



AI Scaling Initiative for Small & Mid-Sized Manufacturers

The Challenge

Many of Pennsylvania's small and mid-sized manufacturers are struggling to scale artificial intelligence (AI) beyond simple applications, despite AI's potential for transformational productivity gains without massive capital investment. Companies face barriers of time, complexity, cost, and risk in scaling AI, risking competitive disadvantages as larger companies rapidly innovate using these technologies.

The Opportunity

The AI Scaling Initiative leverages market forces underway in Pennsylvania to ensure that innovative small and mid-sized manufacturers - the backbone of community prosperity - lead the AI revolution. AI's potential to boost productivity in manufacturing is vast, and many manufacturers are already exploring (and benefitting from) the use of AI in back office applications like marketing, communications, and scheduling. However, much of the AI opportunity is still untapped; there is tremendous upside for manufacturers who innovate and scale AI early, for uses such as predictive analysis (e.g., for maintenance, optimization, energy, and supply chain management), scenario planning, market development, product improvements, production floor enhancements (e.g., safety, quality) and far beyond. Large companies are actively ramping up deployment of AI across operations.

The *AI Scaling Initiative's* goal is to support innovative small and mid-sized manufacturers in Pennsylvania to jump ahead on the AI learning curve and lessen risks of adopting early, to capture real gains in productivity, attractiveness to talent, and ultimately growth. Paired with an active approach to disseminate learnings to other manufacturers, we believe this strategy will boost competitiveness, ramp up output, and bolster jobs in PA's manufacturing cluster overall, with high spillover benefits for communities.

There are important efforts underway across the commonwealth to support manufacturers' familiarity with AI and launch pilots. AI Scaling builds on these critical efforts to boost knowledge of AI across all manufacturers and pilots, though it has a different focus. The initiative targets companies that are ready to jump to the next level (that have innovation-oriented leadership and already-active AI pilots) but face barriers to moving quickly to scale. Our strategic approach is to accelerate these manufacturers who are well-positioned to be leaders in the AI revolution, by connecting them with timely financial resources and technical assistance to capture the economic benefits of AI in the commonwealth. Absent these supports, larger companies are likely to outpace their smaller counterparts in productivity and gain market share, to the detriment of the 99% of manufacturers who have fewer than 500 workers across the commonwealth.

How We'll Do it

The AI Scaling Initiative drives two main actions. First, it connects innovative small and mid-sized manufacturers with resources and technical assistance to scale AI responsibly, securely and sustainably by leveraging Team Pennsylvania's extensive network of industry partners, trusted local organizations, and technical subject experts. Then, Team Pennsylvania and its partners will amplify learnings and tools across the broader manufacturing ecosystem so that additional companies and communities can benefit. Specific actions include:

Action 1. Connect innovative Small and Mid-sized Manufacturers with resources

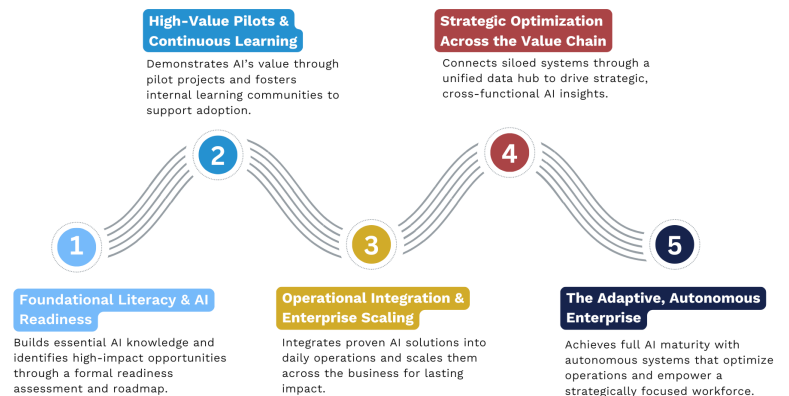
- Cultivate collaboration agreements with major engineering and technology companies to boost leverage of planned investments among small and mid-sized manufacturers in Pennsylvania. Tremendous investment is entering Pennsylvania through data center development, and technology companies such as AWS, Microsoft, and Google concurrently offer financial incentives to develop the market for AI and cloud services. Team Pennsylvania will catalyze partnerships to ensure small and mid-sized manufacturers in Pennsylvania - especially those in rural areas who may not automatically be first in line - can leverage these unique, time-limited resources that will only benefit a finite number of early-mover manufacturers.
- Catalyze flexible funding to support manufacturers in planning for scaling AI. Recognizing that partnerships with big tech will not fit all companies, Team Pennsylvania will pursue grants to support manufacturers in accessing alternative technical assistance pathways.
- Build an information bank of PA-based AI subject experts, including private engineering/integration companies and non-profit organizations (such as ARM Institute and Industrial Resource Centers). Team Pennsylvania will lead a request for information to seed this information bank and help manufacturers navigate options quickly.
- Elevate and recruit manufacturers with innovation-oriented leadership and active AI pilots, to connect them to this initiative. Team Pennsylvania will put out a call for nominations to our network of PA industry partners, economic development organizations, Industrial Resource Centers, and beyond to surface innovative manufacturers. In partnership with local organizations and technology companies, Team Pennsylvania will also co-host working sessions to raise the visibility of next-level AI use cases for manufacturing.

Action 2. Amplify Learnings and Tools from early AI Scaling partnerships

- Build and elevate tools and templates to simplify planning for scale. Team Pennsylvania will work with partners that specialize in both scaling AI and small and mid-sized manufacturers to codify and share key tools, including: implementation checklists and AI readiness assessments, example governance approaches for manufacturing environments, example legal arrangements for data protection, and vendor relationships
- Disseminate early learnings so that companies beyond those initially targeted can benefit. Team Pennsylvania and our partners will synthesize insights from early adopters by developing at least five case studies, and host at least four structured learning opportunities: peer roundtables, site visits, workshops, and/or a state-level summit.

Success Metrics

- Scale AI in operations, boost productivity, and accelerate growth in key innovative small and mid-size manufacturers: Within three years, at least 100 companies will be directly supported with resources through this initiative to scale AI in their operations, including tracking changes in productivity and output. Importantly, Team Pennsylvania will ensure a geographic spread of these companies across the commonwealth (targeting ~10 in each of the 10 PA PREP regions, especially focusing on Appalachian counties).
- Increased AI adoption rates among Pennsylvania manufacturers (particularly for more advanced or higher scale applications), leveraging initial learnings and tools. While the current share of companies scaling AI is not known, Team Pennsylvania and its partners will use DVIRC's AI Center of Excellence 5-step AI Adoption Pathway (Figure at right) to track AI progression in the manufacturing sector, especially focusing on the transition from Steps 1 and 2, to Steps 3, 4, and 5. Team Pennsylvania will also track download rates of developed tools and participation in learning events.



- Increase in Manufacturing Sector Productivity and Growth Rate:
Pennsylvania's manufacturing sector's productivity grew by 1.9% between 2018 and 2023, and output grew at an average annual rate of 1.8% between 2021 and 2024, according to analysis of Lightcast real output and employment data. AI Scaling seeks to accelerate productivity and growth rates.

Why Team Pennsylvania: Our neutral, non-partisan convening role, statewide presence, and established relationships with a broad network of manufacturers, local partners, and engineering and technology companies uniquely position us to lead this initiative, broker these strategic partnerships, and ensure benefits reach small and mid-sized manufacturers and their surrounding communities, all across the commonwealth.