RESEARCH SUMMARY

National Security Issues in Cyberspace and Space

Cyberspace and space are new national security frontiers, and their similarities and differences present several national security issues for the U.S. This summary describes a comparison of the two fields and discusses three critical concerns that relate to national security.

The cyberspace and space national security domains blur traditional ideas about borders, sovereignty and defense strategy. Both also share a history of having started as intelligence activities rather than as warfighting domains, and both remain closely linked to their intelligence origins. Both were also originally dominated by the government but are now increasingly commercial activities, and the U.S. military is turning to the private sector for many of its cyberspace and space services. Both are accessible through sophisticated technology employed by a technically capable workforce.

Although space and cyberspace are similar in many respects, they also bear differences. Space is a naturally occurring part of earth's surroundings, whereas cyberspace is a manmade phenomenon. Space-based systems typically require massive capital outlays, whereas cyberspace operations require much less.

IDA researcher Tom Barth assessed the current state of cyberspace and space, considering their unique histories, recent events, commentary by U.S. officials and military leadership, and existing literature. He identified three key issues that impact national security:

— The need to define the national security relationship between the government and the commercial sector in each domain.

— Recruitment, professional development, and retention of a technically capable workforce.

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— Unity of effort within each and between both domains. This includes determining the appropriate relationships between relevant combatant commands and federal agencies.

The IDA review shows that legal and policy frameworks for cyberspace are underdeveloped, impeding the government from tackling national security challenges. Meanwhile, the shift from space as an area of scientific exploration dominated by the government to one with significant commercial activity presents its own issues for security operations. Addressing the national security relationship between the government and the commercial sector in both domains will require the active participation of several government agencies, including the Department of Defense (DOD). The DOD's needs will be critical when discussing the national security systems that operate in or move through cyberspace or space.

The existing shortage of technically capable civilian and uniformed personnel in federal cyberspace and space workforces also presents national security concerns. IDA found that addressing this shortage will likely require a whole-of-nation approach drawing on efforts by the government, academia and commercial industry. As part of this approach, the DOD would need to ensure its internal policies, procedures, and resources for recruitment, retention and professional development enable it to be competitive with the rest of the government and the commercial sector.

The final issue addressed in the IDA report relates to the interdependence between U.S. Cyber Command (CYBERCOM) and U.S. Space Command (SPACECOM). IDA suggested that the DOD should conduct a series of stress tests to evaluate the current command and support approaches between CYBERCOM and the National Security Agency, between SPACECOM and the National Reconnaissance Office and between both CYBERCOM and SPACECOM and the other combatant commands. These tests would reveal whether current approaches can achieve the necessary synergy between cyberspace and space, enable a coordinated response to similar threats and allow for simultaneous activity. This information could be critical to the Defense Department's preparation for emerging threats.

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