Website: americanmcc.org

The American Manufacturing Communities Collaborative

Leading a National Manufacturing Renaissance Bottom-up by Regional Stakeholders

Speaker:
Matt Bogoshian – Executive Director

This presentation was prepared by AMCC using Federal funds under award ED22HDQ3070145 from the Economic Development Administration, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Economic Development Administration or the U.S. Department of Commerce.

2014
2016
2018-2020
2021
2022-PRESENT

AMCC has a history supporting bottom-up approaches to regional sustainable development.

A New Federal Policy Model Emerges

The National Economic Council collaborates with an Interagency Working Group leading to the Investing in Manufacturing Communities Partnership (IMCP) program.

"The IMCP is designed to reward communities that demonstrate best practices in attracting and expanding manufacturing by bringing together key local stakeholders and using long-term planning that integrates targeted public and private investments across a community's industrial ecosystem to create broad-based prosperity." – EDA Fact Sheet (2013).

Communities meet rigorous selection criteria with 3 key elements:

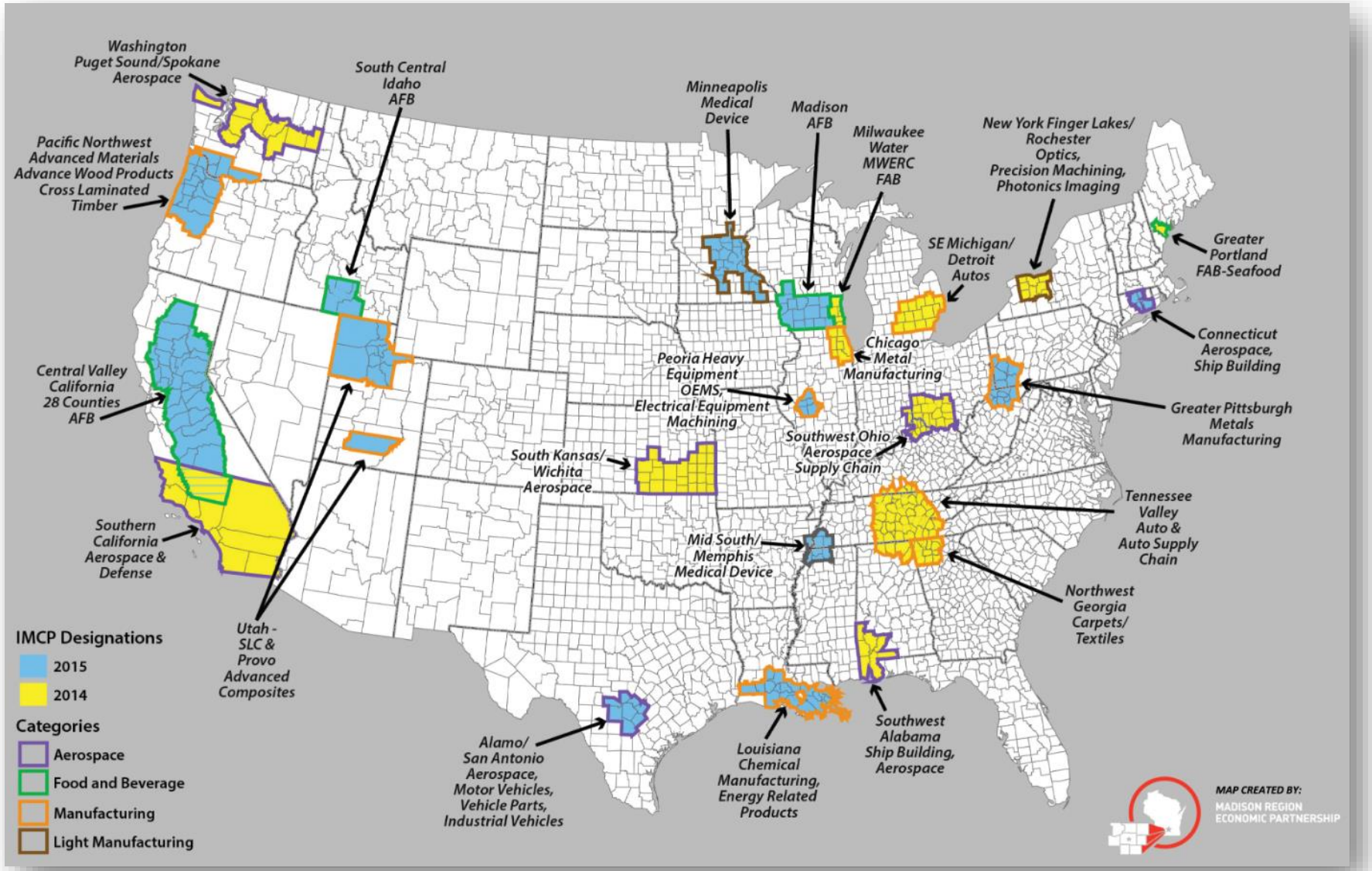
1. Organize a diverse regional public/private backbone organization.
2. Conduct a regional SWOT analysis.
3. Create a regional plan that strengthens the Big 6 areas essential for a thriving manufacturing ecosystem: 1)Workforce and Training, 2)Research and Innovation, 3)Infrastructure and Site Development, 4)Supply Chain Support, 5)Trade & International Investment, and 6)Operational Improvement & Capital Access.

- **Over 70 US regions first apply for IMCP designations showing large demand**

2014 2016

24 Regions Designated as IMCP Communities in 2 Years

- Designation came with technical assistance, some preference for grants, branding
- Community of practice develops amongst the regions



2018-2020 2021 2022-PRESENT

IMCP Ends, but Bottom-up Leadership Persists

Regional consortia leaders double-down on collaboration:

- Stakeholders continue holding weekly national conference call meetings
- Regions interact with one another nationally, sharing best practices
- Public, private, and non-profit partners in regions increase collaboration
- Federal staff continue assisting the evolving IMCP network stakeholders

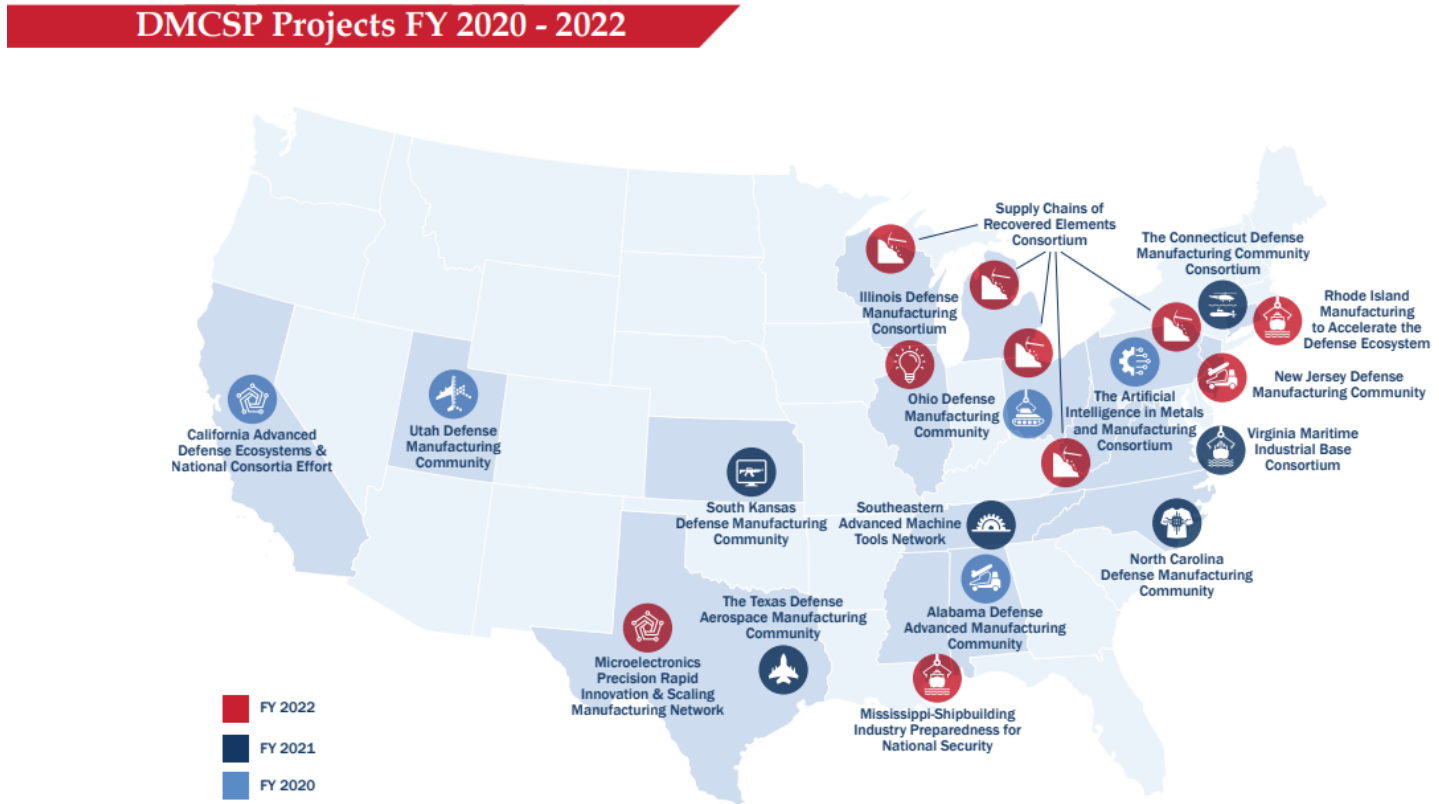
IMCP communities organize a national Summit in DC, leading to:

- Creation of a new non-profit backbone organization (AMCC)
- Outreach to Congress for the IMCP model to become law in DOD federal program (DMCSP)

AMCC regional consortia leaders advocate for DMCSP with the U.S. House Manufacturing Caucus (2019)

2014 2016 2018-2020 2021 2022-PRESENT

IMCP Regions Pursue New Opportunities, Strengthen Collaborations



Several IMCP regions receive designation and funding through DMCSP:

- 4 of 6 DMC designees in 2020 originated from IMCP
- 3 of 5 DMC designees in 2021 originated from IMCP
- 3 of 6 DMC designees in 2022 originated from IMCP

AMCC Undertakes Organizational Strategic Plan

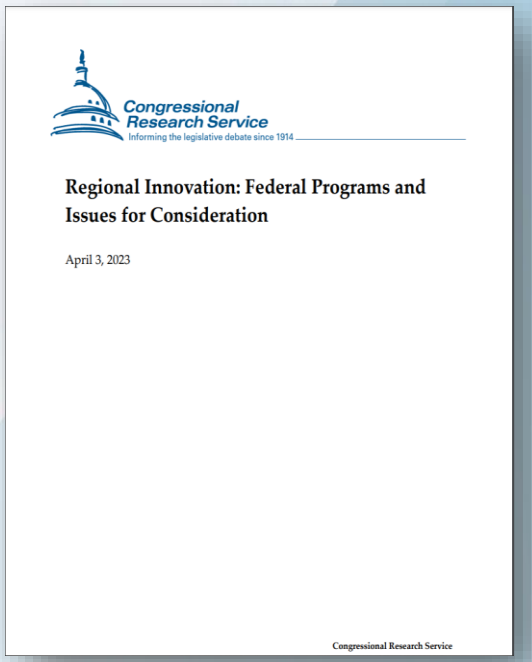
Built by regional and national stakeholders to assist all American regions in adopting this bottom-up intervention approach.

2022-PRESENT

Bottom-up Regional Development in Manufacturing is Driving the National Agenda

Legend

- IMCP
- Defense Manufacturing Communities
- Build Back Better Regional Challenge
- NSF Innovation Engines
- EDA Recompete Pilot Program
- EDA Tech Hubs



Congressional Research Service
Informing the legislative debate since 1914

Regional Innovation: Federal Programs and Issues for Consideration

April 3, 2023

Congressional Research Service

[2023 CRS overview of federal regional innovation programs]

2015 2016 2020 2021 2022 2023 2024

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Revitalizing U.S. Manufacturing is a Complex Challenge

How do we make smarter decisions in regions that produce better outcomes?

Prioritize Key Industries

- Defense
- Energy
- Transportation
- Agriculture
- IT/Communications
- Health

2021 WH Report on Priority Industries

6

Focus on Ecosystem Components

1. Workforce & Training
2. Research, Innovation & Entrepreneurship
3. Infrastructure & Site Development
4. Supply Chain Support
5. Trade & International Investment
6. Operational Improvement & Capital Access

More on the Big 6

Toward Sustainable Development

- Economic competitiveness
- Social Equity and Inclusion
- Environmental Sustainability
- National Security

2022 CHIPS and Science Act
Section 10387(b): National, Social and Geostrategic Challenges

Revitalizing U.S. Manufacturing is a Complex Challenge

How do we make smarter decisions in regions that produce better outcomes?

Critical & Emerging Technologies

- Advanced manufacturing
- Advanced materials
- Artificial intelligence
- Biotechnology
- Communications and wireless
- Cyberinfrastructure and advanced computing
- Cybersecurity
- Disaster risk and resilience
- Energy technology
- Quantum information science
- Semiconductors and microelectronics

1. 2024 WH Science & Tech Council
2. CHIPS & Science Act Technologies
3. DOD Critical Technology Areas
4. Manufacturing USA Institutes

Prioritize Key Industries

6

Types of Individual Roles

- Technical
- Scientific
- Administrative
- Educational
- Financial
- Legal

Focus on Ecosystem Components

Advancing Systems Change

1. Relationship Building
2. Story Telling
3. Strategizing
4. Actions via events and organizations
5. **Structuring**

Systems Leadership
Harvard Kennedy School

Toward Sustainable Development

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AMCC Designated As Nation's Manufacturing Community of Practice

Free, Open-Source, Evidence-Based Community of Practice seeking collaboration with:

- Designated Communities w/manufacturing focus
- Other EDA Communities of Practice
- Relevant federal investments, e.g. NIST MEP, Manufacturing USA Institutes
- Relevant state, regional, philanthropic coalitions e.g. California's CERF regions
- Other public and private BFFs e.g. CREC, ASBN, Connex, Accenture, Deloitte, Renewable Thermal Collaborative, Urban Manufacturing Alliance, National Governor's Association

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Core activities:

- Weekly stakeholder calls, presentations, and newsletter
- Promotion of regional lessons learned via Roadshows and *Manufacturing An American Century* podcast
- Integration and stewardship with mfg stakeholders of all kinds; government, NGO, private etc.
- Development of Manufacturing Community Ecosystem Metrics (MCEM) project
- Supporting success and coordination among regional, place-based manufacturing policy initiatives.

Meet the AMCC Team

Matt Bogoshian – Executive Director

- Former U.S. Navy J.A.G. Officer
- Former local, state and federal enforcement and policy official
- Author, educator, and systems leader

David Van Siclen – Operations Director

- Background in nonprofit development
- Master's degree in Project Management at Georgetown Univ.
- AMCC's first intern circa 2018!

Advisory Board

Regional Consortia:

- Impact Washington State MEP
- Wichita State University
- Connecticut Department of Economic and Community Development
- 47G (Utah)
- Cook County, Illinois Bureau of Economic Development

Founding Partners:

- Northeast-Midwest Institute
- The Century Foundation

Advisors:

- Phil Singerman Ph.D., Performance Measurement
- Nikhil Kalathil Ph.D., Ecosystem Assessment
- Sarah Lee, Capital Access
- Matthew Fieldman, Workforce & Training
- Dr. Tulinda Larsen, Utah Manufacturers Association

AMCC's mission is to create and strengthen an alliance of communities with regional economic development initiatives underway dedicated to achieving sustainability through economic growth, improved environmental performance, and inclusive well-paid job creation within a revitalized American manufacturing base.

Participate in AMCC!

- Join our **consistent, weekly** 30-minute national Monday call to get connected with public/private stakeholders from across the nation! (message David to be added)

- Explore americanmcc.org
- Get our **consistent, weekly** newsletter updates at americanmcc.org/subscribe
- Chat with us today on how we can add value to your work
- Learn more about our Roadshows and *Manufacturing An American Century* podcast.
- Contact us by email:

  matt.bogoshian@amccmail.org

  david.vansiclen@amccmail.org

Advancements in Ecosystem Assessment Metrics

Co-creating a Self-Assessment Tool That Regions Can Use to Map and Measure Progress

Presented by:

Matt Bogoshian
Executive Director

David Van Siclen
Operations Director

American Manufacturing Communities Collaborative

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Manufacturing Community Ecosystem Metrics (MCEM)

- There are 250,000+ manufacturers operating in the United States, each connected to and relying on a network of public and private stakeholders: **a manufacturing ecosystem.**

- To be **more strategic**, make **smarter interventions**, and **maximize impact**, regional decisionmakers need ways to understand the composition, interactions, inputs and outputs of their manufacturing ecosystem.

- To address this need, AMCC, NIST MEP and several partners are developing a Tool and Playbook to provide **actionable guidance** for regions to **identify, map and measure** the core component networks that constitute a **thriving manufacturing ecosystem**.

Thanks to our partners:

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U.S. ECONOMIC DEVELOPMENT ADMINISTRATION

AMCC distinguishes three types of metrics that reveal the strength and weaknesses of a manufacturing system.

1. **Manufacturing Metrics:**

   Throughputs and outputs of manufacturing activity by a manufacturer, group of manufacturers, or in a geographical region.

   Data currently gathered by NIST MEPs.

2. **Programmatic Metrics:**

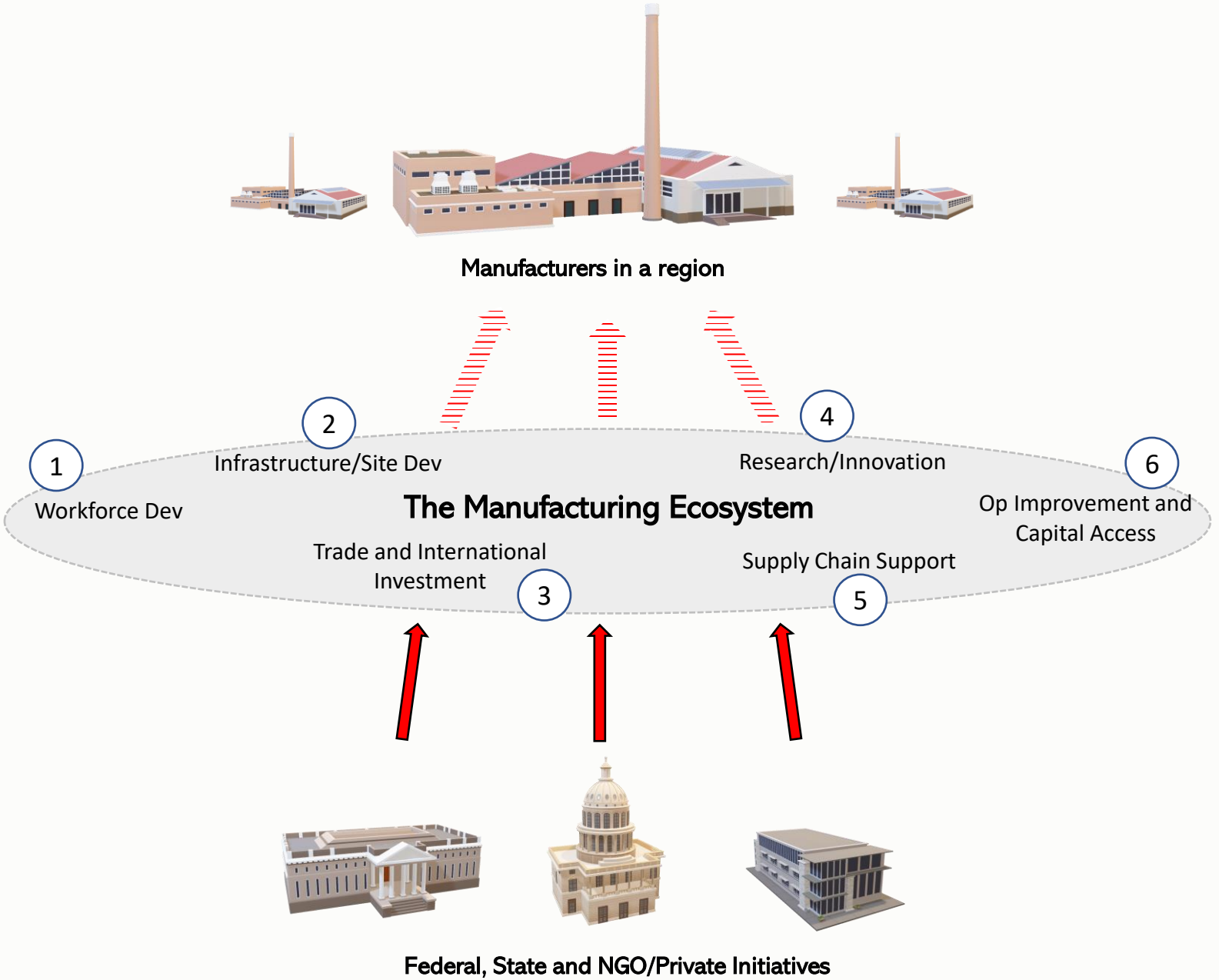
   Public and private interventions that seek to enhance the strength of regional manufacturing.

   Data gathered within each program administered by Federal, State or NGO/Private sources.

3. **Ecosystem Metrics:**

   The outputs and outcomes resulting from the interactions between stakeholders in a region, e.g., a university/NGO collaboration targeting workforce development.

   Problem!! Without ecosystem metrics, it is unclear how Federal/State interventions produce lasting outcomes in communities that support manufacturers.



Example: Connecticut's IMCP Community Actors

State Funding Program:
Manufacturing Innovation Fund

Public Funding Organization:
Connecticut Green Bank

Nonprofits:
Eastern Connecticut Workforce Investment Board
Connecticut Center for Advanced Technology
Capital Workforce Partners

Industry Association:
Aerospace Components Manufacturers
Connecticut Business and Industry Association
New Haven Manufacturers Association
Smaller Manufacturers Association

Public University:
University of Connecticut

Private University:
University of Hartford

Manufacturing Consultant:
Connecticut State Technical Extension Program

State Agencies:
Connecticut Department of Economic and Community Development
Connecticut Department of Energy and Environmental Protection
Connecticut Department of Labor
Connecticut State Department of Education

Community College Training Centers:
Advanced Manufacturing Centers

Foundation Focusing on Education and Workforce:
Connecticut Business and Industry Association Education Foundation

Public State Technical High Schools:
Connecticut Technical High School Systems

Economic Development Organization:
Southeastern Connecticut Enterprise Region

Business Development Counseling:
Connecticut Small Business Development Center

Manufacturing Workforce Development Organization:
Eastern Advanced Manufacturing Alliance

Example: Connecticut's IMCP Community Actors

Manufacturing Innovation Fund

Connecticut Department of Economic and Community Development

Connecticut Department of Energy and Environmental Protection

Smaller Manufacturers Association

Connecticut Department of Labor

Connecticut Green Bank

Advanced Manufacturing Centers

Eastern Connecticut Workforce Investment Board

Connecticut State Department of Education

Connecticut Business and Industry Association Education Foundation

Connecticut Center for Advanced Technology

Connecticut Technical High School Systems

Capital Workforce Partners

Southeastern Connecticut Enterprise Region

Connecticut Business and Industry Association

Aerospace Components Manufacturers

New Haven Manufacturers Association

Connecticut Small Business Development Center

University of Connecticut

University of Hartford

Eastern Advanced Manufacturing Alliance

Connecticut State Technical Extension Program

Example: Connecticut's IMCP Community Actors

State Funding Program
Manufacturing Innovation Fund

Federal Program
IMCP

Intervention

Manufacturing Community Ecosystem

Connecticut Department of Economic and Community Development

Connecticut Department of Energy and Environmental Protection

Smaller Manufacturers Association

Connecticut Department of Labor

Connecticut Green Bank

Advanced Manufacturing Centers

Eastern Connecticut Workforce Investment Board

Connecticut State Department of Education

Connecticut Business and Industry Association Education Foundation

Connecticut Center for Advanced Technology

Connecticut Technical High School Systems

Capital Workforce Partners

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Connecticut Business and Industry Association

Aerospace Components Manufacturers

New Haven Manufacturers Association

Connecticut Small Business Development Center

University of Connecticut

University of Hartford

Eastern Advanced Manufacturing Alliance

Connecticut State Technical Extension Program

Desired Outcomes

- Workforce Development
- Research & Innovation
- Supply Chain Improvement

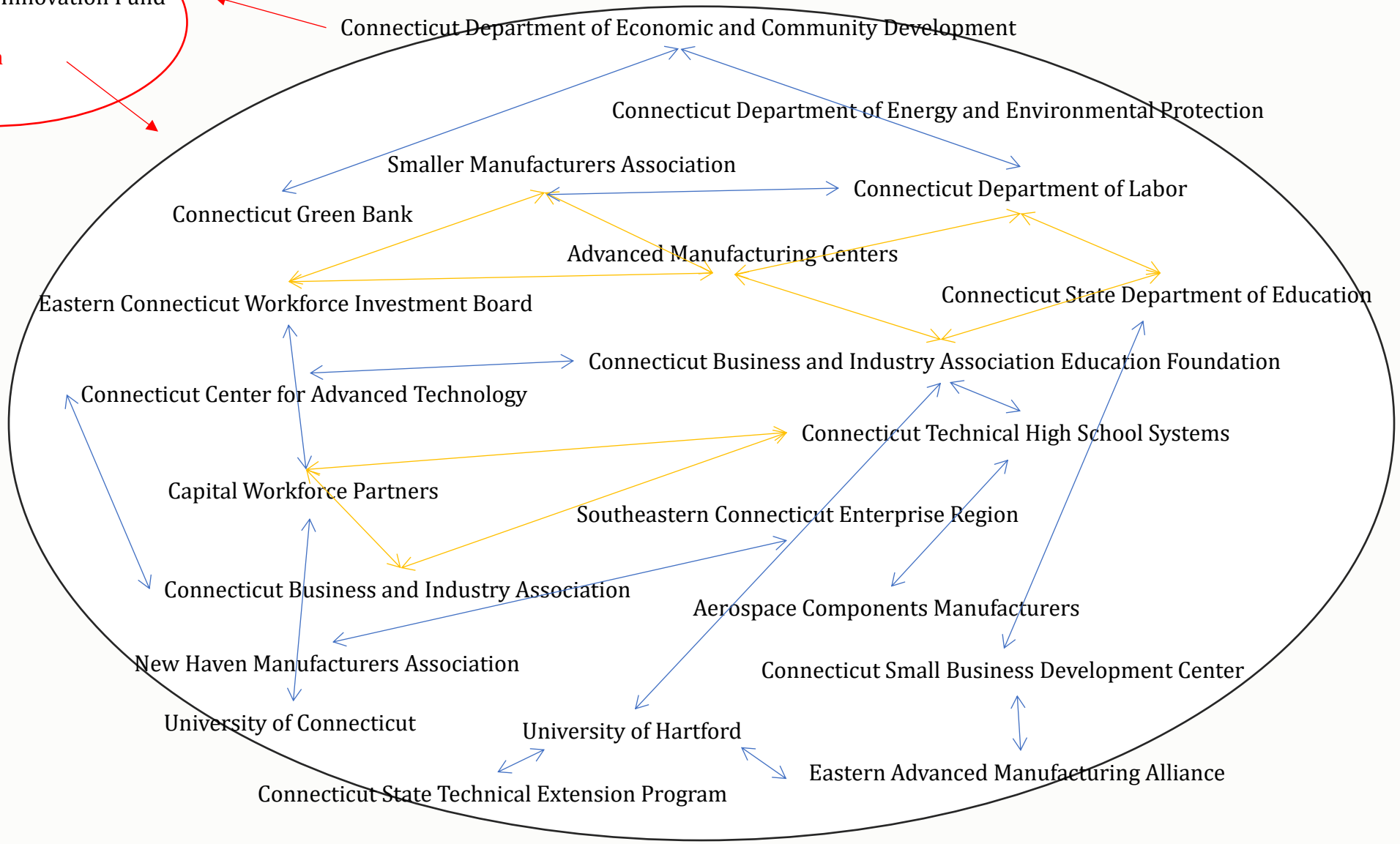
Example: Connecticut's IMCP Community Actors

State Program Funding
Manufacturing Innovation Fund

Federal Program
IMCP

Intervention

Manufacturing Community Ecosystem



Desired Outcomes

- Workforce Development
- Research & Innovation
- Supply Chain Improvement

Manufacturing Community Ecosystem Metrics (MCEM)

Project Objectives

This project seeks to identify the key components of prosperous regional manufacturing communities and determine what defines a "thriving" manufacturing ecosystem.

1. Identify the major ecosystem stakeholders, assets, interventions, and programs ("**the component parts**").
2. **Measure** each of those component parts and the ecosystem as a whole.
3. Create best practices for regions to use as a self-assessment tool, producing **better measures and target outcomes.**

6

Organized around Key Subject Areas

1. Workforce & Training
2. Research & Innovation
3. Infrastructure & Site Development
4. Supply Chain Support
5. Trade & International Investment
6. Operational Improvement & Capital Access

More on the Big 6

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Manufacturing Community Ecosystem Metrics (MCEM)

Demonstration using Utah 1.0 Trial Map and Hypothetical Data

- UAMMI partnership leads to two MCEM meetings in January and June 2023
- Utah Manufacturers Association conducts initial mapping exercise, reaches out to network with Davis Technical College and Weber State University
- **Next step:** Identify and collect relevant stakeholder-level data.

Utah MCEM Webinar Attended by:

America Makes, The ARM Institute, Davis Technical College, Granite School District, i5 Service's CONNEX Marketplace, Idaho National Laboratory, Salt Lake Community College, Spectrum Recruiting Solutions, Utah Advanced Materials and Manufacturing Institute, Utah Department of Workforce Services, Utah Governor's Office of Economic Opportunity, Utah Manufacturers Associations, Utah State University's College of Engineering, Utah STEM Action Center, Utah System of Higher Education, and Weber State University

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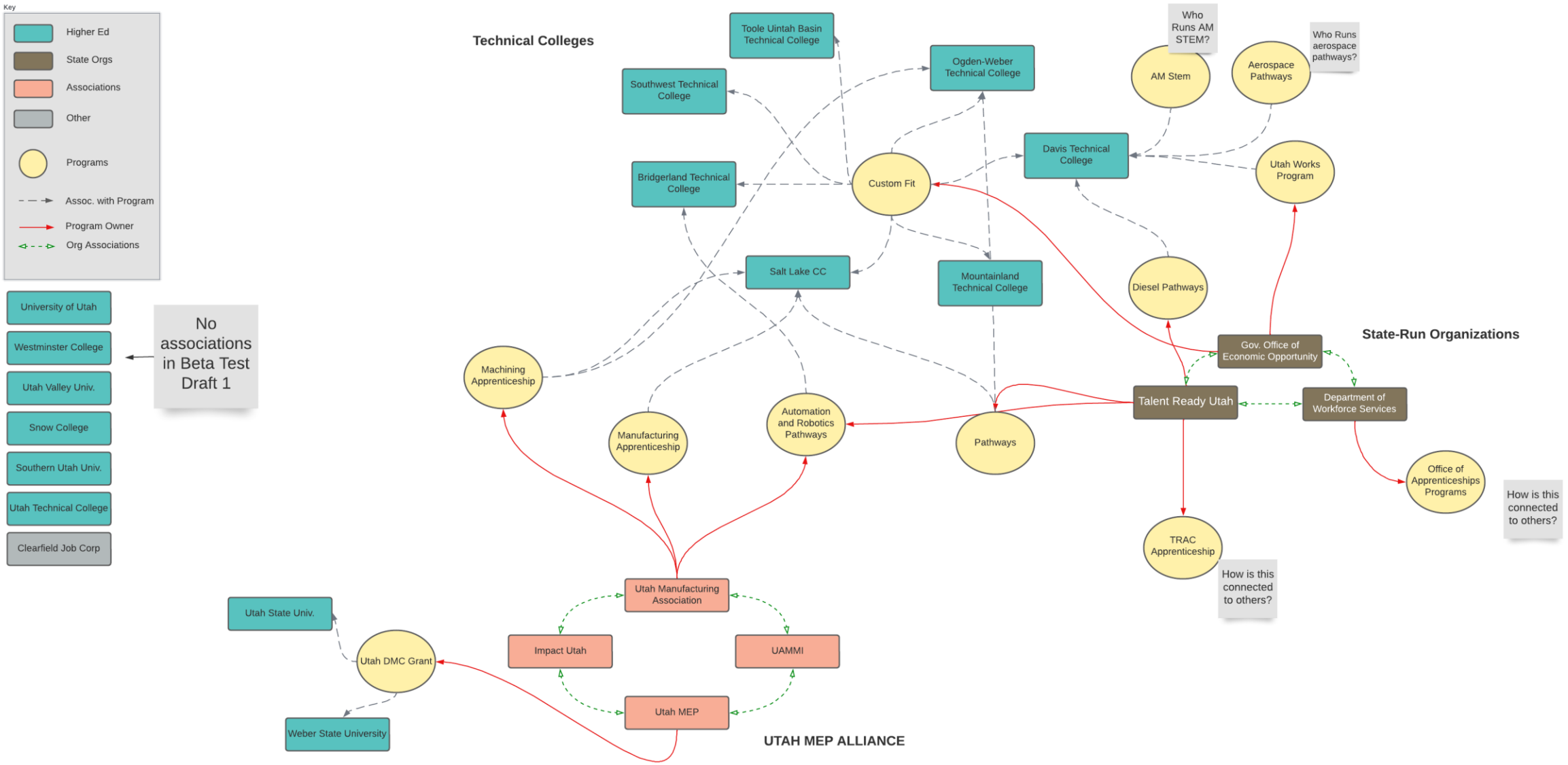


Example: Utah Manufacturer's Association map from AMCC's Workforce Activity Wokshop

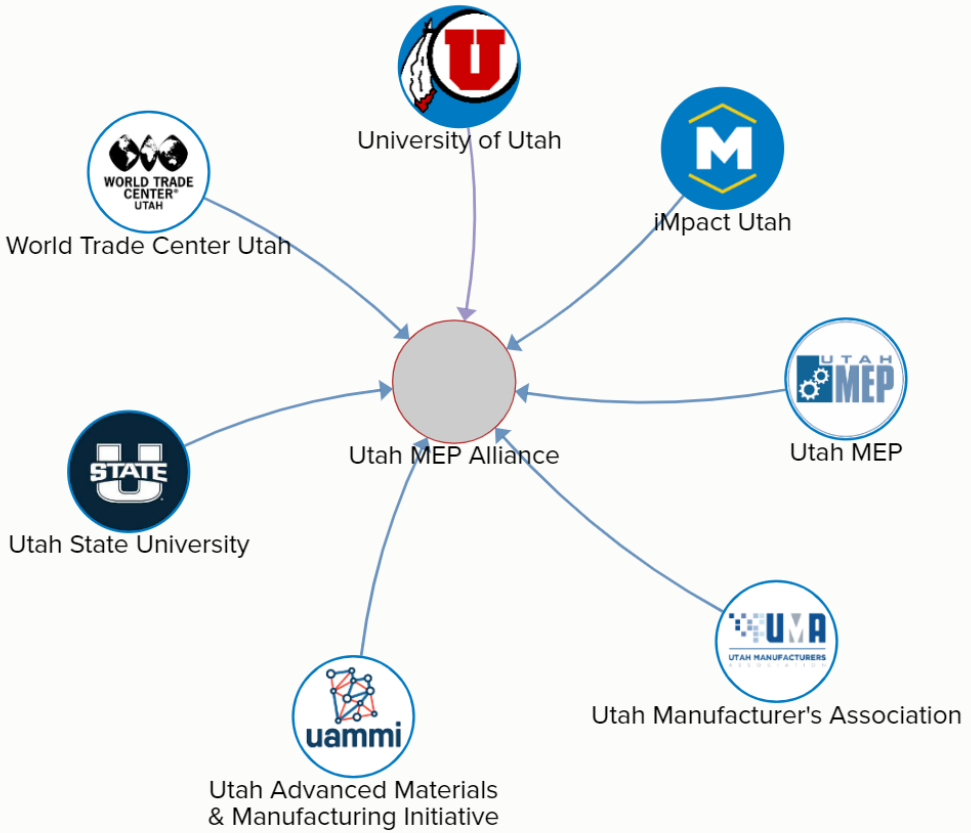
Manufacturing Community Ecosystem Metrics (MCEM)

Use MCEM To Investigate Regional Workforce Development

Challenge: Survey of manufacturers reveals aggregate need for 10,000 skilled workers/year.

Skill Attainment	Example Professions	Likely Education Pathway	% of Need	# Required
Above Mid Skill	Engineer Production Manager	University Community College	20%	2,000
Mid Skill	Machinist Tool Operator	Community College Trade/Technical School	45%	4,500
Below Mid Skill	Entry-level Technician	High School Entry credentials	35%	3,500

Step 1: Utah MEP Alliance seeks federal, state, private funding to increase regional training capacity.



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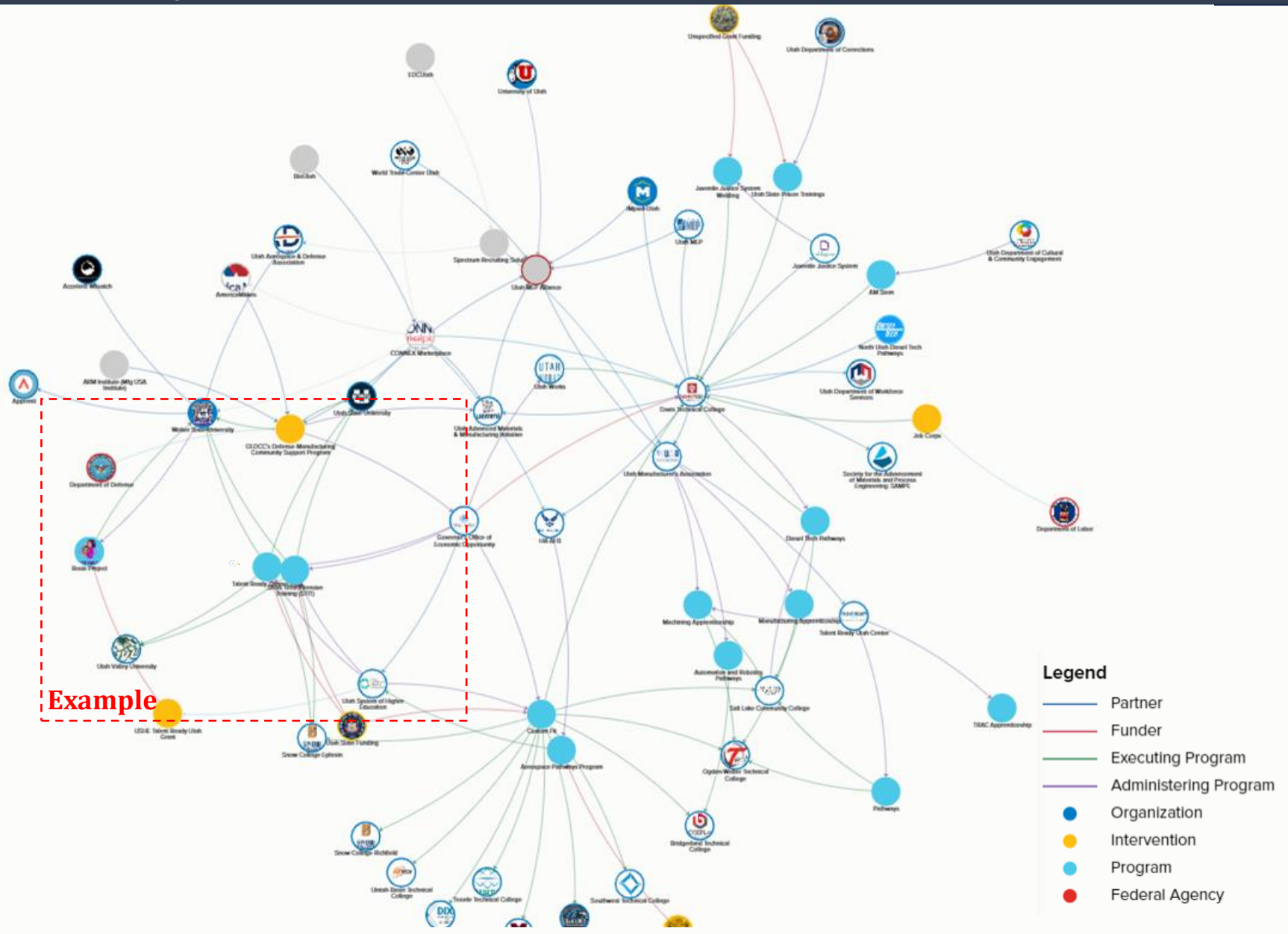
Manufacturing Community Ecosystem Metrics (MCEM)

Map and Visualize Your Workforce Ecosystem

Step Two: Utah Manufacturers Association spearheads stakeholder map with support from Weber State University and Davis Technical College.

Stakeholder map identifies organizations, programs, and existing intervention "**nodes**" connected by relational lines.



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Manufacturing Community Ecosystem Metrics (MCEM)

Align Standard Metrics Across all Stakeholders

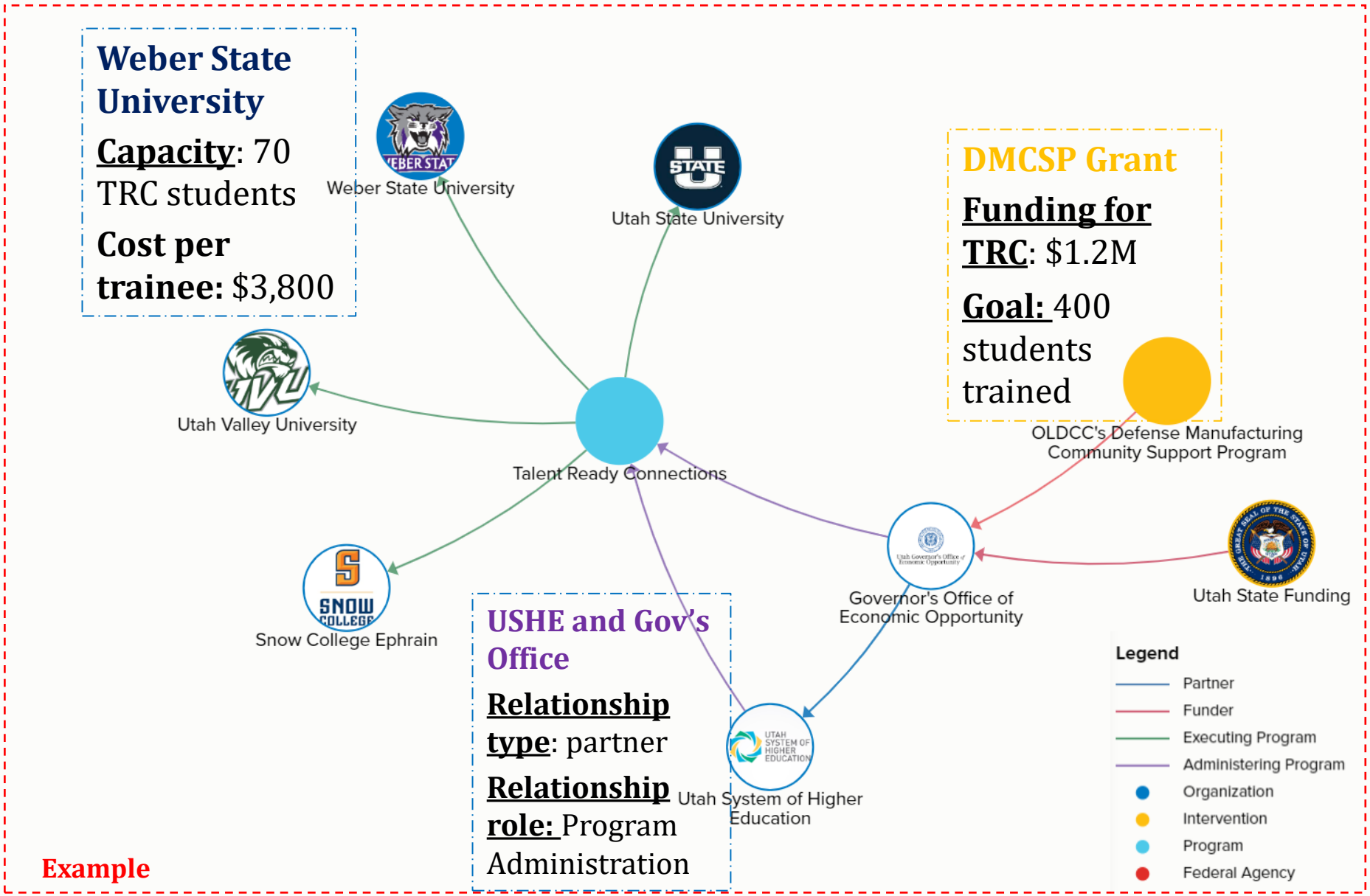
Step Three: Utah coalition collects standardized metrics from partners to assess workforce ecosystem.

Descriptive data: org type, website, description etc.

Program data: capacity, # trained per year, cost per training

Intervention data: funding amounts, sources, intended outcomes

Relational data: collaboration types



Thanks to our partners:

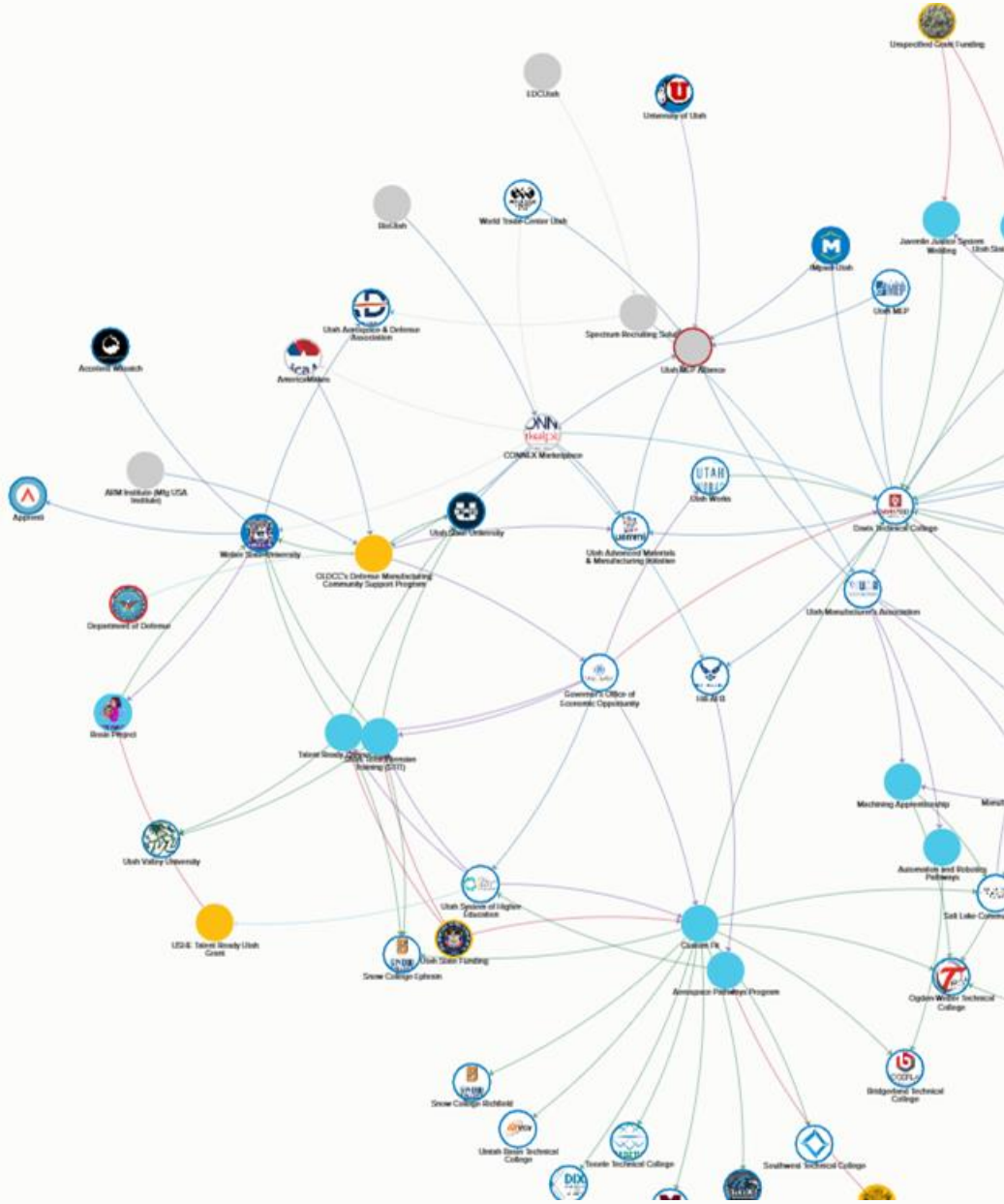
Manufacturing Community Ecosystem Metrics (MCEM)

Drill Down into Program-level Data

From the network assessment, Utah's coalition can determine specific org-level or aggregate ecosystem-level capacity related to high priority professions:

Program	Skill Attainment	Annual Training Capacity	Cost per Trainee
Talent Ready Connect	Above mid-skill	800	$5,300
MFG Apprenticeship	Mid-skill	1,200	$3,900
Machining Apprenticeship	Mid-skill	700	$3,600
AM Stem	Above mid-skill	600	$7,000
Diesel Tech Pathways	Mid-skill	600	$4,300
Juvenile Justice Welding	Below mid-skill	500	$2,800
Rosie Project	Mid-skill	100	$4,000
Automation and Robotics Pathways	Mid-skill	400	$3,900
Custom Fit	Below and mid-skill	2,000	$3,000 / $3,800
Other	varied	900	range

HYPOTHETICAL DATA



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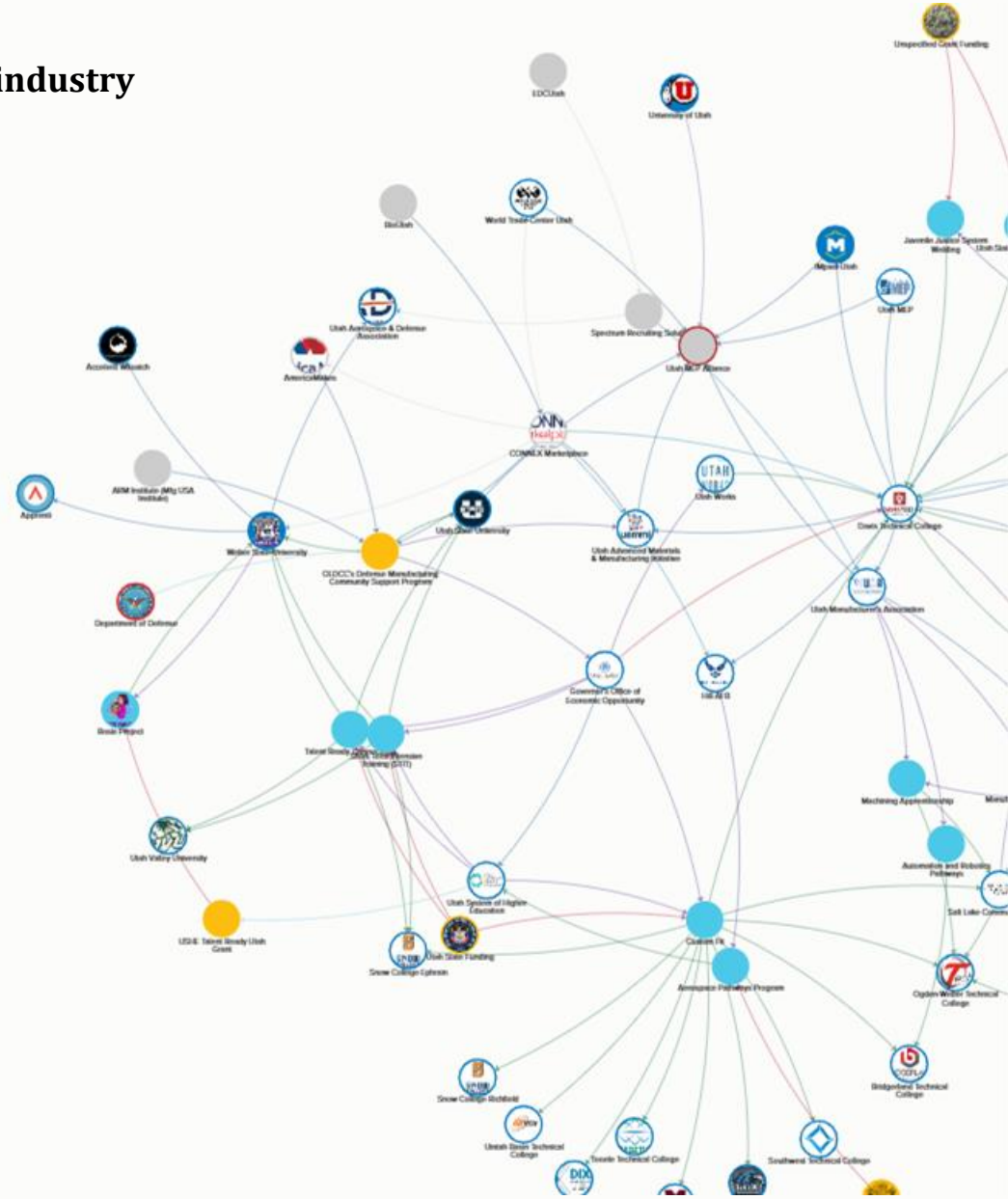
Manufacturing Community Ecosystem Metrics (MCEM)

Aggregate Findings to Inform Strategic Planning

Aggregate training capacity reveals gap of 2400 workers less than 10,000 needed by industry

Skill Attainment	Annual Training Capacity	Avg. Cost per Trainee	Diff. from demand
Above mid-level	1400	$6150	(600)
Mid-level	3800	$3920	(700)
Below mid-level	2400	$2900	(1100)

HYPOTHETICAL DATA



Using this analysis, Utah's coalition can:

- Assess total and average cost of training to better articulate funding needs.
- Identify "nodes" in the ecosystem primed for additional investment and capacity-building.
- Build specific recommendations and key partners to close workforce gap.

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Manufacturing Community Ecosystem Metrics (MCEM)

Three Key Steps to Remember

Across the Big 6 Ecosystem Subsystems:

1. Identify/leverage stakeholders, assets, interventions and programs and their relations.
2. Develop indicator metrics from public sources and data obtained from in-network partners.
3. Integrate into a gap analysis that reveals immediate and long-term areas for action/impact.

6

Organized around Key Subject Areas

1. Workforce & Training
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More on the Big 6

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Manufacturing Community Ecosystem Metrics (MCEM)

Benefits of Network Mapping and Analysis

The exercise allows Utah's coalition to engage in further assessments, including **network** analyses, **root cause** analyses, and **gap analyses** to inform prescriptive actions. Further benefits include:

Short-term

- Discover and collaborate
- Align with partners
- Identify and invite new stakeholders

Mid-term

- Engage in ecosystem-building activities
- Orient new stakeholders
- Enhance ecosystem with data
- Validate and align stakeholder benchmarks

Long-term

- Enhance funding pitches and proposals.
- Strengthen long-term regional network
- Boost economic and sustainable growth

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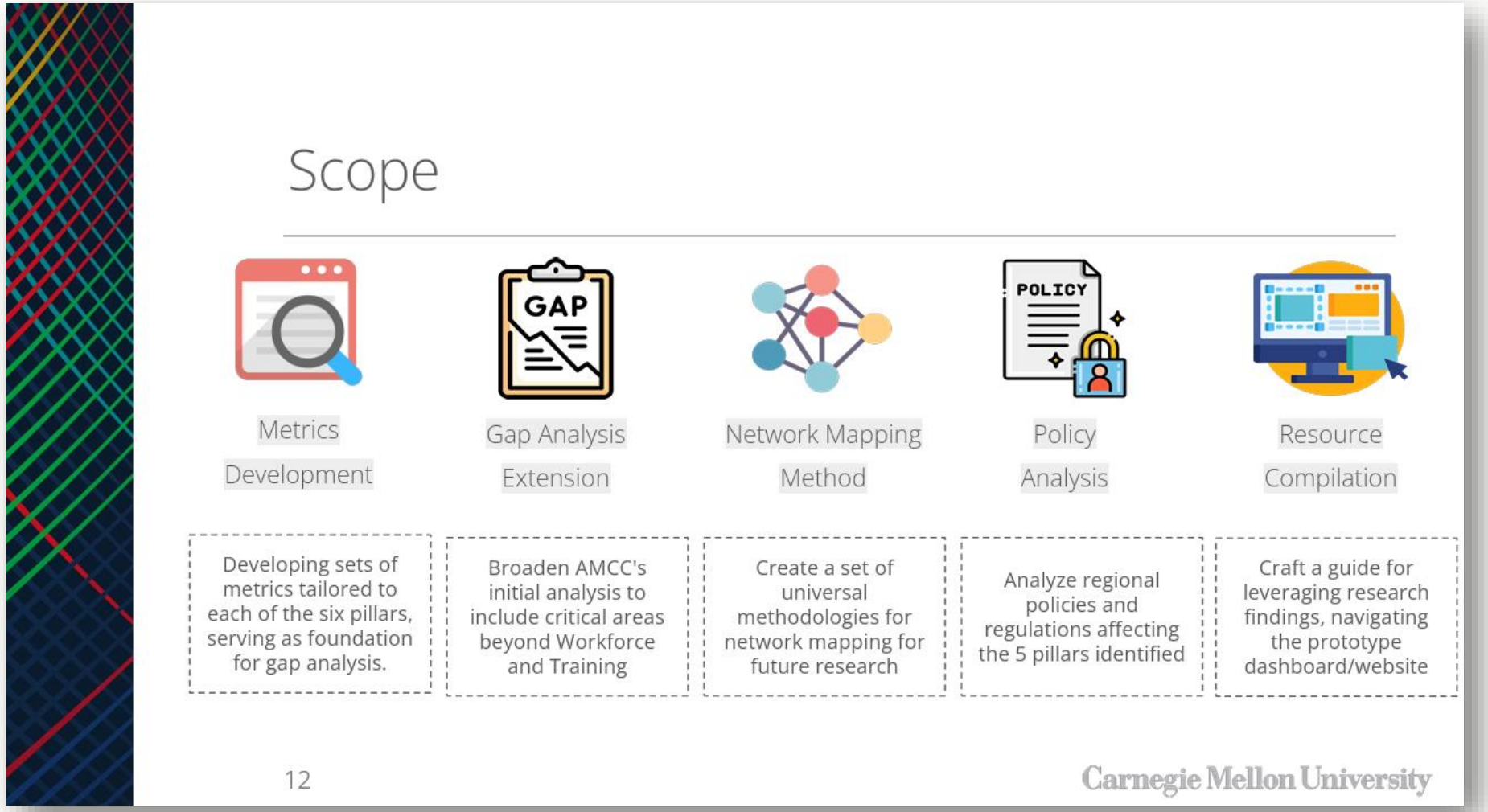
Carnegie Mellon Student Project

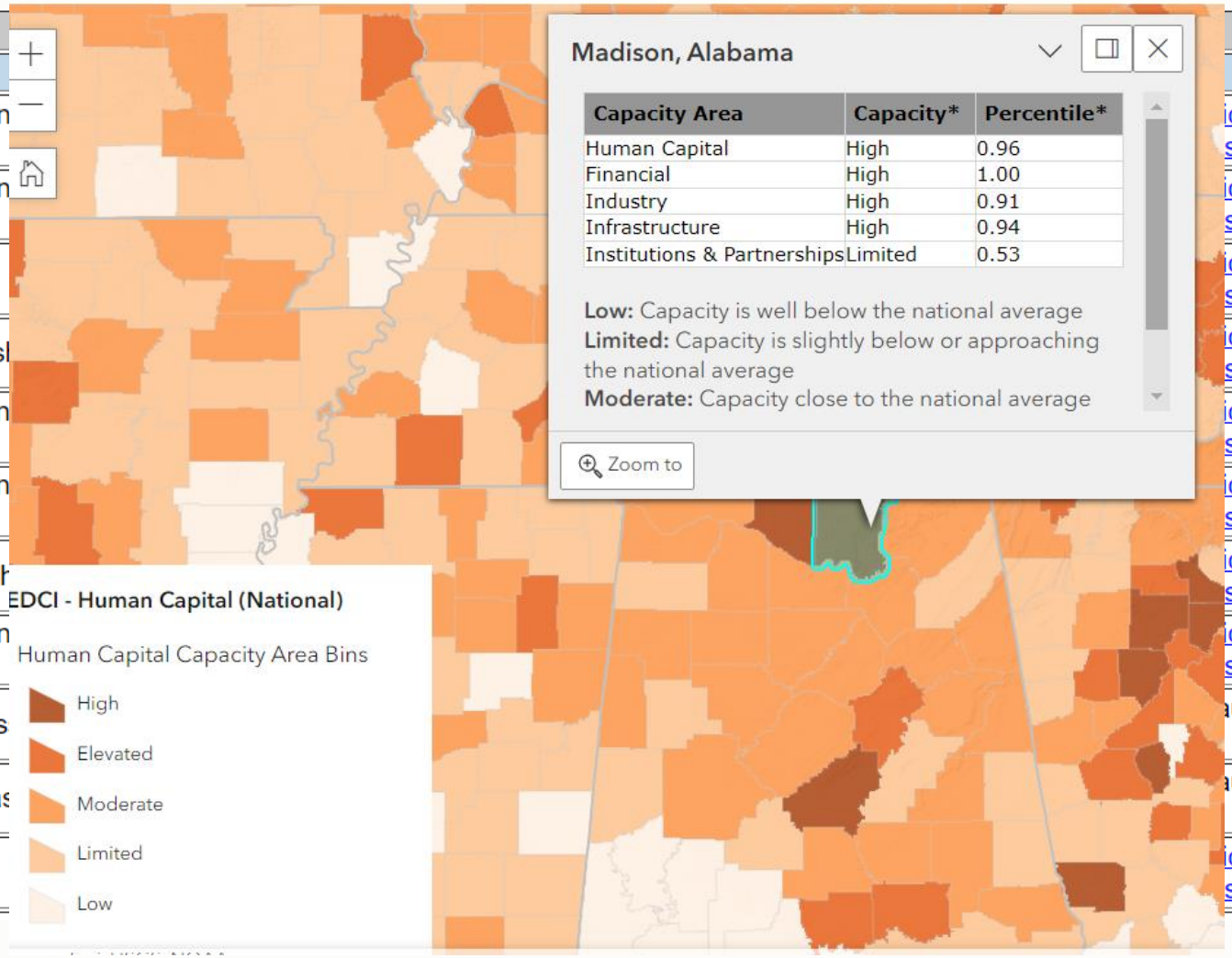


Thanks to our partners:

Manufacturing Community Ecosystem Metrics (MCEM)

Proving the Case: ANL NERCC's Economic Development Capacity Index (EDCI)

Human Capital	
Indicator Name	
Percent HS Education Above	ican Community Survey 5-s 2020
Percent HS Education Above Movement	ican Community Survey 5-s 2020
Gini Index	ican Community Survey 5-s 2020
Percent Homeownersl	ican Community Survey 5-s 2020
35%+ of Household in Rent	ican Community Survey 5-s 2020
35%+ of Household in Mortgage	ican Community Survey 5-s 2020
Percent SNAP housel	ican Community Survey 5-s 2020
Healthcare Profession capita	ican Community Survey 5-s 2020
Percent Creative Clas	au Special Tabulation ACS
Percent Inventive Clas	au Special Tabulation ACS
Per Capita Income	ican Community Survey 5-s 2020



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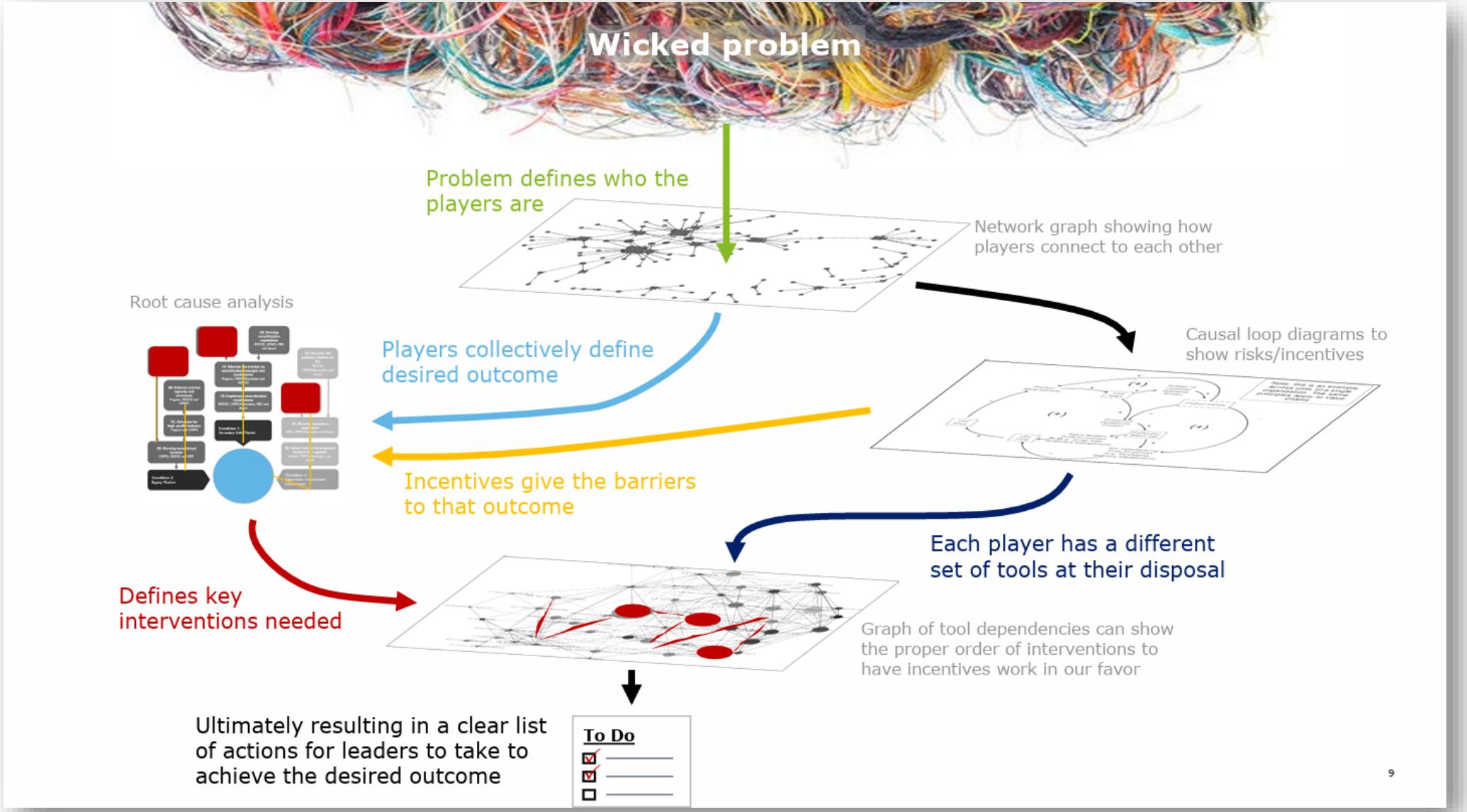
Deloitte's 'Wicked Problem' Ecosystem Assessment Framework

Stakeholder Analysis, Root Cause, Risk/Incentives, Developing Tools and Recommendations



Manufacturing Community Ecosystem Metrics (MCEM)

Current Progress and Future Work

1. AMCC co-leads with NIST MEP a biweekly discussion advancing the MCEM project with federal stakeholders in **DOC**, **DOD**, **DOE**, **DOL**, **SBA** – alongside private and nonprofit collaborators.

2. Graduate student team from Carnegie Mellon's Heinz College of Information Systems and Public Policy framework for Big 6 indicator metrics.

3. Collaboration with Argonne National Lab's National Economic Research & Resilience Center

4. Ongoing advisory support from private analysts at Deloitte and Accenture

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Manufacturing Community Ecosystem Metrics (MCEM)

UAMMI Case Study on Supply Chains and Operational Improvement

Steps:

1. Utah Governor's Office wins DOD DMCSP award
2. UAMMI as grant execution lead for Utah DMC
3. Portion of funds invested in CONNEX Marketplace as Supply Chain Solution. Additional funding provided for CONNEX to offer more capabilities in workforce and research
4. Consortia-led working groups of broad stakeholders engaged to discover gaps
5. UAMMI and university partners leverage CONNEX capabilities to research capabilities in supply chain.
6. America Makes provides specific research and recommendations related to additive practices adoption.
7. Report on supply chain produced by UDMC
8. **Gap discovered**: lagging adoption of new technologies for SMMs reducing onshoring objectives
9. Communication with Governor's Office on issue

1

2

3

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Manufacturing Community Ecosystem Metrics (MCEM)

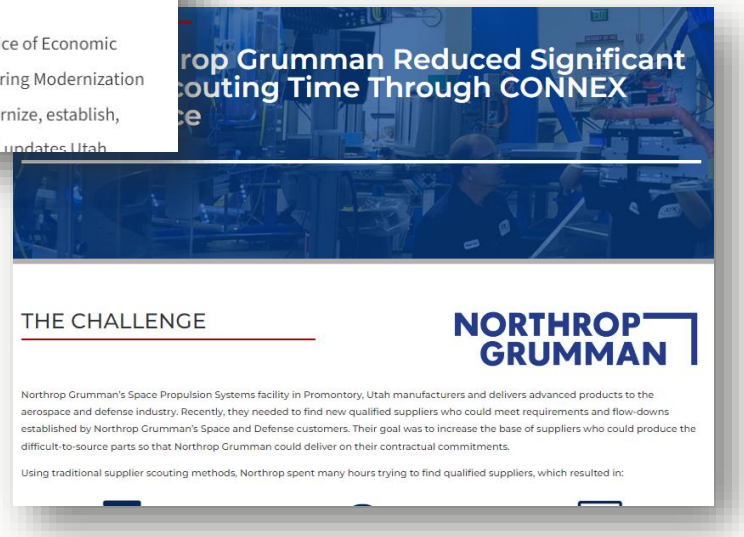
Drill Down into Program-level Data

Two Outcomes:

1. Utah Legislature establishes Manufacturing Modernization Grant program for two years at $10M/yr (2022-2023) with funds up to $750,000 to help manufacturers afford new equipment to participate in regional supply chains **(180 applicants requesting $100M, 21 winners, all less than 250 employees)**

2. Expanded capabilities enabled Northrup Grumman to use CONNEX to identify several qualified suppliers, 8 of which were entirely new, and several of which supported NG's small-diversity supplier goals. 12 RFPs released as result.

https://business.utah.gov/news/manufacturing-modernization-grant-awardees-announced/



https://connexmarketplace.com/case-study/northrop-grumman-significantly-reduced-supplier-scouting-time-using-connex-marketplace/

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