Ensuring Mission Assurance While Conducting Rapid Space Acquisition

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ISSUE

The U.S. Space Force (USSF) faces potential adversaries that have demonstrated increasingly effective counterspace capabilities. To outpace these threats, the USSF is pursuing rapid acquisition of warfighting capabilities. A key question is whether the acceleration of acquisition by the USSF using various techniques introduces any critical new risks. In particular, do the adaptations and streamlining techniques being used to get new space systems to operators quickly create vulnerabilities and challenges to mission assurance (MA) (i.e., the ability of operators to achieve their mission, continue critical processes, and protect people and assets in any operating environment or conditions)?

The project was guided by the following questions:

- What *streamlining* techniques are being used to accelerate USSF acquisition?
- What potential *risks* are associated with those streamlining techniques?
- What is the potential impact of these streamlining techniques on *mission assurance*?
- What are potential *mitigations*?

APPROACH

We used a mixed methods approach to address the questions, including a review of government policies and literature on acquisition; discussions with over 40 subject-matter experts from the USSF, the Department of the Air Force, and federally funded research and development centers (FFRDCs); identification of potential sources of risk; creation of a framework for identifying the relative risk to MA of various events; identification of potential mitigation strategies; and analysis of Department of the Air Force data to identify common issues in programs using rapid acquisitions strategies.

CONCLUSIONS

- Streamlining methods across Space Systems Command (SSC) and the Space Rapid Capabilities Office (RCO) share some similarities, but differences are also evident, driven by the urgency of the threat, complexity, organizational and structural resources, and risk tolerance of missions and culture.
- There are a series of critical risks that need to be addressed by USSF leadership across all rapid acquisition efforts:
  - insufficient alignment and coordination between the acquisition and operations communities
  - unreliable or inadequately timed financial resources
  - a shortage of on-site cybersecurity experts and intelligence personnel colocated with program offices
  - a lag in development of needed test capabilities and infrastructure
  - challenges in aligning software development life cycles
  - failure to consider and plan for systems evolution
  - alternative requirements processes that might specify capabilities that cannot be acquired on a rapid schedule.
- The programs using streamlining at SSC are still in the early stages of their life cycles and have not delivered products. Thus, MA outcomes of streamlining are not yet measurable.
- MA has traditionally focused on managing technical risk of the individual program, but MA for rapid acquisition should consider trade-offs between mission capability, reliability, resilience, security, and schedule to ensure mission success.

RECOMMENDATIONS

- Expand the MA objectives for rapid acquisition to reflect the addition of new operational and programmatic goals on top of technical system goals.
- Address the risks associated with rapid acquisition identified above (mitigation options are described in Chapter 3 of the report).
- Ensure that processes across the USSF acquisition and operational communities are updated to address the need to onboard capabilities more quickly. As these issues cross organizational boundaries, the acquisition community cannot address all of the challenges itself, so other communities including the requirements and financial management will also need to make some changes.
- Proactively manage risks to MA associated with rapid acquisition by using the risk assessment framework and management process described in Chapter 5 of the report to provide a structured way to conceptualize MA from program inception; provide an approach for making intelligent risk trade-offs and choosing courses of action that ensures mission success; and offer an approach to manage risks collectively rather than individually.

KEY DIFFERENCES IN MISSION ASSURANCE APPROACH BETWEEN TRADITIONAL AND RAPID ACQUISITION PROGRAMS

What constitutes mission success for rapid acquisition differs from that for traditional acquisition, which is performance-focused. Further, the risk postures associated with traditional acquisition and rapid acquisition are very different.

MA for Traditional Space Acquisition	MA for Rapid Space Acquisition
• Focuses on system	• Focuses on warfighter/mission
• Addresses technical risks to the narrow system	• Addresses technical, operational, and programmatic risks of the broader mission
• Averse to technical risk	• Tolerant of technical risk
• Maximizes performance-centric MA objectives (mission capability and reliability) that drive cost and schedule	• Balances multiple MA objectives (schedule, mission capability, reliability, security, resilience) within cost constraints