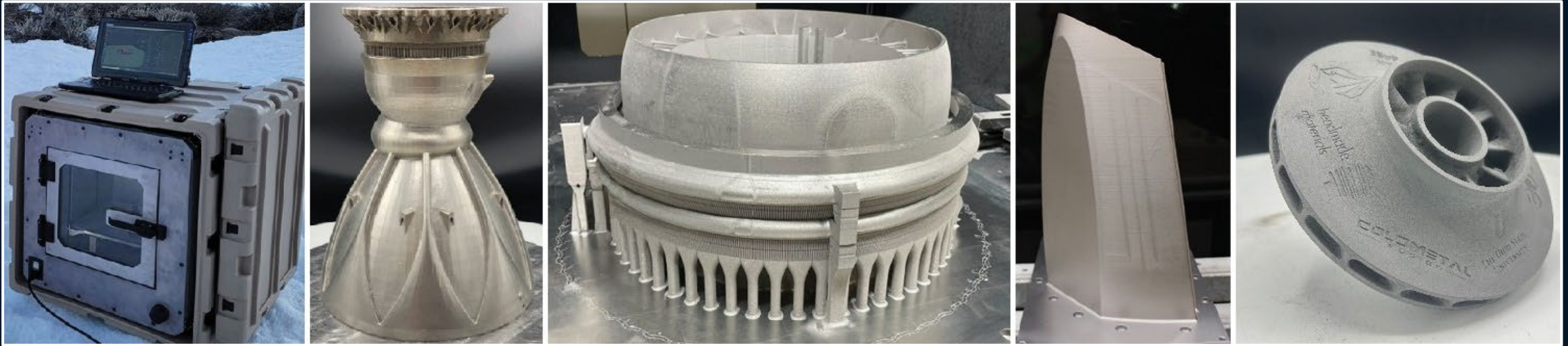




# America Makes

The National Additive Manufacturing Innovation Institute



## America Makes Overview



## VISION

To be the driver for additive manufacturing (AM) innovation, technology, and education

## MISSION

Accelerate the adoption of AM to advance U.S. manufacturing competitiveness and security

## ACHIEVING THE MISSION

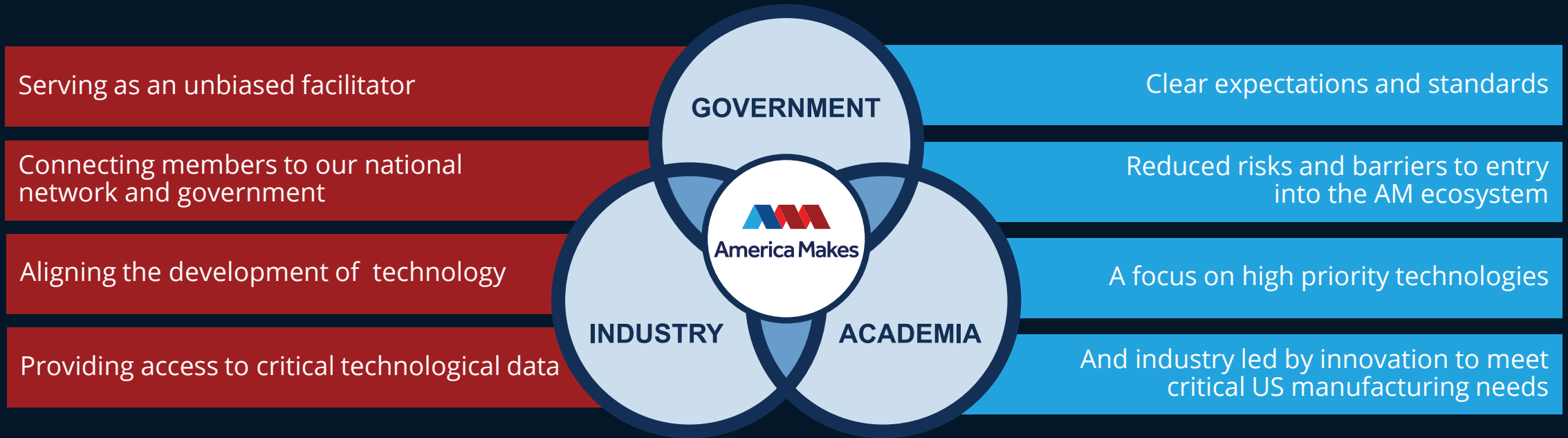
**CONVENING** the most brilliant minds from government, industry, and academia to accelerate AM innovation

**COORDINATING** AM technical and workforce data to transform industry

**CATALYZING** industry through collaborative projects, delivering high value and high impact

## THE ADVANTAGE

As the nation's leading public-private partnership for AM technology and education, America Makes operates at the intersection of government, industry and academia...



...to advance AM technology, drive innovation and accelerate adoption through collaboration



## FOCUS AREAS



### Technology Development

*Identify gaps in AM technology through our roadmap, close them, and advance the industry through our collaborative member network.*



### Education and Workforce Development

*Educate, train, and grow the advanced manufacturing workforce by developing industry-recognized credentials, standards, and pathways in AM.*



### Industrial Base Integration

*Grow awareness and adoption of AM across the U.S. through working with regional, state and national stakeholders.*

## SCOPE & BOUNDARIES

### Technology Development

#### We do...

- Gather **needs and gaps** from ecosystem
- **Establish priorities**
- Structure and integrate with Technology and Standards Roadmaps
- **Execute member-driven research** to address priority needs
- **Disseminate data** to the ecosystem
- Strategically partner to scale programs

#### We do not...

- Perform **research internally at our facility/lab**
- Perform Printed flexible electronics or bio-printing

### Workforce Development

#### We do...

- Identify gaps and best practices through assessments across industry
- Maintain and prioritize needs within the EWD Roadmap and Heatmap
- Generate **reusable EWD inventory assets** accessible both internally and externally by membership
- Strategically partner to scale our programs and minimize our staff

#### We do not...

- **Sell training**
- Venture beyond AM and the enabling technologies/software/hardware

### Industrial Base Integration

#### We do...

- Maintain a **diverse ecosystem**
- Support the ecosystem development to address the needs of various industries
- Align regional networks to assess and address supply chain needs and gaps
- Strategically partner to scale our programs

#### We do not...

- **Solve everything ourselves.** Effective partnership (e.g., AMGTA, AMT, etc.) is a necessity to accelerate adoption and effectively deploy scarce resources

## CONVENE, IDENTIFY, & PRIORITIZE – SETTING STRATEGIC PRIORITIES

### AM Technology Roadmap



- Tracking progress in AM tech space from over 350 projects since 2012
- Delivering annual guidance on time-phased objectives
- Participation by +200 organizations

### AMSC Roadmap



- 3 versions released since 2015
- Over 350 volunteer contributors
- Roadmaps have been accessed and downloaded by public over 9,000 times since 2017

### DoD Roadmaps Strategies/Guidance



- 5 roadmaps produced by Institute since 2016
- Engagement by over 100 SME across government departments and agencies
- JAMWG Priorities – Institute serves as a key contributor to priority revision annually

### Specialty Roadmaps



- America Makes AM Alloy Development Roadmap
- AM for Casting & Forging Roadmap
- AM for Space Propulsion Roadmap

# ALIGNMENT OF EXISTING RESEARCH PORTFOLIO TO DoD PRIORITIES AND U.S. GOVERNMENT POLICIES



## Marine Industrial Base

- AM HY-80 Heat Treatment - SWAAHT
- Wire Arc AM Qual and Digital Twin
- AM application development



## AI and Autonomy

- Data management
- AI/ML for AM qualification and data generation
- Closed loop control
- Advanced quality control and assurance, Trusted Metal AM



## Missile Defense

- AXIOM
- CP1 Large Scale AM
- AM for high-speed propulsion intercept
- High performance electronics
- Hybrid manufacturing



## AM for Propulsion Apps

- Large scale AM
- High temperature material AM
- Joining, Finishing, and Coating
- Heat pipe qualification
- AM for propulsion systems qualification, ground and flight testing



## Unmanned Aircraft Systems

- IRAMPP
- Advanced Manufacturing Confluence
- Large scale AM non-metallic materials
- Advanced manufacturing airworthiness - DAWGS



## Casting and Forging

- Sand and Investment Casting
- Forging Dies and Forging of AM preforms
- Hybrid manufacturing
- Industry 4.0 integration – productivity and yield improvements



## Qualification of Alt. Sources/Critical Materials

- Data-driven Qual, Delta Qual, JAQS, PACQS, Operational Qualification, AAMI, WATCH LIST
- JMADD, GAMAT, PODS
- PADAM, CAPP, Refractory Alloy Demand Assessment



## Indo-Pacific Advanced Manufacturing

- AAMI, QTIME
- Common AM Qual Template
- Expeditionary 3D printer
- Regionalization efforts

Sources:

## EXPANDING THE REGIONALIZATION/SATELLITE CENTER FOOTPRINT

### UTEP – University of Texas El Paso



**AM Mission:** Lead the Additive Manufacturing (AM) transformation through multidisciplinary activities that include education, research, outreach, technology development, structured materials, advanced applications, and commercialization, and industrial partnerships.

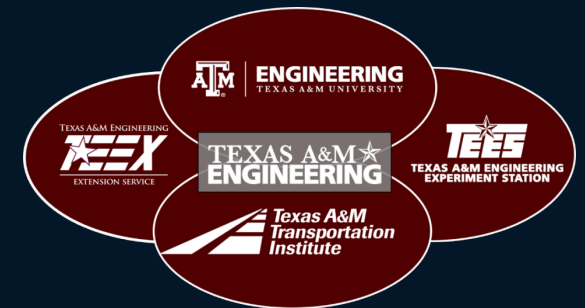
### Nat'l Institute Aviation Research (NIAR) – Wichita State University



WICHITA STATE UNIVERSITY

**AM Mission:** Integrate additive materials and manufacturing processes to rapidly qualify applications leveraging NIAR's state-of-the-art machines, manufacturing expertise, engineering, and applied research experience.

### Texas A&M Engineering Experiment Station (TEES)



**AM Mission:** Leverage TEES mission to deploy AM into the \$2T Texas economy and integrate America Makes mission across broad range of stakeholders (local, state, federal) including existing partnerships with DoD, DoE, DoC, NASA, and NSF - and align to America Makes strategic priority of DoD alignment.

## MEMBERSHIP RESOURCES

### Networking



- Institute hosted MMX and TRX events
- Workshops, tradeshows, and conferences
- Working groups

### Business Opportunities



- Access to funding (project calls and directed projects)
- Meet and collaborate with suppliers, peers and customers

### Member Resources



- Member Portal
- Strategic account management
- @Program app
- Our fantastic membership team

### Working Groups



- Curate the Technology Roadmap
- Learning with and from fellow members
- Prioritize topical areas for project calls

### Access to Projects



- Access to project deliverables via CORE
- Experimental data sets
- Presentations from TRX and MMX events



America Makes

# When America Makes, America Works



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