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Contingency Contractor Optimization Phase 2, Requirements Document

Katherine A. Jones, Kristin L. Adair, Alisa Bandlow, Jared L. Gearhart, Dean A. Jones,
Nathaniel Martin, Nadine E. Miner, Alan S. Nanco, Linda K. Nozick

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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Katherine A. Jones, Kristin L. Adair, Alisa Bandlow, Jared L. Gearhart, Dean A. Jones,
Nathaniel Martin
Operations Research and Knowledge Systems
Nadine E. Miner, Alan S. Nanco
Military and Operational Energy Systems Analysis
Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-MS1138

Linda K. Nozick
Cornell University

Abstract

This document represents the results of Task 1 (Requirements Elicitation) in Phase 2 of the Contingency Contractor Optimization project. The aim of the overall effort is to create a tool for the contingency contractor element of total force planning during the Support for Strategic Analysis (SSA). The goal of Phase 2 is to develop an electronic storyboard prototype of a tool for use in conjunction with the strategic planning framework of the SSA that can be used for communication with senior decision makers and other strategic contract support stakeholders.

The requirements presented here are those on which the electronic storyboard prototype developed in Phase 2 were based, and are also intended to be the basis for the functional tool to be developed in Phase 3.

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J8 Force Development
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J4 Analysis and Resource Division (ARD)
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OSD CAPE Joint Data Support
OSD Policy
OSD Personnel & Readiness
OSD DASD Plans
SOUTHCOM
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CENTCOM
NORTHCOM
OSD Acquisition Test, & Logistics (ATL)

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NOMENCLATURE

SNL	Sandia National Laboratories
CS/CSS	Combat Support/Combat Service Support
DoD	Department of Defense
ISC	Integrated Security Construct
JCA	Joint Capability Area
JCS	Joint Chiefs of Staff
OCS	Operational Contract Support
SSA	Support for Strategic Analysis
SME	Subject Matter Expert
TPFDD	Time Phased Force and Deployment Data
DoDI	Department of Defense Instruction
OSD	Office of the Secretary of Defense

1. SCOPE

This document represents the results of Task 1 (Requirements Elicitation) in Phase 2 of the Contingency Contractor Optimization project. The aim of the overall effort is to create a tool for the contingency contractor element of total force planning during the Support for Strategic Analysis (SSA). The goal of Phase 2 is to develop an electronic storyboard prototype of a tool for use in conjunction with the strategic planning framework of the SSA that can be used for communication with senior decision makers and other strategic contract support stakeholders.

To elicit the requirements for the tool, Sandia conducted interviews over the course of several months with Subject Matter Experts (SMEs) in the Department of Defense (DoD) and with members of the Joint Chiefs of Staff (JCS). The goal of those meetings was to collect and understand current processes, tools, and reference documents used to make decisions related to optimizing the match of personnel types and capabilities to meet mission requirements. This information was used to create this Requirements Definition document, which builds on information from Phase 1 of the project where possible.

The requirements presented here are those on which the electronic storyboard prototype developed in Phase 2 were based, and are also intended to be the basis for the functional tool to be developed in Phase 3.

2. BACKGROUND AND MOTIVATION

The Contingency Contractor Optimization project is intended to address former Secretary Gates' mandate in a January 2011 memo [1] and DoDI 3020.41 [8] by delivering a centralized strategic planning tool that allows senior decision makers to quickly and quantitatively assess the impacts, risks, and mitigation strategies associated with utilizing contract support. Initial efforts have identified the following major gaps in the current information and planning processes that hinder the ability to examine Total Force Mix (military, Department of Defense (DoD) civilian, and contractor) options and to develop a comprehensive strategic plan for contractor utilization:

- No single source of authoritative data for contractors
- De-centralized data sources for military and civilian personnel
- Planning processes which default to military resourcing strategies
- Lack of detail for quantitative CS/CSS functional capability requirements
- Absence of a structured approach to identification of Total Force Mix options
- Absence of a thorough, consistent approach to evaluation of Total Force Mix options
- Absence of cost data for contractors
- Absence of defined geopolitical, legal, and socioeconomic parameter values and risk guidelines

The final version of the tool will address integrate personnel data sources with detailed quantitative functional requirements, in a geopolitical, legal, and economic context. This will allow planners to clearly identify and evaluate opportunities, impacts, considerations, and risks associated with operational contract support plans in a rigorous, defensible framework. Given multiple future mission scenarios from the Support for Strategic Analysis (SSA), the planning tool will determine the personnel requirements and apply the manpower mix criteria (DoDI 1100.22) [7], along with additional planning constraints.

The tool will optimize the match of personnel types (military, DoD civilian, and contractors) and capabilities to meet the mission requirements as effectively as possible, based on risk, cost, and other requirements. This tool will integrate the knowledge currently found throughout the Joint Chiefs of Staff (J4, J8), OSD (P&R, CAPE), and each of the services, as well as developing new processes as needed, into a centralized planning and analysis application with extensive "what-if" capabilities. The resulting analysis framework will allow planners to have a common starting point to analyze competing plans by modifying characteristics of the scenarios, such as start date, phase duration, operational risk, and budget constraints. This structured method will highlight opportunities for trade-offs and evaluate Total Force Mix in terms of what is possible, appropriate, and preferred across the spectrum of DoD operations.

Figure 1 shows the required inputs and outputs at a high level. The upcoming sections will provide a detailed discussion of each required element.

DATA REQUIREMENTS

Planner

Definitions of:

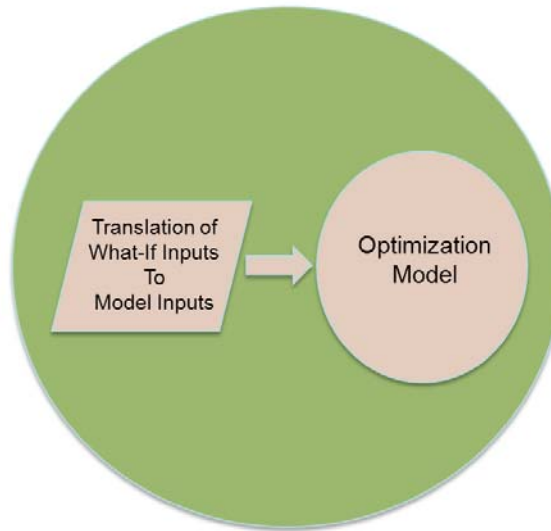
- Personnel Groups & Costs
- Manpower Mix Criteria
- Laws, Executive Orders, & Treaties
- Mission Scenarios & Details

Analyst

What-If Inputs:

- Scenarios for analysis
- Start dates
- Annual budget
- Phase durations
- Operational risk
- Uncertainty

TOOL



OUTPUTS

1. Contractor Needs & Capabilities by Month
2. Budget

Figure 1. High-level overview of required inputs and outputs.

3. CUSTOMER NEEDS

The Department of Defense (DoD) is required to improve its centralized planning capabilities for using contractors to support future military operations. DoDI 3020.41 requires that the DoD “fully consider, plan for, integrate, and execute acquisition of, contracted support, including synchronizing and integrating contracted support flowing into an operational area from systems support.” [8] In order for this tool to help meet the requirements under DoDI 3020.41, the tool must be given enough input data to know when there is competition for resources, what constraints there are on using different personnel groups to fulfill the need for a capability, and what the military personnel availability is for a given capability. The inputs necessary to meet that requirement are specified in section 4 of this document.

Annex W (a part of the combatant command operation plan) requires estimates of the numbers and types of contractors to be used to support that operation. These estimates can be difficult to create, depending on the level of detail provided in the operation plan and on the business rules affecting when contractors can and cannot be used. The planning tool results, in order to support the creation of Annex W in the operation plans, must include workforce allocation.

The tool also must provide solutions which minimize cost. This requirement is based on several sources. In their 2011 final report to Congress, [2] the Commission on Wartime Contracting in Iraq and Afghanistan notes that contractors’ support “has been unnecessarily costly, and has been plagued by high levels of waste and fraud” due to poor planning, management, and oversight of contracts. Also, DoDD 1400.6 states that “When using civilian staffing support in overseas areas, each Military Service commander shall employ a civilian manpower mix--U.S. citizens and local nationals—that blends financial prudence, conformance with host-country agreements or treaties, availability of qualified local national personnel, and the desired low-key presence of the U.S. Government abroad.” [3]

In addition to considering contractors, DoD civilian employees must also be considered. DoDD 1404.10 states that “DoD civilian employees shall be included in the DoD Global Force Management process ... Global Force Management Board recommendations and decisions and Global Force Allocation Management Plans shall reflect designation of DoD civilian employees as the preferred sourcing solution when appropriate...” [4]

The tool must be designed to model optimal workforce mix (dependent on the settings entered by the analyst) and to provide estimates on the optimal number of contractors to employ for each capability type. Graphical or tabular format will be used to display this information as appropriate.

4. REQUIRED INPUT DATA

In order to meet the need for a tool that is both centralized and useful for decision making by several stakeholders, two types of required inputs to the tool are defined: planner input and analyst input. Planner will be the term used in this document for the person who owns a mission scenario and is responsible for its definition.

The term analyst will be used for an individual who is interested in running analyses to determine the impact of different combinations of scenarios and/or parameter constraints. Input by a planner gives the baseline requirements for a single scenario which cannot be changed in an analysis and provides default values for the what-if analysis parameters. Input by an analyst allows for different scenarios to be combined and analyzed while varying input parameters. The fixed values that are input by a planner allow for scenarios to be compared in a consistent way.

4.1. Planner Inputs

In order to perform the required analysis, there are several categories of input data that are needed from planners. They include:

- Personnel groups and costs
- Manpower Mix criteria
- Time Phased Force and Deployment Data (TPFDD)-like input and logistics support input for each approved mission scenario
- Laws, executive orders, and treaties for each approved mission scenario
- Default values for what-if analysis

DoDD 1100.4 [6] states that ~~assigned~~ missions shall be accomplished using the least costly mix of personnel (military, civilian and contract)” and ~~manpower~~ authorities shall consider all available sources when determining manpower mix, to include the Active and Reserve military manpower, U.S. and foreign national civilian manpower, intra-governmental, contract and host nation support.” In order to satisfy this requirement, cost data for all relevant personnel groups is needed.

Relevant personnel groups for which cost data is needed include active and reserve military, DoD civilian, United States contractor, local nation contractor, and third country contractor. It is a requirement that common skill categories are used across all personnel groups. Given the level of granularity that is expected in the output, the cost data is needed in the form of dollars per person per year. Cost data is required because the optimal recommended mix of military and contractor personnel will minimize cost. Cost data is needed by personnel group and capability category. Cost data is fixed for all U.S. personnel (military, DoD civilians, and contractors). For local nation and third country contractors, the costs are default values but can be varied by analysts.

DoDD 3020.49 requires that the DoD ~~use~~ contractor support only in appropriate situations consistent with DoD Instruction 1100.22.” [5] The Manpower Mix criteria are required inputs that will be drawn directly from DoDI 1100.22, ~~Policy and Procedures for Determining Workforce Mix.~~” This document establishes policy and prescribes procedures for determining

the appropriate mix of manpower (military and DoD civilian) versus private sector support for all mission scenarios. These rules will be used to determine constraints in the model representing allowable uses of each type of personnel. The tool is required to be flexible to accommodate revisions to DoDI 1100.22 or replacement by another DoDI.

Laws, executive orders, and treaties are specific to a mission scenario and are applied to the Manpower Mix criteria. If there are constraints on the scenario due to policy, they can be represented in the tool to prevent recommendation of a solution that is not allowable. TPFDD-like input and logistic support input for each mission scenario must include capabilities needed by start date and, optionally, the destination for each capability/start date pair. If a destination is not provided, a default destination for the scenario can be used. It is currently assumed that once a capability is needed, it is required until the end of the scenario, thus an end date is not required. When aggregated, this input provides the requirements by capabilities in each phase of a scenario. This input defines the scenario and cannot be changed by the analyst. In addition, the planner must give default values for the parameters which can be varied for what-if analysis. Specific inputs that are required for each mission scenario include:

- Start date
- Phase durations (in months)
- Operational risk of using contractors

The start date and duration of each phase are necessary to identify the time span when capabilities are needed, and the operational risk is needed to determine which types of personnel the model can choose from to provide the capability.

4.2. Analyst Inputs

Since this tool focuses on the “strategic” aspect of the high level requirement for “better planning at the strategic and operational levels for contract support,” [1] the planner should be able to vary several parameters for what-if analysis. The longer term nature of the strategic planning process means that the exact conditions for future scenarios are more uncertain. Specific inputs that analysts might want to vary include:

- Number of people available by personnel group and capability category
- Annual overall budget
- Mission scenarios to include for analysis
- Start date for each mission scenario
- Phase durations for each mission scenario (in months)
- Acceptable operational risk of using contractors for each mission scenario
- Laws, executive orders, and treaties by mission scenario

The analyst may want to vary inputs such as labor hours, start dates, and phase durations because those will change the degree of competition for resources. Analysts need to understand how overlapping mission scenarios impact the workforce requirements. Historically, plans have been developed assuming an all military workforce. However, with multiple military engagements across the world, this assumption is not valid in most cases. The planning tool will help ensure that the available military workforce is used for the tasks where they are most needed, with consideration for cost, manpower mix criteria, and other policies.

The size of the military workforce is less flexible than that of the contractor workforce, however, contractors are less flexible with respect to tasks that can be performed based on DoDI 1100.22. Therefore, analysts should be able to use the tool to identify situations where overlapping missions will create workforce requirements that exceed military availability. The contractor pool will be considered unlimited in terms of availability for the purposes of this tool, since there are many private entities from which these contractors can be drawn. The tool will then help the user to identify those situations in which there are shortages of the military or civilian personnel groups.

An analyst's selection of policies and level of operational risk of using contractors impact whether or not contractors can be included in the workforce. Business rules such as DoDI 1100.22 instruct when contractors can and cannot be used. If there is some doubt as to whether a policy will remain in place during a certain scenario, or if there is a question about what the operational risk will be, the analyst could vary those inputs to compare contract support requirements and cost under differing conditions.

5. MODEL RESULTS

The analyst will select one or more mission scenarios to analyze. The analyst should be able to customize the analysis by modifying the parameters listed in the *Required Input Data: Analyst inputs* section. The model optimizes the workforce mix by minimizing the combined total costs for the selected mission scenarios. The workforce mix is further limited by which personnel groups can be used and how many people are available. The requirements below were generated in support of the high level requirement that the model minimize cost and provide an optimal workforce mix.

5.1. Costs

With declining budgets and concerns about overspending on contractors, understanding and estimating the cost of future operations is an important aspect of strategic planning. For analysts to understand where money is needed, cost data should be presented in several different ways.

5.1.1. Annual Manpower Costs

At the overview level, the analyst requires the total costs. The tool should provide information on the optimized, total manpower cost (sum of all mission scenarios) by fiscal year. The analyst should be able to run the model multiple times to see how changes in the parameters impact total cost.

5.1.2. Annual Costs by Personnel Group

At a more detailed level, the analyst requires a view of how much money is being spent for each personnel group. More specifically, the analyst requires estimates of total contractor costs by fiscal year. Based on the tool's optimized, total manpower cost (sum of all mission scenarios), the analyst should see what portion of the total annual cost has been spent on each personnel group.

5.2. Workforce Allocations

In addition to cost data, the analyst needs to know the number and type of people that are required to support the mission scenarios. The analyst will use the tool to develop estimates of the number of contractors needed and when they will be needed. These estimates are required for Annex W.

5.2.1. Workforce Allocations by Personnel Group

While the TPFDD-like input and logistic support information provides an estimate of the total number of people by capability needed to support a single mission scenario, the analyst needs to determine the optimal workforce mix. Based on the tool's optimized manpower mix (sum of all mission scenarios), the analyst should be able to view the number of people being employed per personnel group.

5.2.2. Workforce Allocations for a Specific Capability

At a more detailed level, the analyst needs the ability to look at the manpower mix for a single capability. This is most useful for capability areas that heavily rely on contractors, such as logistics.

5.3. Capabilities: Need versus Availability

For a selected capability and personnel group, the analyst should be able to view the number of people needed compared to the number of people available. Many tasks are required to be performed by military or civilian personnel groups based on DoDI 1100.22. The tool's optimized manpower mix will assign these tasks to the required personnel group, but will report an overage for a specific personnel group (more people are needed than are available). In the event of overages, the analyst needs to see in which months there will be a shortage in personnel for the selected capability. For example, the analyst will be able to see when the need for military logistics personnel has exceeded the number available. Because contractors are assumed to be unlimited, shortage in personnel will only be shown for military and civilian personnel groups.

5.4. Strategic Hiring

Strategic hiring is a concept within the planning tool that allows for the hiring of contractors for specific capabilities before they are needed. While not a requirement, this feature can help mitigate the risk of a capability shortage. This ensures that there will be a ready supply of contractors to fulfill projected needs. Allowing strategic hiring in the model would help the analyst understand which capabilities need to be hired or trained in advance so that they will be readily available in the future.

5.5. Uncertainty

The planning tool should also be capable of assessing how uncertainty impacts contingency contractor decisions. Most analyses use predetermined profiles and start dates for each mission scenario. In reality, the exact requirements for executing mission scenarios are uncertain. While uncertainty is not an explicit requirement of the tool, the inclusion of uncertainty in the tool will result in much more realistic recommendations. In the initial prototype tool implementation, the analyst should be able to specify a range of possible durations for Phases 3 and 4 of each mission scenario.

Additional insight can be gained when uncertainty is added to an analysis. Without uncertainty, the outputs are a single estimate of one possible outcome for the mission scenarios. When uncertainty is included, the range of possible outcomes and their likelihood can be calculated. For example, instead of a single estimate of cost, the minimum, maximum, most likely and average costs can be understood.

6. SUMMARY

The Phase 1 Functional Requirement Document and Roadmap Report, created by ICF International during Phase 1, took a broad view of the overall problem of contingency contractor planning. Phase 2 focuses on developing an electronic storyboard prototype of a tool for use in the strategic planning framework of the SSA that can be used for communication with senior decision makers and other strategic contract support stakeholders. This document represents the requirements for that decision support tool. Phase 3 will create a functional tool based on these requirements as well as feedback from the prototype developed during phase 2.

As outlined in this document, the final functional version of the tool will integrate personnel data sources, provided by the DoD, with detailed quantitative functional requirements, in a geopolitical, legal, and economic context. This will allow planners to clearly identify, describe, and evaluate opportunities, impacts, and risks associated with operational contract support plans. The output of the tool will include workforce allocation, personnel needs, and cost.

In order for the tool to provide the requested functionality and outputs, input data is needed in several areas. These include personnel groups and costs, manpower mix criteria, laws and policies, input similar to the Time Phased Force and Deployment Data for ISCs and Logistic Support, and user inputs for what-if analysis. User inputs for what-if analysis will include:

- Number of people available by personnel group and skill category
- Annual overall budget
- Start date for each mission scenario
- Phase durations for each mission scenario(in months)
- Operational risk of using contractors

7. REFERENCES

- [1] Secretary of Defense Memorandum, “*Strategic and operational planning for operational contract support (OCS) and Workforce Mix*”, 2011.
- [2] “*Transforming Wartime Contracting: Controlling costs, reducing risks.*” Commission on Wartime Contracting in Iraq and Afghanistan, 2011.
- [3] *Department of Defense Directive (DoDD) Number 1400.6*, 2003.
- [4] *Department of Defense Directive (DoDD) Number 1404.10*, 2009.
- [5] *Department of Defense Directive (DoDD) Number 3020.49*, 2009.
- [6] *Department of Defense Directive (DoDD) Number 1100.4*, 2005.
- [7] *Department of Defense Instruction (DoDI) Number 1100.22*, 2010.
- [8] *Department of Defense Instruction (DoDI) Number 3020.41*, 2011.

APPENDIX A: GLOSSARY

Operational Contract Support (OCS): The ability to orchestrate and synchronize the provision of integrated contract support and management of contractor personnel providing that support to the joint force in a designated operational area.

Mission Scenario: An account or synopsis of a projected course of action or events, with a focus on the strategic level of warfare. Scenarios include information such as threat and friendly politico-military contexts and backgrounds, assumptions, constraints, limitations, strategic objectives, and other planning considerations. A scenario is intended to represent a plausible challenge and may not reflect the most likely events. (from DoDD 8260.05)

Phase: In joint operation planning, a definitive stage of an operation or campaign during which a large portion of the forces and capabilities are involved in similar or mutually supporting activities for a common purpose. Phases 0 – 5. (JP1_02-DoD_Dictionary)

Capability: Functional grouping of DoD jobs by expertise (required skill set).

Personnel group: A grouping of DoD jobs by employment category. This could include military, DoD civilian, U.S. contractor, local nation contractor, and third country contractor.

Support for Strategic Analysis (SSA): Previously referred to as the Analytic Agenda. SSA analysis products (1) Support deliberations by DoD senior leadership on strategy and planning, programming, budgeting, and execution system (PPBES) matters, including force sizing, shaping, and capability development. (2) Provide a starting point for studies that support: (a) Development and implementation of defense strategy and policy. (b) The DoD PPBES.

Integrated Security Construct (ISC): Overlapping, detailed sets of planning scenarios and associated assessment tools. It is a collection of scenarios, including major combat scenarios, foundational activities, enhanced protective posture, and homeland defense events. The scenarios are placed on a multiyear timeline to product a plausible schedule for competing demands. The ISCs are built using a spiral development process that produces three views, or levels, of output: a summary view, a macro view and a detailed view. There are three ISCs currently under development. The ISC scheduled to be completed first is designated ISC-B.

APPENDIX B: REQUIREMENTS TRACEABILITY TABLE

DoD Requirement	Tool Requirement
<p>Secretary of Defense Memorandum, —Strategic and operational planning for operational contract support (OCS) and Workforce Mix”, 2011.</p> <p><i>“...better planning at the strategic and operational levels for contracted support”</i></p>	Strategic level (annual, long term) planning.
<p>—Transforming Wartime Contracting: Controlling costs, reducing risks.” Commission on Wartime Contracting in Iraq and Afghanistan, 2011.</p> <p><i>Contractors’ support “has been unnecessarily costly, and has been plagued by high levels of waste and fraud”</i></p>	Minimize cost.
<p>Department of Defense Directive (DoDD) Number 1400.6, 2003.</p> <p><i>“When using civilian staffing support in overseas areas, each Military Service commander shall employ a civilian manpower mix--U.S. citizens and local nationals—that blends financial prudence, conformance with host-country agreements or treaties, availability of qualified local national personnel, and the desired low-key presence of the U.S. Government abroad.”</i></p>	Consider all available personnel groups, minimize cost, and observe all treaties.
<p>Department of Defense Directive (DoDD) Number 1404.10, 2009.</p> <p><i>“DoD civilian employees shall be included in the DoD Global Force Management process ...Global Force Management Board recommendations and decisions and Global Force Allocation Management Plans shall reflect designation of DoD civilian employees as the preferred sourcing solution when appropriate...”</i></p>	DoD civilians should be considered during the planning process when appropriate.
<p>Department of Defense Directive (DoDD) Number 3020.49, 2009.</p> <p><i>“use contractor support only in appropriate situations consistent with DoD Instruction 1100.22.”</i></p>	Observe existing manpower mix criteria.
<p>"Department of Defense Directive (DoDD) Number 1100.4," 2005.</p> <p><i>“Assigned missions shall be accomplished using the least costly mix of personnel</i></p>	Minimize cost and consider all available personnel groups.

<p><i>(military, civilian and contract) ... Manpower authorities shall consider all available sources when determining manpower mix to include the Active and Reserve military manpower, U.S. and foreign national civilian manpower, intra-governmental, contract and host nation support."</i></p>	
<p>Department of Defense Instruction (DoDI) Number 1100.22, 2010. <i>"Establishes policy, assigns responsibilities, and prescribes procedures for determining the appropriate mix of manpower (military and DoD civilian) and private sector support."</i></p>	<p>Observe existing manpower mix criteria.</p>
<p>"Department of Defense Instruction (DoDI) Number 3020.41," 2011. <i>"...fully consider, plan for, integrate, and execute acquisition of, contracted support, including synchronizing and integrating contracted support flowing into an operational area from systems support."</i></p>	<p>Plan across multiple scenarios.</p>
<p>Annex W required CJCSM 3122.03C, 2006 GAO Report 10-472, 2010 —...most of the draft Annex Ws developed...included few details on the type of contractors needed to execute a given plan, despite guidance requiring Annex Ws to list contracts likely to be used in theater."</p>	<p>Results must include number and type of contractors</p>

Table 1. Requirements Traceability Table.

DISTRIBUTION

4 Office of the Deputy Assistant Secretary of Defense (Program Support)
3500 Defense Pentagon
Room 5A712A (ATTN: Anna Carter)
Washington DC 20301-3500

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1	MS1138	Alisa Bandlow	6131
1	MS1138	Jared Gearhart	6131
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