



**DEPARTMENT OF THE AIR FORCE
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Department of the Air Force
Scientific Advisory Board

Abstract: Future Air Force Vanguard Selection and Management Processes

In April 2019 the Air Force released its new 2030 Science and Technology Strategy. As part of that strategy, the Air Force recommends allocating at least 20% of its S&T budget to a transformational component intended to drive future force design, including a set of efforts called Vanduaards - these are high-priority programs focused on developing and transitioning game-changing capabilities via prototyping and experimentation. While an initial process was in place to choose the first three Vanguard programs (Golden Horde, Navigation Technology Satellite-3, and Skyborg), the Air Force intends to implement a more formalized selection and management process to maximize the likelihood of successful Vanguard program execution and transition. The Department of the Air Force Scientific Advisory Board (SAB) study on "Future Air Force Vanguard Selection and Management Processes" focused on helping to define a sustained selection and management process for future Vanduaards

The study panel engaged with numerous Air Force organizations to understand goals and constraints of these high-profile programs. This included organizations directly involved in the current Vanguard projects, those that are involved in planning the selection of the next set of Vanduaards, and stakeholders who are invested in the success of future Vanduaards. The panel found a variety of views on the definition and metrics for successful Vanguard programs, but also found several consistent positive characteristics among the existing Vanduaards. The panel identified common characteristics of successful prior DoD Vanguard-like constructs, such as Air Force Development Planning Initiatives and Joint Capability Technology Demonstrations (JCTDs), as well as best practices from traditional and non-traditional agile commercial organizations and Venture Capital companies. Based on this data, the SAB made the following recommendations.

The SAB recommends a selection and management process with three distinct phases: (1) Concept ideation, exploration, and down-selection, (2) Concept validation and selection, and (3) Vanguard execution and management. The Air Force should implement an objective and repeatable Phase 1 process that will turn the best technical ideas from a broad range of sources into compelling game-changing capability concept "itches". These high-potential Vanguard candidates should be assessed in Phase 2 by an independent Validation Panel that includes external concept-specific technical and operational subject matter experts, before being recommended to the Capability Development Council (CDC) for selection. Once selected, the Air Force should in Phase 3 operate each Vanguard "like a start-up", leveraging successful program management practices from agile technology development organizations, to achieve the required disruptive innovation, rapid pace, and delivery of end-state capabilities demanded for Vanduaards. While selecting transformational Vanduaards is important, the SAB also recommends that the Air Force implement a disciplined decision-gate process in each Vanguard timeline, with the option of "de-Vanduaarding" projects where appropriate to avoid endless pursuits, and to free up funds for other Vanguard concepts. Maximizing Vanguard success will require a broad definition of "transition success", but follow-on actions must be explicitly agreed upon during the selection process. Finally, the Department must demonstrate strong, visible, and sustained commitment to the Vanguard initiative, to on-going Vanguard programs, and to resulting Vanguard follow-on actions to ensure the success of these "transformational" programs.