



LIGHTWEIGHT INNOVATIONS
FOR TOMORROW

Operated by *ALMMII*

National Network for Manufacturing Innovation: Lightweight Metals Institute Overview

**Presentation to:
IACMI Winter Membership Meeting**

DoubleTree by Hilton Hotel Detroit – Dearborn
5801 Southfield Expressway
Detroit, Michigan 48228

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Mission

LIFT will ...

- Accelerate the development and application of innovative **lightweight metal** production and component manufacturing technologies to benefit the US transportation, aerospace and defense market sectors
- Ensure that the U.S. is the world leader in the application of innovative lightweight metal production and component/subsystem manufacturing technologies. Ensure a robust talent pipeline for metals manufacturing.



Deliver high value advanced alloy processing technologies that reduce the weight of machines that move people and goods on land, sea and air

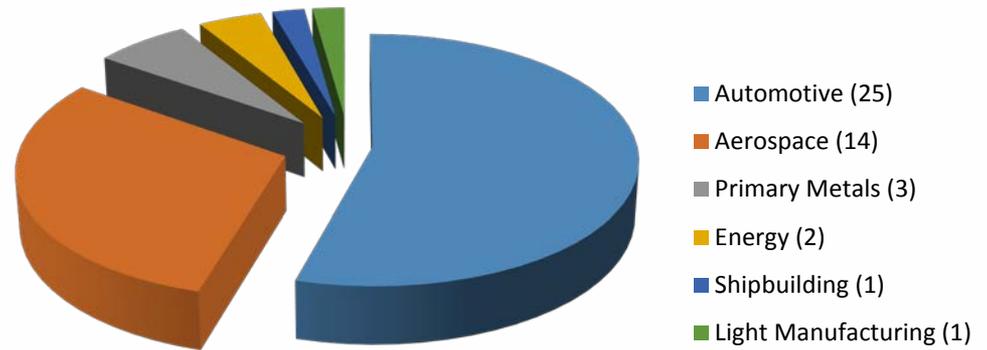
Video

Membership

- Thus far, Eighty-one (**84**) organizations have provided signed memberships agreements:

- (**46**) Industrial Manufacturers (includes Large Corporations, SMEs <500 and Start-ups <50), (**5**) Trade & Professional Organizations, (**4**) State Organizations, (**20**) Research Partners, and (**9**) Workforce Partners
- Twenty four (**24**) states represented

Industry Membership by Sector



Note: 24 of 45 support DoD activity

- Additional ninety eight (**98**) Education and Workforce Organizations (representing the five state and more than a dozen national programs) are now engaged with the program.

Membership Agreements Signed

(As of 01-08-2016)

Industries & Professional Societies



Academic & Research Partners



Small/Medium Manufacturers



Start-ups

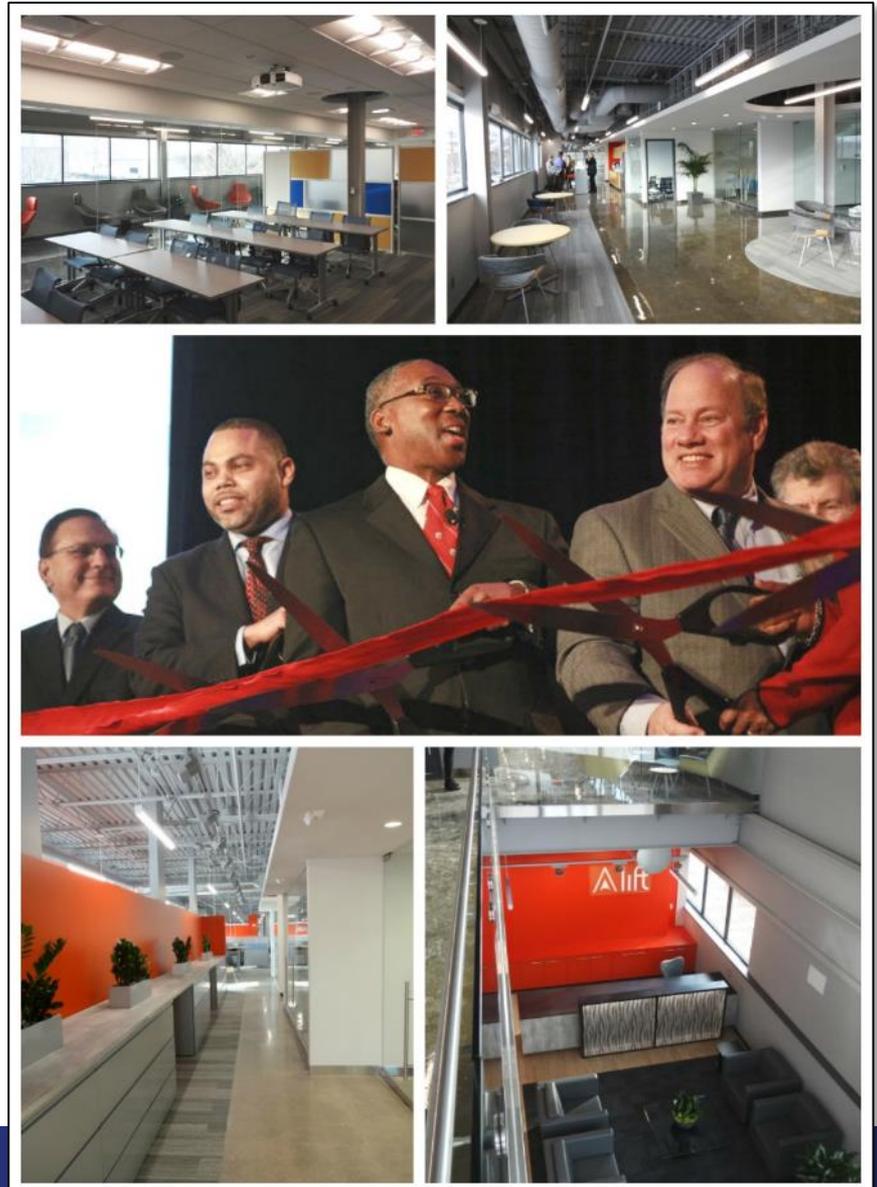


Workforce/Education



LIFT Headquarters

- Selected ~100,000 sq. ft. vacant building in Detroit's Corktown area
- Lease signed July 2014 followed by the Mayor of Detroit's press conference
- All city building permits received and renovation started September 2014
- Ribbon cutting held January 2015 --- 200 + in attendance



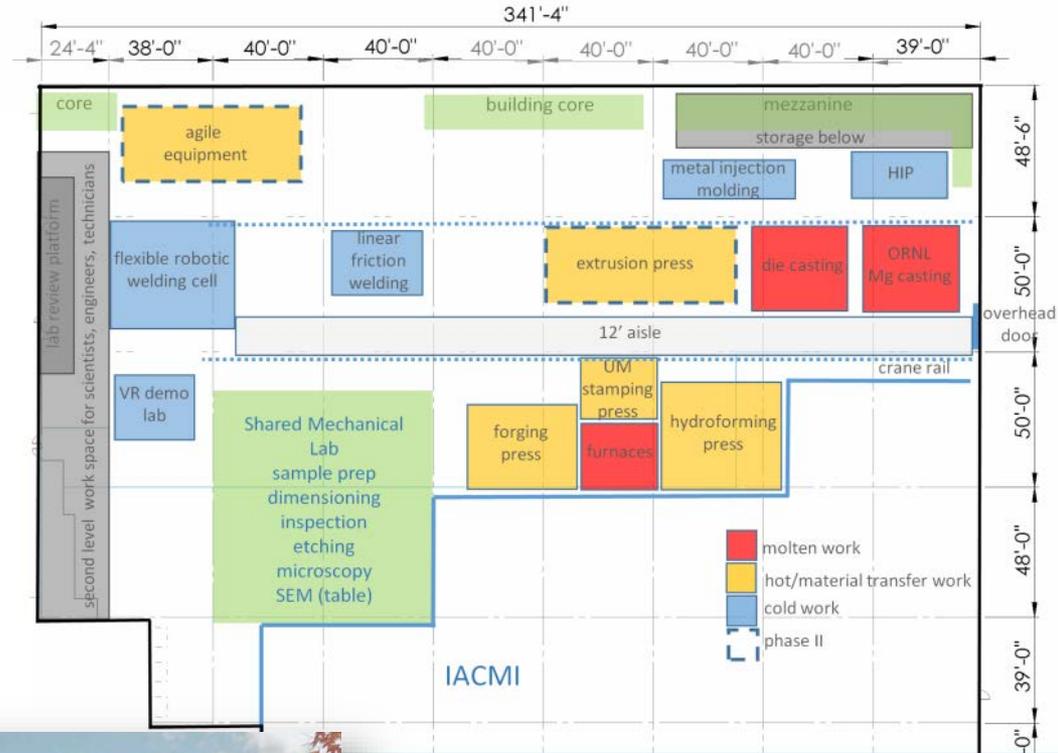
HQ Facility ... Transformation



Lift HQ Equipment- Layout

2-Story Office Area

- 5 Executive Offices
- 1 Executive Conference Room
- 22 Office Cubes
- Training/ Conf Rm (64 -80 persons)
- 4 Meeting Rooms
- Draft layout of equipment to ensure packaging
- Exact placement under development with engineering study and Safety requirements



Total Facility ~ 100,000 sqf

Facility Area: 86,837 sqf

LIFT Lab Area: 41,500 SQF

IACMI Lab Area: 31,000 SQF

Shared Lab Area: 14,337 SQF

lift Technology Scope

Priority metal classes and its alloys are: Advanced High-Strength Steels, Titanium, Aluminum and Magnesium

Technology development needs have been grouped into 6 pillars:

- Melt processing
- Powder Processing
- Thermo-mechanical processing
- Low Cost, Agile Tooling
- Coatings
- Joining and Assembly

In addition, there are crosscutting themes:

- Integrated Computational Materials Engineering (ICME)
- Design
- Life-cycle analysis
- Validation / Certification
- Cost modeling
- Supply chain
- Corrosion
- Ballistic / Blast



Technology Portfolio Summary

- 5 projects released - Value: \$16.9M projects identified with strong industry support and participation; two (2) projects topics at ONR for authorization to start
 - Developing and Deploying Thin Wall Ductile Iron Castings For High Volume Production
 - Thin-Wall Aluminum Die Casting Development
 - Integration of ICME with Legacy and Novel TMP Processing for Assured Properties in Large Titanium Structures
 - Processing for Assured Properties in Al-Li Forgings by Development, Application and Validation of a Localized Physics-Based Viscoplastic Model
 - Robust Distortion Control Methods and Implementation for Construction of Lightweight Metallic Structures
- Second Project call; White papers initiated by Industry PI in 10 of 16 projects topics identified
- RFP Project call – two (2) topics: Proposals due 1/29

LIFT Industrial Commons



Education & Workforce Development

Our goal: “To build an educated and skilled manufacturing workforce, confident and competent in using new technologies and processes.”



Education & Workforce Development Roadmap

Summer-Fall 2014

- Infrastructure
- National Working Group
- State Lift Work Teams

Fall 2014-Winter 2015

- Addressing the Skills Gap
- Closing “Leaks” in State Manufacturing Workforce Pipelines
- Replicable, Scalable Solutions

Spring-Summer 2015

- State-Wide Solutions
- Systemic Transformation: K-12, Community College, University, Workforce Investment

Fall 2015-Spring 2016

- Continue Systemic Transformation
- K-12 MakerMinded
- Community College Technical Pathways
- State-Wide Work & Learn

Summer-Fall 2016

- New Competencies for New Technologies
- LIFT as a Learning Lab
- Upskilling the Incumbent Workforce

12 Workforce Education Initiatives Underway – Value: \$3.9M

SME Engagement

- SME outreach and participation is a key tenant of the institute's charter.
- Need dialog with SME's to understand what we can provide in service or technology, and identify SME's with unique technology
- Find a way to reach out to large numbers of SME's at a low cost
- Pilot Strategy: partner with Manufacturing Extension Partner (MEP) organization – Michigan Manufacturing Technology Center (MMTC).
 - Communication needs and capability to broader audience
 - Target SMEs with capabilities to solve new challenges
 - Launch database/ Gallery (3rd Qtr FY16)
 - Launch Technology Help Desk for Membership (Jan 2016)



National Network for Manufacturing Innovation:



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<http://lift.technology>



Partnership for Manufacturing Innovation