

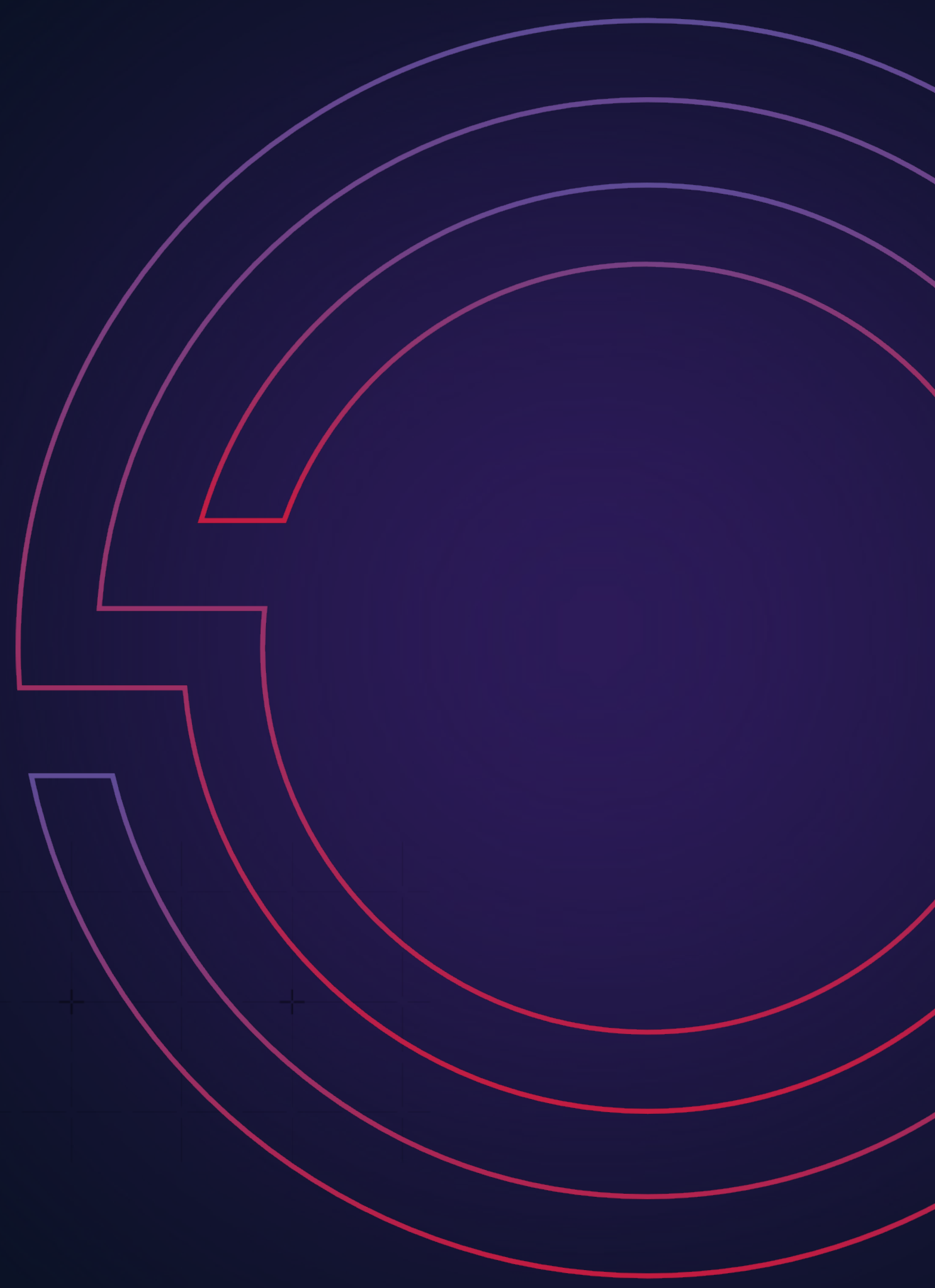


CT General Assembly AI Working Group

AI in Manufacturing

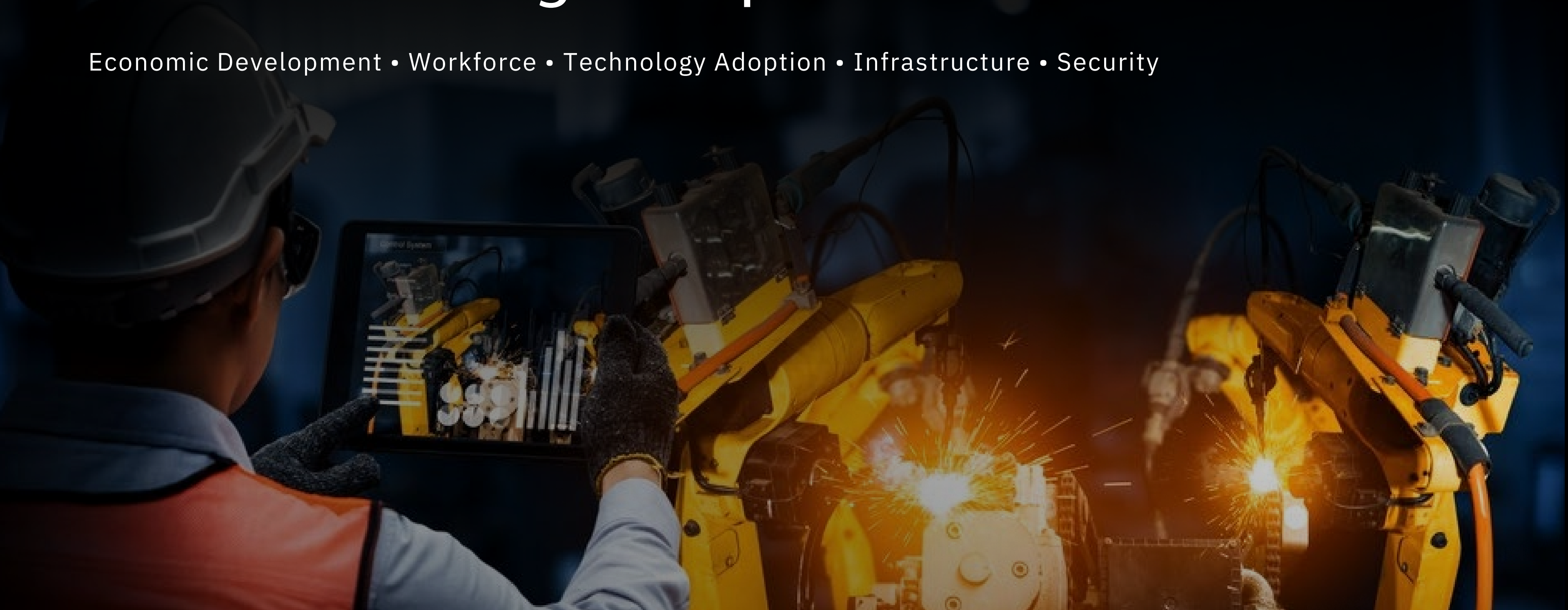
Amy Thompson, Ph.D.
Chief Technology Officer, CCAT

September 14, 2026



AI Will Shape Connecticut's Manufacturing Competitiveness

Economic Development • Workforce • Technology Adoption • Infrastructure • Security



AI Supports Manufacturing Competitiveness

AI offers new opportunities to improve productivity and competitiveness.

4,500+ manufacturers in Connecticut
Connecticut's manufacturing base is predominantly small and midsize.

61%	27%*	80%*	82%
employ fewer than 50 people	have integrated AI technologies	unsure how to incorporate AI	report difficulty finding and retaining workers



*CBIA 2025 Connecticut Manufacturing Report



How quickly can a **50-person American manufacturer** go from hearing about an AI technology to safely putting it into production?

AI Moving From Pilots to Production

The challenge is no longer whether manufacturers will use AI — but how quickly they can apply it safely, productively and at scale.

AWARENESS → EXPERIMENTATION → PILOT → **PRODUCTION** → **INTEGRATION** → **SCALE**

Value comes when AI becomes part of real automated manufacturing workflows.



Manufacturing Is Built on Safety and Process Control

Because manufacturing systems affect products, equipment and operations, AI adoption works best when monitored, validated, and with disciplined implementation.

**SAFETY • VALIDATION • PROCESS CONTROL
OF SAFETY-CRITICAL CYBER PHYSICAL SYSTEMS**

The broader business community can learn a great deal from manufacturing about how to design, engineer, validate, deploy, and govern AI, particularly when AI influences physical systems, safety, quality, or other high-consequence decisions.

Why we need an AI ecosystem in CT: to learn from one another's domains, prior work, and expertise. *Speed comes from building upon prior knowledge.*

AI Adoption in MFG Depends on Digital Thread Readiness

The challenge is not interest — it is having the data quality, connected heterogenous systems, interoperability, traceability, standards, security and people in place to use AI effectively. - NIST

Four foundations manufacturers need before AI can scale:

-  **Usable Digital Thread Data**
Digitized, accurate and accessible manufacturing information across the lifecycle, connected across heterogenous systems with interoperability and traceability
-  **Connected Systems**
Engineering, production, quality and maintenance linked through a digital thread
-  **Secure Infrastructure**
Storage, access controls and cybersecurity, especially for defense suppliers
-  **People and Processes**
Teams prepared to evaluate, trust and act on AI-supported insights



AI performs more reliably when it can access trusted, appropriately structured information, and analyze the relationships among requirements, designs, processes, configurations, tests, suppliers, and other relevant lifecycle information. CONTEXT MATTERS for Decision Making.

Digital Thread Lab

CCAT's Digital Thread Lab delivers immersive, hands-on training that empowers manufacturers to embrace Model-Based Definition (MBD) and digital thread practices across their operations. Developed in collaboration with industry leaders and the U.S. Department of Defense.

Course Catalog

Digital Thread Lab

All categories

Awareness

Digital Design

Digital Manufacturing

Digital Quality and Inspection

Digital Product Definition

Digital CNC Operations

Change Management for Model-Based Definition (MBD) Adoption Workshop

Awareness



Digital Thread & MBD Awareness Training

🕒 1 day, 9am-4pm

\$14M Federal Investment in Connecticut and Region

[VIEW COURSES](#) →

[U.S. Department of Defense Digital Thread Lab \(DTL\) Training at CCAT](https://ccat-inc.arlo.co/w/courses/cat-9-digital-thread-lab)
<https://ccat-inc.arlo.co/w/courses/cat-9-digital-thread-lab>

Beyond the Thread: Governance and Trust

“Can the organization establish the processes, standards, governance, skills and behaviors necessary to trust and use the connected information?”

Governance

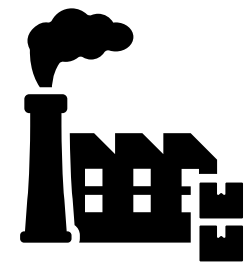
- Which model was used?
- Which version?
- What prompt/context?
- What tools did it invoke?
- What assumptions were made?
- Was retrieval deterministic?
- Can the result be reproduced?
- How was the output validated?

A digital thread can **support organizational memory**, but it doesn't automatically capture engineering wisdom.

- Tacit, Experiential, Judgment-Based, Situational, Organizational, Sometimes Poorly Documented

Closing the AI Adoption Gap is Key to Connecticut's Competitiveness

The opportunity is to support manufacturers in moving from experimentation to productive, scalable AI adoption.



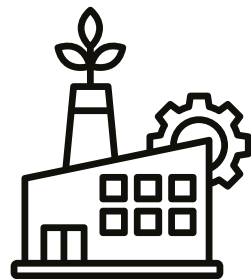
Digitally Mature Manufacturers

Investing and advancing toward full - scale adoption.


Integration


Scale

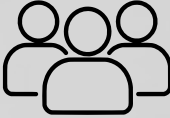

Systemic AI



Many Small and Midsize Manufacturers

Often constrained by data, AI expertise, cybersecurity and investment capacity.


Awareness


Experimentation


Pilots

↑
Adoption
Gap
↓



Assisting smaller manufacturers cross this gap strengthens the entire industrial base.

Automate Tasks. Elevate People.

The key is to automate tasks, not people — using technology to address workforce gaps while creating higher-value, more technical roles.



AUTOMATE TASKS

Repetitive, labor-intensive and data-driven tasks are strong candidates for automation.

- Material movement
- Machine tending
- Inspection
- Data collection
- Scheduling
- Documentation
- Repetitive assembly
- Packaging
- Tool management
- Quality data analysis
- Routine programming
- Administrative processes



TECHNOLOGY INVESTMENT

Automation and digital tools shift repetitive work away from people.

- Robotic machine tending
- Automated inspection
- Digital work instructions
- Tool monitoring
- Automated material handling



ELEVATE PEOPLE

People move into higher-value, more technical roles.

- Process optimization
- Robotics programming
- Troubleshooting
- Quality engineering
- Process engineering
- Automation engineering
- Data analysis
- Advanced machining
- Manufacturing technology
- Continuous improvement



EXAMPLE: THE MACHINIST OF THE FUTURE

Today, machinists spend significant time on:

- Loading/unloading
- Inspection
- Paperwork
- Tool measurement
- Material movement



With technology investment:

- Robotic machine tending
- Automated inspection
- Digital work instructions
- Tool monitoring
- Automated material handling

Workers can move into:

Higher-value roles, greater technical responsibility and pathways to higher pay.



Automation
Technician



CNC
Programmer



Quality
Technician

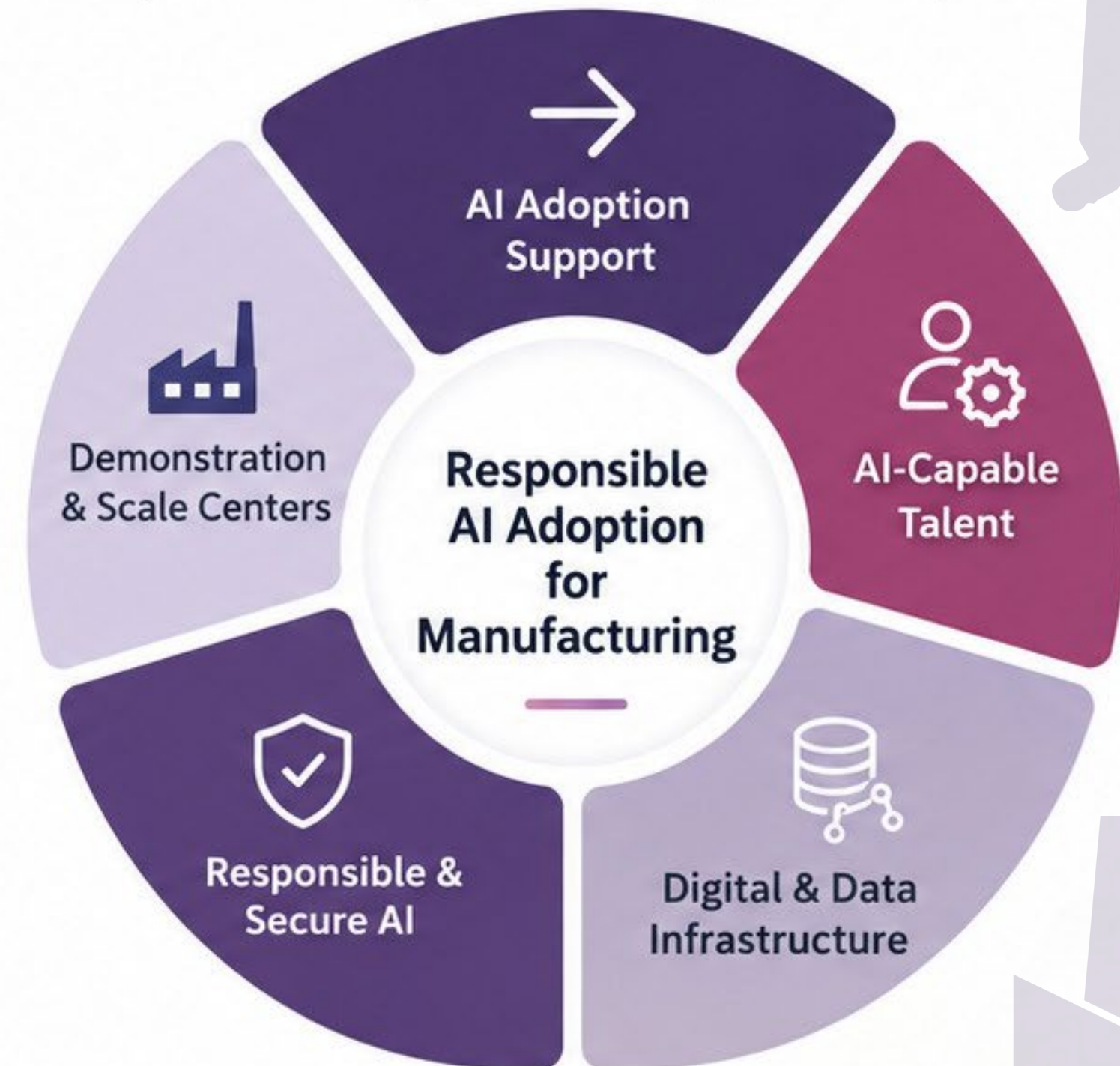


Robotics
Operator

The Policy Opportunity Is Responsible Adoption

Connecticut can help manufacturers adopt AI safely, securely and competitively.

A strong state strategy should help manufacturers move from awareness to adoption — while building the talent, data foundation, security practices, and demonstration capacity needed to scale.

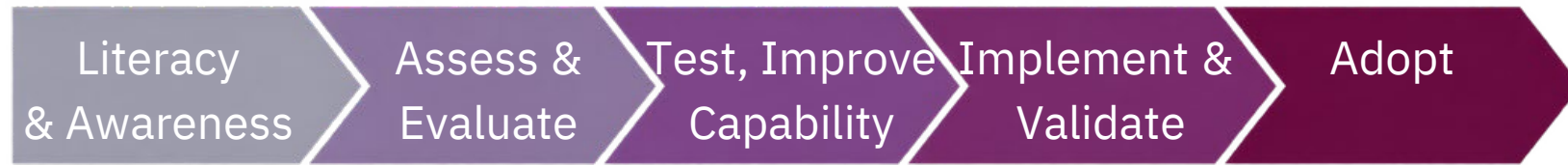


Goal: a stronger, safer, more innovative and competitive manufacturing base.

CCAT Supports Manufacturers Moving from AI Awareness to Adoption

A neutral place to build awareness, understanding, skills, assess, align, test, improve capability, evaluate and validate technology and processes for confidence

The Practical Bridge:



CCAT Supports Manufacturers:

- See what is possible
- Assess benefits, risks and readiness
- Test and evaluate technologies before investing
- Build adoption plans and roadmaps
- Train teams to use AI safely and productively
- Adoption occurs when the workflow is owned, validated, and repeatable





- # TEST & APPLY
- Real parts. Real processes. Lower-risk adoption.

From Shop-Floor Data to Better Decision Making

See how connected manufacturing systems turn real-time data into actionable insight.

MACHINE / PROCESS



DATA



DIGITAL MODEL



AI ANALYSIS



ACTION

Monitor • Predict • Improve



Connecticut Can Lead the AI Revolution in Manufacturing

by supporting manufacturers as they adopt AI responsibly, securely and competitively.

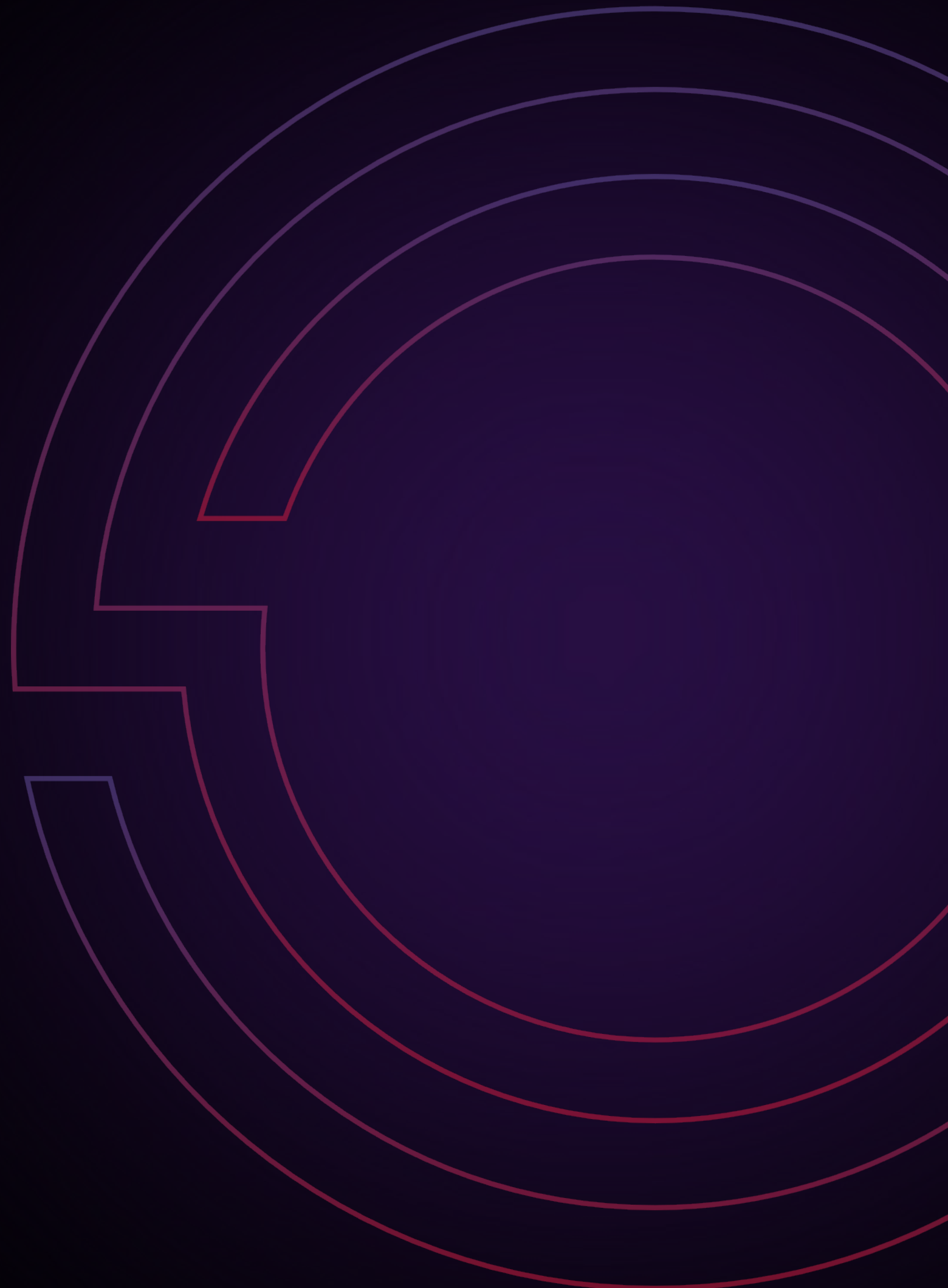
Responsible adoption happens when manufacturers can test, validate and understand AI before they invest.

See it in action. Visit CCAT. —→

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APPENDIX



CCAT: A Manufacturing Readiness Center

Through five connected areas, CCAT applies autonomous manufacturing techniques, model-based engineering, modeling and simulation, and physics-based AI to deliver practical manufacturing technology and business solutions.

01

Digital

Advanced
Design, Intelligence,
Automation &
Metrology

02

Additive

Additive Technologies &
Workflows,
Optimization and
Machining

03

Composites

Advanced
Composites
Technology

04

Training

Applied Technical
Training & Talent
Development

05

Investment

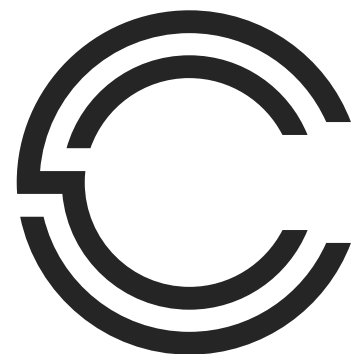
Strategic
Manufacturing
Investment Center

From Vision to Impact

CCAT connects manufacturers, technology providers and industry partners to advance applied technologies, accelerate adoption and deliver practical manufacturing solutions—turning transformative ideas into measurable impact.



CONNECTICUT
CENTER FOR
ADVANCED
TECHNOLOGY



CCAT Executive Leadership



Ron Angelo
President & CEO



John Glidden
Chief Finance Officer



Andrew Bond
Executive Director



Amy Thompson, Ph.D.
Chief Technology Officer



Sonja Randall
Chief Operating Officer

Digital Engineering Team



Nasir Mannan
Technical Fellow,
Mechanical and Software
Engineering



Rachel McGrath
Principal Engineer,
Systems Engineering



Sriniket Rachuri
Mechatronics Engineer



Garrison Kunst
AI/ Machine Learning Engineer



Nicholas Lockwood
Controls Engineer



Chris Miller
Manufacturing
Applications Engineer



Maleeha Wahid
Software Developer



Ryan Matthiessen
Mechanical Engineer



Gian Samuel
Metrology Technician



Ryan George
Simulation Engineer

Artificial Intelligence • Machine Learning • Robotics • Computer Vision Workflows • Predictive Analytics • Digital Twin • Digital Thread • Model Based Systems Engineering • Model Based Design • Model Based Inspection • Computational Fluid Dynamics • Finite Element Analysis • Process Simulation • Plant Simulation • Causality Analysis • CNC Machining • Welding • Deburring • Polishing • Sheet Metal Bending • Laser Cutting • Visual Inspection • Dimensional Inspection • Blue Light Scan

Technology for Today's Solutions

Our Services and Expertise

CCAT OVERVIEW



The Connecticut Center for Advanced Technology is a technology solutions innovation and readiness center—turning technology into capability by enabling companies to automate, build, scale, and sustain advanced manufacturing across the industrial base.

Technology Exploration

- Engineering Consultations
- Interactive Technology Demos
- Tech Data & MBD Workflow Support
- Technology Validation
- AI Adoption Exploration

MBD & Additive Training

- Digital Design & Costing
- Digital Manufacturing
- QA & Inspection
- Additive Workflows
- Personalized Pathway Portal

Technology Integration

- Assessments
- Customized Tool Guidance
- Project Implementation
- Ongoing System Support
- Grants for Manufacturers



ccat.us/contact

Engineering & Technology Expertise

We support companies of all sizes in overcoming technology and process challenges—serving as a trusted partner to OEMs and federal agencies, and the broader industrial ecosystem.

Talent & Training Accelerator

A hands-on training facility that builds critical skills in advanced manufacturing, 3D printing, quality inspection, and automation technologies.

Innovation Centers

Our world class centers include; Manufacturing Technology Center, Manufacturing Composites Center and Technical Training Center.

TAKE THE NEXT STEP

Connect with our experts and explore how CCAT can help your business innovate, build talent, and adopt advanced technology.

Build Digital Thread Readiness

DIGITAL THREAD & MODEL-BASED
DEFINITION AWARENESS TRAINING



CONNECTICUT
CENTER FOR
ADVANCED
TECHNOLOGY

Manufacturers face growing expectations for Model-Based Definition, connected workflows, and consistent product data across engineering, manufacturing, and quality. CCAT's Awareness Training introduces these concepts through practical, real-world manufacturing examples.

A stronger digital foundation improves communication, reduces inefficiencies, supports customer requirements, and guides technology and workforce decisions.

Practical Training for Manufacturers
Designed for small and mid-sized manufacturers and suppliers, this session introduces Digital Thread and Model-Based Definition through practical manufacturing examples.

Participants see how model-based information moves across design, production, and quality, and how connected workflows can reduce errors, improve collaboration, and support customer requirements.

Join an Upcoming Session Near You

CCAT partners with universities, technology centers, industry organizations, and manufacturers to offer Awareness Training at locations across the region and country.

Bring colleagues from engineering, manufacturing, quality, and leadership together for a shared introduction to Digital Thread and Model-Based Definition.

Reduce Errors and Rework

Create a more reliable flow of information across design, production, and inspection.

Improve Quality & Traceability

Help teams work from consistent, authoritative product data throughout manufacturing.

Build Digital Fluency Across Teams

Give employees a shared understanding of Digital Thread and Model-Based Definition.

What Participants Will Gain

- Understand Digital Thread and MBD without unnecessary technical complexity
- Connect digital practices to manufacturing and quality performance
- Identify priorities for technology, workforce development, and next-step training

Learn More & Register

ccat-inc.arlo.co



tnt@ccat.us

Training Portfolio & Course Offerings

Engineer your future with customizable career training pathways & in-person, hands-on learning modules

CAREER TRAINING PATHWAYS

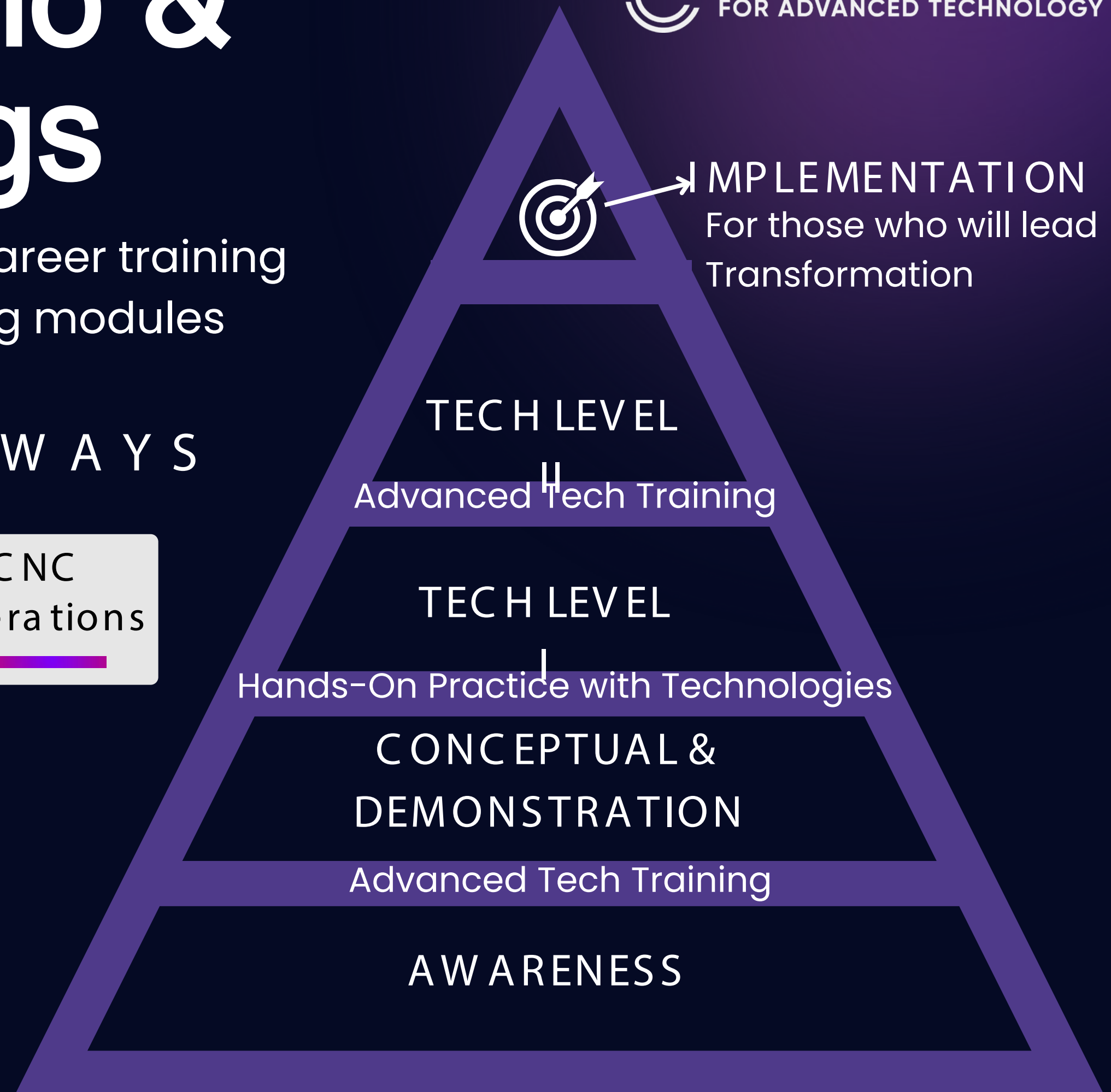
Digital
Design

Digital
Mfg

QA &
Inspection

CNC
Operations

Each pathway will include multiple levels of training to provide depth & breadth in opportunities. Pre-requisites necessary



Help Students See What's Possible in a Career in Manufacturing

A Free Webinar for Connecticut High School Counselors

MANUFACTURING & TECHNOLOGY CAREERS WEBINAR



Manufacturing is changing—and so are the opportunities available to your students.

Join the Connecticut Center for Advanced Technology (CCAT) for an inside look at today's advanced manufacturing and technology careers, the skills employers need, and the many education and training pathways that can lead to success.

Working across the nation's manufacturing industry, CCAT connects companies, technology and talent. This webinar brings that industry perspective directly to counselors, giving you current industry insights and resources to share with students.

Explore Career Opportunities

Gain insight into emerging careers, in-demand skills, and where the manufacturing industry is headed.

Understand the Pathways

Explore multiple routes to rewarding careers—from entering the industry after high school and short-term credential programs to associate and bachelor's degrees.

Connect Students to Resources

Discover programs, events, learning experiences, and resources that can expand students' awareness of manufacturing and technology careers.

Give students a clearer view of where manufacturing is going—and the many ways they can be part of it.

Manufacturing Career Insights for Counselors

Hear directly from CCAT technology and manufacturing experts who work across the nation with major manufacturers, OEMs, and small and mid-sized suppliers.

Gain an industry-informed perspective you can use in conversations with students about emerging careers, skills and education pathways.

Build greater confidence guiding students toward opportunities that align with their interests, strengths and goals.

Learn About the Educator Fellowship

During the webinar, we'll introduce CCAT's Industry 4.0 Educator Fellowship, a hands-on professional learning experience for Connecticut high school CTE and STEM educators on November 3.

Wednesday,
October 14, 2026

**Manufacturing & Technology
Career Pathways Webinar**
9:00 a.m.–10:00 a.m.



This free webinar is funded by the Connecticut State Department of Education.

REGISTER

Questions and to register, contact Eileen Candels at ecandels@ccat.us

or scan QR code



GRANTS for MANUFACTURERS



Discover funding programs to help Connecticut companies gain essential skills and resources, enhancing your resiliency and maintaining a competitive edge.

TECHNOLOGY

Cybersecurity Adoption Program

\$35,000 to help manufacturers with cybersecurity assessments and CMMC adoption.

Additive Voucher Program **\$20,000**

for additive mfg./ 3D printing hardware, software and integration services

Innovation Voucher Program

\$25,000 for digital hardware, sensors, platforms and related integration services

Manufacturing Voucher Program

\$100,000 for new equipment or software aimed at enhancing productivity, yield, accuracy and quality

TALENT and TRAINING

Apprenticeship Funding Program

\$15,000 wage subsidy per registered apprentice and pre-apprentice

Incumbent Worker Training

\$100,000 of training expenses paid on a matching basis to upskill employees. (\$50,000 maximum annual benefit)

CT Manufacturing Internship

\$14,000 wage subsidies; cohort-based program for summer college interns at manufacturing companies, ccat.us/interns

Digital Transformation Training

Offering hands-on technical training in adaptive automation, industrial IoT, extended reality (AR/VR/MR) and model-based definition

Additive Technology Training

Providing industry-certified technical training in additive manufacturing, 3D printing technologies, and design for additive



Explore funding opportunities for your company.

Scan QR code or visit ccat.us/grants

Is Your Company Eligible?



Manufacturers or Allied Service Providers



Facility in Connecticut or relocating manufacturing operations to Connecticut



Registered in business for 3+ years and currently generating revenue



Business with minimum of three employees



In good tax standing with the State of CT