

A Conceptual Framework for More Effectively Integrating Combat Support Capabilities and Constraints into Contingency Planning and Execution

Robert S. Tripp, John G. Drew, and Kristin F. Lynch

Key findings

- Creation of deputy COMAFFORs for combat support and operations in demand-side organizations (e.g., component major commands/numbered air forces) could improve dialogue between these functions and improve contingency resource requirements estimates.
- New global supply-side organizations (e.g., Air Force Installation and Mission Support Center and Air Force Sustainment Center) must be better informed of requirements in order to meet demand most effectively.
- A neutral integrator (e.g., global Agile Combat Support C2 Reachback Cell) should be appointed to make scarce-resource allocation decisions as needed.

SUMMARY ■ Planners for contingency operations generally assume that sufficient combat support (CS) resources will be available to support operational plans. This assumption carries a degree of risk: Budgetary constraints, the inability to perfectly predict demands, the variability in supply processes, the possibility of multiple unplanned contingency operations taking place simultaneously, and other factors mean that there will always be imbalances between the global CS resources available and those requested to meet operational demands. Combatant commanders (CCDRs) and their component commands often lack information about global CS resource availabilities and constraints. Part of the challenge, from an Air Force perspective, is that the operations and CS communities do not have a cohesive approach (including doctrine, processes, analytic tools, training regimen, and organizations) to systematically include CS resource capabilities and constraints within the contingency planning process. Processes and assessment capabilities that relate CS resource availabilities/capabilities and constraints to operationally relevant metrics exist within some

CS functional communities (e.g., munitions), but not others (e.g., impacts of casualties on operationally relevant metrics, such as sortie generation). The Air Force has not developed the processes and tools needed to assess the impact of resource capabilities and constraints across the diverse set of CS resources and to determine the integrated impact of these capabilities or constraints on operational plans. This report describes a conceptual framework for better integrating CS capabilities and constraints into contingency planning and execution at the global, combatant command (COCOM), component, and wing levels.

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This report describes a conceptual framework for integrating combat support capabilities and constraints into contingency planning and execution at the global, combatant command, component, and wing levels.

Planners for contingency operations generally assume that sufficient combat support (CS) resources will be available to support operational plans. This assumption carries a degree of risk: Budgetary constraints, the inability to perfectly predict demands, the variability in supply processes, the possibility of multiple unplanned contingency operations taking place simultaneously, and other factors mean that there will always be imbalances between the global CS resources available and those requested to meet operational demands. Combatant commanders (CCDRs) and their component commands often lack information about global CS resource availabilities and constraints. Consequently, operational plans are often put together without the assurance they can be supported from a global resource perspective.

Part of the challenge, from an Air Force perspective, is that the operations and CS communities do not have a cohesive approach (including doctrine, processes, analytic tools, training regimen, and organizations) to systematically include CS resource capabilities and constraints within the contingency planning process. Processes and assessment capabilities that relate CS resource availabilities/capabilities and constraints to operationally relevant metrics exist within some CS functional communities (e.g., munitions), but not others (e.g., impacts of casualties on operationally relevant metrics, such as sortie generation).¹ The Air Force has not developed the processes and tools needed to assess the impact of resource capabilities and

constraints across the diverse set of CS resources and to determine the integrated impact of these capabilities or constraints on operational plans. This lack imposes risks that component commanders do not fully appreciate and limits their ability to take steps in advance to mitigate risks.²

RAND Project AIR FORCE (PAF) has worked with the Air Force over an extended period of time to document and develop approaches to address these challenges.³ The Air Force has begun to make some important organizational changes consistent with recommendations from this body of work, including the creation of the Air Force Sustainment Center (AFSC) and the Air Force Installation and Mission Support Center (AFIMSC) within Air Force Materiel Command (AFMC).⁴

These organizational changes should help improve the Air Force's ability to state balanced requirements for CS resources, relate CS capabilities and constraints to desired operational effects, and use shortfall information to gain additional CS capabilities to relieve the constraint or to balance CS execution actions to achieve the best operational capabilities given the constraints. However, PAF's work suggests that further process improvements and organizational changes are needed to integrate and balance additional CS functions (e.g., A6 and portions of A1) within Air Force component commands and joint task forces and to more effectively link these "demanders for CS resources" with "suppliers of CS resources" like the AFSC and AFIMSC.⁵

This report describes a conceptual framework for integrating CS capabilities and constraints into contingency planning and execution at the global, combatant command (COCOM), component, and wing levels. We discuss how the AFSC and AFIMSC would fit within such a framework at the global level. We also propose the creation of a Deputy Commander of Air Force Forces for Agile Combat Support (DEPCOMAFOR/ACS) and a Deputy Commander of Air Force Forces for Operations (DEPCOMAFFOR/OPS) to improve coordination and integration at the component level.

CONCEPTUAL FRAMEWORK FOR INTEGRATING CAPABILITIES AND CONSTRAINTS INTO PLANNING AND EXECUTION

Prior PAF research has proposed a framework to better integrate CS capabilities and constraints into contingency planning

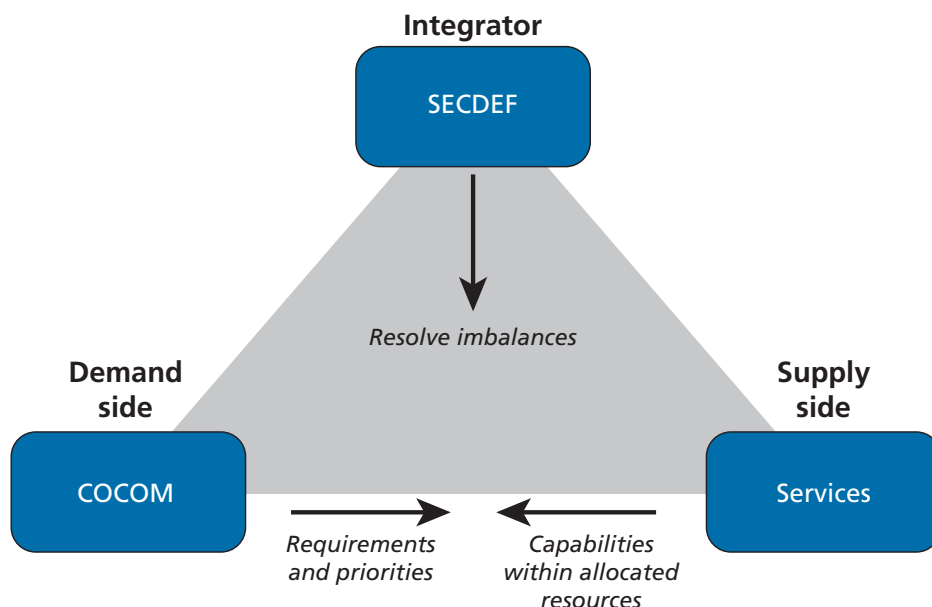
and execution in a resource-constrained environment.⁶ The framework specifies demand-side organizations, which call for resources to meet operational objectives, supply-side organizations, which seek to meet those demands within approved resource levels across given time frames, and an integrator, who resolves imbalances between the two sides as necessary. The framework embodies two principles:

- **Separation of supply-side and demand-side decisions.** Supply- and demand-side decisions should be made separately from one another. Following this principle, the demand side specifies operational requirements and priorities for combat support resources, and the supply side decides how to satisfy those needs. The demand side does not instruct the supply side on how to schedule sustainment actions but specifies when capabilities are needed (to the extent that they are known). The supply side determines the sustainment actions and schedules needed to efficiently satisfy the operational requirements within the time frame needed.
- **Independence of the integrator.** The integrator should be independent of both supply-side and demand-side organizations. If the integrator is too close to the supply side, then actions may lean toward efficiency at the expense of operational effectiveness. If, on the other hand, the integrator is too close to the demand-side, then current operations may be given first priority with little or no attention given to ongoing resource constraints.

When applying the principles of separation and independence in the framework, a tension results between the supply and the demand sides. This tension is natural and desired, and it needs to be explicitly recognized by senior leaders.

Figure 1 illustrates the framework at the global level (the same principles hold true at the COCOM, component, and wing levels, as discussed below). At this level, the COCOM Joint Task Forces (JTFs) and associated component commands make up the demand side. Air Force combat support and force providers, other services, and allies make up the supply side. The Secretary of Defense (SECDEF) is the integrator. Each CS demand may require a combination of component resources to achieve the desired capability and ultimately provide the joint operational effect. And there may be more than one way to meet that demand using component, allied, and/or commercial assets. The supply side would make recommendations about how to satisfy demand-side needs, starting with individual service capabilities to support their combat forces. Each service would allocate resources to COCOMs based on SECDEF allocations for that area of responsibility (AOR). Only when resource requirements exceed allocated limits would the SECDEF be notified that reallocation of resources across AORs might be necessary to achieve the desired effects in the highest-priority AOR. Under this proviso, if individual services cannot meet service requirements, the suppliers would notify the demanders, who could request support from allies or other services or request that assets be reallocated from other AORs.

Figure 1. Framework for Combat Support Integration into Contingency Planning



For example, if the Air Force cannot meet all civil engineering capabilities needed to support the deployment and employment of Air Force forces, the supply side (e.g., AFIMSC) would notify the air component of this shortage and work with the air component to state the impacts of constraints on operationally relevant metrics (e.g., the ability to open or sustain forward operating locations). The COCOM, when informed of shortages to meet the contingency plan from an Air Force perspective, could levy requirements on other services or allies to supply the needed capabilities. If shortages still exist, the integrator (i.e., the SECDEF) could approve reallocation of resources if there is little risk to national objectives in other AORs or if the risk is deemed acceptable. If the risk is not acceptable and the integrator does not approve the reallocation of needed resources, then the COCOM on the demand-side would need either to reevaluate the demand and try to identify alternative means for providing desired joint effects or notify the SECDEF that the desired effects may not be achievable.

While Figure 1 illustrates PAF's conceptual framework at a global level, the same scheme can be applied at the COCOM, component, and wing levels.⁷ At each level, there is a clear separation between supply-side and demand-side organizations and a clearly defined, independent integrator who resolves tensions between demanders and suppliers.

APPLYING THE CONCEPTUAL FRAMEWORK TO AIR FORCE AND JOINT ORGANIZATIONS

The framework described above can help clarify the relationships between existing suppliers and demanders of combat support resources. In some cases, new organizations and roles would further enhance the integration of combat support considerations into operational planning and execution. This section describes how recently created or proposed future organizations could operate within this framework at the global and component levels. We note that these organizations and roles could be established by reassigning personnel within existing staffs; therefore, the resources implications would be minimal.

Air Force Global Supply-Side Organizations

As noted above, the Air Force has acted to create the AFSC and AFIMSC within AFMC. Both of these organizations can play essential roles in managing global combat support, within

a supply-demand-integration framework such as that proposed earlier. Figure 2 illustrates how the AFSC and AFIMSC could be incorporated into the framework, focusing on the Air Force portion of the global supply side.

Within this suggested framework, the AFSC commander would be responsible for conducting supply chain assessments, configuring supply chains to meet operational needs, and developing supply chain mitigation strategies. Supply chain management would include directing and monitoring the performance of the depot level repair network as needed to meet operational requirements. During steady state, these managers would oversee the day-to-day in-garrison supply chains needed to support organize, train, and equip forces.

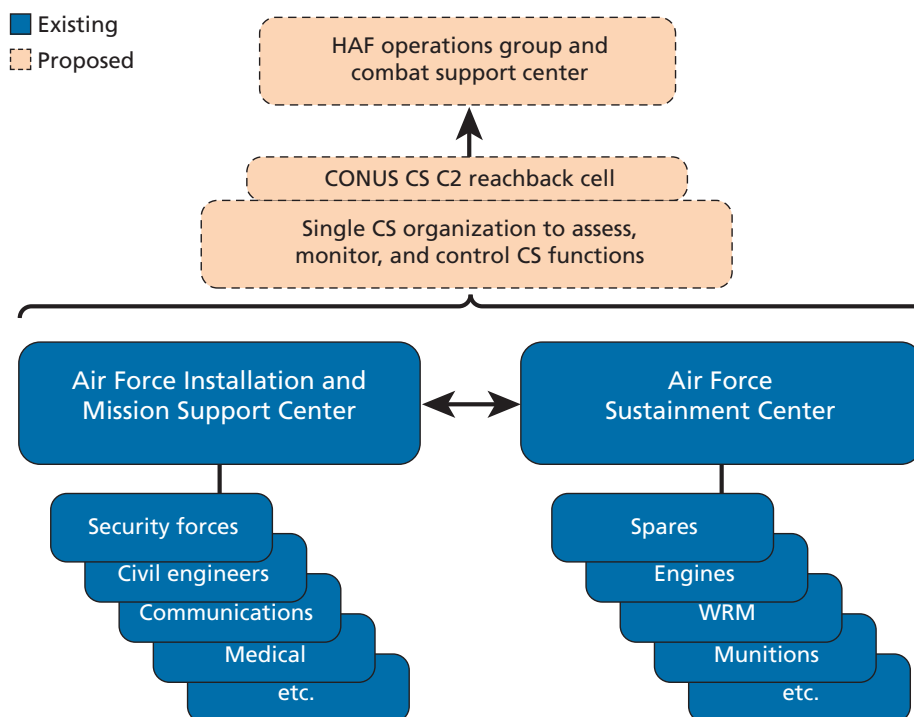
The AFIMSC commander would be responsible for developing deployable packages needed to open and sustain forward operating locations. Part of this responsibility would be to ensure that installation and mission support functional manpower capabilities are aligned correctly during peacetime to meet future contingency needs. In fact, recent PAF analyses found that CS manpower could be realigned to meet future Office of the Secretary of Defense (OSD) planning scenarios much more efficiently than at present.⁸

The next-higher box in Figure 2 calls for a single CS C2 organization (not yet created) to assess, monitor, balance, and control CS functions across installation and mission support and weapon system sustainment responsibilities. This organization could also include reachback support to forward component command staff personnel to evaluate the supportability of COCOM demands.⁹ Establishing the ability to perform risk assessments within the short decision cycles associated with contingency planning would require investments in modeling capabilities and staff development.

The Headquarters Air Force (HAF) operations group and combat support center would evaluate supply-side resource allocation analyses and allocation recommendations from an Air Force perspective and would make scarce resource allocation recommendations to the SECDEF level (integrator) from an Air Force perspective. The SECDEF would decide on scarce resource allocations among COCOMs.

Supply-side organizations can benefit greatly from having forward supply-side liaison positions (e.g., from the AFSC and AFIMSC) engaged in major contingency operations. Liaisons could help ensure that planning data are provided to the supply side, facilitate assessments of global capabilities, and help think through how to alleviate shortages (e.g., shifting manpower from one field to another or investing in technologies such as

Figure 2. Air Force Global Supply-Side Organizations



NOTE: CONUS = continental United States; WRM = war reserve materiel.

runway repair capabilities and aircraft shelters to improve CS resiliency). From an AFSC perspective on the supply side, forward liaisons could help ensure that the supply chain, including alternative maintenance concepts of operations (CONOPs), is aligned with the desired operational effects and operational CONOPs. From an AFIMSC perspective, information about basing strategies and associated forward operating locations can be shared through the forward liaisons. The AFIMSC could then determine if the deployment of assets to meet COCOM needs for the duration of the deployment requires allocations from other AORs and assess the effectiveness and risk impacts on the donor AOR. The AFIMSC could also investigate the possibility of assigning temporary assets to the COCOM, and those associated risks. The AFIMSC would notify the affected COCOM and the integrator of the effectiveness/risk assessments for all AORs. This coordination/assessment function could be aided by having AFIMSC and AFSC forward liaison positions on the DEPCOMAFFOR/ACS staff, as discussed shortly.

For example, suppose that the COCOM and the air component commander identify a demand for 30 air bases, but the Air Force can open and sustain only 25 bases because

it has limited civil engineer (CE) unit type codes (UTCs). The DEPCOMAFFOR/ACS would make requests, through the COCOM, to access other service or allied nation capabilities (e.g., Sea Bee UTCs or Corps of Engineers UTCs). The COCOM staff with embedded DEPCOMAFFOR/ACS staff and potential AFIMSC forward liaison staff could also work with the AFIMSC and other supply-side organizations to determine if allied CE capabilities could be leveraged to open additional locations. In the longer term, the AFIMSC may need to work with the COCOM, HAF, and others to develop more Air Force CS capabilities.

The proposed organizational structure would reduce CS global availability planning assumptions and give COCOMs and component staffs a more realistic view of the supportability of a plan.

Component-Level Integration

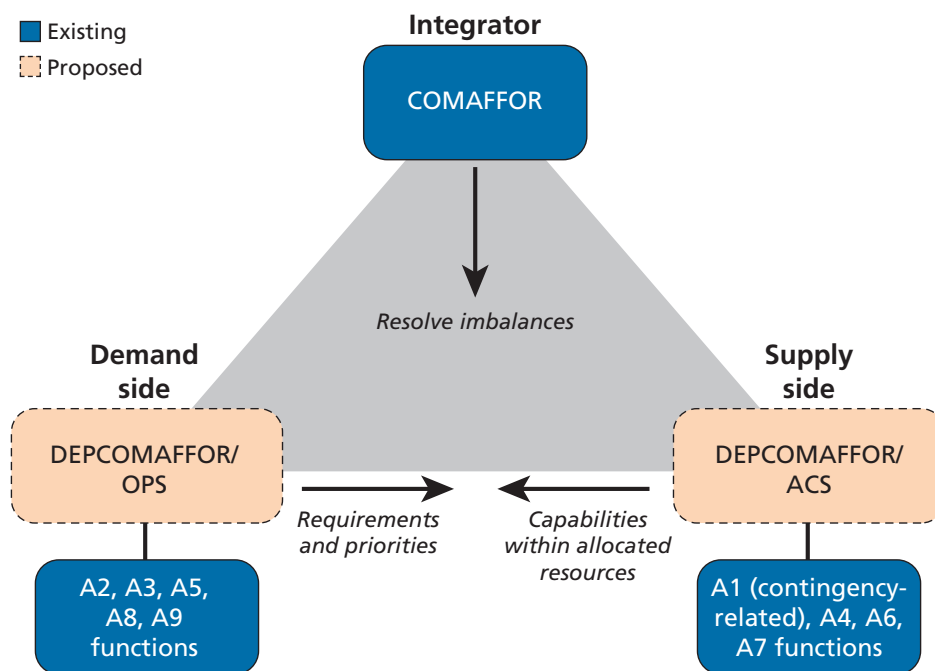
Thus far, we have discussed integration of CS capabilities with contingency planning and execution at the global level. There are also opportunities to improve integration at the component level. Currently, the diverse set of CS resources is split among

many directorates on the component-level staff, e.g., logistics, engineering, force protection, communications, services, personnel, and others. These communities do not currently have a common set of metrics and models that relate how constraints in one area impact operationally relevant metrics, e.g., sortie generation capabilities or the number of bases that can be opened and sustained in a timely fashion. There are two main options for improving integration at the component level. The first option is to create two deputy commanders who would report to the Commander, Air Force forces (COMAFFOR) on CS and operations, as shown in Figure 3. The DEPCOMAFFOR/ACS would direct CS actions across A4, A6, A7, and contingency-related functions in A1.¹⁰ The DEPCOMAFFOR/OPS would direct A2, A3, A5, A8, and A9 functions. The DEPCOMAFFOR/ACS would be replicated on the Joint Force Air Component Commander staff, and it could be dual-hatted if the contingency warrants the rank and authority of the DEPCOMAFFOR/ACS. To strengthen integration with suppliers of CS resources, the DEPCOMAFFOR/ACS would have liaison positions from the AFIMSC, AFSC, Defense Logistics Agency, and other important CS supply-side organizations.

The Air Force component command working with the COCOM staff is responsible for levying CS requirements needed to achieve COCOM desired operational effects. The proposed DEPCOMAFFOR/ACS would work with each CS functional area to ensure that CS CONOPs and demands for resources are consistent with desired operational effects and are balanced across functions. For example, the proposed DEPCOMAFFOR/ACS could work with maintenance and operations to decide if employing centralized intermediate repair facilities (CIRFs) would be appropriate in the CS plan for a given scenario. The DEPCOMAFFOR/ACS and the DEPCOMAFFOR/OPS could review the advantages and disadvantages of establishing a CIRF and the impacts a CIRF might have on operations. The proposed DEPCOMAFFOR/ACS could facilitate dialogue and ensure coordination of all affected CS and operational functions.¹¹

The second option for improving ACS integration into contingency planning is to develop analytical capabilities that better incorporate individual functional capabilities and constraints into assessments that express how these capabilities and constraints impact operationally relevant metrics such as sortie generation capabilities or number of bases that

Figure 3. Integrating Supply and Demand at the Air Force Component Level



These organizations and roles could be established by reassigning personnel within existing staffs; therefore, the resources implications would be minimal.

can be supported. In this option, the operational planners would need to work with ACS personnel to develop options to mitigate resource and capability shortfalls and balance support across the ACS functional domains. This option requires more detailed knowledge of ACS functions by operational planners.

CONCLUSION AND NEXT STEPS

For many years combat support capabilities and constraints have not been well integrated into contingency planning and execution processes. Combatant commanders and their component commands often lack information about global CS resource availabilities and constraints. Consequently, operational plans are often put together without the assurance that they can be supported from a global resource perspective.

The framework described here provides a conceptual foundation to help address these problems by better integrating CS capabilities and constraints into contingency planning and execution. The framework prescribes that demand-side processes, supply-side processes, and integrator processes be independent and separated and explains how the roles of the AFIMSC, AFSC, and DEPCOMAFFOR/ACS organizations would fit within this framework. These organizations and roles could be established by reassigning personnel within existing staffs; therefore, the resources implications would be minimal. Supply, demand, and integrator roles exist across the planning, programming, budgeting, and execution time horizons. Adopt-

ing this conceptual foundation and recognizing these roles are important first steps in being able to continuously improve operational planning and execution. Additional steps should be taken in the near term to include

- describing the framework in CS and operational doctrine
- focusing CS contingency planning and execution processes on operations and identifying separate demand, supply, and integrator processes
- specifying demand-side, supply-side, and integrator roles at the component, joint, allied, service, and Department of Defense levels; assigning process responsibilities to specific organizations to include delineation of the responsibilities for the AFIMSC, AFSC, and DEPCOMAFFOR/ACS; and working to continuously improve processes
- expanding CS professional development to include teaching operational planning processes; encouraging assignments in supply, demand, and integrator organizations; and expanding operational professional development to include an overall understanding of the importance of including CS planning early in strategy development
- identifying metrics and information needed to manage and relate CS activities to operationally relevant metrics and desired capabilities.

By adopting this framework and codifying it in doctrine, the Air Force can provide a basis for sustaining and enhancing this capability over time and through leadership changes.

Notes

¹ As part of RAND PAF research in this area, we have noted that the same lack of a cohesive approach to relate CS capabilities and constraints to operationally relevant metrics exists in other services and with our key allies.

² Similar disconnects exist in development of national objectives and strategies that drive the Program Objective Memorandum and other long-range planning activities. Without a cohesive CS approach and the codification of implementing policies, directives, and regulations, the ability to include CS capabilities and constraints within operational strategy development across near-term and longer-range time horizons will continue to be ad hoc.

³ See Kristin F. Lynch, John G. Drew, Robert S. Tripp, and Charles Robert Roll, Jr., *Supporting Air and Space Expeditionary Forces: Lessons from Operation Iraqi Freedom*, Santa Monica, Calif.: RAND Corporation, MG-193-AF, 2005; Robert S. Tripp, Kristin F. Lynch, John G. Drew, and Robert G. DeFeo, *Improving Air Force Command and Control Through Enhanced Agile Combat Support Planning, Execution, Monitoring, and Control Processes*, Santa Monica, Calif.: RAND Corporation, MG-1070-AF, 2012; and Kristin F. Lynch, John G. Drew, Robert S. Tripp, Daniel M. Romano, Jin Woo Yi, and Amy L. Maletic, *Implementation Actions for Improving Air Force Command and Control Through Enhanced Agile Combat Support Planning, Execution, Monitoring, and Control Processes*, Santa Monica, Calif.: RAND Corporation, RR-259-AF, 2014b, for discussions on the deficiencies identified through these research efforts. Also see “A New Vision for Global Support, C2 Combat Support,” *Air Force Journal of Logistics*, Vol. XXVII, No. 2, Summer 2003; and Maj Gen Terry L. Gabreski et al., “Command and Control Doctrine for Combat Support: Strategic and Operational-Level Concepts for Supporting the Air and Space Expeditionary Force,” *Air and Space Power Journal*, Spring 2003.

⁴ See Tripp et al., 2012; Lynch et al., 2014b; and Robert S. Tripp, Kristin F. Lynch, Daniel M. Romano, William Shelton, John A. Ausink, Chelsea Kaihoi Duran, Robert G. DeFeo, David W. George, Raymond E. Conley, Bernard Fox, and Jerry M. Sollinger, *Air Force Materiel Command Reorganization Analysis: Final Report*, Santa Monica, Calif.: RAND Corporation, MG-1219-AF, 2012.

⁵ See Kristin F. Lynch, John G. Drew, Robert S. Tripp, Daniel M. Romano, Jin Woo Yi, and Amy L. Maletic, *An Operational Architecture for Improving Air Force Command and Control Through Enhanced Agile Combat Support Planning, Execution, Monitoring, and Control Processes*, Santa Monica, Calif.: RAND Corporation, RR-261-AF, 2014a.

⁶ See Robert S. Tripp, Kristin F. Lynch, Charles Robert Roll, Jr., John G. Drew, and Patrick Mills, *A Framework for Enhancing Airlift Planning and Execution Capabilities Within the Joint Expeditionary Movement System*, Santa Monica, Calif.: RAND Corporation, MG-377-AF, 2006. This document and others explain how a resource-constrained strategies-to-tasks (STT) framework could be used to describe the roles and responsibilities of COCOMs, component staffs, CS suppliers of resources, and the Secretary of Defense (SECDEF). The report uses the STT framework to describe current and needed organizational responsibilities in terms of demand-side, supply-side, and integrator roles. See also James Leftwich, Robert S. Tripp, Amanda B. Geller, Patrick Mills, Tom LaTourrette, Charles Robert Roll, Jr., Cauley Von Hoffman, and David Johansen, *Supporting Expeditionary Aerospace Forces: An Operational Architecture for Combat Support Execution Planning and Control*, Santa Monica, Calif.: RAND Corporation, MR-1536-AF, 2002; Patrick Mills, Ken Evers, Donna Kinlin, and Robert S. Tripp, *Supporting Air and Space Expeditionary Forces: Expanded Operational Architecture for Combat Support Execution Planning and Control*, Santa Monica, Calif.: RAND Corporation, MG-316-AF, 2006; and Lynch et al., 2014a.

⁷ The concept can be extended to show how allied organizations can be integrated into contingency strategy development and execution.

⁸ PAF research has shown that if manpower realignments were allowed, end strength could be reduced while still increasing expeditionary capability to meet OSD scenario requirements, with the potential for large net savings. Most CS career fields derive manpower requirements from home-station installation needs, not expeditionary demands. This creates inherent imbalances for CS manpower relative to expeditionary requirements: more military manpower in some areas than the Air Force could conceivably need, and much less in other areas than the Air Force would need to execute OSD future plans. If manpower within the active duty and reserve component were realigned, these imbalances could be remedied. The realigned CS manpower mix would better meet surge and steady-state operations at the same or reduced end strength. See Patrick Mills, John G. Drew, John A. Ausink, Daniel M. Romano, and Rachel Costello, *Balancing Agile Combat Support Manpower to Better Meet the Future Security Environment*, Santa Monica, Calif.: RAND Corporation, RR-337-AF, 2014.

⁹ During an experiment organized by the Air Force Command and Control Integration Center, as part of the Joint Expeditionary Force Experiment 11-1, a portion of the CS command and control (C2) reachback cell was demonstrated. In this experiment, several subject-matter experts from various stovepiped CS functions were brought together at the operational support facility at the Ryan Center, Langley Air Force Base, Virginia, to act as the CS C2 reachback cell and provided information about the Air Force's global ability to support individual courses of action from three component numbered Air Force (C-NAF) staffs. Instead of Air Force forces staffs reaching back to 26 different CS functional managers for stovepiped capability assessments, the CS reachback cell in the Ryan Center provided an assessment of the ability to generate sorties as well as the ability to open forward operating locations (FOLs) for a select number of supply chain and functional areas. Spare parts and engines were assessed to determine sortie generation capability. Civil engineers, security forces, communications, medical, and WRM were assessed to determine FOL capability. In the experiment, one of the C-NAF staffs then conducted replanning actions that took these constraints into account.

¹⁰ There are other CS functions, including special staff (such as chaplain, judge advocate, historian, and other functions such as acquisition and test and evaluation) that fall outside these groupings yet still need to be considered during contingency planning and execution.

¹¹ The merger of A4 and A7 at the major command and numbered Air Force levels puts maintenance, supply, transportation, logistics readiness, civil engineering, and security forces under one leader and provides the basis for integrating these functions. It can then facilitate dialogue on developing analytic capabilities to relate how resource constraints in these areas impact operationally relevant metrics. This leaves communications, services, and personnel as individual organizations with functions that need to be related to operationally relevant metrics.

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About the Authors

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Kristin F. Lynch, with RAND since 2001, has researched logistics and resource management–related issues for the Air Force and the Air National Guard such as options for configuring an agile combat support (ACS) system—policy, practice, and technology options—to support current and future military operations; logistical support systems such as ACS planning, execution, monitoring, and control, forward operating locations, forward support locations, CONUS support locations, and the theater distribution system; and resourcing issues such as Component Numbered Air Force AFFOR staff and AOC force posture options.

About This Report

For many years, combat support capabilities and constraints have not been well integrated into contingency planning and execution processes. Consequently, combatant commanders and their component commands often lack information about the availability of combat support resources and therefore cannot anticipate and mitigate the effects of potential shortfalls on operations.

RAND Project AIR FORCE (PAF) has worked with the Air Force for many years to develop ways to address these challenges. The Air Force has begun to take steps such as the creation of the Air Force Sustainment Center and the Air Force Installation and Mission Support Center as well as other potential initiatives. To help inform these discussions, this executive summary synthesizes insights from previous PAF research (see the notes for references) on combat support command and control and shows how recent and proposed measures could fit within an integrated framework. It should be of interest to Air Force and joint personnel responsible for operations and provisioning of supporting capabilities.

RAND Project AIR FORCE

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