Manufacturing USA at DOE: Charting Progress, Seeking Stability

David M. Hart, Senior Fellow, ITIF
Peter L. Singer

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About ITIF

- Independent, nonpartisan research and education institute focusing on intersection of technological innovation and public policy, including:
  - Clean energy
  - Innovation and competitiveness
  - IT and data
  - Telecommunications
  - Trade and globalization
  - Life sciences and agricultural biotech
- Formulates and promotes policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress
- World's top think tank for science and technology policy, according to the University of Pennsylvania's authoritative *Global Go To Think Tank* Index

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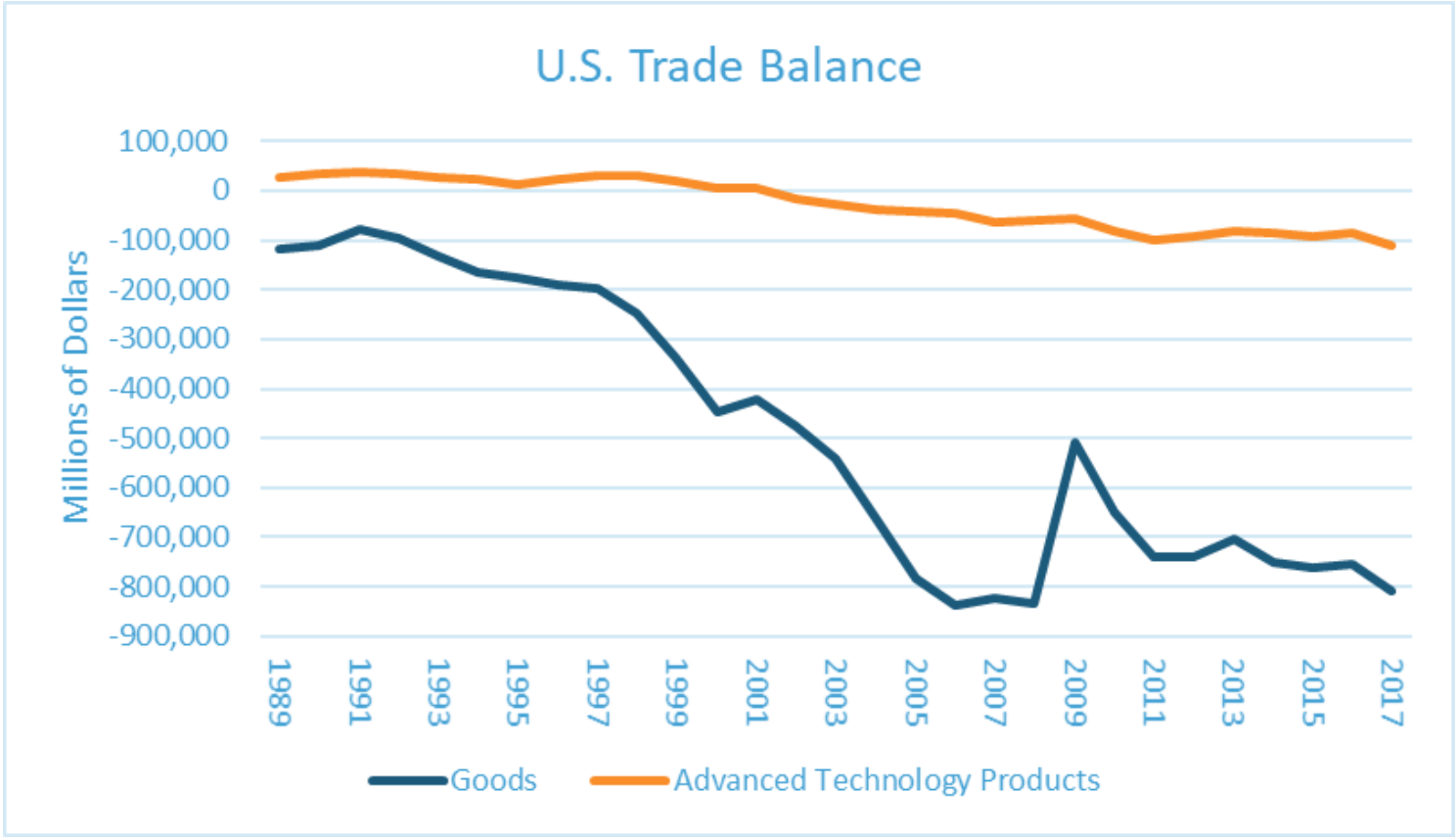
1 The Energy Innovation Imperative in Manufacturing

2 Manufacturing USA at DOE

3 Findings and Recommendations

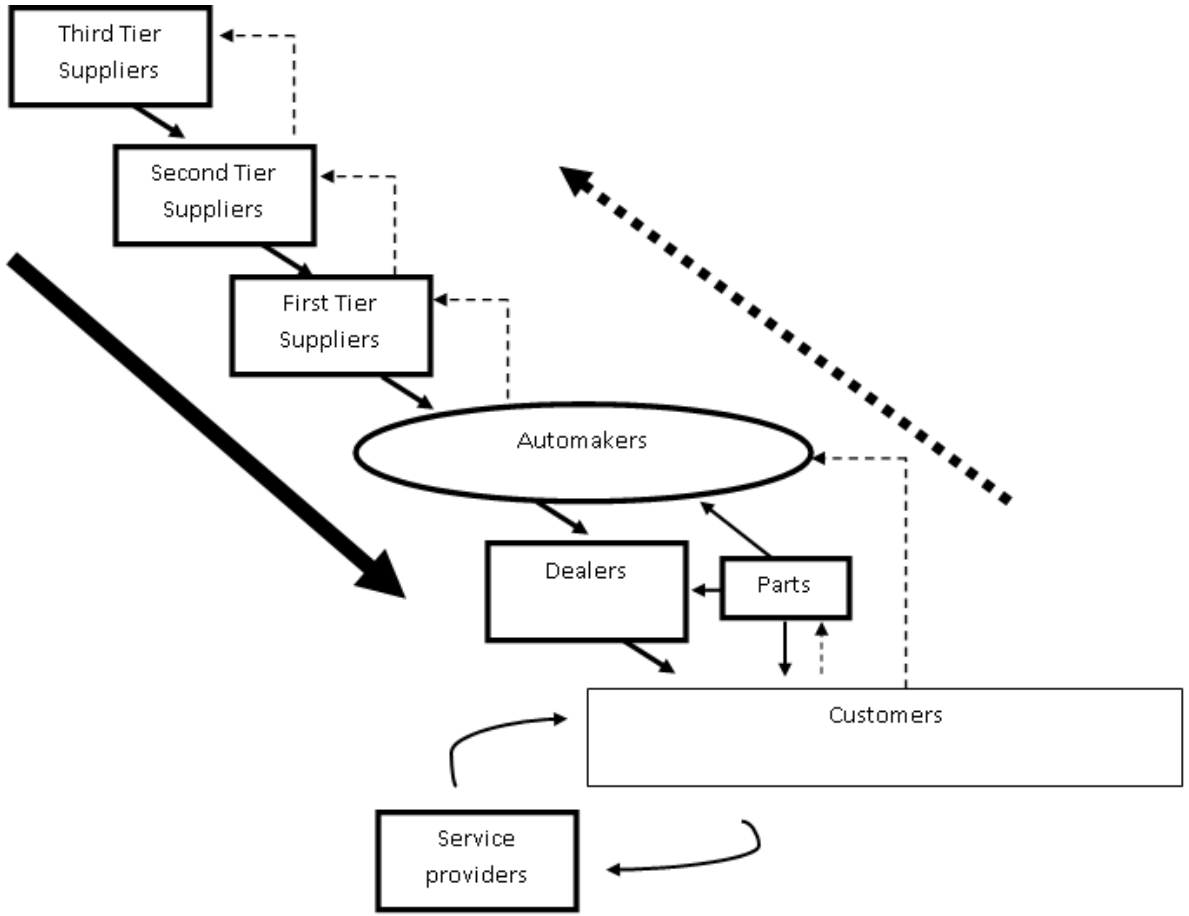
The Energy Innovation Imperative: 4 Dimensions

- Economic
- Workforce
- National Security
- Environmental



Market Failures

- Underinvestment in knowledge and skills
- Weak cooperation across supply chains and within regions
- Unfair international competition



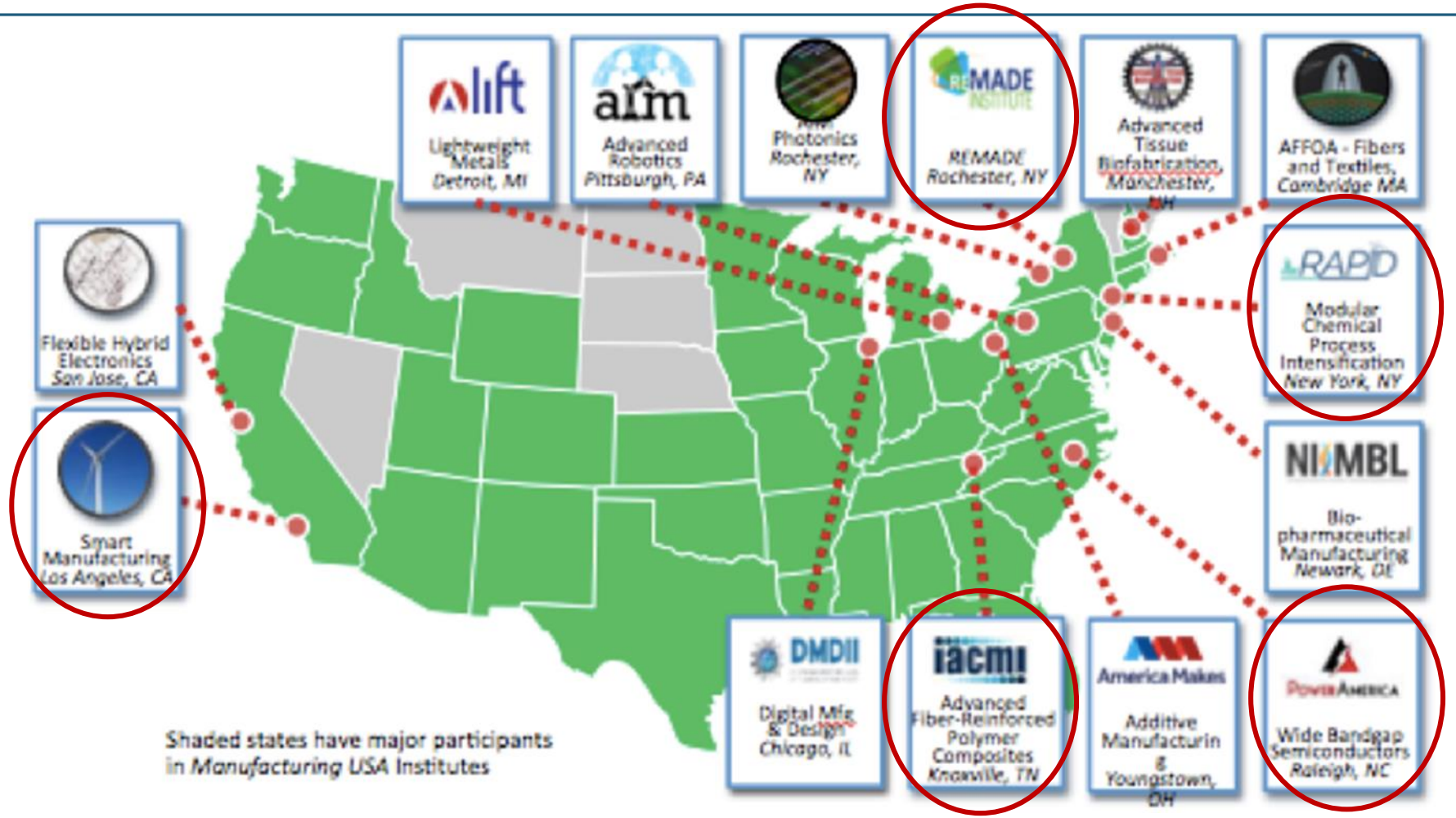
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Manufacturing USA Network



DOE (EERE) Advanced Manufacturing Office

- Goals
  - Higher productivity
  - Lower impact
  - Leverage US resources
  - Tech transition
  - Workforce
- Programs
  - Industrial Tech. Assistance
  - R&D Projects
  - R&D Consortia (incl. Manufacturing USA)



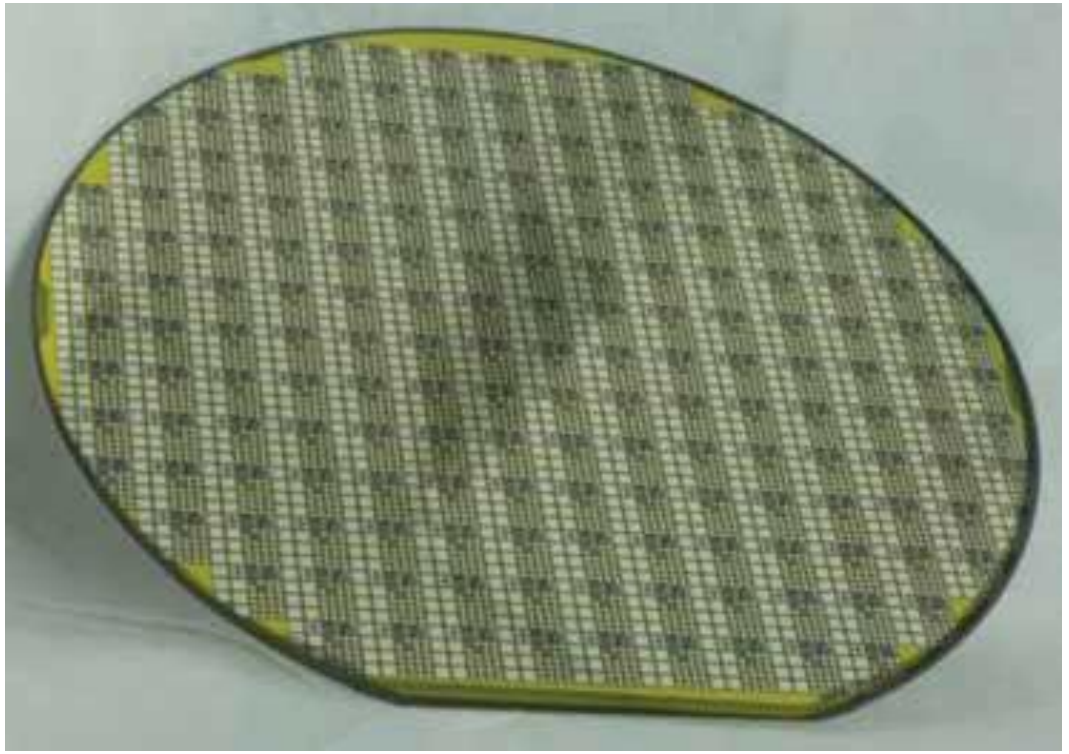
DOE's Manufacturing USA Innovation Institutes

- High opportunity technologies
- Competitive selection
- Diverse members & structures
- 5 year cooperative agreement
- Min. 1:1 non-federal cost share



PowerAmerica

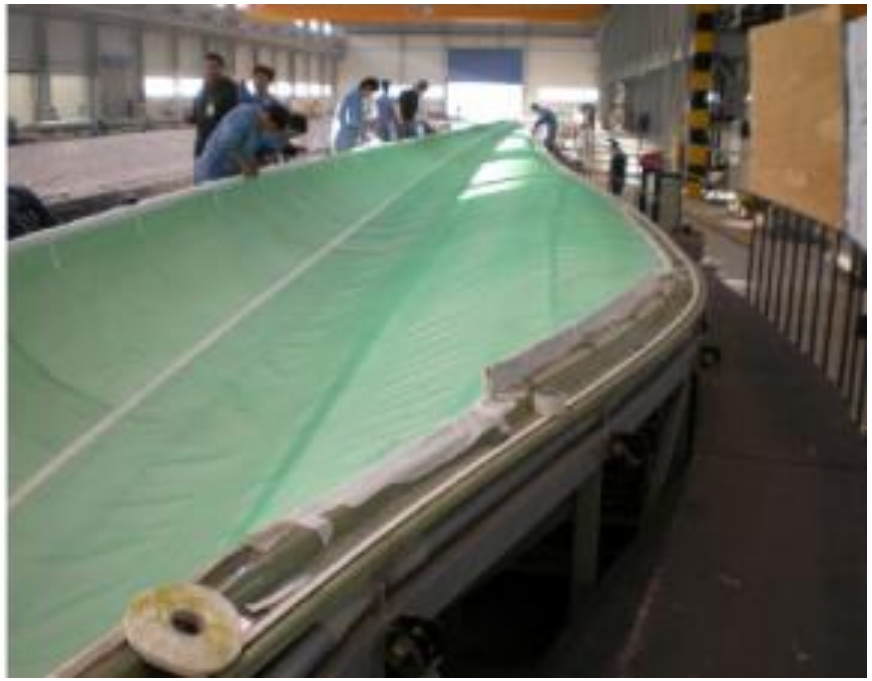
- Focus: Power Electronics
  - SiC & GaN wide bandgap semiconductors
  - Estd. January 2015
  - Lead: NC State University
  - $140 (70) million/ 5 years
  - 50 members



A 150mm SiC wafer fully processed at X-FAB Texas using Monolith's 1200V SiC diode process. (Source: PowerAmerica)

Institute for Advanced Composites Manufacturing Innovation (IACMI)

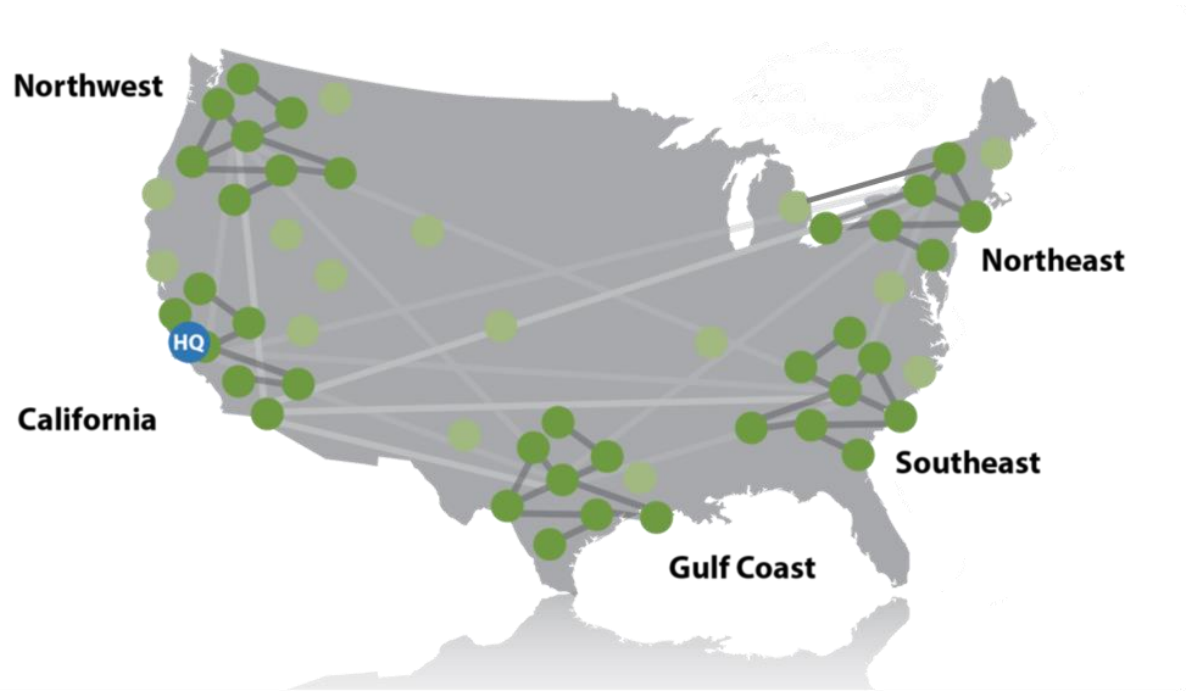
- Focus: Composites
  - Automotive, compressed-gas, and wind industries
  - Estd. June 2015
  - Lead: Collaborative Composite Solutions Corporation
  - $170 (70) million/ years
  - 170 members



Composite wind turbine blade production (Source: IACMI)

Clean Energy Smart Manufacturing Innovation Institute (CESMII)

- Focus: Smart Manufacturing
  - Estd. December 2016
  - Lead: Smart Manufacturing Leadership Coalition
  - $170 (70) million/ 5 years
  - 90 members



CESMII regional manufacturing centers. (Source: CESMII)

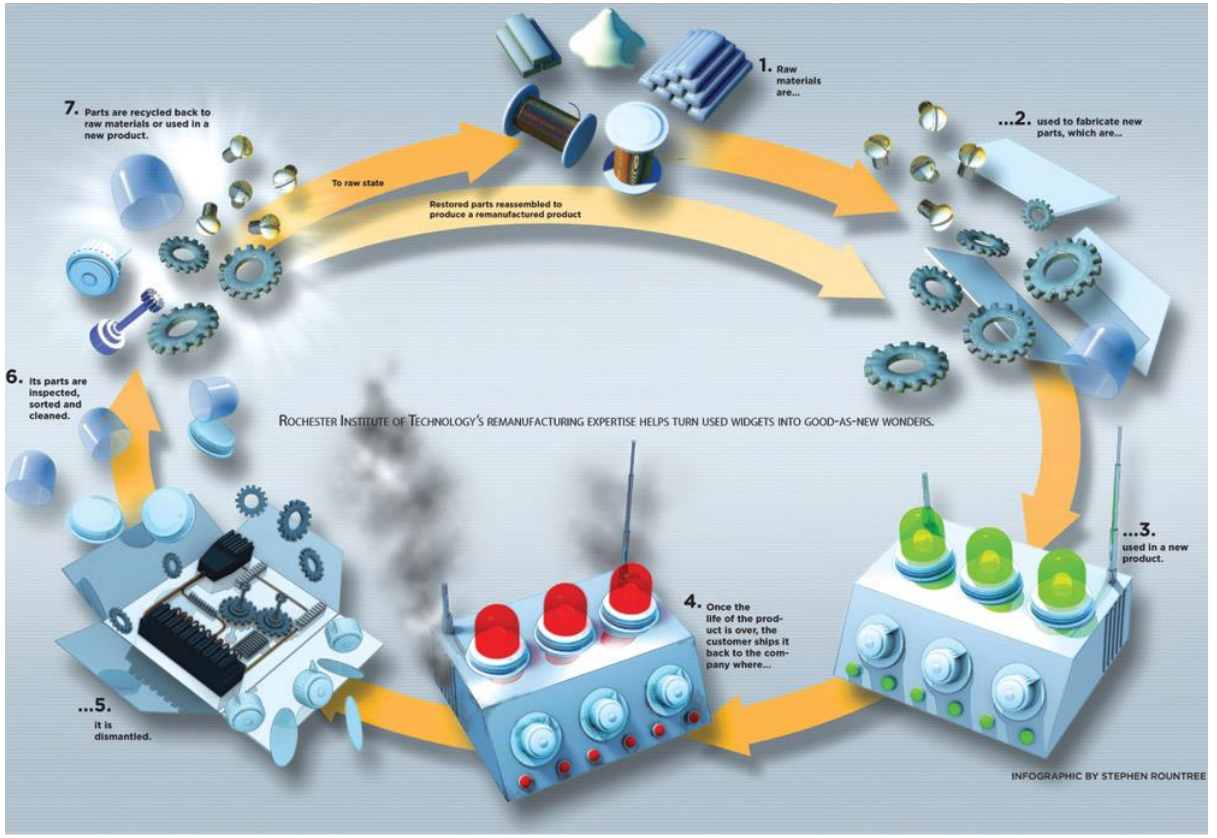
Rapid Advancement in Process Intensification Deployment (RAPID) Institute

- Focus: Modular Chemical Process Intensification
  - Estd. March 2017
  - Lead: The American Institute of Chemical Engineers
  - $140 (70) million/ 5 years
  - 57 members



Reducing EMbodied-energy And Decreasing Emissions (REMADE) Institute

- Focus: Recycling, Recovery, Remanufacturing and Reuse
  - Estd. March 2017
  - Lead: Sustainable Manufacturing Innovation Alliance
  - $140 (70) million/ 5 years
  - 43 members



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Findings

- High potential, beginning to be realized
- Be patient:
  - New institutions
  - New collaborations
  - Ambitious agendas



Recommendations

- Continue to fund existing institutes
- Allow greater flexibility
- Intensify outreach to small & medium manufacturers
- Develop mid-skill education & training
- Inform public regarding energy-specific mission

Spotlight Recommendation: Ongoing Support

- Fully private funding within 5-7 years = difficult!
- Virtues of 20-30 percent ongoing support:
  - Management flexibility
  - Member confidence
  - Limit influence of largest members, incl. foreign HQ firms
  - Sustain most public-oriented programs, e.g. workforce
- Other countries receive core government funding

Thank You!

David M. Hart & Peter L. Singer
dhart@itif.org | @ProfDavidHart