RELIANCE 21 – DoD COMMUNITIES OF INTEREST
MATERIALS AND MANUFACTURING PROCESSES (M&MP)

Scope/Thrust Areas

M&MP Tier 1 Taxonomy
M&P for Survivability & Life Extension
• Comprised of all materials and processes that enable mission operations; contains Technical Area Teams (TATs)
Civil Engineering
• Supports all aspects of technology vital to force protection, projection, and sustainment; projects are reported in TAT7
Manufacturing Technology for Affordability
• Contains materials, processes, and fabrication techniques to significantly change the mfg. cost curve; efforts are integrated into all TAT roadmaps
Environmental Quality
• Reflects DoD activities conducted within the DoD-DoE Strategic Environmental R&D Program

Engagement Opportunities for Industry

• National Defense Industrial Association (NDIA) Science & Technology Conference
• Annual Perno Conference
• National Research Council, Defense Materials, Manufacturing and Infrastructure (DMMI)
• Joint Defense Manufacturing Technology Panel (JDMP)
• Independent Research and Development (IRAD), Technology Interchange Meeting (TIM)
• Partner through National Manufacturing Institutes

Impact on Capability Needs and Success Stories

Tools for Polymer Matrix Composite Certification
Mature damage prediction tools for multi-service component design, materials development, lifing, and certification
Technologies/Benefits
• Enables certification by analysis
• High-fidelity composite damage prediction
• Fiber development for damage tolerant resin
• Quicker system maintenance turnaround
• New tools for future platform development
• Improved current and future system readiness, survivability, and lifecycle costs

Graphene on Silicon Carbide on Silicon for Low-Loss Nanophotonics
Technologies/Benefits
• More affordable solution to bulk SiC
• Large area silicon up to 12 inches
• Enables integration with Si-CMOS technology
• Supports optical data communications
• New, jam-resistant communication links
• Micro-robotic systems; photonic info processing for capability at very small size

AgilePod™
JDMP – ManTech Versatility for the ISR mission
Technologies/Benefits
• Enables ISR mission flexibility through a sensor pod that is flight line reconfigurable
• Plug-and-play up to seven different sensors depending on the mission
• Pod expansion from 63 inches to 110 inches for higher payload
• Demonstrates agile manufacturing techniques and the use of open systems architecture

Focus Going Forward

• Cross Service Collaboration on Emerging Solutions for Materials and Manufacturing Processes
• Determine Capability Gaps and Science

DISTRIBUTION A. Approved for public release; distribution unlimited. Case #18-5-0714