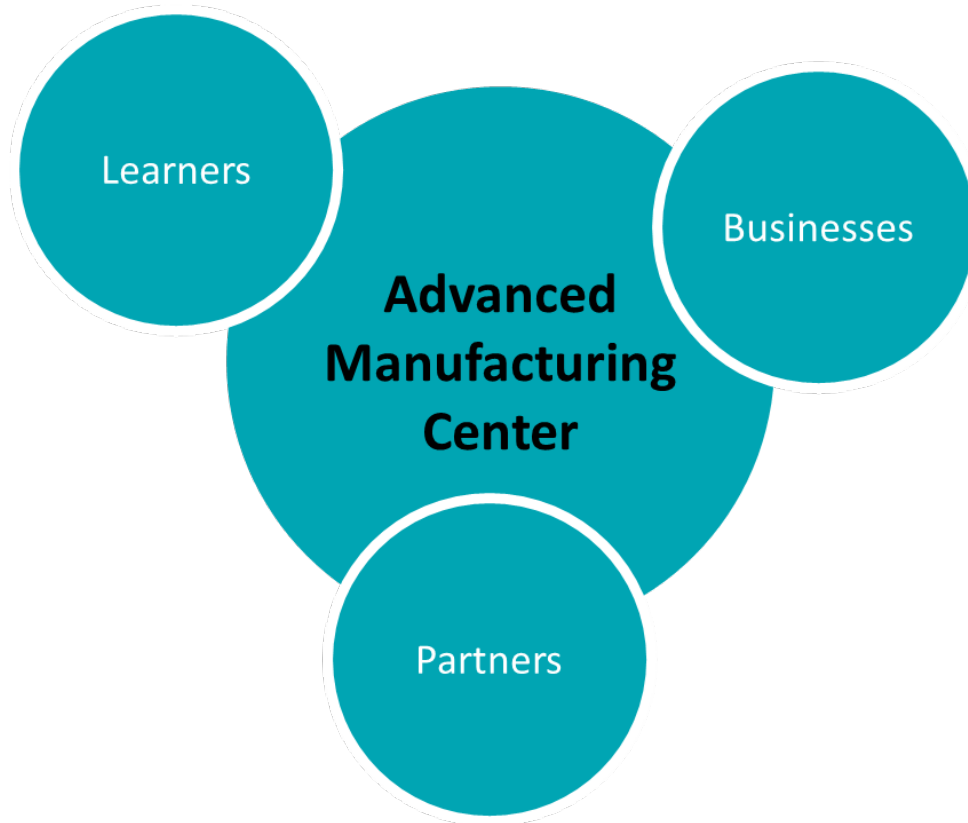
Vermont Manufacturing Collaborativ



Vermont Manufacturing Collaborative

- **Born from an industry need**
- **Help accelerate business adoption of Advanced Manufacturing technologies**
- **Develop a highly capable workforce**
- **Leading-edge technology supporting the full product lifecycle, from ideation to production**
 - **Design digitization**
 - **DFM - DfAM**
 - **Prototyping**
 - **Qualification testing**
 - **Operational Qualification**
 - **Technical Data Package**

Advanced Manufacturing



Vermont Manufacturing Collaborative

Mission:

Help businesses thrive by Making advanced manufacturing technology accessible and developing the highly-capable workforce to support it.

Advanced Manufacturing

DIGITAL DESIGN & DIGITIZATION

Advanced Computer Aided Design
Generative Design
DfAM and lattice structure integration
3D Scanning and Reverse Engineering

MACHINING AND CUTTING

Manual mill and lathe machining
HAAS 3-axis CNC
DMG Mori DMU75 5-axis mill
Makino U6 wire EDM
GF20 EDM drill
Water jet cutter
Laser cutter
Welding

POLYMER ADDITIVE

Essentium HSE 280i (HT FDM)
3D Systems ProX 6100 (SLS)
3D Systems Figure 4 (Polymerization)
Markforged X7 and Mark 2 (Composite)
Ultimakers (Composite)

METAL ADDITIVE

ExOne 25Pro (Binder jet)
EOS M100 and M290 (DMLS)

HEAT TREATMENT

Curing and Stress Relief
CM Furnace - Sintering

METROLOGY

Nikon CT scanner + Volume Graphics
Vision System and Microscopes
Coordinate Measuring Machine (Future)

TEST / METALLURGY

Hardness/ Microhardness
Impact
Compression / Stress-strain



Advanced Manufacturing

Advanced Manufacturing Services

- Design, prototype, manufacture, test, and characterize
- Equipment use
- Objective technology advice
- Equipment demonstrations (See / Try before you buy)

Workforce Development

- Advanced training – Generative, DfAM, Cyber, Edge Devices
- Company tailored upskilling programs
- Skill/tool-based tailored training programs
- Access to trained workforce

Advanced Manufacturing



Next Steps

- NCDMM / AMNEW Program
 - Additive Manufacturing Projects aimed at developing capabilities and documenting processes
 - Cybersecurity and Edge Devices
- The New England Defence Supply Chain Enhancement program
 - Recently launched Collaborative initiative aimed at developing new DoD suppliers. Looking folks with additive and subtractive capabilities.



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