

## Indiana Manufacturing Competitiveness Center (IN-MaC)

**IN-MaC creates a stronger, more competitive manufacturing ecosystem for Indiana and the nation.** Hosted by Purdue University in partnership with Ivy Tech Community College and Vincennes University, IN-MaC aims to catalyze growth and reinvigorate the American dream for future generations. We do so by mobilizing our resources, expertise and network to strengthen the relationship between workforce education, technology adoption and manufacturing research to elevate Indiana as the manufacturing destination of choice. Areas of concentration include Education & Workforce Development (E&WD), Technology Adoption and Transfer (TA) and Research for Future Competitiveness (RFC).

### EDUCATION & WORKFORCE DEVELOPMENT

IN-MaC activates the formation of short and long-term manufacturing skills in a highly accessible manner through a variety of educational programs and experiences for students, educators and workers. We augment education achievement pathways and create opportunities to develop technical literacy, cross-discipline agility, design thinking and problem-solving skills across a range of ability and experience levels.

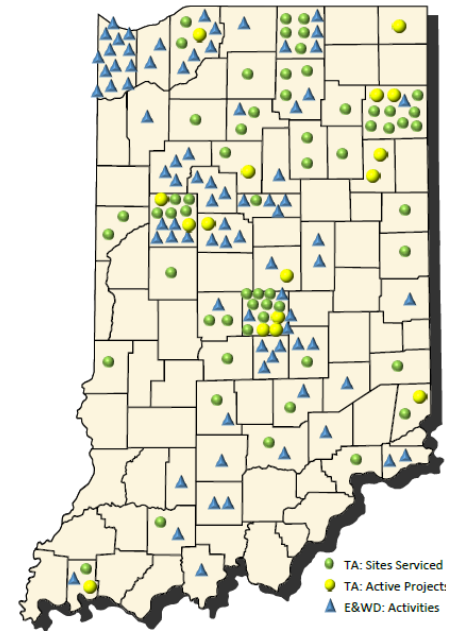
### RESEARCH for FUTURE COMPETITIVENESS

IN-MaC supports the development of knowledge that improves the industry competitiveness by driving discovery at the nexus of digital design, simulation and enterprise systems integration. We currently support 5 consortia to address industry-defined topics and facilitate connections to help solve chronic manufacturing challenges.

### TECHNOLOGY ADOPTION & TRANSFER

IN-MaC's Technology Adoption program provides short-term expertise to manufacturers when implementing high-impact, high-return projects within and across their value chain. Areas of specialization include: digital engineering, product and process simulation, product lifecycle management, supply chain integration, data intelligence and warehouse systems. The program is delivered by Purdue faculty experts in union with Indiana's Manufacturing Extension Partnership (MEP).

### Participation Reach to Date



#### Select Impacts:

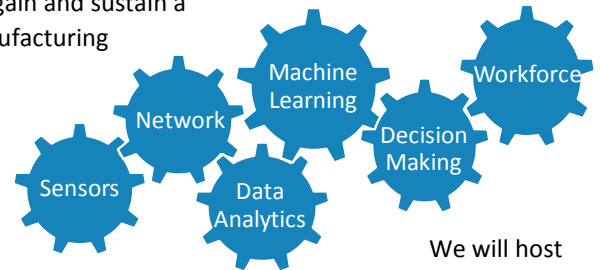
- Activated >10,000 Indiana youth to participate in local Manufacturing Day activities through 61 micro-grants.
- Trained 58 high school educators in an advanced manufacturing program who each trained at least 3 peers across 37 districts that touched more than 3,000 students.
- Serviced 66 manufacturing sites across Indiana with a cumulative benefit of \$21,250,000 from an investment of \$1.76M (**12x benefit**) and 98 jobs added or retained.
- Connected 67 students with manufacturers across Indiana through a work-based learning intern & apprenticeships.
- Supported membership in 4 ManufacturingUSA Institutes (NMMI) resulting in 16 awards totaling \$12,540,000 from a \$2M investment (**6.2x benefit**).
- Invested in 5 SME consortia with 26 industry members and \$750,000 in gifts (**5.1x benefit**).
- Launched a "Design and Discovery Lab" at Subaru of Indiana Automotive that will engage 6,000 youth and incumbent workers each year.

#### Goals through June 2021:

1. Expand the delivery of Education & Workforce Development programs to engage 40,000 youth, 3,000 incumbent workers and engage 20 companies.
2. Impact 45 Indiana manufacturers through the Technical Adoption program, 15 of which will touch underserved regions.
3. Forge 30 new partnerships with local governments, agencies or allied organizations to expand the reach of programs, especially into less-served areas.
4. Engage 50 partners in a Digital Manufacturing Testbed to discover, demonstrate and disseminate industry-crucial enterprise, manufacturing, and operations management skills and knowledge.
5. Assist 14 businesses to develop their manufacturing know-how and locally scale their production beyond prototypes.

**SMART MANUFACTURING PROVING GROUND**

Industry must adopt new and innovative technologies and methods to regain and sustain a competitive advantage relative other sectors and regions. The smart manufacturing proving ground will accelerate the discovery of technologies and demonstration of approaches for all manufacturing tiers to overcome digital connectivity barriers and advance next-generation competitiveness across their value and supply chains. The testbed will be a demonstration and validation space for the “art of the possible” for interconnected enterprises of all sizes and a range of technical baselines.



We will host next generation

manufacturing workshops to disseminate practical knowledge and skills to help companies and their workforce prepare for Industry 4.0.

**Address Challenges for Sustaining Competitive Advantage**

- ▀ Quality, Due Date Precision, Production Cost and Yield, Responsiveness
- ▀ Unscheduled Downtime, Cost / Resource Control
- ▀ Supply Chain Efficiency, Risk Mitigation, Workforce Readiness

**Digital Manufacturing**



**Enterprise Testbed**

**Prepare Manufacturers and their Workforce to:**

- ▀ **Address Digital Information and Connectivity Barriers**
  - ▀ Evaluate Architectures, Tools, Methods and Costs to Optimize Approach
- ▀ **Receive + Automatically Translate** Digital Product Specifications and Design Systems into Machine Instructions
- ▀ Provide Customers **Real-Time Production Status** and **Quality Trends** During Fulfillment
- ▀ Automatically Monitor **Input Costs** and Workflow
- ▀ Anticipate and **Mitigate Unplanned Downtime**
- ▀ Leverage Digital Technologies to **Human-Proof Processes**
- ▀ Automatically Monitor **Supply Chain**

**Additional Benefits:**

- ▀ **Improve New Product Introduction Time**
  - ▀ Improve Accuracy and Decision-Making, Minimize Human Intervention
- ▀ **Tighten Relationships** with Customers and Suppliers
- ▀ **Reduce Lead Times** from Product Conception to Production
- ▀ **Reduce Cost** of Documentation and Compliance
- ▀ **Optimize Product Execution** (on-time and on-cost)
- ▀ **Reduce Operating Costs** (nimbleness to optimize asset utilization and delivery times)
- ▀ Improve **Product Quality** and **Process Uniformity**