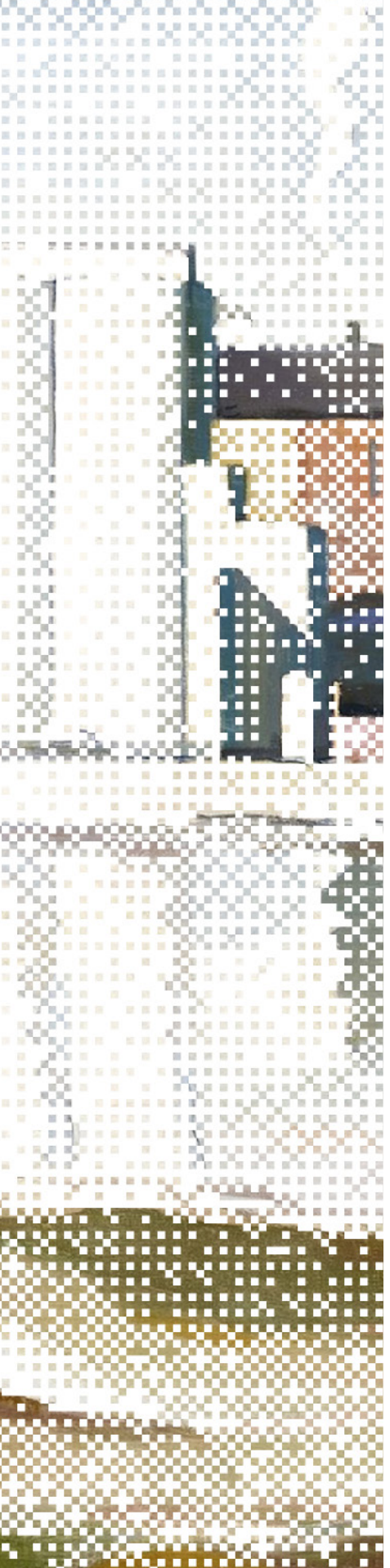

■ Industrial Power

Upgrading the Manufacturing Extension Partnership

Ryan Kelly

SUMMARY

The Hollings Manufacturing Extension Partnership (MEP) is a nationwide network that serves as a cornerstone of America's manufacturing ecosystem. Anchored at the National Institute of Standards and Technology (NIST) with centers in every state and Puerto Rico, MEP connects small and medium-sized manufacturers (SMMs) with the expertise and resources they need to innovate, improve productivity, and compete globally. Through this unique public-private partnership, federal, state, and private support are combined to deliver high-impact services—from technology adoption and process improvements to workforce training and supply chain optimization. For over three decades, MEP's proven model has empowered thousands of manufacturers, delivering strong returns on investment for taxpayers while fueling growth in local economies.

Today's volatile economic and security environment demands that MEP intensify its role in bolstering American manufacturing. This proposal calls for a comprehensive upgrade of

MEP to serve as a true engine of reindustrialization, in support of urgent national priorities such as building resilient supply chains, enhancing defense industrial capabilities, and driving breakthrough manufacturing innovation. MEP is not currently optimized to fill this function; the following measures will unlock MEP's full potential as a dynamic driver of national industrial strength.

PROBLEM

Current Challenges

DECENTRALIZED DELIVERY: MEP's network of 51 centers operates with significant autonomy, resulting in variable service quality, limited scale, and inconsistent impact across regions.

LACK OF STANDARDIZATION: There are no uniform national benchmarks for evaluating technology adoption and productivity gains. Without these tools, improvements in productivity, supply chain resilience, and job creation are difficult to track.

BROAD INDUSTRY GAPS: US SMMs face fierce global competition, persistent supply chain vulnerabilities, technology adoption gaps, and workforce shortages that compound the challenges MEP is meant to address.

Why It Matters

DEFINING STRATEGIC PRIORITIES: A modernized MEP should be laser-focused on boosting productivity, promoting reshoring, and securing critical supply chains in strategic sectors. Uniform benchmarks—set by NIST under broad guidance from the White House—should define key outcomes like technology integration, productivity gains, and supply chain resilience, ensuring all centers work toward the same national priorities.

FOCUSING ON OUTCOMES: This proposal recommends shifting the evaluation focus from how MEP centers report their activities to the tangible improvements in manufacturers' operations. Prioritizing outcomes—such as increased productivity, accelerated technology adoption, and strengthened supply chains—MEP can ensure that its policy and practice is focused on the foundation for a unified measurement system geared to national strategic goals.

IMPROVING MEASUREMENT AND ACCOUNTABILITY: Uniform metrics enable direct comparisons across regions, highlight best practices, and reveal gaps where further support is needed. This approach allows policymakers to make data-driven decisions, refine performance-based funding, and ensure that every federal investment translates into meaningful, measurable progress toward national industrial goals.

Urgency

RAPID TECHNOLOGICAL ADVANCEMENTS: With technologies evolving at a breakneck pace, American manufacturers must rapidly adopt advanced methods to remain competitive. An enhanced MEP is ideally positioned to assist by serving as a central hub that disseminates cutting-edge manufacturing practices. By providing expert assistance, training, and digital toolkits, MEP can accelerate adoption of automation, AI, and cybersecurity, helping manufacturers quickly capitalize on new innovations.

SUPPLY-CHAIN DISRUPTIONS: Global shocks have exposed significant vulnerabilities in US production systems, underscoring the need for robust, coordinated responses. An enhanced MEP can play a vital role in strengthening supply chains by offering targeted technical assistance in risk management, digital connectivity, and resiliency planning. Integrating regional expertise with best practices, MEP can help manufacturers quickly respond to disruptions.

SOLUTION

Executive

NIST, the Department of Commerce's agency dedicated to promoting national industrial competitiveness, should do the following.

EXPAND MEP CAPACITY: Increase federal matching grants and establish centrally determined performance targets focused on national industrial goals as set by the White House, acting through a designated Manufacturing Council or other appropriate office.

CREATE UNIFIED BENCHMARKS AND TOOLKITS: Develop national benchmarks that all MEP centers must implement to consistently measure and guide improvements. Benchmarks should focus on:

- Advanced Technology Utilization: Metrics might include data integration levels, adoption of "digital-twin" simulations, cybersecurity preparedness, and cross-factory collaboration. Germany's Industrie 4.0 initiative successfully used similar standardized benchmarks (like the RAMI 4.0 reference architecture) to accelerate technology adoption and standardization nationwide. Though the framework is nearly 15 years old, it still serves as an effective model for structured guidance.
- Supply Chain Responsiveness and Resilience: Benchmarks like Manufacturing Critical Path Time (MCT)—measuring the total duration from order placement to delivery—can help identify and eliminate production bottlenecks, enhancing agility and responsiveness. MCT complements lean manufacturing by pinpointing process bottlenecks and opportunities for faster, more agile production. Additionally, measuring on-time delivery rates, supplier diversification (with particular emphasis on increasing domestic suppliers), and Time-to-Recovery (TTR) after disruptions can reveal how well MEP-assisted firms withstand shocks—an increasingly vital metric in today's volatile environment.

- Productivity Gains and Quality Improvement: Operational outcomes such as increased output per worker, reduced defects, and higher first-pass yields are useful measures of productivity gains. If MEP assistance boosts productivity by enabling manufacturers to achieve higher output with existing resources, these metrics can directly demonstrate modernization's economic impacts.

Given the rapid pace of technological change, a structured, collaborative review process—engaging manufacturers, industry groups, and technology experts—should regularly update these benchmarks. NIST should align these metrics closely with national industrial priorities set by political leadership, focusing on strategic objectives. Standardized toolkits, based on updated benchmarks, will then provide practical, actionable guidance for manufacturers and MEP centers nationwide, accelerating digitization, productivity gains, and enhanced supply chain resilience.

State Economic Development Agencies

STREAMLINE COORDINATION: States should formalize partnerships via MOUs among MEP centers, state agencies, and financial institutions, clearly outlining roles and ensuring timely access to financing and training. For example, states could establish a joint advisory board that links MEP centers with local banks to facilitate referrals and monitor outcomes. Successful models include New York's integration of MEP with state economic development and Maryland's Manufacturing 4.0 program.

Workforce Development Offices

INTEGRATE TRAINING PROGRAMS: Workforce Development Offices should establish formal partnerships with MEP centers and local educational institutions—through agreements such as MOUs—to embed advanced manufacturing and cybersecurity training into community college curricula and apprenticeship programs. This approach would create a seamless pipeline of skilled talent tailored to modern manufacturing needs. For example, New Jersey MEP's Pro-Action Education Network achieved 100 percent job placement rates through partnerships embedding manufacturing and cybersecurity training into local curricula. (Such an approach will benefit from broader workforce development improvements as well.)

Congress

The relevant committees (e.g., House Committee on Science, Space, and Technology , Senate Committee on Commerce) should:

FOCUS ON PERFORMANCE-BASED FUNDING AND ACCOUNTABILITY: Legislation should tie federal matching funds to measurable outcomes (e.g., productivity, technology adoption, resilience). Enhanced matching grants rewarding states exceeding baseline contributions will drive accountability.

INCENTIVIZE STATE AND PRIVATE CO-INVESTMENT: Legislation should promote state matching and private-sector co-investment through challenge grants (similar to those used in Manufacturing USA institutes) and formal public-private partnerships that recognize in-kind contributions and fee revenues (as seen in the Department of Agriculture Cooperative Extension's matching approach).

JUSTIFICATION

Established in 1988, the MEP supports SMMs, generating significant economic benefits. However, to sustain these outcomes amid escalating global competition and rapid technological changes, MEP's current structure requires modernization.

Global competitors significantly outpace US investments in manufacturing support programs. Germany's Fraunhofer Institutes receive approximately $1 billion annually, far surpassing MEP's 2025 federal budget request of $175 million. Recent global disruptions—from Covid-19 to geopolitical tensions—have highlighted US supply chain vulnerabilities, underscoring the urgency of empowering small manufacturers to swiftly adopt advanced technologies and localize critical production.

MEP currently serves only a fraction of the nation's approximately 246,000 small and medium-sized manufacturers, reaching about 36,000 firms in 2023. Limited federal funding and inconsistent service capabilities constrain centers' ability to support widespread, transformative technology adoption. While decentralization fosters local responsiveness, it also leads to uneven service quality and incremental rather than comprehensive technological upgrades. As manufacturing technology advances rapidly, MEP's capacity to deliver advanced support in automation, AI, and cybersecurity remains limited, hindering national competitiveness.

Without MEP modernization, the US risks ceding technological leadership and manufacturing capacity in its SMM sector to international competitors such as China, which direct vast resources toward dominating high-tech industries. Continued reliance on foreign suppliers jeopardizes national security, especially during crises. Competitive small- and medium-sized manufacturers play a critical role in advancing American industrial strength. An upgraded MEP can help more of them step into the role America needs them to. ■

FURTHER RESOURCES

- Government Accountability Office, "Manufacturing Extension Partnership," 2019

Ryan Kelly is Vice President of Technology at the Association For Manufacturing Technology (AMT), a 120-year-old nonprofit dedicated to strengthening the US industrial base through advanced manufacturing solutions.