



Where Manufacturing Technology and Talent Matter

A Public-Private-Partnership:
Department of Defense – Industry – Academia



LIFT Overview

SMARTER MANUFACTURING

On a global scale the next industrial and economic powerhouse will be the country or region that masters this first.

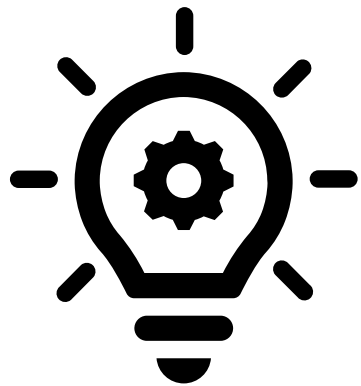
We are the engine driving the U.S. mobility sector toward the Smarter Manufacturing revolution to support our nation's economy and enhance our national security.

We link Fortune 500 companies with SMEs, DoD and Academia.

TOGETHER MANUFACTURING A SMARTER FUTURE

SOLVING THE MANUFACTURING EQUATION

 MATERIALS +  PROCESS +  SYSTEMS

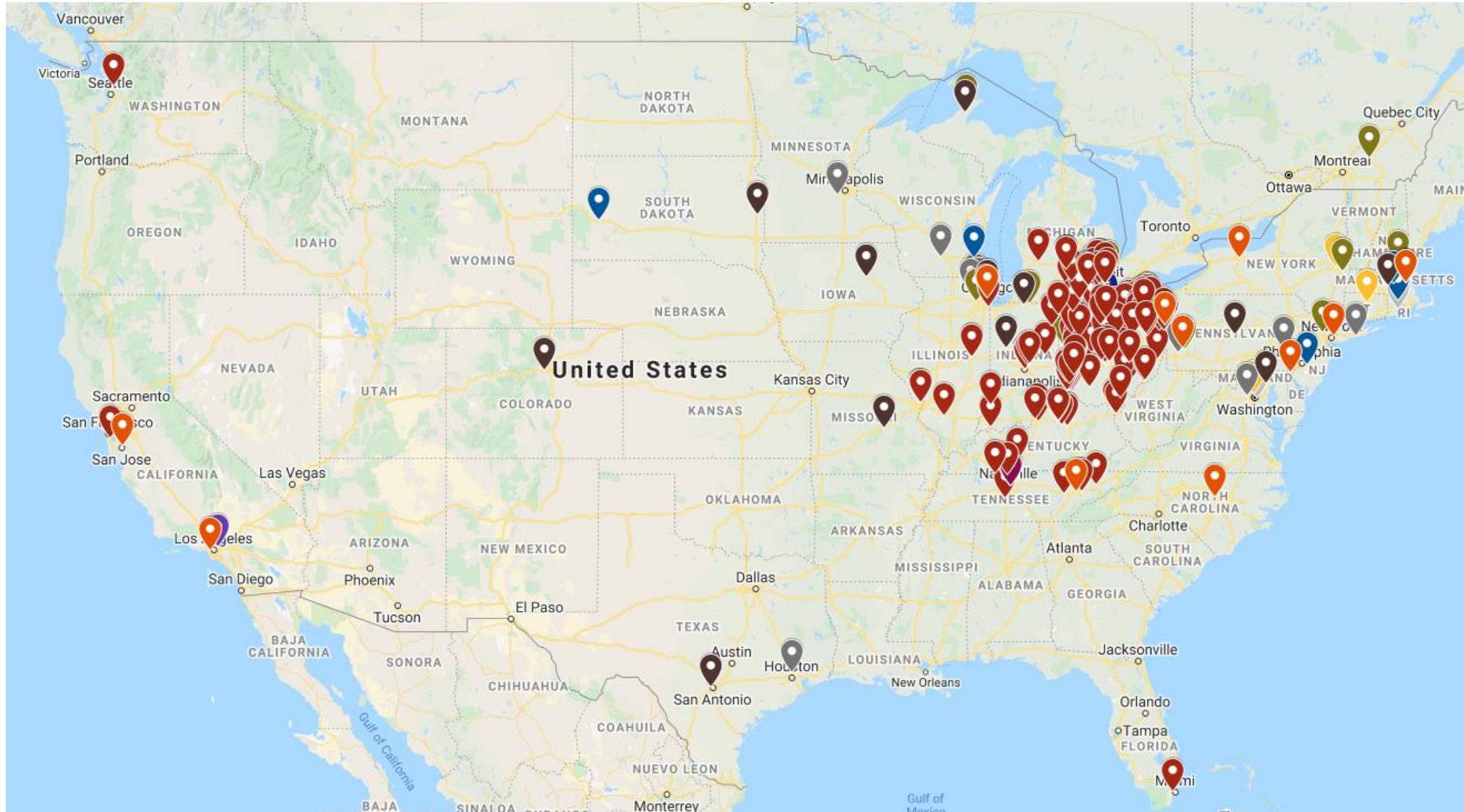


 Leading Innovations for Tomorrow

 Learning Innovations for Tomorrow

Where Manufacturing Technology and Talent Matter

THE LIFT NATIONAL ECOSYSTEM



GOVERNMENT PARTNERS



RESEARCH AND ACADEMIC PARTNERS



LIFT INDUSTRY PARTNERS

PLATINUM

SIEMENS

KEARNEY



GOLD



SILVER



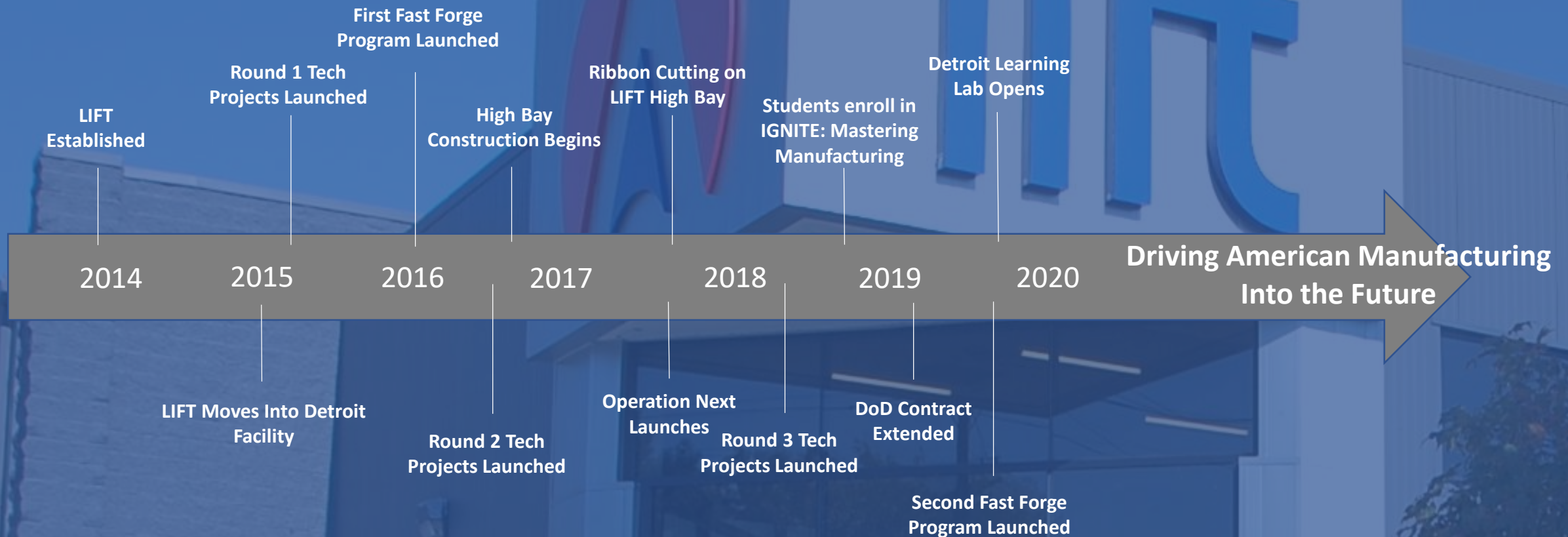
MENAWAT & CO.™



BRONZE AND SMALL & MEDIUM ENTERPRISES



THE LIFT JOURNEY



lift[®] by the **NUMBERS**



350,000+

students and teachers
impacted through more than
40 LIFT talent initiatives

5,000+

Visitors through the Detroit
LIFT facility over the last 12
months



\$100,000,000+
committed to LIFT projects
by the federal government



200+

LIFT members & partners
across the country



100,000+

square foot research and
development facility in Detroit and
industrial commons nationwide



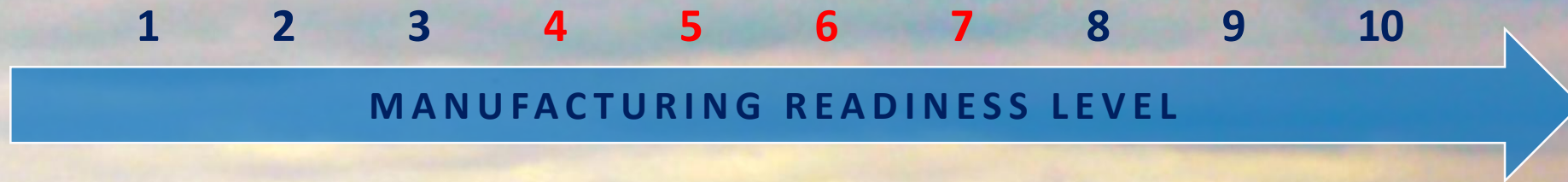
\$30 MILLION
worth of cutting-edge equipment
available for collaborative and
proprietary R&D work



275

Industry partner meetings
convened each year

BRIDGING THE GAP IN MANUFACTURING INNOVATION



Government & Universities



Industry

LEADING INNOVATIONS FOR TOMORROW

- Integrated Computational Materials Engineering (ICME) and Computational Engineering
- Agile and Smarter Manufacturing
- Advanced Alloy and Process Development
- Multi-Material Joining

LEADING INNOVATIONS FOR TOMORROW

ICME & Computational Engineering

- ▲ ICME/Laboratory Materials Characterization
- ▲ ICME Material Model Development & Licensing
- ▲ ICME Education
- ▲ CAD/CAE/CAM Industry Projects

Agile and “Smarter” Manufacturing

- ▲ Wire Arc Additive Manufacturing (WAAM)
- ▲ Cold Spray Additive Manufacturing
- ▲ Direct Metal Laser Sintering Additive Manufacturing (DMLS)
- ▲ Incremental Sheet-forming (Robotic Blacksmithing)
- ▲ Quality & ND Inspection of Additive Parts
- ▲ Factory Automation Demonstration and Education
- ▲ Digital Thread & Digital Twin Demonstration and Education
- ▲ Orphan & Obsolete parts

Advanced Alloy & Process Development

- ▲ Lightweight Armor Development
- ▲ Rare Earth Materials Process Optimization
- ▲ Hypersonic Materials Development
- ▲ Agile Tooling
- ▲ Supply base development to accelerate manufacturing readiness (MRL)

Multi-Material Joining

- ▲ Advanced Metallic Welding Process Development (GMAW, Friction-Stir, Linear Friction)
- ▲ Metallic/Non-Metallic Joining
- ▲ Quality & Inspection
- ▲ Advanced Joining Education

IMPACT IN TECHNOLOGY DEVELOPMENT

ROI projected over the next 20 years

\$402 MILLION

FeMnAl LIGHTWEIGHT ARMOR

Elimination of armor mass while maintaining ballistic performance



\$1.4 BILLION

WELDING DISTORTION CONTROL

Project showed a 30% reduction in distortion and significant reduction in cost



\$500 MILLION

LIFELINE FIREHOSE

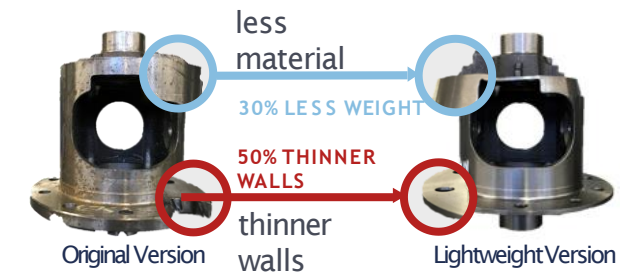
Helping small manufacturer enter the market and save First Responder lives



\$3.1 BILLION

THIN-WALL CASTING FOR HIGH VOLUME PRODUCTION

Weight reduction of nearly 30% with walls thinned by approximately 50%



LEARNING INNOVATIONS FOR TOMORROW

- 🔺 The LIFT Learning Lab
- 🔺 Operation Next
- 🔺 IGNITE: Mastering Manufacturing
- 🔺 World-Class Certification Programs

LEARNING INNOVATIONS FOR TOMORROW

LIFT Learning Lab

A state-of-the-art interactive learning facility, located in the LIFT facility, the LIFT Learning Lab features eight unique labs equipped to prepare students for the most in-demand manufacturing careers.

- Computer/Virtual Reality
 - Flexible Learning
 - Fundamental Skills
 - Robotics/Smarter Manufacturing
 - ASM Materials Science
 - Fabrication
 - Welding Training Center
 - CNC Operations Training Center
-

Operation Next

An innovative training and credentialing program that provides a blended learning curriculum to active-duty soldiers within their last six months of service, the program enables the individual participants to earn one or more nationally portable, standards-based, industry-recognized credentials in high-demand manufacturing fields.

- CNC Machining
 - Industrial Technology Maintenance
 - Welding
-

IGNITE: Mastering Manufacturing Curriculum

“IGNITE: Mastering Manufacturing” is a three-year foundational competency model for the “multi-skilled technician” needed in today’s workplace.

- Year 1: Materials Science and Introduction to Manufacturing
 - Year 2: Advanced Manufacturing Systems 1
 - Year 3: Advanced Manufacturing Systems 2
-

World-Class Certification Programs

LIFT offers world-class nationally-recognized certification programs to help advanced manufacturing workers gain new abilities or enhance their skills.

- CNC Operations
- Welding: Level 1 SENSE Certification

IMPACT IN TALENT DEVELOPMENT

ROI projected over the next 20 years

\$32 BILLION INCREASED & POTENTIAL EARNINGS

Over the next 20 years for K-12, post-secondary and incumbent workers reached



\$35 BILLION INCREASED & POTENTIAL EARNINGS

For the 350 students earning credentials at each of 100 new Learning Lab sites around the country



\$297 MILLION POTENTIAL EARNINGS

For the 300 initial IGNITE: Mastering Manufacturing® curriculum students



\$101 MILLION POTENTIAL EARNINGS

For 101 graduated soldiers from Operation Next pilot at Ft. Campbell, KY



\$1.8 BILLION POTENTIAL EARNINGS

Over 20 years of 1,800 soldiers expected to graduate from nine additional Operation Next bases



SMARTER MANUFACTURING ECOLOGY

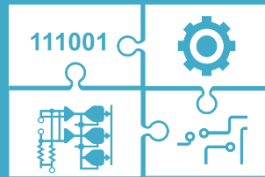
Changing
the way
systems
come to life

Changing
the way
systems
are realized

Changing
the way
systems
evolve



GENERATIVE
DESIGN



INTELLIGENT
MODELS



MACHINE
LEARNING



ADDITIVE
MANUFACTURING



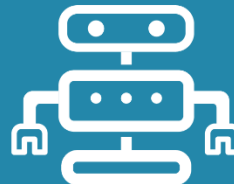
CLOUD
TECHNOLOGY



KNOWLEDGE
AUTOMATION



SYSTEMS OF SYSTEMS



ADVANCED
ROBOTICS

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BIG DATA
ANALYTICS

SUMMARY

Developing ...

 Materials

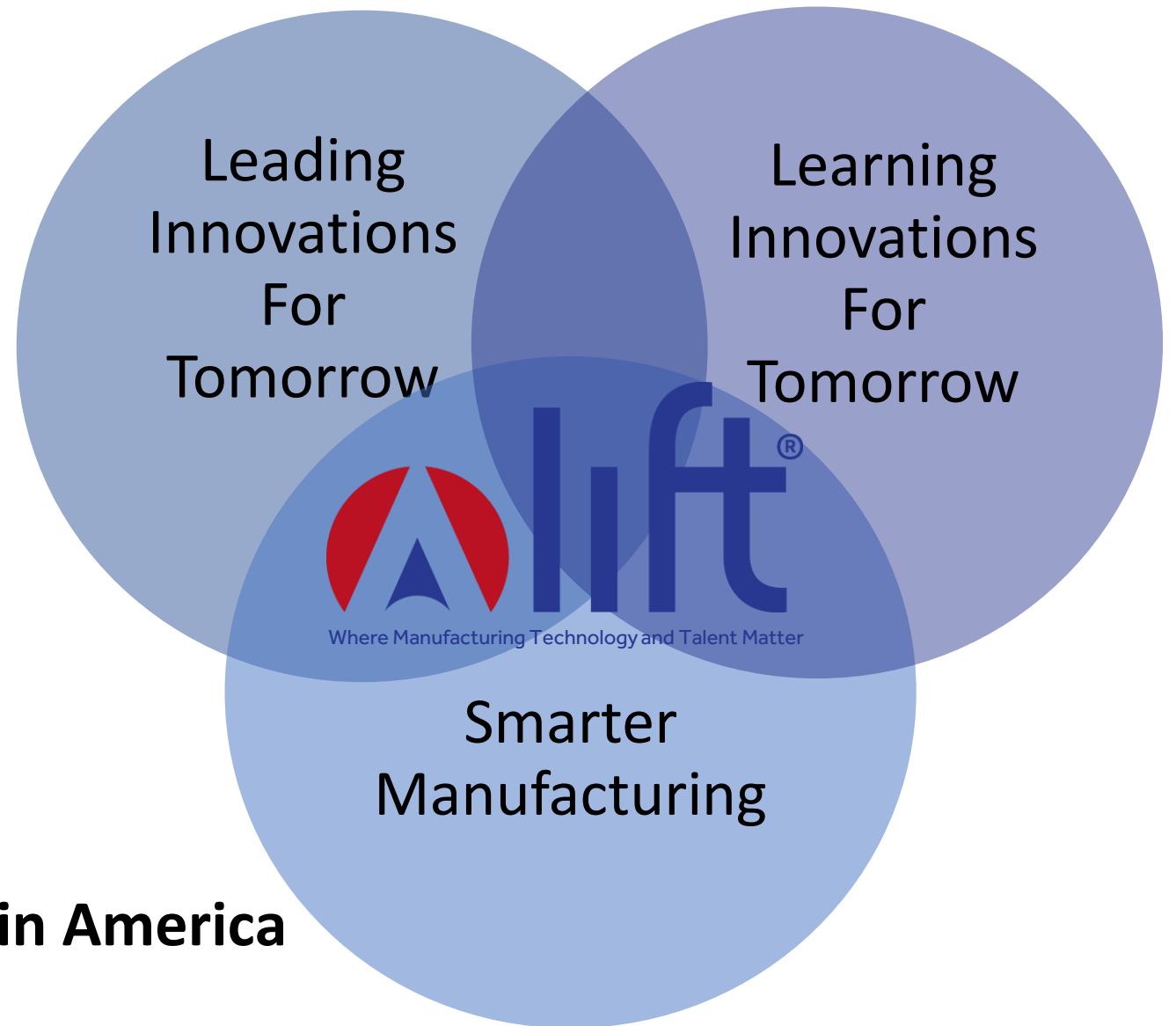
 Process

 Systems



 People

... In the heart of manufacturing in America





**JOIN US TO BUILD THE FUTURE OF
MANUFACTURING IN THE UNITED STATES
IN SUPPORT OF OUR NATIONAL SECURITY AND
ECONOMY**



Where Manufacturing Technology and Talent Matter



Where Manufacturing Technology and Talent Matter

A Public-Private-Partnership:
Department of Defense – Industry – Academia



THANK YOU!



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