



Manufacturing USA Institutes (2012 to Present)



DMDII
DIGITAL MANUFACTURING AND
DESIGN INNOVATION INSTITUTE

Digital Manufacturing
February 2014 (DoD)



Lightweight Metals
February 2014 (DoD)



POWERAMERICA
Advanced Semi-Conductors January
2015 (DoE)



Additive Manufacturing
August 2012 (DoD)



Photonics
July 2015
(DoD)



Advanced Composites
June 2015 (DoE)



Flexible Electronics
August 2015 (DoD)



Composites and Textiles
April 2016 (DoD)



Clean Energy
June 2016 (DoE)



Emission Reduction
January 2017 (DoE)



Advanced Robotics
January 2017 (DoD)



Chemical Manufacturing
December 2016 (DoE)



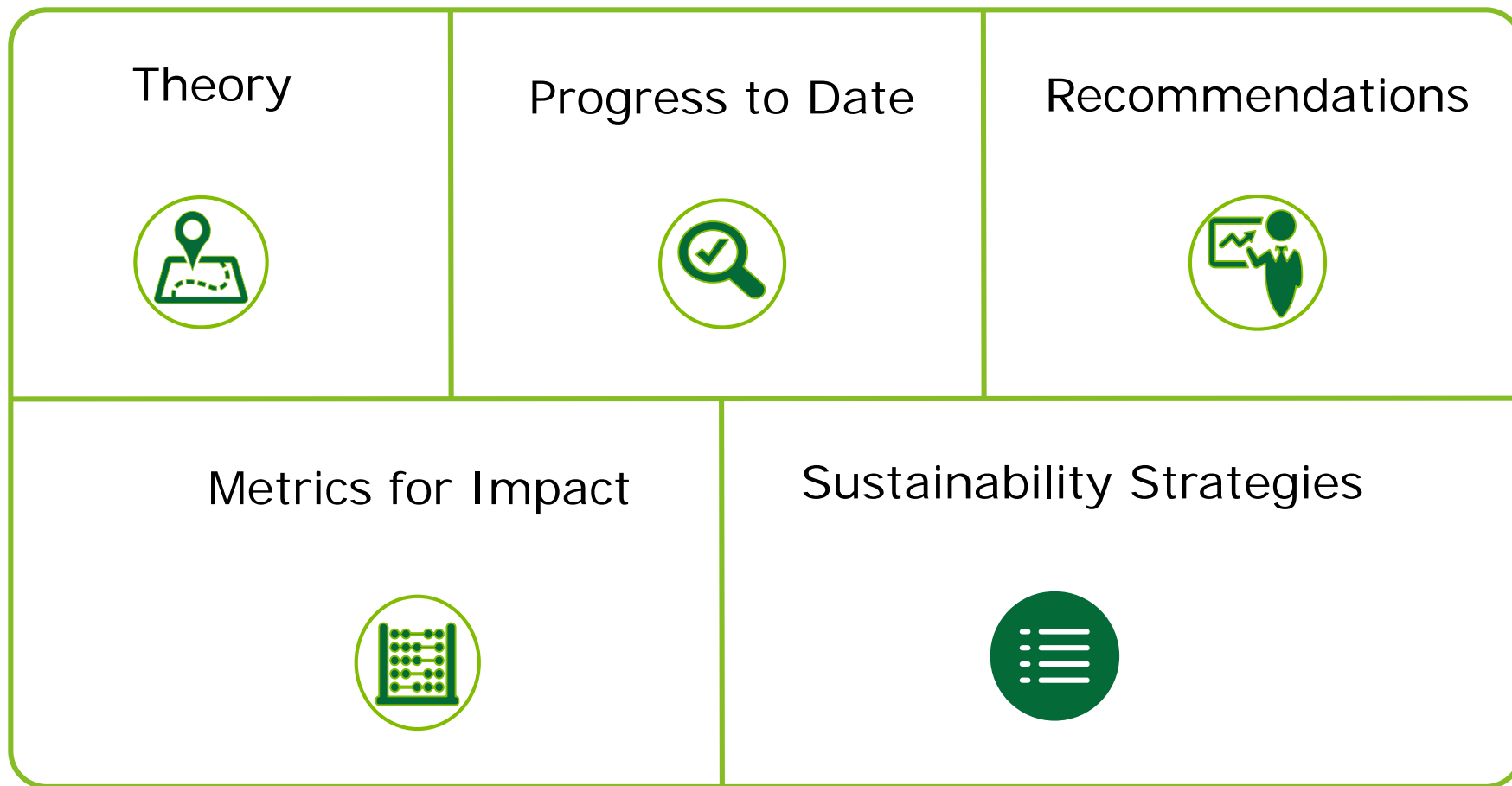
Biopharmaceuticals
December 2016 (DoC)



**Advanced Tissue Bio-
fabrication**
December 2016 (DoD)

Project Objectives

Deloitte studied five key areas to generate insights and surface stories of impact



Evaluating the Manufacturing USA

Deloitte leveraged experts, data, and analysis tools to evaluate and validate Manufacturing USA's program and Institute impact

Key Questions



Does the design of Manufacturing USA Program help Institutes improve U.S. manufacturing competitiveness?



Does the Program help Institutes accelerate the development of an advanced manufacturing workforce?



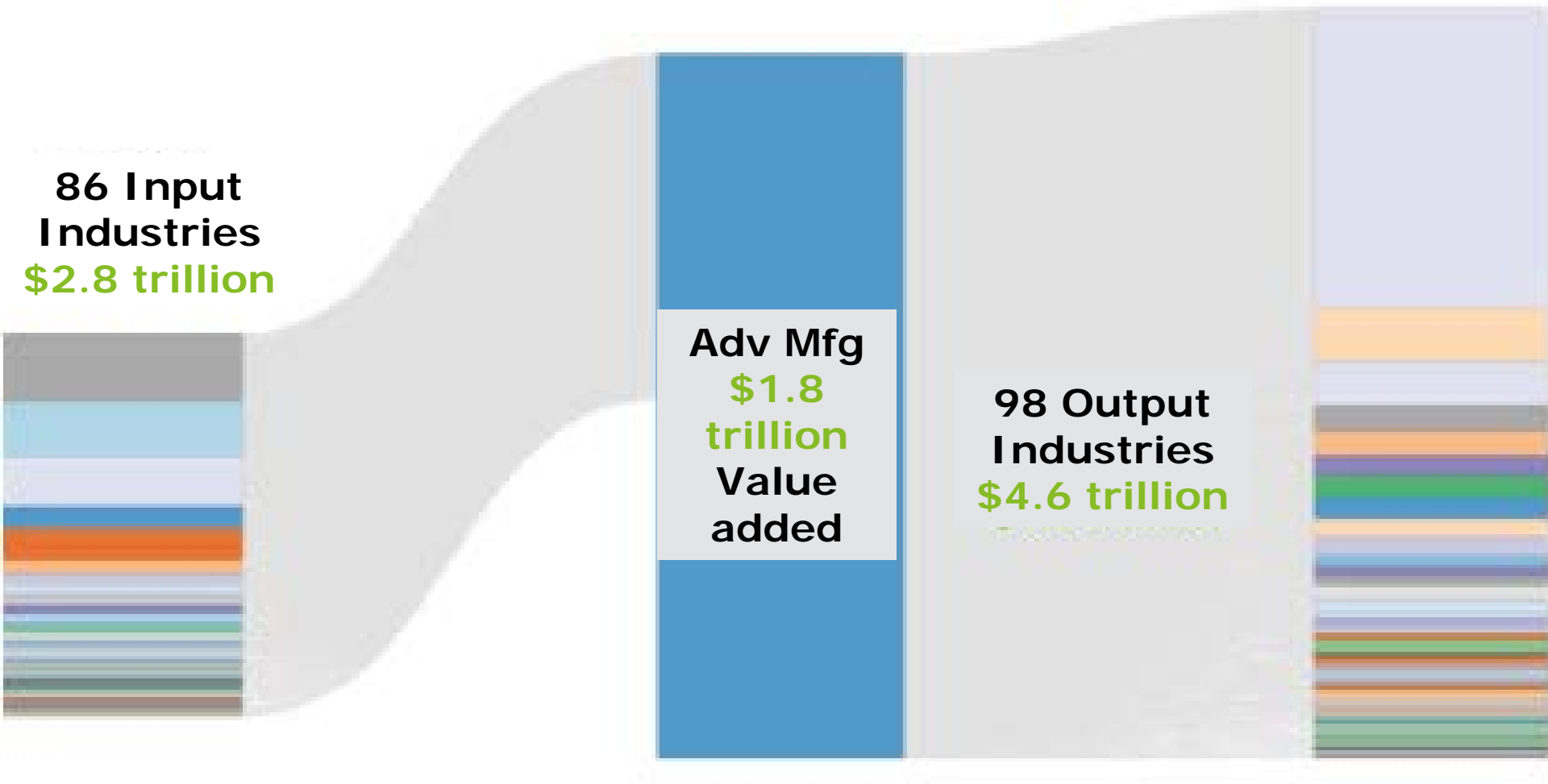
Is the Manufacturing USA Program design valid or does it need to be modified?



How could the Program or Institutes evolve to further improve their performance and effectiveness?

Advanced Manufacturing Multiplier Effect

U.S. advanced manufacturing **supports trillions of dollars** of production in other parts of the U.S. Economy.



Foreign Competition in Advanced Manufacturing

Manufacturing USA is a response to the increase in global pressure on U.S. advanced manufacturing

In 2016, China **announced \$3B for an advanced manufacturing program** to boost high-end manufacturing and promote modernization of traditional industry.



Japan **invested more than 30 times as much as the U.S.** as a share of GDP in small and medium enterprise (SME) support programs.



The German Fraunhofer-Gesellschaft **program's annual research budget is €1.9 billion** and supports 67 Institutes and research units.

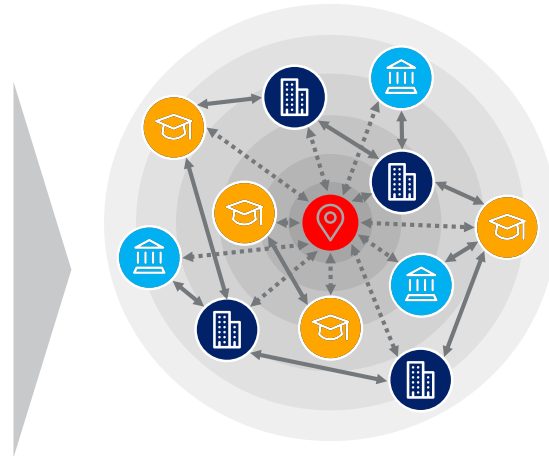


Manufacturing USA enables Institutes to solve collective action problems



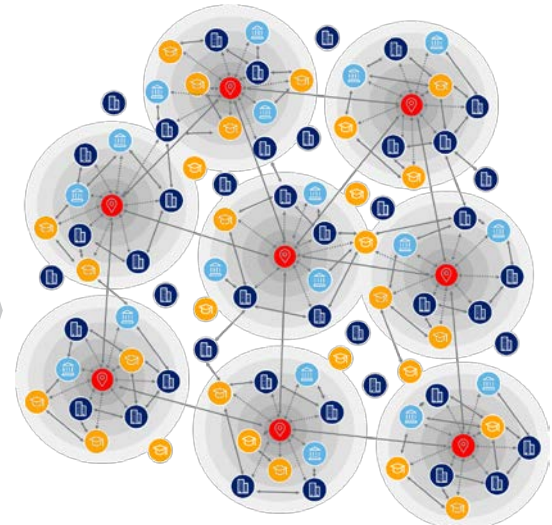
Organization-to-Organization

E.g., Company & University



Institute Consortium

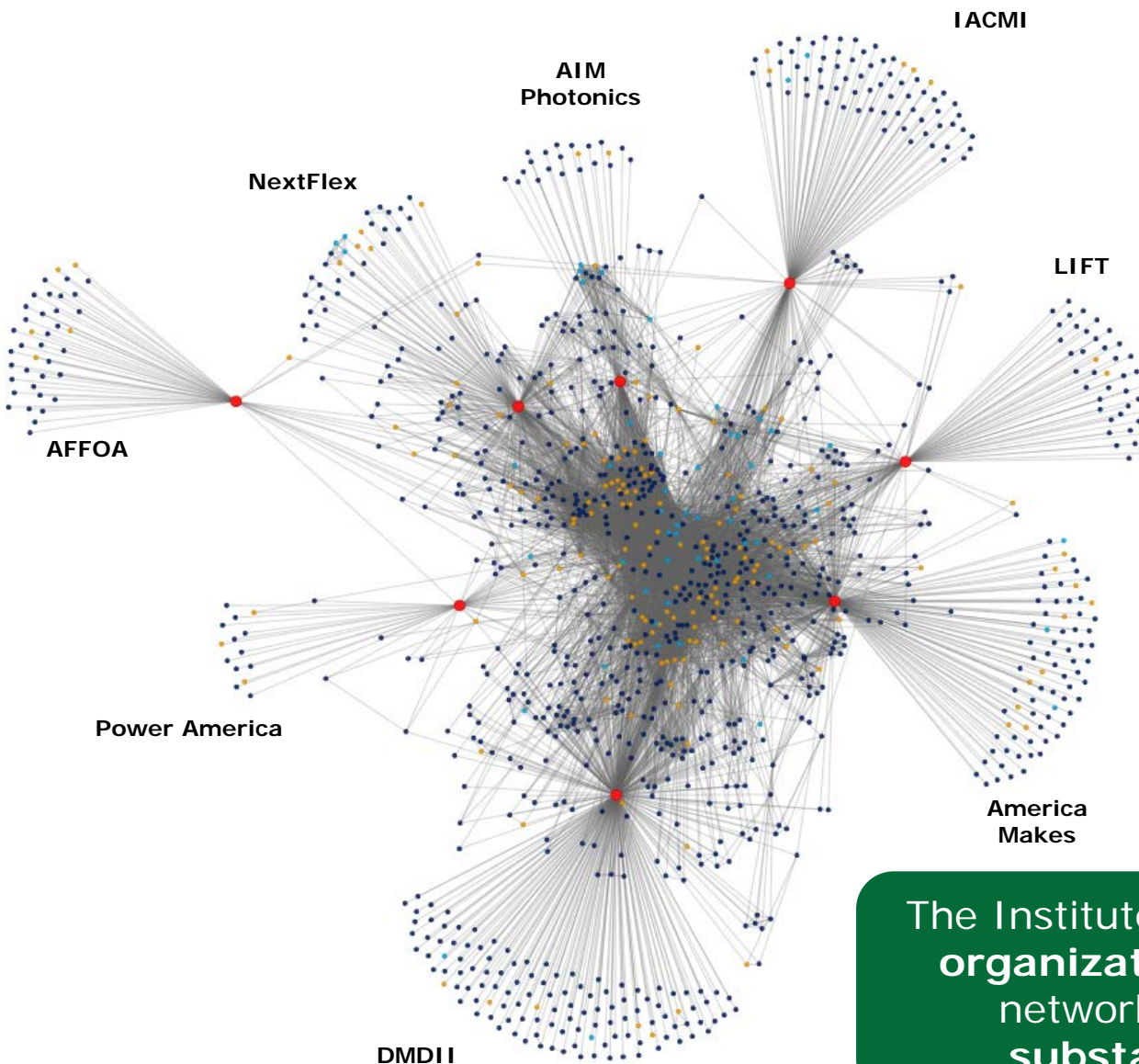
E.g., America Makes and its Members



Network

E.g., Manufacturing USA

An Interconnected Network



9,424

Relationships
between
organizations

1,174

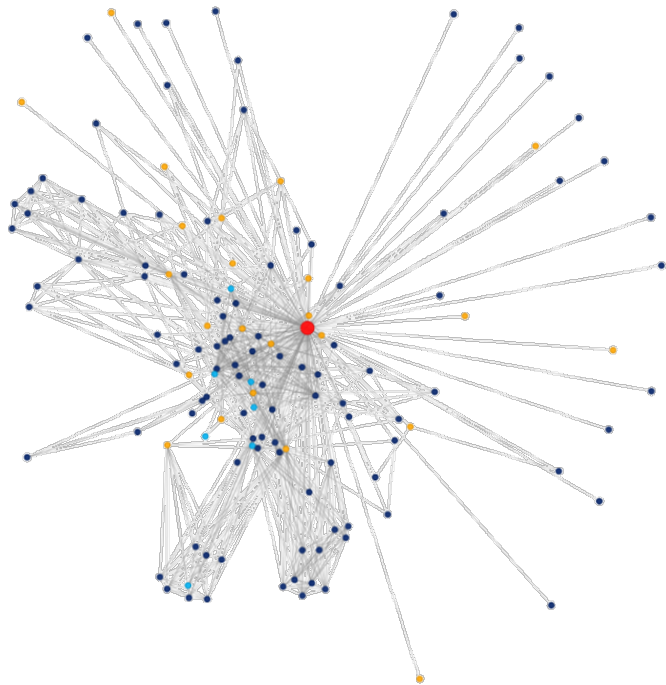
Organizations
involved with the
program

753

Organizations with
formal membership

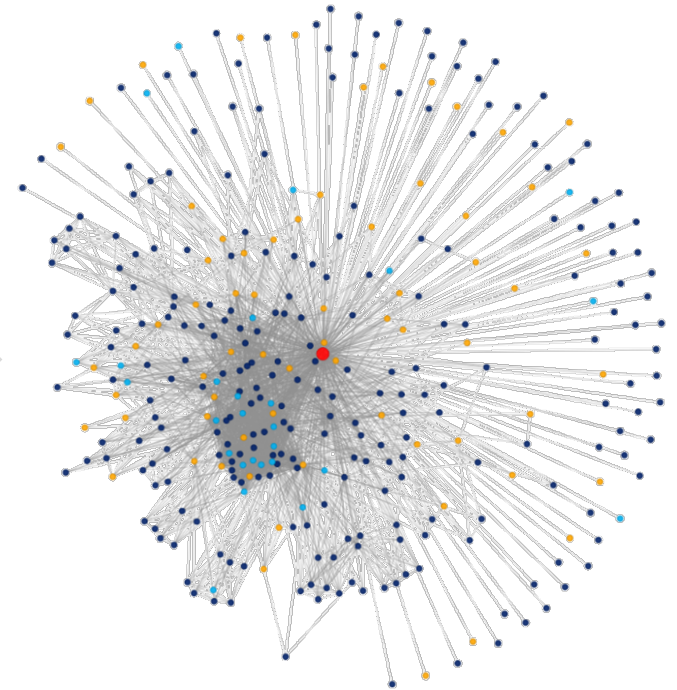
The Institutes convene nearly **1,200 organizations** of an inter-industry network comprising, **9,000+ substantive relationships**

America Makes Membership and Connectivity Growth Over Time



America Makes

has developed into



2013

135 organizations* connected
through 652 relationships

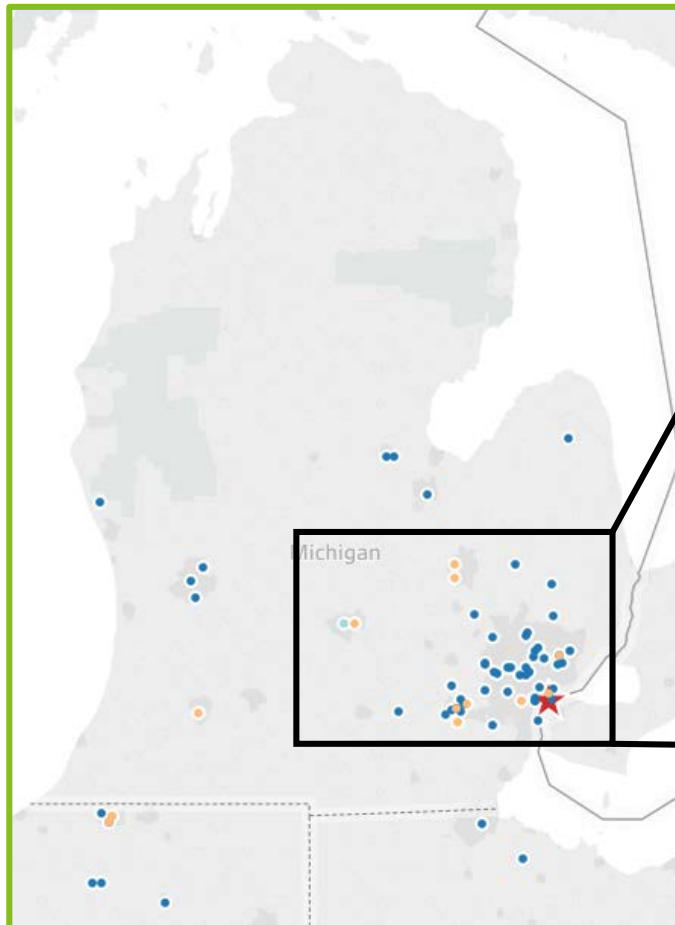
2016

345 organizations* connected
through 3,634 relationships

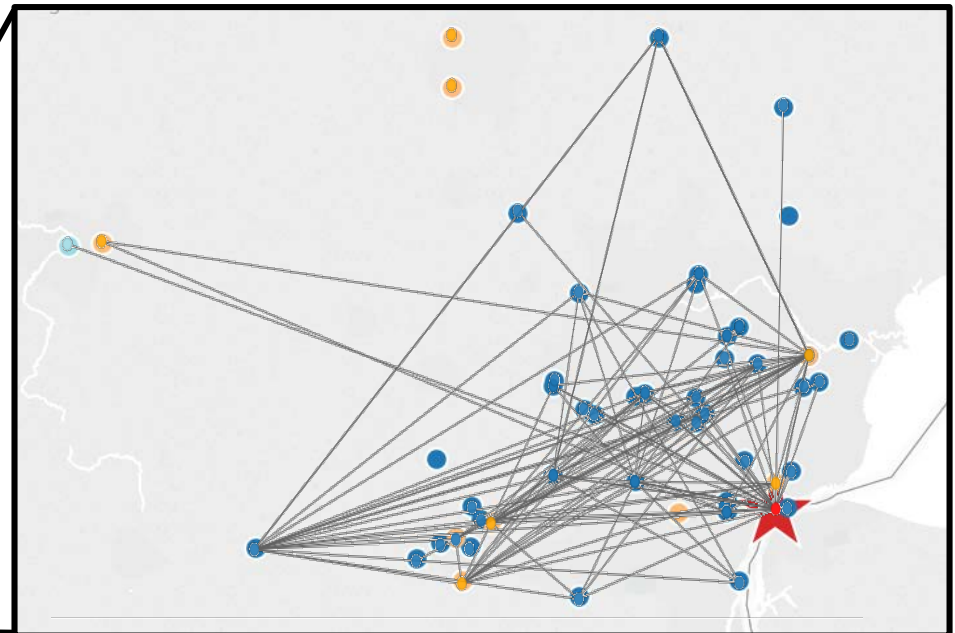
Advanced Manufacturing Ecosystem in Detroit, MI

Anchored by the LIFT Institute (As of Dec. 2016)

The Detroit Regional Cluster



- Consists of **63 organizations** from across **seven of the Institutes**
- Has generated **125 connections** between organizations in the cluster



KEY



Industry



Government



Academia



Institute



Organization-to-Organization
Connection

Key Findings



Overcoming Investment Challenges



Network Connectivity



Access to Equipment, Pooling Project Costs, Knowledge Roadmaps



Strengthen Regional Economic Clusters



A Portfolio Approach



Talent Gap

Manufacturing USA Program Recommendations

Key opportunities for enhancement over and above current success



Develop and execute an overarching growth strategy



Facilitate further connections to relevant organizations and resource especially amongst institutes



Provide shared-services to promote quality operations



Ensure an enduring focus on U.S.-centric goals



Increase activities to promote transition to commercialization vice technology development



Create contracting and membership agreements at the speed of industry



Further align Institute workforce programs with existing federal, state, and local programs



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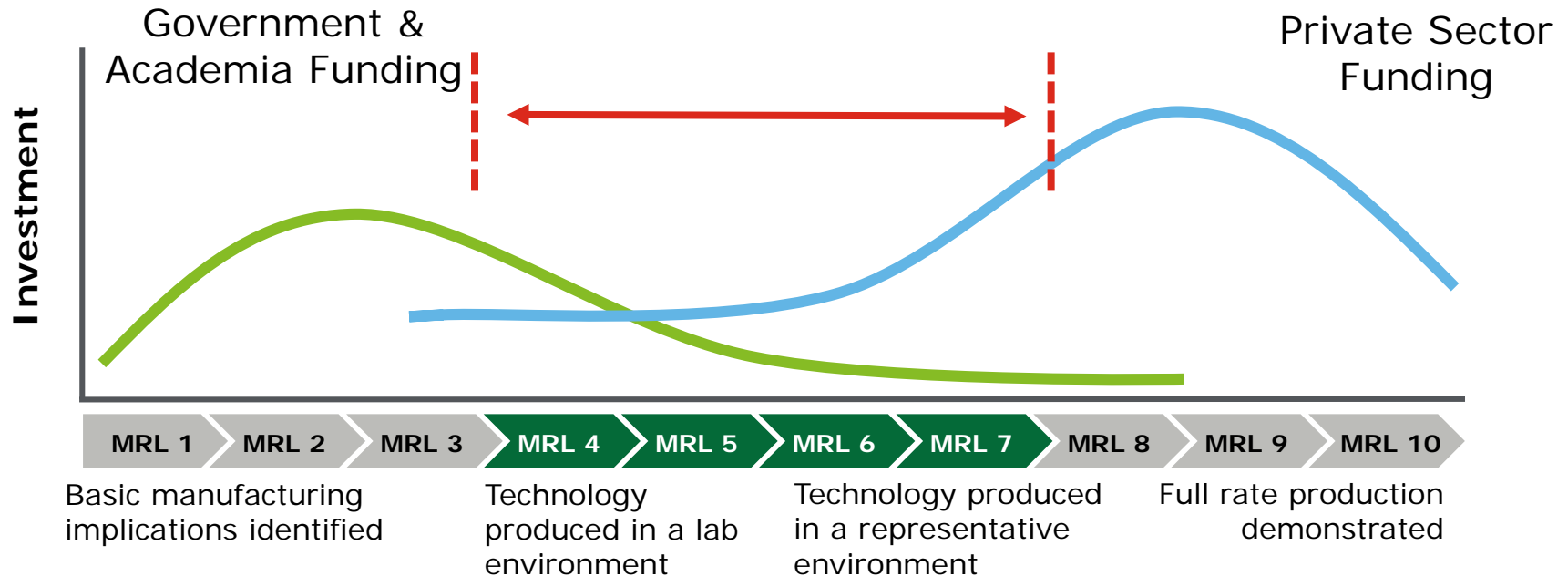
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Back-up

Overcoming the Valley of Death

Technology-specific gaps can be summed to depict the overall U.S. advanced manufacturing “valley of death” that stifles commercialization.

Advanced Manufacturing Valley of Death



Manufacturing USA Program

A network of public-private Institutes that focus on critical advanced manufacturing technology areas

Program Goals



Increase the U.S. manufacturing competitiveness



Facilitate the transition of innovative technologies to manufacturing



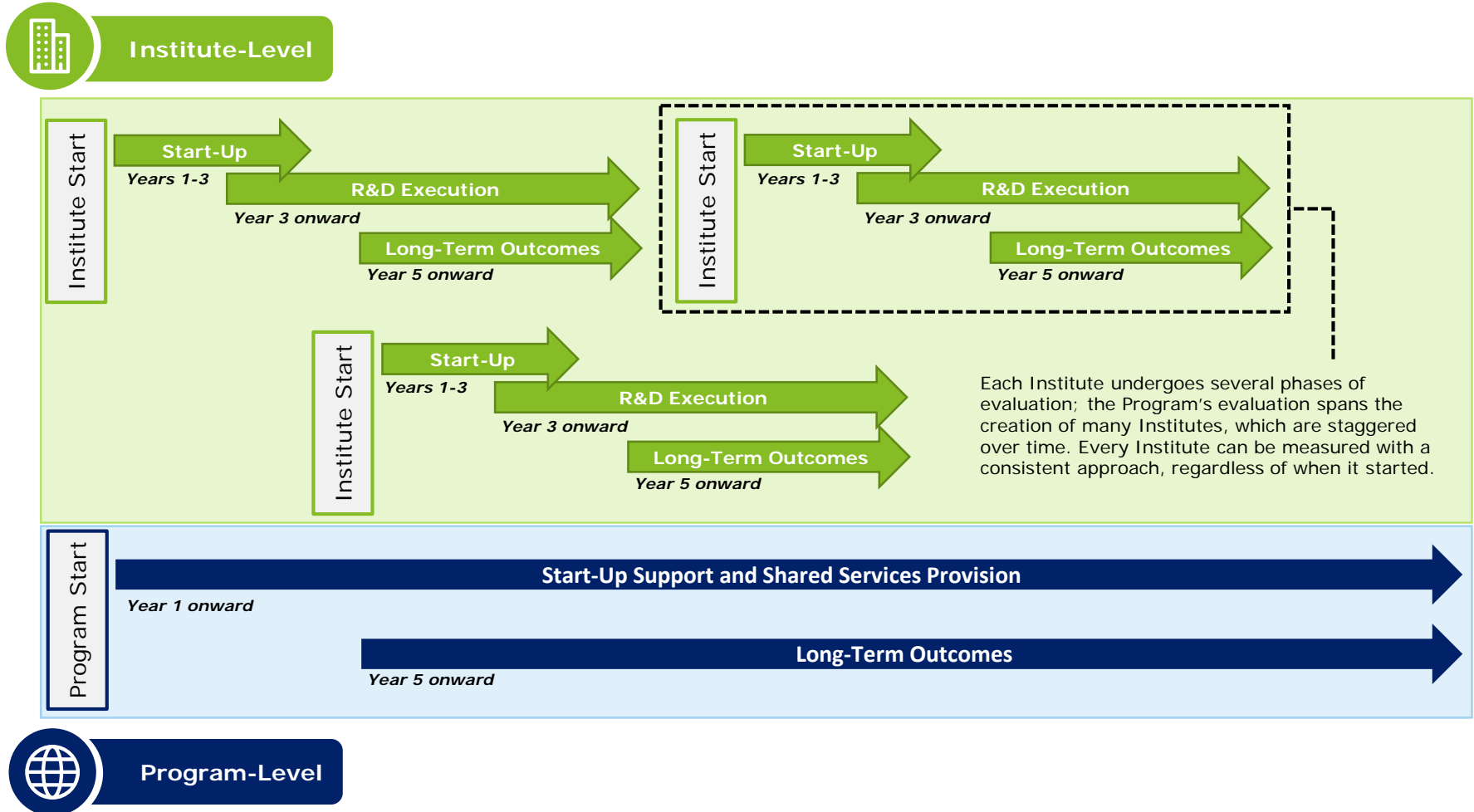
Accelerate the development of an advanced manufacturing workforce



Support a business model that helps Institutes become sustainable

Phase Metrics – Institute & Program Level

The Program Office's existing evaluation work, combined with this phased approach, can help promote an enduring performance management capability



"Affiliation with Manufacturing USA provides access to **unique opportunities to bring together multidisciplinary teams to conduct impactful research**. The combination of research partners, industry members, and government interest all focused on advanced manufacturing **exists nowhere else**."

- Member Organization
Crowdsourcing Exercise

"My affiliation provides me with an outstanding opportunity to see **basic science and technology discoveries translated into real-world applications and products**. It has facilitated connections between my research groups and a broad community that would be otherwise difficult to access."

- Research-Focused Academic Institution
Crowdsourcing Exercise

"The most important value of participation in Manufacturing USA's Institutes is that it creates a highly respected venue to inform many relevant parties of newly developed technology. **Such truly effective opportunity is simply not available elsewhere**."

- Small and Medium Enterprise
Crowdsourcing Exercise