



BUILDING 21ST CENTURY MANUFACTURING TALENT

Aligning Manufacturing USA Technology and Talent Development: Strengthening University-Industry Partnerships to Build a Technology-Savvy Manufacturing Workforce

An Education & Workforce Development Initiative for
LIFT...Lightweight Innovations for Tomorrow

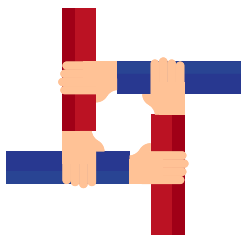


THE PROBLEM

Manufacturing is becoming more cutting-edge every day, and workers are expected to have advanced math skills and scientific prowess to join the workforce and continue driving innovation. Historically, much of the manufacturing workforce has been developed in two education silos: the technician, assembly, and skilled trades through apprenticeships and skilled training programs in vocational education and community colleges; and the engineers in university programs of study. Now, the infusion of technology across all manufacturing sectors and at all levels of design and production requires the workforce to have higher level skills and a significant set of competencies related to new technologies, materials, and processes.

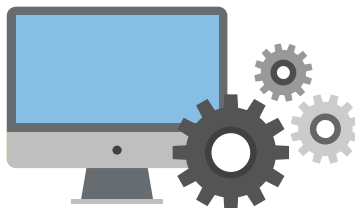
Over 31 percent of the more than 343,000 advanced manufacturing jobs posted between October 2015 and September 2016, required applicants to have, at minimum, a Bachelor's degree. Yet, many degree programs are not created with industry in mind. As the advanced manufacturing industry evolves, so do employer needs. Strong partnerships are needed between post-secondary education and industry. If community and technical colleges and universities are not incorporating the evolving needs of industry into their curriculum and training opportunities, their students will not be prepared for the world of innovation in advanced manufacturing.

THE SOLUTION



Building a Team of Education Experts

LIFT, as a member of Manufacturing USA, will work to align technology and talent development by empaneling an Expert Educator Team from universities and community colleges to help identify the knowledge, skills and abilities workers at all levels will need in order to deploy the technologies, materials, and processes created at LIFT.



Aligning Technology Development Plans with Training Competencies

LIFT's Expert Education Team will strengthen the connection between emerging technologies and educational programs of study by identifying for faculty the competencies related to using these technologies in the design or production environment, to better prepare students to enter the workforce after graduation.



Providing Industry-Driven, Technology-Aligned Work- and-Learn Curricula

LIFT will increase access to opportunities for students to engage in work-based learning activities by making work-and-learn a part of the university and community college curricula to produce graduates more capable and confident in using new manufacturing technologies and processes.

ALIGNMENT TO LIFT STRATEGIC FOCUS AREAS



Expanding work and learn opportunities for students



Understanding workforce demand-supply gaps



Ensuring students gain STEM foundational skills for success in manufacturing careers



Creating enhancements to engineering curriculum using lightweighting technologies



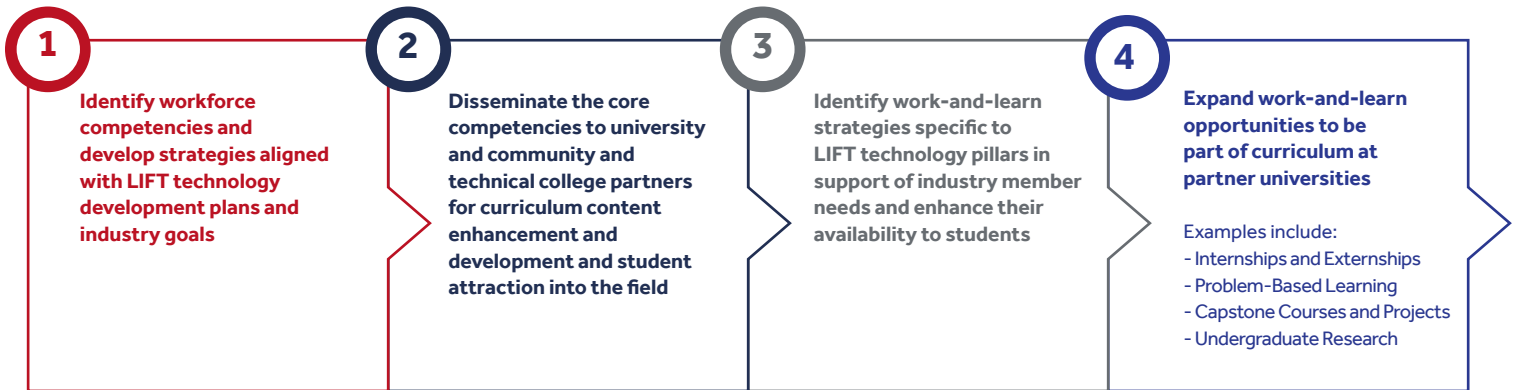
Offering on-the-job training solutions for industry partners



Linking and leveraging resources and related initiatives on the ground today

THE PLAN

LIFT, APLU and NCMS will convene an Expert Educator Team (EET) with participants from LIFT and APLU member universities to work with LIFT's industry members to:



These activities will result in:



Foresight of technology advances to come for materials and processes



Engagement of students in work-and-learn opportunities as part of their education pathway



Integration of new technology, work-and-learn, and industry needs into higher education curriculum

PROJECT LEAD

The Association of Public and Land-grant Universities (APLU)

The Association of Public and Land-grant Universities (APLU) is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities. With a membership of 236 public research universities, land-grant institutions, state university systems, and affiliated organizations, APLU's agenda is built on the three pillars of increasing degree completion and academic success, advancing scientific research, and expanding engagement.

PARTNERS

The National Center for Manufacturing Sciences (NCMS)

The National Center for Manufacturing Sciences (NCMS) is the largest cross industry collaborative research & development consortium in North America, and is dedicated to driving innovation in commercial, defense, robotics and environmentally sustainable manufacturing.

PROJECT TIMELINES

Aligning Education & Workforce Strategies With LIFT's Technology Advancements

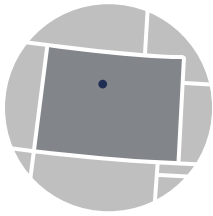


Developing Technology-Aligned, Work-and-Learn Education Strategies



GEOGRAPHIC FOOTPRINT

APLU members in the LIFT 5-state region and LIFT's research partners. A * designates institution as both an APLU member and a LIFT research partner.



Colorado

- Colorado School of Mines*



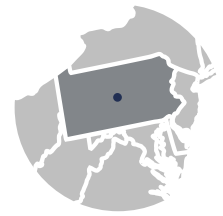
Kentucky

- Kentucky State University
- University of Kentucky*
- University of Louisville



Michigan

- Michigan State University*
- Michigan Technological University*
- Oakland University
- University of Michigan*
- Wayne State University*
- Western Michigan University



Pennsylvania

- Pennsylvania State University*



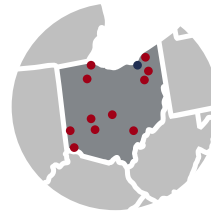
Illinois

- Northwestern University



Maryland

- Johns Hopkins University



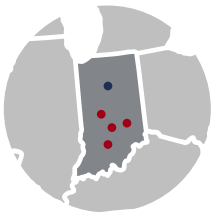
Ohio

- Bowling Green State University
- Case Western Reserve University
- Central State University
- Cleveland State University
- Kent State University
- Miami University
- Ohio University
- The Ohio State University*
- The University of Akron
- The University of Toledo
- University of Cincinnati
- Wright State University



Tennessee

- Middle Tennessee State University
- Tennessee State University
- The University of Memphis
- The University of Tennessee, Knoxville*



Indiana

- Ball State University
- Indiana University
- Indiana University-Purdue University Indianapolis
- Purdue University*
- University of Notre Dame



Massachusetts

- Massachusetts Institute of Technology*
- Worcester Polytechnic University



Texas

- University of North Texas*
- University of Texas at Austin*