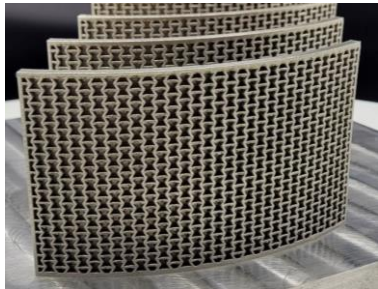


Dayton Regional Ecosystem for Additive Manufacturing: DREAM



DREAM Overview

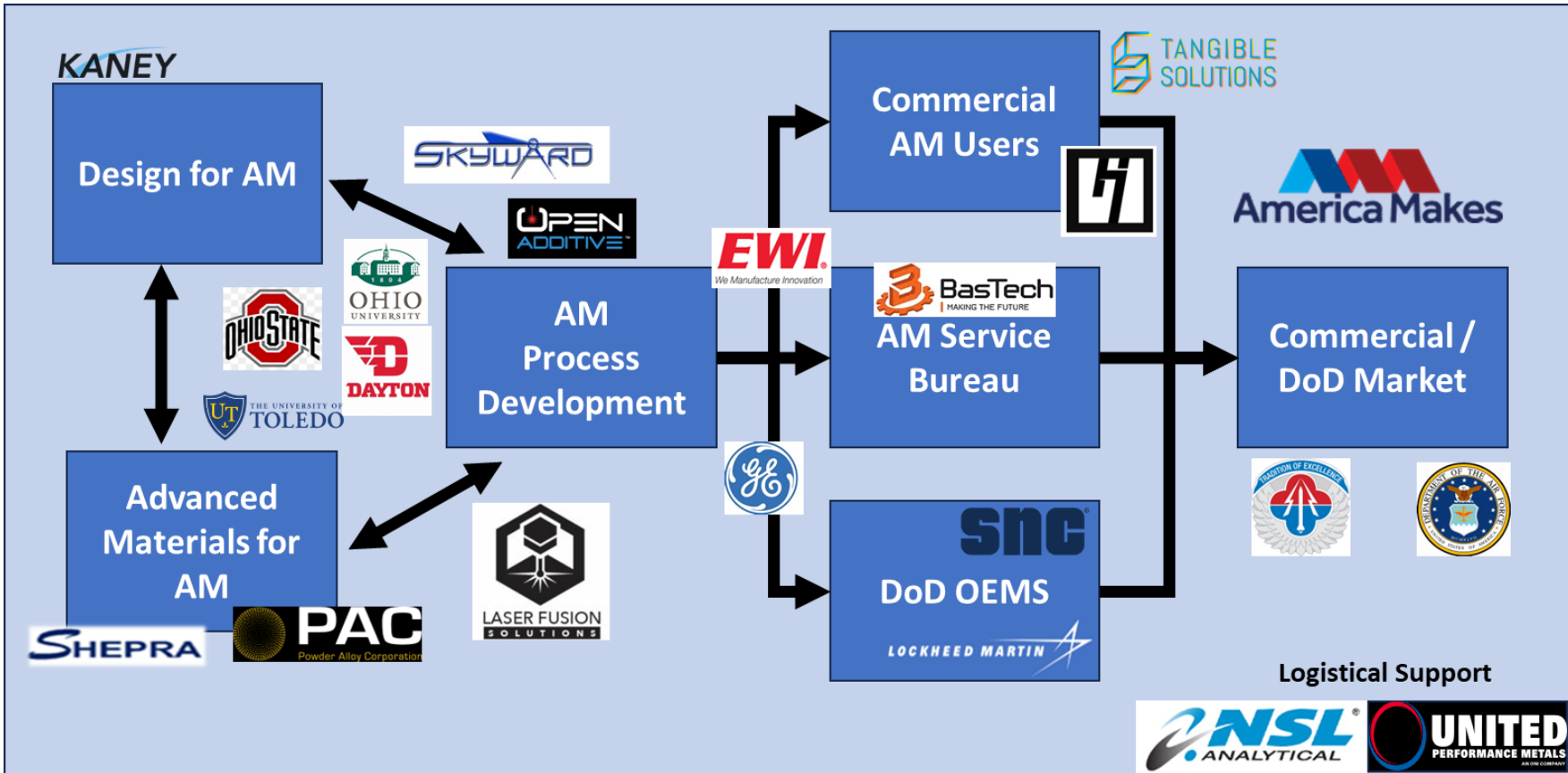
Objective: Spur economic growth by developing keep capabilities and technologies that support the utilization of Additive Manufacturing

Opportunity: The greater Dayton region and the state of Ohio have established a nascent ecosystem that supports the emerging technology of Additive Manufacturing.

- This ecosystem includes:
 - *Raw materials production and advanced material development,*
 - *Fabrication of additive manufacturing systems,*
 - *Sensor and software development for AM quality assurance*
 - *Contract Additive Manufacturing and logistical Support*
 - *Fabrication of Aerospace and Biomedical components and devices*

Approach: Execution of individual projects that collectively develop the workforce and enable new technologies that expand the Additive Manufacturing capabilities of the ecosystem and transition to DoD and Commercial OEMs and spur economic development.

DREAM Value Stream



DoD Science & Technology Priorities

Advanced Materials & Manufacturing
Artificial Intelligence & Autonomy
Space Technology
Hypersonics

Jobs Ohio Priorities

Advanced Manufacturing
Aviation & Aerospace
Military & Federal
Automotive

The DREAM value stream spans the entire innovation pipeline to turn concepts and capabilities into market realities

DREAM Team: Dayton



Dayton has a very strong and broad ecosystem related to Additive Manufacturing capabilities including:

National Policy & Technology Leadership: US Air Force
Materials Development: SHEPRA, University of Dayton
Design for Additive Manufacturing: Kaney
AM Sensor & Software Development: Skyward, Laser Fusion Solutions, Open Additive, Wright State
AM Production Systems Mfg: Open Additive
AM Fabrication Services: BasTech, Tangible Solutions, Laser Fusion Solutions:

Applications:

Maintenance & Sustainment: Sierra Nevada (MRO), SHEPRA (logistics)
Propulsion: Hyphen Innovations
Hypersonic: SHEPRA, GoHypersonic, New Frontier Aerospace

DREAM Team: Southwest – Central Ohio



National Policy & Technology Leadership: US Air Force

Materials Development: SHEPRA, Univ of Dayton, Powder Alloy Corp, Ohio State, Ohio Univ.

Design for Additive Manufacturing: Kaney

AM Sensor & Software Development: Skyward, Laser Fusion Solutions, Open Additive, Wright State, EWI

AM Production Systems Mfg: Open Additive, AddUp

AM Fabrication Services: BasTech, Tangible Solutions, Laser Fusion Solutions, Beehive

AM Logistical Support: United Performance Materials (AM consumables)

Applications:

Maintenance & Sustainment: Sierra Nevada (MRO), SHEPRA (logistics)

Propulsion: General Electric, Hyphen Innovations, Beehive

Hypersonic: SHEPRA, GoHypersonic, New Frontier Aerospace

DREAM Team: Ohio



National Policy & Technology Leadership: US Air Force, AmericaMakes, NASA

Materials Development: SHEPRA, Univ of Dayton, Powder Alloy Corp, Ohio State, Ohio Univ. Univ of Toledo

Design for Additive Manufacturing: Kaney

AM Sensor & Software Development: Skyward, Laser Fusion Solutions, Open Additive, Wright State

AM Production Systems Mfg: Open Additive, AddUp, Lincoln Electric

AM Fabrication Services: BasTech, Tangible Solutions, Laser Fusion Solutions, Beehive, RP+M

AM Logistical Support: United Performance Materials (AM consumables)

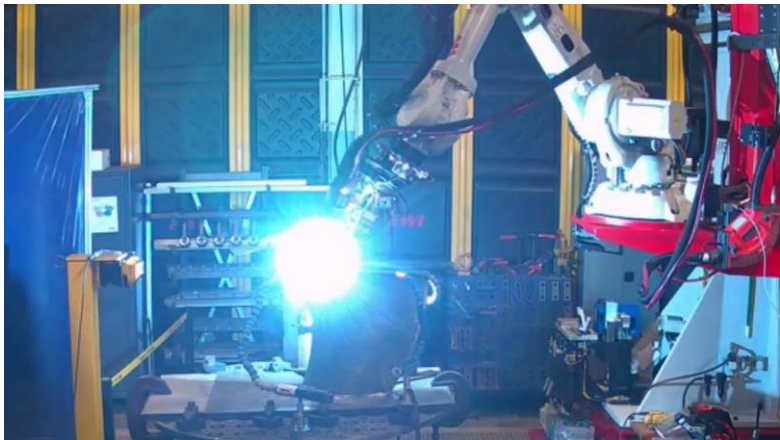
Applications:

Maintenance & Sustainment: Sierra Nevada (MRO), SHEPRA (logistics)

Propulsion: General Electric, Hyphen Innovations, Beehive

Hypersonic: SHEPRA, GoHypersonic, New Frontier Aerospace

DREAM: Robotic Manufacturing for Large Format Aerospace Technology



Description: Robotic Additive Manufacturing

Deliverables:

1. Two integrated robot systems
 1. Laser wire directed energy deposition
 2. Metal binder pellet extrusion
2. Validated accelerated testing methods and capabilities
 1. Accelerated creep testing and modeling
 2. Accelerated fatigue test apparatus
3. TRL 6 demonstration of a propulsion system

DoD Science & Technology Priority:
 Advanced Materials & Manufacturing
 Space Technologies
 Hypersonics

JobsOhio Priority:
 Advanced Manufacturing
 Aviation & Aerospace
 Defense & Federal

Objective: *Develop a sophisticated robotic welding procedure to support laser powder bed fusion for hypersonic systems; develop low-cost metal binder manufacturing*

Benefits: shorter lead-times, improved technology security, lower cost manufacturing

Approach: *work with FANUC Robotics to integrate printer heads and conduct novel accelerated testing to support rapid design of experiments and qualification.*

Collaborators: *Hyphen, GoHypersonic, LFS, The Ohio State University, EWI*

Budget Request

Item / Task	Non-Recurring	Recurring
Robot Integration	\$500k	\$500k
Material Testing	\$200k	\$400k
Component Demonstration	\$200k	\$700k
Total	\$900K	\$1,600K

FY'25 Congressional Budget Request: \$2,500

Program Element: Manufacturing Technology Program: 060368F
 Metals Affordability Initiative: 0603113F