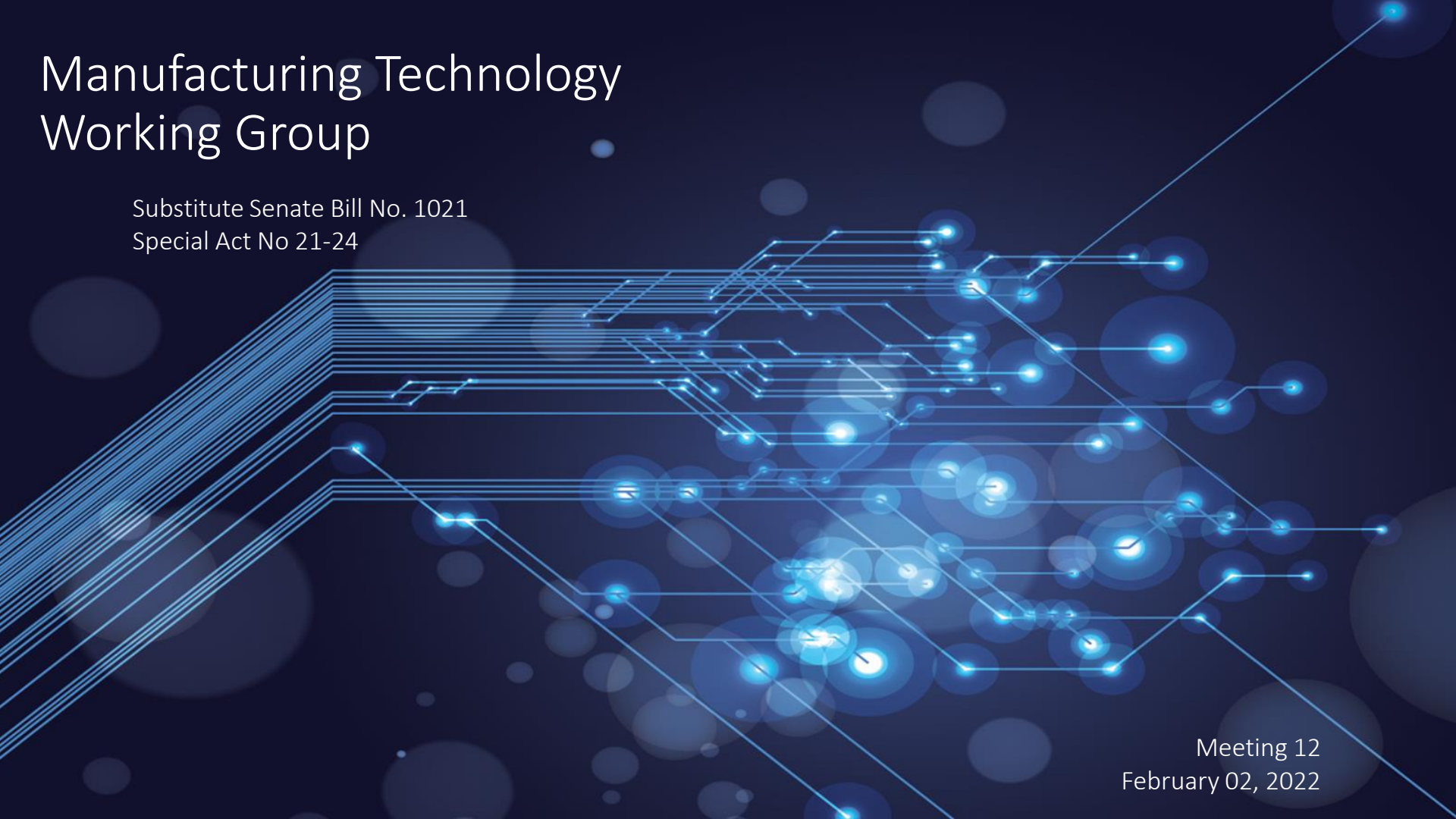
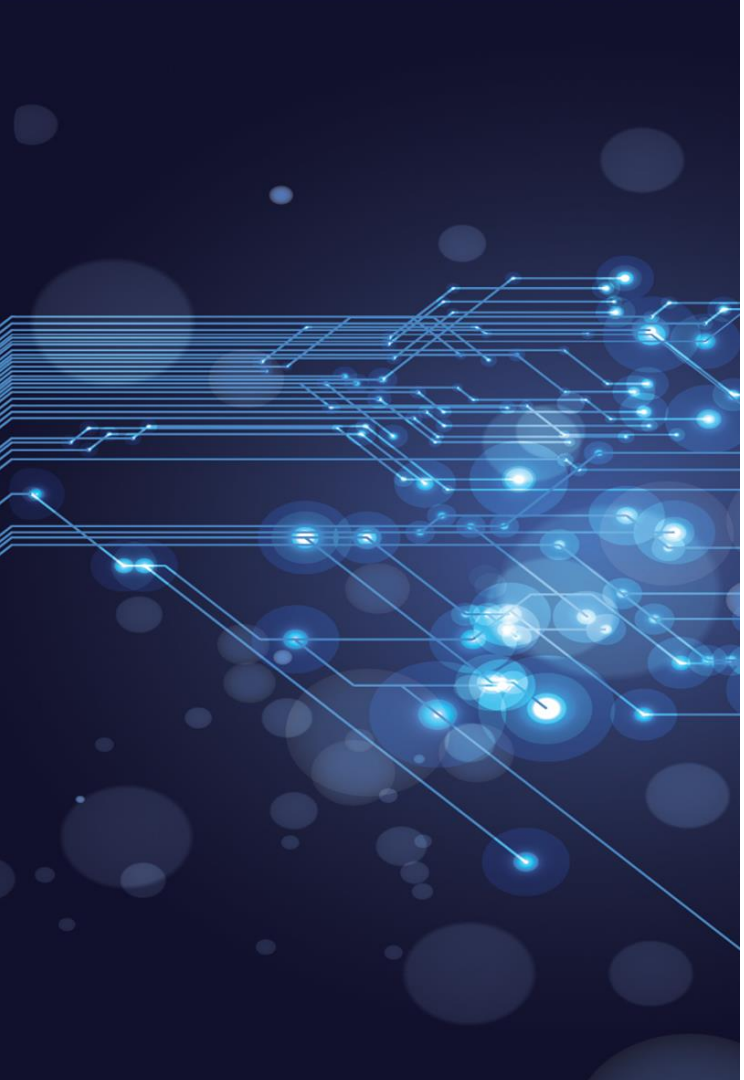
Manufacturing Technology Working Group

Substitute Senate Bill No. 1021
Special Act No 21-24



Meeting 12
February 02, 2022



Agenda

I. Welcome

II. Announcements / Roundtable
- Review schedule for i4.0 Provider features

III. Provider Spotlight
- Yale University – Dr. Sarah Miller

IV. Working Session

V. Adjourn

Next Meeting: Wed, Feb 16 @ 11a
Cadence: bi-weekly

Service Provider Feature Schedule

Feb 16: Central Connecticut Chambers of Commerce

Mar 2: Connecticut Manufacturing Collaborative

REMINDER: **Mar 15**: interim progress report due NLT

Yale

Investment
Infrastructure
Innovation

Services Provided:

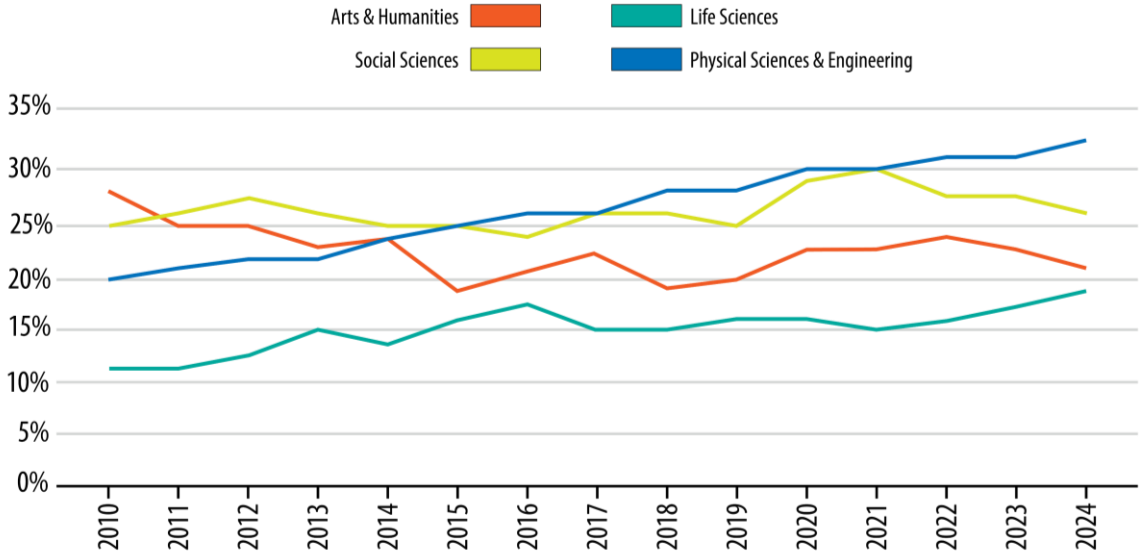
- ☑ Research
- ☑ Development
- ☑ Training
- Marketing
- Consulting
- Deploying

FACULTY:
4,700

RESEARCH:
$1.1B

STUDENTS:
6,000 UG
3,000 Grad
4,400 Prof

Intended Majors of Incoming Class Years



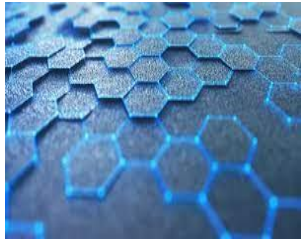
Yale SCHOOL OF ENGINEERING & APPLIED SCIENCE

Applied Physics
Biomedical Engineering
Chemical & Environmental Engineering
Computer Science
Electrical Engineering
Mechanical Engineering & Materials Science

STEM is a top priority for growth

INVESTMENT

Engineering



Materials Science

Robotics

Artificial Intelligence

Mathematical Modeling & Scientific Computation

Yale Priorities

Integrative Data Science & Mathematical Foundations

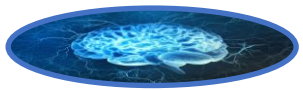
Quantum Science & Engineering

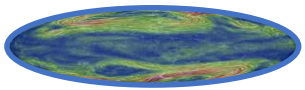
Neuroscience

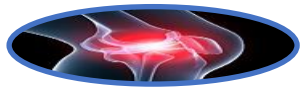
Planetary Solutions

Inflammation

University

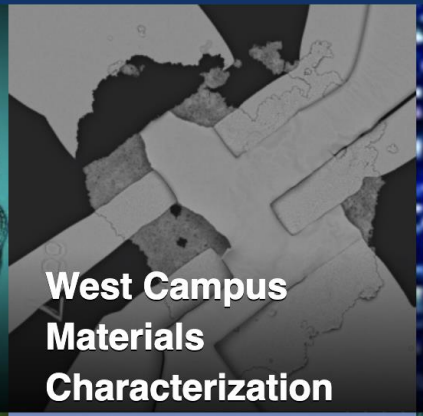


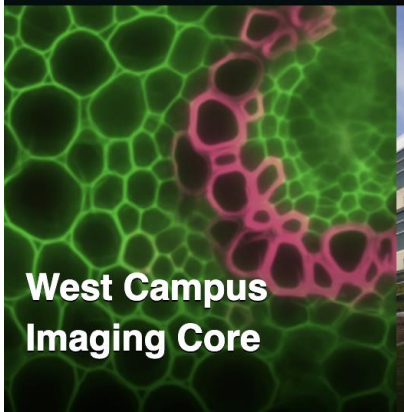




Yale West Campus

Powering discovery

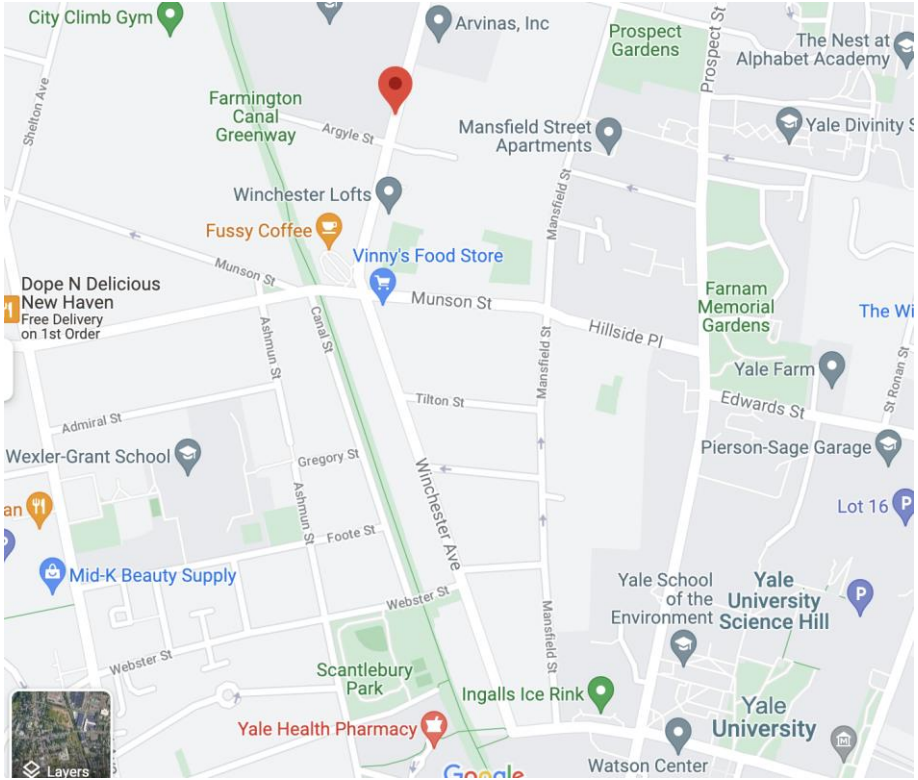




Yale Wright Lab

The laboratory's unique combination of on-site state-of-the-art research facilities, technical infrastructure, and interaction spaces supports innovative instrumentation development, hands-on research, and training the next generation of scientists.

Science Park



Not-for-profit corporation established by Yale, the City of New Haven, Olin Corporation and the State of Connecticut to develop the former Winchester Firearms factory campus

101 College St.

“10-story, 500,000 square-foot bioscience lab and office tower slated to be built atop the former Route 34 Connector downtown.” New Haven Independent

“[A]n ambitious development project that will bolster New Haven’s rising status as an international center for entrepreneurship and innovation in the life sciences sector.” Yale News

INNOVATION

Yale

2021 Innovation & Entrepreneurship

OCR

Yale Office of Cooperative Research

ENTREPRENEURIAL ACTIVITY

- **11** startups launched
- **$53.3M** raised in new venture financing
- NEW RECORD **4th** IPO in four years straight
- Over the past 6 years, **60** new ventures have raised over **$3.7 billion** in capital
- **Doubled** the average number of venture capital-backed startups formed annually from 5 to 10+

ARVINAS, biohaven pharmaceuticals, inozyme pharma, NextCure

BLAVATNIK FUND

- **33** funded projects
- **42** total awards
- **Highest percentage** of women quarterfinalists of all five years
- **12** ventures launched with $108M raised to-date

INVENTION ACTIVITY

- **220** inventions disclosed
- **90** provisional applications
- **211** international applications
- **55** PCT applications

PATENT ACTIVITY

- **247** patents issued (**175** US Patents + **72** International)
- **1626** patents worldwide (US **583** + International **1043**) across **56** countries

DEALS

- **83** deals for financial consideration
- **12** are considered major deals (i.e., potential for **$1M** in royalties or impacting 1 million lives)
- **13.8** deals per business development associate

SPONSORED RESEARCH

- **31** sponsored research agreements & cooperative research agreements
- **$11.0M** in new funding
- Over past 5 years, executed an average of **29.8** corporate & sponsored research agreements with an aggregate value of **$114M**

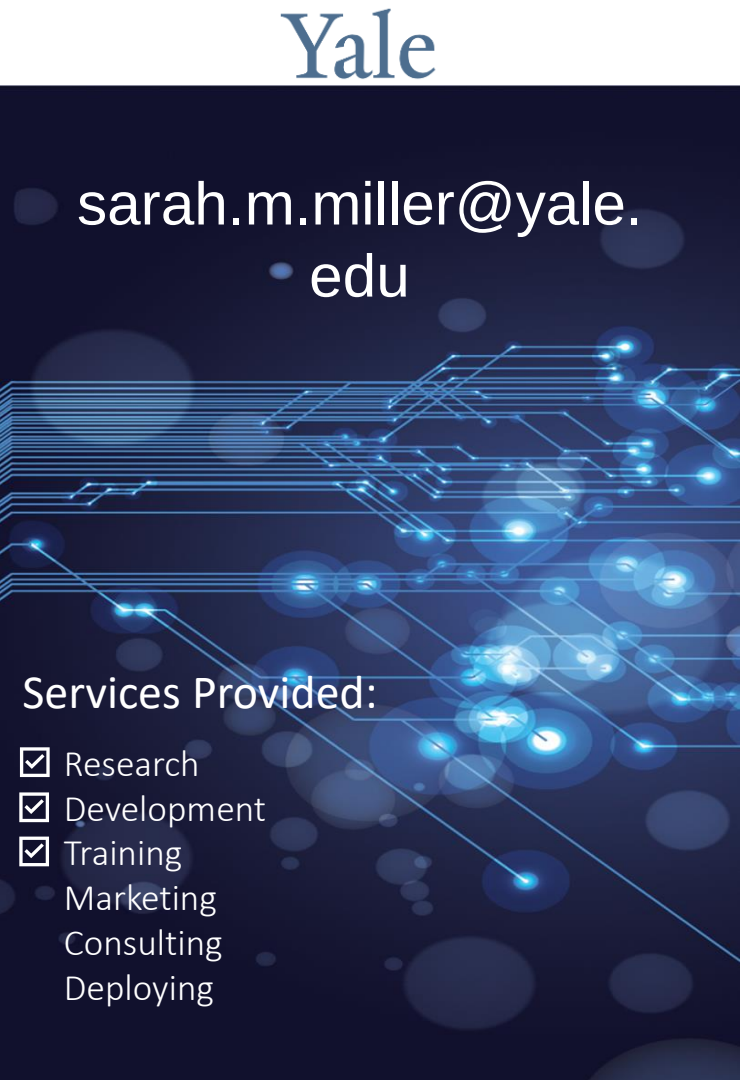
INDUSTRIAL PARTNERSHIPS

- Research partnerships
- Industry projects in curriculum
- Space on campus for industrial collaboration

SEAS will develop new industrial partnerships

Yale

sarah.m.miller@yale.edu



Services Provided:

- ☑ Research
- ☑ Development
- ☑ Training
- Marketing
- Consulting
- Deploying

STEM is a top priority for growth

Investment
Infrastructure
Innovation

SEAS will develop new industrial partnerships

Look Back & Ahead

Aug '21

Launch MTWG

Surveyed i4.0 Provider and SMMs of Working Group.

Awareness to Others in Ecosystem:
- AMEP: Adv Mfg Employer Partnership
- CMC: CT Manufacturing Collaborative
- CCIC Engineering Deans
- SW Regional Sector Partnership

Sept-Q4

Workstreams

Value Stream Mapping
Outreach, Resources
Ecosystem Mapping '22

2022

Q1

Progress Report

NLT 3/15 - identify barriers to accomplish goals

Q2

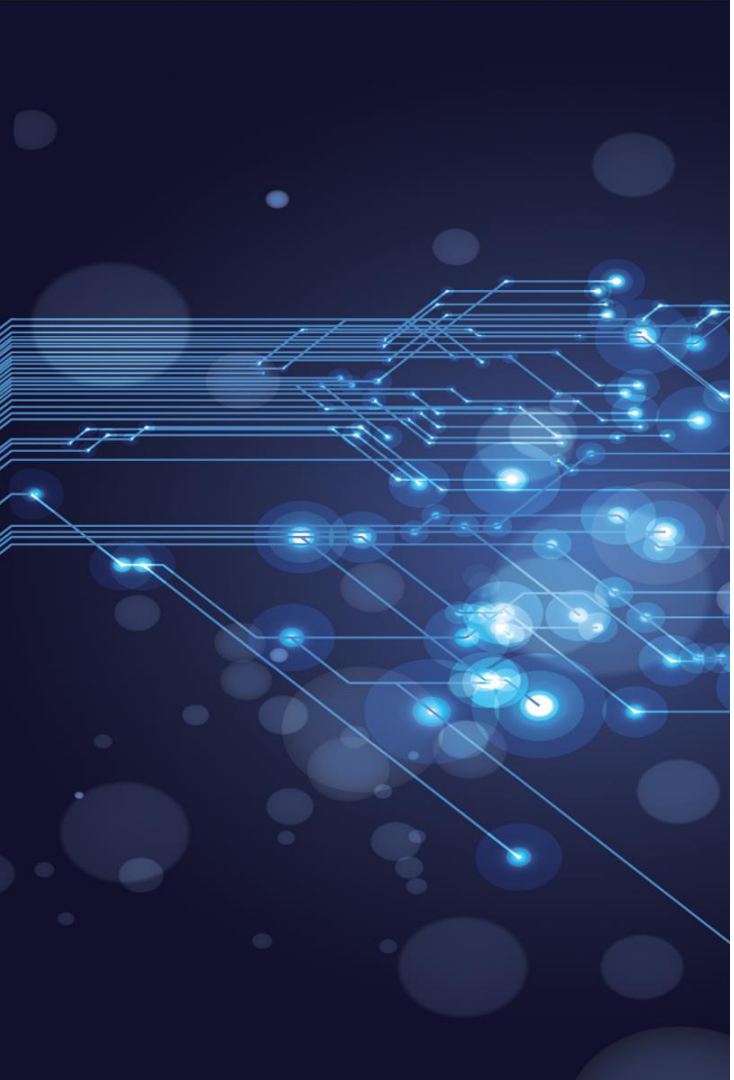
Ecosystem

Comprehensive profiling; success stories; awareness of i4.0 resources

Q3

Strategic Plan

Due October 1

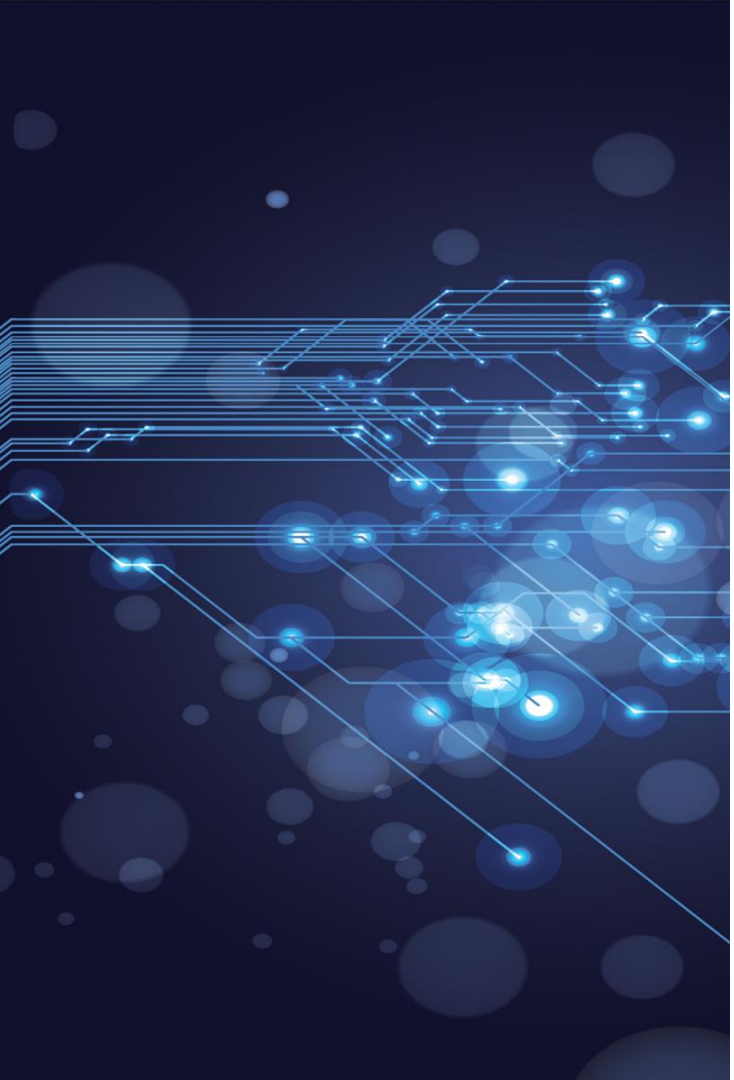


Deliverables

Section 1c.1

Compile comprehensive profiles, including mission statements, and lists of services, for all entities that receive state or federal funding for the purpose of researching, developing, training, marketing, consulting or deploying Industry 4.0 technology or associates services, directly to, or for the benefit of, manufacturing startups, small and mid-sized manufacturers or other businesses primarily engaged in manufacturing.

I4.0 Providers



Deliverables

Section 2

Conduct value-stream mapping and other analyses, as needed, to assess the flow of services from the entities identified. Such analyses shall include, but need not be limited to,

- identification of the extent to which such services complement, conflict with or duplicate each other,
- assessment of the relative impacts of such services on the manufacturers served,
- identification of gaps in services provided relative to the Industry 4.0 technology needs of manufacturers,
- identification of barriers and recommendations for achieving the goals of the working group described in subsection (b) of this section, and
- identification and assessment of participation levels in small business innovation research programs and small business technology transfer programs.

I4.0 Providers

Manufacturers

Workstreams

VSM: Value Stream Mapping

Map out current state value stream of provider network

CONNSTEP
a CBIA affiliate

CCIC · WEPCO PLASTICS INC · Schwerdtle · MDI THE WIPER SPECIALISTS · UCONN · HABCO · HORST ENGINEERING · AGR · Collins Aerospace · Stanley Black & Decker

Resources

Focus on SBIR / STTR; include other grant opportunities & resources

ctnext

pta plastics · beau · OPM · Yale

Outreach

Awareness of manufacturers to provider network

CAT Connecticut Center for Advanced Technology, Inc.

CMC CONNECTICUT MANUFACTURERS' COLLABORATIVE · OKAY · SBA · CSCU · Stanley Black & Decker · microboard brilliant together · CAREY · Medtronic · Central Connecticut Chambers of Commerce · Connecticut

Ecosystem Mapping

Cataloging comprehensive profiles of providers (Deliverable 1)

CONNSTEP
a CBIA affiliate

Connecticut

Partner w/ Manufacturing Innovation Fund Initiative