



AI In Manufacturing

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Why AI Matters in Manufacturing



- Drives productivity and efficiency
- Enables predictive insights and real-time decision making
- Expands technician roles beyond traditional mechanical/electrical tasks

Smart Automation & Robotics

- Collaborative robots (cobots) adaptable to tasks
- Machine vision for defect detection and precision alignment
- AI-powered predictive maintenance for uptime



Data & Process Optimization

- AI-driven sensors and IIoT data collection
- Process analytics suggest efficiency improvements
- Digital twins simulate changes before implementation



Quality & Safety

- Automated AI quality control beyond human vision
- AI safety systems monitoring zones and hazards
- Compliance with OSHA and ISO standards



Human–AI Collaboration



- AI supports decision making in scheduling, resources, maintenance
- Shifts skills to troubleshooting and exception management
- Technicians and AI as partners, not replacements

Career Pathways for 2-Year Graduates

- AI-Assisted Maintenance Technician
- Smart Manufacturing Technician
- Industrial Data Technician
- Automation Specialist
- Quality Control Analyst (AI-Integrated)



Skills for the AI-Enabled Technician

- Configure and troubleshoot AI-powered sensors/robots
- Run predictive maintenance software
- Integrate PLCs with AI platforms
- Operate dashboards and digital twins
- Validate AI quality reports and train peers



Key Predictions

- AI transforms—does not replaces—technician roles
- Graduates need hybrid mechanical + digital skills
- Employers demand readiness for Industry 4.0 ecosystems
- Education programs must embed AI knowledge & skills

So, What Should We Do?

- Ask the employers that will employ you future manufacturing grads to co-lead your work
- What do we know so far about AI in Manufacturing curriculum?
- How do we get busy industry subject matter experts to talk with us?



The Business & Industry Leadership Team (BILT) Model

*A Co-Leadership Approach to
Workforce Development*

Introduction to the BILT

cord Center for
Occupational
Research &
Development



BUSINESS & INDUSTRY LEADERSHIP TEAM MODEL



The **BILT Model** is:

- **Advisory Committee 2.0** – takes employer relationships to the next level
- A **structured, repeatable, very efficient process**, for any program
- A model that puts employers in a **co-leadership/co-ownership role** that greatly increases engagement with college programs
- **Modified DACUM** that takes **MUCH** less time than a **DACUM**



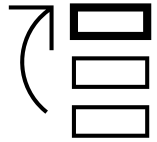
BILT Roots

National Science Foundation (NSF)
Center of Excellence in Convergence
Technology based at Collin College (TX)
[2012-2023]

Established BILT model through work with
business leaders from across the nation to
determine **Knowledge, Skills, and Abilities**
"workforce ready" graduates will need.

Implemented at more than **150+**
institutions, national centers, and projects
in multiple disciplines.

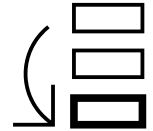
Recognized by funders nationally as a
leading model for strategic employer
engagement



FREQUENCY

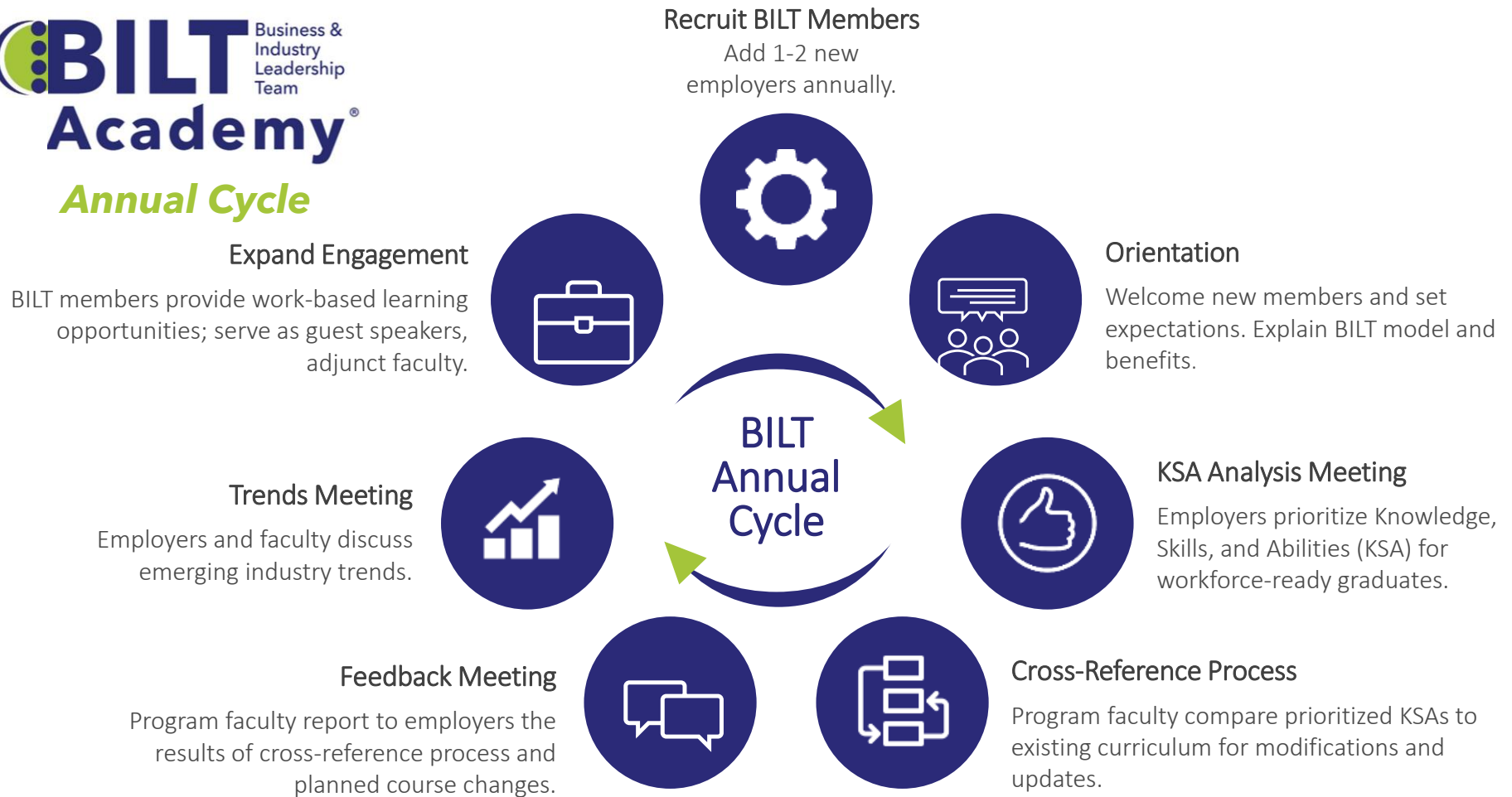
SPECIFICITY

DEPTH OF
INPUT



INDUSTRY-LED

Annual Cycle





Essential Roles

Businesses SMEs:

- Co-lead programs
- **Prioritize Knowledge, Skills and Abilities (KSAs)**
they want graduates to have 12-36 months into the future (at a program level)
 - Structured, repeatable process
 - Synchronous discussion
- **Predict Labor Market Demand**
- **Predict trends** during other meetings annually

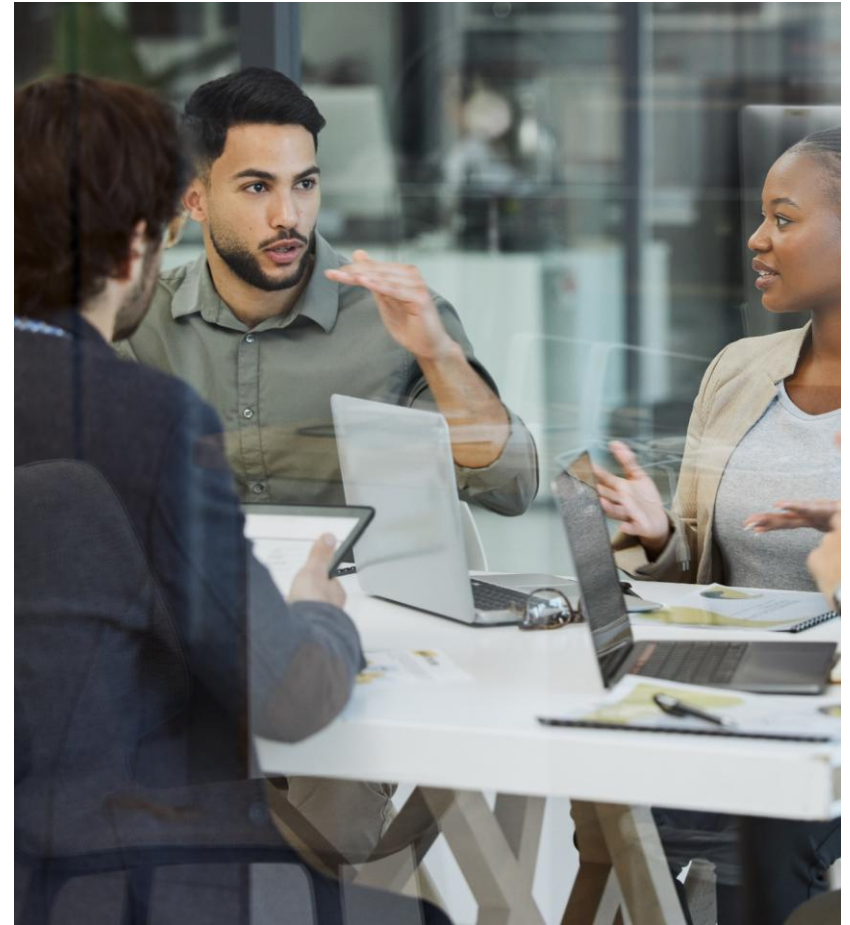
Faculty SMEs:

- Attend KSA mtg as active listeners and questioners
- **Cross reference KSAs to existing curriculum** to determine gaps and coverage
- **Diligently try to update curriculum** to address KSAs needed by businesses
- **Provide businesses with feedback** regarding implementation and discuss challenges

Annual BILT Meetings

- **KSA Analysis Meeting**
In-person w/hybrid option (*1.5 -2 hours*)
- **Feedback Meeting**
Virtual format (*1 hour*)
- **Industry Trends Meeting**
Virtual format (*45 min - hour*)

Emphasis is on **growing a pipeline** of right-skilled job candidates



BILT Examples



DEVELOPING THE TALENT PIPELINE AT FORSYTH TECH



leapr Learn & Earn
Apprenticeship
Program
@ForsythTech

Industry leaders and college faculty collaborate to give middle and high school students exposure to the field of engineering and manufacturing. Students learn about academic pathways that lead to careers through hands-on exploration.

EnTec

MIAMI DADE COLLEGE
SCHOOL OF ENGINEERING
+TECHNOLOGY



BILT DRIVES INNOVATION

- **Cybersecurity BILT** drove build of AS and BS in Cyber that now has over 1200 enrollees and massive demand
- **Cloud BILT** guided development of AS and BS that were recently approved
- **Data Analytics BILT** guided updates for Data Analytics AS and BS.
- **AI BILT** team led creation of the AI credentials at Miami Dade College including 2 CC's, AS, and BS now with almost 2000 students in the program that began Fall 2023.
- **Semiconductor BILT** and **Aerospace BILT** in development



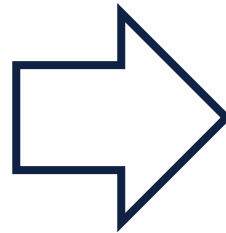
College Teams Receive:

1. One-on-one coaching sessions
2. Cohort training on each step of the BILT Annual Cycle
3. On-demand access to BILT templates and resources
4. Facilitation of KSA Analysis with employers to ensure curriculum is industry responsive

SERVING ON BILT – DRIVING VALUE

We are in the business of employing the future of America.

STUDENT



EMPLOYEE



BILT – What's in it for me?

PROFESSOR

- Delivering relevant, industry sought-after skills
- Students more prepared to enter the workforce
- Early business engagement exposes students to business perspective and taxonomy (Mentoring, internships, externships, business-graded capstone courses, apprenticeships)

BUSINESS LEADER

- Entry-level employees with “hit-the ground-running” skills
- Ability to tangibly give back to the community
- Ability to tap eager talent in transitioning to the workforce
- Time value realized and appreciated

To Learn about BILT – Ask About the BILT Academy

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