

RECORD VERSION

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BEFORE THE

**SUBCOMMITTEE ON INTELLIGENCE AND
EMERGING THREATS AND CAPABILITIES
COMMITTEE ON ARMED SERVICES
UNITED STATES HOUSE OF REPRESENTATIVES**

ON

**REVIEWING DEPARTMENT OF DEFENSE SCIENCE AND TECHNOLOGY
STRATEGY, POLICY, AND PROGRAMS FOR FISCAL YEAR 2021: MAINTAINING
A ROBUST ECOSYSTEM FOR OUR TECHNOLOGICAL EDGE**

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INTRODUCTION

Chairman Langevin, Ranking Member Stefanik, and distinguished Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the U.S. Army's approximately \$2.6 billion request for Science and Technology (S&T) funding for Fiscal Year (FY) 2021. The Subcommittee has a vital role in supporting Army S&T and ensuring that the U.S. Army modernizes to meet future readiness requirements, and your demonstrated commitment to our program is most appreciated.

The Army S&T vision directly supports the goals of Army modernization. Our focus is on discovering emergent S&T for future warfighter capabilities, maturing technology, reducing program risk, developing prototypes to better define affordable and achievable requirements, and conducting experimentation with Soldiers to refine new operational concepts. The publication of the *2019 Army Modernization Strategy* (AMS) outlined our holistic approach to modernization, including our priority research areas – Disruptive Energetics; RF Electronic Materials; Quantum; Hypersonic Flight; Artificial Intelligence; Autonomy; Synthetic Biology; Material by Design; and the Science of Advanced Manufacturing. Modernization is a continuous process requiring collaboration across the entire Army. Aligned with the National Defense Strategy, the Army's goal is a modernized force capable of conducting Multi-Domain Operations (MDO) across an array of scenarios in multiple theaters of operations by 2035.

As the Army executes its modernization strategy, we will continuously revise our modernization efforts to meet great power challenges to our military advantage and to create the capabilities needed to execute MDO. The strategy was established upon the vision for the future Army and the framework of our overarching strategy to balance near-, mid-, and far-term investments. In doing so, the Army is depending on its vital S&T program to help prepare for the future, mitigate the possibility of technical surprise, and ensure that we are able to remain dominant in any environment.

IMPORTANCE OF S&T TO ARMY MODERNIZATION

The Army's S&T program has a large role in enabling the six priorities outlined in the AMS: (1) Long Range Precision Fires, (2) Next Generation Combat Vehicles, (3) Future Vertical Lift, (4) Army Network, (5) Air and Missile Defense, and (6) Soldier Lethality. In the Army's FY21 budget request, approximately 79% of S&T Applied Research and Advanced Technology Development funding is aligned with the Army's modernization priorities, which is the indication of the Army's intent to maintain a well-balanced S&T portfolio near-term, mid-term, and far-term. Organizationally, the Army S&T program is working closely with Army Futures Command (AFC), the four-star command tasked with spearheading the Army's modernization efforts, and the Cross-Functional Teams under AFC that are aligned with each of the priorities. I continue to develop a close working relationship with AFC.

The major S&T efforts in support of the Army's Modernization Priorities include:

- **Long-Range Precision Fires** enable multi-domain forces to penetrate and neutralize enemy A2/AD capabilities to ensure military overmatch at every echelon.
- **Next Generation Combat Vehicles** increase firepower, speed, and survivability of land forces, allowing them to maneuver into superior positions on the battlefield and pair with robotic vehicles.
- **Future Vertical Lift** platforms and technologies increase the maneuverability, endurance, lethality, and survivability of Army aircraft – increasing their operational reach and effectiveness against near-peer competitors.
- The modernization of **Army Network** technologies is necessary to command and control forces distributed across vast terrain, converge effects from multiple domains, and maintain a common situational understanding in MDO.

- Our competitors have invested heavily in indirect fire and missiles necessitating the modernization of our **Air and Missile Defense** capabilities. New technologies will defend ground forces against adversary air threats, and will also defend our infrastructure – and the infrastructure of our allies and partners – against a host of air and missile threats.
- Finally, efforts modernizing **Soldier Lethality** will increase the capability of individual Soldier weapons, provide Soldiers with enhanced night vision, and increase their ability to quickly understand and react to emerging situations – increasing their lethality, precision, and survivability. These efforts will be complementary to ongoing Soldier performance initiatives to improve fitness, nutrition, and resiliency, to ensure we are modernizing the Soldier, not just the equipment for our Soldiers.

We have also increased emphasis on engineering prototyping to permit Soldier touch points early and often. These touch points connect Army S&T with Soldiers to bring operational common-sense to laboratory prototypes for quicker transition of new capabilities.

INFRASTRUCTURE

The Army's over 25,000 scientists, engineers, and technicians at laboratories across the country are critical assets in identifying, developing, and demonstrating technology options that inform and enable effective and affordable capabilities for our Soldiers today and in the future.

The Army relies on its laboratories to foster innovation, develop and demonstrate new technologies, assess competing technology options, and help transition basic research investments as they mature. This is one of the primary reasons why state-of-the-art facilities are imperative to the success of Army S&T.

The three primary areas for infrastructure modernization include:

- Modernizing organic technical infrastructure for state-of-the-art research laboratories and equipment;
- Engaging in Public-Public and Public-Private infrastructure collaborations; and
- Embedding Army Scientists and Engineers in the Public and Private sector, using the Combat Capabilities Development Command (CCDC) open campus business model.

Not only are these facilities important to enabling research and development, they are critical in the Army's ability to recruit new employees, develop existing employees, and retain them. I would like to thank Members of Congress for the numerous staffing flexibilities provided to the Army laboratories. Direct Hiring Authority, Renewable Term Appointments, and 2363 Authorities to give lab directors the ability to fund new research and development projects within the year of execution, and the Laboratory Demonstration Project have been critical to growing the Army's technical workforce and sharpening our technical acumen in emerging research areas.

REFORM

The Army, with the support of Congress, has undertaken a number of reforms to improve the way we do business. Chief among these reforms is the Army's Intellectual Property (IP) policy, which fosters greater communication with industry early on in the process so that we can be clear about our data requirements. IP plays an important role in our ability to develop new weapon systems and maintain the technological advantage.

We are also focused on talent management, especially the ability to recruit and retain top-talent in order to keep the Army on the cutting-edge of technology. Our plans in this area are designed to:

- Develop senior S&T leaders to enable effective execution of S&T programs;
- Reshape the existing technical workforce to meet emerging S&T challenges, dedicated to retraining current Army S&T professionals to prepare them to perform work in higher demand technical areas;
- Broaden technical opportunities for uniformed personnel in our Army Labs and Centers;
- Recruit new personnel utilizing tools like the SMART Scholarship, and timely onboarding of S&T employees; and
- Leverage the best-and-brightest from across the Army S&T Enterprise, bringing together scientific professionals – government, military, academic, and industrial – to address technical problems; these partnerships will enable the rapid technology developments necessary to outpace emerging threats.

The Army has also expanded its industry outreach program, including Innovation Days sponsored by the Army Rapid Capabilities and Critical Technologies Office, supported by AFC's CFTs. We are actively reaching out to non-traditional businesses with innovative ideas that are willing to engage with the Army via numerous mechanisms, including the Small Business Innovation Research program, the Small Business Technology Transfer Research program, Other Transaction Authority consortia, the Army Expeditionary Technology Search prize competition, the Defense Innovation Unit, the Strategic Capabilities Office, the CCDC open campus initiative, and traditional mechanisms such as Broad Agency Announcements or Cooperative Research and Development Agreements with Army laboratories.

CONCLUSION

Today, we find ourselves at a perilous place in history. Our focus is on great power competition, and the Army is moving quickly to address modernization shortfalls. Time is not on our side. We must invest in Army S&T to meet the challenges of the future. With continued support from Congress, including predictable, adequate, sustained, and timely funding, the Army will build a force ready to deter potential adversaries, and if deterrence fails, to rapidly deploy, fight, and win.

Thank you again for this opportunity to discuss Army S&T and for your strong support for the Army's program. I look forward to your questions.