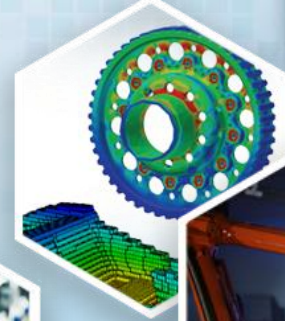


The Composites Institute: A Perspective on State Support of Innovation Resources

John A. Hopkins

Interim CEO, IACMI-The Composites Institute,
managed by Collaborative Composite Solutions Corporation

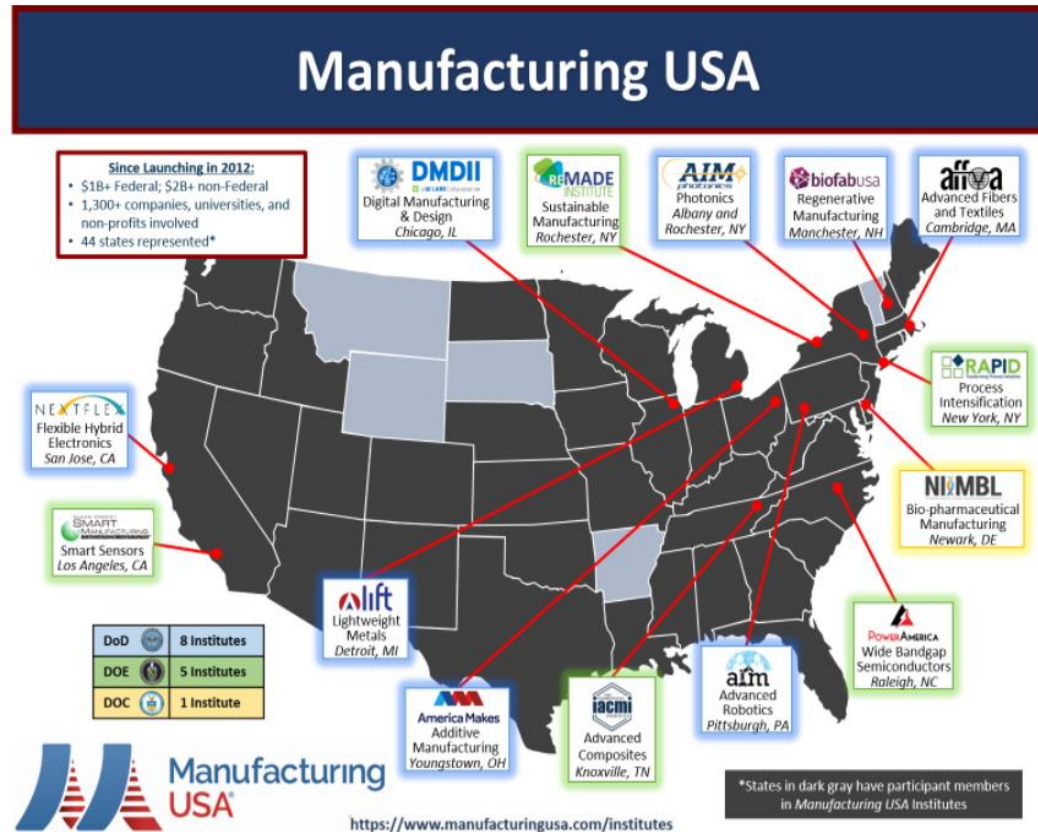


*GUIRR | Role of State Governments in Economic
Development and R&D Competitiveness
Oct 18, 2017*

Manufacturing USA



- National interests in energy, security, and commerce
- Public/private partnerships for manufacturing innovation
- 14 Institutes



What is IACMI-The Composites Institute?



Public-Private Partnership with over \$250M in funding from partners:
Department of Energy, States, Members

Part of the Manufacturing USA network (formerly National
Network for Manufacturing Innovation-NNMI)

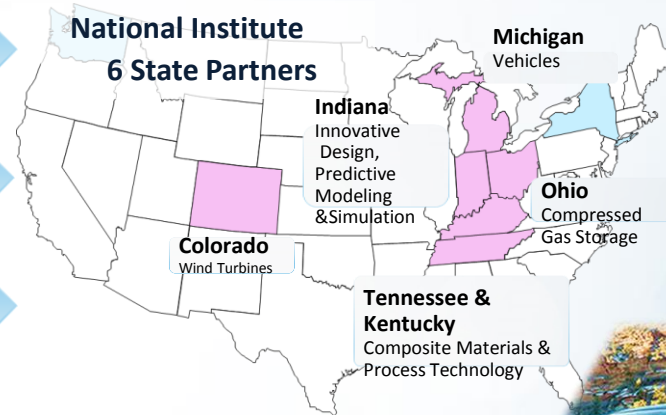
Technical Focus on Advanced Composites

Operated by Collaborative Composites Solutions Corporation
(CCS), an independent not-for-profit

Wholly owned subsidiary of
The University of Tennessee Research Foundation

Strategic Partnerships increase capabilities and drive innovation

>70% of automotive production occurs in IACMI core states



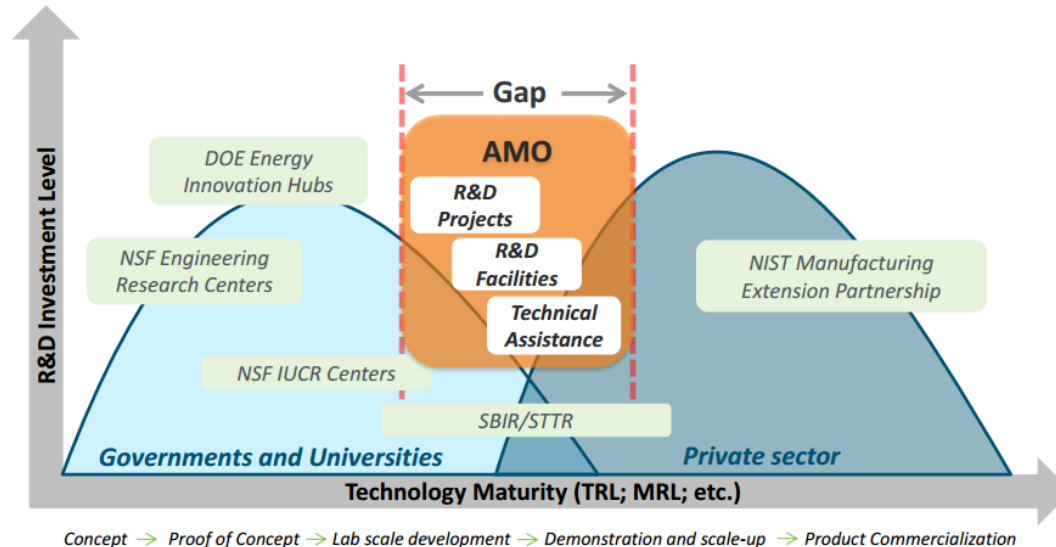
150+ Members, 30+ States



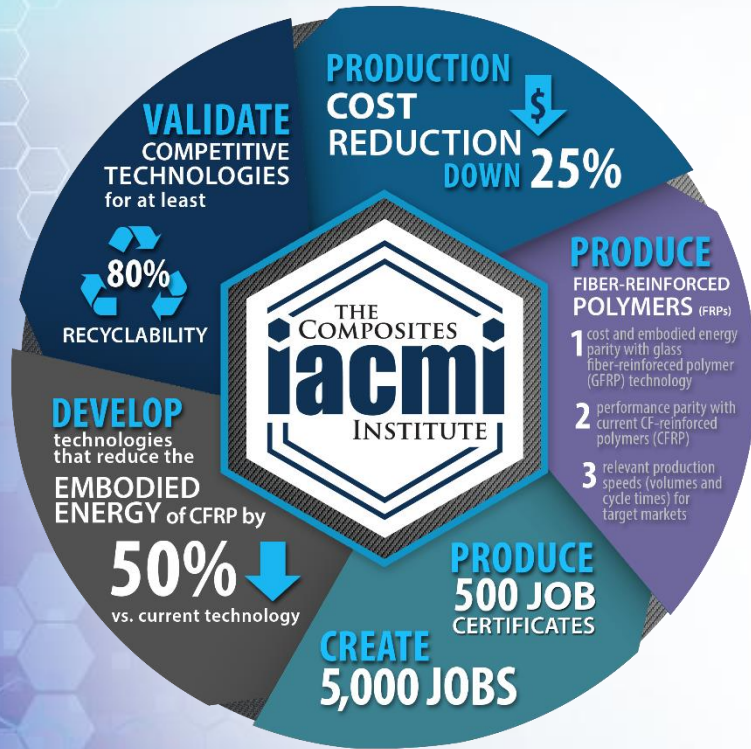
Research and Development Partner for Industry

Bridging the Gap to Manufacturing

AMO: Advanced Manufacturing Office



Technical Focus on Advanced Composites & Structures



Application Areas

Vehicles • Compressed Gas Storage • Wind

Focus Areas

Energy • Speed • Recycling

Enabling Technology Areas

Design • Simulation • Joining
Nondestructive Evaluation • Materials



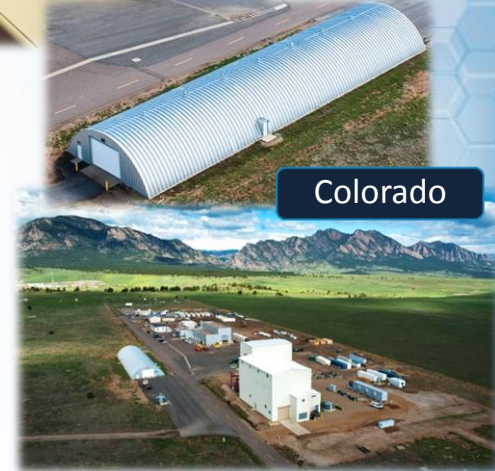
IACMI-The Composites Institute Facilities

Equipment

- Michigan: Press (2, Schuler and Milacron) representing over \$8M investment
- Purdue: 250 Ton Vertical Press Resin Transfer Molding (RTM) Facility, 330-Ton Injection Molding Machine, support equipment and tooling, all representing nearly \$2M investment

Facilities

- Indiana Manufacturing Institute
- IACMI Vehicles Scale-Up Facility
- Colorado Wind Technology Expansion
- Tennessee (UTK, ORNL MDF)



Colorado



Tennessee



Michigan



Indiana

Partnering for Success



Industry, Academia and Government Stakeholders

A partnership of world-class companies including:

 **BASF**

The Chemical Company



DOWAKSA



LOCKHEED MARTIN



A partnership of outstanding small and medium sized organizations including:



Continental
Structural Plastics



Johns Manville



International Automotive Components

Top universities and industry associations including:

MICHIGAN STATE
UNIVERSITY



THE ADHESIVE AND SEALANT COUNCIL, INC.



THE UNIVERSITY OF TENNESSEE

UT RESEARCH FOUNDATION



MINE PURDUE
UNIVERSITY



UNIVERSITY of DAYTON
RESEARCH INSTITUTE



State – Best Practices for R&D Competitiveness



- Facilities and infrastructure
- Project funding for in-state companies
- Manufacturing Extension Partnership (MEP) technical assistance
- SBIR support
- Entrepreneurial and business development support
- Co-recruitment
- Workforce Development



MANUFACTURING
EXTENSION PARTNERSHIP
National Network



IACMI partners with entities such as state governments and economic development councils to support private industry research.

Partnering with States to catalyze Economic Development



Collaboration
of state
development leaders
seeding economies
worth \$2 trillion



Kentucky
Innovation Network



Each state deploys
**hundreds of
millions of
dollars annually**
to create jobs and
investment.

IACMI Core Partner: Indiana

Design, Modeling, and Simulation Technology Area



Indiana Manufacturing Institute

62,000 square-foot facility, half of which is dedicated for public and private enterprises conducting composite materials research in collaboration with Purdue University



IACMI has hosted composites training workshops and internships at the IMI, guiding workforce development efforts in the state.



**COMPOSITES
VIRTUAL
FACTORY
HUB**



The second Closed Mold Alliance Workshop at Purdue will be held this November



ADVANCED MANUFACTURING OFFICE

Facility made possible by support from these IACMI partners.

IACMI Core Partner: Michigan

Vehicles Scale-Up Facility; Vehicles Technology Area



More than **200 participants** in 2017 workshop;
second training workshop will be in 2018

Winter 2018 Members Meeting in Michigan **January 16–18, 2018**

IACMI will bring **300 members** for
semi-annual
Members Meeting.

Showcasing:

- Technical projects
- Innovations in lightweighting and automotive R&D, including tours of the IACMI Vehicles Scale-Up Facility
- Networking throughout program
- Opportunity to attend major automotive show industry preview days
- Reception at the Henry Ford Museum
- Engage in workforce initiatives



IACMI Vehicles Technology Area Hub:

The Vehicles Scale-Up Facility in Corktown, Detroit provides full-scale capabilities to augment MSU's comprehensive composites R&D capabilities at the main campus in East Lansing, MI.

Learn more at iacmi.org



Facility made possible by support from these IACMI partners.

IACMI Core Partner – Tennessee

Materials and Processing Technology Area



Infrastructure and Project Support

- 10 UT Centers of Excellence
- 5 UT/ORNL Joint Institutes
- REvV!
- SBIR Phase 0 Support

IACMI Project Partnerships

- Fibers and Composites Manufacturing Facility
- IACMI projects (eg: Local Motors)
- Workforce development with community college engagement



The FCMF is home to Dr. Uday Vaidya's composite research team of more than 30 undergraduate and graduate students each year.



Building Regional Industry Clusters in Carbon Fiber and Additive Manufacturing



IACMI is:

- 1) Stimulating job creation with regional economic development partners
- 2) Capitalizing on ORNL's world-class R&D facilities
- 3) Engaging more than 250 companies through the IACMI Consortium
- 4) Tapping talent with UT-ORNL Governor's Chairs and Bredesen Center PhD students



OAK RIDGE
National Laboratory



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE



and private industry is responding:

MVP's U.S. headquarters
is located in Knoxville, TN



Leisure Pools created
1,000 jobs



local motors
80 new jobs announced
in Knoxville



Credit a strong composites workforce and partnerships with IACMI, UT, and ORNL as deciding factors in Knoxville location

Why States Invest in IACMI



Workforce Development Opportunities

- STEM
- Internships
- Best in class professionals
- Digital training: Tooling U-SME
- Hybrid training models



Collaboration of Outreach and Communications

- Sharing best practices amongst all stakeholders
- Targeted reach for other state investments
- Collaboration across supply chain to create interdependent partnerships



State engagement takeaways



Factors for State Engagement

- Stakeholder perspectives critical for success
- Emphasis on job creation and viable workforce



Items for Consideration

- Transaction costs and friction in technology transfer
- Investment-to-return timelines
- Disruptions due to changes in administrations



Thank you!

Contact info:

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Corporation*

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