



# DDRE (MODERNIZATION) 101

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# MY CAREER TRAJECTORY

THE OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH & ENGINEERING FOR MODERNIZATION



- New England to New York
- New York to Pittsburgh, Pennsylvania
- Pittsburgh to Livermore/Silicon Valley, California
- Livermore/Silicon Valley to Washington D.C.



**B.S. MECHANICAL ENGINEERING**



**M.S. MECHANICAL ENGINEERING DESIGN**

Lawrence Livermore National Laboratory



**idealab**  
From ideas to successful companies

**DEFENSE INNOVATION UNIT**



Sandia National Laboratories



**INTUITIVE SURGICAL**



# FOCUS ON MODERNIZATION

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**THE U.S. IS NOW CHALLENGED TO STRIKE ANY ADVERSARY AT WILL**

**EQUAL ACCESS TO EMERGING TECHNOLOGIES, SUCH AS AUTONOMY, ARTIFICIAL INTELLIGENCE, AND SYNTHETIC BIOLOGY, WILL DISRUPT FUTURE CONFLICTS**

**THE U.S. STILL POSSESSES THE BEST MILITARY. HOWEVER, OUR ADVERSARIES' DELIBERATE ACTIONS MANDATE CHANGE IN WHAT WE BUY AND HOW WE OPERATE**

**WE MUST DEVELOP NEW LETHAL CAPABILITIES AND ACCELERATE THE PACE IN WHICH WE GET THAT CAPABILITY TO THE WARFIGHTER**





# CRITICAL TECHNOLOGY AREAS



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**DDRE(M) was established in November 2019 to house the modernization priority areas and magnify the Department's technical dominance and support the objectives set forth by the Secretary of Defense and the National Defense Strategy.**

## Seed Areas of Emerging Opportunity



**Advanced Materials**



**Biotechnology**



**FutureG**



**Quantum Science**

## Effective Adoption Areas



**Advanced Computing & Software**



**Human-Machine Interfaces**



**Integrated Network Systems-of-Systems**



**Microelectronics**



**Renewable Energy Generation & Storage**



**Space Technology**



**Trusted AI & Autonomy**

## Defense-Specific Areas



**Directed Energy**



**Hypersonics**



**Integrated Sensing & Cyber**



# ROLES IN DDRE(M)



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## DDRE(M) WAS ESTABLISHED TO ADVANCE THE MODERNIZATION PORTFOLIO

- Connect related priorities (i.e. Directed Energy in Hypersonic defense; Microelectronics in FNC3 and 5G, etc.) and provide a consistent framework
- Overall portfolio includes warfighting deliverables, cross-cutting enablers and future potentials
- Focus on U.S. industrial base and workforce – including universities
- Not just closing gaps and identifying overlap, but providing leap-ahead capabilities

## PRINCIPAL DIRECTOR (PD)

- The PDs are, by definition, meant to work quickly, set the technical direction for the Department in their area of expertise
- Develop modernization roadmaps
- They ensure the transition of technologies into operational use

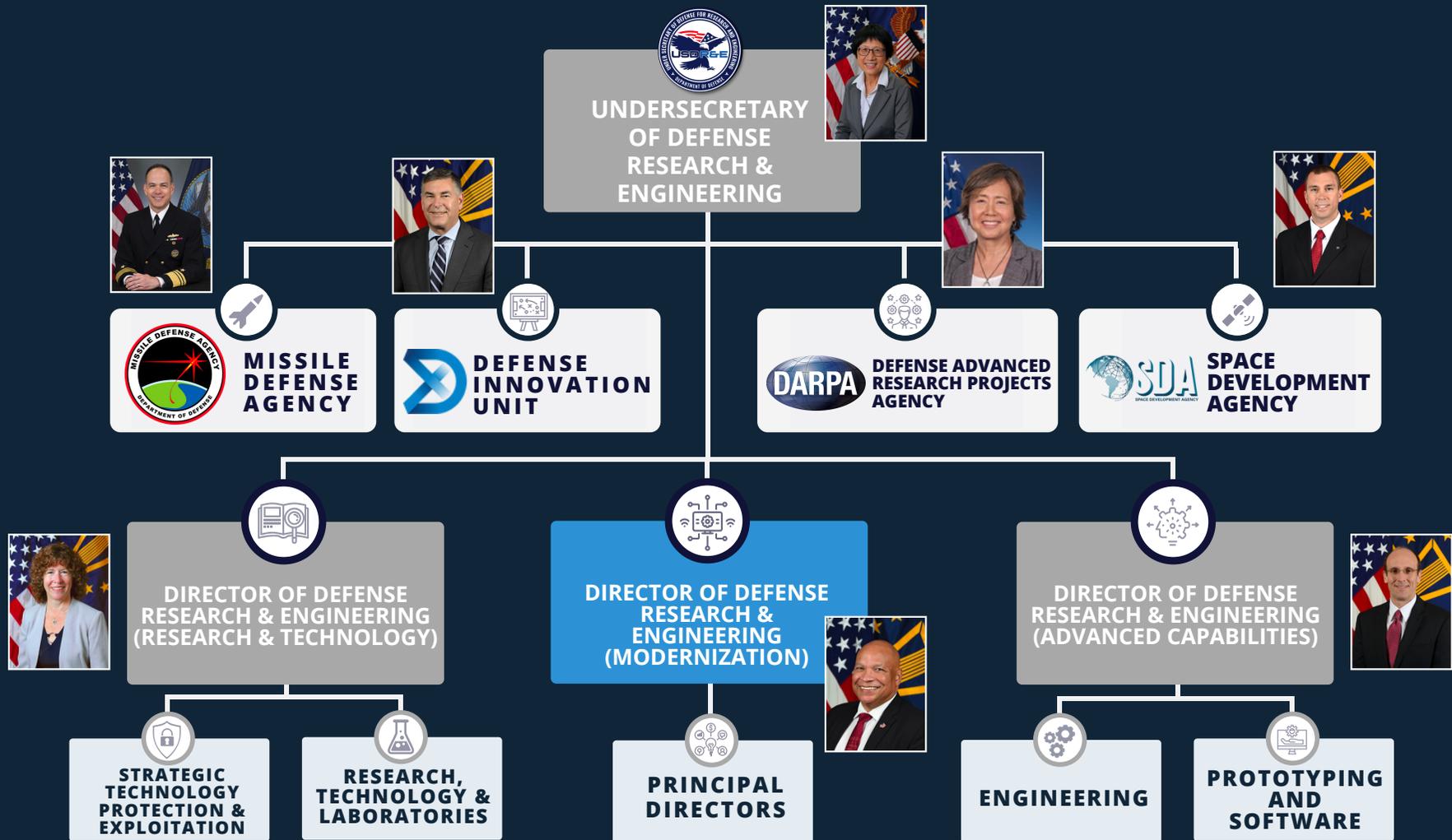




# OUSD(R&E) ORGANIZATIONAL STRUCTURE



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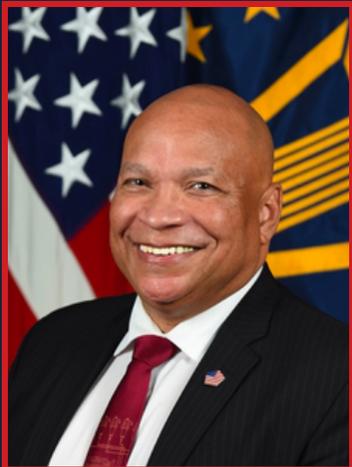




# MODERNIZATION LEADERSHIP



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**DDRE(M)  
MR. HOLLIDAY**



**A/PD 5G->NG  
MS. TOMAN**



**PD AI/ML  
DR. CRISMAN**



**PD AUTONOMY  
DR. RIDDICK**



**PD BIOTECH  
DR. ROGERS**



**A/PD CYBER  
MR. CRONE**



**PD DE  
DR. TREBES**



**PD FNC3  
DR. ZATMAN**



**PD HYPERSONICS  
MR. WHITE**



**PD ME  
DR. SHENOY**



**PD QUANTUM  
DR. BURKE**



**PD SPACE  
DR. MILLARD**



# DOD RESEARCH AND ENGINEERING ENTERPRISE

CREATING THE TECHNOLOGIES OF THE FUTURE FIGHT



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