



DEPARTMENT OF DEFENSE JOINT DEFENSE MANUFACTURING TECHNOLOGY PANEL



DOD ManTech Mission

Reduce the acquisition and supportability costs of defense weapon systems and streamline manufacturing and repair cycle times across their life cycles

FINANCIALS

FY23 Total Enacted Funds

With Congressional Adds

\$1,305,136,000

Five Year Development Plan FY24–FY28

Not Including Congressional Adds

\$2,135,930,000

All data based upon then-year President's Budget and Enacted Appropriations, as briefed by JDMTP Chair, DMC December 2023

PRINCIPALS



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech



PRINCIPALS

A diagram consisting of two horizontal rectangular boxes with rounded corners and white borders. The top box is dark blue with a gradient and contains the word "PRINCIPALS" in white, bold, sans-serif font. The bottom box is lighter blue with a gradient and contains the word "SUBPANELS" in white, bold, sans-serif font. A thin vertical orange line connects the bottom center of the top box to the top center of the bottom box.

SUBPANELS

PRINCIPALS

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graph TD; PRINCIPALS[PRINCIPALS] --> SUBPANELS[SUBPANELS]; SUBPANELS --> METALS[METALS]; SUBPANELS --> COMPOSITES[COMPOSITES]; SUBPANELS --> ELECTRONICS[ELECTRONICS]; SUBPANELS --> ADVANCED[ADVANCED MANUFACTURING ENTERPRISE];
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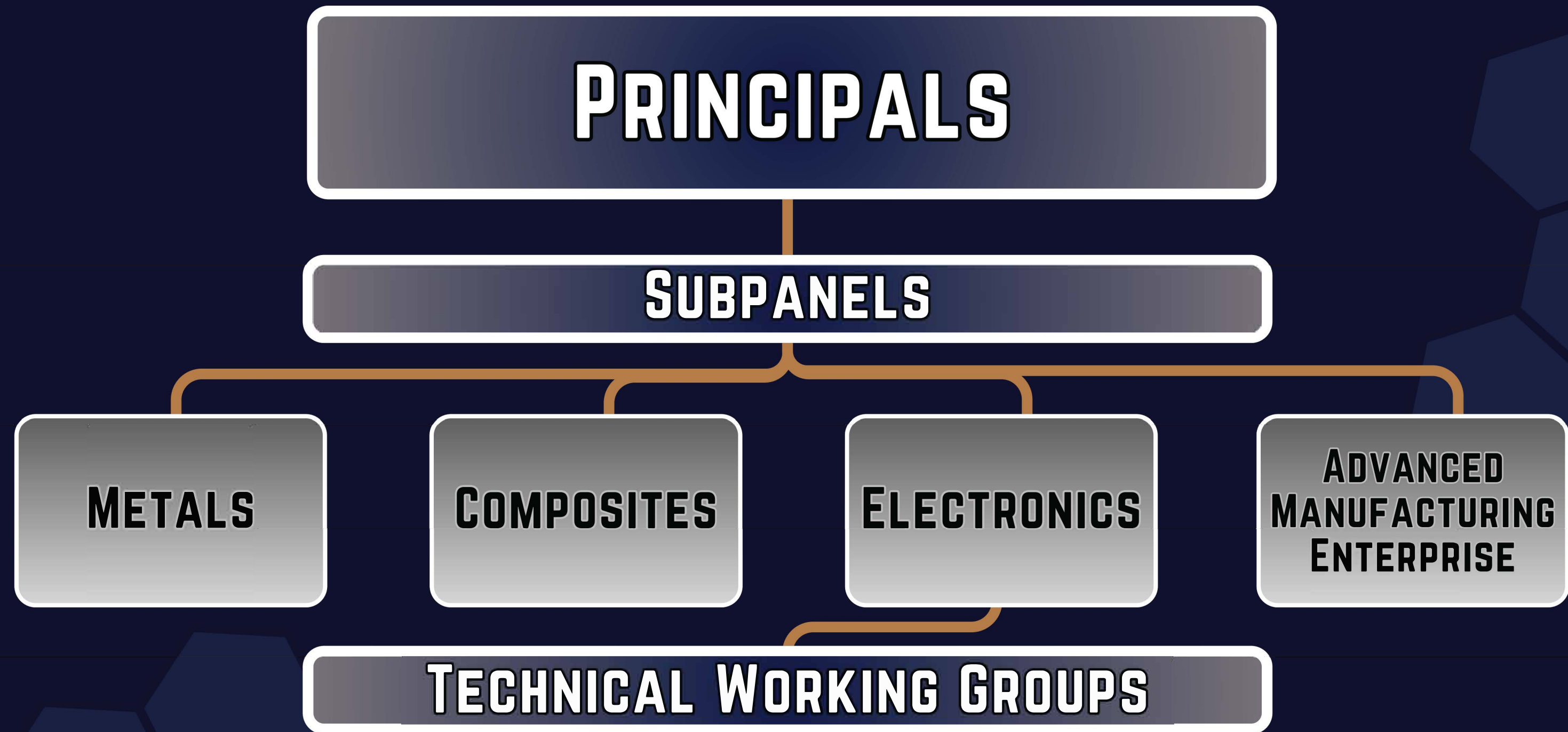
SUBPANELS

METALS

COMPOSITES

ELECTRONICS

**ADVANCED
MANUFACTURING
ENTERPRISE**



PRINCIPALS

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graph TD; PRINCIPALS --> SUBPANELS; SUBPANELS --> METALS; SUBPANELS --> COMPOSITES; SUBPANELS --> ELECTRONICS; SUBPANELS --> ADVANCED_MANUFACTURING[ADVANCED MANUFACTURING ENTERPRISE]; ELECTRONICS --> TECHNICAL_WORKING_GROUPS[TECHNICAL WORKING GROUPS]; TECHNICAL_WORKING_GROUPS --> POWER_SOURCES[POWER SOURCES]; TECHNICAL_WORKING_GROUPS --> ENERGETICS[ENERGETICS AND MUNITIONS]; TECHNICAL_WORKING_GROUPS --> DIRECTED_ENERGY[DIRECTED ENERGY];
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SUBPANELS

METALS

COMPOSITES

ELECTRONICS

**ADVANCED
MANUFACTURING
ENTERPRISE**

TECHNICAL WORKING GROUPS

**POWER
SOURCES**

**ENERGETICS
AND
MUNITIONS**

**DIRECTED
ENERGY**

PRINCIPALS

SUBPANELS

METALS

COMPOSITES

ELECTRONICS

**ADVANCED
MANUFACTURING
ENTERPRISE**

TECHNICAL WORKING GROUPS

**POWER
SOURCES**

**ENERGETICS
AND
MUNITIONS**

**DIRECTED
ENERGY**

**MANUFACTURING
READINESS
LEVEL**

Reports Directly
to Panel

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech

STRATEGY

Facilitate a partnership among the Science and Technology (S&T) community, industry, the Army's organic industrial base (OIB), the Program Executive Offices and Product Managers to ensure viable and realistic transition of technology to a program of record. Focus on initiatives for ground, air, network, Soldier, and weapon systems and platforms.

RESOURCES

12 Program Executive Offices

22 Army T2 Laboratories

- Each Army T2-designated laboratory has an Office of Research and Technology Applications (ORTA). ORTAs are the essential focal point for collaborations between federal laboratories and external partners.

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech

STRATEGY

Concentrate resources on reducing both the acquisition and life-cycle costs of key Navy acquisition programs. Navy ManTech transitions manufacturing technology which, when implemented, results in a cost reduction or cost avoidance. Navy ManTech develops an integrated investment strategy that is approved annually by the Office of Naval Research (ONR) leadership.

RESOURCES

7 Centers of Excellence

- Composites Manufacturing Technology Center
- Electronics Manufacturing Center
- Electro-Optics Center
- Energetics Manufacturing Technology Center
- Institute for Manufacturing & Sustainment Technologies
- Center for Naval Metalworking
- Naval Shipbuilding & Advanced Manufacturing

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



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OSD ManTech



STRATEGY

Invest in five technology pillars:

- Advanced Concepts
- Hypersonic Strike
- Attritable and Low Cost Systems
- Networked Command, Control, and Communication Systems
- Emerging Technology.

RESOURCES

Air Force Research Lab (AFRL)

- Three branches
 - Functional Systems Manufacturing
 - Digital Manufacturing and Supply Chain
 - Structural Systems

Title III

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech

STRATEGY

Employ two major lines of effort: Industrial Base and Aging Weapon System Support and Three-Dimensional (3D) Technical Data Modernization/Model Based Enterprise.

Focus areas include: Advanced Microcircuit Emulation, Batteries, Digital Twin/Digital Thread, Additive Manufacturing, Castings and Forgings, Subsistence, and Clothing and Textiles.

RESOURCES

14 R&D Programs

- LogTech
- ManTech
- SBIP

16 Program Managers

24 Depots

- 17 CONUS
- 7 OCONUS

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech

STRATEGY

Further the national security of the United States by advancing manufacturing technologies and processes through joint, interagency, and public-private collaborations.

Focus on a diverse set of identified joint, defense-critical, and sometimes high-risk manufacturing technology areas to achieve the largest cost-effective impact and facilitate the developments of enabling capabilities to our Warfighters.

RESOURCES

- **Manufacturing Science & Technology Program (MSTP)**
 - OSD investment portfolio which uses all of the resources of the JDMTP components, including ex-officio members.
- **Manufacturing-Education & Workforce Development Program**
- **9 Manufacturing Innovation Institutes**



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech



It's not what we can do on our own, it's the power of what we can accomplish together!

JOINT PLANNING ENVIRONMENT

DOD ManTech Strategic Plan

- Outlines a common set of goals, within four thrust areas, which lay the groundwork for a unified direction and purpose across the DOD ManTech program

Critical Technology Areas

- Established by Honorable Shyu
- 14 technology areas deemed vital to maintaining the United States' national security

Joint Technology Pursuit Areas (JTPAs)

- Opportunities identified at the individual Subpanel/TWG level which could be a priority of focus

Joint Manufacturing Planning Initiatives (JMPIs)

- JTPAs that cut across multiple Subpanel/TWGs help form JMPIs
- JMPIs are established by the Panel to concentrate efforts towards developing innovative solutions for needs apparent across the community

CURRENT JMPIs

Directed Energy

Digital Thread/Digital Twin

Hypersonics

Additive Manufacturing

Power & Energy

DOD ManTech, JDMTP, and USINDOPACOM share many of the same needs.

Directed Energy

Microelectronics

Biomanufacturing

Hypersonics

Shipbuilding

Contested Logistics

Digital Thread/Digital Twin

**Point-of-Need
Manufacturing**

Don't Fight Alone

***Imagine what the future will hold when we
tackle OUR needs TOGETHER***

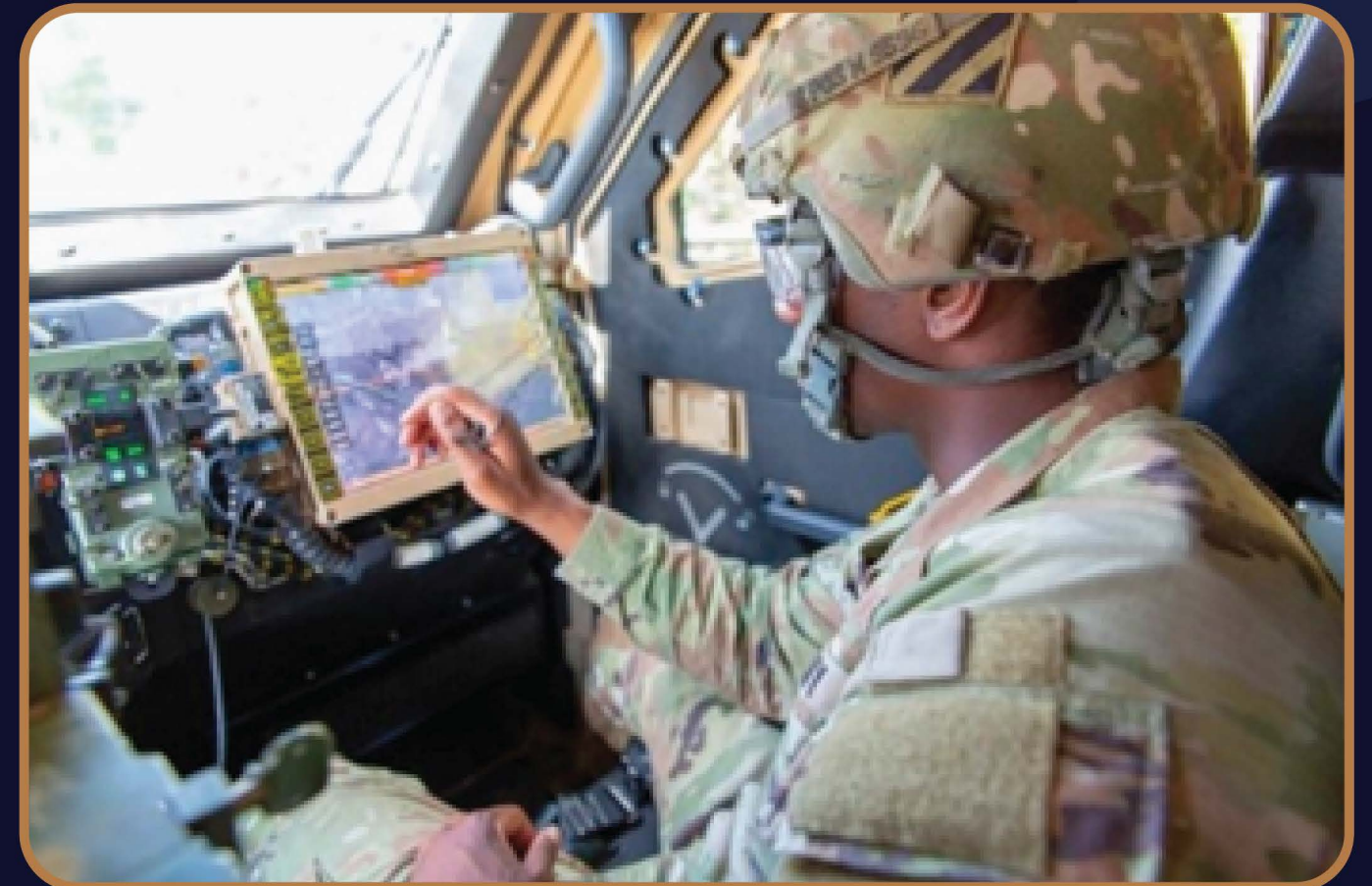
MICROELECTRONICS

ASSURED POSITIONING, NAVIGATION, AND TIMING (A-PNT)

Army ManTech is leading a Joint ManTech project to design, manufacture, and deliver an A-PNT capability that achieves identical (or better) size, weight, and power (SWaP) and performance than what is currently commercially available. The Army A-PNT effort is leveraging advances over the past two decades from the DAF, Navy, and OSD.

IMPACT & BENEFITS

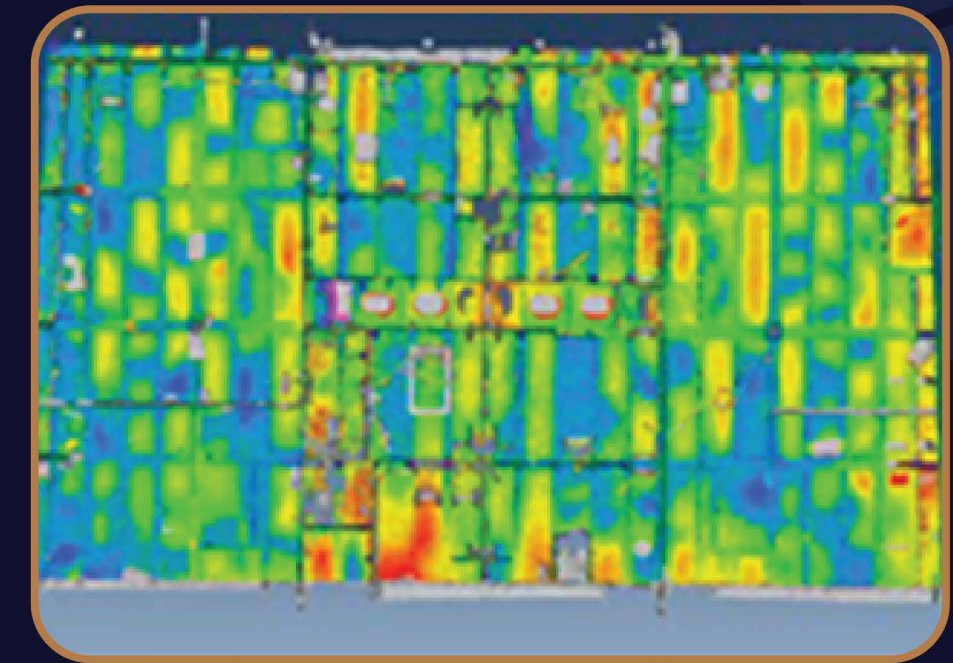
- Improved navigation, communications, surveillance, and synchronization of sensors and systems in GPS-contested environments
- Significant savings over current A-PNT solutions, from greater than \$2,000 to less than \$300 per unit, thus enabling extensive fielding over next decade



SHIPBUILDING

AUTOMATED METROLOGY FOR STRUCTURAL ASSEMBLY

The objective of this Electro-Optics Center (EOC) project is to develop an automated metrology system for use during structural assembly of DDG 51 Class destroyers to conduct in-process accuracy checks utilizing drones. The system was designed to address existing, specific manufacturing hurdles in the shipbuilding industry, including inverted builds and the joining of large structural assemblies into a single unit.



IMPACT & BENEFITS

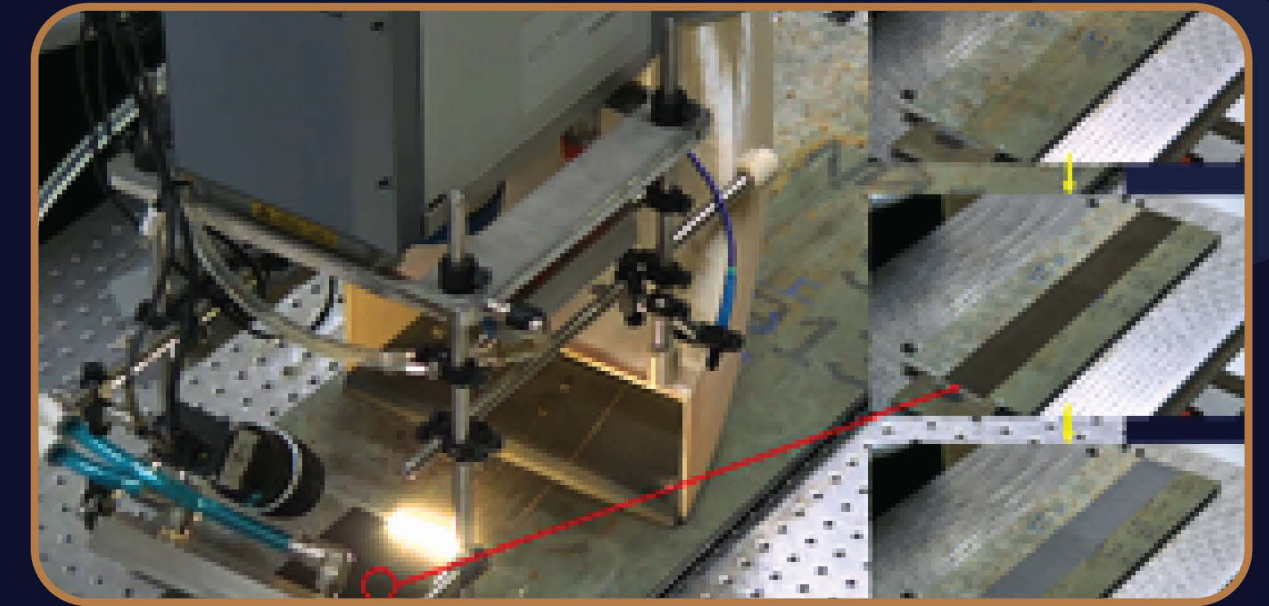
- Will greatly improve the shipbuilding process by reducing costs and increasing manufacturing throughput
- General Dynamics Bath Iron Works (BIW) estimates total savings of \$1.241M per hull, which generates a five-year return on investment (ROI) of 1.2:1, after full implementation



SHIPBUILDING

LASER ABLATION OF PCP FROM HSLA STEEL

In aircraft carrier (CVN) construction, preconstruction primer (PCP) must be removed prior to welding. Current processes using needle guns, handheld or walk-behind grinders, and abrasive blast equipment are dangerous, cause injuries, produce excessive waste materials and can be detrimental to the substrates. Widely supported studies conclude that laser ablation can reduce these concerns, leading many defense and commercial producers to implement the technology already.



IMPACT & BENEFITS

- Following full implementation of laser ablation at NNS, the five-year return on investment is expected to be >2.0. This figure does not include quantified savings in material costs (e.g., abrasives) or cost avoidances related to injuries
- Labor reduction in excess of 20,000 hours for the first year of full laser ablation implementation



POINT-OF-NEED MANUFACTURING

AI-FORGE

DAF ManTech developed AI-FORGE through the Air Force Research Lab in collaboration with the ARM Institute (MII). AI-FORGE uses incremental forming, a heat-assisted metalworking process that permits users to manufacture small lots of customized manufactured parts for military aircraft. The addition of artificially intelligent software allows the robotic system to make significant forming decisions on its own without the need for a human operator.

IMPACT & BENEFITS

- Offers near-term cost and time-saving benefits as well as an improved ability to replace hard-to-find structural aircraft parts
- Reduction in labor costs
- Reduces need of large warehouses to store uncommon parts



BIOMANUFACTURING

BIODEGRADABLE CELLULOSIC BIO-POLYMER (CBP) TO REPLACE PLASTICS FOR MILITARY FOOD PACKAGING AND FOOD SERVICE

SBIR Phase II Project with Biomass Energy Systems Inc. (BESI). DLA ManTech developed biodegradable packaging solution that can be converted to energy, using naturally occurring cellulose (wood) fibers that originate from agricultural and forestry wastes in Hawaii. BESI will demonstrate a comprehensive biodegradable packaging solution, that will include a representative packaged food item for delivery, consumption and acceptance by the military community.

IMPACT & BENEFITS

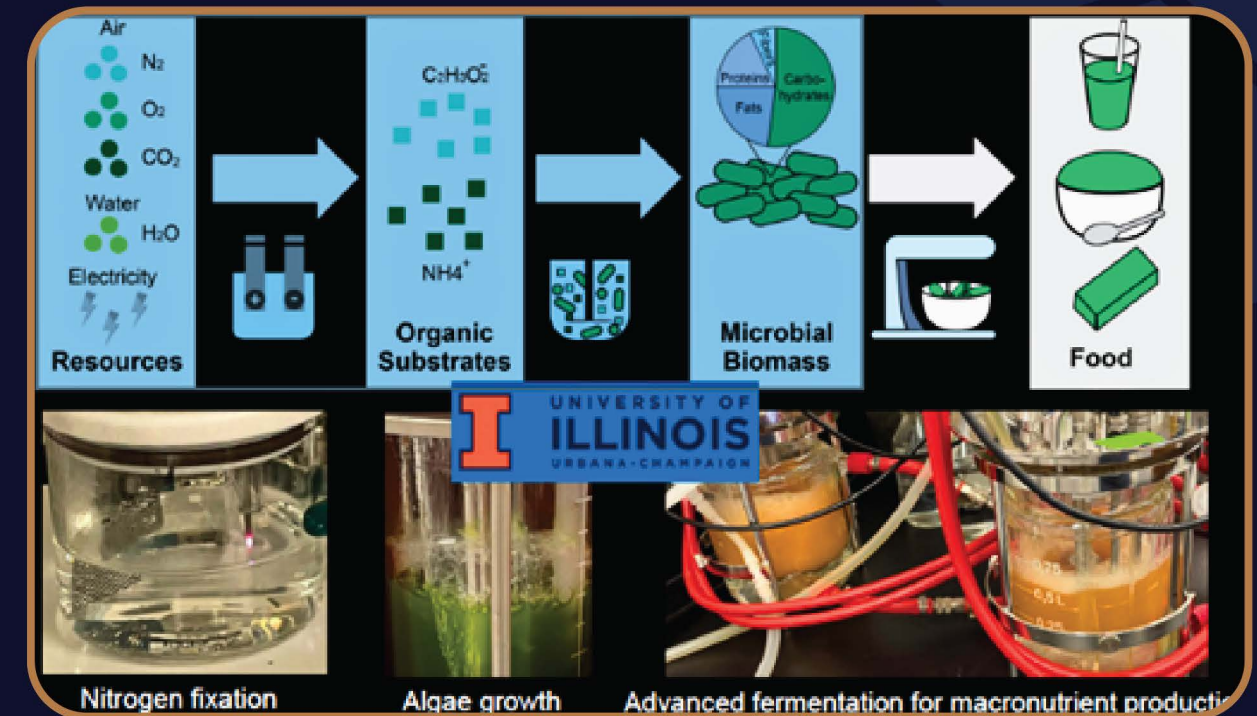
- Cellulosic Bio-polymer packaging is free of plastic coating to enable biodegradation, which replaces single-use plastics, and minimizes deleterious environmental impact/footprint
- Eliminates landfilling requirement by generating renewable energy for on-site use
- Partnerships include: University of Hawaii - Mano, Hilo, and Office of Innovation & Commercialization



BIOMANUFACTURING

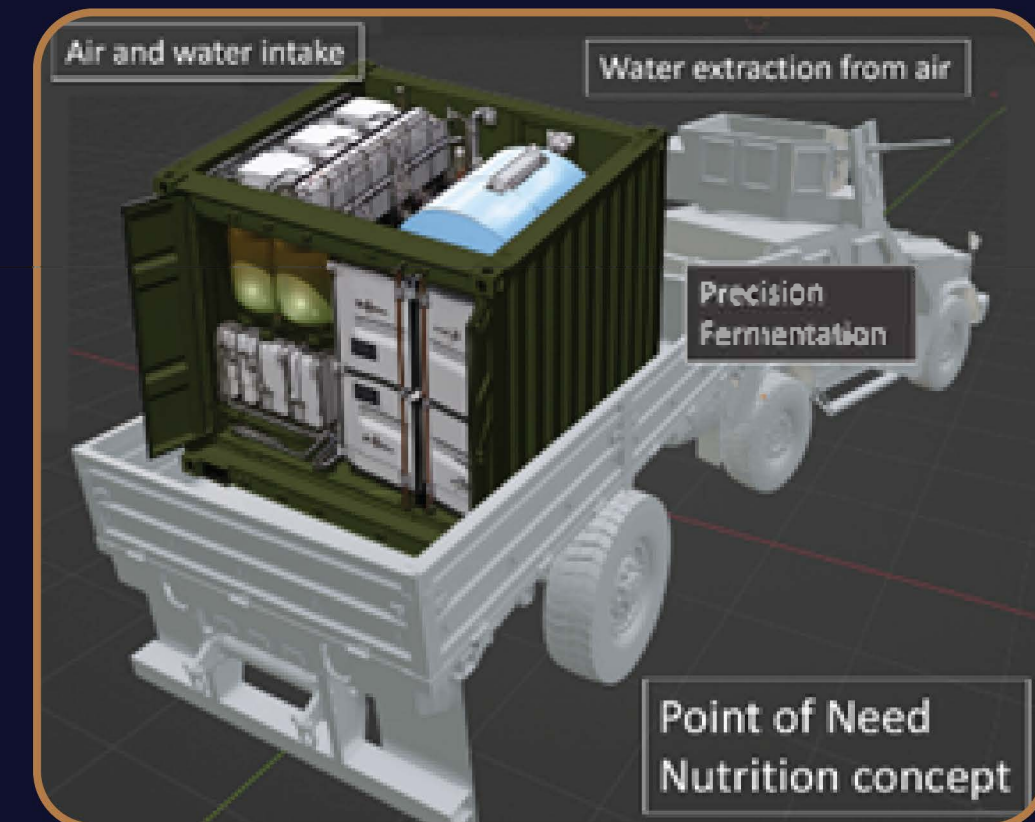
POINT OF NEED MANUFACTURING FOR NUTRITIONALLY TAILORED FOOD

OUSD R&E Manufacturing Science and Technology Program is providing funding to transition and advance bio-manufactured food technologies through the Army DEVCOM-Soldier Center with the support of BioMADE. The basis of this work is to produce a range of microbial-origin foodstuffs from air, water, and electricity to provide supply chain resilience and reduce logistical requirements to feed the warfighter. The biosynthetic technology currently being considered for advancement through this effort include DARPA Cornucopia, DARPA ReSource and other novel biosynthetic technology research institutes.



IMPACT & BENEFITS

- Decreases reliance on the supply chain, extends mission duration and addresses contested logistics challenges
- Food sourced through tailorable bio-manufacturing will meet nutritional needs of the warfighter by producing protein, fat, carbohydrate and fiber with added vitamins and nutrients
- Expected outputs from the biosynthetic nutrition process and post processing include shakes, yogurt, nutrition bars, jerky and water

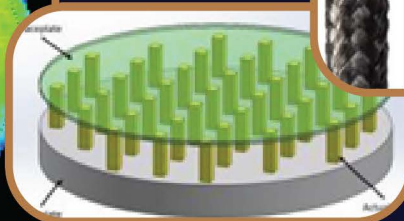
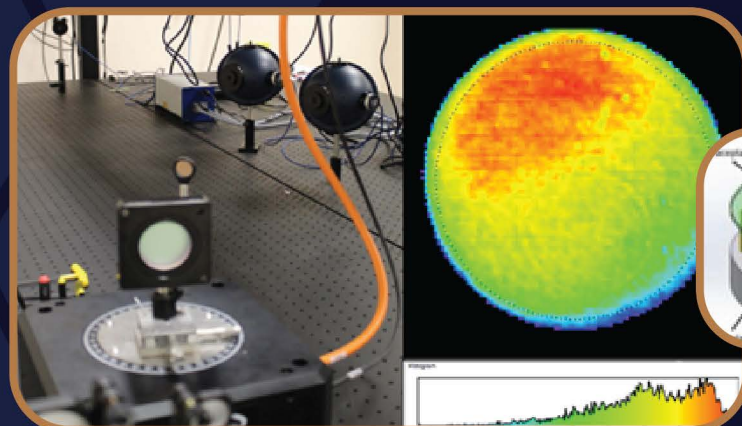


JOINT DIRECTED ENERGY EFFORTS

The JDMTP is leading the charge to advance technology for High-Energy Laser (HEL) and High-Power Microwave (HPM). Army, Navy, and OSD, with support from available DOD ManTech resources, are enabling the successful transition of HEL and HPM technology for DOD systems by establishing appropriate manufacturing processes for an agile and resilient industrial base. These efforts are aimed to improve manufacturability, increase production capabilities and reduce costs of critical components for DOD-wide systems.

Army ManTech

- Fiber-coupled Pump Diode MFG for High-Energy Lasers
- Production Optimization of HEL Optics
- Manufacturing of Fast Steering Mirrors



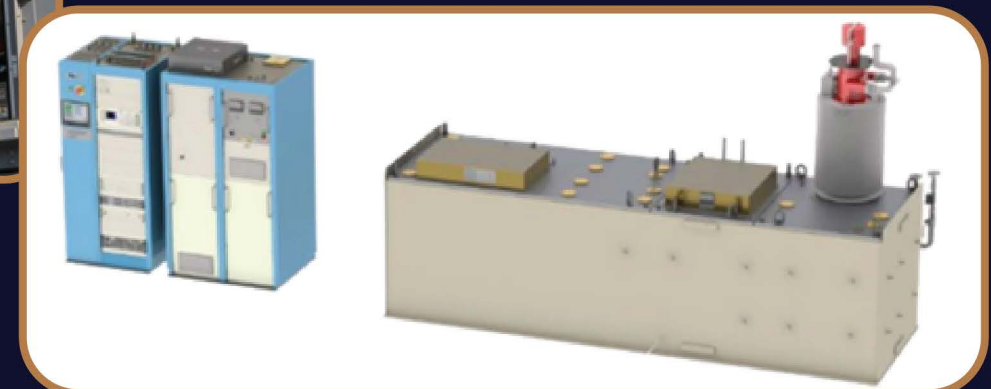
Navy ManTech

- Production Fabrication of Optics for HEL Weapon Systems
- Beam Director Manufacturing
- Production of MLD Gratings for Laser Weapon Systems



OSD ManTech

- Deformable Mirrors
- Advanced Pulsed Power Solution for DE-IAMD Platforms
- Carbon Nanotube Fiber Cathodes for HPM Weapons



***Please join me in welcoming to the stage
the Principals and representatives of the
JDMTP, who will now take part in a panel
discussion and field your questions***



DEPARTMENT OF DEFENSE JOINT DEFENSE MANUFACTURING TECHNOLOGY PANEL

