



Department of the Air Force
Scientific Advisory Board

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE
WASHINGTON DC

Abstract: Developmental and Operational Testing

The Department of the Air Force Scientific Advisory Board's (SAB) Developmental and Operational Testing study addresses the challenges, best practices, and potential accelerators of the United States Air Force (USAF) Test and Evaluation (T&E) community and their impacts on technical advancements and delivering capability to the warfighter in the face of competition with China.

The panel used a case study approach, selecting four current USAF programs in various stages of the acquisition lifecycle, and identifying both positive and negative aspects of these programs' T&E experiences, outcomes, and plans. Topics of particular focus included digital engineering, modeling and simulation, acquisition and contracting, cross-functional integration, and cultural issues within the test enterprise and associated organizations. The study team found best practices in the integration of developmental and operational test organizations, personnel, and assets. In addition, numerous programs demonstrated the development and use of advanced modeling and simulation capabilities to make test procedures and plans more effective and efficient.

However, the study team noted that the test and acquisition enterprise lacked the sense of urgency necessary to address time-critical priorities for potential warfighter engagement with peer adversaries. Without a focus on pressing mission needs, the enterprise can be excessively risk-averse, with concerns about low-probability technology or information security failures overriding the need to transition critical capabilities to the warfighter. Furthermore, crucial T&E investments were sometimes de-prioritized in program funding decisions; existing capabilities and infrastructure were not always leveraged to their full potential. The panel determined that accelerating test requires a greater level of collaboration between the T&E enterprise and the full spectrum of organizations engaged in systems development and acquisition.

Finally, the panel observed that many of the supporting processes needed to realize the potential benefits of digital engineering were not functional, and a strategic vision for achieving and fully leveraging digital readiness was absent. The panel developed five key recommendations, based on evidence gathered from informative briefings and detailed documentation provided by a range of organizations from across the USAF T&E community, exemplar system program offices, the Department of Defense, and numerous private-sector entities. The SAB recommends that the Air Force:

- Develop prioritized, urgent capability delivery plans aligned with OPLANs / IPLs, and knock down obstacles to mission success.
- Develop more agile, situation-dependent risk models; ensure that risk acceptance is aligned with actual risk owners.
- Leverage and expand existing forums (e.g., EWSR, WEPCON) to build across-DAF Requirements-Acquisitions-System Engineering-T&E (RAST) teams.
- Enable DAF's digital transformation with strategic plans and investments guided by cost/benefit analyses.
- Have operational needs drive investment decisions, create Enterprise-wide solutions to recurring T&E issues, and identify and leverage relevant DoD investments.