

DEPARTMENT OF DEFENSE

MANUFACTURING TECHNOLOGY PROGRAM

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Office of the Undersecretary of Defense for Research and Engineering

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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

DOD ManTech: Individual Investment Strategies & Resources



Army ManTech



Navy ManTech



DAF ManTech



DLA ManTech



OSD ManTech

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 (JMPs)

- JTPAs that cut across multiple Subpanel/TWGs help form JMPs
- JMPs 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

Don't Fight Alone

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

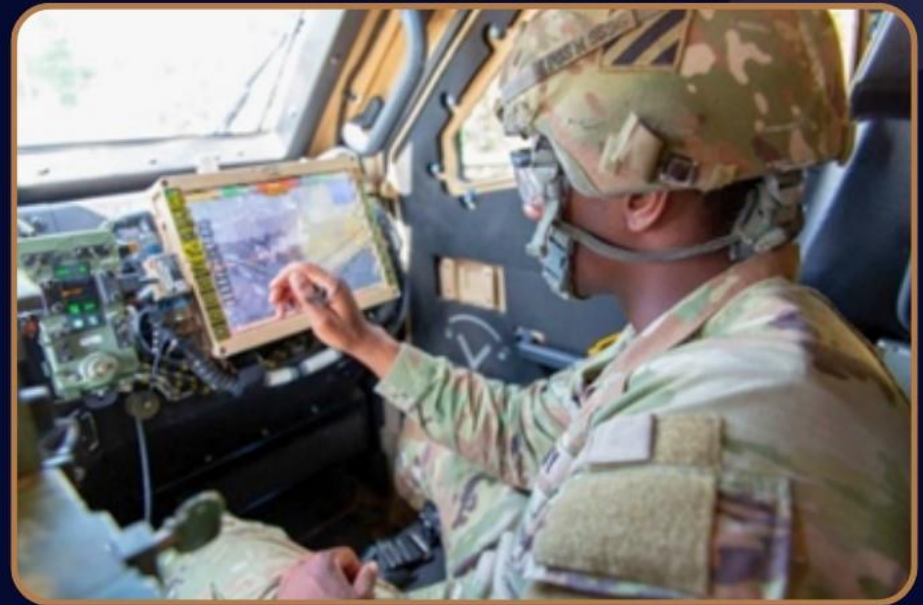
MICROELECTRONICS

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

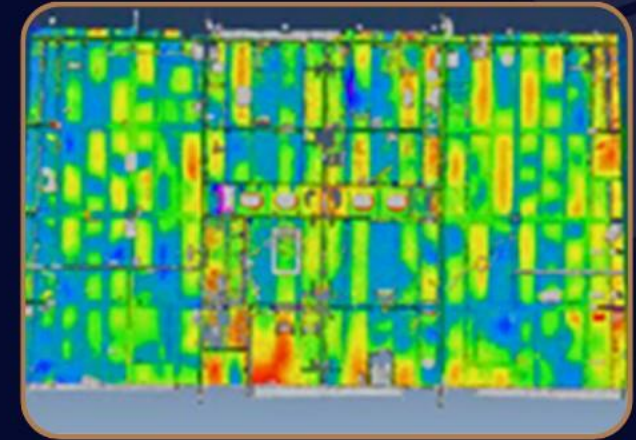
- Improved navigation, communications, surveillance, and synchronization of sensors and systems in GPS-contested environments
- Significant savings over current A-PNT solutions, from greater than \$2,000 to less than \$300 per unit, thus enabling extensive fielding over next decade



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

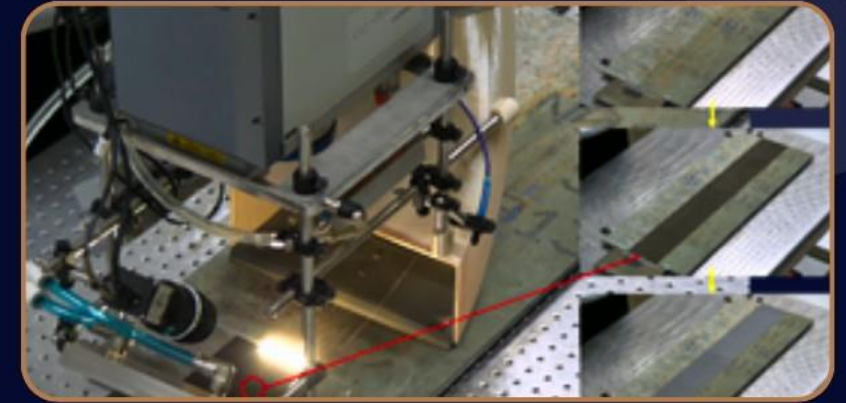
- Will greatly improve the shipbuilding process by reducing costs and increasing manufacturing throughput
- General Dynamics Bath Iron Works (BIW) estimates total savings of \$1.241M per hull, which generates a five-year return on investment (ROI) of 1.2:1, after full implementation



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

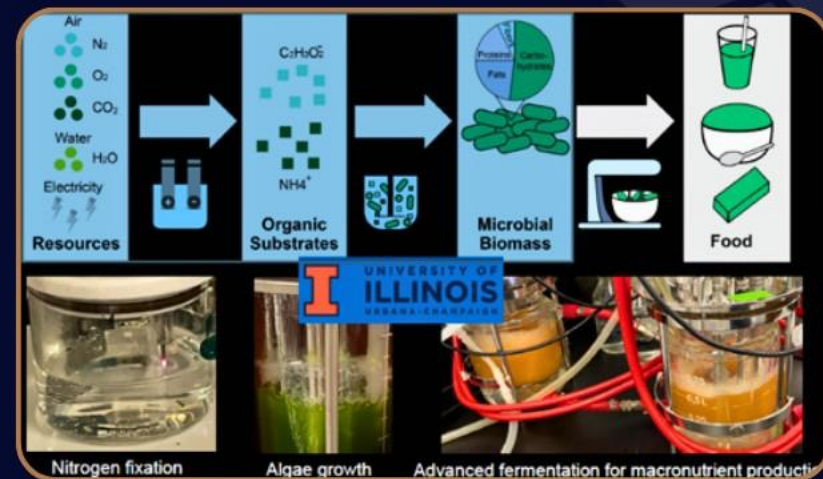
- Cellulosic Bio-polymer packaging is free of plastic coating to enable biodegradation, which replaces single-use plastics, and minimizes deleterious environmental impact/footprint
- Eliminates landfilling requirement by generating renewable energy for on-site use
- Partnerships include: University of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



BIOMANUFACTURING

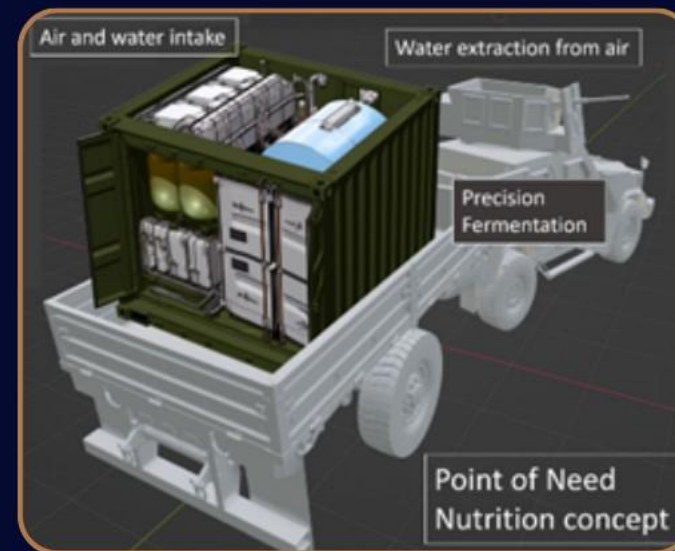
POINT OF NEED MANUFACTURING FOR NUTRITIONALLY TAILORED FOOD

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

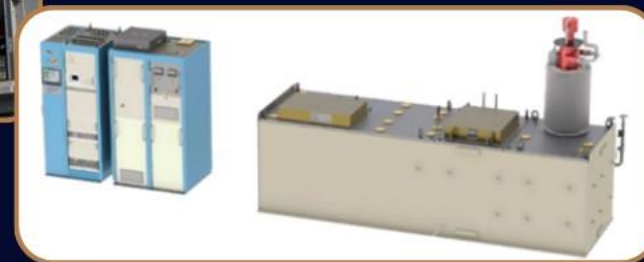
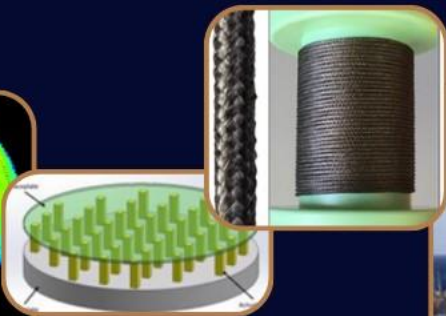
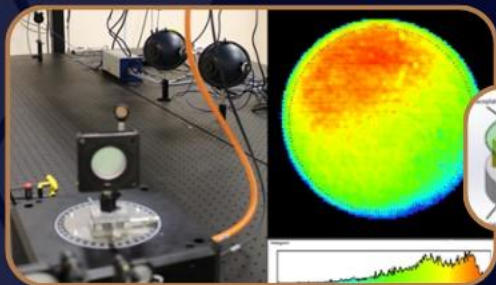
- Fiber-coupled Pump Diode MFG for High-Energy Lasers
- Production Optimization of HEL Optics
- Manufacturing of Fast Steering Mirrors

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***



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