



RESEARCH  
AND ENGINEERING

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MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference - Defense Science Board Task Force on Counter Autonomy

Advances in Artificial Intelligence and global technology proliferation are driving the rapid evolution and global adoption of autonomy, which is creating economic, social, and military disruption. The ability of future U.S. forces to advantageously harness autonomy in both physical and information systems will be essential to address capability and capacity asymmetries. As with past disruptive military technology epochs, a focused and coherent approach to addressing both offensive and defense is critical. This is particularly true with autonomy since the ethical and legal barriers to the full use of autonomous systems are likely to be much lower for future U.S. adversaries. As such, the Defense Science Board (DSB) is tasked with conducting a strategic assessment of U.S. counter-autonomy capabilities in the near (today) and far term (out to 2030).

The Task Force should consider counter-autonomy efforts in the domains of land, sea, undersea, air, space, and cyberspace. The Task Force should focus on countering autonomous physical systems in addition to autonomous operations in the information domain. Key questions to be addressed by the Task Force include:

- Threat: What is the full spectrum of projected autonomy threats? This should include a review of both military and commercial roadmaps for autonomous systems and technologies. It must also consider future warfighting innovations that fully leverage autonomy. How do we learn about adversary intentions and capabilities, and deny the same, especially when software is constantly learning and adapting and possibly denying and deceiving?
- Counter-Autonomy Gaps: What are the current and projected U.S. capability gaps for countering these threats? Is the United States on a path to close any existing gaps, stay ahead of the projected threat, and take full advantage of identified autonomous system vulnerabilities? What is the global state of counter-autonomy systems and technology and how will this evolve through 2030?
- Unique Autonomous System Vulnerabilities: What are the unique vulnerabilities associated with autonomous systems that the United States could exploit to create a lasting warfighting advantage? The full life cycle of an autonomous system should be considered, including research, development, testing, logistics, operations, and maintenance. The full span of autonomous system functions should be considered. Finally, all weapon system dependencies associated with the application of autonomy should be considered.

- Capability Needs and Investments: What key system capabilities and attributes are essential to ensure counter-autonomy from and through land, sea, undersea, air, space, and cyberspace to defend physical, virtual and human assets from autonomous systems across a range of environments and scenarios? What key counter-autonomy systems and technologies ought to be developed?
- Acquisition, Testing, and Training: Do we require new or modified methods to articulate, acquire, experiment, test, train, and evaluate counter-autonomy capabilities? How can speed of invention, innovation, acquisition, and employment of new and evolutionary capabilities be achieved to create and sustain an advantage over time?
- Doctrine/Force Strategy: What innovative Concept of Operations will yield the greatest counter-autonomy benefits? What are the barriers to adoption of effective counter-autonomy solutions and how can they be overcome?
- Deterrence: What are the most attractive options to deter and avoid being deterred by adversary autonomy?

I will sponsor the study. Mr. James Carlini and Dr. Mark Maybury will serve as the co-Chairmen of this study. RADM White will serve as the Executive Secretary. Mr. David Moreau will serve as the DSB Secretariat representative.

The Task Force members are granted access to those Department of Defense (DoD) officials and data necessary for the appropriate conduct of their study. The Under Secretary of Defense for Research and Engineering will serve as the DoD decision-maker for the matter under consideration and will coordinate decision-making as appropriate with other stakeholders identified by the study's findings and recommendations. The nominal start date of the study period will be within 3 months of signing this Terms of Reference, and the study period will be between 9 to 12 months. The final report will be completed within three months from the end of the study period. Extensions for unforeseen circumstances will be handled accordingly.

The study will operate in accordance with the provisions of Public Law 92-463, "Federal Advisory Committee Act," and DoD Instruction 5105.04, "DoD Federal Advisory Committee Management Program." It is not anticipated that this study will need to go into any "particular matters" within the meaning of title 18, United States Code, section 208, nor will it cause any member to be placed in the position of action as a procurement official.



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