

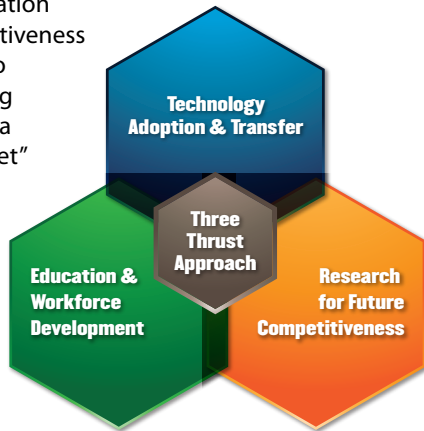


## Indiana Next Generation Manufacturing Competitiveness Center

IN-MaC is Purdue University's response, in partnership with Ivy Tech Community College and Vincennes University, to the economic challenge the United States will face over the next decade: How do we create growth and sustain the American Dream for generations to come? Economic and political instability around the world mean that the time is right to rebuild America's manufacturing capacity. Many US based companies face a shortage of trained workers capable of filling open positions. Technology is moving quickly, and must be transferred to industry quickly in order to remain competitive. Investment in new knowledge creation today will ensure future competitiveness for US industry. IN-MaC answers these needs with an integrated partnership among industry, academia, and government that addresses education, workforce, new technology adoption, and research for future competitiveness.

### A THREE THRUST APPROACH

The Indiana Next Generation Manufacturing Competitiveness Center (IN-MaC) seeks to transform manufacturing in the State of Indiana via a seamless "Lab to Market" three thrust approach: Technology Adoption & Transfer, Education & Workforce Development, and Long-term Research Innovation.



### RESEARCH FOR FUTURE COMPETITIVENESS

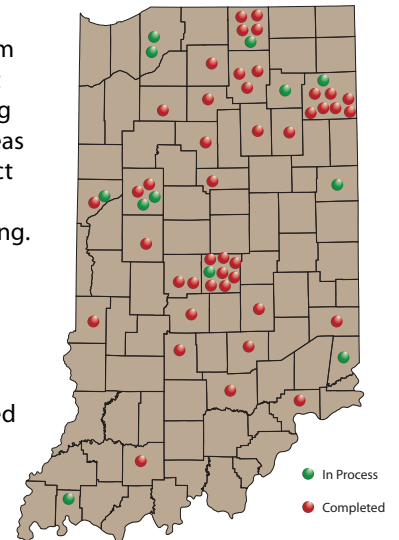
Current and future manufactured products are more than just discrete parts combined into higher-level assemblies to form a finished good. They often incorporate newly invented materials and complex, electro-mechanical systems with embedded software to give them contextual intelligence and a personalized connection to the consumer. These types of products can be developed in research labs, but it is necessary to translate laboratory scales and techniques for manufacturing to commercially viable manufacturing approaches that meet market volume and pricing needs. To do this, it will be necessary to model and simulate product performance, supply networks, and sustainment resources, while considering product complexity (precision and volume) and production capacity. Connecting Indiana's manufacturing base to this new knowledge is a critical part of IN-MaC's mission. Toward that end, IN-MaC is currently supporting the development of five topic based, high TRL/MRL (3-7) consortium programs: Simulation-based Engineering of Materials and Structures, Developing Smart Business Ecosystems, Surface Engineering and Enhancement (CSEE), Advanced Lyophilization Technology, and the Consortium for Materials Processing Research.

### EDUCATION & WORKFORCE DEVELOPMENT

Indiana's workforce must evolve to remain competitive. New technologies often mean new training needs. Individuals entering the workforce often do not have all of the skills necessary for today's advance manufacturing environment. IN-MaC will provide educational programming for new and current workforce members. With our partners Ivy Tech Community College and Vincennes University we will address the complete spectrum from informing high school content to providing certificate and degree based education offerings for both traditional and non-traditional students. Accessibility via online and just in time technologies is a key element of the IN-MaC educational content. Examples of recently funded projects include Additive Manufacturing Capacity Development, Meeting Workforce needs for Mechatronics Technicians, Advanced Manufacturing Leadership Development Program, and Model Based Definition certificate.

### TECHNOLOGY ADOPTION

Indiana companies need access to more efficient and predictable methods to virtually design, test, build, and support their products, while minimizing costs for those activities. IN-MaC's Technology Adoption Program invests up to \$40,000 to assist Indiana employers in adopting digital technologies in the areas of Digital Engineering, Product Lifecycle Management, and Production Systems & Modeling. The typical project timeline is 6-8 months, after which the participating company has a capability which they did not have prior to the IN-MaC project. Each company is asked to match 50% of the IN-MaC investment. To date IN-MaC has completed 43 projects and has 12 in progress.



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