



Smart Manufacturing

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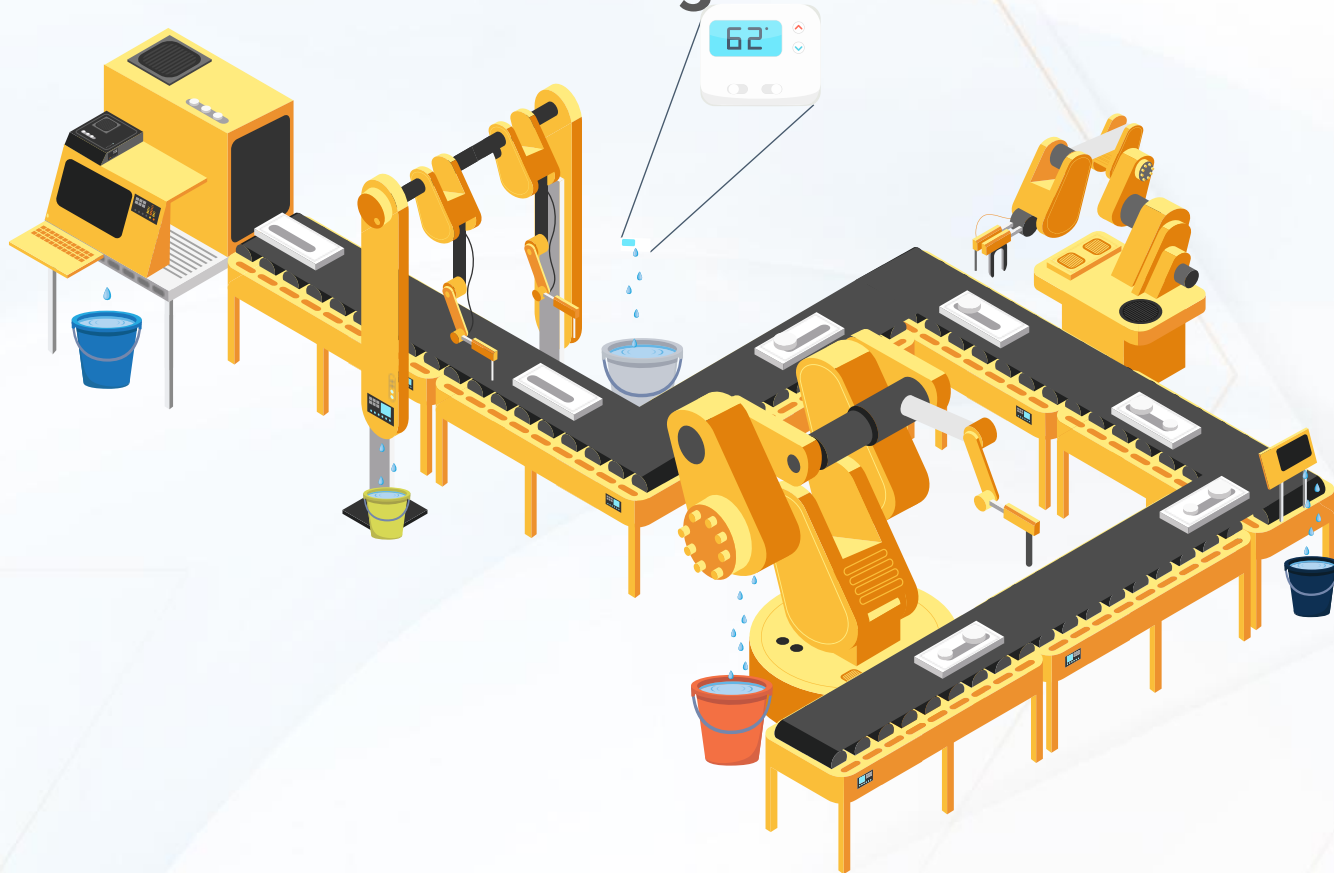
SME

What is Smart Manufacturing?

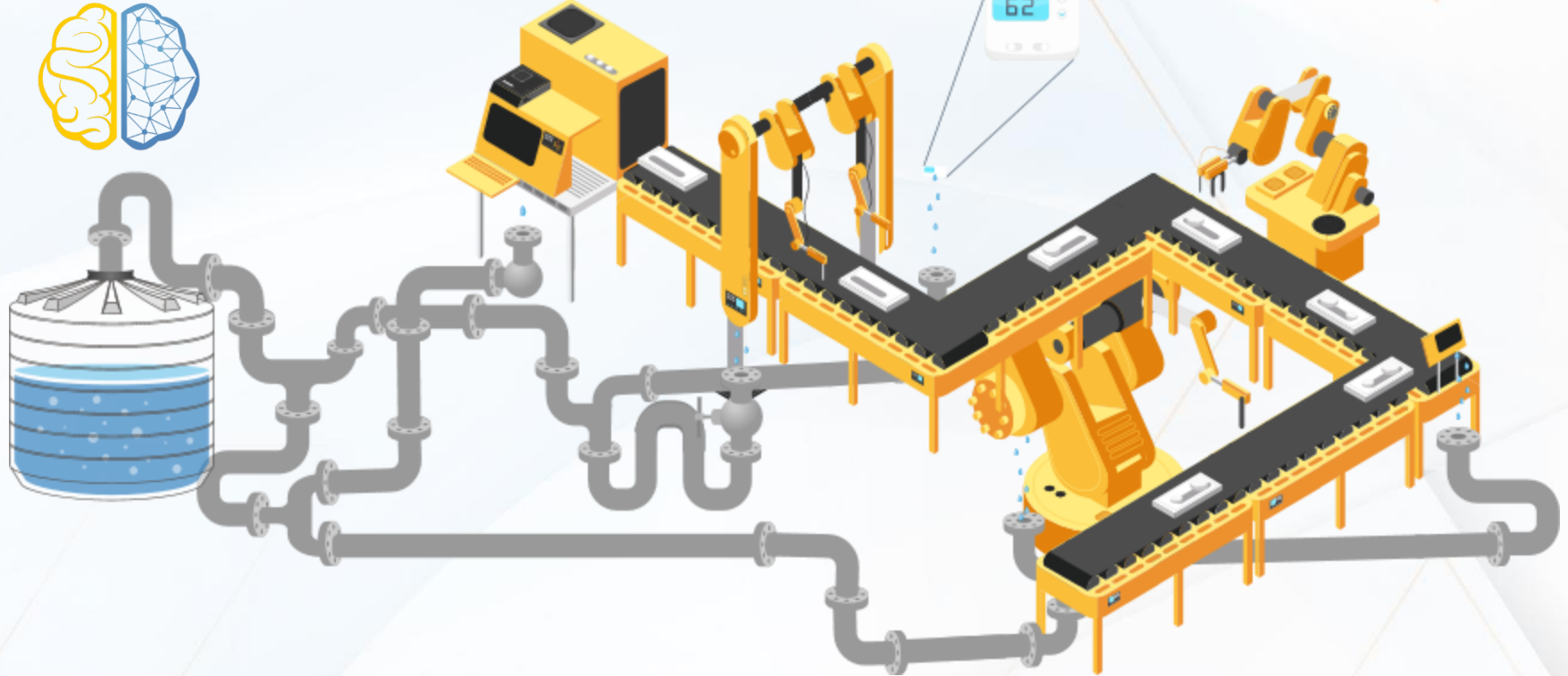
“Smart Manufacturing is the information-driven, event-driven, efficient and collaborative orchestration of business, physical and digital processes within plants, factories and across the entire value chain.”



Before Smart Manufacturing



With Smart Manufacturing



Smart Manufacturing – Emerging Job Roles

SMART QA Manager

Predictive Supply Chain Analyst

Collaborative Robotics Engineer

Smart Safety Engineer

Smart Scheduler

Smart Factory Manager

Digital Twin Engineer

Manufacturing System Designers & Architects

SM Model Implementer

SM Solution Implementer

Manufacturing Data Systems Analyst

Data Profile Developer

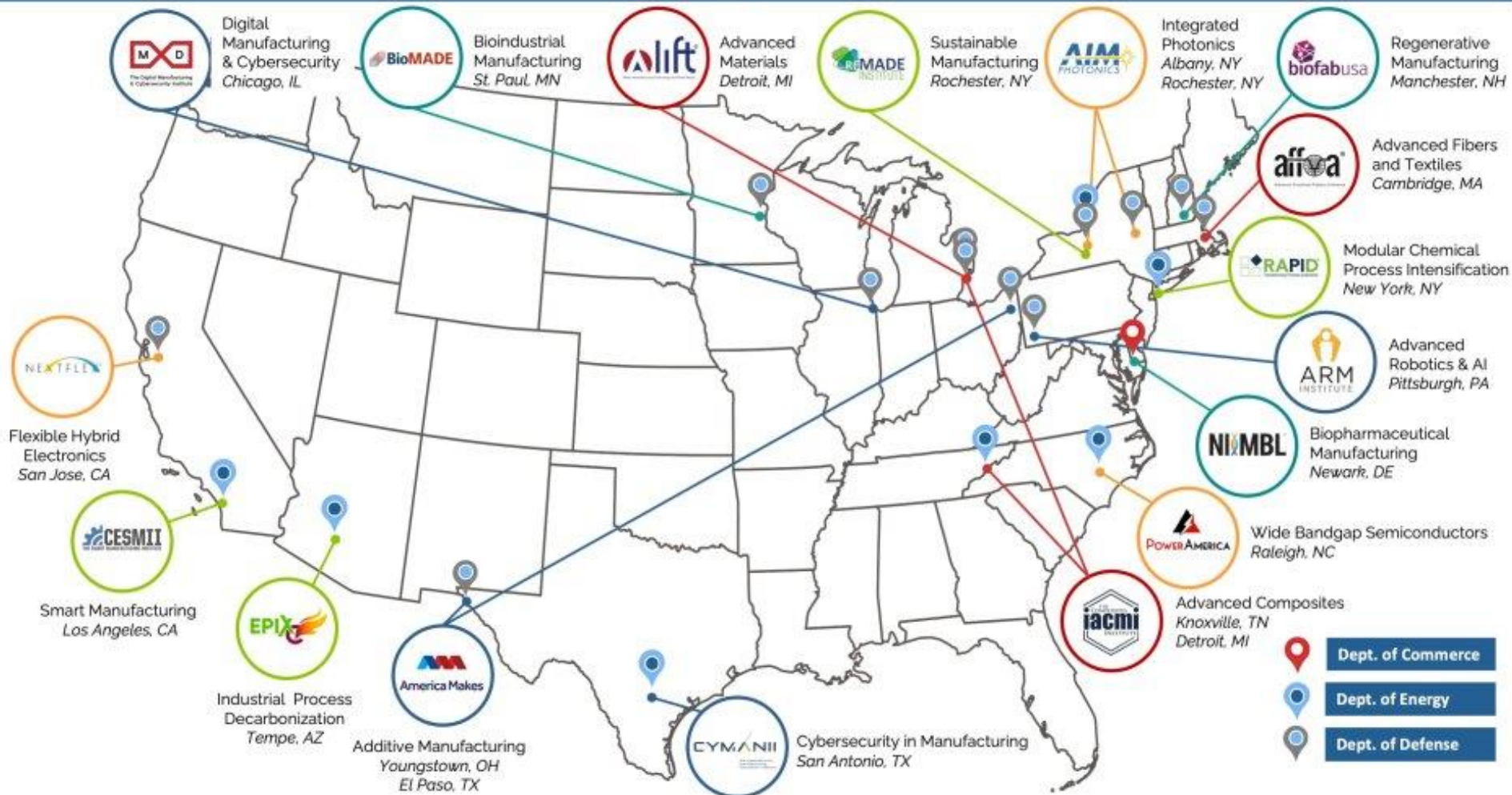
Manufacturing USA & SME

Manufacturing USA was created in 2014 to secure U.S. global leadership in advanced manufacturing by connecting people, ideas, and technology.

Manufacturing USA institutes convene business competitors, academic institutions, and other stakeholders to test applications of new technology, create new products, reduce cost and risk, and enable the manufacturing workforce with the skills of the future.

The network comprises the U.S. Departments of Commerce, Energy, and Defense; their sponsored manufacturing innovation institutes; and six additional federal agency partners, creating a whole-of-government, national effort to drive innovation in manufacturing.

Manufacturing USA Network



Manufacturing USA & SME (excerpt)



Roboticscareer.org: Robotics in Manufacturing Fundamentals, Certified Manufacturing Associate, Robotics, Maintenance, and Smart Manufacturing program content



Certified Additive Manufacturing-Fundamentals, Certified Additive Manufacturing-Technologist, Apprenticeship & Pre-apprenticeship, curriculum & content



CyManII & Tooling U-SME CyManII-Sealed cybersecurity training, OT competency modeling, learning framework



Smart Manufacturing Executive Council, Smart Manufacturing Innovation Centers (SMICs), CESMII Endorsed Education Program, CESMII-Tooling U-SME Smart Manufacturing Fundamentals

Our Charter: The Smart Manufacturing Executive Council has been formed to engage business and technology executives, thought leaders and visionaries advocating for the strengthening of the U.S. manufacturing ecosystem.

Our Objective: To develop practical guidance and policy recommendations that will help US manufacturers become more competitive.

SMART MANUFACTURING
EXECUTIVE COUNCIL
CO-CHAIRS



John
Dyck



Jeannine
Kunz



Online Smart Manufacturing Training

FUNDAMENTALS OF SMART MANUFACTURING

Developing a Strong Smart Foundation to Advance America's Manufacturing Workforce

The first deliverable of the Tooling U-SME and CESMII workforce partnership is the Fundamentals of Smart Manufacturing learning package that covers essential methodologies for today's manufacturing ecosystem. Smart impacts many job roles from leadership to engineering and the frontline workforce, to educators training the next generation of manufacturers. These new resources will set a common foundation and language that enables cross-disciplinary innovation, ensuring American manufacturing competitiveness.



Online Smart Manufacturing Training

Introduction to Smart Manufacturing Capturing & Organizing Data

Introduction to Smart Manufacturing 100
Introduction to Smart Business Strategy 251
Smart Business Strategy: Adopting Smart 252
Smart Business Strategy: Data Management 311

Capturing & Organizing Data

Introduction to the Industrial Internet of Things 111
Data Collection Fundamentals 121
Automatic Identification Technology 141
Data Collection: Inventory and Maintenance 231
IIoT Infrastructure for Smart Manufacturing 225
Organizing Big Data and Smart Manufacturing*

Connecting Data, Platforms, & Systems in Smart Manufacturing

Introduction to PLCs 201
Introduction to Digital Networks 221
Introduction to Digital Twin 241
Introduction to Digital Thread 242
Vision Systems 320
Smart Manufacturing Integrated Management Systems*

Cybersecurity

Cybersecurity for Manufacturing Basics 101
Cybersecurity for Manufacturing: Malware Overview 102
Cybersecurity for Manufacturing: Hacking Overview 201
Cybersecurity for Manufacturing: Wireless Networks 202
Securing the Smart Manufacturing Infrastructure*

Automating Flow & Control

Robot Applications 215
Automated Systems and Controls 216
Introduction to Collaborative Robots 275
Introduction to Machine Learning & Artificial Intelligence 301
Machine Learning and Artificial Intelligence Applications 302
Introduction to the Smart Supply Chain*
Smart Manufacturing Process Modeling and Optimization*
Augmented Worker*

Providing Insights for Enhanced Decision Making

Continuous Process Improvement: Managing Flow 124
Continuous Process Improvement:
Identifying & Eliminating Waste 125
Troubleshooting 181
SPC Overview 211
Lean Smart Manufacturing Overview*

**Classes under development. Coming soon.*



Getting Started

- Self Assessment / Survey
 - CESMII (SMX)
 - MEPs and others

- Site Analysis / Gemba Walk
 - Use Case
 - Technology Roadmap / Axiom (SMX) and others
 - Workforce Roadmap / SME and others

- Start Collecting Data
 - Individual Pilot / Sensors and data collection (SMX)
 - Appreciate Data / Visualize a connected enterprise

- Awareness & Training
 - *Fundamentals of Smart Manufacturing (SME)*
 - *RoboticsCareer.org (SMX)*
 - Build Consensus / Shared Vision

