

IN-MaC

Indiana's Next Generation Manufacturing Competitiveness Center

Connecting Statewide and National Resources for
Manufacturing Knowledge Creation and Delivery

April 24, 2014



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A Vision for Leadership in Manufacturing

The Opportunity: *A once in a generation opportunity*

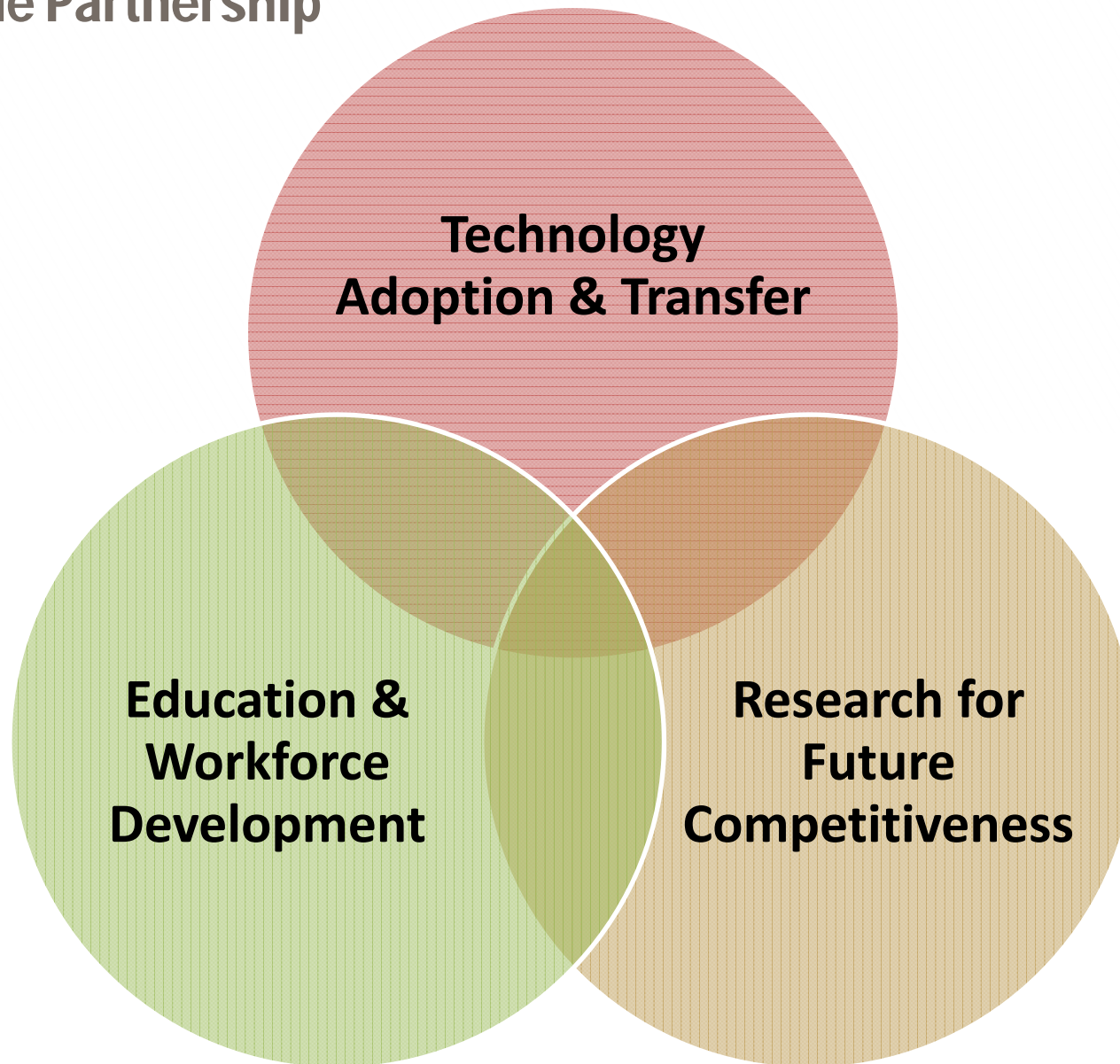
- ❖ Renewed national interest in manufacturing
- ❖ Advanced Manufacturing Partnership (AMP) and National Network for Manufacturing Innovation (NNMI), with potential significant investments in R&D institutes and demonstration facilities
- ❖ A critical component of Indiana's economy

The Action: *A statewide center with global reach in manufacturing competitiveness*

- ❖ Purdue – Ivy Tech – Vincennes partnership
- ❖ Collaboration with leading Indiana companies, SMEs, and the State
- ❖ Partnerships with leading global companies for global impact
- ❖ Impact on the immediate technology transfer, long-term research innovation, and workforce development

IN-MaC Structure

A Statewide Partnership



Workforce & Education Programming

A Statewide Partnership

Initial projects



Orthopedic & Advanced Manufacturing Training Center



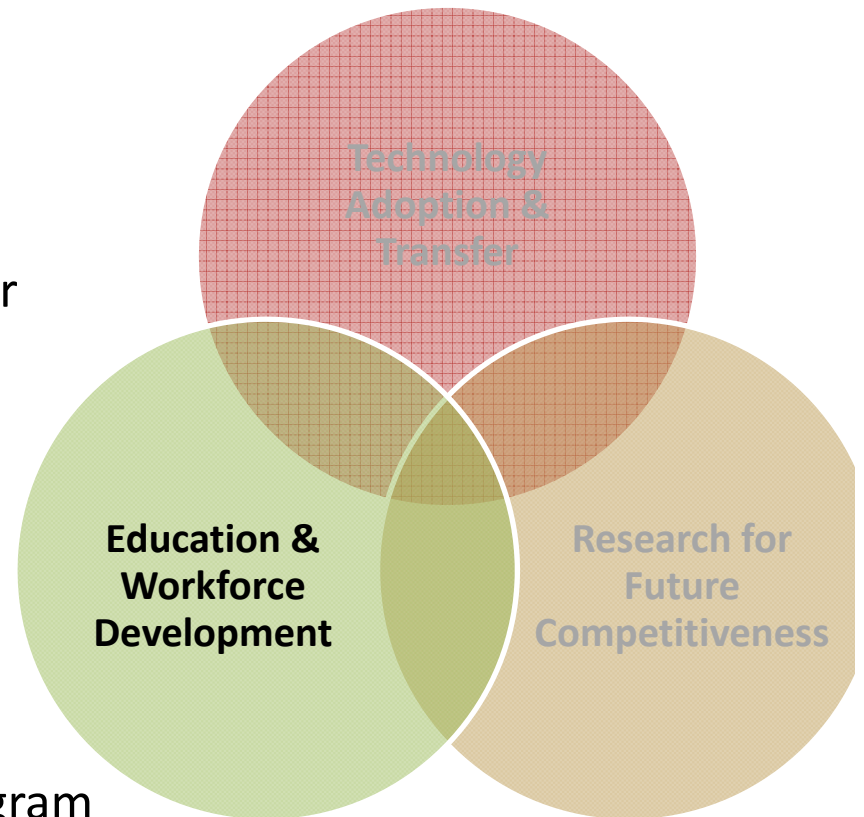
Workforce Development



Meeting Workforce Needs for Mechatronics Technicians



Advanced Manufacturing Leadership Development Program

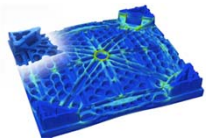


Technology Adoption & Transfer

University – Industry Partnerships

Tech Adoption Focus for 2013-14

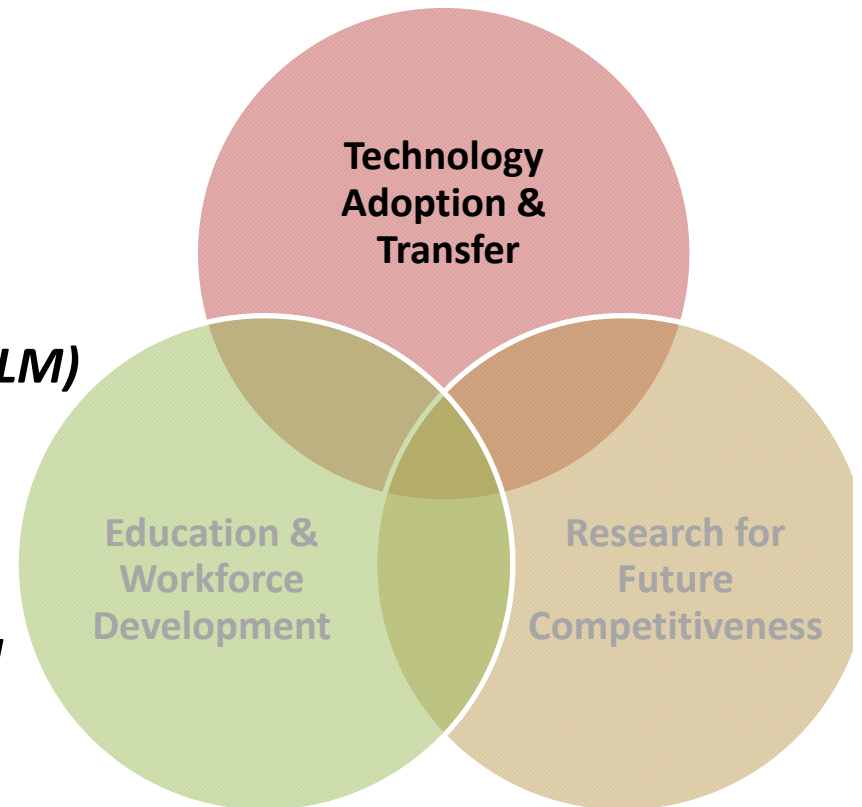
- **Digital Engineering**
 - Finite element methods
 - Materials characterization
 - Computational fluid dynamics



- **Product Lifecycle Management (PLM)**
 - Supply chain integration
 - Inventory optimization
 - ERP/CAD data integration



- **Production Systems and Modeling**
 - Manufacturing floor optimization and layouts
 - Production line simulations
 - Warehouse systems



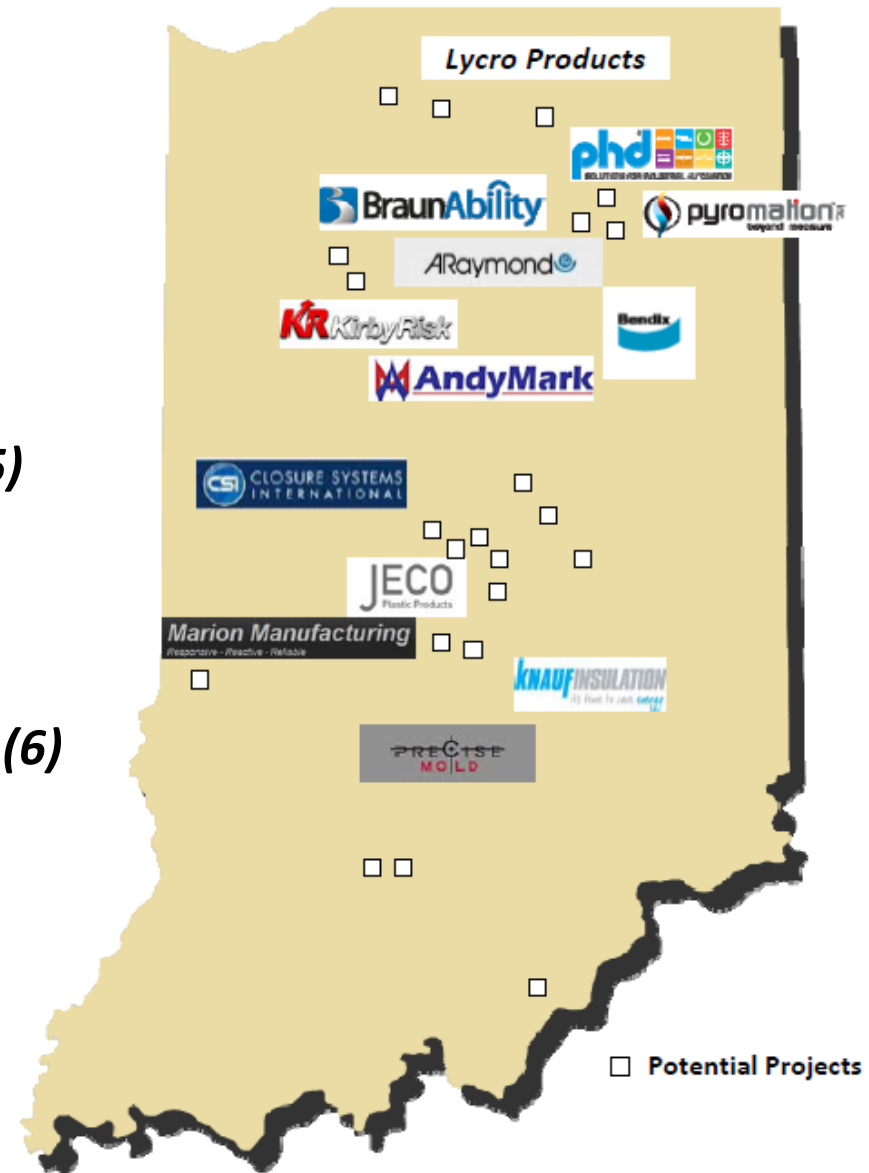
- **13 Companies Under Contract**

- **22 In the Pipeline**

Technology Adoption & Transfer

Projects Underway, Completed, or Under Consideration

- **Digital Engineering (6)**
 - Finite element methods
 - Materials characterization
 - Computational fluid dynamics
- **Product Lifecycle Management (15)**
 - Supply chain integration
 - Inventory optimization
 - ERP/CAD data integration
- **Production Systems and Modeling (6)**
 - Manufacturing floor optimization and layouts
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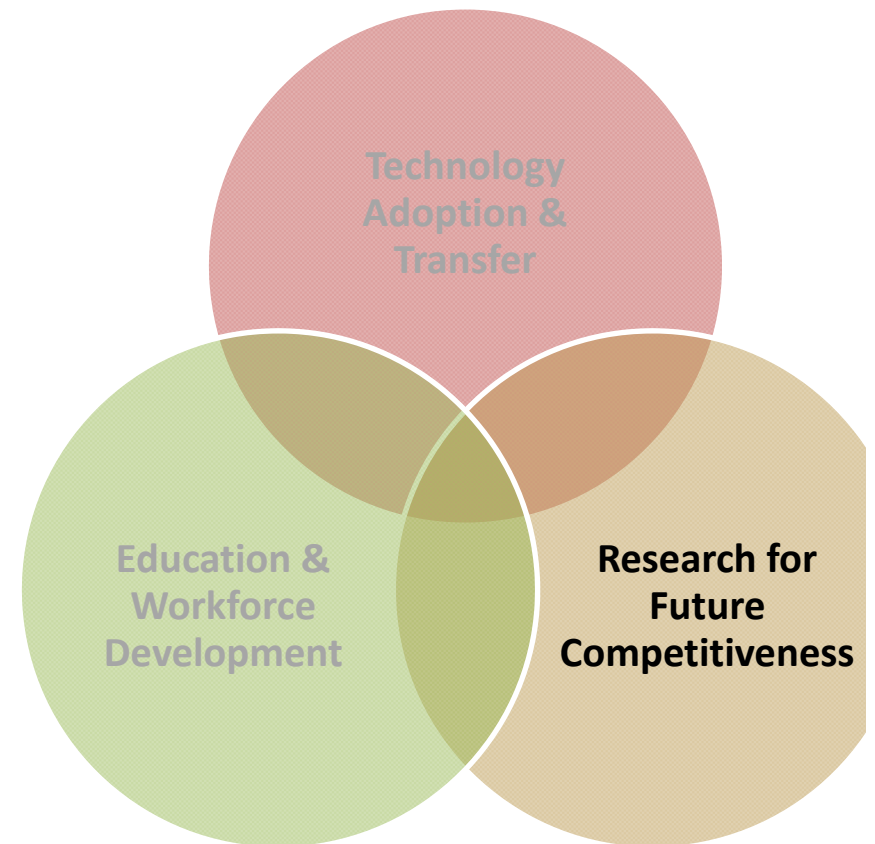


Research for Future Competitiveness

Preparing for the Next Generation of Manufacturing

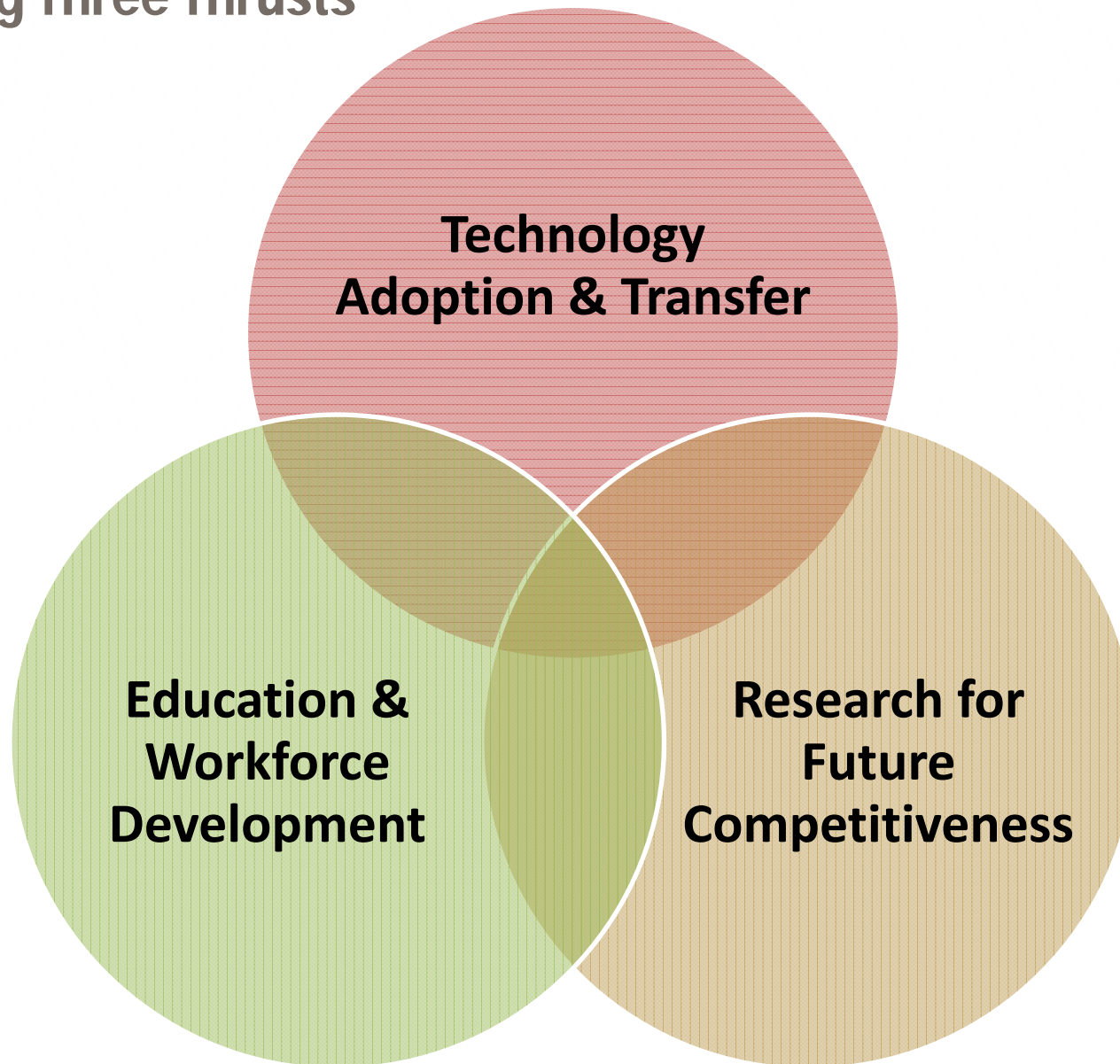
Three Core Directions

- ***Digital Manufacturing Enterprise***
Forms a digital mirror to the physical product including its geometric, behavioral, and contextual definitions
- ***Personalization***
Advances the connectivity and availability of computational resources with potential to allow personalized products with efficiency of mass production
- ***Market Viable Manufacturing Processes***
Translate newly invented materials and complex electro-mechanical systems with embedded software to manufacturing processes at market volumes and cost



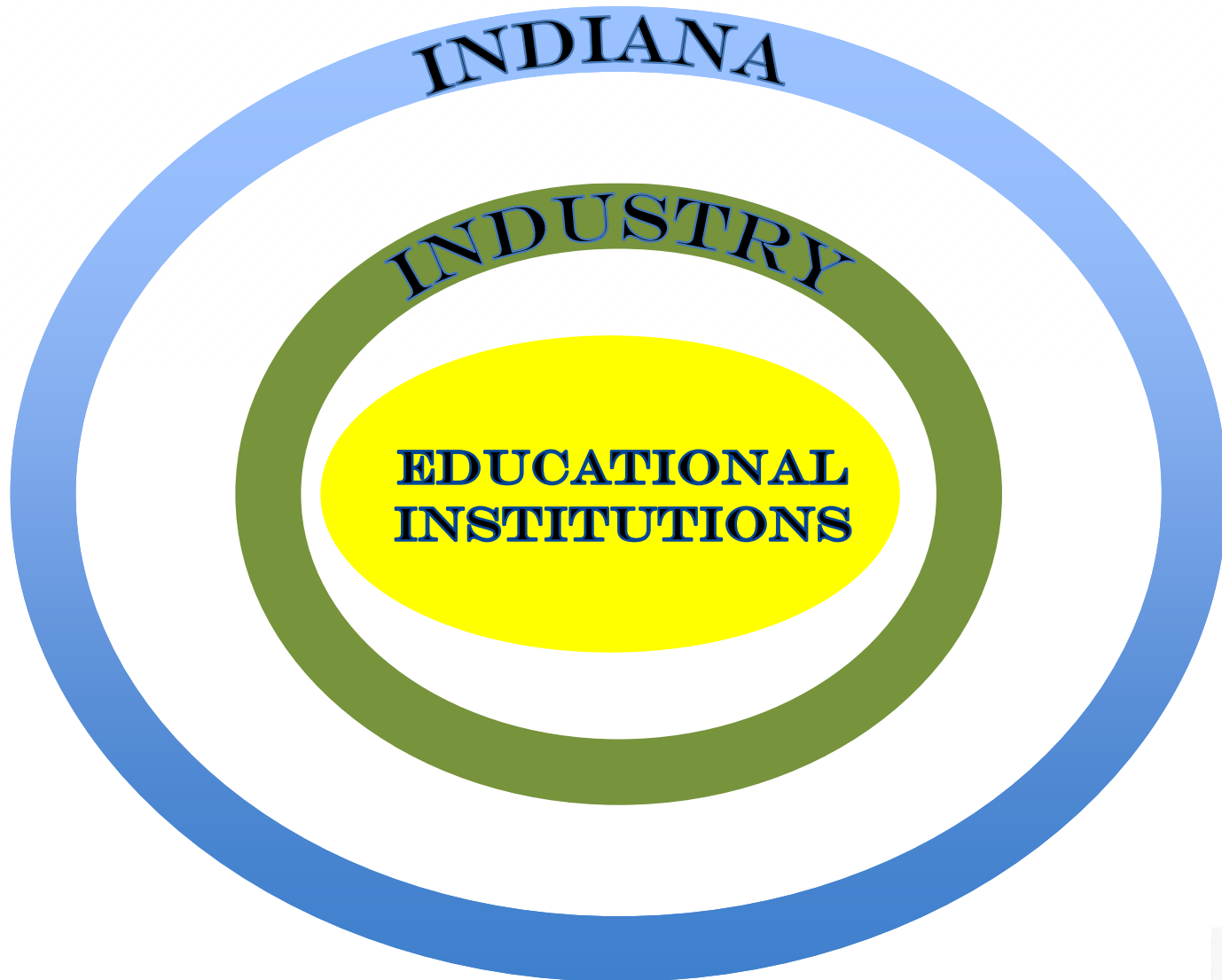
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Integrating Three Thrusts



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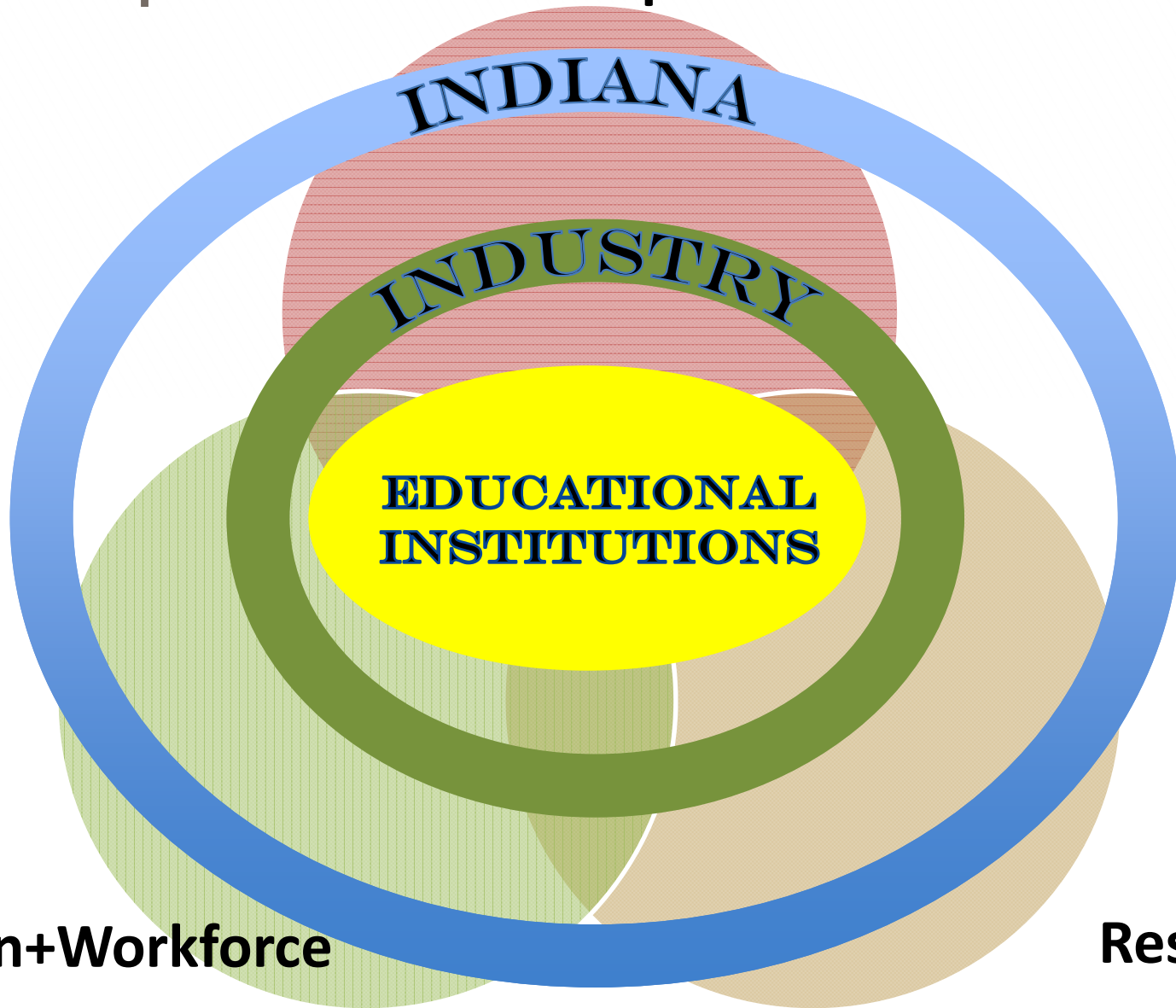
A Three-Way Partnership



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A Model for Impact

Tech Adoption



Education+Workforce

Research