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Supporting Air and Space Expeditionary Forces

Expanded Operational Architecture for Combat Support Execution Planning and Control

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Prepared for the United States Air Force

PROJECT AIR FORCE

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Summary

Introduction and Motivation

During the past decade, the U.S. military has supported continuous deployments of forces around the world, often on very short notice and for prolonged duration, to meet the needs of a wide range of peacekeeping and humanitarian missions or major contingency operations. The pattern of varied and fast-breaking regional crises appears to be the model for the foreseeable future and has prompted the United States to reassess how it prepares, maintains, and employs its military forces.[1] In response to this operating environment, the Air Force has reorganized into an Air and Space Expeditionary Force (AEF).

The AEF concept divides the Air Force into ten relatively equal groups (i.e., AEFs) of people and equipment. In any given 90-day period, two AEFs (or one AEF pair) are vulnerable to deployment to fulfill steady-state Air Force deployment requirements.[2] The aim of this concept is to replace a permanent forward presence with forces that are primarily stationed in the continental United States (CONUS) and can be tailored rapidly, deployed quickly, employed immediately, and sustained indefinitely.

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[1] Donald Rumsfeld, *Defense Strategy Review*, June 21, 2001; Donald Rumsfeld, *Guidance and Terms of Reference for the 2001 Quadrennial Defense Review*, June 22, 2001.

[2] Some assets are not easily divided into ten AEFs and are therefore managed separately, as "enablers" (e.g., AWACS [Airborne Warning and Control System], strategic mobility). These assets are on call at all times.

These AEF global force projection goals present significant challenges to the current combat support (CS) system.[3] CS is the collection of people, equipment, and processes that create, protect, and sustain air and space forces across the full range of military operations.[4] In addition to the importance of CS, command and control (C2) has been identified as a key component of the AEF Agile Combat Support (ACS) system that needs further development.[5] Joint doctrine defines C2 as the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission.[6] CSC2,[7] thus, is the exercise of authority and direction (planning, directing, coordinating, and controlling[8]) over CS forces and resources to meet operational objectives.

To date, operational planning has not sufficiently incorporated CSC2. It is challenging to do so for several reasons. CS planners usually do not have up-to-date and reliable CS resource information in a format that can be easily broken down for use by operators. Also,

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[3] Throughout this report, we use "system" in the general sense—a combination of facts, principles, methods, processes, and the like. We use the expression information system to refer specifically to a product designed to manage data.

[4] ACS concept of operations (CONOPS), January 21, 2005. The CONOPS document includes many functions in CS, such as civil engineering, communications and information, logistics readiness, maintenance, munitions, and security forces.

[5] Research at the RAND Corporation has focused on defining the vision and evaluating options for an ACS system that can meet AEF operational goals. See Lionel A. Galway, Robert S. Tripp, Timothy L. Ramey, and John G. Drew, *Supporting Expeditionary Aerospace Forces: New Agile Combat Support Postures*, Santa Monica, Calif.: RAND Corporation, MR-1075-AF, 2000. Additional research has identified the importance of CSC2 within the AEF ACS system. See Robert S. Tripp, Lionel A. Galway, Paul S. Killingsworth, Eric Peltz, Timothy L. Ramey, and John G. Drew, *Supporting Expeditionary Aerospace Forces: An Integrated Strategic Agile Combat Support Planning Framework*, Santa Monica, Calif.: RAND Corporation, MR-1056-AF, 1999.

[6] Joint Chiefs of Staff, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, Department of Defense, April 12, 2001.

[7] This report deals with the processes associated with CS execution planning and control. Often these processes have been referred to as the set of combat support command and control (CSC2) processes. We will use CSC2 to describe these processes in this report.

[8] Department of the Air Force, Air Force Doctrine Document 2-8, *Command and Control*, February 16, 2001.

most logisticians are not trained in and do not participate in air campaign planning. Finally, operators are often unwilling to commit early on to plans (to the degree that they would put them in writing and pass them on to CS planners).

This work expands on the work of Leftwich et al.,[9] which presented initial concepts for guiding the development of a CSC2 operational architecture[10] for the AEF. When that work was started, the Air Force simply had no operational architecture for CSC2. Leftwich addressed the problem of CS not being integrated into operational planning, focusing mostly on the Commander of Air Force Forces (COMAFFOR) and Joint Forces Air Component Commander (JFACC) levels during strategic planning and contingency planning and execution. For example, during crisis action planning, Air Force operators had limited access to CS information to influence their decisions.[11] The Air Force began to implement Leftwich's recommendations but asked for further work. The current work introduces new concepts for Air Force involvement in the planning, programming, budgeting, and execution processes and provides further detail on CS contingency planning and execution processes associated with

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[9] Research at RAND defined an initial concept for a CS execution planning and control architecture. See James Leftwich, Robert Tripp, Amanda Geller, Patrick Mills, Tom LaTourrette, and C. Robert Roll, Jr., *Supporting Expeditionary Aerospace Forces: An Operational Architecture for Combat Support Execution Planning and Control,* Santa Monica, Calif.: RAND Corporation, MR-1536-AF, 2002.

[10] An operational architecture, within the Department of Defense (DoD), is a description of tasks, operational elements, and information flows required to accomplish or support a DoD function or military operation. It describes the operational elements, assigned tasks and activities, and information flows required to support the warfighter. It defines the types of information exchanged, the frequency of exchange, which tasks and activities are supported by the information exchanges, and the nature of information exchanges in sufficient detail to ascertain specific interoperability requirements (Department of Defense, *C4ISR Framework Document Version 2.0*, December 18, 1997). The Leftwich report and this report are not by themselves, nor do they contain, operational architectures per se. The results of these analyses are concepts that may guide the Air Force in developing and refining its CSC2 operational architecture. For simplicity's sake, we refer to our results as an "operational architecture," although they are in fact concepts for such architecture.

[11] During Operation Allied Force, the single CS person responsible for interaction in the operational planning group did not have a full depth of CS experience, information system links, or decision support tools to help facilitate interaction.

specific organizational nodes described in the earlier report. While Leftwich described some of the CSC2 information produced and passed between organizational nodes, this work goes further in depth and breadth, adding detail on those information flows and the decisions they drive.[12] We intend this study to guide the refinement of the Air Force's CSC2 operational architecture, specifically at the Headquarters Air Force Materiel Command and COMAFFOR A-Staff levels.[13]

We recognize that coalition support has been a key factor in recent U.S. military operations and that coordinating and integrating the CS of coalition partners has been a significant challenge. However, that issue was outside the scope of this report—which focuses on internal Air Force issues—and is not treated here.

Throughout this report, we refer to four different operational architectures: the AS-IS, the TO-BE, the Evolving AS-IS, and the Expanded TO-BE. Leftwich et al. took as their starting point the existing operational architecture, calling it the AS-IS. The results of their research were assembled into what they called the future, or TO-BE. Because the actual operational architecture they observed has evolved since the original work—due to Air Force–initiated changes and implementations of some of Leftwich's concepts—we refer to the current architecture that we took as the starting point for our analysis as the Evolving AS-IS. We analyzed the Evolving AS-IS architecture and built on some of Leftwich et al.'s more general architectural concepts. We refer to the assembly of our results as the Expanded TO-BE.

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[12] The CD-ROM enclosed with this document contains a library of dozens of proposed information products for several different organizational nodes.

[13] Rather than view the results of this study as a CSC2 operational architecture, which would promote the concept of a stovepiped, nonintegrated architecture, we address CS execution planning and control processes in the context of the larger Air Force C2 architecture.

Analytic Approach

Our study builds on a previous one that developed initial concepts for a future (TO-BE) operational architecture. We analyzed the Evolving AS-IS CSC2 architecture, identified changes needed in this architecture to realize AEF operational goals and correct deficiencies identified during recent contingencies, and expanded on the previous concepts in the TO-BE architecture. The concepts in this report incorporate evolving practices; information from interviews with Air Force personnel; lessons from the operations Allied Force, Enduring Freedom, and Iraqi Freedom; and results of the authors' analysis of the current CSC2.

CSC2 Recommendations to Meet the TO-BE Architecture

The Air Force has already initiated changes aimed at implementing doctrine and policy changes according to the TO-BE operational architecture, and plans are in place to continue to close the gaps. Our analysis of the Air Force's CS execution planning and control process revealed remaining shortfalls in the Evolving AS-IS architecture, including the following:

- Operational parameters are not consistently communicated to CS planners early in crisis action planning. (See pages 40–42.)
- Capability assessments are often conducted on an ad hoc basis. (See page 42.)
- Oversight for personnel and equipment resources is spread across multiple organizations. (See page 46.)
- The Spares Commodity Control Point (CCP) lacks closed-loop planning and execution processes and mechanisms. (See pages 46–50.)
- The Combat Support Center (CSC) has limited analytic capability. (See pages 50–51.)

- The deployment planning system lacks the ability to plan or replan and to rapidly explore multiple deployment options. (See pages 53–57.)

We propose an Expanded TO-BE CSC2 architecture that would enable the Air Force to meet its AEF operational goals.

Finally, this report offers the following recommendations to help the Air Force CS community move from the current architecture to the future concept we describe:

- An operational parameters template and capability assessment concepts should be codified in Air Force CS doctrine and policy. Creating a framework, reinforced in doctrine, to delineate specifically what information operators provide, in what format, to CS planners during crisis action planning is necessary to improve the coordination, timeliness, and accuracy of CS planning. The content and format of capability assessments should be codified in doctrine and policy. (See pages 40–42.)
- Personnel and equipment oversight should be brought under one organization to simplify accountability and make deployment planning more efficient. (See page 46.)
- Analytic capabilities should be enhanced in the CSC. (See pages 50–51.)
- Standing CS organizations should be enhanced to further enable execution planning and control. A closed-loop feedback process incorporating depot maintenance and the program objective memorandum process should be included in spares CCP operations. Personnel and equipment oversight should be brought under one organization to simplify accountability and make deployment planning more efficient. Analytic capability should be added to the CSC. (See pages 42–51.)
- Trained operators are needed to create, and CS planners to effectively use, operational parameters templates. The concept and usage of the Operational Parameters Template delineated in doctrine should be reinforced by training operators and CS planners in its design and use. (See pages 51–53.)

- Appropriate information system and decision support tools should be fielded to meet Expanded TO-BE architectural requirements. This will increase access to capabilities assessments, better connect spares planning and execution, and improve the deployment planning process. (See pages 53–57.)

Conclusion

The strategic and operational environment and the AEF concept that addresses it present significant challenges to the current CS structure. Correcting remaining deficiencies in CSC2 as identified in this report is integral to the continued success of this effort.