



# Moving Research into Practice: How do we get from here to there?

- FLATE 2020
- Future of Work for Technicians

## Research, Results, Realization

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# FLATE Vision

**FLATE** will drive Florida's world-class  
manufacturing workforce



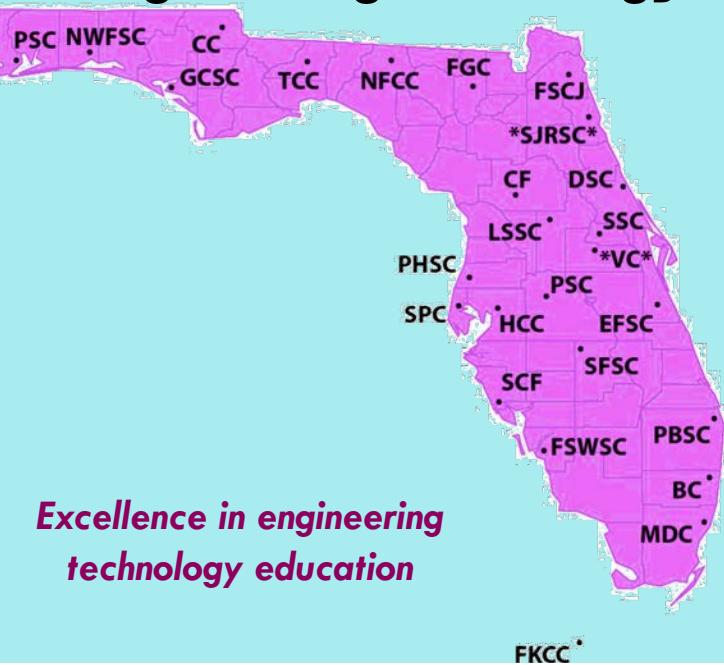
part of the  
**FloridaMakes**  
network





# FLATE's Work

## FORUM on Engineering Technology



Curriculum



Outreach

**FLATE's wiki**  
...full of great FREE RESOURCES for you!

(CLICK ON IMAGES BELOW)

<b>Made in Florida STEM Lesson Plans</b> For Elementary, Middle & High School Educators	<b>Career Education Resources</b>	<b>Modules for Advanced Technological Education</b>	<b>The Toothpick Factory</b> A Simulating Game for Soft Skills	<b>Student Activity Sheets</b> Made in FLORIDA 2015 Teacher's Guide
Industry Tour Resources Find pre-tour lessons, post-tours surveys and many resources for all your	Recruiting all GIRLS who love S.T.E.M.!	FLATE Presentations, Publications, Meetings & Webinars	High School Technology Initiative Modules for high school sciences that teach STEM concepts related to	STEM Summer Camps Robotics & Energy Camp Resources for everyone.

Professional Development

# What's Next?

# The Road Ahead

- ✓ Unprecedented change in economy and nature of work due to rapidly advancing technologies
- ✓ Current education and training systems have not been very agile
- ✓ Stackable credentials could play a larger role in the workforce development ecosystem
- ✓ Lifelong learning needs to start NOW



# Project Team

## Preparing Technicians for the **FUTURE OF WORK**

- Ann-Claire Anderson, Principal Investigator
- Hope Cotner, Co-Principal Investigator
- Mike Lesiecki, Co-Principal Investigator
- Richard Gilbert, Co-Principal Investigator
- Marilyn Barger, Special Advisor

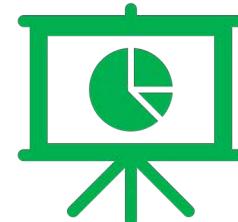


# Simple Research Process

**RESEARCH**



**RESULTS**



**REALIZE**



# Simple Research Process: RESEARCH



**RESULTS**

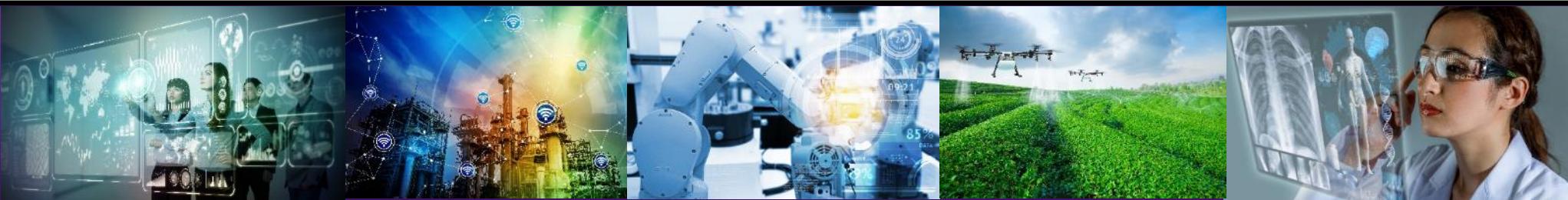
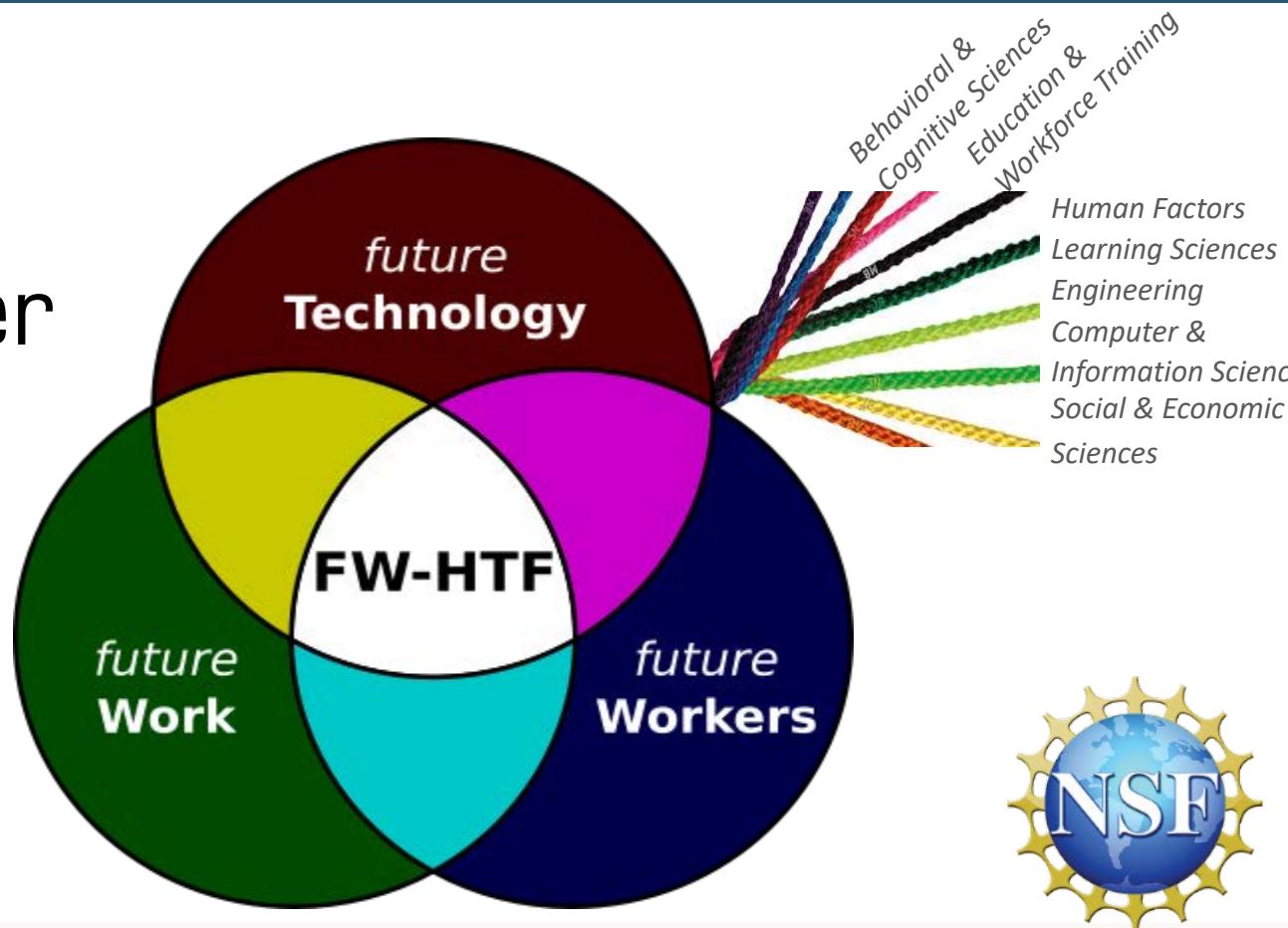


**REALIZE**



# NSF: The Future of Work at the Human-Technology Frontier

**Technicians** sit at the center of much of this “disruption”



# Research Focus and Early Findings



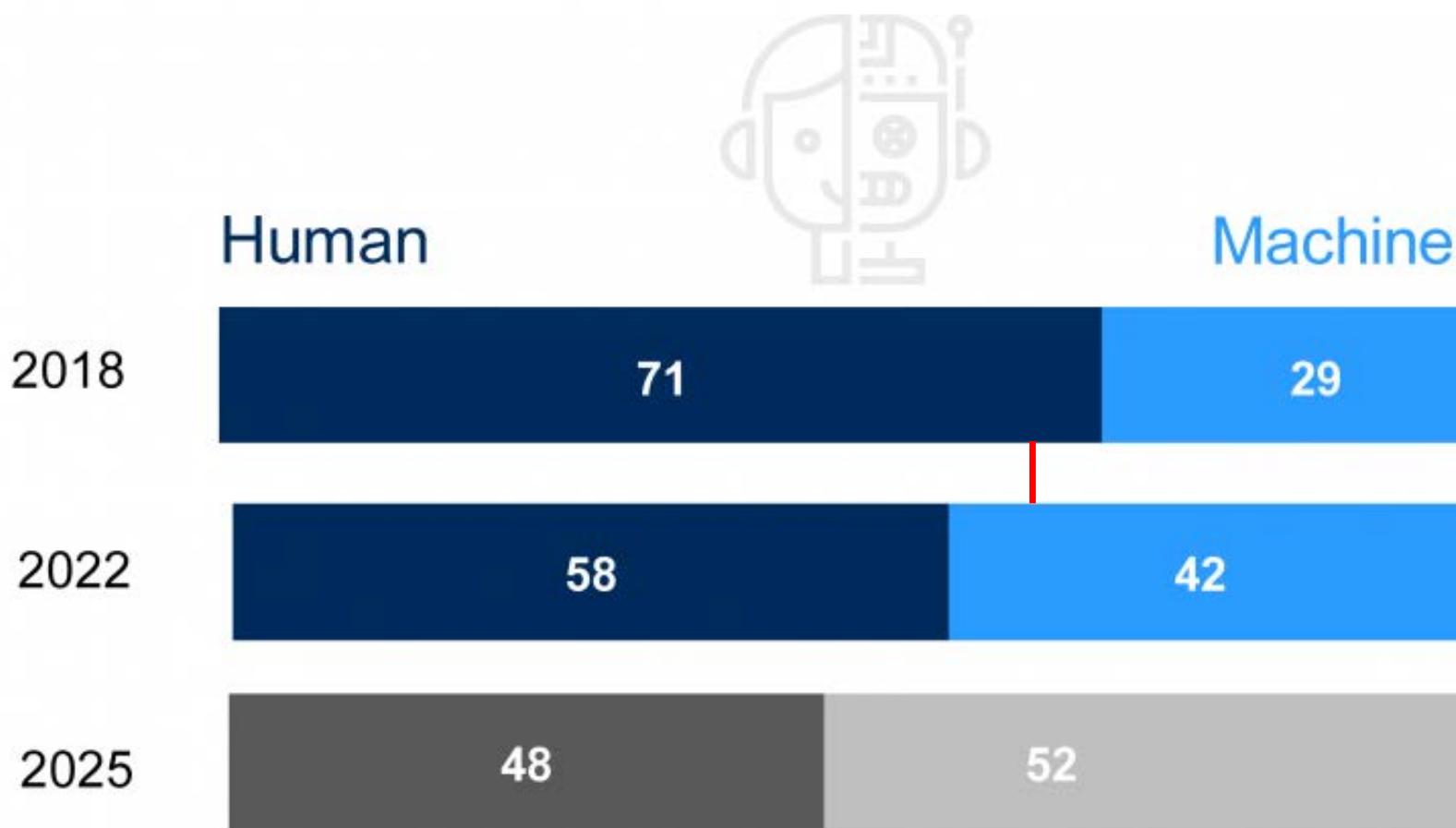
[www.preparingtechnicians.org](http://www.preparingtechnicians.org)

This material is based upon work supported by the National Science Foundation under Grant DUE1839567. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



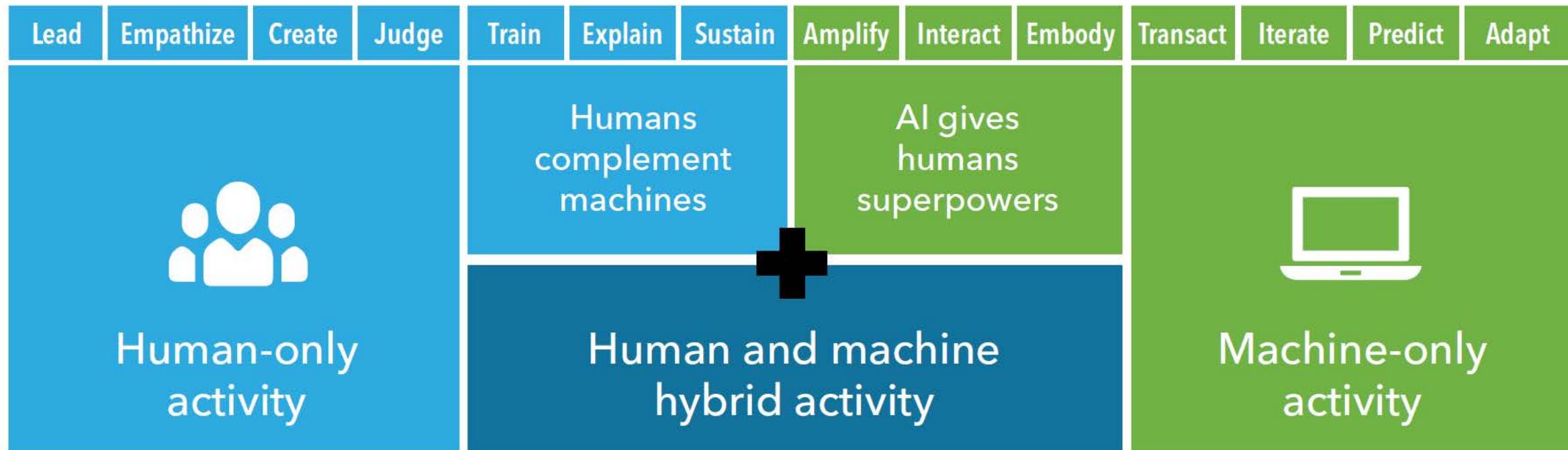
# Rate of automation

Division of labour as share of hours spent (%)



# Humans and Machines

## Roles of Humans and Machines in the AI Era<sup>73</sup>



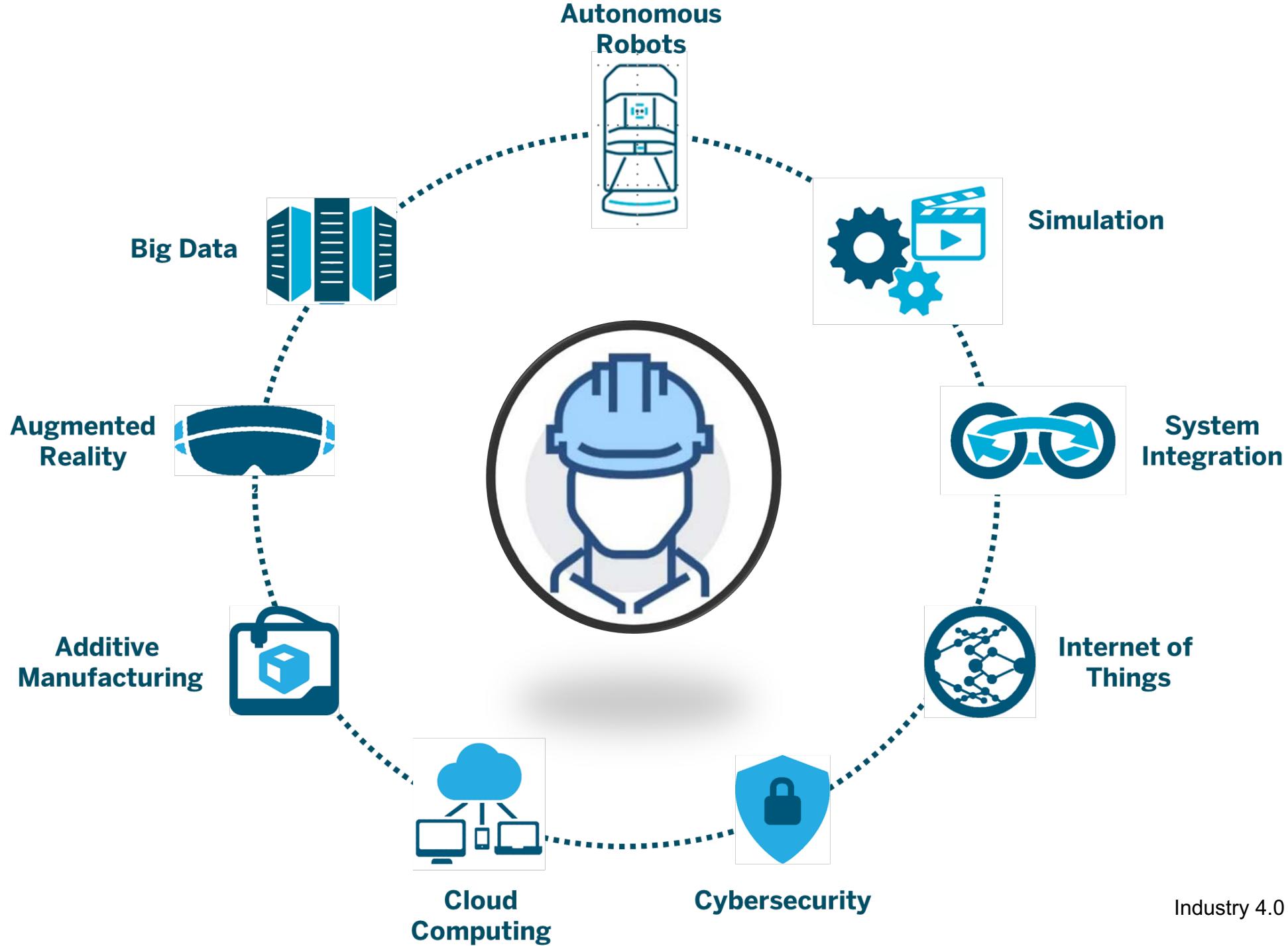
Graphic based on diagram from Daugherty and Wilson, *Human + Machine: Reimagining Work in the Age of AI*

By 2022 everyone will need  
an extra

**101**  
days of  
learning

Source: Future of Jobs Report 2018, World Economic Forum



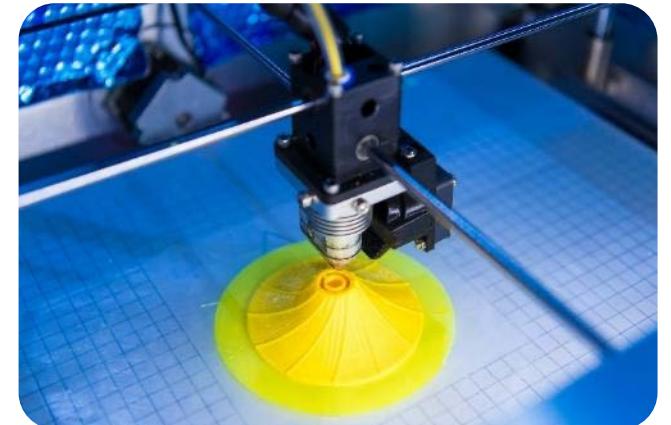


# Gathering Information for New Foundational Competencies for STEM Technicians of the Future



## Gathering Data from Multiple Sources:

- Industry Advisory Board
- ATE Leadership Caucus input
- Industry/education focus groups
- Recent business news and research
- Existing competency models
- Industry site visits and interviews
- Regional convenings
- Surveys

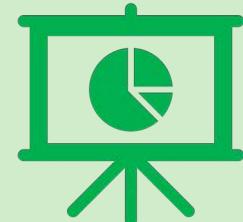


# Research Focus and Early Findings

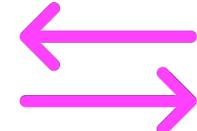
**RESEARCH**



**RESULTS**



**REALIZE**

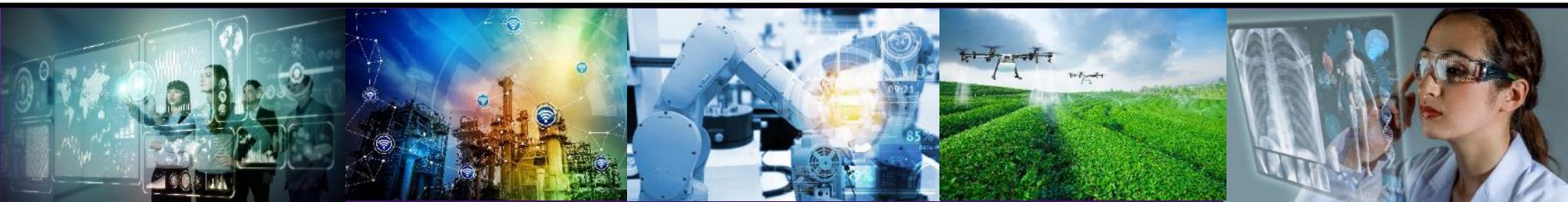
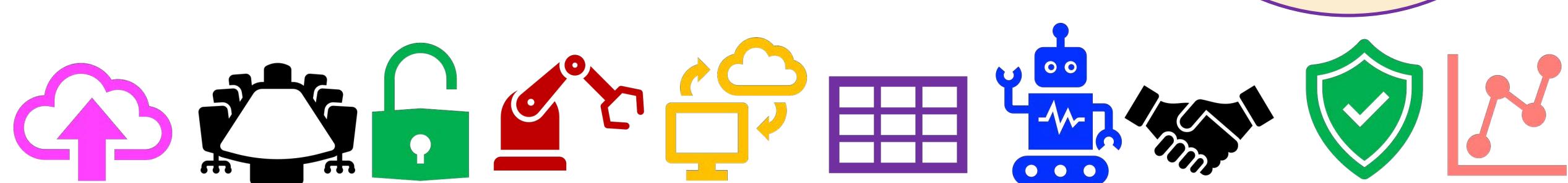


# FoW Skill Areas for STEM Technicians



- 1: Advanced Digital Literacy
- 2: Business Knowledge and Processes
- 3: Data Knowledge and Analysis

50+ specific skills  
collectively in the  
3 categories



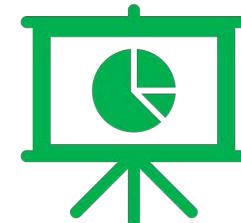
# Simple Research Process: REALIZE



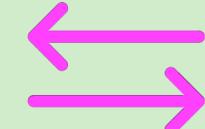
**RESEARCH**



**RESULTS**



**REALIZE**



# Realizing the Results



- Engage Experts
- Develop Resources
- Disseminate
- Mentor
- Provide Educator Workshops
- Building Regional Networks

**DATA KNOWLEDGE AND ANALYSIS**

**Data Visualization**

**What is data visualization?**

Data visualization represents information in the form of a chart, diagram, picture, or infographic so that the data can be quickly and easily understood. Technicians use data visualization software to create graphics that communicate complex information to a variety of audiences.

**Technician Competencies**

- Describe the different ways to represent data and data visualization
- Clean and manipulate the data for analysis
- Analyze various types of data using visualization techniques
- Complete the steps to design a dashboard.

**ACTIVITY**

Create a visual representation of the dataset provided. (Select from [Datasets for Teaching and Learning](#) or [Public Databases](#) of global open data at national, regional, and global levels.)

**DATA KNOWLEDGE & ANALYSIS**

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**Types of Data Visualization**

- Bubble clouds
- Bullet graphs
- Heat maps
- Radial trees
- Infographics

**Vocabulary**

- Dataset – a collection of data, often organized in a spreadsheet or database
- Chart – a graphic representation of data; bar charts, pie charts or line graphs, for example
- Scale – marks on a visualization that indicate the range of data values presented

**For Students**

**How will a technician use data visualization?**

Evan Garcia is a technician for Green Mountain Power Company. He is responsible for tracking increased system outages over time across a metropolitan network, collects outage statistics, including system logs, environmental information, and helpdesk ticket details from network nodes and service centers in order to determine the cause. Evan stores the data in an Excel workbook, then imports data into SAS, Tableau, or MS Power BI visualization tools and creates a dashboard to present to management. The data dashboard provides an interactive geographical heat map showing outage details and other graphical representations of his data analysis of the event. The heat map allows management to make real-time decisions, troubleshooting, and dispatching.



# Integrating Industry 4.0: Next Steps for Colleges



- ✓ Find out what I 4.0 means to your employers emerging workforce needs
- ✓ Take an audit of what I 4.0 components are already being taught
- ✓ Determine which existing curricula can be leveraged across the college
- ✓ Define professional development needs and get it
- ✓ Form interdisciplinary teams
- ✓ Use stackable credentials and emerging certifications as tools for upskilling/reskilling/lifelong learning as well as connecting to credit programs

[NCATC Industry 4.0 Toolkit](#)



# FOW Considerations for Community & Technical Colleges

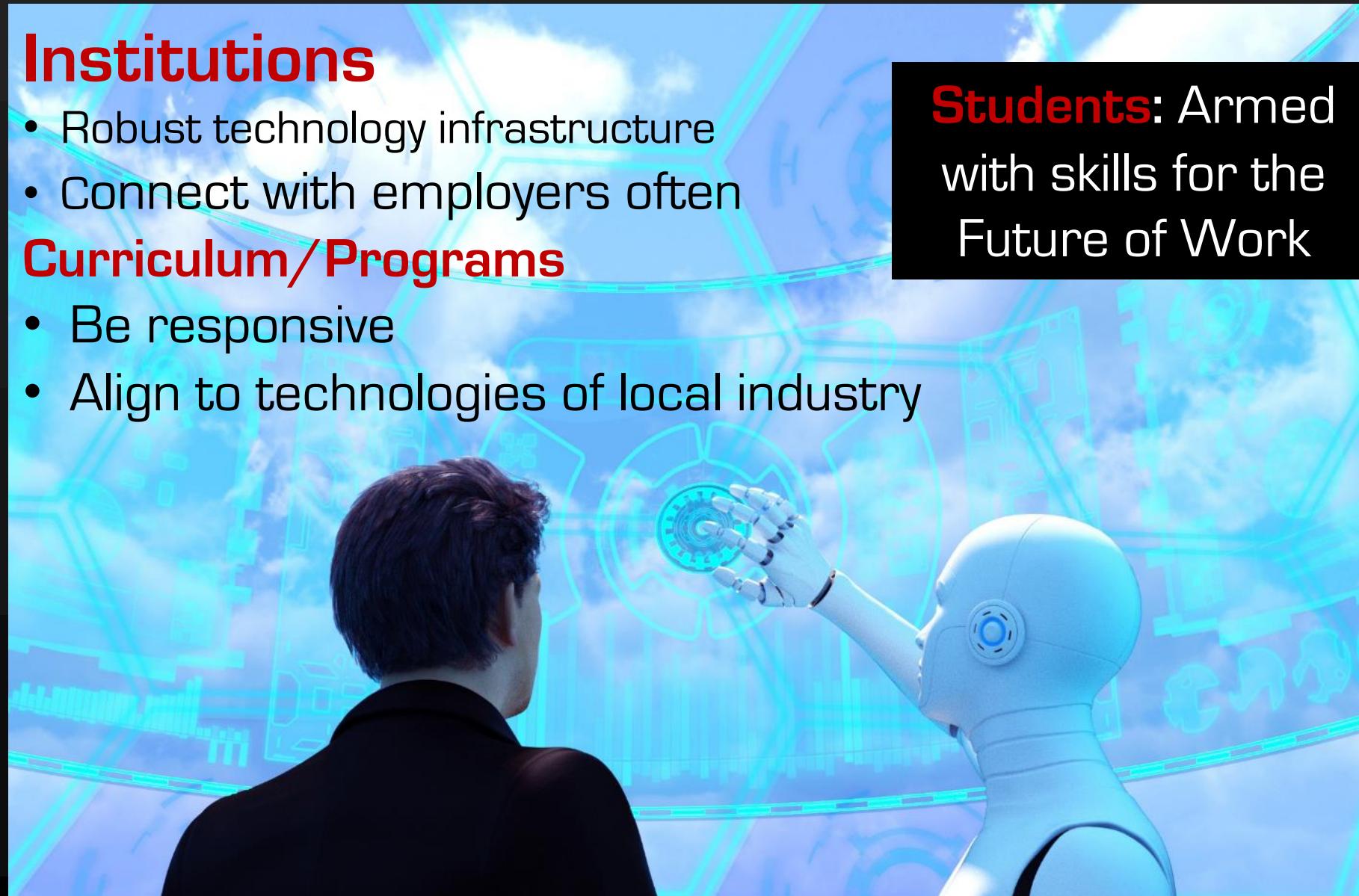
## Institutions

- Robust technology infrastructure
- Connect with employers often

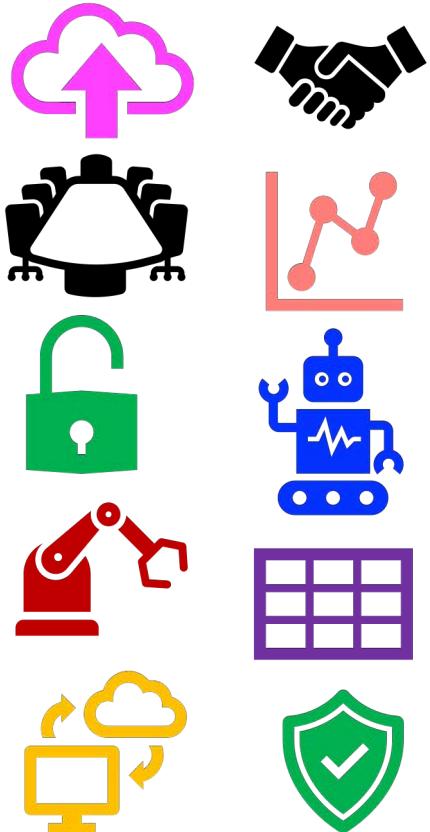
## Curriculum/Programs

- Be responsive
- Align to technologies of local industry

**Students:** Armed with skills for the Future of Work



# Thank you!



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