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OPERATIONS OTHER THAN WAR: REQUIREMENTS FOR ANALYSIS TOOLS RESEARCH REPORT

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EXECUTIVE SUMMARY

This report documents research performed to determine the requirements for new or improved analysis tools to support decisions at the strategic and operational levels for military Operations Other than War (OOTW). The work was performed for the Commander in Chief, U.S. Pacific Command (USCINCPAC).

BACKGROUND

Over the past several years, there has been an increasing recognition of the need for analysis tools to support planning and execution of military OOTWs. Analysis tools to support decision-making for large-scale military operations (such as major regional contingencies) are relatively mature. In contrast, OOTW analysis tools are embryonic or non-existent. Because the U.S. military involvement in OOTWs is expected to be increasingly frequent during the post-Cold-War era, development of OOTW analysis tools should receive higher priority than continued enhancement of analysis tools for large-scale military operations.

PURPOSE

This report describes the results of the first phase in a multi-phase effort to develop the analysis tools for OOTW. Specifically, this report identifies requirements for OOTW analysis tools, based primarily on two workshops sponsored by USCINCPAC. The primary purpose of the project is to influence the development of OOTW analysis capabilities within the Joint Warfare System (JWARS), which is being developed under the sponsorship of the Office of the Secretary of Defense (Program Analysis & Evaluation). However, current plans for JWARS development do not call for OOTW analysis capabilities to be incorporated for several years. Hence, a secondary purpose is to identify opportunities for developing interim OOTW analysis capabilities, including exploratory tools for possible incorporation into JWARS.

SCOPE

The scope of this report is to identify functional requirements for OOTW analysis tools and to provide the necessary details for personnel working on succeeding phases of the effort. Based on similarities of requirements across different kinds of OOTW, the similarity of tasks performed, and assessments of the maturity of analysis methods and availability of data to support tool development, the requirements have been tentatively grouped into ten generic tools, as described below under Conclusions and Recommendations. Within the body of the report, each of these generic tools is analyzed with respect to similarities and differences across kinds of OOTW, OOTW attribute impacts, required tasks, and methods/data

availability. These requirements, generic tools, and analyses will form the basis for a Military Operations Research Society (MORS) workshop on OOTW analysis tools, which will be held in January 1997. The MORS workshop will focus on specific approaches to meeting the requirements identified here.

PROCESS

As mentioned above, the requirements identified here largely reflect the insights obtained at two USCINCPAC-sponsored workshops. These workshops were hosted by the U.S. Naval Postgraduate School and attended by representatives of the Office of the Secretary of Defense, the Joint Staff, the Unified Commands, the Services, and numerous other organizations. These workshops, supplemented by other conferences and research, identified and categorized the many types of operations that can be considered operations other than war; examined the attributes of different kinds of OOTWs; and identified similarities and differences of U.S. military tasks that must be performed in OOTWs. This process, and the detailed results obtained, are fully described in this report. A companion report summarizes the results.

CONCLUSIONS AND RECOMMENDATIONS

The project identified 10 requirements for analysis tools. The requirements (Rqmt), user level (Use), priority (P), and recommended actions (Act) are shown in the table below.

Priorities for each requirement are taken from a five point scale. A priority of "1" represents a critical need for an automated supplement to current procedures, a "3" represents an important need, and a "5" represents an enhancement. Requirements scoring below a "3" have been dropped. The priority values represent the consensus values of a group of knowledgeable analysts, including Combatant Command, Service and Joint representatives.

The recommended action for each tool is based on the priority and the estimated difficulty of developing the tool. Two basic actions are recommended, either "do now" or perform "research and development (R&D)." One requirement has a modified "do now" recommendation of "start now," indicating an estimate of a more complex modeling/data problem. The recommended action represents a preliminary estimate, to be modified by participants in a MORS workshop in January 1997.

Rqmt	Title	Description	Use	P	Act
1	**Situational Awareness**	supports the generation of a complete picture of the current and likely future situation	NCA CINC JTF Service	2	start now
2	**Impact Analysis**	supports the analysis of the impact of human actions (own-side, opposition or neutral parties) on the current situation and on future plans	NCA CINC JTF Service	1	R&D
3	**Mission Definition & Analysis**	supports mission definition in its broadest sense	NCA CINC JTF	2	do now
4	**Force Planning: Design Forces**	supports the design of supporting and supported forces for use in OOTWs, where the supported forces may consist of forces that belong in the supporting category in combat operations - both parts may include U.S. non-military and non-U.S. elements	CINC Service	1	do now
5	**Force Planning: Deployment Scheduling**	supports the timing and prioritization of deployment scheduling, including U.S. non-military and non-U.S. elements	CINC	1	do now
6	**COA Development, Analysis, Comparison**	supports COA development, analysis, comparison, estimates of success and casualty predictions, risk modeling, and recommendations	CINC JTF	1	R&D
7	**Transition Planning and Tracking of Operational Data**	supports continued planning of the transition and tracking of MOEs, MOPs, end-state and transition criteria, and analysis of such things as casualties and medical treatments	CINC JTF	3	do now
8	**Communication Analysis**	supports communications analysis, including interoperability of non-U.S. and non-military equipment	CINC JTF	3	R&D
9	**Cost Analysis**	models costs of generic OOTWs for use in national force structure planning, input to decisions on engaging in an OOTW, and to estimate comparative costs during mission planning	NCA CINC JTF Service	3	do now
10	**Information Availability and Analysis**	supports data collection and analysis and use by other tools	NCA CINC JTF Service	1	do now

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ABSTRACT

This report documents the research effort to determine the requirements for new or improved analysis tools to support decisions at the strategic and operational levels for military Operations Other than War (OOTW). The work was performed for the Commander in Chief, U.S. Pacific Command (USCINCPAC).

The data collection was based on workshops attended by experts in OOTWs: analysis personnel from each of the Combatant Commands, the Services, the Office of the Secretary of Defense (OSD), the Joint Staff, and other knowledgeable personnel. Further data were gathered from other workshops and conferences and from the literature.

The results of this research begin with the creation of a taxonomy of OOTWs: categories of operations, attributes of operations, and tasks requiring analytical support. The tasks are connected to the Joint Staff's Universal Joint Task List (UJTL). Historical OOTWs are analyzed to produce frequency distributions by category and responsible CINC. The analysis products are synthesized into a list of requirements for analytical tools and definitions of the requirements. The report concludes with a timeline or roadmap for satisfying the requirements.

ACRONYMS

ABIS	Advanced Battlefield Information Systems
ACAAM	Air Courses of Action Assessment Model
ACE	Allied Command Europe
AGIS	Analysis & Gaming Information System
AHP	Analytic Hierarchy Process
AI	Artificial Intelligence
AID	Agency for International Development
ALSP	Aggregate Level Simulation Protocol
AMORS	Asia Pacific Military Operations Research Symposium
AMP	Analysis of Mobility Platform
AOR	Area of Responsibility
APOD	Air Port of Debarkation
APSO	Aggravated Peace Support Operation
ARRC	Allied Command Europe (ACE) Rapid Reaction Corps
ASAP	All Hazards Situation Assessment Program
ASD	Assistant Secretary of Defense
C2W	Command & Control Warfare
C^3I	Command, Control, Communications, and Intelligence
C^3I-NAM	C^3I - Network Assessment Model
CAA	U.S. Army Concepts Analysis Agency
CAC	U.S. Army Combined Arms Center
CALL	Center for Army Lessons Learned
CAM	Civil Affairs Module
CAPS	Contingency Analysis Planning System
CARE	Cooperative for Assistance and Relief Everywhere
CCIR	Commander's Critical Information Requirements
CD	Counterdrug
CDC	Centers for Disease Control and Prevention (U.S.)
CI	Counterinsurgency
CINC	Commander in Chief
CJTF	Combined Joint Task Force
CMASS	Counterdrug Modeling and Simulation System
CMO	Civil-Military Operations
CMOC	Civil-Military Operations Center
CNA	Center for Naval Analyses
COA	Course of Action
COMSEC	Communications Security
CONT	Military Contingency Operations
CONUS	Continental United States
CS	Combat Support
CSS	Combat Service Support

CT	Combatting terrorism
DART	Disaster Assistance Response Team
DEA	Drug Enforcement Agency
DEXES	Deployable Exercise Support (system)
DHA	Department of Humanitarian Affairs (UN)
DOD	Department of Defense
DNA	Defense Nuclear Agency
DR	Disaster Relief
EA	Electronic Attack
EEFI	Essential Elements of Friendly Information
EW	Electronic Warfare
FAO	Food and Agriculture Organization (UN)
FAST-OR	Force Analysis Spreadsheet Tool - Operations Other Than War
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FID	Foreign Internal Defense
FFRDC	Federally Funded Research and Development Center
FM	Field Manual
FDE	Force Deployment Estimator
FON	Freedom of Navigation
FTLM	Future Theater Level Model
GCCS	Global Command and Control System
GEDS	Global Events Data Sets
GTN	Global Transportation Network
GUI	Graphical User Interface
HA	Humanitarian Assistance
HAST	Humanitarian Assistance Survey Team
HEAT	Headquarters Effectiveness Assessment Tool
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HQ	Headquarters
HRA	Humanitarian and Refugee Affairs
Humint	Human Intelligence
ICRC	International Committee of the Red Cross
IFOR	Implementation Force
Intel	Intelligence
IR	Intelligence Requirements
ISMOR	International Symposium on Military Operational Research
ISO	International Standards Organization
ISR	Intelligence, Surveillance, Reconnaissance
ITEM	Integrated Theater Engagement Model
ITO	Integrated Tasking Order
IW	Information Warfare
JCM	Joint Conflict Model
JCS	Joint Chiefs of Staff
JFAST	Joint Flow and Analysis System for Transportation
JITF	Joint Interagency Task Force
JMET	Joint Military Essential Task
JMETL	Joint Military Essential Task List

JOA	Joint Operations Area
JSCP	Joint Strategic Capabilities Plan
JSIMS	Joint Simulation System
JSORT	Joint Staff Operational Team
JSTARS	Joint Strategic Target Acquisition and Reporting System
JTF	Joint Task Force
JUORS	Japan-US Operations Research Seminar
JWARS	Joint Warfare System
KEDS	Kansas Events Data Set
LCRS	Low Intensity Conflict Capabilities Requirements System
LOC	Line of Communication
LOGGEN	Logistics Generator
M&S	Modeling and Simulation
MAUT	Multi-Attribute Utility Theory
MCCDC	U.S. Marine Corps Combat Developments Command
METL	Mission Essential Task List
METT-T	Mission, Enemy, Troops, Terrain/Weather and Time Available
MIO	Maritime Interdict Operation
MOBA	Military Operations in Built-up Areas
MOE	Measure of Effectiveness
MOOTW	Military Operations Other Than War
MOP	Measure of Performance
MORS	Military Operations Research Society
MP	Military Police
MRC	Major Regional Contingency
MSCA	Military Support to (Domestic) Civil Authorities
NA	Nation Assistance
NASM	National Air and Space Model
NATO	North Atlantic Treaty Organization
NCA	National Command Authority
NEO	Noncombatant Evacuation Operations
NGO	Non-Governmental Organization
NI	National Integrity
NPS	Naval Postgraduate School
NSS	Naval Simulation System
OAB	Operational Analysis Branch
OFDA	Office of Foreign Disaster Assistance (U.S.)
OOTW	Operations Other Than War
OP	Operational
OPLAN	Operations Plan
OPSEC	Operations Security
OPTEMPO	Operational Tempo
OR	Operations Research
ORNL	Oak Ridge National Laboratory
OSD	Office of the Secretary of Defense
OXFAM	Oxford Committee for Famine Relief
PA&E	OSD Program Analysis and Evaluation
PANDA	Program for the Assessment of Nonviolent Direct Action

PC	Personal Computer
PDC	Pacific Disaster Center
PE	Peace Enforcement
PECAN	Peacekeeping Cost Analysis
PEKO	Peacekeeping Operations
PEO	Peace Enforcement Operations
PERSTEMPO	Rate (Tempo) of Personnel Usage
PIR	Priority Intelligence Requirements
PK	Peacekeeping
PKO	Peacekeeping Operations
PO	Peace Operations
PSYOPs	Psychological Operations
PVO	Private Volunteer Organization
QDR	Quadrennial Defense Review
QRAM	Quick Reaction Analysis Methodologies
RCDM	Regional Counterdrug Model
RDSS	Regional Development Simulation System
RISTA	Reconnaissance, Intelligence, Surveillance, and Target Acquisition
ROE	Rules of Engagement
ROWPU	Reverse Osmosis Water Purification Units
RSOI	Reception, Staging, Onward Movement, & Integration
RSSIA	Regional Security Strategy Implementation Analysis
SAGES	Scenario Generation Expert System
SAR	Search and Rescue
SIGSEC	Signal Security
SN	Strategic National
SO/LIC	Special Operations/Low Intensity Conflict
SOF	Special Operations Forces
SORTS	Status of Readiness and Training System
SPITE	Social, Political, Ideological, Technological, and Economic factors
SPOD	Sea Port of Debarkation
ST	Strategic Theater
SWOT	Strength, Weakness, Opportunities, Threats
TAM	Theater Analysis Model
TPFDD	Time Phased Force Deployment Data
TSPS	Theater Security Planning System
UJTL	Universal Joint Task List
UN	United Nations
UNDP	UN Development Program
UNHCR	UN High Commissioner for Refuges
UNICEF	UN Children's Fund
UNITAF	UN International Task Force (Somalia)
UNOSOM	UN Operations in Somalia
UNPROFOR	UN Protection Force
U	Unclassified
U.S.	United States
USACOM	U.S. Atlantic Command
USAID	United States Agency for International Development

USCENTCOM	U.S. Central Command
USEUCOM	U.S. European Command
USN	U.S. Navy
USPACOM	U.S. Pacific Command
USSOCOM	U.S. Special Operations Command
USSOUTHCOM	U.S. Southern Command
VFR	Visual Flight Rules
VIP	Very Important Person
VTC	Video Teleconferencing
WES	Waterways Experiment Station (Army Corps of Engineers)
WHO	World Health Organization (UN)
WMD	Weapons of Mass Destruction

1. INTRODUCTION

This document describes research to determine the required capabilities for Operations Other Than War (OOTW) analysis tools and to state those requirements. The complete definition of the characteristics for those tools is part of a later project phase.

Currently, the U.S. military is heavily involved in performing OOTWs. Unfortunately, the class of OOTWs is defined not by what it is, but what it isn't. The military operations that are part of wars are, if not completely understood, at least made familiar by the extensive historical record of warfare. All other military operations are OOTWs. The fluid terminology (including current shifts away from terming them "OOTWs") reflects the lack of a unified understanding of their nature and a difficulty in preparing for and executing them. This incomplete understanding of OOTWs is also reflected in a lack of analytic tools to support the deliberation on, preparation for, and execution of OOTWs. "[M]odels developed during the Cold War for large-scale military operations are mature, but not well-suited for many types of operations that we are likely to conduct in the foreseeable future," [Haut & McCurdy, 81]. Despite a mismatch between the capabilities of available tools and the future analysis requirements, analyses to support military operations will continue. The challenge is to obtain tools that will support these analysis requirements. This document reports efforts to define the tools that are needed to support analysis for OOTWs.

1.1 BACKGROUND

Haut and McCurdy describe the current conflict situation as one in which the likelihood of the level of conflict operations strongly favors peace operations over combat operations and favors less intense levels of combat over more intense levels. Figure 1 is adapted from [81] and shows various types of military operations, plotting their position on the level of conflict continuum versus their likelihood of occurrence. The precise positions of the various types of operation are approximate, with a smooth curve drawn to illustrate the general trend, which is the expected predominance of OOTWs over combat operations in the near future.

Before the requirements for analytical tools can be determined, an understanding of OOTWs that goes beyond the definition, "everything other than war," is required. All military operations are set in a larger context of geopolitical interests. Wars are fought for reasons, whether explicit or unexpressed. And they are ended for some reason. The general procedure is for the leaders to decide on war, the military to fight the war, and the leaders to decide to end the war. Wars in which the leaders "meddle" in the fighting are considered unsatisfactory, despite the fact that such "meddling" is common at least at the strategic level. Non-war operations are also decided upon by the leaders and ended by the leaders; however, the military is generally not the sole party conducting the operation. In fact, the military almost always plays a supporting role, rather than a leading role. For example, the Department of State is the lead United States (U.S.) agency in foreign disaster relief

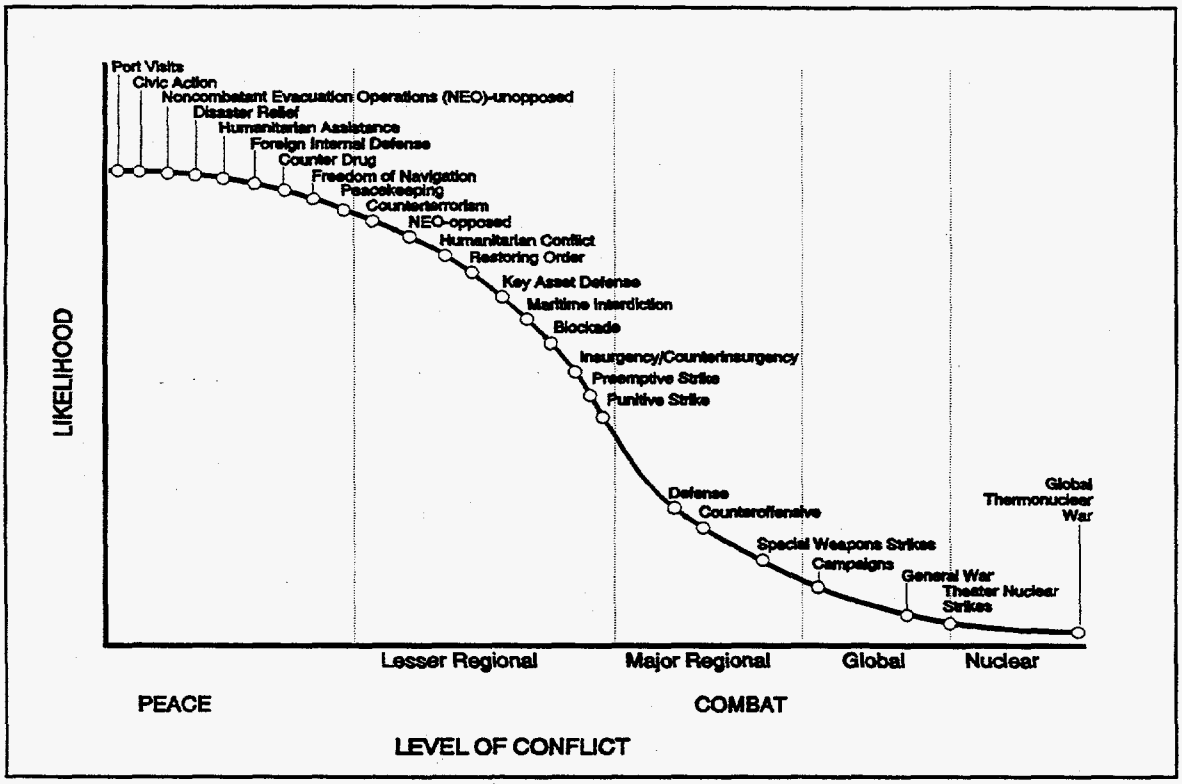

Fig. 1. Continuum of conflict operations.

operations and the Federal Emergency Management Agency (FEMA) is the lead in domestic disaster relief operations. Even the most combat-like OOTWs, the military contingency operations, are carefully constrained by political considerations and often support other operations. In short, the level of "meddling" reaches overwhelming proportions in OOTWs. Essentially all actions have a component of the political to them and must be coordinated with non-military people.

The goal of the project described by this report relates to military support to OOTW and therefore OOTWs are treated from a military perspective. However, it is critical to understand the context of the problem. That context begins with the fact that OOTWs are fundamentally political responses to political, economic and psycho-social problems. These problems are often symptoms of social system failures, whether direct failures, such as the inability to peacefully resolve inter- or intra-national conflict, or indirect such as the inability to handle natural disasters. In such situations, the military is called upon to perform various functions, such as organizational management, information management, and application of force. Despite the importance and necessity of these functions, they are support functions and are only complete and successful when they are successfully transitioned to political authorities.

This non-military context pervades the military functions that comprise the military's part of OOTWs. Not only does the context define the military initiation of an OOTW and the military completion of an OOTW, but also the context affects the military execution during the OOTW. Relations with foreign military forces, non-military U.S. governmental agencies,

non-U.S. governmental agencies (such as UN agencies), and non-governmental organizations are not just part of the **problem** of U.S. military execution, these relations are part of the **reason** for military participation. In fact, the U.S. military will generally have a subordinate role to play with respect to one or more of these non-traditional organizations.

Part of the methodology for understanding OOTWs consists of dividing them into types and categories, such as peacekeeping and unopposed noncombatant evacuation operations (NEOs). In one sense, these divisions are artificial. Any particular OOTW is likely to include multiple types of operations. Further, the underlying situation may change with time, making the appropriate operational type different (whether or not the defined operation changes). However, the purpose of the divisions is not to prescribe operations, but to uncover differences and similarities that affect the analytical tools that are needed. The goal is to obtain tools that satisfy the analytical needs, no matter what the type of operation that is envisioned (or what it is called).

Siegel [136] notes that the demands of OOTW often change the relative emphasis between combat arms and combat service support from the relative emphasis in combat operations.

> In general, the requirements for military forces to conduct [OOTWs] fall within three groups:
>
> - First are those requirements that draw on traditional miliary capabilities and training. These "traditional requirements" can include, for example, transportation (of people or things) or communications support.
>
> - A second category consists of those requirements that may draw on capabilities inherent in the military..., but demand that these capabilities be used differently from the ways they would be used in combat operations. For example, military medicine focuses on a healthy, primarily male, population that is 18 to 50 years old which undergoes severe trauma (i.e., a combat wound). In contrast, in [OOTWs], in addition to caring for the miliary personnel, in [OOTWs] medical assistance may focus on the indigenous population, which includes weak, "at-risk" populations (infants and the elderly), or may focus on preventing the outbreak of infectious diseases. To provide another example, reconnaissance assets, critical for combat operations, are also critical for [OOTWs]. Evaluating surveillance photos of a disaster zone, however, differs from analyzing images of an enemy's trench system.
>
> - The third group consists of requirements that fall outside military equipment inventories or traditional military capabilities. For example, in almost every recent disaster-relief operation, the U.S. military's standard communications equipment could not connect appropriately with all the involved organizations. Thus, procuring (even if simply borrowing) such communications equipment has often been an early priority. As another example, few military units have structural engineers or disaster-management specialists who can play crucial roles in disaster relief [136].

Haut and McCurdy [81] describe the status of modeling and simulation to support these three areas in deliberate analysis as:

traditional military	- good,
non-traditional military	- unacceptable, and
non-military	- fair.

They describe the status in real-time analysis as:

traditional military	- fair,
non-traditional military	- fair, and
non-military	- unacceptable.

Unfortunately, OOTW operations often require real-time analysis and definitely require analysis of the non-traditional military and non-military areas. Overall, the status for analysis tools for OOTWs is fair to unacceptable.

1.2 PROBLEM STATEMENT

At the various Combatant Commands, analysts support the CINC's planners. When a mission is being planned (or considered), typical questions to be answered are "What is needed?", "What is available?", and "How can it be transported from where it is to where it is needed?" When the action is OOTW, generally, there are no standard plans, as there is too much variation possible; the action is usually a crisis action or deliberate planning for immediate action; and existing tools are not adequate. It is clear from the lessons learned [35] and the Command Histories [28, 29, 30] that not all of the right questions are being asked and answered before an operation. In addition to the direct results of successful OOTWs, the military must consider the effects of participation in OOTWs on its other responsibilities, for example, the ability to fight and win two nearly simultaneous Major Regional Contingencies (MRCs). The U.S. Pacific Command (USPACOM) determined that the level of OOTW analysis necessitated better analysis tools.

Therefore, this project was initiated to define the requirements for new or improved OOTW analysis tools. The purpose of this set of tools is to support analysis of OOTWs at all levels from operational through national strategic; however, the central focus is at the CINC analysis level. The tools (collectively) should support both deliberate and crisis planning. When possible, the tools should be small, fast-running, easily understood, and robust in their range of applicability. The preference is for the tool to run on a personal computer (PC).

1.3 AVOIDING DUPLICATION OF EFFORTS

Analytic support for OOTW questions in the Joint Warfare System (JWARS) is several years in the future. Further, JWARS is not the appropriate tool for some planning needs (e.g., providing a checklist of things to be considered). The results of this project (once validated by the appropriate parties) will be used as inputs to the ongoing JWARS design process. The results will also be fed to the design process of the Global Command and Control System (GCCS), as appropriate. Issues of connectivity and compatibility with other modeling and simulation (M&S) efforts will be considered in producing analytic tool specifications.

1.4 NOTES ON THE DOCUMENT CONTENT

The goal of the research reported here is to produce a list of requirements for analytic support tools for OOTW planning. The purpose of this document is to report on that research in a manner that clearly tracks the derivation of those requirements and supports efforts to create tools to meet those requirements. A separate (and much shorter) document will be produced that simply reports the requirements that were produced.

The need to track the requirements' derivation and to support future tool creation imposes a requirement for completeness, including explicit definitions of all terms and references. These definitions are especially critical because the community of people involved in OOTWs are continuing to change definitions and usages of the terminology (including the acronym OOTW). To ensure that future changes in terminology do not obscure the meaning of this report, each of the terms is given an explicit definition **for use in this document**. The particular definitions used were selected from among those commonly used, with the goal of providing the greatest advantage in determining analytic tool needs. Similarly, the organizational constructs used here are explicitly stated and were chosen for convenience in developing analytic tools. Thus, the existence and usefulness of these constructs here does not negate or lessen the usefulness of other constructs for other uses.

This document should be read to understand how and why the requirements that resulted from the research were selected. The methodology used (described in the next section) was developed to illuminate the problem in terms that would aid in constructing tools to satisfy the derived requirements, as well as to derive those requirements. Therefore, this document also provides a detailed definition of the requirements to support implementation.

2. METHODOLOGY

Requirements for analytic tools must be defined and validated by the users, which include the analysts, operators, and planners. The users cross the spectrum of disciplines, such as medicine, logistics, law, and intelligence. Thus the methodology must consist of elicitation, refinement and validation. Data have been collected from various sources, most significantly from representatives of the analysis community, from members of the OOTW community in general, and from the literature.

The initial structure of the problem and its solution was produced at a workshop on the topic of OOTW analysis requirements held at the Naval Postgraduate School (NPS) in Monterey, CA. This workshop was sponsored by USPACOM and took place on February 26-28, 1996. The basic concept was that a taxonomy of OOTW categories, attributes, and tasks could be used to synthesize a useful description of OOTW analysis tools requirements. Figure 2 illustrates the form of the taxonomy, with each cell representing a unique combination of values for each of OOTW category, attribute, and task. Ideal tools would cover as many cells as possible (resulting in a minimal number of tools), while not being excessively general because of stretching a tool to cover too many cells (maintaining tool simplicity).

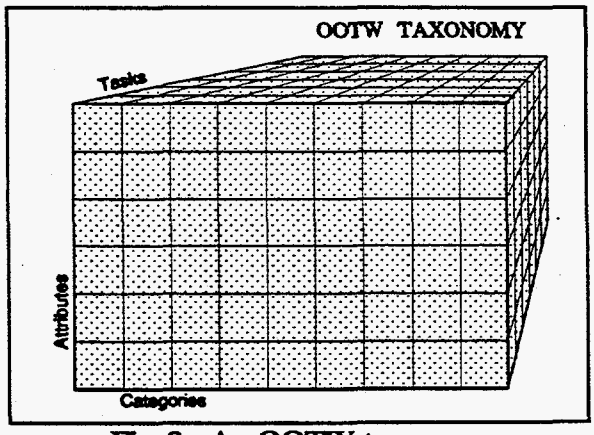

Fig. 2. An OOTW taxonomy.

The approach that is used in this report is illustrated in Fig. 3, with iconic representations of the data elements and research products. This approach consists of four phases: research, analysis, synthesis, and recommendations. The figure shows the flow between the phases and the connections among the parts of each phase.

2.1 RESEARCH PHASE

As shown in Fig. 4, eight classes of data concerning OOTWs were acquired in the research phase:

- information on the context;
- CINC questions requiring response;
- an organized list of OOTW categories (defined as useful here);
- an organized list of the relevant attributes of the operations;
- an organized list of tasks associated with analysis;

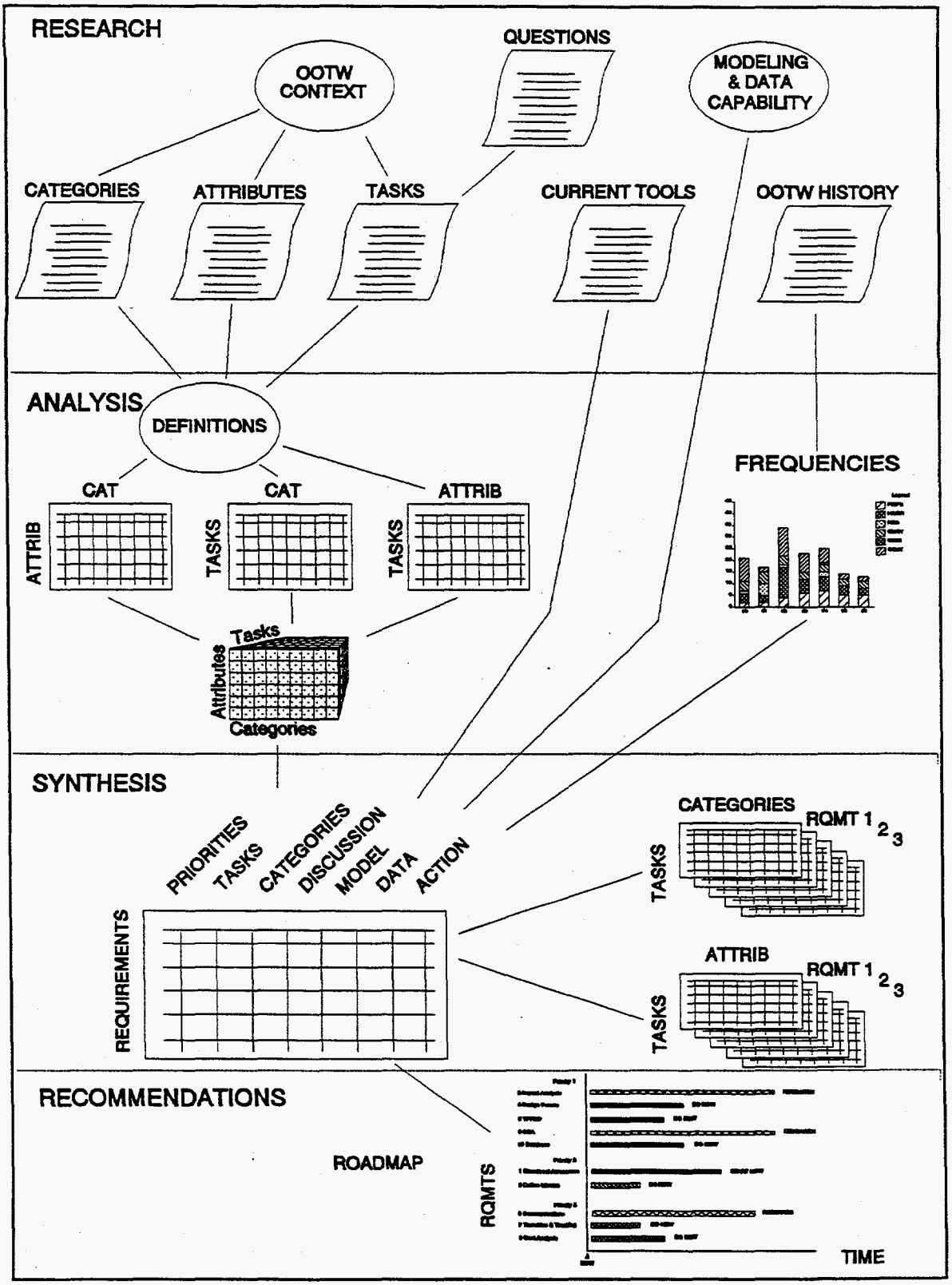

Fig. 3. Study approach.

- a list of current tools;
- an appreciation of modeling capability and data availability; and
- a list of recent OOTWs supported by the U.S. military.

Figure 4 identifies these sources and their relationships graphically.

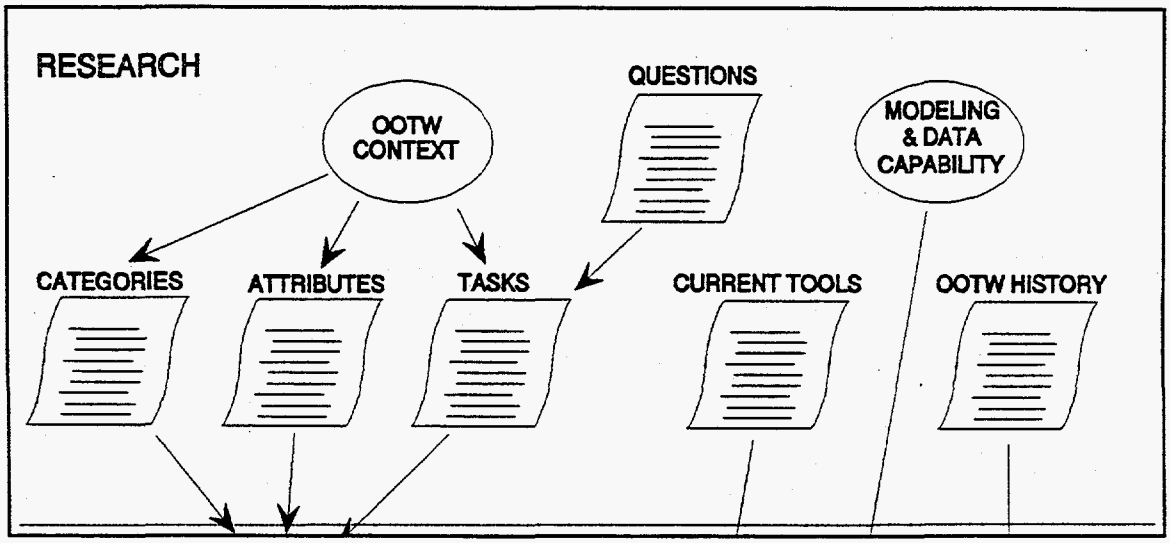

Fig. 4. Data sources.

The research phase was accomplished through literature searches and several workshops and conferences. The data obtained from these conferences are summarized in the research section, with detailed notes being reserved for appendices. The literature of interest is listed in the Bibliography section. The conferences that generated data were as follows:

- the USPACOM sponsored Monterey Workshop on OOTW analysis requirements, held at NPS in Monterey, on February 26-28, 1996;
- a second USPACOM sponsored workshop on OOTW analysis requirements, held at NPS in Monterey, on September 18-19, 1996;
- a workshop on analytical approaches to future conflict that was held at the Lester B. Pearson Canadian International Peacekeeping Centre in Nova Scotia, Canada, on March 26-28, 1996;
- the 64th Military Operations Research Society (MORS) Symposium, held at Ft. Leavenworth, KS, on June 18-20, 1996;
- the International Symposium on Military Operational Research (ISMOR) on September 2-6, 1996; and
- the MORS Quick Reaction Analysis Methodologies (QRAM) Workshop, held at Booz-Allen Hamilton in Washington, on October 1-3, 1996.

2.2 ANALYSIS PHASE

Because of the variation in OOTW related definitions (see Appendix A), one of the analysis tasks was to create a common set of definitions and relationships for the categories, attributes and tasks, using the OOTW context. These explicit definitions ensure that despite any future changes in usage, the meaning here is clear. The definitions supported the analysis tasks of creating matrices of the following three kinds:

- attribute impacts on the categories;
- task similarities across the categories; and
- attribute inputs to the tasks.

These matrices form the basis of creating the taxonomy of Fig. 2. Other analytical tasks included the creation of frequency charts from the historical OOTWs, which is useful in informing priority decisions. The analysis products and their relationships are pictured in Fig. 5.

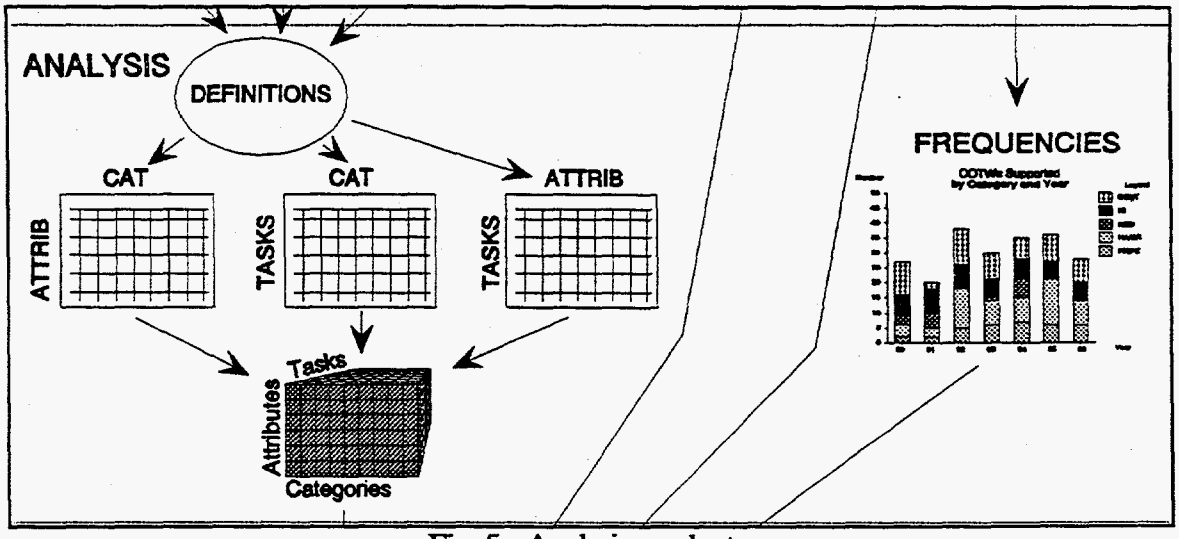

Fig. 5. Analysis products.

2.3 SYNTHESIS PHASE

In the synthesis phase, ten OOTW analysis tool requirements were identified. These requirements were then merged with the tasks, categories, model capabilities, and data availability. Data from the users' statements of need, the OOTW frequency information, and sequencing of the requirements were used to generate priorities. The priorities and capability information were used to generate the recommended actions. All of this information is summarized in a requirements matrix. This matrix, giving the tasks' connections to the requirements, and the task vs attribute matrix were used to create individualized task vs attribute matrices for each requirement. Similarly, individual task vs category matrices were

created for each requirement. These individual matrices are to be used in designing the analytical tools called for by the requirements. The synthesis products and their relationships are shown in Fig. 6.

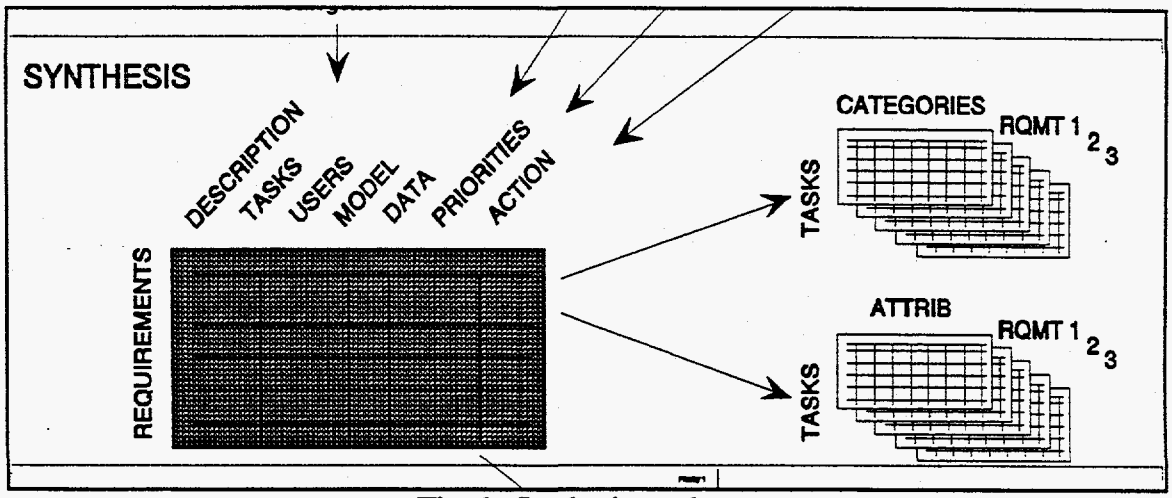

Fig. 6. Synthesis products.

2.4 RECOMMENDATIONS PHASE

The recommendations phase consisted of creating a roadmap for implementation (shown iconically in Fig. 7). The roadmap includes relative timelines for the various activities, taking into account requirements' priorities and the amount of time, effort and funding required to produce the required systems.

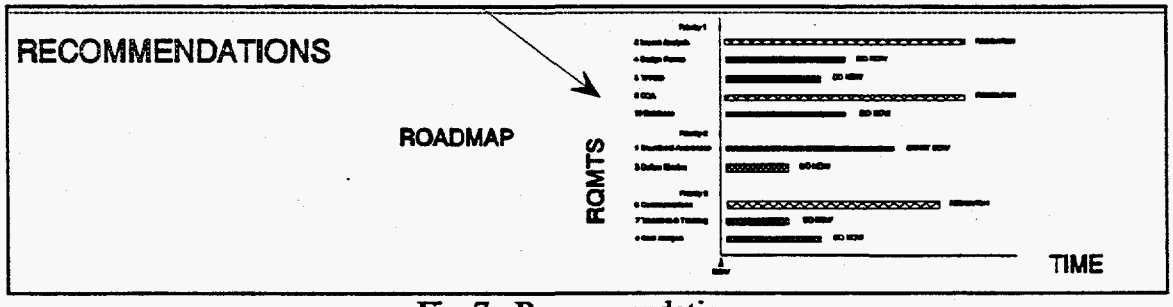

Fig. 7. Recommendations.

2.5 VALIDATION

All phases of the project involved interactions with users, both from USPACOM and from the other commands. These interactions produced refinements throughout the course of the project and support the ultimate validation of the recommendations. Validation of the

requirements will be performed by the staffs of each of the CINCs. Validation of the timing of the recommendations, shown in the roadmap, will be produced by a workshop to be conducted by the Military Operations Research Society (MORS) in early 1997.

3. RESEARCH

Information was collected from a variety of sources, with the source being valued intrinsically by source and extrinsically by application. Thus, requirements posited by CINC analysts were weighted more heavily than requirements proposed by modelers and descriptions of the basic nature of OOTWs were judged by the experience of those providing the descriptions.

The February Monterey Workshop provided the organizing principles for all of the information obtained subsequently. The September Monterey Workshop provided the basic validation of the requirements and a reshaping of some concepts. Information from other workshops and conferences and the OOTW literature was used to fill in gaps. The information gathering process and the information gathered is described in this section, with the details presented in appendices.

3.1 FEBRUARY MONTEREY WORKSHOP

The February Monterey Workshop was sponsored by the USPACOM with the intent of identifying analytic needs to support OOTW. The workshop was held at the Naval Postgraduate School on February 26-28, 1996. There were five workshop objectives.

- Identify information requirements for OOTW operations and analyses.
- Investigate our understanding of OOTW processes and interactions among them.
- Provide a basis for developing a functional specification of OOTW support tools.
- Develop a shared viewpoint among the attendees of OOTW for
    - Definitions/terminology/lexicon,
    - Attributes,
    - Categories/taxonomy of OOTW,
    - Phenomena, and
    - Tasks.
- Identify areas in which additional field analysis or exploratory modeling should be undertaken to improve our understanding of OOTW phenomena.

3.1.1 Workshop Organization

The workshop consisted of general information presentations and break-outs into working group sessions to resolve specific issues. The working group sessions were organized to produce the results shown below.

- Determine useful categories: The variation in OOTW definitions and the political orientation of OOTWs required a revisitation of the fundamental nature of each type of OOTW. The goal of this revisitation was to ensure a common basis of understanding and a categorization of OOTWs that would be useful in discussing the military functions and analysis requirements of OOTWs.

- Define attributes for the categories: The verbal definitions of the types and categories of OOTW provided a start for the definition of analysis requirements; however, more definition was required. Defining the categories in terms of the names and values of the critical attributes was the next step. Some attributes are "definitive," that is their values discriminate among types of OOTW (or categories of OOTW). Other attributes are "variational," that is their values vary with the situation; however, they are important in the conduct of the OOTW.

- Define tasks: The required analyses depend on the military tasks required in an OOTW. The Joint Military Essential Tasks (JMETs), identified in Joint Staff Manual 3500.04, are not sufficiently fine for this purpose; however, the concept is the proper starting point.

- Examine the phenomena/modeling problems: For which attributes are phenomena sufficiently well-understood to justify modeling? How well-prepared are we to model the interactions between phenomena? To what extent is providing data, vice information derived from analysis, what is really needed? In what areas might exploratory modeling be undertaken as a means for improving our understanding of phenomena?

3.1.2 Workshop Taxonomy Results

The terminology of OOTW is not consistent. Several sources for the definition of terms related to OOTW, each normally regarded as definitive, differ. The details are contained in Appendix A. The members of the workshop answered a questionnaire, which was used to create a list of types of OOTW and to group the types into five categories: peace operations (PO), consisting of peacekeeping (PK) and peace enforcement (PE); humanitarian assistance (HA) and disaster relief (DR), including permissive non-combatant evacuation operations (NEO); counterdrug (CD) and counterterrorism (CT); counterinsurgency (CI) and nation assistance (NA) or nation building; and military contingency operations (CONT is used in graphs and tables where space is at a premium). This section lists the initial results from the workshop. Section 4 introduces the definitions of the terms that will be used in this report, following analysis. The uncertainty of exact definitions and the need for actionable information about missions leads to attribute analysis.

These attributes should separate different types of operations by differing attribute values and help define differences in the conduct of operations with differing attribute values. Further, the attribute segregations should help differentiate the tool-sets required to address the analytical needs of OOTW.

The workshop subgroups divided the areas in which attributes had impact into: the national level, the CINC's level, and the force planner's level. Some attributes were determined to be of interest at all levels and others restricted to one or two levels. In addition, the group determined certain attributes were useful, for example, in dividing peace operations from other OOTW, and some were useful in distinguishing peacekeeping from peace enforcement.

New subgroups were organized to analyze the tasks that were defined by the category subgroups. Five tasks were defined: C^3I, Mobilization/Deployment, Employment, Sustainment, and Redeployment. These tasks were analyzed across OOTW categories for:

- homogeneity (across categories);
- need for analytical support;
- quantification (MOE);
- information/data availability; and
- other observations on requirements for modeling and simulation (M&S).

Measures of Effectiveness (MOEs) drive exit criteria for operations and for analysis and thus they drive the execution of operations and the analysis requirements. A simplistic view of war is that the MOE is a variable with two possible values, "won" or "lost," and Measures of Performance (MOPs) are number of enemy casualties and number of friendly casualties. Realistic measures are more complex; however, this example illustrates the concept of MOEs and MOPs and shows MOPs as impacting MOEs. In OOTWs, the MOEs and MOPs become very complex. Strictly military measures are still required, e.g., readiness levels; however, political and economic measures become equally important (or perhaps more important). Examples include measures of public health, political stability, and infrastructure restoration. Determining the correct measures becomes critical in measuring progress in situations where progress is not obvious, a common situation in OOTWs.

3.1.3 Workshop Modeling and Data Results

Decisions on requirements, especially priorities, need to be informed by current availability of tools, likely near term availabilities, and difficulties (costs) of producing desired tools. It also helps to have in mind an overview of how the tools will be used, both in refining requirements and in judging the modeling and data situation.

The current analytical toolset includes political-military games, issues workshops, wargaming, combat simulation, mission rehearsal, and modeling (such as logistics network modeling). These need to be pieced together (and modified or improved) to cover the range of activities of OOTWs. Despite the problem of piecing together disparate tools, the need is for many tools, not a single tool. The traditional combat modeling approach will not work. An accepted body of theory for political, economic, military, and information interactions is required to model OOTW. JWARS will not have any OOTW capability until Phase 3.

The various types of tools needed were assessed against two criteria, modeling maturity and data availability. The group concluded that most of the modeling needs can be solved, given time and money; however, data, model usability, and actually fielding appropriate tools were identified as serious problems, with obtaining valid data being the most difficult. The group stated that the integration problem is the outstanding problem: OOTWs are composed of interdependent missions, with fundamental interactions of the missions with the non-military perceptions, opinions, political actions, and responses. Generally, the desirable tools are decision support tools, are simple (e.g., menu driven, point and click), are deployable, are joint, are rigorous, use non-parochial data, have available data, and are capable of rapid turnaround.

Systematic data collection is a problem across the board. Data availability, access, organization, and display are critical. In some areas, such as combatting terrorism (CT), the data are largely classified, imposing difficulties. Big-picture technical information is available from national and regional assets. Open source and existing data bases are rich but seldom fully exploited. Existing models and data, e.g. environmental, demographic, health, and other complex models require specialized support, which is not readily available now. In counterinsurgency (CI) and nation assistance (NA), the phenomena are not well understood and there are no current models. Data on non-military actors are less available and more complex. The major decisions are non-military, possibly limiting the scope of analysis. A mechanism for collecting lessons learned is badly needed. Data collection designs exist, but are seldom applied in practice.

Opportunities for collecting measurable data should not be passed up. Analysts need exposure to OOTWs to cast useful new models. They need to make measurements and experience cultural insights and surprises. Repeated politico-military exercises should result in a baseline dataset with some validity. (Creating data for many countries where OOTWs are likely requires exotic expertise, as the assumptions of current models (such as an existing road system) may be incorrect.) These data can be used to create a seminar wargame-in-a-box.

3.1.4 Summary

This workshop exposed many concepts and subjected them to discussion. It established a framework for defining analysis requirements for OOTW. See Appendix B for a detailed description of the workshop and its results.

3.2 SEPTEMBER MONTEREY WORKSHOP

The September Monterey workshop was held at NPS on September 18-19, 1996. The attendees represented the analysis cells of the CINCs, Services, OSD, and The Joint Staff. The purpose of the meeting was to review the draft version of this report and propose modifications. Because of the bulk of the draft report and because many of the attendees had not attended the first Monterey workshop, the workshop schedule was designed to elicit comments while educating the attendees on the methodology and content of the report, culminating in a thorough analysis of the analysis requirements - the goal of the project.

Three classes of input were solicited: individual comments on the report as a whole, "homework" comments (produced after-hours during the workshop) on specific areas, and "in-class work" by breakout sessions on the most critical areas of the report.

- The first breakout session concerned the category groupings and the tasks. The attendees were divided into five groups, representing the OOTW categories: peacekeeping (PK)/peace enforcement (PE), humanitarian assistance (HA)/disaster relief (DR) and unopposed noncombatant evacuation operations (NEO), counterdrug (CD)/CT, CI/NA, and military contingency operations. Two topics were covered: the validity of the category groupings and definitions, and the accuracy and completeness of the tasks defined in the report. Corresponding homework for the first topic was to assign ranges of values to the attributes, complete and validate the definitions of the attributes, and validate the categories vs attributes matrix. The homework for the second topic was to review the correspondences of the tasks to the tasks in the UJTL.

- The second breakout session concerned the questions that drive analysis of OOTWs and the analysis tool requirements. The five breakout groups were CINC representatives, Service representatives, The Joint Staff and OSD, non-governmental organization/private voluntary organization (NGO/PVO) concerns, and modeling/phenomena. The topics were: completeness of the question set with respect to the breakout groups' areas, and whether the tasks of the report were capable of addressing the questions. The CINC group went beyond these topics and recommended changes to the analysis tool requirements.

- The third breakout session concerned the tasks vs categories matrix. The five breakout groups were Prior to Mission, C^3I, Mobilization/Deployment, Force Employment, and Sustainment/Redeployment. Each group considered its sections of the matrix.

- The fourth breakout session addressed the area of primary concern: the analysis tools requirements. The original grouping by OOTW category was used, supplemented by the work of the CINC group from the second breakout session.

The results of this workshop provided the final shaping of this report:

- the initial category groupings were revised;

- the attributes were revised and organized according to the Mission, Enemy, Troops, Terrain/Weather and Time Available (METT-T) schema;

- the task groups were revised to include non-mission-related analysis and pre-mission tasks; and

- the requirements were consolidated.

3.3 OTHER WORKSHOPS

Four other workshops and conferences were useful in gathering information for this report. The four consisted of a workshop in Nova Scotia, a conference in England, the national MORS Symposium, and a MORS workshop.

3.3.1 March Nova Scotia Workshop

The workshop held at the Lester B. Pearson Canadian International Peacekeeping Centre in Nova Scotia, Canada, was entitled "Analytical Approaches to Future Conflict." The majority of the presentations involved only OOTW, presumably either because future conflicts were judged most likely to be of this nature or because analytical approaches for warfare were judged to be less in need of novel approaches. The international character of the participants, the inclusion of military, academic and corporate viewpoints, and the presence of a person with U.S. State Department Agency for International Development (AID) and Non-Governmental Organization (NGO) experience gave this conference a distinct importance in deriving a reasonably balanced view of OOTW operations and the analytic possibilities.

Presentations were made that concerned the nature of OOTWs, potential solutions (such as psycho-social modeling, influence diagrams, scenario creation, and C^3I modeling), and applications of analysis to OOTWs. The general consensus was that the current era provides the opportunity to return to the roots of the Operations Research (OR) field, the analysis of important tactical, operational, and strategic operations. In the new, multi-scenario world, everything needs rethinking. The key word is "uncertainty" and the need for rapid response force design and employment, with restrictions and constraints on acceptable results, requires close attention to actual operations and analysis, rather than crank-turning of models. The big questions have often been off-limits, even in the best of times; however, the opportunity exists to address more of them than has been the case in the immediate past.

Unlike most conferences, each of the presentations was allotted an entire hour. This time allocation reduced the number of presentations possible over the three-day conference; however, it afforded time for a more complete exposition of ideas and for contributions by the other presenters and attendees, each of whom had been selected for his or her potential for making contributions. More details are given in Appendix C. Proceedings of the conference are to be published later in the year.

The workshop was clearly a success as an information exchange mechanism. It was also a success in provoking thoughtful criticism and consideration of new ideas. For the purpose of this report, it was successful in introducing variations on the concepts of the Monterey Workshop, as well as completely new concepts. The proceedings, edited by Alexander Woodcock and David Davis, have been published as *Analytical Approaches to the Study of Future Conflict* [154].

3.3.2 June MORS Symposium

This year's MORS Symposium (a classified conference on military operations research) was held at Ft. Leavenworth, KS, on June 18-20, 1996. Several presentations were valuable in providing greater understanding of the problems involved in OOTWs. Further, individuals who attended the symposium provided useful information, both at the symposium and subsequent to its close. Included in this information were lists of OOTWs that have been supported by the U.S. military. These lists have been consolidated in Appendix D.

3.3.3 September ISMOR Conference

The 13th International Symposium on Military Operational Research (ISMOR) convened at Roberts Hall, Royal Military College of Science, Shrivenham, Swindon, Wiltshire, United Kingdom, on September 2, 1996. Thirteen countries were represented at the Symposium by more than 100 attendees, many of whom are analysts with world-wide reputations. The United Kingdom dominated the attendance with slightly more than 50 percent. The US followed with about 20 percent of the attendees. The other nations represented, in decreasing order of numbers of attendees, were: Germany, France, Canada, Denmark, Turkey, Singapore, Norway, Israel, Spain, the Netherlands, and Belgium.

Thirty-one papers were presented. Six of the papers were related to OOTW. Two dealt with models or modeling, two with support to planning for operations, and one related to a database development. The sixth was a report on an operational analysis field team in Bosnia, supporting the rapid reaction corps of NATO.

Professor David F. Davis presented one of the modeling papers, "Peace Operations Analysis with Bayesian Belief Networks" [61]. The paper summarized work on a conceptual model of peace operations. Professor Davis has made considerable progress in developing a framework for examining the interrelationships among institutions participating in peace operations. The conceptual model is to be ready for use by the analytic community later in 1996 or early 1997.

The second modeling paper was presented by Dr. Amnon Gonen and Brigadier General (retired) Uzy Ben Itzhak, "Modeling Aspects of OOTW" [75]. The paper contained a short typology of operations included in OOTW (from an Israeli perspective) and focused on the application of models to train Israeli personnel. The paper included an application to the demolishing of buildings (necessitated by a bombing or other destructive act) and urban fire fighting.

Dr. Gregory W. Frank presented a paper on support to planning, "The Joint Staff Operational Research Team: Providing OR Support to Canadian Forces Joint Operations and Planning" [70]. The Joint Staff Operational Team (JSORT) is a small, flexible, deployable team that provides OR analysis for planning and operations elements. Particular emphasis is placed on lessons learned as a mechanism for using historical data to "close the loop" and improve future joint staff operations. Operational research support to a new humanitarian relief operation and to a land mine risk assessment tool was presented, and their impact upon planning discussed.

Ola-Petter Munkvold, Jonny M. Otterlei and Ragnvald H. Solstrand presented the second planning support paper, "Analysing Peace Support Operations in the Context of Defence Structuring" [109]. The paper addressed the analytical approach to peace support operations within the scope of Norway's defence structure analysis. The paper focused on three major issues: the principal idea behind the integration of peace support operations into the overall national defence structure; methods of costing peace support operations; and methods of characterizing risk and effectiveness of units participating in peace support operations.

Ed Barnes and Ruth Hayes presented the databases paper, "Databases of Operations Other Than War - Why and What?" [36]. The paper described two databases being developed by the High Level Studies Department of the United Kingdom, both concerned with OOTW. One database is a historical one, summarizing operations since 1948. At the time of the paper, only three operations were included (Malaya, Kuwait 1961 and Rwanda). Considerable detail is provided, with an objective of seeking factors common to a number of operations. Following the procedure laid down by the High Level Studies group, the British Army Historical Branch will add four more operations (Cyprus, Rhodesia/Zimbabwe, Bosnia, and Angola 1990). The second database is more like a scenario file, focused on current and future operations. The plan is to generate a range of possible operations to test alternative force structures.

Dr. George Rose and N. Lambert presented the operational report, "Operational Analysis in the Front Line (Five Go Camping in Bosnia!)" [124]. The presentation was an overview of the work carried out by the Headquarters, Allied Command Europe (ACE) Rapid Reaction Corps (HQ, ARRC) Operational Analysis Branch (OAB) in support of Operation Firm Endeavor in Bosnia-Hercegovina during 1996. The team is sited in a suburb of Sarajevo near the airport. When the OAB deployed there were few mature analytical techniques for dealing with the types of problems arising in such an operation; there were lots of areas in which the team could contribute. Among the areas actually worked are: methods to measure compliance with the Dayton agreement, assessment of mission success and impact of the NATO military force on the communities, quick methods to analyze redeployment plans, support to the election process, establish procedures to collect and retain data, enhance command information management, and provide general scientific advice and analysis as called upon. Activity connected with the assessment of mission success and impact of the military force on the communities, named normality indicators, was discussed in detail. Normality indicators are: objective, quantitative and regularly collected from the same locations. A simple scoring system (red, amber, yellow, green) is used to display changes over time and for comparison among the 109 towns from whence data are collected. Among the measures are: availability of key groceries, staple food outlets, food price stability, staple goods outlets, housing and farms occupancy levels, use and conditions of public buildings, and level of local traffic.

3.3.4 October QRAM Workshop

MORS held a classified workshop at the Booz-Allen & Hamilton offices in McLean, VA, on October 1-3, 1996, with Quick Reaction Analysis Requirements and Methodologies (QRAM) as the subject. One major impetus for this workshop was the upcoming Quadrennial Defense Review (QDR), which will require quick reaction analyses. One of the seven working groups examined Military Operations Other Than War, as a topic specified by the QDR. Because

of the near-term focus and because of the ongoing work represented by this report, discussion centered on the need to produce a historical database of OOTWs, containing data on appropriate attributes of the OOTWs. This database was envisioned as supporting projections of the impact of OOTWs on U.S. strategic objectives.

3.4 LITERATURE SEARCH

The majority of this report's data derives from the interactions at the workshops; however, significant information was also obtained from various publications. The bibliography contains the list of works referred to, as well as other sources that might be useful in understanding OOTWs. The works that were obtained and examined contained material on the OOTW categories, OOTW issues, and modeling OOTW, each described below.

3.4.1 OOTW Categories

There is a considerable body of literature concerning peace operations. These include reports from workshops, such as *Command and Control in Peace Operations: Workshop Number 3, Western Hemisphere* [4] and *Analytical Approaches to the Study of Future Conflict* [154], military unit histories, such as the 10th Mountain Division's *Operations in Haiti* [17], and government reports, such as the General Accounting Office report *United Nations: US Participation in Peacekeeping Operations* [73]. Other references include Alberts and Hayes' *Command Arrangements for Peace Operations* [31], Cowan's *Operation Provide Comfort: Operational Analysis for Operations Other Than War* [52], David Davis [61], Haut and McCurdy's "Modeling and Simulation for the New Pacific Community: A USPACOM Perspective" [81], Rose and Lambert [124], Shedlowski's "Peacekeeping Operations (PEKO)" [131], Siegel's *Requirements for Humanitarian Assistance and Peace Operations: Insights from Seven Case Studies* [136], and The Dupuy Institute's *Peacekeeping in Bosnia: Fatality Estimates* [147].

Similarly, there are many works concerning humanitarian assistance and disaster relief. These include governmental documents, such as the *Pacific Disaster Center (PDC) Concept of Operations* [19], the USPACOM After Action Report [35] and the USPACOM 1991 and 1992 Command Histories [28, 29], as well as theoretical expositions and historical descriptions. The topics include foreign operations and domestic disaster relief operations. Some of the most useful with regard to developing analysis tools are a series by personnel of the Center for Naval Analyses (CNA): Newett's *Planning for Humanitarian Assistance Operations* [116], Geis's *Logistics and Engineering Requirements for Humanitarian Assistance Operations* [72], Smith's *Command and Coordination in Humanitarian Assistance Operations* [138], Nelson, et al.'s *Measures of Effectiveness for Humanitarian Assistance Operations* [113], Dworken's *Improving Marine Coordination with Relief Organizations in Humanitarian Assistance Operations* [66], McGrady's *CNA's Humanitarian Assistance Operations Game: A Summary Report* [103], and Newett, et al.'s *Emerald Express '95: Analysis Report* [115]. Other references include Alberts and Hayes [31], Brown and Vassiliou's "Optimizing Disaster Relief: Real-Time Operational and Tactical Decision Support" [41], Burkle's "Complex, Humanitarian Emergencies: I. Concepts and Participants" [43], Burkle et al.'s "Complex, Humanitarian Emergencies: III. Measures of Effectiveness" [46], Clair's *Humanitarian Assistance and the*

Elements of Operational Design [49], Davis and Farnsworth's *After-Action Report of the Hurricane Hugo OFDA Disaster Relief Team* [60], Farnsworth's *South African Drought Assessment: March 24 - April 29, 1992* [67], Hutzler's *Logistics Issues for Operations Other Than War: Operation Restore Hope* [90], Lovell's *Theater Level Operations Other Than War Modeling: Applications of Decision Making* [96], Mayer's *Operations Other Than War* [100], Metz' *Disaster and Intervention in Sub-Saharan Africa: Learning from Rwanda* [106], Siegel [136], and Zvijac and McGrady's *Operation Restore Hope: Summary Report* [156].

Four works were consulted on the subject of NEO, Clark's *Noncombatant Evacuation Operations: Major Considerations for the Operational Commander* [50], Siegel [136], Stahl's *Noncombatant Evacuation Operations in Support of the National Military Strategy* [139], and the USPACOM 1991 Command History [28].

Works on counternarcotics include theoretical treatments, such as Coyle's "The Nature and Value of Futures Studies or Do Futures have a Future?" [55] and Coyle and Alexander's "Two Approaches to Qualitative Modelling of a Nation's Drug Trade." [56], and historical descriptions of operations, such as Shaw's *The U.S. Southern Command and the Andean Drug War* [130]. Other works are Mayer [100] and Stuart's *The U.S. Marine Corps' Role in the War on Drugs* [142].

Works on terrorism are represented by Hoffman's *Responding to Terrorism Across the Technological Spectrum* [86].

Works on counterinsurgency and insurgency were numerous. The range from discussions of models for predicting success, such as Blanco's *Counter-Insurgency in Cuba: Why Did Batista Fail?* [39], and methods of modeling counterinsurgency, such as Coyle and Millar's "A Methodology for Understanding Military Complexity: the Case of the Rhodesian Counter-Insurgency Campaign" [53], to tactical methodologies, such as Damm's *Does history repeat itself or do we repeat history? The CAP program, relic or tool of the future?* [59] and Heritage's *Tactical Methods for Combatting Insurgencies: Are U.S. Army Light Infantry Battalions Prepared?* [84]. Other works examine the driving forces behind insurgencies, the different kinds of insurgencies and the connections to other activities, such as narcotics and terrorism. References include Hogg's *A Military Campaign against Gangs: Internal Security Operations in the United States by Active Duty Forces* [87], Metz' *The Future of Insurgency* [105], Rosbolt's *Islamic Fundamentalism: Considerations for the Operational Commander* [123], Shaw [130], Stuart [142], and Weltsch's *The Future Role of The Combined Action Program* [151].

Nation Assistance is represented by Cababa's *Nation Assistance - A Misunderstood Mission* [47].

3.4.2 OOTW Issues

Several articles raise issues concerning appropriate doctrine for OOTWs - and the authors' ideas for changing doctrine: Allard's *Lessons Unlearned: Somalia and Joint Doctrine* [33], Bunker's "Rethinking OOTW" [42], Stahl's *Noncombatant Evacuation Operations in Support*

of the National Military Strategy [139], and Story and Gottlieb's "Beyond the Range of Military Operations" [141].

Associated with doctrine is the concept of task lists. The two versions of the Joint publication, *Universal Joint Task List* [26, 27] and the Gibbing's *Blueprint of the Battlefield* [74] are comprehensive descriptions of task lists for military operations, including OOTWs. Other works include task lists or refer to them in the context of the particular work. Examples include Heritage's *Tactical Methods for Combatting Insurgencies: Are U.S. Army Light Infantry Battalions Prepared?* [84], Mayer [100], and Siegel [136].

Lorenz's "Forging Rules of Engagement: Lessons Learned in Operation United Shield" [95] and Alvarado's *Rules of Engagement Representation in Combat Models* [34] give insights into ROEs and their application to OOTWs.

Burkle et al.'s "Complex, Humanitarian Emergencies: III. Measures of Effectiveness" [46] introduces the need for good measures of effectiveness (MOEs) in successfully prosecuting OOTWs. Nelson, et al.'s *Measures of Effectiveness for Humanitarian Assistance Operations* [113] is an excellent document on MOEs, providing a framework for their definition, as well as a large set of MOEs produced by the framework.

The geopolitical causes (and repercussions) of OOTWs and the plausible scenarios defining the operations are complex and not well understood. Numerous works bear on the various problems that relate to this issue, among them are the following: "Army 21 World Trend Projections Geopolitics" [1], Bond and Vogele's *Profiles of International "Hotspots"* [40], Bunker's "Rethinking OOTW" [42], Chrisman [48], Coyle and Clee's "A Semi-Quantitative Approach to Threat Assessment" [54], Coyle's "The Nature and Value of Future Studies or Do Futures have a Future?" [55], Coyle and Yong's "A Scenario Projection for the South China Sea: Further Experience with Field Anomaly Relaxation" [57], Craig and Watt's "The Kondratieff Cycle and War" [58], Flynn's "An Introduction to Psychohistory, Part I of II" [68], Gass' "A Model to Analyze Future Conflict Trends" [71], Hartley's "Modeling Psycho-Social Attributes in Conflict" [79], Haustein and Neuwirth's "Long Waves in World Industrial Production, Energy Consumption, Innovations, Inventions, and Patents and Their Identification by Spectral Analysis" [80], Kaisler and Modjeski's "Thinking about AI and OR: Knowledge-Based Simulation for Geo-Political Analysis" [91], Low's Discoveries, Innovations, and Business Cycles" [97], Lucas's "Game Theoretic Concepts of Equilibrium and Stability" [98], Mahncke's "Smaller Wars: Prospects for Surface Warfare" [99], Metz [106], Moglewer's "The Flawed Economics of Defense" [107], Saur's "Definition and Development of a Scenario Generation Expert System (SAGES): Demonstration Prototype" [127], Scarborough's "Forecasting Political Instability Before and During OOTW" [128], Taylor's *Alternative World Scenarios for Strategic Planning, Creating Strategic Visions, A World 2010 A New Order of Nations, Alternative World Scenarios for a New Order of Nations* [143, 144, 145, 146], and Theune's *Contingency Analysis and Planning System (CAPS): Requirements Analysis Technical Report, Vol I* [148].

Command and control issues are directly addressed by five works, *Command and Control in Peace Operations: Workshop Number 3, Western Hemisphere* [4], Alberts and Hayes' *Command Arrangements for Peace Operations* [31], Allard's "Lessons Unlearned: Somalia and

Joint Doctrine" [32], Smith [138], and Hayes and Scarborough's "Understanding C3I in OOTW" [82].

Hutzler's *Logistics Issues for Operations Other Than War: Operation Restore Hope, 9 December 1992 - 5 May 1993* [90], although incomplete, gives a good sense of the logistics problems in humanitarian assistance operations. Geis's work [72] gives an excellent set of task lists for logistics and engineering in humanitarian assistance operations.

Two articles directly address the issue of the media and OOTWs, Fox's "Closing the Media-Military Technology Gap" [69] and Shelton and Vane's "Winning the Information War in Haiti" [132]. Alberts and Hayes also include this issue in their work [31].

3.4.3 OOTW Modeling

The literature search uncovered several potentially useful models or modeling techniques. Alvarado's *Rules of Engagement Representation in Combat Models* [34] describes how to model ROEs. Barnes and Hayes [36] describe OOTW databases. Bond and Vogele [40] describe a model for predicting "hotspots." Chrisman [48] describes a model of geopolitical events. Coyle and Millar's "A Methodology for Understanding Military Complexity: the Case of the Rhodesian Counter-Insurgency Campaign" [53] describes a methodology for modeling geopolitical events. Coyle and Yong [57] describe a methodology for creating scenarios that models possible events. David Davis [61] describes a conceptual model of peace operations. Gass [71] describes a model of geopolitical events. Gonen and Itzhak [75] describe a training model for urban operations. Hartley [79] describes a method for creating a usable model of geopolitical events. Hayes and Scarborough [82] describe a model of C^3I. Lovell [96] describes the application of a model to OOTW. Mayer [100] refers to a disaster effects model. Scarborough [128] describes a model for predicting political instability. Theune [148, 149] describes a potential model of many aspects of OOTWs. McGrady, et al. [103] describe a seminar wargame for humanitarian assistance operations. Several methodologies are described in *Analytical Approaches to the Study of Future Conflict* [154].

3.5 RESEARCH RESULTS

The results from the various avenues of research fall into eight classes: OOTW context, characterizing questions, categories, attributes, tasks, modeling and data capability, tools, and history. The OOTW context has been briefly described earlier and is more completely contained in the references. The OOTW history is described in the analysis section, where the history is analyzed. Modeling and data capabilities are applied in the recommendations of the synthesis section. The results in the other classes are described below.

3.5.1 Questions

The analytical requirements are characterized by the questions that must be answered. The questions fall into five groups: those that are non-mission-related, those that support a decision to engage (or not to engage) in a mission, those needed to plan a mission, those that occur during a mission, and those related to the termination of a mission. The questions

listed below indicate some of the range and depth of the questions; however, they must be considered as a representative list, rather than a complete list.

3.5.1.1 Non-mission-related questions

At the national strategic level there are three overall planning questions.

- What force structure, equipment and plans are needed for the future?
    - What is the range of possible future scenarios?
    - What are the likely future scenarios?
    - Where and when will future OOTWs occur?
    - How often do OOTWs occur?
    - How long do OOTWs last?
    - What do we know about the state of the world?
    - How well coordinated are we with other potential actors?
- How do potential OOTWs affect the readiness for the national strategy?
- How do OOTW missions proceed?
    - What factors most affect success in OOTWs?
    - What factors put pressure on the mission?
    - What is needed to avoid failure?

3.5.1.2 Questions prior to deciding to engage in an operation

The first group of questions need to be considered before deciding to enter an OOTW.

- Should we engage in this situation and, if so, how?
    - How great is the need to intervene / what will be effects?
    - What was done in previous similar situations?
    - What will the force do?
    - What agreements are in place?
    - What NGO/PVOs are in place?
    - What are the alternatives for sharing the burdens?
    - What impacts will an OOTW have on other operations?
    - What impacts will an OOTW have on OPTEMPO and PERSTEMPO?
    - What are the appropriate ROEs?
    - How large a force is needed?
    - Do we have a TPFDD?
    - Are the forces ready?
    - What impact will unplanned expenditure of reserves have on other operations?
    - How much will the operation cost?

- What are the costs of alternative forces and methods of performing the operation?
- Who will win / what will the results be / how will we know?

3.5.1.3 Questions for planning an operation

The second group of questions occur after the decision has been made to undertake in an OOTW, but before engaging in it.

- What is the needs assessment?
  - What needs are the U.S. military forces expected to meet?
  - What needs are other military forces expected to meet?
  - What needs are other agencies, NGOs, PVOs, etc., expected to meet?
  - What needs might shift to the U.S. military forces?
  - What is the threat?
  - What are the ROEs?
- Who is the right commander?
  - How do the available candidates match with the potential multi-hat roles of military commander, relief camp mayor, diplomat to foreign dignitaries, talk-show host to local population, negotiator among relief organizations?
- What is the right force structure?
  - Can this size/composition force secure the transportation routes necessary?
  - Can this size/composition force defend itself if attacked?
  - Can this force effectively neutralize hostile elements in a given area and secure the area?
  - Can this force evacuate itself and the necessary non-combatant personnel in time, if necessary?
  - How should coalition forces be integrated most effectively?
  - How will responsibilities for tasks be divided among coalition partners, NGO/PVOs, other agencies?
  - How should the HQ staff be configured to handle the military and non-military functions required of it?
  - What are the information needs and information sharing requirements of the mission and does this force structure support them?
  - If there are functions/roles that, for whatever reason, the commander/ force structure cannot handle well, how will these be done (e.g., NGO/PVO, contractors, etc., take on role)?
  - Is the force structure configured to support the press, NGOs, VIPs, etc. (e.g., HMMWVs [high mobility multipurpose wheeled vehicles], drivers, parts, fuel)?

- What is the plan?
    - Which course of action will most quickly accomplish the mission?
    - Which course of action presents the least risk to friendly forces?
    - How will communication needs be satisfied?
    - What are the appropriate rules of engagement (e.g., who carries what arms, when can they be used)?
    - How much information on the plan should be shared with others actors?
- How soon can we get there?
    - What forces close when?
    - If I alter my APOD/SPOD [air/sea port of debarkation] mix, how will this affect force closure?
    - What are the essential infrastructure forces that I need to flow, and by when, to establish the requisite reception base to receive the planned force flow?
    - Given the primary forces (whether combatant or non-combatant) flow, what is the proper amount and sequencing of combat support (CS) and combat service support (CSS) forces and sustainment to ensure a balanced force, adequate reception and responsive onward movement?
    - What transport support will we provide to reporters, NGO/PVOs, etc.?
- How do we sustain the forces?
    - What logistical support is necessary to sustain this force and for how long?
    - What logistical support will we provide to NGO/PVOs, coalition partners?
    - What logistical support will be provided to us by the host nation or coalition partners?
- How long will we stay?
    - What is the end-state definition?
    - What are the potentials for mission creep or change?
    - What MOEs will be useful?
- What are the exit elements?
    - What are the measures of success?
    - How will disengagement occur?
    - What transport will be required for exit?
    - What happens if a more critical operation arises in the middle of this one?
    - What will happen when we leave?
    - How can the probability of continued success be enhanced?
- How much will it cost?
    - What will be the direct costs?
    - What will be the indirect costs?

- What costs of others (civilians, NGO/PVOs, coalition partners, etc.) will be borne by U.S. forces?
- What agreements will incur long-term costs?

- What can go wrong / How many different things can go wrong?

3.5.1.4 Questions during engagement

The third group of questions involve operational analysis.

- What is the situation?
  - How are the assets allocated and what is the flow?
  - What have been the actions of all of the actors?
  - What are the centers of gravity?
  - What is the environmental situation?
  - Where is everyone and how are they moving?
  - What is likely to happen?
  - What are the sustainment needs (over time)?
  - What humanitarian support is needed?
  - What kind of casualties/medical treatments do we have and why?
  - What are the MOE values and their trends?

- What is the plan?
  - Which course of action will most quickly accomplish the mission?
  - Which course of action presents the least risk to friendly forces?
  - Where should forces be placed or moved?
  - What is the status of transition?
  - What factors might cause an early end to the operation?
  - What is the contingency plan for an early exit?

3.5.1.5 Transition, disengagement and exit analytical questions

Several questions relate to the end of an operation.

- How do we define success and what are its components (MOEs)?

- What happens after we leave and how do we enhance the probability of continuing success?

- What happens after the operation?
  - Who has what responsibilities?
  - What are the after action reports (from all actors, including NGO/PVOs)?

3.5.2 OOTW Types and Categories

Following the second Monterey workshop, the numerous types of OOTWs have been regrouped into four categories: peace operations (PO), humanitarian assistance (HA)/disaster relief (DR) operations, national integrity (NI) operations, and military contingency operations. Table 1 lists the operations that are included within the category of peace operations. Table 2 lists the operations in the humanitarian assistance/disaster relief category.

Table 1. Peace operations

- Peacekeeping Operations (PK)
  - Observer Missions
  - UN Chapter VI
  - Preventive Diplomacy
  - Preventive Deployment
  - Delegatory Peacekeeping
  - Peacemaking
  - Military Support to Civil Authorities (MSCA)
- Peace Enforcement Operations (PE)
  - UN Chapter VII
  - Peace Imposition
  - UN Chapter VI ½
  - Aggravated Peace Support Operation (APSO)
- Pre-Conflict Peace Building
- Post-Conflict Peace Building
- Arms Control
- Deterrence
- Disarmament
- Counterproliferation

Table 2. Humanitarian assistance/disaster relief operations

- Humanitarian Assistance
  - Humanitarian and Civic Assistance
- Disaster Relief
  - Disaster Relief Domestic
  - Disaster Relief International
  - Disaster Control
  - Consequence Management

Table 3 lists the operations that are included within the category of national integrity operations. Table 4 lists the operations in the military contingency operations category.

Table 3. National integrity operations

Counterdrug (CD) Operations
Combatting Terrorism (CT)
Antiterrorism
Counterterrorism
Counterinsurgency (CI)
Nation Assistance (NA) or Nation Building
Security Assistance
Foreign Internal Defense (FID)

Table 4. Military contingency operations

Enforcement of Sanctions/Maritime Intercept Operations (MIO)/Quarantines
Enforcing Exclusion Zones
Ensuring Freedom of Navigation (FON) and Overflight
Protection of Shipping
Show of Force Operations
Strikes or Attacks
Raids
Recovery Operations/Search and Rescue (SAR)
Relocation of Refugees/Illegal Immigrants/Illegal Emigrants
Noncombatant Evacuation Operations (NEO)
Support to Insurgency

3.5.3 OOTW Attributes

Table 5 displays the first part of the list of attributes. The Mission, Enemy, Troops, Terrain/Weather and Time Available (METT-T) analysis is used for a framework for grouping the attributes. The term "enemy" may refer to natural factors such as erupting volcanos when appropriate. Troops may refer to non-military and non-U.S. personnel (who are not the enemy). The definition of terrain/weather is extended to cover the general environment, including the geopolitical situation.

Table 5. Attributes (part 1)

Mission: Rationale	
Mission, objectives, and MOEs	Definitive attribute
Political vs Economic vs Ideological vs Symbolic Interest	
Mission: Assistance requirements	
Assistance required	Definitive attribute
Mission: Constraints	
ROE	Definitive attribute
Legal	Definitive attribute
Degree of risk	
Use of force	Definitive attribute
Level of intensity	
Scope of conflict	
Degree of Casualties	
Potential $ cost - direct	
Potential $ cost - indirect	
Enemy	
Human enemy exists	Definitive attribute
Consent	Definitive attribute
Impartiality	
Information/intelligence availability	
Troops: Force structure	
Command structure	Definitive attribute
Force mix	Definitive attribute
Integrated planning	
Need for CMOC	
Need for HAST	
C3I	
Security	
Use of liaisons	
Logistics / resupply	
Military capabilities of opposing sides	
Military technology	
Force size / force ratio / preponderance of force	
Troops: Non-U.S., Non-military	
Level of host nation support/infrastructure	Definitive attribute
Involvement of other nations	Definitive attribute
Degree of UN involvement	Definitive attribute
Degree of U.S. agency involvement	
Scale of NGO/PVO involvement	
Extent of coalition	
Host government stability	

Table 6 displays the second part of the attribute list.

Table 6. Attributes (part 2)

Terrain/Weather (Environment): Location	
Location	
Distance from United States	
Environment/terrain	
Size of operating area/demographics	
Terrain/Weather (Environment): Geopolitics	
Geo-political environment	
Cultural Dissimilarities/ ethnic conflict	
Interests of Other Nations	
Great Power involvement	
Political sphere	
Media attention	
U.S. public support	
Time	
Time	
Planning/Reaction Time	
Duration	Definitive attribute
OPTEMPO/PERSTEMPO	

3.5.4 OOTW Tasks

Following the second Monterey workshop, the tasks have been regrouped into seven groups: non-mission-related analysis, mission definition and analysis, C^3I, mobilization/deployment, force employment, sustainment, and redeployment. Table 7 shows the tasks in the non-mission-related analysis group.

Table 7. Non-mission-related analysis tasks

Provide instability forecast, impact forecast (psycho-social)
Estimate cost of operations

Table 8 shows the tasks in the mission definition and analysis group. The tasks that were developed under the C^3I group are shown in Table 9.

Table 8. Mission definition and analysis tasks

Develop mission, MOEs, etc.
Determine ROEs
Define end-state, transition criteria
Determine force structure
Determine force mix
Estimate readiness
Evaluate risks and do 'worst case' gaming
Estimate robustness of mission success

Table 9. C^3I tasks

Create command arrangements, span of control
Develop courses of action (COAs)
Perform staff estimates
Evaluate COAs
Maintain measures of effectiveness (MOEs), including probability of mission success and end-state status
Monitor situation and provide feedback
Activate joint task force (JTF)
Establish liaisons/civil-military operations center (CMOC)
Design and install communications
Perform intelligence collection and intelligence, surveillance, reconnaissance (ISR)
Establish cultural awareness
Establish red teams
Perform mission, enemy, troops, terrain/weather - time (METT-T) analysis
Identify centers of gravity
Estimate threat
Support media/public affairs
Execute psychological operations (PSYOPS)

The tasks that were developed under the Mobilization/Deployment group are shown in Table 10. The tasks that were developed under the Employment group are shown in Table 11. The tasks that were developed under the Sustainment group are shown in Table 12.

Table 10. Mobilization/deployment tasks

Initiate appropriate reserve call-up
Determine deployment timing
Determine deployment priorities
Determine transport capabilities
Activate humanitarian assistance survey team (HAST)
Activate CMOC

Table 11. Force employment tasks

Establish lines of communication (LOCs)
Protect forces
Allocate and station forces
Assess casualties
Identify infrastructure improvement requirements
Support humanitarian operations
Evaluate potential use of force
Rehearse missions
Perform interdictions, raids, stings, infiltration

Table 12. Sustainment tasks

Balance tooth to tail ratio
Perform logistics planning/resupply
Provide transport support
Provide engineering support
Provide medical support
Provide joint/interagency/coalition support
Provide indigenous/client/refugee support

The tasks that were developed under the Redeployment group are shown in Table 13.

Table 13. Redeployment tasks

Determine priorities: effectiveness vs availability/feasibility
Reposition assets
Perform transition
Determine reconstitution requirements

3.5.5 OOTW Tools

The reason for the definition of OOTW categories, attributes, and tasks was to lay a foundation for defining the requirements for tools to support analysis of OOTWs. Certain tools already exist or are under development. OOTW requirements for these or similar tools become requirements for modifications. Other OOTW requirements must be met by new tools.

The following subsections describe the needed tool categories in general terms by describing some examples. Generally, the desirable tools are decision support tools, are simple (e.g., menu driven, point and click), are deployable, are joint, are rigorous, use non-parochial data, have available data, and are capable of rapid turnaround.

3.5.5.1 Multi-Use Tools

Many tools are quite simple and only require the insight to use them and some basic training. The tools described below have multiple uses in general problems solving and planning.

- Checklists are simple tools that ensure known requirements are met during demanding times and provide continuity as personnel change.
- Wordprocessors are simple tools for recording ideas and data.
- Spreadsheets are tools that can be either simple or complex as the needs require. They provide as needed data recording or modeling capability, as well as predefined applications.
- Databases are tools for recording and accessing data.
- Project management programs are specifically designed to account for sequential and parallel tasks and conflicts in resources in scheduling tasks.
- Brainstorming is a simple group idea gathering process.

- Historical analysis is a useful tool for estimating the impacts of poorly quantified and modeled attributes and activities.

- Pareto analysis is a simple tool for discovering the "important few" things to address among the "less significant many."

- Strengths, weaknesses, opportunities, and threats (SWOT) analysis is a simple tool for comparing alternatives.

- Net flow analysis is a simple tool for discovering whether a resource (or threat) is concentrating in an undesirable location.

- Morphological boxes is a simple tool for defining possible scenarios.

- Field Anomaly Relaxation is another tool for defining possible scenarios.

- Color-coded maps provide a simple information display mechanism that uses the human ability to see patterns.

- Other graphics/presentation programs provide other useful information display tools.

- Statistical analysis packages provide useful data analysis tools.

- System Dynamics provides a modeling tool that can be useful in modeling OOTWs.

- Information theory is a complex tool that may be useful in identifying the value of intelligence gathering efforts.

3.5.5.2 Decision support programs

Many of the analytic needs can be framed as decision support problems, which in turn can be addressed in many ways, as shown below.

- Many of the multi-use tools can be used or combined into decision support tools by gathering and presenting relevant information in a way that makes alternatives clear.

- Some problems must be addressed by sophisticated simulations that show the possible results of various courses of action, permitting decisions as to the preferred COA.

- The Analytic Hierarchy Process (AHP) and the Extended AHP are tools for comparing complex alternatives using user defined weighting values.

- Multi-Attribute Utility Theory (MAUT) is a complex tool for comparing even more complex alternatives, especially where there are competing goals.

- Decision trees/Influence diagrams provide a method for describing human decision making in complex situations, computing the resulting probabilities, and displaying the relationships fairly clearly.

3.5.5.3 Specialized Tools

The specialized tools shown below address particular problems that are part of the overall OOTW situation.

- Politico-military games/seminar wargames use human players to explore the possibilities of a scenario, helping to define and assess risks.
- The Joint Logistic Electronic Planning Book is a logistics planning tool from the U.S. Atlantic Command (USACOM).
- The Theater Security Planning System (TSPS) is a security planning tool.
- The Consequence Assessment Tool Set is a results assessment tool.
- The Headquarters Effectiveness Assessment Tool (HEAT) models the internal processes of a headquarters.
- The CyCAM III model may be useful in analyzing conflict trends [71].
- The All Hazards Situation Assessment Program (ASAP) may be useful in modeling disaster affects.
- The Global Events Data Set (GEDS) is useful in impact forecasting.
- The Kansas Events Data Set (KEDS) is a useful tool for parsing news reports into useful data [40].
- The Protocol for Assessing Nonviolent Direct Action (PANDA) is useful in predicting conflicts [40].
- Barnes and Hayes [36] describe OOTW databases that may prove useful.
- David Davis [61] describes a conceptual model of peace operations that may prove useful.
- Gonen and Itzhak [75] describe a training model for urban operations that addresses some parts of OOTW.
- The Regional Development Simulation System (RDSS) was developed to analyze the economic, psycho-social, etc., aspects of OOTWs. The Regional Security Strategy Implementation Analysis (RSSIA) is political stability model.
- The SimCity™ computer game may be modified to provide a useful analysis tool for psycho-social modeling.
- The Analysis and Gaming Information System (AGIS) was developed to provide a tool for access to political, economic and social information.

- The Counterdrug Modeling and Simulation System (CMASS) was developed to support modeling of the narcotics business and the Regional Counterdrug Model (RCDM) is a simulation of a particular part of the narcotics business.

- The Humanitarian Demining Decision Support Tool was developed to help with demining decisions.

- The Low Intensity Conflict Capabilities Requirements System (LCRS) and the Low Intensity Strategies-to-Task Analysis have generated OOTW task lists.

- There are communication network planning tools; however, their complexity makes them less useful than they could be for OOTWs.

3.5.5.4 Borrowed Tools

Many tools that are used for other purposes may have applications in OOTW analysis, either with modification or for narrow uses. Some are listed below.

- Training simulations may be useful for some mission rehearsals or to perform some analyses.

- The Integrated Theater Engagement Model (ITEM) is useful in some analyses.

- The Air Courses of Action Assessment Model (ACAAM) is used for air strike planning.

- The existing planning tools, Joint Flow and Analysis System for Transportation (JFAST)/Logistics Generator (LOGGEN)/Analysis of Mobility Platform (AMP)/Global Transportation Network (GTN), can be useful in planning transportation and logistics for OOTWs.

- Janus and its derivatives are used for training and operations analysis.

- The Theater Analysis Model (TAM) is used for operations analysis.

- The Joint Conflict Model (JCM) is used for training and might be used for operations analysis.

- The Future Theater Level Model (FTLM, renamed to StochWars) has been used for analysis of OOTW scenarios.

- The Naval Simulation System (NSS) may be useful in the area of command and control relationships and communications architecture for OOTW.

- The DIAMANT model has been used engineering reconstruction and conceptual minefield clearing.

- The Deployable Exercise Support (DEXES)/ Civil Affairs Module (CAM) is a civil affairs model, used for training, that might have analytic applications.

- McGrady, et al. [103] describe a seminar wargame for humanitarian assistance operations that may have analytic applications.

- Spectrum is a training tool that investigates the impact of actions and results of instability.

3.5.5.5 Comprehensive Tools

The class of comprehensive tools comprises the tools specifically designed for analysis of a major portion of OOTW analytic needs.

- Force Analysis Spreadsheet Tool - Operations Other Than War (FAST-OR) is used to define non-combat units and infer their support requirements.

- CAPS is a force planning tool.

- JWARS will be used for cost analysis (system vs system) and theater assessment (programming for the future) and will have OOTW elements included in the analyses.

3.5.5.6 Current tools and tools under development

Table 14 lists a sample of existing tools and tools that are under development, their general areas of use, and their proponents.

Table 14. Current tools and tools under development

Tool	Use	Proponent
Air Courses of Action Assessment Model (ACAAM)	air strike planning	
Analysis of Mobility Platform	logistics	USTRANSCOM
All Hazards Situation Assessment Program (ASAP)	disaster effects	FEMA and DNA
Analysis & Gaming Information System (AGIS)	access to pol/econ/social info	Army War College
Contingency Analysis and Planning System (CAPS)	define forces are needed to achieve the military objective	TRAC
Consequence Assessment Tool Set	results assessment	
Counterdrug Modeling and Simulation System (CMASS)	counterdrug seminar game	USSOUTHCOM
CyCAM III	analyze conflict trends	Gass [63]
Deployable Exercise Support (DEXES)/ Civil Affairs Module (CAM)	civil affairs, for training	
Field Anomaly Relaxation (FAR)	scenario generation	Coyle & Yong [52]
Force Analysis Spreadsheet Tool - Operations Other Than War (FAST-OR)	non-combat units are defined and support requirements inferred	
Future Theater Level Model (FTLM - StochWars)	model OOTWs	J-8
Global Transportation Network (GTN)	logistics	
Headquarters Effectiveness Assessment Tool (HEAT)	models the internal processes of a headquarters	
Humanitarian Demining Decision Support Tool	demining support	ASD SO/LIC-HRA
ITEM	joint campaign model	
Janus & derivatives	operations analysis; training	
Joint Flow and Analysis System for Transportation (JFAST)	logistics planning	
Joint Conflict Model (JCM)	operations analysis; training	
Joint Logistic Electronic Planning Book	logistics planing	USACOM
Joint Warfare System (JWARS)	cost analysis (system vs system) and theater assessment (programming for the future)	
Logistics Generator (LOGGEN)	logistics	
Logistics Over the Shore (LOTS)	logistics through ports	Army WES
Low Intensity Conflict Capabilities Requirements System (LCRS)	OOTW task list	Booz-Allen
Low Intensity Conflict Strategies-to-Task Analysis	OOTW task list	ASD SO/LIC
Naval Simulation System	predict "hot spots"	Bond & Vogele [36]
PANDA/KEDS	C^2 relationships, com architecture	
Power Relationship Matrix	Data	Booz-Allen
Regional Counterdrug Model (RCDM)	simulation of narcotics industry	USSOUTHCOM
Regional Development Simulation System (RDSS)	OOTW analysis	J-8
Regional Security Strategy Implementation Analysis (RSSIA)	USSOUTHCOM political stability	USSOUTHCOM J5
Statistical analysis packages	analyze data	
Seminar Wargames	intensive human interactions	
Spectrum	impact of actions, instability	Nat'l Sim Center
Spreadsheets	multipurpose	
System Dynamics	build models	
Theater Analysis Model (TAM)	operations analysis	
Theater Security Planning System (TSPS)	security planning	
Windows-like workstation	support system for tools	

3.5.5.7 Missing Tools

Several tools (or parts of other tools) are missing. The following is a unprioritized collection of tools that could be helpful.

- Consequence management tools are needed for the many occasions when plans don't work as expected.
- Readiness assessment tools for assessing readiness for OOTW missions and the readiness after an OOTW for training cycle and MRC requirements are needed.
- A cost of operation estimation tool is needed.
- A threat analysis tool is needed.
- A tool for designing command arrangements and Civil Military Operating Center (CMOC) staffing is needed.
- An integrated (inter/intra-theater seam) deployment tool is needed.
- A COA development and analysis (comparative capability) tool is needed.
- A tool to help develop and keep track of measures of effectiveness (MOEs) is needed.
- A real-time intelligence fusion tool for CD/CT is needed.
- A mission analysis/assessment tool is needed.
- A tool to aid in the identification of centers of gravity is needed.
- A tool to support the identification and selection of ROE choices is needed.
- A force allocation and stationing tool is needed.
- A tool to support data collection is needed.
- A tool to support transition planning and execution is needed.
- A tool for NEO visualization (troop flows, refugee flows) and for keeping track of people and their location is needed.
- Checklists need to be defined and developed (e.g., for U.S. disasters, what are the requirements for each of the various federal, state and local agencies; in foreign situations, what are the restrictions on performing tasks, such as medical aid; for NEOs, what legal papers are required, who needs to be involved [lawyers, veterinarians, translators, customs agents, medics, etc.]).
- Databases need to be created and populated (e.g., up-to-date data on airfields, ports, facilities, linked to real-time intelligence).

4. ANALYSIS

The categories of OOTWs provide a first-order differentiation of the analytical requirements. Because each of the categories must group similar types of operations and separate dissimilar operations, the analytical needs will exhibit some segregation according to category. However, despite this gross differentiation, there remain similarities.

The delineation of the attributes that describe OOTWs provides the next step. Any analytical tool must take into account the values of the attributes, whether defining attribute values that differentiate categories and individual types of OOTW or the valid ranges of the remaining common attributes. These sets of values provide potential limits that can be used to create non-overlapping (or minimally overlapping) sets of tools.

The third element of the analysis is tied to the OOTW tasks that must be performed. Some OOTW tasks do not involve the analytic community and may be safely ignored. Other tasks are critically important and must be addressed. The remainder of the tasks vary in importance to the analytic community and should be addressed where necessary.

The final element in the analysis of requirements is the current state of the art in building tools. Obviously, existing tools that supply the necessary support to the analytic community for warfare provide a starting point that should not be ignored. At worst, they supply definitions for re-engineering. Alternatively, they may need modification to mesh well with new tools or they may constitute the core around which new tools should be constructed. The computer code is only half of a tool. The other half consists of the data needed to use the tool. Thus, the assessment of data availability is a critical part of determining the state of the art in tools.

The subsections that follow address each of the points, pulling together the information collected (as described in the previous section) into a coherent statement of the current situation. These elemental analyses are integrated in the synthesis section that follows.

4.1 CATEGORIES

The categories of OOTWs that were briefly described in the research section are fully defined here. The definitions are based on several official sources [2, 6, 12, 13, 16] and knowledgeable analysts [31, 88, 104, 117, 141, 152]. These definitions are widely accepted in different communities, yet are inconsistent between communities (see Appendix A). Accordingly, the definitions have been modified by the participants of the Monterey workshops to increase their comprehensibility **with respect to creating analytic tools.**

The frequencies of occurrence of the categories of OOTW, as shown following the definitions, are useful in inferring relative priorities for proposed OOTW analytic tools.

4.1.1 Peace operations

Definition: Military operations to support diplomatic efforts to reach a long-term political settlement.

Peacekeeping Operations (PK)

Definition: Military operations undertaken with the consent of **all** major parties to a dispute, designed to monitor and facilitate implementation of an agreement and support diplomatic efforts to reach a long-term political settlement. Often involves ambiguous situations requiring the peacekeeping force to deal with extreme tension and violence without becoming a participant.

Observer Missions

Definition: Assisting in the observance and maintenance of a cease-fire; acting as a neutral witness for the handing-over of personnel or property from one party to another; and other limited operations.

UN Chapter VI Peace Operations

Definition: **Peacekeeping**, as above.

Preventive Diplomacy

Definition: Diplomatic actions taken in advance of a predictable crisis to prevent, limit or mitigate its effects.

Preventive Deployment

Definition: a subset of peacekeeping (consent is assumed) in which (military) forces are deployed prior to the eruption of hostilities, with a goal of preventing active conflict.

Delegatory Peacekeeping

Definition: Operations led by regional organizations but sanctioned by the UN.

Peacemaking

Definition: The process of diplomacy, mediation, negotiation, or other forms of peaceful settlements that arranges an end to a dispute and resolves issues that led to conflict.

Military Support to (Domestic) Civil Authorities (MSCA)

Definition: When authorized, armed forces assist in domestic emergencies within the U.S.; FEMA has primary responsibility. (Under provisions of the *Posse Comitatus Act,* neither the active component nor the Reserve may execute the law in the place of duly appointed law-enforcement means without specific Presidential or Congressional approval and direction.) DOD participation is coordinated through the Secretary of the Army.

Peace Enforcement Operations (PE)

Definition: The application of military force, or threat of its use, normally pursuant to international authorization, to compel compliance with resolutions or sanctions designed to maintain or restore peace and order.

UN Chapter VII Peace Operations

Definition: Operations, short of general war, requiring force to impose peace - also called peace imposition.

Peace Imposition

Definition: The same as UN Chapter VII above.

UN Chapter VI ½ Peace Operations

Definition: Operations requiring a show of force, or small tactical operations, to enforce peace.

Aggravated Peace Support Operation (APSO)

Definition: Operations falling between UN Chapter VI and UN Chapter VII, and thus often referred to as Chapter VI ½.

Pre-Conflict Peace Building

Definition: Longer-term, non-military, economic, social and political measures which can help states deal with emerging threats and disputes.

Post-Conflict Peace Building

Definition: Post-conflict actions, predominantly diplomatic and economic, that strengthen and rebuild governmental infrastructure and institutions in order to avoid a relapse into conflict. May be associated with either peacekeeping or peace enforcement.

Arms Control

Definition: Any plan, arrangement, or process, resting upon explicit or implicit international agreement, governing the numbers, types, and characteristics of weapon systems or the numerical strength, organization, equipment, deployment, or employment of armed forces. Focuses on promoting strategic military stability. Arms Control encompasses Disarmament. May be associated with either peacekeeping or peace enforcement.

Deterrence

Definition: May consist of either actions or maintenance of a particular state, such as level of preparedness, that create negative incentives against another country or group engaging in war.

Disarmament

Definition: The reduction of a military establishment to some level set by international agreement. May be associated with either peacekeeping or peace enforcement.

Counterproliferation

Definition: Efforts to impede the proliferation of weapons of mass destruction (WMD: chemical, biological, and nuclear or radiological weapons).

In this document, peacekeeping requires the consent of both parties and peace enforcement does not. Peace enforcement may be divided into two parts, UN Chapter VI ½ and UN Chapter VII (peace imposition), by the level of impartiality shown by the peace forces toward the opposing sides. For example, the UN Police Action in Korea (the Korean War) was war. Following the cessation of fighting, peace was imposed (on North Korea) by the UN forces along the Demilitarized zone, showing partiality toward the Republic of Korea. On the other hand, the NATO IFOR operations in Bosnia in early 1996 were peace enforcement with more impartiality. The earlier UN Protection Force (UNPROFOR) operations were an attempt at peacekeeping, under an assumption of consent by both sides.

4.1.2 Humanitarian Assistance and Disaster Relief

Definition: Missions to promote human welfare, to reduce pain and suffering, to prevent loss of life or destruction of property from the aftermath of natural or man-made disasters. Includes refugee problems.

Humanitarian Assistance

Definition: Programs conducted to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human pain, disease, hunger, or privation that might present a serious threat to life or that can result in great damage to or loss of property. In those operations in which governmental structures have broken down, the military may provide local authority through the Civil-Military Operations Center (CMOC) to provide essential humanitarian and technical expertise with the goal to contain the situation and transition to another lead agency.

Humanitarian and Civic Assistance

Definition: Incidental assistance to the local populace provided in conjunction with military operations and exercises.

Disaster Relief

Definition: Disaster relief falls within the overall context of humanitarian assistance but is conducted in emergency situations to prevent loss of life and property.

Disaster Relief Domestic

Definition: FEMA is in charge; the military may become an asset to local and state governments bringing specific capabilities to contain the situation and assist in recovery.

Disaster Relief International

Definition: The host government is intact and requests assistance to handle a natural or man-made crisis; the military may become an asset to local governments or international agencies to bring specific capabilities to contain situation and assist in recovery.

Disaster Control

Definition: Measures taken before, during or after hostile action or natural or manmade disasters to reduce the probability of damage, minimize its effects, and initiate recovery.

Consequence Management

Definition: Measures taken after a WMD attack to alleviate the damage, loss, hardship or suffering, restore essential government services, protect public health and safety, and provide emergency relief to affected governments, businesses and individuals. FEMA is the designated lead agency for domestic operations.

4.1.3 National Integrity Operations

National integrity (NI) operations include counterdrug (CD), combatting terrorism (CT), counterinsurgency (CI), and nation assistance (NA) operations. The national integrity designation is chosen because these operations, when providing support to a foreign country,

are supporting that country's integrity and stability. When national integrity operations are conducted to protect the United States, they support U.S. integrity and stability.

Domestic counterdrug operations and combatting terrorism are largely within the purview of law enforcement agencies. Within the United States, DOD support in these areas is normally given to those organizations designated by the Department of Justice, such as the Federal Bureau of Investigation (FBI) and the Drug Enforcement Agency (DEA). In foreign countries, the Department of State performs the lead function, usually as the head of a Country Team. In and over international waters, the lead agency may be the Department of Transportation (Coast Guard/Federal Aviation Administration) or the Department of Defense, depending upon specific tasks to be accomplished. Counterinsurgency and nation assistance (usually) relate to the internal affairs of a single foreign country. The U.S. Ambassador and his Country Team perform liaison with that country and set the agenda as concerns military support.

Counterdrug (CD) Operations

Definition: Support to federal, state, and local law enforcement agencies in their efforts to disrupt the transfer of illegal drugs into the U.S. Those active measures taken to detect, monitor, and counter the production, trafficking, and use of illegal drugs. Support efforts to interdict the flow of illegal drugs at the source, in transit, and during distribution.

Combatting Terrorism (CT)

Definition: Actions taken to oppose terrorism from wherever the threat.

Antiterrorism

Definition: Those passive defensive measures taken to minimize vulnerability to terrorism.

Counterterrorism

Definition: The full range of offensive measures taken to prevent, deter, and respond to terrorism.

Counterinsurgency

Definition: Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency. Or, the use of military resources to provide support to a host nation's counterinsurgency operations in the context of foreign internal defense (FID) through logistical and training support.

Nation Assistance or Nation Building

Definition: U.S. support of host nation's efforts to promote development, ideally through the use of host nation resources.

Security Assistance

Definition: Providing defense material, military training, and defense-related services by grant, loan, credit, or cash sales to further U.S. national policies and objectives. May take place in either nation assistance, counterinsurgency or counterdrug operations.

Foreign Internal Defense (FID)

Definition: Programs that encompass the total political, economic, informational, and military support provided to another nation to assist its fight against subversion and insurgency. Also, participation by civilian and military agencies of one government in any of the

action programs taken by another government to free and protect its society from subversion, lawlessness, and insurgency. May take place in either nation assistance, counterinsurgency or counterdrug operations.

Nation assistance is the program under which U.S. assistance is often provided for counterinsurgency, countering drugs, and combatting terrorism. Thus nation assistance is more general in nature. For instance, counterinsurgency always implies the threat of lethal force against U.S. forces; nation assistance may, but need not. Insurgencies often present relatively well-organized, ideologically committed opponents, which may be backed by significant outside interests; nation assistance need not involve human opponents. Counterinsurgency involves support for an existing government under pressure; nation assistance can occur in a context in which no effective government exists. Humanitarian assistance and disaster relief are often components of national integrity operations, with scale depending in part upon the functionality of the host country government.

4.1.4 Military contingency operations

Military contingency operations are similar to traditional military operations. To the extent that traditional operations are understood and adequate tools created, military contingency operations analysis requirements are met. However, there are holes in the tools for traditional operations and some specialized models may be needed.

Noncombatant Evacuation Operations (NEO)

Definition: Operations to relocate noncombatants from a foreign country or host nation. The environment may be permissive, uncertain, or hostile. The threat that necessitates the NEO may be a natural disaster or may be of human origin.

Enforcement of Sanctions/Maritime Intercept Operations (MIO)/Quarantines

Definition: Coercive measures to interdict the movement of certain types of designated items into or out of a nation or specified area.

Enforcing Exclusion Zones

Definition: Prohibit specified activities in a specific geographic area.

Ensuring Freedom of Navigation (FON) and Overflight

Definition: Operations conducted to demonstrate U.S. or international rights to navigate sea or air routes.

Protection of Shipping

Definition: U.S. forces providing protection of U.S. flag vessels, U.S. citizens, and their property against unlawful violence in and over international waters.

Show of Force Operations

Definition: A mission carried out to demonstrate U.S. resolve in which U.S. forces deploy to influence a situation that may be detrimental to U.S. interests or national objectives. Can take the form of combined training exercises, rehearsals, forward deployment of military forces, or introduction and buildup of military forces in a region.

Strikes or Attacks

Definition: Offensive operations conducted to inflict damage on, seize, or destroy an objective for political (or other) purposes or to demonstrate U.S.

capability and resolve to achieve a favorable result in terms of U.S. national interests.

Raids

Definition: Usually a small-scale operation involving swift penetration of hostile territory to secure information, confuse the enemy, temporarily seize an objective, or destroy installations.

Recovery Operations/Search and Rescue (SAR)

Definition: The search for, location, identification, rescue, and return of personnel or human remains, sensitive equipment, or items critical to national security.

Relocation of Refugees/Illegal Immigrants/Illegal Emigrants

Definition: Transporting, and often caring for, refugees or other detained persons.

Support to Insurgency

Definition: Support for an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict. DOD support, if and when authorized, would probably be assigned to the Department of State, the Country Team or to the Director of Central Intelligence.

4.1.5 Historical OOTW experience

Table 39, in Appendix D, lists the OOTWs supported by U.S. forces from 1990 through 1996. Absent any contrary evidence, it must be assumed that the number, variety and frequencies of OOTWs in the future will resemble the situation in the immediate past. Thus the analysis of historical experience is valuable in determining the priorities for any proposed analytical support tools for OOTWs.

Early data collection and analysis supported the concept of NEOs as partially separate from other military contingency operations. Thus, NEOs are presented as a separate group here. It should be noted that the data for 1996 may be incomplete. The relative frequencies, by year, are shown in Fig. 8. This figure shows large numbers of operations in the HA/DR, and Military Contingency Operations (labeled CONT) categories and moderate numbers in the PK/PE and NI categories. In these data, the NI category is mostly represented by counterdrug operations, which are imperfectly represented. Counterdrug operations are supported by three standing Joint Task Forces (JTFs), each of which is represented by a nominal one operation per year, which grossly understates the number of individual operations per year. However, some of the planning and analysis for these operations may not take place at the CINC level and may therefore be beyond the scope of this project. Also, the data concerning USSOUTHCOM operations, with four standing JTFs, contain an artificially created three Counterdrug operations per year, as a stand-in for continuous support operations to numerous countries.

The total frequency ranges, by category, are shown in Fig. 9. The shaded box indicates the middle 50 percentile ranges for the number of operations per year for each category (1990-1995, 1996 data are omitted as incomplete). The whiskers extending above and below the boxes indicate the maximum and minimum number of operations in a year. The heavy horizontal line indicates the mean value. The frequencies are useful in developing priorities.

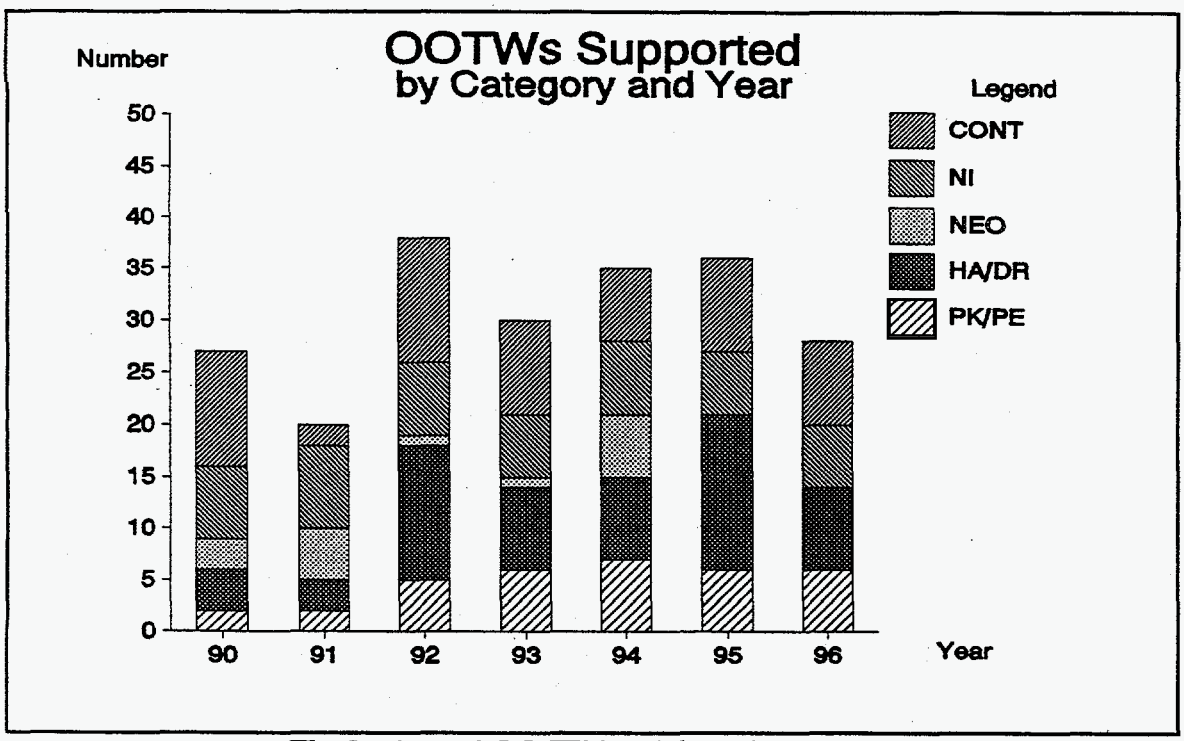

Fig. 8. Annual OOTW breakdown by category.

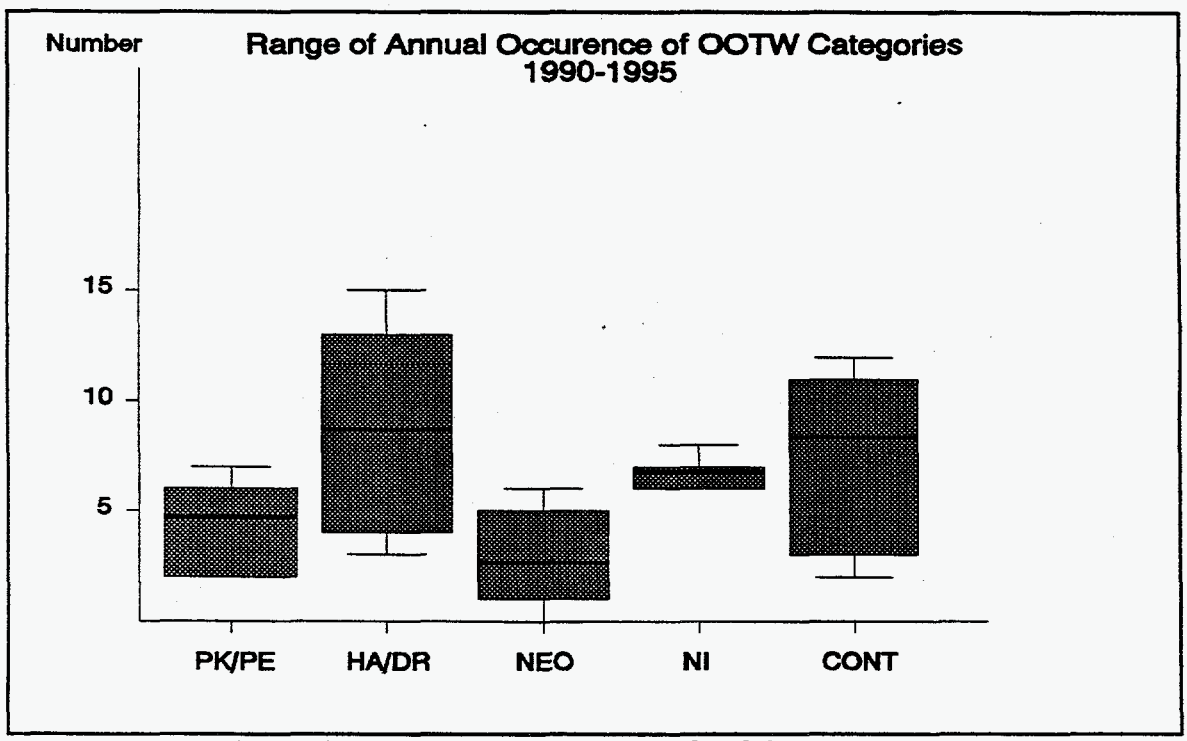

Fig. 9. Annual range of occurrence for OOTW categories.

However, the frequencies do not tell the whole story, because some operations are longer than others. This is partially accounted for by counting operations that extend over multiple

years as multiple operations. Further, some operations are planned, but not executed. This is particularly true of NEOs. For example, the situation may indicate a potential need for a NEO; however, as time passes, the situation changes for the better and the NEO is not required. Some of these planned NEOs are included in the data, because the analysis is required whether or not the operation takes place. It should also be noted that many operations have aspects of two categories (or more). The more obvious examples are counted in both categories. However, despite these caveats, the frequencies are useful in showing the large number of OOTWs conducted or planned for each year and indicating the types of operations for which planning may be required in the future.

The total numbers of OOTWs during the period 1990-1995, divided by category and CINC are shown in Fig. 10. Clearly, most of the OOTWs conducted by USACOM are in the HA/DR and NI categories. The data show that this is a result of USACOM's responsibility for two of the standing counterdrug JTFs, Joint Interagency Task Force (JITF)-East (the old JTF-4) and JTF-6, and its responsibility for the bulk of the domestic disaster relief operations. The bulk of the peace operations are conducted by the U.S. Central Command (USCENTCOM) and the U.S. European Command (USEUCOM). The bulk of the military contingency operations are also conducted by USCENTCOM and USEUCOM. NEOs have been more frequent in the USEUCOM and USPACOM areas of responsibility. The U.S. Southern Command (USSOUTHCOM) operations are dominated by NI operations, reflecting

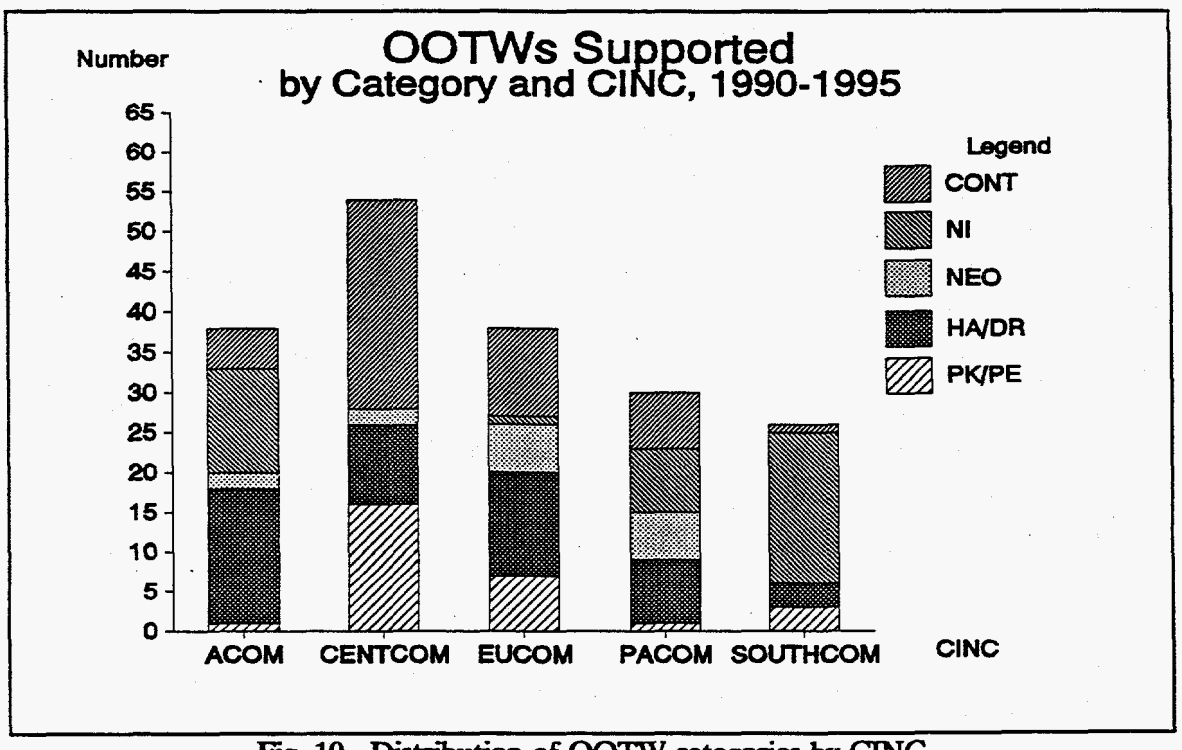

Fig. 10. Distribution of OOTW categories by CINC.

the arbitrary approach to counting the continuous operations in the counterdrug arena. This approach was chosen as a compromise between counting each country as a separate operation and counting the entire Counterdrug effort as one operation.

4.2 ATTRIBUTES

The attributes that were listed in the research section are fully defined here. Attributes that differentiate one type of operation from another are labeled as definitive attributes. Mission, Enemy, Troops, Terrain/Weather and Time Available (METT-T) analysis is used for a framework for grouping the attributes. The term "enemy" may refer to natural factors such as erupting volcanos when appropriate. Troops may refer to non-military and friendly non-U.S. personnel. The definition of terrain/weather is extended to cover the general environment, including the geopolitical situation.

4.2.1 "Mission:" Rationale

The rationale for engaging in OOTWs is often complex. The rationale may be humanitarian, political, economic, or military; however, it is usually a mixture.

Mission, objectives, and MOEs

Definition: What is the mission; what are the objectives; and what are the measures of effectiveness. Definition of end states should be included in the mission statement. Measures of effectiveness are likely to be political, medical, humanitarian, social, etc., but should include military criteria, as appropriate. The stated mission should define which OOTW category (or categories) apply to the operation and the desired end-state and transition criteria should be traceable to the mission statement. **Definitive attribute.**

Political vs Economic vs Ideological vs Symbolic Interest

Definition: Is the rationale primarily political, economic, ideological, or symbolic. Return to *status quo ante* in host country will tend to be a minimum objective. Restoration of infrastructure and commerce, establishment of democratic processes and restoration of indigenous law enforcement and judiciary system are characteristic objectives.

4.2.2 "Mission:" Assistance requirements

Many OOTWs involve military assistance to civilians. The various types of assistance generate several sets of possible values.

Assistance required

Definition: Types of assistance required may include medical, security, engineering support/infrastructure, civil affairs, transportation for NGO/PVOs, PSYOPs, MP, and communications. **Definitive attribute: HA/DR and nation assistance operations require assistance to be delivered, NEO and military contingency operations do not. Peace operations, counterdrug, counterterrorism, and counterinsurgency operations may also require assistance.**

4.2.3 "Mission:" Constraints

Various attributes define constraints on military options.

ROE

Definition: This attribute refers to the type and restrictiveness of the rules of engagement imposed on U.S. military forces. ROEs impact the level of visibility of U.S. actions ("footprint"). Minimizing civilian casualties and collateral damage are usually top priority. ROEs must take adequate account of personal security of American and allied forces. Urban/rural differences are likely to be important. The ROEs strongly impact force structure, choice of weapons, and target identification criteria. Restrictive (vs permissive) rules of engagement are a fundamental training priority, and potential morale problem. **Definitive attribute: near combat (peace enforcement) and combat (some military contingency operations) OOTWs will generally have less restrictive MOEs.**

Legal

Definition: This attribute refers to the type and restrictiveness of the legal constraints imposed on U.S. military forces. Legal constraints impact the level of visibility of U.S. actions ("footprint"). Legal issues are a fundamental training priority. Treatment of detained combatants, identification and apprehension of war criminals, etc., likely to be important issues in conflict termination. American and allied forces' relationship to local laws and law enforcement agencies needs to be precisely defined. **Definitive attribute: DR-domestic operations fall under U.S. legal restrictions, whereas different restrictions may apply to combat operations or to operations overseas.**

Degree of risk

Definition: Risk involves both the likelihood of undesirable events and the magnitude of their undesirability. The amount of risk to U.S. interests (including personnel safety) varies by operation type. Risk includes the risk involved in performing the mission and the risk that results from not performing the mission.

Use of force

Definition: The likelihood of the use of force against U.S. forces varies by type of operations, as does the likelihood that U.S. forces will use force. The authorized type of force may be lethal force, nonlethal force, or none. **Definitive attribute.**

Level of intensity

Definition: The level of intensity (general war, sporadic sniper attacks, etc.) and the risk of escalation (increase in intensity level), e.g., in response to casualties, driven either by public and official opinion or by military judgment, are components of this attribute.

Scope of conflict

Definition: The scope of conflict ranges from local to regional conflict.

Casualties

Definition: Expected casualty level and the type personnel expected to be involved (e.g, military, non-military support, or civilian, also U.S., coalition, host nation, or adversary). The casualty driver may be disease or natural disaster, as well as combat.

Potential $ cost - direct

Definition: Estimated direct costs for the operation.

Potential $ cost - indirect

Definition: Estimated indirect costs of the operation, including opportunity costs, reconstitution/retraining, etc. Some indirect costs are difficult to convert to dollar costs, particularly opportunity costs; however, such a conversion provides the most practical method of comparing dissimilar situations.

4.2.4 "Enemy"

In the OOTW context, the enemy may be human and may be some natural force (such as a volcano, a hurricane, or a disease epidemic) or it may be a combination.

Human enemy exists

Definition: In some types of operations, U.S. forces must contend with a human enemy, whereas this is not the case for other operations. **Definitive attribute: CI, CD, CT, some peace operations, and military contingency operations have human enemies, whereas the others generally do not.**

Consent

Definition: Consent refers to the major parties of a conflict and whether they consent to third party mediation, peacekeeping, etc. (full, none, or partial also strategic consent vs tactical consent). **Definitive attribute: peacekeeping vs peace enforcement.**

Impartiality

Definition: Impartiality refers to whether a third party acting in a mediating, peacekeeping, etc., role behaves with impartiality towards the various sides of the conflict.

Information/intelligence availability

Definition: The level and quality of information or intelligence availability.

4.2.5 "Troops:" Force structure

Force structure is an expected attribute in any military operation. In OOTWs, the complexities that are possible generate several force-structure-related attributes.

Command/coordination structure

Definition: Who is in charge. What are the command arrangements. CMOC is critical consideration in nation assistance. Political liaison with host country (via ambassador and country team) critical in counterinsurgency. Peace operations are usually under UN or an international command, such as NATO. Domestic disaster relief operations are headed by FEMA. International disaster relief and humanitarian assistance operations are usually headed by some international organization, the host nation, or the U.S. Ambassador. Counterdrug operations and counterterrorism operations in the United States are headed by law enforcement organizations. Counter-terrorism operations in foreign countries may be headed by the U.S. military, the U.S. Ambassador, or the host nation. Counterinsurgency, foreign counterdrug and nation assistance operations are usually headed by the U.S. Ambassador and the Country Team. Military contingency operations are usually headed by the U.S. military. **Definitive attribute.**

Force mix

Definition: Force mix needed for the operation (combat by type, CS, CSS and supporting vs supported and active duty vs reserves). More warriors on the Counterinsurgency side, typically heavily weighted toward Special Operations Forces (SOF) at the outset. Large-scale pacification in low-threat environment tends toward light infantry. Trainers, civil affairs, engineers are required to recreate infrastructure in Nation Assistance. Contractor support for forces is likely to be large, especially in a low-threat environment. Military combat forces are standard in military contingency operations. **Definitive attribute.**

Integrated planning

Definition: Type of planning (coalition, joint services, multi-agency, or all plus NGO/PVOs) needed.

Need for CMOC

Definition: Whether CMOC is needed.

Need for HAST

Definition: Whether Humanitarian Assistance Survey Team (HAST) is needed.

C^3I

Definition: C^3I personnel and equipment needed.

Security

Definition: Type and level of security needs of the operation. For example, different threats requiring security protection are pilferage, hostile attack and information theft.

Uses of liaison

Definition: Numbers and types of liaisons needed (language skills, knowledge of culture, etc.).

Logistics/resupply

Definition: Logistics/resupply needs. The needs may be solely for the military forces or may include support to NGO/PVOs or the indigenous population.

Military capabilities of opposing sides

Definition: What are the military capabilities of the opposing sides (depending on the operation): small, medium, or large.

Military technology

Definition: What kinds of military technologies are involved: capital-intensive, personnel-intensive, or in-between. For example, extremely mountainous terrain might preclude tanks and other heavy weapons, shifting the military technologies toward the personnel intensive.

Force size / force ratio / preponderance of force

Definition: How beneficial force ratio (between the U.S. side and either the opposition or the parties involved in conflict, depending on the operation) will be achieved (armament, personnel numbers, better organization, moral force).

4.2.6 "Troops:" Non-U.S., Non-military

The breadth of the coalition and the interactions with non-U.S. and non-military organizations create several important attributes that impact OOTWs.

Level of host nation support/infrastructure

Definition: Can the host nation provide support and is its physical infrastructure sufficient to support the operation (high, moderate, low). **Definitive attribute: complex humanitarian emergencies (i.e., those requiring HA operations) are defined by the lack of support or infrastructure.**

Involvement of other nations

Definition: Are other nations besides the United States (and the host nation) involved (many, few). **Definitive attribute: domestic DR operations do not involve other nations.**

Degree of UN involvement

Definition: Is the UN involved and in what capacity (high, moderate, low). **Definitive attribute: peace operations are generally undertaken only with some UN involvement, whereas many military contingency operations have no UN involvement.**

Degree of U.S. agency involvement

Definition: Are other U.S. agencies involved and in what capacities (many, few and high, medium, low).

Scale of NGO/PVO involvement

Definition: Are NGOs involved and in what capacities. Tends to be critical in nation-assistance, esp. in defining the end state, which is normally a hand-off to UN/NGO/local authorities. Local are NGOs/PVOs especially important in reestablishing a legitimate, functional regime. Large-scale presence of NGOs/ PVOs can compound security problem, depending on threat environment (none, few, many, very many).

Extent of coalition

Definition: What is the extent of coalition forces (unilateral [e.g., U.S. only strike], bilateral, multi-lateral).

Host government stability

Definition: How stable is the host government.

4.2.7 "Terrain/Weather" (Environment): Location

Several location-based attributes are important to OOTWs.

Location

Definition: What is the location of the area of operations? What CINC is responsible? Is it in the Western Hemisphere? Is it close to U.S. overseas presence? The emphasis is on the political supportability of the operation.

Distance from United States

Definition: Is the operation in the United States. If not, how far away from the United States is it. The emphasis is on the physical supportability of the operation.

Environment/terrain

Definition: What is the geographical and meteorological environment and does the environment involve the use of sea, land, air, space, etc.?

Size of operating area/demographics

Definition: What is the size of the area of operations and what are its demographics? What is the status of the infrastructure, e.g., road network, airfields, and ports?

4.2.8 "Terrain/Weather" (Environment): Geopolitics

OOTWs are inextricably embedded in geopolitics. The terrain/weather component of the METT-T analysis is expanded to consist of the total environment of the operation.

Geo-political environment

Definition: Is the geopolitical environment supportive or not (hostile toward U.S. involvement, neutral, supportive, involved). How stable is the coalition (if any).

Cultural Dissimilarities/ethnic conflict/religious conflict

Definition: Is the area of operations destabilized by cultural dissimilarities, ethnic or religious conflict, or linguistic and social differences.

Interests of Other Nations

Definition: Are non-participating nations interested in the operation? Are any of them U.S. allies? Do they have conflicting interests?

Great Power involvement

Definition: Are any of the Great Powers (defined politically, economically and militarily) involved and are their strategic interests involved? Is the strategic interest of the United States involved?

Political sphere

Definition: What is the political sphere of interest, e.g., NATO or the Former Soviet Union.

Media attention

Definition: Level and kind of media attention (high, medium, low and favorable, neutral, unfavorable).

U.S. public support

Definition: Level of U.S. public support for the operation (high, medium, low). Is the support in the government from the Executive Branch or the Legislative Branch or both?

4.2.9 "Time"

Time is an important attribute for any operation. In the context of OOTWs, it is useful to subdivide time into several attributes.

Time

Definition: Time elements of the operation, such as deployment time and rotation times.

Planning/Reaction Time

Definition: The amount of planning and reaction time available prior to initiating the operation.

Duration

Definition: The expected duration of the operations and the time to return to full combat effectiveness after the operation. **Definitive attribute: military contingency operations and NEOs have a very short duration and DR operations generally have fairly short durations, whereas other operations can have extended durations.**

OPTEMPO/PERSTEMPO

Definition: The expected operational tempo (OPTEMPO, rate of equipment usage) and rate of personnel usage (PERSTEMPO) of the operation. High-tempo, low-intensity operations are characteristic of counterinsurgencies. Larger-scale infrastructure restoration and civilian-military activity do not have such high tempo. Force rotation is necessary in protracted operations and puts pressure on training, morale and continuity of civilian-military relations. Employment of high-skill reserve components in Nation Assistance is an important bottleneck.

4.2.10 Attribute analysis of the categories

Table 15 presents the attribute analysis of the categories. Each attribute is listed along the vertical axis of the matrix, with shading and the Type column indicating which are definitive attributes. The definitive values are indicated in the body of the table. Each of the major subcategories is listed along the horizontal axis of the matrix. (NEO, particularly permissive NEO was explored as separate from military contingency operations prior to the decision to include it within the contingency category. Rather than lose the results of this work, NEO is presented as a separate part of military contingency operations, rather than being combined with all other types.) The cells of the matrix indicate the defining value of the attribute or the range of values which it may be expected to take in an operation of the type defined by its column value. Other information may also be found in some of the cells, such as the appropriate level of command that defines or is interested in the attribute (national, CINC, or force planner).

Table 15. Attributes and categories

	Categories		Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				Mil Cont Ops	
	Attributes	Type	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
Mission	Mission, objectives, and MOEs	DEF	keep peace national, CINC, force planner, important	impose peace national, CINC, force planner, important	help people complex	fix damage simple	fix damage moderate	reduce drugs objectives important, MOEs a problem	stop terrorism objectives important	stop insurgency need end states, MOEs are political	help country need end states, MOEs are political	achieve obj	get people
	Political vs economic vs ideological vs symbolic interest		political national, prime consideration	political national, prime consideration	economic, symbolic	economic	economic, symbolic	economic	varies	ideological/ political	politico-economic	political	
	Assistance required	DEF	varies	varies	full spectrum	med/secur, s/t engin	med, st others	varies	varies	yes	yes	varies	no
	ROE	DEF	low CINC (free, hold, open)	med CINC (free, hold, open)	critical	legal issues	yes	ROE set by *legal issues*	ROE set by *legal issues*	varies *critical*	low *critical*	high	important
	Legal	DEF	CINC (restricted)	CINC	varies	posse *commitatis*	legal issues	legal issues	legal issues	varies *critical*	legal issues	varies	legal issues
	Degree of risk		med national, CINC, force planner	high national, CINC, force planner	med	low	low	med	high	high	med	high.	varies
	Use of force	DEF	none, *restrictive*	none, *restrictive*, lethal	restrictive	restrictive lethal: self defense only	restrictive	legal restrictions	varies	none, restrictive, lethal	none, restrictive	varies	varies
	Level of intensity		none-low	low-high	none-low	none	none-low	low	low - high	ROE linked	ROE linked	low-high	varies
	Scope of conflict		non-war	intra-state to regional	non-war	non-war	non-war	non-war to intra-state	varies	intra-state to inter-state	varies	varies	non-war to regional
	Casualties		low national	low-med civ national	low-med civ	low-med civ	low-high civ	low-med non-gov	med	med-high civ	low-med civ	varies	varies
	Potential $ cost - direct		national, force planner	national, force planner	moderate	moderate	moderate	low per activity high total	varies	*potentially high*	varies	varies	*low-med*

Table 15. Attributes and categories

	Categories		Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				Mil Cont Ops	
	Attributes	Type	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
	Potential $ cost - indirect		national		high	moderate	moderate	very high				varies	low
Enemy	Human enemy exists	DEF	no	no - yes	not usually	no	not usually	yes	yes	yes	maybe	yes	varies
	Consent	DEF	yes	some - none	usually	yes	yes	varies	varies	yes	yes	no	varies
	Impartiality		yes	varies				no	no	no		no	varies
	Information availability / intelligence		varies national, CINC	important/varies national, CINC	varies	legally restricted	med	key element	key element	key element	varies	key element	important
Troops	Command structure	DEF	UN/NATO CINC	UN/NATO CINC	internatl	FEMA	internatl	law enforcement	law enforce-mnt, military, ambassador	integrate ambassador, country team	integrate ambassador, country team	military	military, Ambas-sador
	Force mix	DEF	low-medium forces CINC, force planner	medium-high forces CINC, force planner	support, some combat troops	support, MPs	support, contractor	support	varies	high in warriors, SOF	trainers, civil affairs, engineers, contractors	combat forces + sustainment	small
	Integrated planning		critical	critical	critical	high	high	high	high		high	high	limited
	Need for CMOC		varies	varies	varies	with FEMA	varies				critical	no	
	Requirement for HAST				varies	no	varies						no
	C^3I		critical	critical	critical -US	shared	shared					high	critical - US
	Security		high	high	high	limited	limited	corruption		problem		high	moderate-hi
	Use of liaisons		critical	critical	important	important	important	varies	critical	critical		varies	
	Logistics/resupply				critical	critical	critical						critical
	Military capabilities of opposing sides		yes	yes	na	na	na	varies	varies	varies	varies	varies	varies

Table 15. Attributes and categories

	Categories		Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				Mil Cont Ops	
	Attributes	Type	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
	Military technology (capital intense, personnel intense)		varies	varies	na	na	na	varies				varies	varies
	Force size/force ratio/ preponderance of force		constrained	yes	na	na	na					high	varies
	Level of host nation support/infrastructure	DEF	varies national, CINC, force planner	poor national, CINC, force planner	low-med	med-high	low-med	varies important	varies important	varies critical	low	varies	varies
	Involvement of other nations	DEF	US=third party	US=third party	yes	no	yes	yes	yes	yes	yes	varies	yes
	Degree of UN involvement	DEF	usually national, CINC	usually national, CINC	usually high	none	usually high	none	none	none	usually high	varies	varies
	Degree of U.S. agency involvement		low national, CINC	low national, CINC	varies	high	varies	law enforcement primary	law enforcement primary	none	high	varies	high
	Scale of NGO/PVO involvement		high national, CINC	high national, CINC	high	medium	high	none	varies	varies	high	none	varies
	Extent of coalition		multilat CINC	multilat CINC	multilat	U.S. agency	multilat	sets of bilateral	sets of bilateral	multi/bilat	multilat	varies	bilat-multilat
	Host government stability		varies	varies	low-med	high	varies	varies	shaky	at issue	varies	varies	varies
Terrain	Location		CINC, force planner	CINC, force planner	varies, freq 3rd world	US	varies, freq 3rd world	US & elsewhere	US & elsewhere			varies	varies
	Distance from US		varies	varies	varies	0	>0	0 & varies	0 & varies	varies	varies	varies	varies
	Environment/terrain		varies	varies	varies	varies	varies	varies	varies	varies	varies	varies	varies
	Size of operating area/ demographics		varies	varies	varies	varies	varies	large	varies	varies	varies	varies	varies

Table 15. Attributes and categories

	Categories		Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				Mil Cont Ops	
	Attributes	Type	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
Environment	Geo-political environment				often poor	good	mod-poor					med	often bad
	Cultural dissimilarities/ ethnic conflict		important CINC	important CINC	important	na	important	yes	yes	critical	critical		important
	Interests of other nations				varies	na	varies					varies	
	Great Power involvement				varies	na	varies					varies	
	Political sphere (NATO, former Soviet Union, etc.)				varies, freq 3rd world	U.S.	varies, freq 3rd world					varies	
	Media attention		national	national	varies	high	high	works both ways	works both ways	security	security	varies	after the fact
	U.S. public support		varies	varies	varies	high	varies	med	varies	varies	varies	varies	high
Time	Time		not critical	usually not critical	important	critical	critical	variable	variable	important	not critical	critical	critical
	Planning/reaction time		short-long	med-long	short-med	short	short	long	varies	reasonable	reasonable	short	short
	Duration	DEF	long	long	full range	short	short	no end	usually short	indeterminate (usually long)	indeterm-inate	short	short
	OPTEMPO/ PERSTEMPO		slow force planner	slow-med force planner	high	high	high	slow or high	varies	high	low	high	high

4.3 TASKS

The types and categories of OOTWs comprise the first taxonomic element. Attributes constitute the second element. The third element in the taxonomy is tasks. Table 40 in Appendix E contains a list of strategic theater tasks and operational tasks drawn from the Universal Joint Task List (UJTL) version 2.1 [26] and modified by the draft version 3.0 [27]. However, not all tasks are required in OOTWs. Appendix E provides a suggested Mission Essential Task List (METL) for each category of OOTW. (Additional tasks that are unique to OOTWs are suggested as additions and are shown in italics.) Further, not all tasks need analytical support; nor are the UJTL tasks defined and grouped with an orientation appropriate for analysis. This section analyzes the questions and tasks from Section 3, describes the analysis tasks, and connects them to the UJTL, the categories, and the attributes.

4.3.1 Task lists by mission stage

The tasks that were identified as needing analytical support have been grouped into seven stages. The stages are defined as, "non-mission-related," "mission definition and analysis," "C^3I," "mobilization/deployment," "force employment," "sustainment," and "redeployment," are retained. The C^3I tasks take place throughout the mission and, consequently, are grouped together. Tasks not requiring analytical support or that are currently sufficiently supported analytically are omitted. Associated elements from the UJTL are shown for each task. The "SN," "ST" and "OP" of the UJTL numbers identifies the tasks as strategic national, strategic theater or operational, respectively. Italicized entries are additions proposed in this document to meet the needs of OOTWs.

4.3.1.1 Non-mission-related analysis

This stage includes activities that are conducted at the National Command Authority (NCA), at the Services and at the CINC level. This stage consists of non-mission-related analyses relating to OOTWs, such as maintaining a watch for potential crises and determining what forces the United States requires to accomplish the national strategy.

- **Provide instability forecast, impact forecast (psycho-social)**, task # 1.1: Forecast the regions of potential instability, the predicted dates, the related probabilities, and the nature of the instabilities. Forecast the impact of various actions, both those intended to be remedial and otherwise.
    - SN 5.1.4 Monitor worldwide strategic situation
    - SN 5.2 Reassess worldwide and regional strategic environment
    - ST 2.4.1.3 *Produce instability forecast for theater area of interest*
    - ST 2.4.1.4 *Produce impact forecast for proposed plans*
    - ST 2.4.2.1 Provide theater strategic indications and warnings

- OP 2.4.2.1 Develop indications and warnings

- **Estimate cost of operations**, task # 1.2: Estimate the cost of operations, including both direct and indirect costs.

  - SN 1.1 Determine transportation infrastructure and resources
  - SN 4 Provide sustainment
  - SN 5.3 Determine national military strategic direction
  - SN 7 Conduct force development
  - ST 5.3.1.5 *Estimate cost of mission*

4.3.1.2 Mission definition and analysis

This stage includes activities that are conducted at the National Command Authority (NCA) and the CINC level in deciding whether a mission should be undertaken and in preparing for a mission. This stage also includes non-mission-related analyses relating to OOTWs, such as maintaining a watch for potential crises.

- **Develop mission, MOEs, etc.**, task # 2.1: Develop the proposed mission and its elements and the MOEs necessary for evaluating the progress of the mission.

  - ST 5.3.2.1 *Identify firm mission elements and elements in flux*
  - OP 5.3.1.1 *Develop mission*
  - OP 5.3.1.2 *Develop MOEs for mission*

- **Determine ROEs**, task # 2.2: Determine the appropriate ROEs for the proposed mission and its elements under various potential situations.

  - ST 5.4.1 Issue theater strategic operations plans, orders and ROE
  - OP 5.4.3 Provide rules of engagement

- **Define end-state, transition criteria**, task # 2.3: Define the mission end-state and the nature of the transition to be carried out at mission end. Define the criteria for the elements of the transition.

  - ST 5.3.2.2 *Identify transition criteria*
  - OP 5.3.3 Determine operational end state
  - OP 5.5.5 Establish command transition criteria and procedures

- **Determine force structure, heavy vs light forces, weapons mix, CS and CSS elements**, task # 2.4: Determine the appropriate force structure for the mission. This force includes forces needed to open and maintain LOCs, as well as the employment force.

    - ST 7.1.6.1 *Determine force structure, heavy vs light forces, weapons mix*

- **Determine force mix**, task # 2.5: Determine the mix of active and reserve forces required to accomplish the mission, the service mix (including Coast Guard), the coalition forces mix based on task allocations. The decisions of this task are also conditioned on the range of expected contributions by civilian organizations, including NGO/PVOs.

    - ST 7.1.6.2 *Determine active/reserve mix to meet force requirements, to include tailoring*

- **Estimate readiness**, task # 2.6: Estimate the readiness of U.S. military forces, U.S. agency elements, and coalition elements to perform the mission.

    - ST 7.2.1 Maintain and report force readiness

    - OP 2.3.3.4 *Estimate readiness*

- **Evaluate risks and do 'worst case' analysis/gaming**, task # 2.7: Evaluate the risks of mission failure, both as to failure modes and severity. Perform analysis/gaming to identify worst case results.

    - ST 2.4.1.5 *Evaluate risks and 'worst case'*

- **Estimate robustness of mission success to changes in assumptions**, task # 2.8: Estimate the probabilities of mission success associated with likely geo-political and operational events, conditioned on the major alternatives in the scenario/situation.

    - ST 5.3.1.4 *Estimate probability of mission success*

    - OP 5.3.1.3 *Estimate probability of success*

4.3.1.3 C^3I

This stage consists of activities that cross several or all stages. In addition to the command, control, communications, and intelligence activities of C^3I, the coordination and information (gathering, maintaining and dissemination) activities are included.

- **Create command arrangements, span of control**, task # 3.1: Define the relationships among the military, government agencies, coalition forces, and NGOs/PVOs.

- ST 5.4.3.1 Augment the joint force staff
- ST 5.4.3.2 Activate theater boards, committees and cells
- OP 5.5.1.1 *Establish command arrangements and span of control*

- **Develop COAs**, task # 3.2: Develop courses of action. COAs are prepared at all levels and for all phases of a mission, from mission definition through analysis of redeployment alternatives.
  - OP 5.3.4 Develop courses of action/prepare staff estimates
- **Perform staff estimates**, task # 3.3: Prepare staff estimates.
  - OP 5.3.4 Develop courses of action/prepare staff estimates
- **Evaluate COAs**, task # 3.4: Analyze and compare courses of action.
  - OP 5.3.5 Analyze courses of action
  - OP 5.3.6 Compare courses of action
  - OP 5.3.7 Select or modify course of action
- **Maintain MOEs, including probability of mission success and end-state status**, task # 3.5: Maintain current values for each of the mission MOEs on the appropriate periodic basis, whether daily, weekly, or monthly.
  - OP 5.2.1.1 *Maintain up-to-date values for MOEs, probability of success and end-state status*
- **Monitor situation and provide feedback**, task # 3.6: Monitor the situation and provide feedback to all necessary parties.
  - ST 5.1.1 Communicate strategic and operational decisions and information
  - ST 5.2.1 Review current situation
  - OP 5.1.1 Communicate operational information
  - OP 5.2.1 Review current situation (project branches)
- **Activate JTF**, task # 3.7: Define the needed structure for the JTF and activate it.
  - OP 5.5 Establish a joint task force

- **Establish liaisons/CMOC**, task # 3.8: Establish the CMOC. Establish liaisons with government agencies and NGOs/PVOs.
    - ST 8.2.10 Coordinate multinational operations within area of responsibility (AOR)
    - ST 8.2.11 Cooperate with and support nongovernmental organizations (NGOs) in AOR
    - ST 8.2.12 Cooperate with and support private voluntary organizations (PVOs) in AOR
    - OP 4.7.2 Coordinate and provide civil-military operations (CMO) support in theater of operations/joint operations area (JOA)
    - OP 5.5.2 Develop joint force liaison structure
- **Design, install communications**, task # 3.9: Design and install the communications systems, including non-standard communications with other government agencies, coalition forces, host government, and NGOs/PVOs.
    - ST 5.1 Operate and manage communications and information systems
    - OP 5.1 Acquire and communicate operational level information
- **Perform intelligence collection and ISR**, task # 3.10: Define Intelligence, Surveillance and Reconnaissance (ISR) needs and collect information and intelligence to support the mission, including information concerning threat, friendly and neutral elements and environmental information. Plan for ISR dissemination to a variety of non-DOD recipients.
    - ST 2.1 Plan and direct theater strategic intelligence activities [add emphasis on political and social situations, animosities, etc.]
    - ST 2.2 Collect theater strategic information
    - OP 2.1 Determine and direct operational intelligence activities
    - OP 2.2 Collect operational information
- **Establish cultural awareness**, task # 3.11: Establish and maintain awareness of significant cultural issues.
    - OP 2.4.1.5 *Establish cultural awareness*
- **Establish red teams**, task # 3.12: Establish teams to think as opposition forces, providing realistic opposing courses of action.

- OP 2.3.3.1 Develop enemy operational intentions

- **Perform METT-T analysis**, task # 3.13: Perform complete Mission, Enemy, Troops, Terrain/Weather and Time Available (METT-T) analysis. The term "enemy" may refer to natural factors such as erupting volcanos when appropriate. Troops may refer to non-military and friendly non-U.S. personnel. The definition of terrain/weather is extended to cover the general environment, including the geopolitical situation.

  - OP 5.3.1.4 *METT-T*

- **Identify centers of gravity**, task # 3.14: Identify locations at which minimal actions will produce maximal results, both desirable and undesirable.

  - OP 2.4.1.3 *Identify centers of gravity*

- **Estimate threat**, task # 3.15: Estimate the nature and severity of threats to mission success.

  - ST 2.4.1.1 Identify theater issues and threats
  - ST 2.4.1.2 Determine enemy's theater strategic capabilities
  - OP 2.4.1.1 Identify operational issues and threats
  - OP 2.4.1.2 Determine enemy's operational capabilities and course of action

- **Support media / public affairs**, task # 3.16: Provide media and public affairs support.

  - ST 5.6 Provide public affairs in theater
  - OP 5.8 Provide public affairs in theater of operations/JOA

- **Execute PSYOPs**, task # 3.17: Conduct psychological activities (both benign and offensive) to induce desired actions.

  - ST 3.2.2.1 Conduct theater psychological activities
  - ST 5.5 Employ theater-wide command and control warfare [PSYOPs]
  - OP 3.2.2.1 Employ PSYOP in theater of operations/JOA

4.3.1.4 Mobilization/deployment

These activities include the movement activities.

- **Initiate appropriate reserve call-up**, task # 4.1: Determine what reserves are needed and request call-up where appropriate. This task requires maintenance of information on immediate availability of reserves and availability of active service time.
    - ST 7.1.1 Provide operations plans (OPLANs) for mobilization and deployment planning and execution
- **Determine deployment timing**, task # 4.2: Determine the sequence of arrival (at destination) by units required to accomplish the mission and provide security.
    - ST 7.1.3.1 *Determine deployment timing*
- **Determine deployment priorities**, task # 4.3: Determine deployment priorities (considering entire transport chain to destination) to resolve bottlenecks.
    - ST 7.1.3.2 *Determine deployment priorities*
- **Determine transport capabilities**, task # 4.4: Determine availabilities and capabilities of the transport resources (both inter- and intra-theater) needed to accomplish the mission, including any transport needed for other agencies, coalition partners, and NGOs/PVOs.
    - ST 1.1.1.1 *Determine transport capabilities*
- **Activate HAST**, task # 4.5: Define and activate the HAST.
    - OP 2.2.2.1 *Activate HAST*
- **Activate CMOC**, task # 4.6: Determine a suitable location and activate the CMOC.
    - OP 4.7.2 Coordinate and provide CMO support in theater of operations/JOA

4.3.1.5 Force employment

This stage concerns the active use of the forces defined in the previous stage. Note, however, that only analysis activities are included. Standard employment activities are outside the scope of this study.

- **Establish LOCs**, task # 5.1: Establish the lines of communication (LOCs).
    - ST 6.2.5.3 Secure and protect theater air, land and sea LOCs
    - OP 6.5.4 Protect and secure air, land and sea LOCs in theater of operations/JOA

- **Protect forces**, task # 5.2: Ensure adequate protection of all forces, including other agencies, coalition forces, and NGO/PVOs.
    - OP 6.2 Provide protection for operational forces, means and noncombatants
- **Allocate and station forces**, task # 5.3: Determine optimal allocation and stationing of forces.
    - OP 1.2.3 Concentrate forces in theater of operations/JOA
- **Assess casualties and perform medical treatment analyses**, task # 5.4: Analyze casualty and medical treatment data to support COA development and MOE assessment.
    - Manage flow of casualties in theater of operations/JOA
    - Manage health services resources in theater of operations/JOA
- **Identify infrastructure improvement requirements**, task # 5.5: Identify infrastructure improvements needed to conduct the mission and needed under the humanitarian or nation assistance aspects of the mission.
    - OP 2.4.1.4 *Identify infrastructure improvement requirements*
- **Support humanitarian operations**, task # 5.6: Support all aspects of humanitarian operations as called for in the mission.
    - ST 8.2.2 Conduct civil affairs in theater
    - ST 8.2.3 Coordinate disaster relief
    - ST 8.2.4 Provide humanitarian assistance
    - ST 8.2.5 Provide nation assistance support
    - ST 8.2.6 Provide military civic action assistance
    - ST 8.2.7 Assist in restoration of order
    - OP 4.7.2.1 *Support humanitarian operations*
- **Evaluate potential use of force**, task # 5.7: Evaluate the need for force, whether lethal or non-lethal.
    - ST 3.1.1 Select strategic targets in the theater for attack
    - OP 3.1.3 Develop operational targets

- OP 3.1.4 Prioritize high payoff targets

- **Rehearse missions**, task # 5.8: Provide for mission rehearsal.
  - OP 4.4.5.1 *Conduct mission rehearsals*

- **Perform interdictions, raids, stings, infiltration, etc.**, task # 5.9: Perform military contingency operations in cooperation with government agencies, host government, or coalition forces as appropriate.
  - OP 1.2.4.3 Conduct forcible entry: airborne, amphibious and air assaults
  - OP 1.2.4.5 Conduct raids in JOA
  - OP 1.2.4.7 Conduct direct actions in JOA
  - OP 1.4.2 Plan and execute quarantine/embargo
  - OP 1.4.3 Plan and execute blockade

4.3.1.6 Sustainment

This stage includes the analysis activities required to support the sustainment of the force.

- **Balance tooth to tail ratio**, task # 6.1: Maintain the desirable ratio of combat, combat support, and combat service support forces, given the needs of all parties in the mission.
  - ST 7.1.3.3 *Determine tooth to tail ratio*
  - OP 1.1.3.1 *Maintain tooth to tail ratio*

- **Perform logistics planning/resupply**, task # 6.2: Provide adequate logistics and supply for all mission forces and to support humanitarian mission needs.
  - ST 4.3.2 Provide supplies and services for theater forces
  - OP 4.5.2 Establish priorities and supply operational forces

- **Provide transport support**, task # 6.3: Provide transportation support for mission forces, including appropriate NGOs/PVOs and media personnel.
  - ST 4.3.1 Provide movement services within area of responsibility (AOR)
  - OP 4.5.1 Provide for movement services in theater of operations/JOA

- **Provide engineering support**, task # 6.4: Provide engineering support needed for mission accomplishment and humanitarian and nation assistance elements of the mission.
    - ST 4.4.2 Provide civil-military engineering in theater
    - OP 4.6.2 Provide civil-military engineering
- **Provide medical support**, task # 6.5: Provide medical support to mission forces and to accomplish humanitarian mission elements.
    - ST 4.2.2 Provide heath services
    - OP 4.4.3 Provide health services in theater of operations/JOA
- **Provide joint/interagency/coalition support**, task # 6.6: Provide needed support to all parts of the mission forces, as required.
    - ST 8.2.1 Conduct security assistance activities
    - ST 8.5 Coordinate and integrate regional interagency activities
    - OP 4.7.3 Provide support to DOD and other government agencies
    - OP 4.7.5 Coordinate politico-military support
- **Provide indigenous/client/refugee support**, task # 6.7: Provide support to ensure the safety of civilians. This includes location tracking.
    - ST 8.4.3 Support evacuation of noncombatants from theater
    - OP 4.6.4 Provide law enforcement and prisoner control
    - OP 4.7.2.2 *Provide indigenous/client/refugee support*

4.3.1.7 Redeployment

This stage concentrates on mission completion or change.

- **Determine priorities: effectiveness vs availability/feasibility**, task # 7.1: Determine redeployment priorities, comparing effectiveness in current and future tasks against the availability or feasibility of alternative options. This includes consideration for rotation of troops.
    - ST 7.1.4.1 *Determine redeployment priorities: effectiveness vs availability/ feasibility*
- **Reposition assets**, task # 7.2: Reposition forces and systems as needed.

- OP 1.1.2 Conduct intratheater deployment and redeployment of forces within theater of operations/JOA

- **Perform transition**, task # 7.3: Plan and conduct the transition of activities to follow-on forces or civil authorities.

  - OP 4.7.4 Plan and transition to civil authorities

- **Determine reconstitution requirements**, task # 7.4: Determine what retraining, etc., is needed to reconstitute the forces.

  - ST 4.2.3 Reconstitute theater forces

4.3.2 Task analysis of the categories

Table 16 presents the task analysis of the categories. The categories are grouped in the table (for each task) according to similarity of analytic needs for the task, indicated by a common grouping letter (A, B, C, etc.) in the cells for the appropriate categories. (There is no connection between tasks [rows]. That is an "A" in a cell for one task implies nothing about an "A" in a cell for another task.) Examples of the reasoning are provided below.

- The groupings for C^3I tasks are based on the presence of an active, intelligent enemy vs nature as the enemy and on the involvement of a coalition with the United States as a participant vs the United States acting alone. The monitor and feedback task is judged to be similar across category types; however, it might differ during short-duration operations as opposed to long-duration operations.

- The groupings in the tooth to tail task (6.1) are based on differences in routine presences of U.S. armed forces, host nation support, duration of the operation, and the desire for minimum U.S. footprint in HA operations.

- The groupings in the effectiveness vs availability/feasibility task (7.1) are based on differences in duration, potential opposed withdrawal and the size of the force. The differences in reposition assets (task 7.2) are based on presumed differences in force composition.

Categories that do not require a given task have the cell shaded. The tasks are ordered as in the previous subsection, with the UJTL identification numbers for reference.

Table 16. Tasks and categories

	UJTL #	#	Categories / Tasks	Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				MilCostOps	
				PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
Non-mission-related analysis	SN 5.1.4 SN 5.2 ST 2.4.1.3 ST 2.4.1.4 ST 2.4.2.1 OP 2.4.2.1	1.1	Instability fcst, impact fcst (psycho-social)	A	A	A	C	B	A	A	A	A	A	A
	SN 1.1 SN 4 SN 5.3 SN 7 ST 5.3.1.5	1.2	Estimate cost of operation	A	A	B	B	B	D	E	F	G	H	C
Mission definition & analysis	ST 5.3.2.1 OP 5.3.1.1 OP 5.3.1.2	2.1	Develop mission, MOEs, etc.	A	B	C	D	E	G	H	I	J	K	F
	ST 5.4.1 OP 5.4.3	2.2	Determine ROEs	A	A	A	A	A	A	A	A	A	A	A
	ST 5.3.2.2 OP 5.3.3 OP 5.5.5	2.3	Define end-state, transition criteria	A	A	A	A	A			A	A	A	A
	ST 7.1.6.1	2.4	Determine force structure, heavy vs light forces	A: data, decision aids	A: data, decision aids	B: models, decision aids	B: models, decision aids	B: models, decision aids	D improve fusion	D improve fusion	E:research, data problems	E:research, data problems	F: basically exist	C: models, decision aids
	ST 7.1.6.2	2.5	Determine force mix, active/reserve, service, coalition, civilian	A: data, decision aids	A: data, decision aids	B: models, decision aids	B: models, decision aids	B: models, decision aids	D improve fusion	D improve fusion	E:research, data problems	E:research, data problems	F: basically exist	C: models, decision aids
	ST 7.2.1 OP 2.3.3.4	2.6	Estimate readiness	A	A	B	B	B	D	E	F	G	H	C
	ST 2.4.1.5	2.7	Risks & 'worst case' gaming	A	A				C	C	D	D	E	B
	ST 5.3.1.4 OP 5.3.1.3	2.8	Robustness of mission success	A	A	B		B	D	E	F	G	H	C

Table 16. Tasks and categories

	UJTL #	#	Tasks	Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				MilConOps	
			Categories	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
C^3I	ST 5.4.3.1 ST 5.4.3.2 OP 5.5.1.1	3.1	Command arrangements, span of control	A	A	B	B	B	C ad hoc	D ad hoc	E	E	F	A
	OP 5.3.4	3.2	COA development	A	A	B	B	B	C	C	D	B	A	A
	OP 5.3.4	3.3	Staff estimates	A important	A imp.	B imp.	B	B imp.	C imp.	C imp.	D imp.	B imp.	A imp.	A imp.
	OP 5.3.5 OP 5.3.6 OP 5.3.7	3.4	COA evaluation	A imp.	A imp.	B imp.	B	B imp.	C imp.	C imp.	D imp.	B imp.	A imp.	A imp.
	OP 5.2.1.1	3.5	Maintenance of MOEs, including probability of mission success and end-state status	A tool needed	A tool needed	B tool needed	B tool needed	B tool needed	B tool needed	B tool needed	B tool needed	B tool needed		A tool needed
	ST 5.1.1 ST 5.2.1 OP 5.1.1 OP 5.2.1	3.6	Monitor situation and provide feedback	A	A	A	A	A	A	A	A	A	A	A
	OP 5.5	3.7	Activate JTF	A	A	A	A	A	A done	B	A	A	B	A
	ST 8.2.10 ST 8.2.11 ST 8.2.12 OP 4.7.2 OP 5.5.2	3.8	Establish liaisons / CMOC	A	A	A	A	A	B	B	A	A		
	ST 5.1 OP 5.1	3.9	Design, install communications	A	A	A	A	A	A	A	A	A	A	A
	ST 2.1 ST 2.2 OP 2.1 OP 2.2	3.10	Intel collection and ISR	A	A	B	B	B	A	A	A	B	C	A
	OP 2.4.1.5	3.11	Cultural awareness	A	A	A	B	A	A	A	A	A	C	A

Table 16. Tasks and categories

	UJTL #	#	Tasks	Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				MilCostOps	
			Categories	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
C^3I	OP 2.3.3.1	3.12	Establish red teams	A	A				A	A	A		A	A
	OP 5.3.1.4	3.13	METT-T	A	A	B	B	B	A	A	A	B	A	A
	OP 2.4.1.3	3.14	Identification of centers of gravity	A	A	B		B	C	C	D	B	A	A
	ST 2.4.1.1 ST 2.4.1.2 OP 2.4.1.1 OP 2.4.1.2	3.15	Estimate threat (includes natural forces)	A	A	A	A	A	A	A	A	A	A	A
	ST 5.6 OP 5.8	3.16	Support media/public affairs	A	A	B	B	B	C	C	C	C	D	B
	ST 3.2.2.1 ST 5.5 OP 3.2.2.1	3.17	Execute PSYOPs	A	A	B	B	B	C	C	C	C	D	B
Mobilization/ Deployment	ST 7.1.1	4.1	Initiate appropriate reserve call-up, track	A	A	A	A	A	A	A	A	A	A	A
	ST 7.1.3.1	4.2	Determine deployment timing	A: good schedulin g model	A: good scheduling model	A: good scheduling model	A: good scheduling model	A: good scheduling model		A: good scheduling model	A: good scheduling model	A: good scheduling model	B basically exist	A: good sc heduling m odel
	ST 7.1.3.2	4.3	Determine deployment priorities	A: good schdling model	A: good schdling model	A: good schdling model	A: good schdling model	A: good schdling model		A: good schdling model	A: good schdling model	A: good schdling model	B basically exist	A: good sc hdling model
	ST 1.1.1.1	4.4	Determine transport capabilities	A: good schdling model	A: good schdling model	A: good schdling model	A: good schdling model	A: good schdling model		A: good schdling model	A: good schdling model	A: good schdling model	B basically exist	A: good sc hdling model
	OP 2.2.2.1	4.5	Activate HAST			A		A						
	OP 4.7.2	4.6	Activate CMOC	A	A	A	A	A						A
Force employment	ST 6.2.5.3 OP 6.5.4	5.1	Establish LOCs	A	A	A	B	A	A	A	A	A	A	A
	OP 6.2	5.2	Force protection	A	A	B		C	A	A	A	B	A	A

Table 16. Tasks and categories

	UJTL #	#	Tasks	Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				MilContOps	
			Categories	PK	PB	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
Force employment	OP 1.2.3	5.3	Force allocation & stationing	A	A	A	B	A	A	A	A	A		
	OP 4.4.3.2 OP 4.4.3.3	5.4	Casualties & medical treatment analyses	A	A	B	B	B	C	C	D	B	A	A
	OP 2.4.1.4	5.5	Identify infrastructure improvement requirements	A	A	B	B	B	C	C	D	B	F	E
	ST 8.2.2 ST 8.2.3 ST 8.2.4 ST 8.2.5 ST 8.2.6 ST 8.2.7 OP 4.7.2.1	5.6	Support humanitarian *operations*	A	B	C	C	C	D	E	F	C	A	A
	ST 3.1.1 OP 3.1.3 OP 3.1.4	5.7	Evaluate potential use of force, targeting	A	B				C	C	D		B	B
	OP 4.4.5.1	5.8	Mission rehearsal	A	A				B	C	B		A	A
	OP 1.2.4.3 OP 1.2.4.5 OP 1.2.4.7 OP 1.2.4.8 OP 1.4.2 OP 1.4.3	5.9	Interdictions, raids, stings, infiltration	A	A				B	B	B		A	A
Sustainment	ST 7.1.3.3 OP 1.1.3.1	6.1	Balance tooth to tail ratio	B imp.	D imp.	A min footprint, imp.	A	A imp.	E	C	D imp.	B imp.	E	E
	ST 4.3.2 OP 4.5.2	6.2	Logistics planning/ resupply	B	B	A	A	A	C	D	B	B	C	C
	ST 4.3.1 OP 4.5.1	6.3	Transport support	B imp.	A imp.	A very imp.	A	A very imp.	B	B	B imp.	B imp.	B	B very imp.

Table 16. Tasks and categories

	UJTL #	#	Tasks	Peace Operations		Humanitarian Assistance/Disaster Relief			National Integrity Operations				MilCoordOps	
			Categories	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
Sustainment	ST 4.4.2 OP 4.6.2	6.4	Engineering support	B imp.	B imp.	B very imp.	A	A very imp.	C		B imp.	A imp.	B	
	ST 4.2.2 OP 4.4.3	6.5	Medical support	C	B	A very imp.	A very imp.	A very imp.	C	C imp.	C imp.	C imp.	C	C
	ST 8.2.1 ST 8.5 OP 4.7.3 OP 4.7.5	6.6	Joint/interagency/ coalition support	A imp.	A imp.	A very imp.	A very imp.	A very imp.	B imp.	C imp.	B imp.	B imp.	B	B
	ST 8.4.3 OP 4.6.4 OP 4.7.2.2	6.7	Indigenous/client/ refugee support	B imp.	B imp.	A very imp.	A very imp.	A very imp.	B	B	B imp.	B imp.	B	A very imp.
Redeployment	ST 7.1.4.1	7.1	Priorities: effectiveness vs availability/feasibility	C	C	A	A	A	B		B	A	B	B
	OP 1.1.2	7.2	Reposition assets	C	C	A		A	B		B	B		
	OP 4.7.4	7.3	Transition	A	A	A	A	A	B		B	B		
	ST 4.2.3	7.4	Reconstitution requirements	A	A	B		B			B	B		

4.3.3 Attribute analysis of the tasks

Table 17 presents the attribute analysis of the tasks. The labels of the definitive attributes are shaded. This table is divided into three parts because there are too many attributes to fit across the page. Each part consists of several pages, each page having the same attributes and a new set of tasks. The shaded cells indicate that the attribute value is needed as an input for complete performance of the task (and thus for analysis of the task). This analysis supports later detailed specification of tool requirements for each task.

Table 17. Tasks and attributes (part 1)

			Mission												Enemy			
		Attributes	Mission-obj-MOEs	Pol-econ-ideal-symb	Assist reqd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
	#	Tasks																
Non-mission-related analysis	1.1	Instability fcst, impact fcst (psycho-social)	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	1.2	Estimate cost of operation	•	•	•	•	•	•	•	•	•	•			•	•	•	
Mission definition & analysis	2.1	Develop mission, MOEs, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	2.2	Determine ROEs	•	•		•	•	•	•	•	•	•			•	•	•	•
	2.3	Define end-state, transition criteria	•	•	•			•	•	•	•	•			•	•	•	•
	2.4	Determine force structure	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	2.5	Determine force mix	•	•	•	•	•											
	2.6	Estimate readiness	•		•	•	•		•	•	•				•			
	2.7	Risks & 'worst case' gaming	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	2.8	Robustness of mission success	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Table 17. Tasks and attributes (part 1)

			Mission												Enemy			
		Attributes	Mission-obj-MOEs	Pol-econ-ideal-symb	Assist req'd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
	#	Tasks																
C^3I	3.1	Command arrangements, span of control	•	•	•			•	•						•			
	3.2	COA development	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	3.3	Staff estimates	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	3.4	COA evaluation	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	3.5	Maintenance of MOEs, including probability of mission success and end-state status	•		•													•
	3.6	Monitor and feedback	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	3.7	Activate JTF	•															
	3.8	Establish liaisons / CMOC	•		•											•	•	
	3.9	Communications	•		•			•	•		•				•	•		
	3.10	Intel collection and ISR	•	•	•			•	•	•	•	•			•	•	•	•

Table 17. Tasks and attributes (part 1)

			Mission												Enemy			
	#	Tasks / Attributes	Mission, obj, MOEs	Pol-econ-ideal-symb	Assist req'd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
C^3I	3.11	Cultural awareness	•	•	•	•	•		•		•	•			•	•	•	•
	3.12	Establish red teams	•					•	•			•			•		•	•
	3.13	METT-T	•	•	•	•	•	•	•	•	•	•			•	•	•	•
	3.14	Identification of centers of gravity	•	•	•													•
	3.15	Estimate threat	•	•		•	•	•	•	•	•	•			•	•	•	•
	3.16	Media/public affairs	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	3.17	PSYOPs	•	•	•	•	•		•	•	•	•			•	•	•	•
Mobilization/ Deployment	4.1	Initiate appropriate reserve call-up																
	4.2	Determine deployment timing	•	•	•			•	•									•
	4.3	Determine deployment priorities	•	•	•			•	•									•

Table 17. Tasks and attributes (part 1)

			Mission												Enemy			
		Attributes	Mission-obj-MOEs	Pol-econ-ideal-symb	Assist req'd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
	#	Tasks																
Mobilization/ Deployment	4.4	Determine transport capabilities			•			•			•							
	4.5	Activate HAST	•								•					•		
	4.6	Activate CMOC	•	•							•							
Force employment	5.1	Establish LOCs	•					•	•		•				•	•	•	•
	5.2	Force protection	•		•	•	•	•	•	•	•	•			•	•	•	•
	5.3	Force allocation & stationing	•	•	•	•	•	•	•		•	•			•	•	•	•
	5.4	Casualties & medical treatment analyses	•		•			•				•						•
	5.5	Identify infrastructure improvement requirements	•		•			•										•
	5.6	Support humanitarian operations	•	•	•			•					•	•				•

Table 17. Tasks and attributes (part 1)

			Mission												Enemy			
	#	Attributes / Tasks	Mission-oblig-MOE	Pol-econ-ideal-symb	Assist reqd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
Force employment	5.7	Potential use of force	•	•					•	•		•			•	•	•	•
	5.8	Mission rehearsal	•					•	•									•
	5.9	Interdictions, raids, stings, infiltration	•	•		•	•	•	•						•			•
Sustainment	6.1	Tooth to tail	•	•	•	•	•	•	•	•	•	•			•			•
	6.2	Logistics planning/resupply	•	•	•				•			•						
	6.3	Transport support	•		•	•	•		•	•					•			
	6.4	Engineering support	•	•	•			•										•
	6.5	Medical support	•	•	•			•	•			•						•
	6.6	Joint/interagency/coalition support	•		•	•	•											
	6.7	Indigenous/client/refugee support	•	•	•								•	•				•

Table 17. Tasks and attributes (part 1)

			Mission												Enemy			
		Attributes	Mission, obj, MOEs	Pol-econ-ideal-symb	Assist rqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
	#	Tasks																
Redeployment	7.1	Priorities: effectiveness vs availability/feasibility	•					•	•						•			•
	7.2	Reposition assets	•		•			•	•						•			•
	7.3	Transition	•	•	•	•	•	•					•	•		•	•	•
	7.4	Reconstitution requirements	•						•	•			•	•				

Table 17. Tasks and attributes (part 2)

			Troops																		
	#	Attributes / Tasks	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
Non-mission-related analysis	1.1	Instability fcst, impact fcst (psycho-social)		•		•						•	•	•	•	•	•	•	•	•	•
	1.2	Estimate cost of operation	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mission definition & analysis	2.1	Develop mission, MOEs, etc.	•									•	•		•	•	•	•	•	•	•
	2.2	Determine ROEs										•	•	•		•	•	•	•	•	•
	2.3	Define end-state, transition criteria													•	•	•	•	•	•	•
	2.4	Determine force structure	•		•	•	•	•	•	•	•	•	•		•	•	•	•		•	•
	2.5	Determine force mix	•												•	•	•	•	•	•	•
	2.6	Estimate readiness	•	•	•	•	•	•	•	•	•					•	•				
	2.7	Risks & 'worst case' gaming	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	2.8	Robustness of mission success	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Table 17. Tasks and attributes (part 2)

			Troops																		
	#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
C^3I	3.1	Command arrangements, span of control		•	•	•			•	•	•	•		•		•	•	•	•	•	
	3.2	COA development	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	3.3	*Staff estimates*	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	3.4	COA evaluation	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	3.5	Maintenance of MOEs, including probability of mission success and end-state status	•													•	•	•	•	•	
	3.6	Monitor and feedback	•			•	•	•													
	3.7	Activate JTF																			
	3.8	Establish liaisons / CMOC														•	•	•	•	•	
	3.9	Communications	•	•		•				•					•	•	•	•	•	•	•
	3.10	Intel collection and ISR	•	•	•	•	•	•	•	•		•	•	•		•	•	•	•	•	•

Table 17. Tasks and attributes (part 2)

			Troops																		
	#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
C^3I	3.11	Cultural awareness				•	•			•					•	•	•	•	•	•	•
	3.12	Establish red teams	•									•	•	•							•
	3.13	METT-T										•	•	•	•						
	3.14	Identification of centers of gravity				•						•	•	•	•						•
	3.15	Estimate threat	•									•	•	•	•	•					•
	3.16	Media / public affairs	•												•	•		•		•	
	3.17	PSYOPs	•	•				•	•	•		•						•			•
Mobilization/ Deployment	4.1	Initiate appropriate reserve call-up																			
	4.2	Determine deployment timing	•			•	•		•	•	•	•	•		•	•	•	•		•	•
	4.3	Determine deployment priorities	•			•	•		•	•	•	•	•		•	•	•	•		•	•

Table 17. Tasks and attributes (part 2)

	#	Tasks	Troops: Command structure	Force mix	FS: integrtd plan	CMOC	FS: HAST rqmt	FS: C3I	FS: security	FS: liaisons	FS: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
Mobilization/ Deployment	4.4	Determine transport capabilities		•			•								•	•	•	•	•	•	•
	4.5	Activate HAST					•								•						•
	4.6	Activate CMOC	•			•										•	•	•	•	•	
Force employment	5.1	Establish LOCs	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•
	5.2	Force protection	•	•					•			•	•	•	•	•	•	•	•	•	•
	5.3	Force allocation & stationing	•	•		•		•	•	•	•				•	•	•	•	•	•	•
	5.4	Casualties & medical treatment analyses													•	•	•	•	•	•	
	5.5	Identify infrastructure improvement requirements				•	•								•						
	5.6	Support humanitarian operations	•			•	•			•	•				•	•	•	•	•	•	•

Table 17. Tasks and attributes (part 2)

			Troops																		
	#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
Force employment	5.7	Potential use of force	•	•	•			•	•	•	•	•	•	•							•
	5.8	Mission rehearsal	•	•								•	•	•	•	•	•	•		•	•
	5.9	Interdictions, raids, stings, infiltration	•	•								•	•	•	•	•	•	•		•	•
Sustainment	6.1	Tooth to tail	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•
	6.2	Logistics planning/resupply	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•
	6.3	Transport support	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•
	6.4	Engineering support	•	•											•	•	•	•	•	•	•
	6.5	Medical support	•												•	•	•	•	•	•	•
	6.6	Joint/interagency/coalition support	•			•				•						•	•	•	•	•	
	6.7	Indigenous/client/refugee support	•			•				•					•	•	•	•	•	•	•

Table 17. Tasks and attributes (part 2)

			Troops																		
	#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C31	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involvement	UN involvement	US agency involve	NGO involve	Coalition	Host stability
Redeployment	7.1	Priorities: effectiveness vs availability/feasibility	•	•								•	•	•	•	•	•	•		•	•
	7.2	Reposition assets	•			•			•		•				•	•	•	•	•	•	•
	7.3	Transition	•		•	•					•				•	•	•	•	•	•	•
	7.4	Reconstitution requirements		•																	

Table 17. Tasks and attributes (part 3)

			Terrain/Weather (Environment)											Time			
	#	Attributes / Tasks	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
Non-mission-related analysis	1.1	Instability fcst, impact fcst (psycho-social)			•		•	•	•	•	•	•	•			•	•
	1.2	Estimate cost of operation	•	•	•	•		•			•					•	•
Mission definition & analysis	2.1	Develop mission, MOEs, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	2.2	Determine ROEs			•		•	•	•	•	•	•					
	2.3	Define end-state, transition criteria					•	•	•	•	•		•			•	
	2.4	Determine force structure	•	•	•	•	•	•	•	•	•			•	•	•	•
	2.5	Determine force mix	•	•	•	•		•						•		•	
	2.6	Estimate readiness	•	•	•	•								•	•	•	•
	2.7	Risks & 'worst case' gaming	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	2.8	Robustness of mission success	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Table 17. Tasks and attributes (part 3)

			Terrain/Weather (Environment)											Time			
	#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
C^3I	3.1	Command arrangements, span of control	•	•		•				•	•	•		•	•	•	
	3.2	COA development		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	3.3	Staff estimates		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	3.4	COA evaluation		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	3.5	Maintenance of MOEs, including probability of mission success and end-state status															
	3.6	Monitor and feedback	•	•		•								•	•	•	•
	3.7	Activate JTF											•				
	3.8	Establish liaisons / CMOC					•	•	•	•	•				•	•	
	3.9	Communications	•	•	•	•						•			•	•	•
	3.10	Intel collection and ISR			•	•	•	•	•	•	•	•		•	•	•	•

Table 17. Tasks and attributes (part 3)

	#	Tasks	Terrain/Weather (Environment)											Time			
		Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-politi environ	Culture conflict	Oth nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
C^3I	3.11	Cultural awareness				•	•	•	•	•	•			•	•	•	
	3.12	Establish red teams					•	•						•	•	•	
	3.13	METT-T	•	•	•	•	•	•	•		•	•	•	•	•	•	•
	3.14	Identification of centers of gravity					•	•	•	•	•					•	
	3.15	Estimate threat	•		•	•	•	•	•		•				•	•	•
	3.16	Media / public affairs	•				•		•			•	•				
	3.17	PSYOPs			•	•	•	•	•	•	•	•	•	•	•	•	•
Mobilization/ Deployment	4.1	Initiate appropriate reserve call-up										•	•	•	•		
	4.2	Determine deployment timing	•	•	•	•	•										
	4.3	Determine deployment priorities	•	•	•	•	•										

Table 17. Tasks and attributes (part 3)

			Terrain/Weather (Environment)											Time			
	#	Attributes / Tasks	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
Mobilization/ Deployment	4.4	Determine transport capabilities	•	•	•									•	•	•	•
	4.5	Activate HAST															
	4.6	Activate CMOC						•									
Force employment	5.1	Establish LOCs	•	•	•	•								•	•	•	
	5.2	Force protection			•	•	•	•									•
	5.3	Force allocation & stationing			•	•	•	•						•	•	•	•
	5.4	Casualties & medical treatment analyses														•	
	5.5	Identify infrastructure improvement requirements			•	•											
	5.6	Support humanitarian operations	•	•	•	•	•	•	•	•	•					•	

Table 17. Tasks and attributes (part 3)

			Terrain/Weather (Environment)											Time			
	#	Attributes / Tasks	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Other nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
Force employment	5.7	Potential use of force	•	•	•	•	•	•							•		
	5.8	Mission rehearsal			•		•	•							•		
	5.9	Interdictions, raids, stings, infiltration	•	•	•	•	•	•	•	•	•						
Sustainment	6.1	Tooth to tail	•	•	•	•		•									
	6.2	Logistics planning/resupply	•	•	•	•		•						•		•	•
	6.3	Transport support	•	•	•	•		•						•	•	•	•
	6.4	Engineering support	•	•	•	•		•								•	
	6.5	Medical support	•	•	•	•		•							•	•	
	6.6	Joint/interagency/coalition support	•	•		•											
	6.7	Indigenous/client/refugee support		•	•	•	•	•				•	•			•	

Table 17. Tasks and attributes (part 3)

			Terrain/Weather (Environment)											Time			
	#	Attributes / Tasks	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-politi environ	Culture conflict	Oth nation interest	Great power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
Redeployment	7.1	Priorities: effectiveness vs availability/feasibility	•	•	•	•		•						•	•	•	
	7.2	*Reposition assets*			•	•								•	•		•
	7.3	Transition					•	•	•	•	•	•	•	•	•	•	
	7.4	Reconstitution *requirements*	•	•	•											•	•

5. SYNTHESIS

In the synthesis phase, ten OOTW analysis tool requirements were identified. These tools are needed by analysts variously at the National Command Authority level (NCA), at the CINC level or at the JTF level. Figure 11, near the end of the section, portrays these needs and the general relationships among the requirements. These requirements were merged with the tasks, categories, model capabilities, and data availability. Data from the users' statements of need, the OOTW frequency information, and sequencing of the requirements were used to generate priorities. The priorities and capability information were used to generate the recommended actions. All of this information is summarized in a requirements matrix at the end of the section (Table 38). In this section, the requirements are defined, followed by a compilation of the results.

5.1 REQUIREMENTS

Each of the 10 tools is associated with one or more tasks. These tasks were analyzed (see Table 16) for commonality and significance by OOTW category. In addition, each of these tasks was analyzed to determine which attributes impacted the task (see Table 17, parts 1-3). The tool requirement's connections to the tasks and the task vs category matrix (Table 16) were used to create individualized task vs category matrices. Similarly individual task vs attribute matrices were created for each requirement from the task vs attribute matrix (Table 17). These individual matrices are to be used in designing the analytical tools called for by the requirements. Where tools are customized to address a limited set of categories, the attribute vs category matrix (Table 15) should be consulted.

Associated with each requirement is an assessment of the current capability to build such a tool and the availability of data to support such a tool. The capability to build the tools, called modelability for brevity, is indicated by a three-valued rating. Green (G) is used for extant tools or relatively simple construction task. Yellow (Y) is used for a situation where the basic structure and algorithms required are known; however, the task will involve a fair amount of effort. Red (R) is used where the tool will be difficult to construct or the basic structure or algorithms are conjectural or unknown.

Data availability is also indicated by a three-valued rating. Readily available data is rated Available (OK). Data that will require funding to gather are rated Expensive ($). Data that are unavailable and require definition are rated Very Hard (V). Each tool requirement, its analysis results, and the recommended disposition are discussed.

Priorities for each requirement are taken from a five point scale. A priority of "1" represents a critical need for an automated supplement to current procedures, a "3" represents an important need, and a "5" represents an enhancement. Requirements scoring below a "3"

have been dropped. The priority values represent the consensus values from the September Monterey Workshop.

The recommended action for each tool is based on the priority and the estimated difficulty of developing the tool. Two basic actions are recommended, either "do now" or start "research and development." One requirement has a modified "do now" recommendation of "start now," indicating an estimate of a more complex modeling/data problem.

The following subsections characterize each requirement. The characterization gives a general description of the desired functionality and a first-level breakdown of the requirement, followed by the requirement priority, modelability, data availability, and recommended action. Most of the tasks that were identified in the research and defined in the analysis phase are addressed by one or more of the requirements; however, in dropping requirements scoring below "3" in priority, some aspects of some tasks are not completely addressed by any requirement. Further, a few tasks are not addressed in any aspect by any requirement. These unaddressed tasks are listed following the requirement discussions.

5.1.1 Situational Awareness

This tool supports the generation of a complete picture of the current and likely future situation. It includes both an operational mission component and a non-mission, regional or global component. All elements of the situation are included: red elements (threat, both human and natural, e.g., volcanoes), white (ostensibly neutral) elements, and blue (allied) elements. The factors that must be considered include location, intent, cultural and political environment, potential flashpoints, and centers of gravity.

The tool must support analysis of infrastructure status, evaluation of physical disaster effects, and display of engineering density predictions. This tool helps evaluate general support requirements, migrant interdiction, people's reactions to disaster effects, personnel tracking and locating, and visualization of refugee flows. Existing models and data, e.g. environmental, demographic, health, and other complex models require specialized support, which is not readily available to the CINC users. The tool must permit rapid update of locations of forces and population centers needing support.

The tool feeds and uses the database of requirement 5.1.10.

This tool supports (but may not necessarily perform all aspects of) task numbers 1.1, 2.6, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 5.4, 5.5, and 6.7.

- **Provide instability forecast, impact forecast (psycho-social)**, task # 1.1: Forecast the regions of potential instability, the predicted dates, the related probabilities, and the nature of the instabilities. Forecast the impact of various actions, both those intended to be remedial and otherwise.

- **Estimate readiness**, task # 2.6: Estimate the readiness of U.S. military forces, U.S. agency elements, and coalition elements to perform the mission.

- **Perform intelligence collection and ISR**, task # 3.10: Define Intelligence, Surveillance and Reconnaissance (ISR) needs and collect information and intelligence to support the mission, including information concerning threat, friendly and neutral elements and environmental information.

- **Establish cultural awareness**, task # 3.11: Establish and maintain awareness of significant cultural issues.

- **Establish red teams**, task # 3.12: Establish teams to think as opposition forces, providing realistic opposing courses of action.

- **Perform METT-T analysis**, task # 3.13: Perform complete METT-T analysis.

- **Identify centers of gravity**, task # 3.14: Identify locations at which minimal actions will produce maximal results, both desirable and undesirable.

- **Estimate threat**, task # 3.15: Estimate the nature and severity of threats to mission success.

- **Support media / public affairs**, task # 3.16: Provide media and public affairs support.

- **Execute PSYOPs**, task # 3.17: Conduct psychological activities (both benign and offensive) to induce desired actions.

- **Assess casualties and perform medical treatment analyses**, task # 5.4: Analyze casualty and medical treatment data to support COA development and MOE assessment.

- **Identify infrastructure improvement requirements**, task # 5.5: Identify infrastructure improvements needed to conduct the mission and needed under the humanitarian or nation building aspects of the mission.

- **Provide indigenous/client/refugee support**, task # 6.7: Provide support to ensure the safety of civilians. This includes location tracking.

This is primarily a display tool to support decision making. The priority is 2; modelability is rated as Yellow (Y); and the data availability is rated as Very Hard (V). The recommended action is to start work on the tool.

Table 18. Requirement 1 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilContOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
1.1	Instability fcst, impact fcst (psycho-social)	A	A	A	C	B	A	A	A	A	A	A
2.6	Estimate readiness	A	A	B	B	B	D	E	F	G	H	C
3.10	Intel collection and ISR	A	A	B	B	B	A	A	A	B	C	A
3.11	Cultural awareness	A	A	A	B	A	A	A	A	A	C	A
3.12	Establish red teams	A	A				A	A	A		A	A
3.13	METT-T	A	A	B	B	B	A	A	A	B	A	A
3.14	Identification of centers of gravity	A	A	B		B	C	C	D	B	A	A
3.15	Estimate threat (includes natural forces)	A	A	A	A	A	A	A	A	A	A	A
3.16	Support media/public affairs	A	A	B	B	B	C	C	C	C	D	B
3.17	Execute PSYOPs	A	A	B	B	B	C	C	C	C	D	B
5.3	Force allocation & stationing	A	A	A	B	A	A	A	A	A		
5.4	Casualties & medical treatment analyses	A	A	B	B	B	C	C	D	B	A	A
5.5	Identify infrastructure improvement requirements	A	A	B	B	B	C	C	D	B	F	E
6.7	Indigenous/client/ refugee support	B imp.	B imp.	A very imp.	A very imp.	A very imp.	B	B	B imp.	B imp.	B	A very imp.

Table 19. Requirement 1 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission, obj., MOEs	Pol-econ-ideal-symb	Assist rqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human tendency exists	Consent	Impartiality	Info-intel
1.1	Instability fcst, impact fcst (psycho-social)	•	•	•	•	•	•	•	•	•	•			•	•	•	•
2.6	Estimate readiness	•		•	•	•		•	•	•				•			
3.10	Intel collection and ISR	•	•	•			•	•	•	•	•			•	•	•	•
3.11	Cultural awareness	•	•	•	•	•		•		•	•			•	•	•	•
3.12	Establish red teams	•					•	•			•			•		•	•
3.13	METT-T	•	•	•	•	•	•	•	•	•	•			•	•	•	•
3.14	Identification of centers of gravity	•	•	•													•
3.15	Estimate threat	•	•		•	•	•	•	•	•	•			•	•	•	•
3.16	Media/public affairs	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
3.17	Psyops	•	•	•	•	•		•	•	•	•			•	•	•	•
5.4	Casualties & medical treatment analyses	•		•			•				•						•
5.5	Identify infrastructure improvement requirements	•		•			•										•
6.7	Indigenous/client/refugee support	•	•	•								•	•				•

Table 19. Requirement 1 tasks and attributes (part 2)

#	Tasks / Attributes	Troops: Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
1.1	Instability fcst,impact fcst (psych o-social)		•		•						•	•	•	•	•	•	•	•	•	•
2.6	Estimate readiness	•	•	•	•	•	•	•	•	•					•	•				
3.10	Intel collection and ISR	•	•	•	•	•	•	•	•		•	•	•		•	•	•	•	•	•
3.11	Cultural awareness				•	•			•					•	•	•	•	•	•	•
3.12	Establish red teams	•									•	•	•							•
3.13	METT-T										•	•	•	•						
3.14	Identificati on of centers of gravity				•						•	•	•	•						•
3.15	Estimate threat	•									•	•	•	•	•					•
3.16	Media / public affairs	•												•	•		•		•	
3.17	Psyops	•	•				•	•	•		•						•			•
5.4	Casualties & medical analyses													•	•	•	•	•	•	
5.5	Identify infrastretr imprvmnt requrmnts				•	•								•						
6.7	Indige/ client/refu gee spprt	•			•				•					•	•	•	•	•	•	•

Table 19. Requirement 1 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
1.1	Instability fcst, impact fcst (psycho-social)			•		•	•	•	•	•	•	•			•	•
2.6	Estimate readiness	•	•	•	•								•	•	•	•
3.10	Intel collection and ISR			•	•	•	•	•	•	•	•		•	•	•	•
3.11	Cultural awareness				•	•	•	•	•	•			•	•	•	
3.12	Establish red teams					•	•						•	•	•	
3.13	METT-T	•	•	•	•	•	•	•		•	•	•	•	•	•	•
3.14	Identification of centers of gravity					•	•	•	•	•					•	
3.15	Estimate threat	•		•	•	•	•	•		•				•	•	•
3.16	Media / public affairs	•				•		•			•	•				
3.17	Psyops			•	•	•	•	•	•	•	•	•	•	•	•	•
5.4	Casualties & medical treatment analyses														•	
5.5	Identify infrastructure improvement requirements			•	•											
6.7	Indigenous/client/refugee support		•	•	•	•	•				•	•			•	

5.1.2 Impact Analysis

This tool supports the analysis of the impact of human actions (own-side, opposition or neutral parties) on the current situation and on future plans. The human environment that must be considered includes the political environment, the economic environment, and the cultural environment. The tool includes both an operational mission component and a non-mission, regional or global, component. It uses the database of 5.1.10.

Elements include:

Impact of proposed or current OOTWs on
strategy,
other missions, such as MRCs and other OOTWs, and
Joint Strategic Capabilities Plan (JSCP) Tasking;

Instability analysis - predicting future trouble spots; and

Visibility for unintended consequences.

This tool supports (but may not necessarily perform all aspects of) task numbers 1.1, 3.11, 3.13, 3.14, and 3.16.

- **Provide instability forecast, impact forecast (psycho-social)**, task # 1.1: Forecast the regions of potential instability, the predicted dates, the related probabilities, and the nature of the instabilities. Forecast the impact of various actions, both those intended to be remedial and otherwise.

- **Establish cultural awareness**, task # 3.11: Establish and maintain awareness of significant cultural issues.

- **Perform METT-T analysis**, task # 3.13: Perform complete METT-T analysis.

- **Identify centers of gravity**, task # 3.14: Identify locations at which minimal actions will produce maximal results, both desirable and undesirable.

- **Support media / public affairs**, task # 3.16: Provide media and public affairs support.

This is a complex model, which must display the range of likely results in an understandable manner. Careful attention must be paid to the user interface. The priority is 1; modelability is Red (R); and data availability is Very Hard (V). Because of uncertainties concerning the best modeling approach, the recommended action is to start research and development on the tool.

Table 20. Requirement 2 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilContOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
1.1	Instability fcst, impact fcst (psycho-social)	A	A	A	C	B	A	A	A	A	A	A
3.11	Cultural awareness	A	A	A	B	A	A	A	A	A	C	A
3.13	METT-T	A	A	B	B	B	A	A	A	B	A	A
3.14	Identification of centers of gravity	A	A	B		B	C	C	D	B	A	A
3.16	Support media/public affairs	A	A	B	B	B	C	C	C	C	D	B

Table 21. Requirement 2 tasks and attributes (part 1)

		Mission												Enemy			
	Attributes	Mission, obj, MOEs	Pol-econ-ideal-symb	Assist rqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info.-intel
#	Tasks																
1.1	Instability fcst, impact fcst (psycho-social)	•	•	•	•	•	•	•	•	•	•			•	•	•	•
3.11	Cultural awareness	•	•	•	•	•		•		•	•			•	•	•	•
3.13	METT-T	•	•	•	•	•	•	•	•	•	•			•	•	•	•
3.14	Identification of centers of gravity	•	•	•													•
3.16	Media/public affairs	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

Table 21. Requirement 2 tasks and attributes (part 2)

		Troops																		
#	Tasks / Attributes	Command structure	Force mix	FS: integrtd plan	CMOC	FS: HAST rqmt	FS: C3I	FS: security	FS: liaisons	FS: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
1.1	Instability fest,impact fest (psych o-social)		•		•						•	•	•	•	•	•	•	•	•	•
3.11	Cultural awareness				•	•			•					•	•	•	•	•	•	•
3.13	METT-T										•	•	•	•						
3.14	Identify centers of gravity				•						•	•	•	•						•
3.16	Media / public affairs	•												•	•		•		•	

Table 21. Requirement 2 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Attributes / Tasks	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Other nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
1.1	Instability fcst, impact fcst (psycho-social)			•		•	•	•	•	•	•	•			•	•
3.11	Cultural awareness				•	•	•	•	•	•			•	•	•	
3.13	METT-T	•	•	•	•	•	•	•		•	•	•	•	•	•	•
3.14	Identification of centers of gravity					•	•	•	•	•					•	
3.16	Media / public affairs	•				•		•			•	•				

5.1.3 Mission Definition and Analysis

This requirement is for a tool or tools to support mission definition in its broadest sense. At the NCA level this includes the basic definition of the mission, while at the CINC level this includes suggested refinements or requests for clarification. Elements of this tool requirement include:

Mission definition,
MOEs,
MOPs,
ROEs,
End-state and transition criteria,
Command arrangements concepts

This tool supports (but may not necessarily perform all aspects of) task numbers 2.1, 2.2, 2.3, and 3.1.

- **Develop mission, MOEs, etc.**, task # 2.1: Develop the proposed mission and its elements and the MOEs necessary for evaluating the progress of the mission.

- **Determine ROEs**, task # 2.2: Determine the appropriate ROEs for the proposed mission and its elements under various potential situations.

- **Define end-state, transition criteria**, task # 2.3: Define the mission end-state and the nature of the transition to be carried out at mission end. Define the criteria for the elements of the transition.

- **Create command arrangements, span of control**, task # 3.1: Define the relationships among the military, government agencies, coalition forces, and NGOs/PVOs.

This is a simple decision support tool that supports the organization and display of inputs and choices. The priority is 2; modelability is rated as Green (G); and the data availability is rated as Available (OK). The recommended action is to do now.

Table 22. Requirement 3 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilCoinOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
2.1	Develop mission, MOEs, etc.	A	B	C	D	E	G	H	I	J	K	F
2.2	Determine ROEs	A	A	A	A	A	A	A	A	A	A	A
2.3	Define end-state, transition criteria	A	A	A	A	A			A	A	A	A
3.1	Command arrangements, span of control	A	A	B	B	B	C ad hoc	D ad hoc	E	E	F	A

Table 23. Requirement 3 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission, obj., MOEs	Pol-econ-ideal-symb	Assist rqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
2.1	Develop mission, MOEs, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.2	Determine ROEs	•	•		•	•	•	•	•	•	•			•	•	•	•
2.3	Define end-state, transition criteria	•	•	•			•	•	•	•	•			•	•	•	•
3.1	Command arrangements, span of control	•	•	•			•	•						•			

Table 23. Requirement 3 tasks and attributes (part 2)

		Troops																		
#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
2.1	Develop mission, MOEs,etc.	•									•	•		•	•	•	•	•	•	•
2.2	Determine ROEs										•	•	•		•	•	•	•	•	•
2.3	Define end-state, transition criteria													•	•	•	•	•	•	•
3.1	Command arrangements, span of control		•	•	•			•	•	•	•		•		•	•	•	•	•	

Table 23. Requirement 3 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
2.1	Develop mission, MOEs, etc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.2	Determine ROEs			•		•	•	•	•	•	•					
2.3	Define end-state, transition criteria					•	•	•	•	•		•			•	
3.1	Command arrangements, span of control	•	•		•				•	•	•		•	•	•	

5.1.4 Force Planning: Design Forces

This requirement is to support the design of primary and secondary forces for use in OOTWs, where the primary forces may consist of forces that belong in the secondary category in combat operations. These forces include U.S. non-military and non-U.S. elements.

Elements include:

medical support needs, including disaster effects on medical needs,
civilian (indigenous) support,
engineering support needs,
MP and Law enforcement operations,
Civil Affairs,
communications support, and
public affairs/PSYOP/media support.

Considerations include:

tooth-to-tail ratio,
US/coalition/UN/NGO/PVO/interagency mix,
active/reserve mix,
employment of small and partial units and support thereof, and
command arrangement details.

There is a high priority need for tools to:

balance effectiveness against availability/feasibility.
do trade-off analyses.
consider joint/interagency/coalition functionality/interoperability, and
estimate force structure effectiveness.

The analysis tool must tie to the infrastructure evaluation, physical disaster effects models, and engineering density predictions of situation awareness. It must also be based on indigenous/client/refugee support needs from situation awareness. It uses the database of 5.1.10.

This tool supports (but may not necessarily perform all aspects of) task numbers 2.4, 2.5, 3.16, 5.5, 5.6, 5.9, 6.1, 6.4, 6.5, 6.6, 6.7, 7.1, and 7.4.

- **Determine force structure, heavy vs light forces, weapons mix**, task # 2.4: Determine the appropriate force structure for the mission. This force includes forces needed to open and maintain LOCs, as well as the employment force.

- **Determine active/reserve mix to meet force requirements, to include tailoring**, task # 2.5: Determine the mix of active and reserve forces required to accomplish the mission, the service mix (including Coast Guard), the coalition forces mix based on task allocations. The decisions of this task are also conditioned on the range of expected contributions by civilian organizations, including NGO/PVOs.

- **Support media/public affairs**, task # 3.16: Provide media and public affairs support.

- **Identify infrastructure improvement requirements**, task # 5.5: Identify infrastructure improvements needed to conduct the mission and needed under the humanitarian or nation building aspects of the mission.

- **Support humanitarian operations**, task # 5.6: Support all aspects of humanitarian operations as called for in the mission.

- **Perform interdictions, raids, stings, infiltration**, task # 5.9: Perform military contingency operations in cooperation with government agencies, host government, or coalition forces as appropriate.

- **Balance tooth to tail ratio**, task # 6.1: Maintain the desirable ratio of combat, combat support, and combat service support forces, given the needs of all parties in the mission.

- **Provide engineering support**, task # 6.4: Provide engineering support needed for mission accomplishment and humanitarian and nation building elements of the mission.

- **Provide medical support**, task # 6.5: Provide medical support to mission forces and to accomplish humanitarian mission elements.

- **Provide joint/interagency/coalition support**, task # 6.6: Provide needed support to all parts of the mission forces, as required.

- **Provide indigenous/client/refugee support**, task # 6.7: Provide support to ensure the safety of civilians. This includes location tracking.

- **Determine priorities: effectiveness vs availability/feasibility**, task # 7.1: Determine redeployment priorities, comparing effectiveness in current and future tasks against the availability or feasibility of alternative options. This includes consideration for rotation of troops.

- **Determine reconstitution requirements**, task # 7.4: Determine what retraining, etc., is needed to reconstitute the forces.

This is a decision support tool, with graphical user interface (GUI), and must be tied closely to current large databases. The CAPS and FAST-OR tools are candidates for enhancement. The priority is 1; modelability is rated as Yellow (Y)-Red (R); and the data availability is rated as Expensive ($)-Very Hard (V). The recommended action is to create the tool now.

Table 24. Requirement 4 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilContOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NBO
2.4	Determine force structure, heavy vs light forces	A: data, decision aids	A: data, decision aids	B: models, decision aids	B: models, decision aids	B: models, decision aids	D improve fusion	D improve fusion	E:research, data problems	E:research, data problems	F: basically exist	C: models, decision aids
2.5	Determine force mix, active/reserve, service, coalition, civilian	A: data, decision aids	A: data, decision aids	B: models, decision aids	B: models, decision aids	B: models, decision aids	D improve fusion	D improve fusion	E:research, data problems	E:research, data problems	F: basically exist	C: models, decision aids
3.16	Support media/public affairs	A	A	B	B	B	C	C	C	C	D	B
5.5	Identify infrastructure improvement requirements	A	A	B	B	B	C	C	D	B	F	E
5.6	Support humanitarian operations	A	B	C	C	C	D	E	F	C	A	A
5.9	Interdictions, raids, stings, infiltration	A	A				B	B	B		A	A

Table 24. Requirement 4 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilCostOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
6.1	Balance tooth to tail ratio	B imp.	D imp.	A min footprint, imp.	A	A imp.	E	C	D imp.	B imp.	E	E
6.4	Engineering support	B imp.	B imp.	B very imp.	A	A very imp.	C		B imp.	A imp.	B	
6.5	Medical support	C	B	A very imp.	A very imp.	A very imp.	C	C imp.	C imp.	C imp.	C	C
6.6	Joint/interagency/ coalition support	A imp.	A imp.	A very imp.	A very imp.	A very imp.	B imp.	C imp.	B imp.	B imp.	B	B
6.7	Indigenous/client/ refugee support	B imp.	B imp.	A very imp.	A very imp.	A very imp.	B	B	B imp.	B imp.	B	A very imp.
7.1	Priorities: effectiveness vs availability/feasibility	C	C	A	A	A	B		B	A	B	B
7.4	Reconstitution requirements	A	A	B		B			B	B		

Table 25. Requirement 4 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission. obj. MOEs	Pol-econ-ideal-symb	Assistrqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
2.4	Determine force structure	•	•	•	•	•	•	•	•	•	•			•	•	•	•
2.5	Determine force mix	•	•	•	•	•											
3.16	Media/public affairs	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
5.5	Identify infrastructure improvement requirements	•		•			•										•
5.6	Support humanitarian operations	•	•	•			•					•	•				•
5.9	Interdictions, raids, stings, infiltration	•	•		•	•	•	•						•			•
6.1	Tooth to tail	•	•	•	•	•	•	•	•	•	•			•			•
6.4	Engineering support	•	•	•			•										•
6.5	Medical support	•	•	•			•	•			•						•
6.6	Joint/interagency/coalition support	•		•	•	•											
6.7	Indigenous/client/refugee support	•	•	•								•	•				•
7.1	Priorities: effectiveness vs availability/feasibility	•					•	•						•			•
7.4	Reconstitution requirements	•						•	•			•	•				

Table 25. Requirement 4 tasks and attributes (part 2)

#	Tasks	Attributes: Troops																		
		Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host spport/infra	Othr nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
2.4	Determine force structure	•		•	•	•	•	•	•	•	•	•		•	•	•	•		•	•
2.5	Determine force mix	•												•	•	•	•	•	•	•
3.16	Media / public affairs	•												•	•		•		•	
5.5	Identify infrastrctr imprvmnt requrmnts				•	•								•						
5.6	Support humanitarian ops	•			•	•			•	•				•	•	•	•	•	•	•
5.9	Interdctns, raids, infiltration	•	•								•	•	•	•	•	•	•		•	•
6.1	Tooth to tail	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•
6.4	Enginrng support	•	•											•	•	•	•	•	•	•
6.5	Medical support	•												•	•	•	•	•	•	•
6.6	Joint/inter agency/ coalition support	•			•				•						•	•	•	•	•	
6.7	Indige/ client/refu gee sprt	•			•				•					•	•	•	•	•	•	•
7.1	Priorities: effectve vs availability /feasibility	•	•								•	•	•	•	•	•	•		•	•
7.4	Recons-titution requrmnts		•																	

Table 25. Requirement 4 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Other nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
2.4	Determine force structure	•	•	•	•	•	•	•	•	•			•	•	•	•
2.5	Determine force mix	•	•	•	•		•						•		•	
3.16	Media / public affairs	•				•		•			•	•				
5.5	Identify infrastructure improvement requirements			•	•											
5.6	Support humanitarian operations	•	•	•	•	•	•	•	•	•					•	
5.9	Interdictions, raids, stings, infiltration	•	•	•	•	•	•	•	•	•						
6.1	Tooth to tail	•	•	•	•		•									
6.4	Engineering support	•	•	•	•		•								•	
6.5	Medical support	•	•	•	•		•							•	•	
6.6	Joint/interagency/coalition support	•	•		•											
6.7	Indigenous/client/refugee support		•	•	•	•	•				•	•			•	
7.1	Priorities: effectiveness vs availability/feasibility	•	•	•	•		•						•	•	•	
7.4	Reconstitution requirements	•	•	•											•	•

5.1.5 Force Planning: Deployment Scheduling

This requirement is to support the timing and prioritization of deployment scheduling, including U.S. non-military and non-U.S. elements. It includes the logistics support planning and transport planning. The goal is to support a 6-8 hour turn around from a no-plan situation.

There is a need for user-friendly interfaces to permit experimentation with different schedules. The tool must not be just U.S. military oriented. It needs to specifically address the inter- and intra-theater and intermodal seams and provide mobility network analysis. It should be able to infer supply needs once the force structure has been determined.

This tool supports (but may not necessarily perform all aspects of) task numbers 4.1, 4.2, 4.3, 4.4, 5.1, 6.2, and 6.3.

- **Initiate appropriate reserve call-up**, task # 4.1: Determine what reserves are needed and request call-up where appropriate. This task requires maintenance of information on immediate availability of reserves and availability of active service time.

- **Determine deployment timing**, task # 4.2: Determine the sequence of arrival by units required to accomplish the mission and provide security.

- **Determine deployment priorities**, task # 4.3: Determine deployment priorities to resolve bottlenecks.

- **Determine transport capabilities**, task # 4.4: Determine availabilities and capabilities of the transport resources needed to accomplish the mission, including any transport needed for other agencies, coalition partners, and NGOs/PVOs.

- **Establish LOCs**, task # 5.1: Establish the lines of communication (LOCs).

- **Perform logistics planning/resupply**, task # 6.2: Provide adequate logistics and supply for all mission forces and to support humanitarian mission needs.

- **Provide transport support**, task # 6.3: Provide transportation support for mission forces, including appropriate NGOs/PVOs and media personnel.

This is a decision support tool that displays options and results. The Force Deployment Estimator (FDE) and JFAST models are candidates for enhancement. The priority is 1; modelability is rated as Green (G)-Yellow (Y); and the data availability is rated as Available (OK)-Expensive ($). The recommended action is to create this tool now.

Table 26. Requirement 5 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilCoordOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
4.1	Initiate appropriate reserve call-up, track	A	A	A	A	A	A	A	A	A	A	A
4.2	Determine deployment timing	A: good sched uling model	A: good schedu ling model	A: good schedu ling model	A: good schedu ling model	A: good schedu ling model		A: good schedu ling model	A: good schedu ling model	A: good schedu ling model	B basically exist	A: good schedul ing model
4.3	Determine deployment priorities	A: good schdli ng model	A: good schdlin g model	A: good schdlin g model	A: good schdlin g model	A: good schdlin g model		A: good schdlin g model	A: good schdlin g model	A: good schdlin g model	B basically exist	A: good schdlin g model
4.4	Determine transport capabilities	A: good schdli ng model	A: good schdlin g model	A: good schdlin g model	A: good schdlin g model	A: good schdlin g model		A: good schdlin g model	A: good schdlin g model	A: good schdlin g model	B basically exist	A: good schdlin g model
5.1	Establish LOCs	A	A	A	B	A	A	A	A	A	A	A
6.2	Logistics planning/ resupply	B	B	A	A	A	C	D	B	B	C	C
6.3	Transport support	B imp.	A imp.	A very imp.	A	A very imp.	B	B	B imp.	B imp.	B	B very imp.

Table 27. Requirement 5 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission, obj, MOEs	Pol-econ-ideal-symb	Assistrqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
4.1	Initiate appropriate reserve call-up																
4.2	Determine deployment timing	•	•	•			•	•									•
4.3	Determine deployment priorities	•	•	•			•	•									•
4.4	Determine transport capabilities			•			•			•							
5.1	Establish LOCs	•					•	•		•				•	•	•	•
6.2	Logistics planning/resupply	•	•	•				•			•						
6.3	Transport support	•		•	•	•		•	•					•			

Table 27. Requirement 5 tasks and attributes (part 2)

		Troops																		
#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilties	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
4.1	Initiate reserve call-up																			
4.2	Determine deployment timing	•			•	•		•	•	•	•	•		•	•	•	•		•	•
4.3	Determine deploymnt priorities	•			•	•		•	•	•	•	•		•	•	•	•		•	•
4.4	Determine transport capability		•			•								•	•	•	•	•	•	•
5.1	Establish LOCs	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•
6.2	Logistics planning/ resupply	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•
6.3	Transport support	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•

Table 27. Requirement 5 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
4.1	Initiate appropriate reserve call-up										•	•	•	•		
4.2	Determine deployment timing	•	•	•	•	•										
4.3	Determine deployment priorities	•	•	•	•	•										
4.4	Determine transport capabilities	•	•	•									•	•	•	•
5.1	Establish LOCs	•	•	•	•								•	•	•	
6.2	Logistics planning/resupply	•	•	•	•		•						•		•	•
6.3	Transport support	•	•	•	•		•						•	•	•	•

5.1.6 COA Development, Analysis, Comparison

This tool supports both mission definition and force employment COA development, analysis, comparison, estimates of success and casualty predictions, risk modeling, and especially recommendations.

This tool supports (but may not necessarily perform all aspects of) task numbers 2.7, 2.8, 3.2, 3.3, 3.4, 5.2, and 5.7.

- **Evaluate risks and do 'worst case' gaming**, task # 2.7: Evaluate the risks of mission failure, both as to failure modes and severity. Perform gaming to identify worst case results.

- **Estimate probability of mission success**, task # 2.8: Estimate the probabilities of mission success associated with likely geo-political and operational events.

- **Develop COAs**, task # 3.2: Develop courses of action.

- **Perform staff estimates**, task # 3.3: Prepare staff estimates.
- **Evaluate COAs**, task # 3.4: Analyze and compare courses of action.
- **Protect forces**, task # 5.2: Ensure adequate protection of all forces, including other agencies, coalition forces, and NGO/PVOs.
- **Allocate and station forces**, task # 5.3: Determine optimal allocation and stationing of forces.
- **Evaluate potential use of force**, task # 5.7: Evaluate the need for force, whether lethal or non-lethal.
- **Reposition assets**, task # 7.2: Reposition forces and systems as needed.

This is a decision support tool that requires a good user interface. Responsiveness is the key factor. The priority is 1; modelability is rated as Red (R); and the data availability is rated as Very Hard (V). Because the best modeling approach is uncertain, the recommended action is initiate research and development.

Table 28. Requirement 6 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilContOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
2.7	Risks & 'worst case' gaming	A	A				C	C	D	D	E	B
2.8	Robustness of mission success	A	A	B		B	D	E	F	G	H	C
3.2	COA development	A	A	B	B	B	C	C	D	B	A	A
3.3	Staff estimates	A important	A imp.	B imp.	B	B imp.	C imp.	C imp.	D imp.	B imp.	A imp.	A imp.
3.4	COA evaluation	A imp.	A imp.	B imp.	B	B imp.	C imp.	C imp.	D imp.	B imp.	A imp.	A imp.
5.2	Force protection	A	A	B		C	A	A	A	B	A	A
5.3	Force allocation & stationing	A	A	A	B	A	A	A	A	A		
5.7	Evaluate potential use of force, targeting	A	B				C	C	D		B	B
7.2	Reposition assets	C	C	A		A	B		B	B		

Table 29. Requirement 6 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission, obj. MOEs	Pol-econ-ideal-symb	Assistqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy existts	Consent	Impartiality	Info-intel
2.7	Risks & 'worst case' gaming	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.8	Robustness of mission success	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.2	COA development	•	•	•	•	•	•	•	•	•	•			•	•	•	•
3.3	Staff estimates	•	•	•	•	•	•	•	•	•	•			•	•	•	•
3.4	COA evaluation	•	•	•	•	•	•	•	•	•	•			•	•	•	•
5.2	Force protection	•		•	•	•	•	•	•	•	•			•	•	•	•
5.3	Force allocation & stationing	•	•	•	•	•	•	•		•	•			•	•	•	•
5.7	Potential use of force	•	•					•	•		•			•	•	•	•
7.2	Reposition assets	•		•			•	•						•			•

Table 29. Requirement 6 tasks and attributes (part 2)

		Troops																		
#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other national involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
2.7	Risks & worst case gaming	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.8	Robustness of success	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.2	COA development	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.3	Staff estimates	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.4	COA evaluation	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
5.2	Force protection	•	•					•			•	•	•	•	•	•	•	•	•	•
5.3	Force allocation, stationing	•	•		•		•	•	•	•				•	•	•	•	•	•	•
5.7	Potential use of force	•	•	•			•	•	•	•	•	•	•							•
7.2	Reposition assets	•			•			•		•				•	•	•	•	•	•	•

Table 29. Requirement 6 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-political environ	Culture conflict	Other nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
2.7	Risks & 'worst case' gaming	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.8	Robustness of mission success	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.2	COA development		•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.3	Staff estimates		•	•	•	•	•	•	•	•	•	•	•	•	•	•
3.4	COA evaluation		•	•	•	•	•	•	•	•	•	•	•	•	•	•
5.2	Force protection			•	•	•	•									•
5.3	Force allocation & stationing			•	•	•	•						•	•	•	•
5.7	Potential use of force	•	•	•	•	•	•							•		
7.2	Reposition assets			•	•								•	•		•

5.1.7 Transition Planning and Tracking of Operational Data

This tool supports continued planning of the transition and tracking of MOEs, MOPs, end-state and transition criteria, and analysis of such things as casualties and medical treatments. It should track force status, readiness, morale (all elements of force) - expanded GCCS Status of Readiness and Training System (SORTS) concept. It should track historical data and trends. The system should perform roll-ups of subsidiary items.

This tool supports (but may not necessarily perform all aspects of) task numbers 3.5, 3.6, 5.4, and 7.3.

- **Maintain MOEs, including probability of mission success and end-state status,** task # 3.5: Maintain current values for each of the mission MOEs on the appropriate periodic basis, whether daily, weekly, or monthly.

- **Monitor situation and provide feedback**, task # 3.6: Monitor the situation and provide feedback to all necessary parties.

- **Assess casualties and perform medical treatment analyses**, task # 5.4: Analyze casualty and medical treatment data to support COA development and MOE assessment.

- **Perform transition**, task # 7.3: Plan and conduct the transition of activities to follow on forces or civil authorities.

The need is for a simple system for entering tracking items and their connections. Linked spreadsheets, tied to data and rolodex type file of contacts. The priority 3; modelability is rated as Green (G); and the data availability is rated as Available (OK). The recommended action is to create the tool now.

Table 30. Requirement 7 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilCoutOps	
#	Tasks	PE	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
3.5	Maintenance of MOEs, including probability of mission success and end-state status	A tool needed	A tool needed	B tool needed	B tool needed	B tool needed	B tool needed	B tool needed	B tool needed	B tool needed		A tool needed
3.6	Monitor situation and provide feedback	A	A	A	A	A	A	A	A	A	A	A
5.4	Casualties & medical treatment analyses	A	A	B	B	B	C	C	D	B	A	A
7.3	Transition	A	A	A	A	A	B		B	B		

Table 31. Requirement 7 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission, obj., MOEs	Pol-econ-ideall-symb	Assistrqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human geography exists	Consent	Impartiality	Info-intel
3.5	Maintenance of MOEs, including probability of mission success and end-state status	•		•													•
3.6	Monitor and feedback	•	•	•	•	•	•	•	•	•	•			•	•	•	•
5.4	Casualties & medical treatment analyses	•		•			•				•						•
7.3	Transition	•	•	•	•	•	•					•	•		•	•	•

Table 31. Requirement 7 tasks and attributes (part 2)

		Troops																		
#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involvement	UN involvement	US agency involve	NGO involve	Coalition	Host stability
3.5	Maintnnc MOEs, prob of success end-state	•													•	•	•	•	•	
3.6	Monitor, feedback	•			•	•	•													
5.4	Casualties & medical analyses													•	•	•	•	•	•	
7.3	Transition	•		•	•					•				•	•	•	•	•	•	•

Table 31. Requirement 7 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
	Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
#	Tasks															
3.5	Maintenance of MOEs, including probability of mission success and end-state status															
3.6	Monitor and feedback	•	•		•								•	•	•	•
5.4	Casualties & medical treatment analyses														•	
7.3	Transition					•	•	•	•	•	•	•	•	•	•	

5.1.8 Communications Analysis

This tool supports communications analysis. Analytic support for communications systems design and adaptation exists (e.g., the C^3I-Network Analysis Model [C^3I-NAM]), however, ease of use for planners could be improved. It needs to have an interoperability focus and include non-U.S. and non-military equipment.

This tool supports (but may not necessarily perform all aspects of) task number 3.9.

- **Design, install communications**, task # 3.9: Design and install the communications systems, including non-standard communications with other government agencies, coalition forces, host government, and NGOs/PVOs.

This is a complex model/simulation. The priority is 3; modelability is rated as Yellow (Y); and the data availability is rated as Expensive ($). The recommended action is to start research on the tool.

Table 32. Requirement 8 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilContOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
3.9	Design, install communications	A	A	A	A	A	A	A	A	A	A	A

Table 33. Requirement 8 tasks and attributes (part 1)

		Mission												Enemy			
	Attributes	Mission. obj. MOEs	Pol-econ-ideal-symb	Assist rqrd	ROE	Legal restraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
#	Tasks																
3.9	Communications	•		•			•	•		•				•	•		

Table 33. Requirement 8 tasks and attributes (part 2)

		Troops																			
	Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
#	Tasks																				
3.9	Communications	•	•		•				•					•	•	•	•	•	•	•	

Table 33. Requirement 8 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
	Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Oth nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
#	Tasks															
3.9	Communications	•	•	•	•						•			•	•	•

5.1.9 Cost Analysis

This tool models costs of generic OOTWs for use in national force structure planning, input to decisions on engaging in an OOTW, and to estimate comparative costs during mission planning. Historical data is required.

Elements include:

opportunity cost and
comparative costs of different force structures.

This tool supports (but may not necessarily perform all aspects of) task number 1.2.

- **Estimate cost of operation**, task # 1.2: Estimate the cost of operations, including both direct and indirect costs.

This is a medium-complexity model. The priority is 3; modelability is Yellow (Y); and the data availability is Expensive ($). Do it now.

Table 34. Requirement 9 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilContOps	
#	Tasks	PK	PE	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
1.2	Estimate cost of operation	A	A	B	B	B	D	E	F	G	H	C

Table 35. Requirement 9 tasks and attributes (part 1)

		Mission												Enemy			
#	Tasks / Attributes	Mission, obj, MOEs	Pol-econ-ideal-symb	Assistrqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy exists	Consent	Impartiality	Info-intel
1.2	Estimate cost of operation	•	•	•	•	•	•	•	•	•	•			•	•	•	

Table 35. Requirement 9 tasks and attributes (part 2)

		Troops																	
#	Tasks / Attributes	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nation involve	UN involvement	US agency involve	NGO involve	Coalition	Host stability
1.2	Estimate cost of operation	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Table 35. Requirement 9 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
	Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-polit environ	Culture conflict	Other nation interest	Great power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
#	Tasks															
1.2	Estimate cost of operation	•	•	•	•		•			•					•	•

5.1.10 Information Availability and Analysis

The requirement is to support data collection and analysis for all other tasks.

Elements include:

regional databases,
historical data/analysis (use of people, equipment, costs of past OOTWs),
database on equivalences of foreign units and equipment to U.S. and interoperability,
NGO/PVO roles and missions,
situational awareness data, and
access to lessons learned, with a GUI.

This tool supports (but may not necessarily perform all aspects of) task number 3.10.

- **Perform intelligence collection and ISR**, task # 3.10: Define Intelligence, Surveillance and Reconnaissance (ISR) needs and collect information and intelligence to support the mission, including information concerning threat, friendly and neutral elements and environmental information.

This is a database (possibly distributed) tool, with attention paid to standard feeds from current data entry and ease of data retrieval. The priority is 1; modelability is rated as Yellow (Y); and the data availability is rated as Very Hard (V). Because information availability is central to all of the other requirements and needs immediate attention at the research and development, experimental and user levels, the recommended action is to do now.

Table 36. Requirement 10 tasks and categories

	Categories	PO		HA/DR			National Integrity Ops				MilCostOps	
#	Tasks	PK	PB	HA	DR-dom	DR-int	CD	CT	CI	NA	General	NEO
3.10	Intel collection and ISR	A	A	B	B	B	A	A	A	B	C	A

Table 37. Requirement 10 tasks and attributes (part 1)

		Mission												Enemy			
#	Attributes / Tasks	Mission, obj, MOEs	Pol-econ-ideal-symb	Assist rqrd	ROE	Legal constraint	Degree of risk	Use of force	Conflict intensity	Conflict scope	Casualties	Direct cost	Indirect cost	Human enemy existence	Consent	Impartiality	Info-intel
3.10	Intel collection and ISR	•	•	•			•	•	•	•	•			•	•	•	•

Table 37. Requirement 10 tasks and attributes (part 2)

		Troops																		
#	Attributes / Tasks	Command structure	Force mix	Fs: integrtd plan	CMOC	Fs: HAST rqmt	Fs: C3I	Fs: security	Fs: liaisons	Fs: logistics	Military capabilities	Military technology	Force ratio	Host support/infra	Other nations involvement	UN involvement	US agency involve	NGO involve	Coalition	Host stability
3.10	Intel collection and ISR	•	•	•	•	•	•	•	•		•	•	•		•	•	•	•	•	•

Table 37. Requirement 10 tasks and attributes (part 3)

		Terrain/Weather (Environment)											Time			
#	Tasks / Attributes	Location	Dist from US	Environ/terrain	Size of AO/demog	Geo-political environ	Culture conflict	Other nation interest	Great Power involve	Political sphere	Media attention	US public support	Time	Planning time	Duration	OPTEMPO/PERSTEMPO
3.10	Intel collection and ISR			•	•	•	•	•	•	•	•		•	•	•	•

5.1.11 Unaddressed Tasks

Most of the tasks that were defined in the analysis phase are addressed by at least one tool requirement; however, there are several tasks that are not addressed by any requirement. Generally, the reason is either low priority (below 3) or low analysis content for the task. The unaddressed tasks are collected below.

- **Activate JTF**, task # 3.7: Define the needed structure for the JTF and activate it.
- **Establish liaisons/CMOC**, task # 3.8: Establish the CMOC. Establish liaisons with government agencies and NGOs/PVOs.
- **Activate HAST**, task # 4.5: Define and activate the HAST.
- **Activate CMOC**, task # 4.6: Determine a suitable location and activate the CMOC.
- **Rehearse missions**, task # 5.8: Provide for mission rehearsal.

5.2 REQUIREMENTS RELATIONSHIPS

Several of the tools must serve multiple uses, supporting analysis of particular missions and missions in general or supporting analysis at the strategic and the operational levels. Many of the analysis activities depend on other activities, whether or not these activities are supported by tools. Some activity groups have iterative relationships. Fig. 11 suggests these relationships at a macroscopic level. Other relationships may also exist at the detail level.

Activities for which analytical tools are not proposed are omitted to reduce the complexity of the figure.

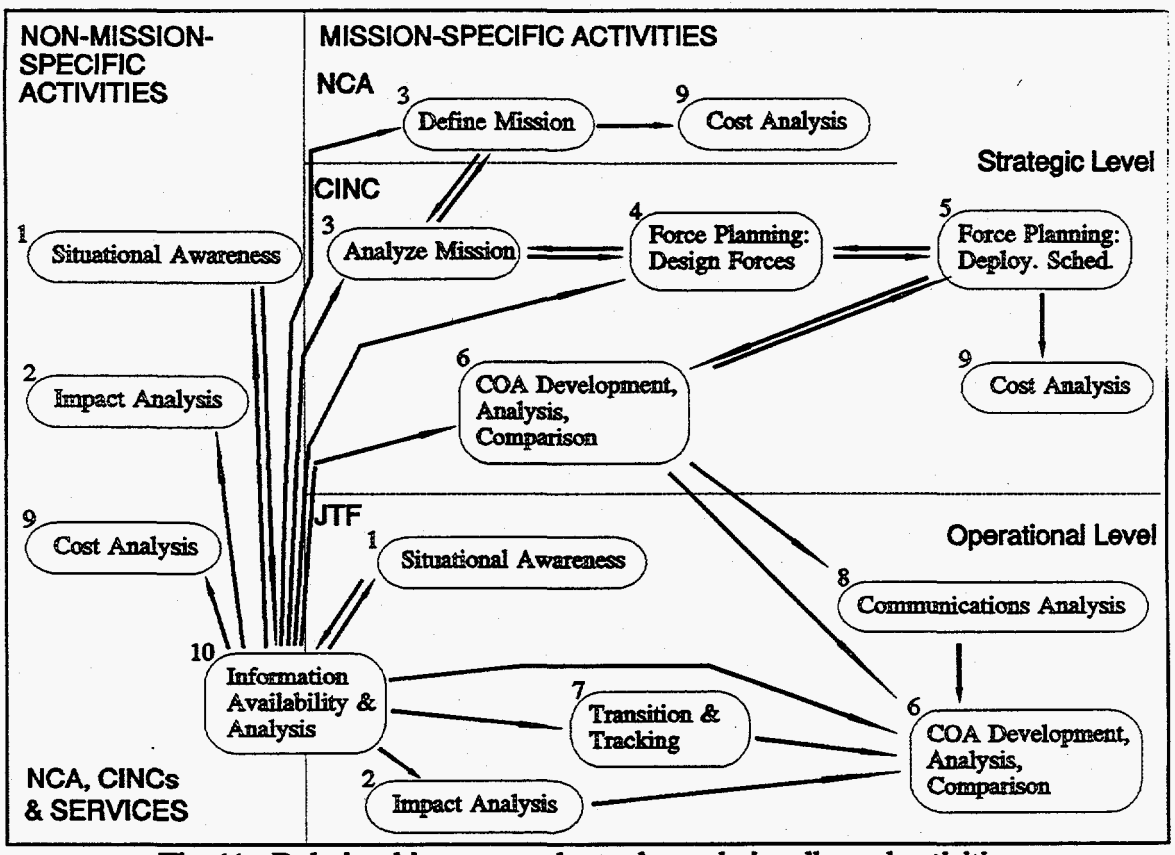

Fig. 11. Relationships among the tools, analysis cells, and activities.

5.3 REQUIREMENTS TABLE

Table 38 summarizes the discussions of each of the 10 requirements into a single brief table for ease of reference.

Table 38. Analysis tool requirements								
Rqmt #	Title	Description	Task Refs	Used by	Mod	Data	Prty	Action
1	**Situational Awareness**	supports the generation of a complete picture of the current and likely future situation	1.1, 2.6, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 5.4, 5.5, 6.7	NCA CINCs JTF Service	Y	V	2	start now
2	**Impact Analysis**	supports the analysis of the impact of human actions (own-side, opposition or neutral parties) on the current situation and on future plans	1.1, 3.11, 3.13, 3.14, 3.16	NCA CINCs JTF Service	R	V	1	R&D
3	**Mission Definition & Analysis**	supports mission definition in its broadest sense	2.1, 2.2, 2.3, 3.1	NCA CINCs JTF	G	OK	2	do now
4	**Force Planning: Design Forces**	supports the design of supporting and supported forces for use in OOTWs, where the supported forces may consist of forces that belong in the supporting category in combat operations - both parts may include U.S. non-military and non-U.S. elements	2.4, 2.5, 3.16, 5.5, 5.6, 5.9, 6.1, 6.4, 6.5, 6.6, 6.7, 7.1, 7.4	CINCs Service	Y-R	$-V	1	do now
5	**Force Planning: Deployment Scheduling**	supports the timing and prioritization of deployment scheduling, including U.S. non-military and non-U.S. elements	4.1, 4.2, 4.3, 4.4, 5.1, 6.2, 6.3	CINCs	G-Y	OK-$	1	do now
6	**COA Development, Analysis, Comparison**	supports COA development, analysis, comparison, estimates of success and casualty predictions, risk modeling, and especially recommendations	2.7, 2.8, 3.2, 3.3, 3.4, 5.2, 5.3, 5.7, 7.2	CINCs JTF	R	V	1	R&D
7	**Transition Planning and Tracking of Operational Data**	supports continued planning of the transition and tracking of MOEs, MOPs, end-state and transition criteria, and analysis of such things as casualties and medical treatments	3.5, 3.6, 5.4, 7.3	CINCs JTF	G	OK	3	do now
8	**Communications Analysis**	supports communications analysis, including interoperability of non-U.S. and non-military equipment	3.9	CINCs JTF	Y	$	3	R&D
9	**Cost Analysis**	models costs of generic OOTWs for use in national force structure planning, input to decisions on engaging in an OOTW, and to estimate comparative costs during mission planning	1.2	NCA CINCs JTF Service	Y	$	3	do now
10	**Information Availability and Analysis**	supports data collection and analysis and use by other tools	3.10	NCA CINCs JTF Service	Y	V	1	do now

6. RECOMMENDATIONS AND CONCLUSION

The concept of state space is useful in describing many situations demanding understanding. In this case consider each unique combination of OOTW type, attribute values, and active tasks as a state. Certain states are more desirable than others, e.g., a state indicating the conclusion of an operation with all goals achieved is more desirable than a state of warfare. From this point of view, the transitions from one state to another are seen as significant. The ideal model would show which factors and actions lead to favorable transitions and which lead to unfavorable transitions. Such a model cannot be created at this time; however, there are tools that can be created that may eventually lead toward the ideal model. These tools were partially defined by the requirements of Section 5. The recommended actions lead to a roadmap toward fulfilling the analytic needs with regard to OOTWs.

6.1 ROADMAP TO FULFILLING THE REQUIREMENTS

The roadmap shown in Fig. 12 shows the recommended actions with respect to each of the 10 requirements identified in Section 5. The timeline has no units, because it depends on the decisions of sponsoring organizations, which in turn depend on funding and relative priorities with respect to other needs. However, the timeline does indicate a general, reasonable sequence for accomplishing the goal of producing analytical OOTW tools. The requirements are grouped by priority. The individual requirement timelines are labeled with the recommended actions and coded to show similar actions. Recommendations for immediate tool creation are represented by solid bars. Tool creation that can be expected to require more lengthy time spans, labeled "Start Now," is represented by longer, darkly hatched bars. Requirements for which there is no clear methodology are labeled "Research," and are shown by lighter, longer hatched bars.

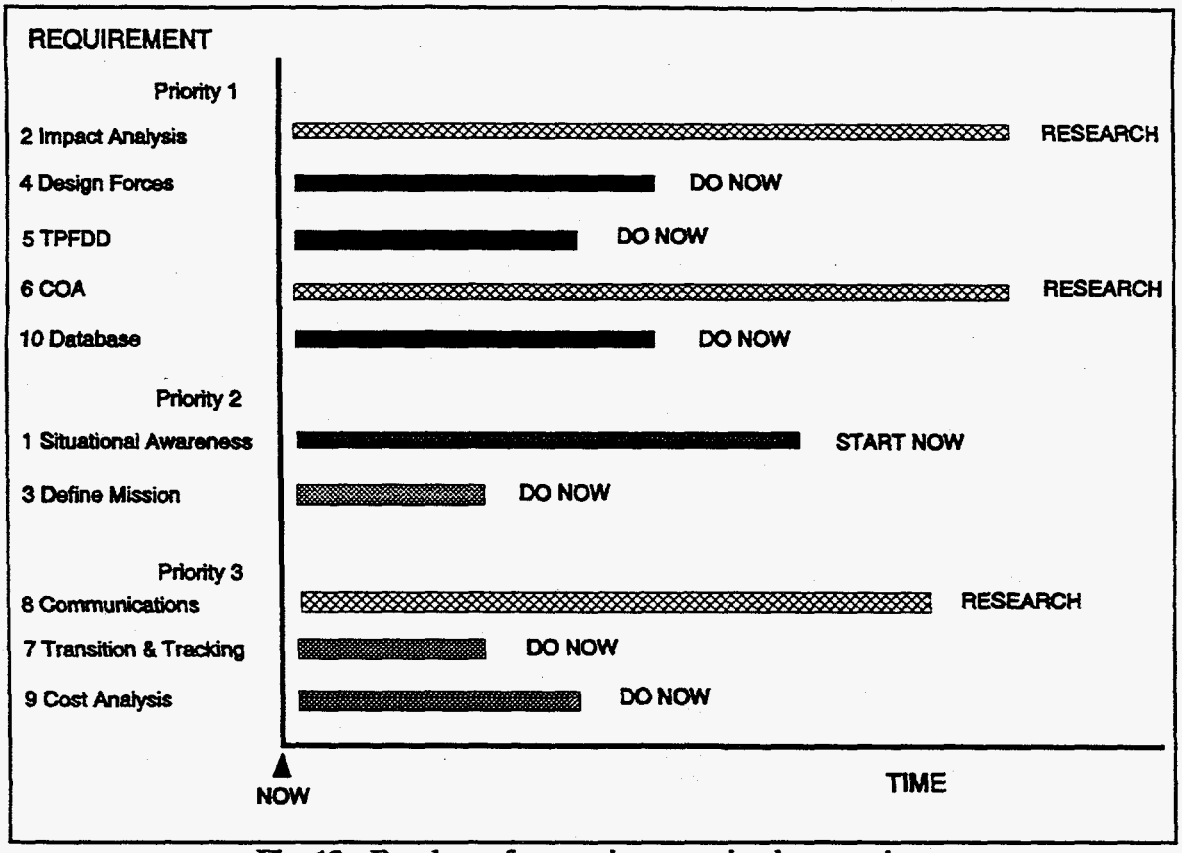

Fig. 12. Roadmap for requirements implementation.

6.2 RECOMMENDED SHORT- AND LONG-RANGE ACTIONS

The roadmap produced here is an initial recommendation, based on known available tools, modeling capabilities, and data availability. However, a more extensive effort to bring together many people with knowledge of tools and data may produce modifications. MORS is planing a workshop for that purpose, based on this report.

Subsequent to the MORS workshop, the recommendation is to create the initial set of tools ("DO NOW"), start on the second set ("START NOW"), and perform research toward the third set ("RESEARCH").

6.3 CONCLUSION

No comprehensive solution, such as the ideal model described at the beginning of this section, is possible now; however, the recommended tools should be built to permit interfaces among themselves and with other tools and good specifications should be kept so future, better tools can use the old ones as prototypes.

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APPENDIX A:
COMPARISON OF TERMS RELATING TO OOTW

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This appendix reviews the definitions of the various operations covered by OOTW. Several sources for the definition of terms related to OOTW are presented here, each normally regarded as definitive. The differences are usually matters of nuance; however, in the political arena in which OOTW are contained, nuances can be critical.

A.1 UNITED NATIONS DEFINITIONS [12]

The United Nations (UN) recognizes the following types of (at least potentially) military operations as sanctioned by its charter. There are no definitions for these different types of operations.

Arms Control/Disarmament
Counter-drug Operations
Enforcement of Sanctions
Enforcing Exclusion Zones
Military Support for Humanitarian Assistance/Disaster Relief (including refugee problems)
Observer Missions
Peacekeeping Operations
Peace/Truce/Armistice Enforcement

A.2 JOINT FORCES DEFINITIONS [13]

The Joint model for military operations, called The Range of Military Operations, has two components; war and Military Operations Other Than War (MOOTW). The terms listed below fall under the category of MOOTW.

Arms Control
Definition: Any plan, arrangement, or process, resting upon explicit or implicit international agreement, governing the numbers, types, and characteristics of weapon systems or the numerical strength, organization, equipment, deployment, or employment of armed forces. Arms Control encompasses Disarmament.

Combatting Terrorism
Definition: Actions taken to oppose terrorism from wherever the threat.

Antiterrorism

Definition: Defensive measures taken to reduce vulnerability to terrorist acts

Counterterrorism

Definition: Offensive measures taken to prevent, deter, and respond to terrorism.

DOD Support to Counterdrug Operations

Definition: Support to federal, state, and local law enforcement agencies in their efforts to disrupt the transfer of illegal drugs into the U.S.

Enforcement of Sanctions/Maritime Intercept Operations

Definition: Coercive measures to interdict the movement of certain types of designated items into or out of a nation or specified area.

Enforcing Exclusion Zones

Definition: Prohibit specified activities in a specific geographic area.

Ensuring Freedom of Navigation and Overflight

Definition: Operations conducted to demonstrate U.S. or international rights to navigate sea or air routes.

Humanitarian Assistance (HA)

Definition: Operations to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human pain, disease, hunger, or privation in countries or regions outside the U.S.

Foreign Internal Defense (FID)

Definition: Programs that encompass the total political, economic, informational, and military support provided to another nation to assist its fight against subversion and insurgency.

Humanitarian and Civic Assistance Programs

Definition: Provided in conjunction with military operations and exercises in such a way that incidentally creates humanitarian benefit to the local populace.

Military Support to Civil Authorities

Nation Assistance/Support to Counterinsurgency

Noncombatant Evacuation Operations (NEO)

Definition: Operations to relocate threatened noncombatants from a foreign country.

Peace Operations (PO)

Definition: Military operations to support diplomatic efforts to reach a long-term political settlement. Categorized as either PKO or PEO

Peacekeeping Operations (PKO)

Definition: Military operations undertaken with the consent of all major parties to a dispute, designed to monitor and facilitate implementation of an agreement and support diplomatic efforts to reach a long-term political settlement.

Peace Enforcement Operations (PEO)

Definition: The application of military force, or threat of its use, normally pursuant to international authorization, to compel compliance with resolutions or sanctions designed to maintain or restore peace and order.

Preventive Diplomacy

Definition: Diplomatic actions taken in advance of a predictable crisis to prevent or limit violence.

Peacemaking

Definition: The process of diplomacy, mediation, negotiation, or other forms of peaceful settlements that arranges an end to a dispute, and resolves issues that led to conflict.

Peace Building

Definition: Post-conflict actions, predominantly diplomatic and economic, that strengthen and rebuild governmental infrastructure and institutions in order to avoid a relapse into conflict.

Protection of Shipping

Definition: U.S. forces providing protection of U.S. flag vessels, U.S. citizens, and their property against unlawful violence in and over international waters.

Recovery Operations

Definition: The search for, location, identification, rescue, and return of personnel or human remains, sensitive equipment, or items critical to national security.

Show of Force Operations

Definition: A demonstration of U.S. resolve involving increased visibility of U.S. deployed forces in an attempt to defuse a specific situation that if allowed to continue may be detrimental to U.S. interests or national objectives.

Strikes and Raids

Strikes

Definition: Offensive operations conducted to inflict damage on, seize, or destroy an objective for political purposes.

Raids

Definition: Usually a small-scale operation involving swift penetration of hostile territory to secure information, confuse the enemy, or destroy installations.

Support to Insurgency

Definition: Support to an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict.

A.3 DEPARTMENT OF DEFENSE DEFINITIONS [6]

The terms presented here are the Department of Defense (DOD) definitions of commonly used OOTW terms. Unfortunately, many OOTW terms are not listed in the DOD dictionary.

Arms Control

Definition: Same as the Joint definition.

Disarmament

Definition: The reduction of a military establishment to some level set by international agreement.

Disaster Control

Definition: Measures taken before, during or after hostile action or natural or manmade disasters to reduce the probability of damage, minimize its effects, and initiate recovery.

Combatting Terrorism

Definition: Same as the Joint definition.

Counterdrug (CD)

Definition: Those active measures taken to detect, monitor, and counter the production, trafficking, and use of illegal drugs.

Counterinsurgency

Definition: Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency.

Foreign Internal Defense (FID)

Definition: Participation by civilian and military agencies of a government in any of the action programs taken by another government to free and protect its society from subversion, lawlessness, and insurgency.

Humanitarian and Civic Assistance

Definition: Assistance to the local populace provided by predominantly U.S. forces in conjunction with military operations and exercises.

Humanitarian Assistance

Definition: Programs conducted to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human pain, disease, hunger, or privation that might present a serious threat to life or that can result in great damage to or loss of property.

Strikes and Raids

Definition: Same as the Joint definition.

Support to Insurgency

Definition: Same as the Joint definition.

A.4 U.S. ARMY DEFINITIONS [16]

Arms Control

Definition: Any plan, arrangement, or process controlling the numbers, types, and performance characteristics of weapons systems. Focuses on promoting strategic military stability.

Attacks and Raids

Definition: Normally executed to achieve specific objectives other than gaining or holding terrain

Attacks

Definition: Used to damage or destroy high-value targets or to demonstrate U.S. capability and resolve to achieve a favorable result.

Raids

Definition: Usually small-scale operations involving swift penetration of hostile territory to secure information, temporarily seize an objective, or destroy a target

Combatting Terrorism

Antiterrorism

Definition: Those passive defensive measures taken to minimize vulnerability to terrorism.

Counterterrorism

Definition: The full range of offensive measures taken to prevent, deter, and respond to terrorism. Occurs in conflict and war.

Humanitarian Assistance and Disaster Relief

Definition: The use of DOD personnel, equipment, and supplies to promote human welfare, to reduce pain and suffering, to prevent loss of life or destruction of property from the aftermath of natural or man-made disasters.

Disaster Relief

Definition: Disaster relief falls within the overall context of humanitarian assistance but is conducted in emergency situations to prevent loss of life and property.

Nation Assistance

Definition: U.S. support of host nation's efforts to promote development, ideally through the use of host nation resources.

Noncombatant Evacuation Operations (NEO)

Definition: The relocation of threatened civilian noncombatants from locations in a foreign country or host nation. It may involve threatened U.S. citizens.

Peace Enforcement

Definition: The support of diplomatic efforts to restore peace or to establish the conditions for a peacekeeping force between hostile factions that may not be consenting to intervention and may be engaged in combat activities. Implies the use of force or its threat to coerce hostile factions to cease and desist from violent actions.

Peacekeeping Operations

Definition: Support of diplomatic efforts to maintain peace in areas of potential conflict. Requires consent of all parties involved. U.S. personnel may function as impartial observers, as part of an international peacekeeping force, or in a supervisory and assistance role. Often involves ambiguous situations requiring the peacekeeping force to deal with extreme tension and violence without becoming a participant.

Security Assistance

Definition: Providing defense material, military training, and defense-related services by grant, loan, credit, or cash sales to further U.S. national policies and objectives.

Show of Force

Definition: A mission carried out to demonstrate U.S. resolve in which U.S. forces deploy to defuse a situation that may be detrimental to U.S. interests or national objectives. Can take the form of combined training exercises, rehearsals, forward deployment of military forces, or introduction and buildup of military forces in a region.

Support to Counterdrug Operations

Definition: Support efforts to interdict the flow of illegal drugs at the source, in transit, and during distribution.

Support to Domestic Civil Authorities

Definition: When authorized, armed forces assist in domestic emergencies within the continental U.S.; the Army has primary responsibility. (Under provisions of the *Posse Comitatus Act,* neither the active component nor the U.S. Army Reserve may execute the law in the place of duly appointed law-enforcement means without specific Presidential or Congressional approval and direction.)

Support for Insurgencies and Counterinsurgencies

Definition: The use of U.S. military resources to provide support to a host nation's counterinsurgency operations in the context of FID through logistical and training support.

Foreign Internal Defense (FID)

Definition: The participation by civilian and military agencies in any of the programs another government takes to free and protect its society from subversion, lawlessness, and insurgency.

A.5 AN ALTERNATIVE APPROACH - STORY AND GOTTLIEB [141]

The categorization of terms in this effort is according to a single dimension: likelihood of combat. In addition, numerous recommendations are made, including the elimination of the terms MOOTW, OOTW, and the Range of Military Operations, in favor of The Military Operational Framework which includes the entire range of military operations.

Combat Operations

Definition: Actions that involve combat.

Operations to Restore Order

Definition: Currently known as Peace Enforcement.

Retaliatory Actions

Definition: Punitive measures to destroy an objective for political or military purposes. Currently known as Strikes and Raids.

War

Could be Combat or Noncombat

Definition: Actions that, depending on the situation, may or may not involve combat.

Combatting Terrorism

Ensuring Freedom of Navigation

Definition: Currently known as Freedom of Navigation and Protection of Shipping.

Exclusion Zone Operations

Definition: Prohibiting specified activities in given geographic areas or stopping movement of designated items into or out of given areas. Currently known as Enforcing Exclusion Zones and Enforcing Sanctions.

Noncombatant Evacuation Operations

Recovery Operations

Noncombat Operations

Definition: Actions that are clearly not intended to involve combat.

Show of Force

Support and Assistance Operations

Definition: The provision of military support and assistance for domestic and international purposes.

Arms Control

Domestic Support Operations

Foreign Humanitarian Assistance

Insurgency Support

Nation Assistance

Support to Counterdrug Operations

Truce-Keeping

Definition: Maintaining a negotiated truce between the parties. Currently known as Peacekeeping.

A.6 ANOTHER ALTERNATIVE APPROACH - PERRY [117]

Combatting terrorism

Counterterrorism

Definition: The offensive portion of Combatting terrorism, provides measures that can include preemptive, retaliatory, and rescue operations

Antiterrorism

Definition: Preparation for defense against terrorism, including collection of threat information, security training programs, and implementation of sound defensive measures.

Contingency Operations Short of War

Definition: The use of military forces to enforce or support diplomatic initiatives, respond to emergencies, or protect U.S. lives.

Disaster relief

Noncombatant Evacuation Operations

Recovery Operations, Attacks and Raids

Freedom of Navigation and Protection of Shipping

Operations to Restore Order

Security Assistance Surges

DOD support to Counterdrug operations

Civil-military Operations

Detection and Monitoring

Host-nation Assistance

Security Assistance Programs

Many Special Area Support Operations

Peacekeeping

Peacekeeping Support

Definition: Providing financial or logistical assistance to a peacekeeping operation.

Observer Missions

Definition: Assisting in the observance and maintenance of a cease-fire; acting as a neutral witness for the handing-over of personnel or property from one party to another; and other limited operations.

Support for Insurgency/Counterinsurgency

A.7 SUPPLEMENTAL DEFINITIONS

Various authors have proposed new definitions or modifications of old terms.

Aggravated Peace Support Operation (APSO) - MacIntosh [104]

Definition: Operations falling between peacekeeping (UN Chapter VI) and peace enforcement (UN Chapter VII), and thus often referred to as Chapter VI ½.

UN Chapter VI Peace Operations - Alberts and Hayes [31]

Definition: Pacific settlement of disputes in which both parties consent to UN intervention - **peacekeeping.**

Peacekeeping [31]

Definition: Pacific settlement of disputes in which both parties consent to UN intervention - **UN Chapter VI.**

UN Chapter VII Peace Operations [31]

Definition: Operations, short of war, requiring force to impose peace - **peace imposition.**

Peace Imposition [31]

Definition: Operations, short of war, requiring force to impose peace - **Un Chapter VII.**

UN Chapter VI ½ Peace Operations [31]

Definition: Operations requiring a show of force, or small tactical operations, to enforce peace - **peace enforcement.**

Peace Enforcement [31]

Definition: Operations requiring a show of force, or small tactical operations, to enforce peace - **UN Chapter VI ½.**

Delegatory Peacekeeping - Wentges [152]

Definition: Operations led by regional organizations, but sanctioned by the UN.

Preventive Deployment - Huber [88]

Definition: a subset of peacekeeping (consent is assumed) in which (military) forces are deployed prior to hostilities erupting with a goal of preventing active conflict.

Pre-Conflict Peace Building - ADF Peacekeeping Center [2]

Definition: Longer term, non-military, economic, social and political measures which can help states deal with emerging threats and disputes.

Post-Conflict Peace Building - ADF Peacekeeping Center [2]

Definition: Involves rehabilitation and reconstruction assistance generally, support for various kinds of institution building and specific practical programs, like demining.

APPENDIX B:
NOTES FROM THE FEBRUARY MONTEREY WORKSHOP

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NOTES FROM THE FEBRUARY MONTEREY WORKSHOP

The Monterey Workshop was sponsored by the USPACOM with the general intent of identifying analytic needs to support OOTW. The workshop was held at the Naval Postgraduate School on February 26-28, 1996. The workshop objectives are shown below.

- Identify information requirements for OOTW operations and analyses.
- Investigate our understanding of OOTW processes and interactions among them.
- Provide a basis for developing a functional specification of OOTW support tools.
- Develop a shared viewpoint among the attendees of OOTW for
    - Definitions/terminology/lexicon,
    - Dimensions (later renamed Attributes),
    - Categories/taxonomy of OOTW,
    - Phenomena, and
    - Tasks.
- Identify areas in which additional field analysis or exploratory modeling should be undertaken to improve our understanding of OOTW phenomena.

The workshop consisted of general information presentations and break-outs into working group sessions to resolve specific issues. The original goals of the working group sessions are shown below.

- Dimensions/Categories
    - Given the questionnaire results on the dimensions of OOTW, are there any dimensions we would like to add, modify, or delete?
    - Relative to the revised list of dimensions, how can we group operations, or assign them to different groups?
- Tasks
    - Given the Joint Military Essential Tasks (JMETs) identified in Joint Staff Manual 3500.04, are there any additional tasks that the United States does or should perform relative to OOTW?
    - How do the tasks performed vary with level (national strategic, theater strategic, operational, and tactical)?

- What tasks are particularly applicable to which operations or groups of operations?
- Are there any direct mappings of tasks to dimensions?

- Phenomena

  - Given the questionnaire results, for which dimensions are phenomena sufficiently well-understood to justify modeling?
  - Which dimensions are inherently qualitative and should be not be incorporated into models (i.e., considered in other ways)?

- Modeling

  - What methodologies/techniques are potentially applicable to modeling well-understood phenomena/tasks?
  - How well-prepared are we to model the interactions between phenomena?
  - To what extent is providing data, vice information derived from analysis, what is really needed?
  - In what areas might exploratory modeling be undertaken as a means for improving our understanding of phenomena?

B.1 DIGESTS OF THE INITIAL PRESENTATIONS

Prior to beginning the workshop proper, several information briefings were presented to ensure a common basis for discussion. These briefings were divided into general information presentations, briefings on the Service requirements, and briefings on the CINC, OSD, and J-8 requirements for OOTW analysis tools.

B.1.1 General Information Presentations

The general presentations set the stage for the breakouts into working groups. Subjects covered included taxonomy and lexicon issues in OOTW, psycho-social causes and effects of OOTWs, non-governmental organizations (NGOs) and private volunteer organizations (PVOs) and their relationship with military forces in OOTWs, the complex "command arrangements" (as opposed to command structure) required to manage OOTWs, the problem of deciding what military forces to commit to an OOTW, and the operational MOEs needed for OOTWs. Beyond the immediacy of an OOTW, the subjects of transition issues, e.g., can the society maintain itself after humanitarian assistance leaves, cost issues, and the impact of OOTWs on the other missions of the military were discussed.

B.1.1.1 "How We Think About OOTW" - Dr. Burkle

Dr. Skip Burkle, CAPT (USN) discussed the human side of OOTW, such as public health, disparate populations coming in contact, natural disasters, and resource wars. Many situations requiring OOTWs are symptoms of social system failure or social changes, such as populations moving from rural to urban living.

Several organizations are involved in OOTW: the United Nations (UN), the International Committee of the Red Cross (ICRC), various NGOs (some are partisan), the military (of several nations), and the media. Beyond the immediacy of an OOTW, there are transition issues, e.g., can the society maintain itself after humanitarian assistance leaves.

Dr. Burkle described areas needing operational MOEs: security/levels of violence; infrastructure (airfield, water); medical/public health; agricultural/economic; and legal (especially sovereignty issue)/political barriers.

B.1.1.2 "Peacekeeping Operations" - Mr. Elliott

Mr. John Elliott of the Army Concepts Analysis Agency (CAA) discussed general peacekeeping operations. He described the need to define who has the lead in each type of operations: the diplomatic area has the lead in preventive diplomacy, peacemaking, peace building; the military has the lead in peacekeeping and peace enforcement. It is also important to know who is we and who is them in each type of operation.

B.1.1.3 "Psycho-Social Attributes of Conflicts" - Dr. Hartley

Dr. Dean Hartley of Oak Ridge discussed the psycho-social factors in OOTW and their impact on analysis requirements. Geo-political decisions can be critical determinants of success in war and peace. These decisions are based on assumed psychological and sociological responses to the decisions by the various individuals and groups in the decision environment. For example, mental models are used in deciding whether to display our naval "presence" in a foreign port or whether a discussion on the golf course would be more effective. However, in constructing consistent policies over long periods of time that involve the conflicting interests of many countries, the complexities often overwhelm simple models. The questions should address the immediate impact of a decision, the long term impact, the potential for diverse impacts throughout the populations of interest, and the consequences of previous actions by other parties. A computer implementation, combining and extending the simple models, might be useful; but its design is a hard problem.

B.1.1.4 "Keys to Understanding C^3I in OOTW" - Dr. Hayes

Dr. Richard E. Hayes of Evidence-Based Research discussed C^3I and OOTW. This research has resulted in the creation of a Headquarters Effectiveness Assessment Tool (HEAT), which models the internal processes of a headquarters. This tool was expanded to include the complex decision making environment of OOTW, where command relationships are extended with multiple partners and direct connections to low level units and where the decision making is often decentralized. He used the term "command arrangements" instead of "command structure" to emphasize this extension. Hayes characterized OOTW decision making cycles as slower than warfighting cycles because of the complexity. Further, the decision support requirements extend beyond directly military matters. Hayes also mentioned an Instability Indicator tool that might be useful to support assessments and early warning of the form and level of instabilities. He said a commander needs to understand more than in purely military operations and may delegate military matters to deputy and concentrate on relationships with NGOs, etc.

B.1.1.5 "Taxonomy and Lexicons of OOTW" - Professor Moran

Professor Dan Moran of NPS discussed taxonomy and lexicon issues in OOTW. He stated that the terminology is not consistent; however, there is some agreement on concepts. He defined four dimensions:

politics,
time (natural disasters arise quickly; political ones take time to germinate),
force (and its centrality), and
decisiveness (what is end state - surrender, hand over to civilian authorities, etc.).

He also defined five clusters of types of operations:

humanitarian intervention,
peace operations,
special operations in the classic sense (strikes, raids, recovery operations),
things that resemble law enforcement (counterterrorism and counterdrug ops), and
military actions in aid of diplomacy (arms control).

B.1.1.6 "Force Analysis for OOTW Requirements" - Maj. Aviles

Maj Steve Aviles of CAA discussed force analysis and OOTW. The need to contribute to multi-lateral forces and the primacy of combat support and combat service support units create analysis requirements that are dramatically different from Cold War force analysis requirements. Rather than building forces that infer support needs from combat force requirements, certain non-combat units will be defined and their support requirements must be inferred. The tool, FAST-OR, was designed to meet some of these needs.

B.1.1.7 "Peacekeeping Cost Analysis (PECAN)" - Mr. Gordon

Mr. Joe Gordon of CAA discussed peacekeeping cost analysis and the fact that the costs of peacekeeping often are borne by the normal training budget, by necessity.

B.1.1.8 "Development of Spectrum" - Mr. Chrisman

Mr. Dennis Chrisman of the National Simulation Center discussed the Spectrum model, an example of a psycho-social prediction model, as described by Hartley.

B.1.2 Service Perspectives

The four armed services each presented its view on OOTW analysis initiatives, deficiencies and needs. Four goals of OOTW were listed:

- projecting order into disorder,
- restoration of status quo,
- damage limitation, and
- projecting defense (e.g., defense of neighboring countries in Iran/Iraq war).

The military skills needed to conduct OOTWs include information management, on-scene training adaptability, precise weapons delivery, and staying power. However, the necessary

capability to support military strategy is being stretched by all of the current OOTWs (e.g., use of, and concomitant unavailability for MRCs of, sensors and transport).

B.1.2.1 Army

Mr. John Elliott presented the U.S. Army perspective on initiatives, deficiencies and needs. He described the current toolset as including political military games, issues workshops, wargaming, combat simulation, and modeling (such as network modeling). These need to be pieced together to forecast success or failure. Despite the problem of piecing together disparate tools, he maintained that the Army needs many tools, not a single tool.

B.1.2.2 Navy

Mr. Bruce Powers presented the U.S. Navy perspective. He listed four goals of OOTW: projecting order into disorder, restoration of status quo, damage limitation, and projecting defense (e.g., defense of neighboring countries during Iran/Iraq war). The skills needed include information management, on-scene training adaptability, precise weapons delivery, and staying power.

B.1.2.3 Marine Corps

Col Bruce Gombar presented the U.S. Marine Corps perspective. He stated that the traditional combat modeling approach will not work. An accepted body of theory for political, economic, military, and information interactions is required to model OOTW. In addition, the logistics area needs more work.

B.1.2.4 Air Force

Col Tom Allen presented the U.S. Air Force perspective. The Air Force's focus is the two Major Regional Contingency (MRC) scenario. The necessary capability is being stretched by all of the current OOTWs (e.g., sensors and transport). He said that some current tools, such as mission rehearsal, can be used in OOTW analysis; however, these do not address what impact mission success has on the whole operation. Col Allen said that JWARS will not have any OOTW capability until Phase 3; however, the National Air and Space Model (NASM), which will be part of JSIMS (the training model) may prototype some OOTW modeling concepts.

B.1.3 CINC Perspectives

Representatives from six of the Commanders in Chief (CINCs) presented their CINCs' views of OOTW. Areas of interest and example studies include:

- the diplomatic, economic, historic, and social environment;
- civil affairs, psychological operations (PSYOPs), information warfare, weapons of mass destruction (WMD), and terrorism;

- the C-17 analysis, the JSTARS [Joint Strategic Target Acquisition and Reporting System] study (surveillance in Peace Enforcement), analysis of a Bosnia-Herzegovina withdrawal, and Implementation Force (IFOR) transportation planning and analysis.

B.1.3.1 USACOM

COL Bob Graebener presented the U.S. Atlantic Command (USACOM) perspective. Keeping track of people and their location is important in OOTW (e.g., NEO and medical emergencies). USACOM also needs a course of action analysis tool for OOTW. His concern is to have a tool that is deployable. The tool should be joint and rigorous and needs non-parochial data. He also mentioned a need for training in the Aggregate Level Simulation Protocol (ALSP) confederation. Their major current tool is ITEM.

B.1.3.2 USCENTCOM

COL Gabe Rouquie presented the U.S. Central Command (USCENTCOM) perspective. USCENTCOM has operational, diplomatic, economic, social, and historical interests. They need a decision support tool (forces required, logistics/administrative tail, and comparative capability) that is menu driven, with point and click simplicity and available data. They use the Joint Logistic Electronic Planning Book from USACOM.

B.1.3.3 USSOUTHCOM

Mr. Larry Blotzer presented the U.S. Southern Command (USSOUTHCOM) perspective. USSOUTHCOM's requirements are as follows:

Tools to analyze plans
- threat analysis
- force package - best mix
- course of action (COA) analysis
- logistics
- cause and effects
- measures of effectiveness (MOEs)

Who will win?
How great is the need to intervene / what will be the effects?
When does an OOTW begin?
What is the required U.S. force composition?
NEO visualization
- troop flows
- refugee flows

USSOUTHCOM uses the Joint Conflict Model (JCM), DEXES/Civil Affairs Module (CAM) [for training], Janus, and the Theater Analysis Model (TAM). Their requirements include rapid turnaround and databases. They need tools for determining force packages and to analyze COAs.

B.1.3.4 USEUCOM

Mr. Nelson Jennings presented the U.S. European Command (USEUCOM) perspective. USEUCOM has performed OOTW analytic support in the C-17 analysis (using spreadsheets), the JSTARS study (surveillance in Peace Enforcement), analysis of a Bosnia-Herzegovina withdrawal, and IFOR transportation planning and analysis. They have used the Theater Security Planning System (TSPS) and the Consequence Assessment Tool Set, which is database driven. They need a readiness assessment tool and a tool to estimate the cost of an operation.

B.1.3.5 USSOCOM

LTC Lou Budroe presented the U.S. Special Operations Command (USSOCOM) perspective. USSOCOM is concerned with civil affairs, psychological operations (PSYOPs), information warfare, weapons of mass destruction (WMD), and terrorism.

B.1.3.6 USPACOM

Mr. Dave Haut presented the U.S. Pacific Command (USPACOM) perspective. Aside from the general need that has created the Monterey Conference, USPACOM sees a need for decision aids.

B.1.4 The Joint Staff and OSD Perspectives

Central analysis needs and support capabilities in the OOTW area were presented by representatives of the Joint Staff and the Office of the Secretary of Defense (OSD).

B.1.4.1 The Joint Staff

Col Stan Gorenc presented the Joint Staff perspective. J-8 is concerned with two basic questions: if there is an operation, what forces are needed to achieve the military objective; and how will a proposed operation affect the readiness to meet the two MRC military requirement. He mentioned that CAPS is being built for the first question and a methodology for the second is being developed.

B.1.4.2 OSD

Dr. Jackie Henningsen presented the OSD perspective. OSD is primarily concerned with cost/benefit questions and needs cost analysis tools (system vs system) and theater assessment (programming for the future) tools that include OOTW in their considerations.

B.2 OOTW CATEGORIES - WORKSHOP DEFINITIONS

The members of the workshop answered a questionnaire (shown in box below), which was used to create a list of types of OOTW.

WORKING LUNCH QUESTIONNAIRE
ON INTERESTS, DEFINITIONS, DIMENSIONS, AND CATEGORIES
OF LESSER REGIONAL CONTINGENCIES
AND OTHER MILITARY OPERATIONS

NAME _____ ORGANIZATION _____
(Note: Name and organization information is optional. However, we request it so that we can contact you for clarification.)

Please indicate the perspective(s) from which you are completing this questionnaire:

As a representative of my organization ___

From a personal perspective ___

1. What kinds of operations do you consider "military operations other than war (MOOTW)"?

2. What national interests, including national security interests, does US military participation in MOOTW advance?

3. What dimensions (e.g., military, political/diplomatic, magnitude, players, time, cost) are needed to describe the operations identified in question 1? Consider dimensions that tend to indicate similarities between types of operations, as well as those that help distinguish between them. Please include dimensions that apply to some but not all of the operations.

4. Are there any "natural" categories to the operations identified in question 1? What are the dimensions of these categories?

5. What are the most important dimensions of Military Operations Other Than War (MOOTWs) as a group?

6. Other than decision-making related to planning and executing MOOTWs, what should analytical models of MOOTW support?

7. What kinds of OOTW operations are you particularly interested in or knowledgeable about?

Additional Comments:

The responses were used to group the OOTW types into five categories:

Peacekeeping / Peace Enforcement;

Humanitarian Assistance (HA) / Disaster Relief (DR) (domestic and foreign), including NEO;

Counterdrug / Counterterrorism;

Counterinsurgency / Country Building, foreign internal defense (FID), refugee assistance, show of force, blockade, escort, freedom of navigation (FON); and

Military Contingency Operations, including opposed NEOs, strikes/raids, search and rescue (SAR), force extractions, arms control, surveillance, support to civil authorities, security assistance surge, information warfare (covert).

B.3 OOTW DIMENSIONS - PER WORKSHOP

The questionnaire also produced a set of the dimensions needed to define OOTW:

Time (planing / duration),
Force structure,
Mission,
Political / economic objectives & implications,
NGO / Private Volunteer Organizations (PVO) / interagency involvement,
Command structure,
Rules of Engagement (ROE) / legal,
Application of lethal force / level of intensity,
Operational tempo (OPTEMPO),
History / cultural dissimilarity / ethnic conflict,
Extent of coalition (unilateral, bilateral, multi-lateral),
Degree of media attention,
Force size / force ratio / preponderance of force,
Costs (casualties, $, opportunity, etc.),
Location (domestic / distance to foreign location),
Risk of escalation,
Host nation support,
Geo-political environment and demographics, and
Information availability / intelligence.

These dimensions may separate different types of operations by different dimensional values and help define differences in the conduct of operations with differing dimensional values. Further, the dimensional segregations should help differentiate the tool-sets required to address the analytical needs of OOTW.

B.4 OOTW CATEGORIES ANALYZED BY DIMENSIONS - PER WORKSHOP

A subgroup was assigned to each OOTW category, with a structured agenda to define each category. Typically of workshops, some subgroups focused on one part of the agenda, while others focused on other parts, leaving an uneven, but still insightful set of results.

B.4.1 Peacekeeping / Peace Enforcement

B.4.1.1 Peacekeeping

Key Insights
Supports political goals
Must include entrance and exit
Consent of parties to conflict, yes or no, is significant

Definition: Operations undertaken with the consent of *all* major parties to a dispute, designed to monitor and facilitate implementation of an agreement and support diplomatic efforts to reach a long-term political settlement.

B.4.1.2 Peace enforcement

Key Insights
- Use of Force
- Coerce actions
- Robust Rules of Engagement
- Lack of consent of at least one party
- Potential Combat
- Peace Agreement not necessary

Definition: The application of force or threat of its use, pursuant to international authorization, to coerce hostile factions to cease and desist from violent actions.

B.4.1.3 Important Dimensions

The subgroup divided the areas in which dimensions had impact into the national level, the CINC's level, and the force planner's level. Some dimensions were determined to be of interest at each level and others restricted to one or two levels. In addition, the group determined certain dimensions were useful in dividing peace operations from other OOTW, and some were useful in distinguishing peacekeeping from peace enforcement.

Dimensions (National Level)
- Mission
- Political/Economic
- Cost
- Casualties
- NGO/PVO/Interagency
- Media
- Risk of Escalation
- Host Nation Support
- Information Availability

Dimensions (CINC Perspective)
- Mission Definition
- Force Structure, (PE more than PK)
- Command Structure
- ROE
- Legal
- History/Cultural
- Location
- Extent of Coalition
- NGO/PVO/Interagency
- Risk of Escalation
- Host Nation Support
- Information Availability

Dimensions (Force Planner)
- Mission

Cost
Force Structure
Location
OPTEMPO
Risk of Escalation
Host Nation Support

Dimensions Dividing Peace Operations from other operations
Primacy of Political Considerations vs Economic, Information, or Military
Third Party role vs level of involvement
Objectives (wide range)

Dimensions Dividing Peacekeeping and Peace Enforcement
Consent (all, some, mixed, few, none)
Use of Force (none, restrictive, robust)
ROE (free, hold, open)
Risk (to group, to force, to peace)
Cost?
OPTEMPO?

B.4.1.4 Analytical Requirements

Requirements
MOEs
Force Requirements Model with all equipments
Force Structure Comparative Tool

B.4.1.5 Relevant Tasks

Peacekeeping
Depends on Objectives
Need to define end state
Support to humanitarian operations
Determine ROE
Establish Lines of Communication (LOC)
Force Protection
Intelligence collection and Intelligence, Surveillance, Reconnaissance (ISR)

Peace Enforcement
Determine ROE
Establish LOC
Force Protection
Intelligence collection and ISR
Potential use of force

On the Side
Grenada/Panama were not Peace Operations

B.4.2 Humanitarian Assistance/Disaster Relief and Unopposed NEO

B.4.2.1 Definitions and Relevant Comments

Humanitarian Assistance: Those operations in which governmental structures have broken down; military will be in charge through the Civil-Military Operations Center (CMOC) to provide essential humanitarian and technical expertise with the goal to contain the situation and transition to another lead agency.

Disaster Relief Domestic: FEMA in charge; military an asset to local and state governments bringing specific capabilities to contain situation and assist in recovery.

Disaster Relief International: Host government intact, requests assistance to handle natural or man-made crisis; military an asset to local governments or international agencies to bring specific capabilities to contain situation and assist in recovery.

Unopposed NEO: Initiated by country team; military assistance in orchestrating non-combatant evacuation which may or may not require the use of military assets.

B.4.2.2 Dimensions

This subgroup decided that a refinement of the dimensions was required, generating the following list:

- C^3I
- Force Structure
- Assessment
- Requirement for Humanitarian Assistance Survey Team (HAST)
- Time
  - Planning Time
  - Reaction Time
  - Duration
- Mission and MOEs
- Potential Cost
- Security
- Integrated planning
- scale of NGO involvement
- degree of U.S. agency involvement
- scale of ICRC involvement
- level of host nation support/infrastructure
- host government stability
- ROE
- Logistics/Resupply
- U.S. Public Support
- Media Attention
- U.S. Government Political Interest
- Size of Operating Area
- Distance from United States
- Interests/Size of Other Nation

Involvement
Assistance required
    medical
    engineering support/infrastructure
    security
    PSYOPs/MP
    civil affairs
    communications
use of lethal force
use of nonlethal force
Use of Liaisons
Cultural Dissimilarities
Degree of Casualties
    Civilian
    Non military support
    Military
Need for CMOC
degree of risk

B.4.2.3 Task list

The subgroup created a task list for HA as an example, as follows:

General Planning (Alternatives, Intelligence, etc.)
Develop Mission Statement
Develop Integrated MOEs, etc
Develop Concept of Operations
Determine Required Force Structure
Publish ROEs
Activate HAST
Activate Joint Task Force (JTF)
Activate CMOC
Develop Transition Criteria
Ensure Liaisons are Established
Logistics Planning/Resupply
Determine Security Requirements
Monitor and Feedback to CINC
Etc.

B.4.2.4 Summary

Aspects of all four categories lend themselves to analytic support. These include:

Modeling,
Decision Aids, and
Data Collection and its analysis.

The same family of tools could be effectively shared by and applied to aspects of each of these categories.

B.4.3 Counterdrug/Counterterrorism

B.4.3.1 Defining dimensions

Information/Intelligence Heavy
An Enemy exists
Host Nation/Coalitions (Overseas)
Inter-agency Groups (CONUS)
    Lots of Black (classified) involvement
Law Enforcement Issue
    Rules of Engagement
    Implies Fragmented Data
NGOs / PVOs not involved
Address Symptoms vice Underlying Cause
Efforts Not Decisive-Problems won't go away (lack of end state)

B.4.3.1 Dimensions with values varying by target

Information Gathering
    Identification of Target Audience
Resource Allocation (Implies Military)
Costs
    Time (Highly Variable)
    Identification of Objectives
    What is MOE ? (Seizures, Street Price, Dollars Spent)
    MOP vs MOE (Because ops not decisive)
    DOD a Supporting Agency- MOE = How well we support others)
    Identification of Center of Gravity
Level of Host Nation Cooperation
    Most Favored Nation Status
    Cultural Dissimilarities
Level of Inter-agency Cooperation
Dedication of Opponent
Technology
Visibility to Media- Works both ways
Media Management
Legal Constraints

B.4.3.3 Counterdrug tasks

Information Collection (Wide Range-Human intelligence (humint) to Space)
Info Fusion
    Dynamic Situation
    Level Dependent, i.e. JTF = Tactical
Dissemination (To DOD and others)
Actions
    Interdiction
    Raids

Stings
Penetration of Groups
Reposition Assets
Establish Red Teams (Useful Structures)
Understand enemy goals
Analysis of enemy Decision Making
Enemy's Limited Options
Devise other ways to address problem
Precursor Chemicals
Other Country Suppliers
Heavily Knowledge Dependent

B.4.3.4 Counterterrorism tasks

DOD normally has lead (or U.S.)
If not, DOD takes lead when using force
Ideological Considerations
Heavy Psychological Dimension
Govt. vs. Non-Govt.
Actions affect Populace
Law Enforcement until force required
Combat Readiness/Mission Rehearsal
Dedicated Units
Dedicated Operations
Specialty Skills
Terrorism
Ideological
Nationalist
U. S. Target/Non-Target
Criminal gone awry
Very Restrictive Legal Constraints
Ops in Terrorism are Finite

CINCs	Joint Chiefs of Staff (JCS)	OSD
Frame Problems	Force Allocation	Justify Budget
Asset Requirements		Force Planning
Inter-Agency Groups		
Strategic,Operational	Force Allocation	Policy
Tactical		

B.4.3.5 Additional insights

Protect the force
Data Assembly and Dissemination
Corruption

B.4.4 CI / Nation Assistance

B.4.4.1 Distinctions

Counterinsurgency always implies the threat of lethal force against U.S. forces; Nation building may, but need not.

Insurgencies often present relatively well-organized, ideologically committed opponents, which may be backed by significant outside interests; Nation-building may not.

Counterinsurgency involves support for an existing government under pressure. Nation-building can occur in a context in which no effective government exists.

Humanitarian assistance and disaster relief are typical components of both missions, with scale depending in part upon the functionality of the host country government.

B.4.4.2 Dimensions

Time

- Time for planning is likely to be reasonable, not critical.
- Indefinite, protracted nature of the operation must be acknowledged and incorporated into the planning and sustainment process.

Mission

- Definition of end states should be included in the mission statement.
- Measures of effectiveness are likely to be political in character, but should include as many objective military criteria as possible.

Rules of Engagement/Legal Constraints

- Critical task.
- Minimizing civilian casualties and collateral damage will be top priority.
- Must take adequate account of personal security of American and allied forces.
- Urban/rural differences likely to matter.
- Strongly impacts force structure, choice of weapons, target identification criteria.
- Restrictive rules of engagement are a fundamental training priority, and potential morale problem.

Political/Economic Objectives

- Return to status quo ante in host country will tend to be a <u>minimum</u> objective.
- Restoration of infrastructure, commerce, etc.
- Establishment of democratic processes a characteristic objective.
- Restoration of indigenous law enforcement, judiciary, etc.

Force Structure

- More warriors on the Counterinsurgency side, typically heavy SOF at the outset. Large-scale pacification in low threat environment tends toward light infantry.
- Trainers, civil affairs, engineers to recreate infrastructure in Nation Building.
- Contractor support for forces likely to be large, esp. in low threat environment.

Command Structure

- Need to integrate ambassador and country team with military command.

CMOC is critical consideration in nation building.
Political liaison with host country (via ambassador and country team) critical in counterinsurgency.
Pursue tactical success in a somewhat empirical fashion, avoiding top-down micro-management.

NGO / PVO / Inter-agency
Less prominent in relatively more lethal environment of counterinsurgency.
Tends to be critical in nation-building, esp. in defining the end state, which is normally a hand-off to UN / NGO / local authorities.
Local NGOs/PVOs especially important in reestablishing legitimate, functional regime.
Large-scale presence can compound security problem, depending on threat environment.

Legal
Treatment of POWs, identification and apprehension of war criminals, etc., likely to be important issues in conflict termination.
American and allied forces' relationship to local laws and law enforcement agencies needs to be precisely defined.

Level of Intensity
Closely linked to rules of engagement.
Trust the judgment of ground force commander in judging necessary weapons and use of force.
Escalation a significant risk in response to casualties, driven either by public and official opinion, or by military judgment.

OPTEMPO
High-tempo, low-intensity ops characteristic of counterinsurgency.
Pro-active, aggressive approach
Larger-scale infrastructure restoration, civil-military activity, etc., not such high tempo.
Force rotation necessary in protracted ops, puts pressure on training, morale, continuity of civil-military relations, etc. Don't expect people to serve "for the duration" in limited-liability operations.
Employment of high-skill reserve components in Nation Building an important bottleneck.

History / Culture / Ethnic Conflict
Critical in relation to civil-military, ROE
Linguistic skill is an important resource.
In-country training priority, also depends on basic DOD ed. infrastructure.
Linked to integration with in-country team.

Media relations
Management of media relations has to be correlated to security problem.

B.4.4.3 Task list

Define the end state
Define rules of engagement
Operational planning
    Scale forces
    Define LOC, logistics load, and Op centers
    Carrying capacity of ports, roads, etc.
    Weapons mix
Identify critical civil-military connections
    Personalities
    Institutions
Local and regional intelligence
    Humint from all sources relatively important, national technical means relatively less.
        Intelligence interpretation has to be linked to culturally informed analysis.
    liaison with country team, exploiting its links to state-side expertise
    Dissemination of intelligence to operational and tactical commands.
Identify critical infrastructure requirements, if reconstruction is part of the mission.
Training in employment of both lethal and non-lethal force in relation to rules of engagement.
Training of host nation personnel to resume functional governing role.
If NGOs and PVOs are present, their security is a priority task.
Establish liaison with neighboring countries re overflight, frontier controls, etc.

B.4.5 Military Contingency Operations

Military contingency operations are very like traditional military operations. To the extent that traditional operations are understood and adequate tools created, military contingency operations analysis requirements are met. However, there are holes in the tools for traditional operations and some specialized models may be needed. An example was transportation planning for opposed NEOs.

An example of an extant model is the Air Courses of Action Assessment Model (ACAAM), which was designed as a model for helping to plan limited air strikes/raids, a la Libya. More recently, it has been used to analyze the Integrated Tasking Orders (ITOs) from Operations Plans (OPLANs). It uses a variety of optimization techniques to assign resources to achieve user-specified objectives.

B.5 OOTW TASKS / FUNCTIONS / DECISIONS - PER WORKSHOP

New subgroups were organized to analyze the tasks that were defined by the category subgroups. The tasks were analyzed across OOTW categories for:

Homogeneity (across categories)
Need for analytical support

Quantification (MOE)
Information/Data availability
Other observations on requirements for M&S

There is a problem with this approach, in that it tends to ask for analyses within an operation, potentially omitting analyses about operations, e.g., what operations should be undertaken, which could be based on reconstitution considerations, political considerations, etc.

B.5.1 Mobilization and Deployment

B.5.1.1 General mobilization tasks

determine force structure necessary to accomplish mission
    factors include scenario, potential threat, national/military objectives, weapons mix (heavy/light, lethal/nonlethal), geography, available infrastructure in theater, logistics support required, staging requirements, etc.
determine active/reserve mix to meet force requirements, to include tailoring
initiate appropriate reserve call-up

B.5.1.2 General deployment tasks

determine deployment timing
determine deployment priorities
determine transport capabilities

These depend on initial force structure decisions and mission requirements. Given time and priority requirements, current models can address many deployment issues; but they need better integration and to specifically address the inter/intra theater seam.

B.5.1.3 Force structure task, by OOTW category

Peacekeeping/Peace Enforcement
    scenario dependent
    few good models
    new models may not add much in near term
    decision aids could help a lot - data access, data organization & display
    need to tap expert opinion
    nonlethal--training, organization, other issues

Humanitarian Assistance/Disaster Relief
    scenario dependent
    new models are needed
    decision aids could help a lot
    need to tap expert opinion
    interaction of DOD and PVO / NGOs

CD / CT
    CT is largely black

host nation dependent
significant real time intelligence requirement - improve fusion model

CI / Nation Assistance
phenomena not well understood
no current models
decision aids could be helpful, but critical data may not be available
major decisions are non-military

Military Contingency Operations
many models/can be adapted quickly to specific scenarios
not the highest priority area for new model development
based on 'traditional' military operation MOEs

B.5.2 Force Employment

mission analysis/assessment (lesser need)
identification of centers of gravity
ROE choice
staff estimates (higher need)
COA development (lesser need)
force allocation and stationing
COA comparison - recommendation (higher need)
measure of mission success
probability of mission success
casualties
risks and worst case gaming

Insights: requirement is for analysis (vice models & simulation), data collection and analysis plan, MOE

B.5.3 Sustainment

need for analysis/analytical support					
task groups	PK/PE	HA/DR	CD/CT	CI/Country Building	Military Contingency
tooth to tail	5	5	0	5	0
medical support	4	5+	0/5	5	0
indigenous / client / refugee support	5	5+	0	5	0
joint / interagency / coalition support	5	5+	5	5	0
transport support	5	5+	0	5	0
engineer support	5	5+	0	5	0

homogeneity across row					
task groups	PK/PE	HA/DR	CD/CT	CI/Country Building	Military Contingency
tooth to tail	y	y	n	y	n
medical support	y	y	n	y	n
indigenous / client / refugee support	y	y	n	y	n
joint / interagency / coalition support	y	y	y	y	n
transport support	y	y	n	y	n
engineer support	y	y	n	y	n

tools only as good as data, which has data source and communication as weakest links. That is, data usually exists, but may not be available to the user because of communication link or because the controlling agency is not in theater. Data may not exist because of missed opportunity or perceived operational priorities.

tools and data needed is JTF level, data may not be available

B.5.4 Redeployment

B.5.4.1 End state identification

essentially homogeneous (counterdrug is exception)
no need for complex analytical tool - MOE calculation
real work on end state id is another function

B.5.4.2 Priorities

homogeneous
need for tools to balance effectiveness against availability/feasibility
no significant difference from needs of war ops

B.5.4.3 Reconstitution requirements

homogeneous
need analytical tool to look at impact on MRCs
however, need is not different from war ops

B.5.4.4 Transition to other responsible parties

must be tailored to the particular operation
not well understood, needs study
needs tools

B.5.5 C^3I

B.5.5.1 Command arrangements, span of control

commander's intent is crucial: presentation and dissemination of commander's intent in a multinational environment benefits from intelligence input and analysis
Combined JTF (CJTF) (doctrine) adequate for military except in CD / CT where they are ad hoc
Coalition (existing [e.g. NATO] or ad hoc) except CD / CT which are bilateral
Host nation critical across the board
Interagency differs by function with law enforcement dominating CD / CT

Comments
- analytical support needed in designing command arrangements (network analysis, span of control, quality of link, graph analysis, etc.)
- MOEs related to mission accomplishment, MOPs related to completeness of coverage and adequacy of information exchange
- Data collection designs exist, but are seldom applied in practice
- Data on non-military actors less available and more complex

B.5.5.2 Liaison / CMOC

interagency liaison critical in CT / CD
UN / NGO / PVO and local relationships critical for all except CD / CT and Contingency ops
Analyze as part of command arrangements issues
MOPs dominate, particularly information exchange and completeness of coverage
Information and data on non-military again crucial and difficult

B.5.5.3 Intelligence

Incorporates cultural awareness, ISR and tasking
Humint important in HA / DR & PKO, may be important in Peace Enforcement, CT / CD, and CI / Nation Building
Cultural capability (language and local knowledge) vital across the board
Big picture technical info available from national and regional assets. Existing models and data, e.g. environmental, demographic, health, and other complex models require specialized support, which is not readily available now

Comments
- sharply focused efforts required for contingency ops
- open source and existing data bases rich but seldom fully exploited
- instability analysis required for all categories
- analytic support (requirements, data fusion, threat projection, red team) relevant to requirements and ops in all mission categories
- MOEs relate to quality of information available to commanders and staffs (completeness, accuracy, precision, currency and consistency)
- Info data availability high but seldom assembled or organized for application

B.5.5.4 METT-T

M(E)TT-T, minus the enemy, covers the information needed from sources outside the intel system
Mission and mission analysis are standard military analytic problems, which do not require special tools in the OOTW environment
In HA / DR, PKO, CD / CT, and Nation Building, they represent novel challenges requiring ad hoc MOEs and consideration of a variety of non-military factors

Comments
- mission and environment dictate the details of the METT-T analysis required
- MOEs include the same standards as for intelligence (completeness, accuracy, precision, currency and consistency)
- info data availability generally good but seldom assembled or organized for application. Some regions (e.g., Africa and parts of Asia) much poorer quality than others

B.5.5.5 Communications

Standard military communications augmented by mission requirements and global location generally adequate for United States
Video Teleconferencing (VTC) has proven valuable in coordination-heavy missions such as HA / DR, PKO, CI, and Nation Building
CD / CT, CI, and Nation-building depends more heavily on national and local
Interoperability with others included in command arrangements often a problem
Specialized network for CMOC participants (UN /NGOs /PVOs /Locals) appears valuable
Outlet systems for media should not be forgotten

Comments

- Analytic support for communications systems design and adaptation exists. Ease of use for planners could be improved.
- MOEs deal with dissemination of information, waiting times, and measures of RAM (reliability, availability, maintainability)
- Data for individual systems available from communications community, but seldom collected on human (perception) dimensions

B.5.5.6 Media / public affairs

Always a trade-off between openness and operation security
All operations require dedicated professionals in this area
Greater control (less openness) needed in Contingency Ops, CD / CT, CI, and Peace Enforcement
Analytic support related to foreign audiences and planning media interactions is important. Professional tools exist but are seldom brought into the military environment.
Lessons learned and other relevant information seldom collected
Models supporting impact such as SPECTRUM and instability forecasting should be validated and incorporated into training
Training (war gaming) is vital

B.5.5.7 Additional insights

Systematic data collection is a problem across the board. A mechanism for collecting lessons learned is badly needed.
CD and CT ops can have a significant nation building aspect
Training is crucial across the board and particularly should emphasize (a) legal and contracting, (b) media, (c) communication of commander's guidance across cultures and agencies, and (d) use of analytic support in real time.
C^3I requirements are always derived from the mission and the operating environment
MOEs must focus on the quality of the information perceived by the commander and his key staff, particularly Commander's Critical Information Requirements (CCIR)

B.6 OOTW TOOL REQUIREMENTS - PER WORKSHOP

Generally, the desirable tools are decision support tools, are simple (e.g., menu driven, point and click), are deployable, are joint, are rigorous, use non-parochial data, have available data, and are capable of rapid turnaround.

In Force Employment, the requirement is for analysis (vice models & simulation), a data collection and analysis plan, and MOE development.

Sustainment tools are only as good as the data, which has data source and communication as the weakest links.

Transition must be tailored to the particular operation, is not well understood, needs study, and needs tools.

In Military Contingency Operations, many existing models can be adapted quickly to specific scenarios. This is not the highest priority area for new model development.

Systematic data collection is a problem across the board. Data availability, access, organization, and display are critical. In some areas, such as CT, the data are largely classified, imposing difficulties. Big picture technical information is available from national and regional assets. Open source and existing data bases are rich but seldom fully exploited. Existing models and data, e.g. environmental, demographic, health, and other complex models require specialized support, which is not readily available now. In CI/Nation Assistance, the phenomena are not well understood and there are no current models. Data on non-military actors are less available and more complex. The major decisions are non-military, possibly limiting the scope of analysis. A mechanism for collecting lessons learned is badly needed. Data collection designs exist, but are seldom applied in practice.

B.6.1 Requirements List

MOEs

PK/PE

Force Employment: measure of mission success
probability of mission success
casualties
risks and worst case gaming

end state ID

C^3I: MOEs related to mission accomplishment, MOPs related to completeness of coverage and adequacy of information exchange

Intelligence: MOEs relate to quality of information available to commanders and staffs (completeness, accuracy, precision, currency and consistency)

- The force employment MOE is based on probability of mission success and casualties. Its evaluation requires determination of risks and worst case gaming. Mission and mission analysis are standard military analytic problems, which do not require special tools in the OOTW environment. In HA/DR,

PK, CD/CT, and Nation Assistance, they represent novel challenges requiring ad hoc MOEs and consideration of a variety of non-military factors.

- In C^2, the MOEs are related to mission accomplishment and the MOPs are related to completeness of coverage and adequacy of information exchange, such as dissemination of information, waiting times, and measures of RAM (reliability, availability, maintainability).

- In intelligence the MOEs relate to quality of information available to commanders and staffs (completeness, accuracy, precision, currency and consistency), particularly Commander's Critical Information Requirements (CCIR).

Force Requirements and Structure Comparative Model/Tool

PK/PE: few good models - new models may not add much in near term; decision aids could help a lot - data access, data organization & display

HA/DR: new models are needed; decision aids could help a lot

CD/CT: improve data fusion model

CI/Nation Assistance: decision aids could be helpful, but critical data may not be available

Military Contingency Operations: many models/can be adapted quickly to specific scenarios; not the highest priority area for new model development

Redeployment Priorities: need for tools to balance effectiveness against availability/feasibility, no significant difference from needs of war ops

Redeployment Reconstitution: need analytical tool to look at impact on MRCs; however, need is not different from war ops

Transition planning

all OOTW: not well understood, needs study - needs tools

Modeling

HA/DR

Deployment: Given time and priority requirements, current models can address many deployment issues; but they need better integration and to specifically address the inter/intra theater seam.

Media, Public Affairs: Models supporting impact such as SPECTRUM and instability forecasting should be validated and incorporated into training

Intelligence: Existing models and data, e.g. environmental, demographic, health, and other complex models require specialized support, which is not readily available now

Decision Aids

HA/DR

Media, Public Affairs: Analytic support related to foreign audiences and planning media interactions is important. Professional tools exist but are seldom brought into the military environment.

Command arrangements, span of control: analytical support needed in designing command arrangements (network analysis, span of control, quality of link, graph analysis, etc.)
Force Employment: staff estimates (higher need)
Force Employment: COA comparison - recommendation (higher need)
Force Employment: mission analysis/assessment (lesser need) - identification of centers of gravity, and ROE choice
Force Employment: COA development (lesser need) - force allocation and stationing
Communications: Analytic support for communications systems design and adaptation exists. Ease of use for planners could be improved.
Intelligence: instability analysis required for all categories
Intelligence: analytic support (requirements, data fusion, threat projection, red team) relevant to requirements and ops in all mission categories

Data Collection and its analysis.
HA/DR
Force Employment
Command arrangements, span of control: Data collection designs exist, but are seldom applied in practice. Data on non-military actors less available and more complex
Intelligence: open source and existing data bases rich but seldom fully exploited. Info data availability high but seldom assembled or organized for application
Media, public affairs: Lessons learned and other relevant information seldom collected

Sustainment

B.6.2 Phenomena and Modeling Group Assessment of Difficulties

Opportunities for collecting measurable data should not be passed up. Repeated politico-military exercises should result in a baseline dataset with some validity. (Creating data for many countries where OOTWs are likely requires exotic expertise, as the assumptions of current models (such as an existing road system) may be incorrect.) These data can be used to create a seminar wargame-in-a-box. MOEs drive exit criteria for operations and for analysis.

Analysts need exposure to OOTWs to cast useful new models. They need to make measurements and experience cultural insights and surprises.

What is needed is a Windows-like workstation, with unified services, a common interface, and sharable data, because models are hard to use.

STATE OF THE ART
Modeling Maturity
G (Green) stable models currently in use
Y (Yellow) there are models emerging
R (Red) Don't model this with constructive simulation
Data Availability

OK World-wide data available, measurable
$ Measurable data can be collected
V Valid application requires repeated uses to establish baseline, immeasurable

FUNCTIONS AND MODELS

Mobilization
- Determine Primary Force (Y,$)
- Determine PKO Force Size (R,V)
- Determine Support Force (G,OK)
- TPFD Prioritization for OOTW (Y,$)

Deployment
- strategic lift (G,ok)
- road transport (g,$)
- C4ISR
  - blue like (g,$)
- TPFD timing (g,ok)

Force employment
- MP and Law Operations (y,$)
- migrant interdiction (y,v)
- Disaster effects
  - physical (G,$)
  - medical (G,OK)
  - people's reactions (Y,V)
- C4ISR
  - Blue-like (G,$)
  - Threat-like (Y,V)
- INT and INFO
  - where is he (g,ok)
  - what's his intent (y,v)
- SOF Strike (G,$)
- Execution of Combat Engineers (Y,$)
- Shipping and Delivery (G,$)
- Flashpoint Coverage and Response (Y,$)

C3I
- C4ISR
  - Blue-like (G,$)
  - Threat-like (Y,V)
- INT and INFO
  - where is he (G,OK)
  - what's his intent (Y,V)
  - competitive colleague gaming (Y,V)
- Flashpoint Coverage and Response: culturally sensitive perceptions (generates political actions) (Y,V)

Sustainment
- strategic lift (g,ok)
- road transport (g,$)
- C4ISR
  - blue like (g,$)

OVERARCHING THEMES
WE have a Handle on Most of the OP Stovepipes
- Data, Data, Data
- Usability Issues
- Getting the Good Stuff to the Users

DATA PEDIGREE is KEY TO VALID APPLICATION

Integration Problem is THE Outstanding Problem
- Interdependent Missions
- Interaction of the Mission with the Non-Military
  - Perception
  - Opinion
  - Political Action
  - Response

BIG MESSAGES
- Opportunities for collecting measurable data
- Repeated exercise of Political-Military games should result in Baseline Dataset with some validity
  - Creating data requires Exotic Expertise
  - Seminar wargames-In-A-Box
- MOEs drive exit criteria
  - For OPERATION
  - For ANALYSIS

MOST OF ALL
- Analysts need exposure to MOOTWs to cast useful new models.
  - Measurements
  - Cultural Insights
  - Surprises
- ANALYSTS, TAKE TO THE FIELD

EFFECTIVE SOLUTION
- Windows-like Workstation
  - unified services
  - common interface
  - sharable data
- Models are HARD to Use

B.7 CAVEATS

As in all workshops, various factors operated to make the product of the workshop incomplete and uneven in quality. Thus, none of the results should be considered as definitive. However, the value of a workshop such as this lies in exposing many concepts and subjecting them to discussion. Thus the results may be expected to exceed what one or two gifted individuals might produce.

APPENDIX C:
NOTES FROM THE NOVA SCOTIA WORKSHOP

APPENDIX C:
NOTES FROM THE NOVA SCOTIA WORKSHOP

The workshop held at the Lester B. Pearson Canadian International Peacekeeping Centre in Nova Scotia, Canada, was entitled "Analytical Approaches to Future Conflict." The majority of the presentations involved only OOTW, presumably either because future conflicts were judged to most likely be of this nature or because analytical approaches for warfare were judged to be less in need of novel approaches. The international character of the participants, the inclusion of military, academic and corporate viewpoints, and the presence of a person with U.S. State Department Agency for International Development (AID) and Non-Governmental Organization (NGO) experience gave this conference a distinct importance in deriving a reasonably balanced view of OOTW operations and the analytic possibilities. The proceedings, edited by Alexander Woodcock and David Davis, have been published as *Analytical Approaches to the Study of Future Conflict* [154].

C.1 DIGESTS OF THE PRESENTATIONS

Unlike at most conferences, each of the presentations was allotted an entire hour. This time allocation reduced the number of presentations possible over the three-day conference; however, it afforded time for a more complete exposition of ideas and for contributions by the other presenters and attendees, each of whom had been selected for his or her potential for making contributions. Proceedings of the conference are to be published later in the year, thus only excerpts are included in this section.

C.1.1 About OOTWs

Peace keeping requires the consent of the parties among whom peace is to be kept, whereas peace enforcement does not require that consent. Because consent is not generally absolute, a large part of the doctrine related to peacekeeping concerns how consent can be kept or lost. Consent can be lost by taking sides, using too much force, losing legitimacy, losing credibility, incurring gross disrespect, and through misunderstanding. Consent-building techniques include negotiation, mediation, liaison, civil affairs, and other techniques. A further complicating factor is that the consent level may be different at the tactical level from that of the strategic level. Thus, the use of force at the tactical level need not break consent at the strategic level (although it may do so). The key is to know when and what effects will be damped and which uses will cause ill effects at other places and times. It was pointed out that a "minimum use of force" means a minimum use of physical force, not necessarily a minimum of moral force.

In developing doctrine for peace enforcement, the division between peace enforcement and war fighting is important. The definition lies in the definition of the end state: the resolution

of peace enforcement is by conciliation, rather than termination by force. It was suggested that there are internal divisions within peace enforcement and that impartiality in the use of force (or its loss) embodies one such division.

Whether the doctrine is for peacekeeping or peace enforcement, a "national doctrine" is virtually useless if it does not account for the presence and activities of other nations and NGOs.

Another speaker proposed impartiality, rather than consent, as the significant partition. In this view, the decision for impartiality or partiality is controlled by the intervenor, whereas the decision for consent or non-consent is not. Within the regime of intervenor impartiality, probability of success increases as the level of consent increases and military difficulty increases as the level of consent decreases, with impartiality being abandoned when military difficulty exceeds some bound.

The "principles of peace operations" were described as a generalization of the principles of war. In peace operations, the enemy is the conflict, not the opposing parties. The offensive in peace operations generally consists of contact skills/negotiating skills. At the tactical level, the goal is to aid the strategic negotiations.

A thesis on "centers of gravity" was presented. One center is "material" and concerns such things as numbers of weapons, food production facilities, electrical generation facilities, and factories. The other center is "immaterial" and concerns the will and moral force of a population or group. In most past conflicts, destroying the material center of gravity effectively destroyed the immaterial center; whereas OOTW involves situations in which the immaterial center of gravity is disconnected from the material center of gravity, so that attacking the material center has only marginal effects on the operation.

Another speaker proposed that the next (short-term) shift in international affairs will be seen as toward increasing nationalism. However, the overall trend is toward globalism. The NATO-led Bosnian operation is seen as the forerunner of a decrease in UN-led missions, supplanted by operations led by regional organizations but sanctioned by the UN. This "delegatory peacekeeping" is the alternative to UN impotence and irrelevancy. This view of the historical trend was debated, but not refuted.

C.1.1.1 "The Pearson Peacekeeping Centre" - Tim Sparling

Tim Sparling is the Vice President of the Centre, a non-profit organization, created to enhance Canada's contribution to international peacekeeping through training Canadian and other peacekeepers and those interested in peacekeeping.

Sparling described the history and purpose of the Centre. He also made the point that the key requirements for peacekeeping are

personnel;
finances;
material and equipment; and
research, education and training.

C.1.1.2 "Keynote Address" - Gene Visco

Gene Visco is an influential civilian member of the U.S. Department of the Army, working for the Deputy Undersecretary for Operations Research.

Visco's keynote address used the history of operations research to underscore the opportunity for change in the analysis of future conflicts. He divided this history into five eras. The first era ran from World War II to the Korean War, characterized by tool development, such as search theory, wargames and game theory. The second era ran from the Korean War to about 1960, characterized by digital computer models of war in a single scenario world. The third era extended from 1960 to the mid '70s, characterized by large scale combat models, enabled by the printed circuit. In the fourth era, from the mid '70s to 1990, the computer simulation was dominant, enabled by microchips, with systems acquisition decisions the predominant user of analysis. Visco's thesis was that the increasing emphasis on large, complex models has accompanied and facilitated the decline in analysis as the principal occupation of operations research.

Despite this gloomy account of history, Visco foresees the current (fifth) era as providing the opportunity to return to the roots of the field, the analysis of important tactical, operational, and strategic operations. In the new, multi-scenario world, everything needs rethinking. The key word is "uncertainty" and the need for rapid response force design and employment, with restrictions and constraints on acceptable results, requires close attention to actual operations and analysis, rather than crank turning of models. The big questions have often been off-limits, even in the best of times; however, the opportunity exists to address more of them than has been the case in the immediate past.

C.1.1.3 "Developing Doctrine for Peace-Support Operations" - Phil Wilkinson

Phil Wilkinson is a military officer in charge of peace-support operations doctrine development for the United Kingdom.

Wilkinson defined doctrine as being composed of moral (the man), physical (the equipment) and conceptual (guidance) components. He explained his responsibilities in defining doctrine to be concerned with the conceptual component. He also commented that a "national doctrine" is virtually useless if it does not account for other nations and NGOs.

Wilkinson's starting point lay in distinguishing peacekeeping from peace enforcement. Peace keeping requires the consent of the parties among whom peace is to be kept, whereas peace enforcement does not require that consent. Because consent is not generally absolute, a large part of the doctrine related to peacekeeping concerns means by which consent can be lost and kept.

Consent can be lost by taking sides, using too much force, losing legitimacy, losing credibility, incurring gross disrespect, and through misunderstanding. Consent building techniques include negotiation, mediation, liaison, civil affairs, and other techniques. A further complicating factor is that the consent level may be different at the tactical level from that of the strategic level. Thus, the use of force at the tactical level need not break consent at the strategic level (although it may do so). The key is know when and what effects will be

damped and which uses will cause ill effects at other places and times. It was pointed out that a "minimum use of force" means a minimum use of physical force, not necessarily a minimum of moral force.

In developing doctrine for peace enforcement, the division between peace enforcement and war fighting is important. The definition lies in the definition of the end state: the resolution of peace enforcement is by conciliation, rather than termination by force. Wilkinson also suggested that there are internal divisions within peace enforcement and that impartiality in the use of force (or its loss) embodies one such division.

C.1.1.4 "A Canadian Perspective on Operations Other Than War" - Brad Bergstrand

Brad Bergstrand is a military officer working on defining Canadian doctrine in the Canadian National Defence Headquarters.

Bergstrand has coordinated with Phil Wilkinson (see above) on peace support doctrine and finds that the United Kingdom and Canada agree on the major aspects. The major difference is that where Wilkinson sees the line between consent and non-consent as the important divider, Bergstrand sees the line between impartiality and partiality (toward the opposing sides of the conflict) as the significant partition. In Bergstrand's view, the decision for impartiality or partiality is controlled by the intervenor, whereas the decision for consent or non-consent is not. Within the regime of intervenor impartiality, he sees probability of success increasing as the level of consent increases and military difficulty increasing as the level of consent decreases, with impartiality being abandoned when military difficulty exceeds some bound.

Bergstrand described the "principles of peace operations" as a generalization of the principles of war. In peace operations, the enemy is the conflict, not the opposing parties. The offensive in peace operations generally consists of contact skills/negotiating skills. At the tactical level, the goal is to aid the strategic negotiations.

C.1.1.5 "The Convergence of Complexity" - Jamie MacIntosh

Jamie MacIntosh is a civilian employee of the United Kingdom Defence Research Agency.

MacIntosh had previously served in the UN peacekeeping forces in Bosnia and presented a set of photographic slides of the situation there. He presented a philosophical view of the Social, Political, Ideological, Technological, and Economic (SPITE) factors. He spoke in favor of defining a peace operation called an Aggravated Peace Support Operation (APSO), falling between peacekeeping (UN Chapter VI) and peace enforcement (UN Chapter VII), and thus often referred to as Chapter VI ½.

His thesis was that there are two "centers of gravity" and that these two centers are no longer co-located. One center is "material" and concerns such things as numbers of weapons, food production facilities, electrical generation facilities, and factories. The other center is "immaterial" and concerns the will and moral force of a population or group. MacIntosh described most past conflicts as ones in which destroying the material center of gravity effectively destroyed the immaterial center; whereas OOTW involves situations in which the

immaterial center of gravity is disconnected from the material center of gravity, so that attacking the material center has only marginal effects on the operation.

C.1.1.6 "Delegatory Peacekeeping" - J. T. Wentges

J. T. Wentges is a Canadian student at the University of Toronto.

Wentges proposed that the next shift in international affairs will be seen as toward increasing nationalism. He does not see this as permanent, believing that the overall trend is toward globalism; however, the time frame could encompass more than 10 years. He described the original UN-led military sanctions against aggressors as "collective security." The UN-led interpositions of forces with the consent of the parties in conflict (from 1955 to 1989) has been "peacekeeping." The interventions (from 1989 to 1995) within nations, driven by concepts of human rights, he labeled "comprehensive peacekeeping."

Wentges sees the NATO-led Bosnian operation as the forerunner of a decrease in UN-led missions and a supplanting by operations led by regional organizations, but sanctioned by the UN. He labels this "delegatory peacekeeping." Wentges sees this as less desirable than UN-led efforts. However, he sees the alternative to legitimizing the best efforts by sanctioning them is for the UN to have no role and be seen as impotent and irrelevant.

Wentges' view of the historical trend was debated, but not refuted.

C.1.2 Psycho-Social Phenomena

Work is being done in developing leading indicators (based on empirical patterns) of instability that can lead to OOTW. Areas of research include interstate conflicts, intra-state conflicts, and international transactional crises (e.g., refugee flows to several countries). Types of early warning systems range from internet news groups containing compilations of incidents to empirical models.

Empirical models provide the most comprehensive systems; however, their development requires a considerable amount of work. Past conflicts must be converted from the historical point of view to the political science viewpoint in order to be useful. For example, data on the level of economic development, infant mortality and the dependency ratio are not standard historical data, but are required for a political-science-based analysis. Some databases exist, however. In addition, current events must be recorded and coded to provide data for future predictions. Work of this sort being performed at the University of Maryland to produce the Global Events Data Sets (GEDS).

Intra-state conflicts is the new growth area in academic research. The Minorities at Risk data collection (also at Maryland) has a potential connection to GEDS. Harvard is working on the Protocol for the Assessment of Nonviolent Direct Action (PANDA) in the area of ethnic conflicts and the concept of the carrying capacity of cultures and nations for conflict. (For example, a robust democracy could endure higher levels of internal conflict than an autocracy.)

Schmedl has done work on regression of indicators for refugees and severe political violence. Migration networks appear to be the best current predictor of refugee flows. (Refugees preferentially travel to places where previous refugees have settled.)

The Theater Analysis Model (TAM) politico-military games has been used to model civil war, using one-week time steps and four teams: Bosnians, Serbs, UN, and control. The political part was played off-line. The players wrote down the strategic objectives, the military options (with pros and cons), and the effects on the civilian populace and the delivery of aid. The discipline of writing down the strategic objectives proved to be very important.

Geo-political decisions can be critical determinants of success in war and peace. These decisions are based on assumed psychological and sociological responses to the decisions by the various individuals and groups in the decision environment. For example, mental models are used in deciding whether to display our naval "presence" in a foreign port or whether a discussion on the golf course would be more effective. However, in constructing consistent policies over long periods of time that involve the conflicting interests of many countries, the complexities often overwhelm simple models. The questions should address the immediate impact of a decision, the long term impact, the potential for diverse impacts throughout the populations of interest, and the consequences of previous actions by other parties. A computer implementation, combining and extending the simple models, might be useful; but its design is a hard problem. A philosophical framework for modeling psycho-social attributes at the theater level was presented and some of the necessary structure was developed.

The Deployable Exercise Support (DEXES) System is a computer-driven exercise (training) system, useful in the OOTW arena. It has heuristic equations for modeling political, social and military factors. It has a standard model for medical epidemics and uses Samuelson's macro-economic model (with 23 state variables) for economic factors. It has a good user interface and has been used for exercises.

C.1.2.1 "Predicting Where the Next OOTW Will Occur" - Karen Parsons

Karen Parsons is an analyst at the U.S. Joint Warfare Analysis Center (until recently an academic in sociology).

Parsons presented a compendium of work that is being done in developing leading indicators (based on empirical patterns) of instability that can lead to OOTW. Areas of research include interstate conflicts, intra-state conflicts, and international transactional crises (e.g., refugee flows to several countries). Types of early warning systems range from internet news groups containing compilations of incidents to empirical models.

Empirical models provide the most comprehensive systems; however, their development requires a considerable amount of work. Past conflicts must be converted from the historical point of view to the political science viewpoint in order to be useful. For example, data on the level of economic development, infant mortality and the dependency ratio are not standard historical data, but are required for a political science based analysis. She mentioned that some databases exist. In addition, current events must be recorded and coded to provide data for future predictions. Parsons described work of this sort being performed at the University of Maryland to produce the Global Events Data Sets (GEDS).

According to Parsons, intra-state conflicts is the new growth area in academic research. She mentioned the Minorities at Risk data collection (also at Maryland) and its potential connection to GEDS. She also described something called Panda being worked at Harvard in the area of ethnic conflicts and the concept of the carrying capacity of cultures and nations for conflict. (For example, a robust democracy could endure higher levels of internal conflict than an autocracy.)

Parsons also mentioned work by Schmedl on regression of indicators for refugees and severe political violence. Migration networks appear to be the best current predictor of refugee flows. (Refugees preferentially travel to places where previous refugees have settled.)

C.1.2.2 "Modeling Psycho-Social Attributes in Conflict" - Dean Hartley

Dean Hartley is a senior scientist at the Oak Ridge Federal Facilities, including the Oak Ridge National Laboratory (ORNL), a Federally Funded Research and Development Center (FFRDC).

Geo-political decisions can be critical determinants of success in war and peace. These decisions are based on assumed psychological and sociological responses to the decisions by the various individuals and groups in the decision environment. For example, mental models are used in deciding whether to display our naval "presence" in a foreign port or whether a discussion on the golf course would be more effective. However, in constructing consistent policies over long periods of time that involve the conflicting interests of many countries, the complexities often overwhelm simple models. The questions should address the immediate impact of a decision, the long term impact, the potential for diverse impacts throughout the populations of interest, and the consequences of previous actions by other parties. A computer implementation, combining and extending the simple models, might be useful; but its design is a hard problem. This paper presents a philosophical framework for modeling psycho-social attributes at the theater level and develops some of the necessary structure.

This presentation combined the requirements-oriented version of the presentation that was delivered in Monterey, the conceptual model version that was delivered in Bangkok, and information that had been suggested by several sources at various venues. The orientation of this presentation was toward a technical description of the conceptual framework of such a model, its utility, and potential problems in developing a useful tool.

C.1.2.3 "Deployable Exercise Support System" - A. E. R. Woodcock and J. Dockery

A. E. R. Woodcock is a scientist with Synectics Corporation of Fairfax, VA, in the United States.

Woodcock described the Deployable Exercise Support (DEXES) System, which is a computer driven exercise (training) system, useful in the OOTW arena. It has heuristic equations for modeling political, social and military factors. It has a standard model for medical epidemics and uses Samuelson's macro-economic model (with 23 state variables) for economic factors. It has a good user interface and has been used for exercises.

C.1.3 Influence Diagrams

A technique for threat assessment based on an analog of the police dicta of "motive, method and opportunity" for determining the culprit in a crime was presented. The technique involves an influence diagram-like construct that is called a causal chain diagram in which the significant factors are connected (as appropriate) through causal links among themselves and lead to the three outputs. An additional major factor is inserted, a "do we care" factor, that indicates the actionability of the results. The current combination mathematics at a node are simple averages of the increases and decreases passed from each input factor. This methodology is under study.

Another influence diagram approach organized the problem of political objectives as a four-step iterative loop consisting of basis structuring, deterministic analysis, probabilistic analysis, basis appraisal, followed by action or repetition, the whole approach being conditioned by values. In applying this approach to peace operations, the overarching U.S. objective was postulated to be maximizing U.S. security. The decisions on application of four factors influence the value obtained for this objective: military factors, U.S. resources, U.S. foreign policy, and clarity and constancy of purpose. These factors can be cast in terms of influence diagrams, which involve relations among chance events, decision events, deterministic events, and value functions. Influence diagrams permit concise descriptions, as well as conveying meaning through simplicity.

A third use of influence diagram methodology showed the impact of the use of Preventive Deployment on the likelihood of success of peace support operations. Preventive deployment was defined as a subset of peacekeeping (consent is assumed) in which (military) forces are deployed prior to hostilities erupting with a goal of preventing active conflict. The example used a recursive set of influence diagrams with three probabilistic events (assumed constant values throughout an entire peace support operation): probability that hostility will break out, probability of factional cooperations, and probability of ceasefire adherence. Three case variables were used: infrastructure - intact or dysfunctional, scenario - hostile or weakly cooperative, and effectiveness of military forces in implementing decisions - modest or strong. The diagram had absorbing states of success or failure and was evaluated to see the impact of using preventive deployment. This model made a strong case for the effectiveness of preventive deployment, as well as some points about the negative implications (for peace) of dysfunctional infrastructures.

C.1.3.1 "A Semi-Quantitative Approach to Threat Assessment" - Geoff Coyle

Geoff Coyle is head of the department of Defence Management and Policy Studies at Cranfield University in England.

Coyle described a technique for threat assessment based on an analog of the police dicta of "motive, method and opportunity" for determining the culprit in a crime. The technique involves an influence diagram-like construct that he called a causal chain diagram in which the significant factors are connected (as appropriate) through causal links among themselves and leading to the three outputs. An additional major factor is inserted, a "do we care" factor, that indicates the actionability of the results. The current combination mathematics

at a node are simple averages of the increases and decreases passed from each input factor. This methodology is under study.

C.1.3.2 "Decision Theoretic Approaches to Peace Operations" - Dan Maxwell

Dan Maxwell is a U.S. Army officer serving at the Army's Concepts Analysis Agency.

Maxwell organized the decision approach as a four-step iterative loop consisting of basis structuring, deterministic analysis, probabilistic analysis, and basis appraisal, followed by action or repetition, the whole approach being conditioned by values. In applying this approach to peace operations, Maxwell used the United States as the example in order to particularize the discussion. He postulated that the overarching U.S. objective is to Maximize U.S. Security. The decisions on application of four factors influence the value obtained for this objective: military factors, U.S. resources, U.S. foreign policy, and clarity and constancy of purpose. Maxwell showed how these factors can be cast in terms of influence diagrams, which involve relations among chance events, decision events, deterministic events, and value functions. (A knowledge map is an influence diagram with only chance nodes, using Bayesian revision for evaluation.)

Maxwell demonstrated the concise description influence diagrams permit, as well as their simplicity as an aid in conveying meaning. There are several software packages that aid in the application of influence diagrams to problems and in their evaluation.

C.1.3.3 "Decision Theoretic Approaches to Strategy Assessment" - Reiner Huber

Reiner Huber is a professor at one of the military universities in Germany, the Universität der Bundeswehr München.

Huber used the influence diagram methodology to show the impact of the use of Preventive Deployment on the likelihood of success of peace support operations. He defined preventive deployment as a subset of peacekeeping (consent is assumed) in which (military) forces are deployed prior to hostilities erupting with a goal of preventing active conflict.

Huber used a recursive set of influence diagrams with three probabilistic events (assumed constant values throughout an entire peace support operation): probability that hostility will break out, probability of factional cooperations, and probability of ceasefire adherence. Three case variables were used: infrastructure - intact or dysfunctional, scenario - hostile or weakly cooperative, and effectiveness of military forces in implementing decisions - modest or strong. The diagram had absorbing states of success or failure and was evaluated to see the impact of using preventive deployment. This model made a strong case for the effectiveness of preventive deployment, as well as some points about the negative implications (for peace) of dysfunctional infrastructures.

C.1.4 Scenario Creation

A derivative of Fritz Zwicky's technique for technology forecasting called a morphological box methodology was used for creating scenarios. The technique is analogous to the standard OR concept of design of experiments: rather than varying a single variable while holding all

others constant, one defines a space of variable values and purposefully evaluates points within that space. The morphological box (in this case) is the space of scenario parameter values. Key steps are as follows:

- formulate the problem;
- define the parameters (scenario dimensions);
- characterize each parameter in terms of possible values;
- determine performance values of all derived solutions; and
- select solutions (scenarios) for evaluation.

The scenario dimensions that were used were grouped into three classes, those related to the actors within the scenario, those related to the conflicts in the scenarios, and those related to the military operations.

- Actor-related dimensions
    - Great Power relationship
    - types of interests involved (e.g., economic, ideologic, symbolic)
    - political sphere (e.g., NATO, Former Soviet Union)
    - military capabilities (high, medium, low)
- Conflict-related dimensions
    - scope (non-war, intra-state, regional, etc.)
    - mandate (e.g., peacekeeping, none)
    - rules of engagement (e.g., restricted, unrestricted)
- Military-operations-related dimensions
    - terrain (open, canalizing, urban, etc.)
    - combat intensity
    - combat environment (land, air, sea, space, electronic warfare (EW), information warfare (IW))
    - military technology (capital intensive, medium, personnel intensive)

Another scenario development methodology was described. The scenario dimensions were divided into mission context, friendly forces (e.g., a single nation or multi-national forces), adversary forces, and operational environment (i.e., both the natural environment and the infrastructure). Each dimensional value is characterized as easier or more difficult (for C^3I). This framework is weighted toward MRCs, but there are some concessions to the differences of OOTW.

C.1.4.1 "Planning for Future Conflict" - Iver Johansen

Iver Johansen is a senior scientist with the Norwegian Defence Research Establishment.

Johansen described the methodology he used for creating scenarios for Norway using a derivative of Fritz Zwicky's technique for technology forecasting called a morphological box.

The technique is analogous to the standard OR concept of design of experiments: rather than varying a single variable while holding all others constant, one defines a space of variable values and purposefully evaluates points within that space. The morphological box (in this case) is the space of scenario parameter values. Key steps are as follows:

1. formulate the problem;
2. define the parameters (scenario dimensions);
3. characterize each parameter in terms of possible values;
4. determine performance values of all derived solutions; and
5. select solutions (scenarios) for evaluation.

Johansen described the scenario dimensions that he had used for Norway. These dimensions were grouped into three classes, those related to the actors within the scenario, those related to the conflicts in the scenarios, and those related to the military operations.

Actor related dimensions
- Great Power relationship
- types of interests involved (e.g., economic, ideologic, symbolic)
- political sphere (e.g., NATO, Former Soviet Union)
- military capabilities (high, medium, low)

Conflict related dimensions
- scope (non-war, intra-state, regional, etc.)
- mandate (e.g., peacekeeping, none)
- rules of engagement (e.g., restricted, unrestricted)

Military operations related dimensions
- terrain (open, canalizing, urban, etc.)
- combat intensity
- combat environment (land, air, sea, space, electronic warfare (EW), information warfare (IW))
- military technology (capital intensive, medium, personnel intensive)

C.1.4.2 "Developing Scenarios to Support C^{3}I Analyses" - Stuart Starr

Stuart Starr is a senior scientist at MITRE, a U.S. FFRDC.

Starr discussed scenario development that was performed to allow stressful testing of Advanced Battlefield Information Systems (ABIS). Where Johansen (see above) divided the scenario dimensions into actor-related, conflict-related, and military-operations-related, Starr divided them into mission context, friendly forces (e.g., a single nation or multi-national forces), adversary forces, and operational environment (i.e., both the natural environment and the infrastructure). Each dimensional value is characterized as easier or more difficult (for C^{3}I). This framework is weighted toward MRCs, but there are some concessions to the differences of OOTW.

C.1.5 C^{3}I

Modeling any element of Reconnaissance, Intelligence, Surveillance, and Target Acquisition (RISTA) must be done in operational terms, which means all elements must be modeled. To

model military C^3I usefully, all elements must be modeled (e.g., modeling a communications network in terms of bandwidth has little relationship to modeling the network in combat conditions where the content of the messages that get through is critical).

A cellular automata computer program was introduced by describing approaches that had failed: Artificial Intelligence (AI) and expert systems, Systems Dynamics (could not find the right functions for describing C^3I), and self-learning algorithms (could not find the data for training the algorithms). The program is broken into two domains, the command domain and the physical domain. The cellular automata approach is based on simple rules for low level entities and results in emergent behaviors.

In another presentation, the information-theoretic concept of entropy (analogous to entropy in physics) was introduced as a useful tool in measuring the amount of information that intelligence operations have procured. This measure then provides a stable base-line against which to compare the value of the efforts. A computer program showed how this tied together with a Bayesian change in estimation of the location probability of something being searched for as the search was prosecuted and results were made known. A significant property of this methodology was that credit is given for searching and finding nothing, rather than only giving credit when something is found.

C.1.5.1 "Adaptive C^3I Systems Modeling" - Lorraine Dodd and Sean Richardson

Lorraine Dodd and Sean Richardson are civilian employees of the United Kingdom Defence Research Agency.

Ms. Dodd introduced her topic of modeling Command, Control, Communications, and Intelligence (C^3I) systems by explaining that modeling any element of Reconnaissance, Intelligence, Surveillance, and Target Acquisition (RISTA) must be done in operational terms, which means all elements must be modeled. To model military C^3I usefully, all elements must be modeled (e.g., modeling a communications network in terms of bandwidth has little relationship to modeling the network in combat conditions where the content of the messages that get through is critical).

Dodd introduced a cellular automata computer program (that was run by Richardson) by describing approaches that had failed: Artificial Intelligence (AI) and expert systems, Systems Dynamics (could not find the right functions for describing C^3I), and self-learning algorithms (could not find the data for training the algorithms). The program is broken into two domains, the command domain and the physical domain. The cellular automata approach is based on simple rules for low level entities and results in emergent behaviors.

C.1.5.2 "Entropy Modeling" - Don Barr and Todd Sherrill

Don Barr and Todd Sherrill are professors at the U.S. Military Academy.

Barr and Sherrill discussed using the information-theoretic concept of entropy (analogous to entropy in physics) as a useful tool in measuring the amount of information that intelligence operations have procured. This measure then provides a stable base-line against which to

compare the value of the efforts. Equation (1) shows the formula for the entropy, e, of a system with n finite states and probabilities, p_j that the system is in state j.

$$e = -\sum_j p_j \ln(p_j) \qquad (1)$$

Entropy has the property that the minimum value possible for e is 0 and the maximum is $ln(n)$. Barr and Sherrill demonstrated a computer program that showed how this tied together with a Bayesian change in estimation of the location probability of something being searched for as the search was prosecuted and results were made known. A significant property of this methodology was that credit is given for searching and finding nothing, rather than only giving credit when something is found.

C.1.6 Miscellany

Some mathematical results that may be useful in the analysis of difficult problems were presented. For example, there are situations in which the volume of data is too great for simultaneous analysis or in which all the data are not simultaneously available. The question arises as to how (and if) the separate analyses of chunks of data can be combined. There is an answer, namely Composable Data Analysis. Catastrophe theory may be useful in prescribing how to make decisions when the objectives are uncertain. There are also some examples where adding noise to a system can make an intractable mathematical problem quite tractable.

A methodology for effecting the repair of a country after a war was described. The Dornier DIAMANT model, a Lanchestrian attrition, brigade-level model, was used to create the damage (building and road damage, minefields and artillery impact areas with possible unexploded ordnance). The model was also used to determine sequences of actions based on trafficability and implied movement speeds, as well as costs. A commercial project management tool was used to collect and organize the engineering tasks.

C.1.6.1 "What Mathematics for Future Systems" - Brian Bramson

Brian Bramson is a scientist at the United Kingdom's Defence Research Agency.

Bramson discussed some mathematical results that may be useful in the analysis of difficult problems. For example, there are situations in which the volume of data is too great for simultaneous analysis or in which all the data are not simultaneously available. The question arises as to how (and if) the separate analyses of chunks of data can be combined. There is an answer, which Bramson discussed as Composable Data Analysis. Bramson discussed how catastrophe theory may be useful in prescribing how to make decisions when the objectives are uncertain. He also showed some examples where adding noise to a system can make an intractable mathematical problem quite tractable.

C.1.6.2 "After War Actions" - K. A. Bertsche

Karl Bertsche works for Dornier in Germany.

Bertsche described a methodology for effecting the repair of a country after a war. He used the Dornier DIAMANT model, a Lanchestrian-attrition, brigade-level model, to create the damage (building and road damage, mine fields and artillery impact areas with possible unexploded ordnance). The model was also used to determine sequences of actions based on trafficability and implied movement speeds, as well as costs. A commercial project management tool was used to collect and organize the engineering tasks.

C.1.7 Applications

Some OR techniques have proved useful in support of Bosnian operations. The common thread was that the techniques were at the low end of the complexity scale and required a relatively small amount of time to perform. Types are shown below.

- Low-level models with quantitative examination of selective scenarios
- Brainstorming
- Politico-military games
- Decision trees
- List of enemy displaced reactions
- Color-coded maps
- SWOT (strength, weakness, opportunities, threats) analyses
- Pareto analyses

The task areas and sample analyses are shown below.

- Support to operations
    - options for use of UN rapid reaction/reserve forces
    - how to exploit reserve - full charge, graduated response, etc.
- Contingency planning
    - risk analysis of future plans - wargames
- Monitoring operations
- Support to lessons identified
    - casualty breakdowns by cause
    - medical treatment breakdown
    - measures of consent on color-coded map
    - measures of normality on color-coded map

Questions that were asked of the analysis teams are shown below.

- Trials
  - how can ISOs (International Standards Organization defined shelters) be protected from mortar and artillery fire
  - how to site weapons-locating radars
  - gaming and analysis of plans for the end of conflict
  - minimize collateral damage from bombs
- Weapon/system assessments
  - e.g., old Yugoslavian weapons, both hardware and human proficiency
- Intelligence threat assessments
  - counts of vehicles passing into and out of areas, deriving net inflows and outflows, predicting next assault
  - inferring actual doctrine by analyzing past events
- Planning - tactical level
- Planning - theater (operational) level

C.1.7.1 "Analytical Techniques in Bosnia" - Hugh Richardson

Hugh Richardson is a chief scientist in the defense establishment of the United Kingdom.

Richardson described the OR techniques that have proved useful in support of Bosnian operations. The common thread was that the techniques were at the low end of the complexity scale and required a relatively small amount of time to perform. Types are shown below.

Low level models with quantitative examination of selective scenarios
Brainstorming
Politico-military games
Decision trees
List of enemy displaced reactions
Color-coded maps
SWOT (strength, weakness, opportunities, threats) analyses
Pareto analyses

The task areas and sample analyses are shown below.

Support to operations
    options for use of UN rapid reaction/reserve forces
    how to exploit reserve - full charge, graduated response, etc.
Contingency planning

risk analysis of future plans - wargames
Monitoring operations
Support to lessons identified
casualty breakdowns by cause
medical treatment breakdown
measures of consent on color-coded map
measures of normality on color-coded map

Questions that were asked of the analysis teams are shown below.

Trials
how can ISOs (International Standards Organization defined shelters) be protected from mortar and artillery fire
how to site weapons locating radars
gaming and analysis of plans for the end of conflict
minimize collateral damage from bombs
Weapon/system assessments
e.g., old Yugoslavian weapons, both hardware and human proficiency
Intelligence threat assessments
counts of vehicles passing into and out of areas, deriving net inflows and outflows, predicting next assault
inferring actual doctrine by analyzing past events
Planning - tactical level
Planning - theater level

The politico-military games used the Theater Analysis Model (TAM) to model civil war, using one week time steps and four teams: Bosnians, Serbs, UN, and control. The political part was played off-line. The players wrote down the strategic objectives, the military options (with pros and cons), and the effects on the civilian populace and the delivery of aid. The discipline of writing down the strategic objectives proved to be very important.

C.2 SUMMARY

The workshop was clearly a success as an information exchange mechanism. It was also a success in provoking thoughtful criticism and consideration of new ideas. For the purpose of this report, it was successful in introducing variations on the concepts of the Monterey Workshop, as well as completely new concepts.

The workshop concluded with a session about the workshop and its content. Of special importance here:

- Are the questions posed by the customers of analysis the wrong questions?
- Most analyses are and have been based (to a large extent) on unitary scenarios; however, current events imply that multiple scenarios should be used.

- The title of the workshop was "Analytical Approaches to Future Conflict," yet discussions of OOTW predominated. Is OOTW the only future?

- Models are not the product, analysis is the product. Models are means to an end.

APPENDIX D:
OOTWS SUPPORTED BY THE U.S. MILITARY

APPENDIX D:
OOTWS SUPPORTED BY THE U.S. MILITARY

The initial data reported here come from Helmbold [83] and Robbins [120]. Additions and modifications have been supplied by several people associated with the various CINCs. Some operations listed have had the CINC entry modified to reflect the current areas of responsibilities (USCENTCOM and USACOM were organized after 1981). These changes permit the compilation of OOTWs by current areas of responsibility to allow drawing inferences for potential future OOTWs.

Table 39. Historical OOTWs

YR	PLACE	CINC	NAME	TYPE
81	SINAI	USCENTCOM		PK
82	SINAI	USCENTCOM		PK
83	SINAI	USCENTCOM		PK
83	LEBANON	USCENTCOM		PK
83	GRENADA	USSOUTHCOM	URGENT FURY	MIL CONT
84	SINAI	USCENTCOM		PK
84	LEBANON	USCENTCOM		PK
85	SINAI	USCENTCOM		PK
86	SINAI	USCENTCOM		PK
87	PERSIAN GULF	USCENTCOM	ERNEST WILL	FON
87	SINAI	USCENTCOM		PK
88		USCENTCOM	PRAYING MANTIS	MIL CONT
88	PERSIAN GULF	USCENTCOM	ERNEST WILL	FON
88		USACOM	YELLOWSTONE FIRES	DR
88	SINAI	USCENTCOM		PK
89	SINAI	USCENTCOM		PK
89	PERSIAN GULF	USCENTCOM	ERNEST WILL	FON

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
89	ALASKA	USACOM	EXXON VALDEZ OIL SPILL	DR
89	PRC	USPACOM		NEAR NEO
89	PHILIPPINES	USPACOM	COUP ATTEMPT	NEAR NEO
89	NICARAGUA	USSOUTHCOM		PK
89	PANAMA	USSOUTHCOM	JUST CAUSE	MIL CONT/CD
90	SINAI	USCENTCOM		PK
90	BANGLADESH	USPACOM		NEAR NEO
90	SOMALIA	USCENTCOM	EASTERN EXIT	NEO
90	PERSIAN GULF	USCENTCOM	MARITIME INTERDICT OPERATION (MIO)	BLOCK (NAVAL)
90	EAST COAST	USACOM	JTF4	CD (NAVAL)
90	WEST COAST	USPACOM	JTF5	CD (NAVAL)
90	HAWAII	USPACOM		CD (NAVAL)
90	TUNISIA	USEUCOM		DR
90	PHILIPPINES	USPACOM	TYPHOON MIKE	DR
90	ANTIGUA	USSOUTHCOM	HURRICANE HUGO	DR
90	ROMANIA	USEUCOM		HA
90	IRAN	USCENTCOM		FON (NAVAL)
90	KENYA	USCENTCOM		FON (NAVAL)
90	IRAN	USCENTCOM		FON (NAVAL)
90	YEMEN	USCENTCOM		FON (NAVAL)
90	IRAN	USCENTCOM		FON (NAVAL)
90	KAMCHATKA	USPACOM		ISR
90	SEA OF JAPAN	USPACOM		ISR (NAVAL)
90	KOREAN STRAIT	USPACOM		ISR (NAVAL)
90	ALASKA	USPACOM		ISR (NAVAL)
90	LIBERIA	USEUCOM	SHARP EDGE	NEO
90	NICARAGUA	USSOUTHCOM		PK
90	PANAMA	USSOUTHCOM	JUST CAUSE	MIL CONT/CD

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
91	SINAI	USCENTCOM		PK
91	NICARAGUA	USSOUTHCOM		PK
91	EAST COAST	USACOM	JTF4	CD (NAVAL)
91	WEST COAST	USPACOM	JTF5	CD (NAVAL)
91	EASTERN MED	USEUCOM		ISR (NAVAL)
91	LIBERIA	USEUCOM	SHARP EDGE	NEO
91	GULF OF MEXICO	USACOM	SINBAD	CD (NAVAL)
91	GULF OF THAILAND	USPACOM	SEA WISE	CD (NAVAL)
91	SW BORDER	USACOM	JTF6	CD
91	CUBA	USACOM	GTMO	HA
91	ZAIRE	USEUCOM	QUICK LIFT	NEO
91	HAITI	USACOM	VICTOR SQUARED	NEO
91	SOMALIA	USCENTCOM	EASTERN EXIT	NEO
91	IRAQ	USEUCOM	PROVIDE COMFORT	HA
91	BANGLADESH	USPACOM	SEA ANGEL	DR
91	PERSIAN GULF	USCENTCOM	MIO	BLOCK (NAVAL)
91	PHILIPPINES	USPACOM	FIERY VIGIL	NEO
92	SINAI	USCENTCOM		PK
92	CALIFORNIA	USACOM	LA RIOTS	PK
92	NICARAGUA	USSOUTHCOM		PK
92	EAST COAST	USACOM	JTF4	CD (NAVAL)
92	WEST COAST	USPACOM	JTF5	CD (NAVAL)
92	BLACK SEA	USEUCOM		FON (NAVAL)
92	IRAN	USCENTCOM		FON (NAVAL)
92	DJIBOUTI	USCENTCOM		FON (NAVAL)
92	CHINA	USPACOM		FON (NAVAL)
92	PERSIAN GULF	USCENTCOM		ISR (NAVAL)
92	LIBYA	USEUCOM		ISR (NAVAL)

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
92	RED SEA	USCENTCOM		ISR (NAVAL)
92	WESTERN MED	USEUCOM		ISR (NAVAL)
92	INDIAN OCEAN	USPACOM		ISR (NAVAL)
92	SW BORDER	USACOM	JTF6	CD
92	PERSIAN GULF	USCENTCOM	MIO	BLOCK (NAVAL)
92	CANARY ISLANDS	USEUCOM		CD (NAVAL)
92	IRAQ	USCENTCOM	PROVIDE COMFORT	HA
92	CUBA	USACOM	GTMO	HA
92	ANGOLA	USEUCOM	PROVIDE TRANSITION	HA
92	CIS	USEUCOM	PROVIDE HOPE	HA
92	KENYA	USCENTCOM	PROVIDE RELIEF	HA
92	MICRONESIA	USPACOM	WATER PITCHER	HA
92	SIERRA LEONE	USEUCOM		NEO
92	ROMANIA	USEUCOM		DR
92	GUAM	USPACOM	TYPHOON OMAR	DR
92	FL/BAHAMAS	USACOM	HURRICANE ANDREW	DR
92	HAWAII	USPACOM	TYPHOON INIKI	DR
92	ITALY	USEUCOM	HOT ROCK	HA
92	ADRIATIC	USEUCOM	MARITIME GUARD	BLOCK (NAVAL)
92	BOSNIA	USEUCOM	PROVIDE PROMISE	HA
92	ADRIATIC	USEUCOM	MARITIME MONITOR	BLOCK (NAVAL)
92	SOMALIA	USCENTCOM	RESTORE HOPE	HA/PE
92	IRAQ	USCENTCOM	SOUTHERN WATCH	PE (AIR)
93	SINAI	USCENTCOM		PK
93	CAMBODIA	USPACOM		NEAR NEO
93		USACOM	MIDWEST FLOODS	DR
93	MARSHALL ISLANDS	USPACOM	PROVIDE REFUGE	HA (NAVAL)/ MIL CONT
93	EAST COAST	USACOM	JTF4	CD (NAVAL)
93	WEST COAST	USPACOM	JTF5	CD (NAVAL)

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
93	SW BORDER	USACOM	JTF6	CD
93	CUBA	USACOM	GTMO	HA
93	IRAQ	USCENTCOM	PROVIDE COMFORT	HA
93	PERSIAN GULF	USCENTCOM	MIO	BLOCK (NAVAL)
93	SOMALIA	USCENTCOM	RESTORE HOPE	HA/PE
93	BOSNIA	USEUCOM	PROVIDE PROMISE	HA
93	ADRIATIC	USEUCOM	MARITIME GUARD	BLOCK (NAVAL)
93	IRAQ	USCENTCOM	SOUTHERN WATCH	PE/STRIKE (AIR)
93	CALIFORNIA	USPACOM,USACOM	NRTHRDG EARTHQUAKE	DR
93	IRAN	USCENTCOM		FON (NAVAL)
93	EASTERN MED	USEUCOM		ISR (NAVAL)
93	GULF OF OMAN	USCENTCOM		ISR (NAVAL)
93	SOMALIA	USCENTCOM	CONTINUE HOPE	HA/PE
93	ADRIATIC	USEUCOM	SHARP GUARD	BLOCK (NAVAL)
93	BOSNIA	USEUCOM	DENY FLIGHT	PE (AIR)
93	HAITI	USACOM	SUPPORT DEMOCRACY	BLOCK (NAVAL)
93	MACEDONIA	USEUCOM	ABLE SENTRY	PK
94	SINAI	USCENTCOM		PK
94	SRI LANKA	USPACOM		NEAR NEO
94	THAILAND	USPACOM		NEAR NEO
94	BURMA	USPACOM		NEAR NEO
94		USACOM	NORTHWEST FIRES	DR
94		USACOM	SOUTHEAST FLOODS	DR
94	EAST COAST	USACOM	JTF4	CD (NAVAL)
94	WEST COAST	USPACOM	JTF5	CD (NAVAL)
94	SW BORDER	USACOM	JTF6	CD
94	IRAQ	USCENTCOM	PROVIDE COMFORT	HA
94	PERSIAN GULF	USCENTCOM	MIO	BLOCK (NAVAL)
94	BOSNIA	USEUCOM	PROVIDE PROMISE	HA

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
94	IRAQ	USCENTCOM	SOUTHERN WATCH	PE (AIR)
94	BOSNIA	USEUCOM	DENY FLIGHT	PE (AIR)
94	ADRIATIC	USEUCOM	SHARP GUARD	BLOCK (NAVAL)
94	HAITI	USACOM	SUPPORT DEMOCRACY	BLOCK (NAVAL)
94	MACEDONIA	USEUCOM	ABLE SENTRY	PK
94	SOMALIA	USCENTCOM	CONTINUE HOPE	HA/PE
94	HAITI	USACOM	UPHOLD DEMOCRACY	NA
94	RWANDA	USEUCOM	DISTANCE RUNNER	NEO
94	ADRIATIC	USEUCOM		NEO
94	KUWAIT	USCENTCOM	VIGILANT WARRIOR	PE/MC
94	KOREA	USPACOM		PE
94	PANAMA	USSOUTHCOM	SAFE HAVEN	HA
94	RWANDA	USEUCOM	SUPPORT HOPE	DR
94	SURINAM	USSOUTHCOM	DISTANT HAVEN	HA
94	IRAN	USCENTCOM		FON
94	HAITI	USACOM	SEA SIGNAL	BLOCK (NAVAL)
94	CUBA	USACOM	ABLE VIGIL	BLOCK (NAVAL)
95	SINAI	USCENTCOM		PK
95	CALIFORNIA	USACOM	FLOOD	DR
95	OKLAHOMA	USACOM	OKLAHOMA CITY BOMBING	DR
95		USACOM	HURRICANE OPAL	DR
95		USACOM	HURRICANE MARILYN	DR
95	NEW YORK	USACOM	LONG ISLAND FIRES	DR
95	TEXAS	USACOM	FLOODS	DR
95	CARIBBEAN	USACOM	MONSERRAT VOLCANO	DR
95	CARIBBEAN	USACOM	HURRICANE LUIS	DR
95	ICELAND	USACOM	AVALANCHE	DR
95	AZORES	USACOM	HURRICANE	DR
95	PANAMA-CUBA	USACOM	SAFE PASSAGE	NEO

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
95	PERSIAN GULF	USCENTCOM	MIO	BLOCK (NAVAL)
95	KUWAIT-SAUDI ARABIA	USCENTCOM	VIGILANT SENTINEL	PE
95	SOMALIA	USCENTCOM	UNITED SHIELD	HA
95	EAST COAST	USACOM	JTF4	CD (NAVAL)
95	WEST COAST	USPACOM	JTF5	CD (NAVAL)
95	SW BORDER	USACOM	JTF6	CD
95	IRAQ	USCENTCOM	PROVIDE COMFORT	HA
95	BOSNIA	USEUCOM	PROVIDE PROMISE	HA
95	CALIFORNIA	USPACOM	PROMPT RETURN	HA
95	IRAQ	USCENTCOM	SOUTHERN WATCH	PE (AIR)
95	MACEDONIA	USEUCOM	ABLE SENTRY	PK
95	BOSNIA	USEUCOM	DENY FLIGHT	PE (AIR)
95	ADRIATIC	USEUCOM	SHARP GUARD	BLOCK (NAVAL)
95	RWANDA	USEUCOM	SUPPORT HOPE	DR
95	HAITI	USACOM	SEA SIGNAL	BLOCK (NAVAL)
95	UAE	USCENTCOM		FON
95	YEMEN	USCENTCOM		FON
95	SUDAN	USCENTCOM		FON
95	DJIBOUTI	USCENTCOM		FON
95	OMAN	USCENTCOM		FON
95	IRAN	USCENTCOM		FON
95	BOSNIA	USEUCOM	JOINT ENDEAVOR	PK
96	SINAI	USCENTCOM		PK
96	PERSIAN GULF	USCENTCOM	MIO	BLOCK (NAVAL)
96	KUWAIT-SAUDI ARABIA	USCENTCOM	VIGILANT SENTINEL	PE
96		USACOM	HURRICANE BERTHA	DR
96	EAST COAST	USACOM	JTF4	CD (NAVAL)
96	WEST COAST	USPACOM	JTF5	CD (NAVAL)
96	SW BORDER	USACOM	JTF6	CD

Table 39. Historical OOTWs				
YR	PLACE	CINC	NAME	TYPE
96	IRAQ	USCENTCOM	PROVIDE COMFORT	HA
96	BOSNIA	USEUCOM	PROVIDE PROMISE	HA
96	IRAQ	USCENTCOM	SOUTHERN WATCH	PE (AIR)
96	MACEDONIA	USEUCOM	ABLE SENTRY	PK
96	BOSNIA	USEUCOM	DENY FLIGHT	PE (AIR)
96	ADRIATIC	USEUCOM	SHARP GUARD	BLOCK (NAVAL)
96	RWANDA	USEUCOM	SUPPORT HOPE	DR
96	HAITI	USACOM	SEA SIGNAL	BLOCK (NAVAL)
96	BOSNIA	USEUCOM	JOINT ENDEAVOR	PK
96	ERITREA	USCENTCOM		HA
96	OMAN	USCENTCOM		FON
96	EGYPT	USCENTCOM		FON
96	IRAN	USCENTCOM		FON
96	PAKISTAN	USCENTCOM		FON
96	JORDAN	USCENTCOM		HA
96	KENYA	USCENTCOM		HA
96	DJIBOUTI	USCENTCOM		HA
96		USACOM	WESTERN FIRES	DR
96	IRAQ	USCENTCOM	DESSERT STRIKE	RAID

APPENDIX E:
OOTW JMETL

APPENDIX E:
OOTW JMETL

These Joint Mission Essential Task Lists (JMETLs) have been created from the UJTL of version 2.1 [26] and then modified to fit those of version 3 (draft) [27]. They contain the strategic theater (ST) and operational (OP) tasks, as those appropriate to the CINC planning cells' needs. In addition, certain strategic national (SN) tasks are called out as relating to analysis tasks for OOTW.

The OOTW types that require separate JMETLs are presented in separate columns. "PK" stands for peacekeeping operations, "PE" for peace enforcement operations, "HA/DR-For" for humanitarian assistance and foreign disaster relief operations, "DR-Dom" for domestic disaster relief operations, "NEO-Un" for unopposed noncombatant evacuation operations, "CD" for counterdrug operations, "CT" for counterterrorism operations, "CI" for counterinsurgency operations, "NA" for nation assistance operations, and "CONT" for military contingency operations. All types of OOTW are included in one of these categories.

The tasks are listed by UJTL sequence number. Shading of a row indicates the task has been called out by a task from this report as requiring analytical support and has the report's task number in square brackets [], following the UJTL task. The "Ver" column lists the UJTL version from which the task is taken, with an "i" indicating an insertion by this report. Tasks that this report recommends to be inserted in the UJTL to accommodate OOTWs are shown in italics. All the UJTL subtasks of an analytically-required task of a specified OOTW type are included, but not shaded unless specifically called out by another required task.

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
SN 1.1	DETERMINE TRANSPORTATION INFRASTRUCTURE AND RESOURCES	[1.2]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SN 4	PROVIDE SUSTAINMENT	[1.2]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SN 5.1.4	Monitor Worldwide Strategic Situation	[1.1]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SN 5.2	REASSESS WORLDWIDE AND REGIONAL STRATEGIC ENVIRONMENT	[1.1]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SN 5.3	DETERMINE NATIONAL MILITARY STRATEGIC DIRECTION	[1.2]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SN 7	CONDUCT FORCE DEVELOPMENT	[1.2]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1	DEPLOY, CONCENTRATE & MANEUVER THEATER FORCES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1	CONDUCT INTRATHEATER STRATEGIC DEPLOYMENT		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.1	Process Movement Requirements		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.1.1	*Determine transport capabilities*	[4.4]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.2	Provide Theater Strategic Reception, Staging, Onward Movement, & Integration (RSOI)		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.2.1	Provide Theater Strategic Reception		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.2.2	Provide Theater Strategic Staging		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.2.3	Provide Onward Movement in the AOR		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.2.4	Provide Theater Strategic Integration of Deploying Forces		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.3	Conduct Intratheater Deployment of Forces		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.4	Provide Command & Control of Deploying Units		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.1.5	Provide for Intratheater Refueling		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.2	CONCENTRATE FORCES		2.1	Y	Y			Y	Y	Y	Y	Y	Y
ST 1.3	CONDUCT THEATER STRATEGIC MANEUVER		2.1	Y	Y			Y	Y	Y	Y	Y	

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PB	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
ST 1.3.1	Posture Forces for Strategic Maneuver		2.1	Y	Y					Y	Y	Y	
ST 1.3.2	Designate Strategic Reserves		2.1	Y	Y					Y	Y	Y	Y
ST 1.3.3	Synchronize Forcible Entry in Theater of War		2.1		Y					Y		Y	Y
ST 1.3.4	Integrate Direct Action in Theater		2.1		Y			Y	Y	Y	Y	Y	Y
ST 1.3.5	Coordinate Show of Force/Demonstration		2.1		Y					Y	Y	Y	Y
ST 1.3.6	Conduct Theater of War Operations in Depth		3										
ST 1.3.7	Coordinate Unconventional Warfare Across Theaters of Operations		3							Y		Y	Y
ST 1.4	ENHANCE STRATEGIC MOBILITY		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 1.5	CONDUCT STRATEGIC COUNTERMOBILITY		2.1	Y	Y			Y	Y	Y	Y	Y	
ST 1.5.1	Establish Strategic System of Barriers, Obstacles & Mines		2.1	Y	Y			Y	Y	Y	Y	Y	
ST 1.5.2	Establish Quarantine, Embargo or Blockade		2.1		Y			Y	Y	Y	Y	Y	
ST 1.6	CONTROL OR DOMINATE STRATEGICALLY SIGNIFICANT AREA(S).		2.1		Y			Y	Y	Y	Y	Y	Y
ST 1.6.1	Control Strategically Significant Land Area		2.1		Y			Y	Y	Y	Y	Y	Y
ST 1.6.2	Gain & Maintain Air Superiority in Theater of War		2.1		Y			Y	Y	Y	Y	Y	Y
ST 1.6.3	Secure Maritime Superiority in Theater of War		2.1		Y			Y	Y	Y	Y	Y	Y
ST 1.6.4	Gain & Maintain Information Superiority in Theater of War		3		Y			Y	Y	Y	Y	Y	Y
ST 2	DEVELOP THEATER STRATEGIC INTELLIGENCE, SURVEILLANCE & RECONNAISSANCE		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.1	PLAN & DIRECT THEATER STRATEGIC INTELLIGENCE ACTIVITIES [add emphasis on political & social situations, animosities, etc.]	[3.10]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.1.1	Determine & Prioritize Theater Strategic Priority Intelligence Requirements (PIR)		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	**UJTL TASK**	**TASK #**	**Ver**	**PK**	**PB**	**HA/DR-For**	**DR-Dom**	**CD**	**CT**	**CI**	**NA**	**General**	**NEO**
ST 2.1.2	Determine & Prioritize Theater Strategic Information Requirements (IR)		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.1.3	Prepare Theater Strategic Collection Plan		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.1.4	Allocate Intelligence Resources in AOR		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.2	COLLECT THEATER STRATEGIC INFORMATION	[3.10]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.2.1	Collect Information on Strategic Situation, Geography, Medical Risks, Climate, & Significant Hazards		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.2.2	Support National and JTF Surveillance Reconnaissance Requirements		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.3	PROCESS & EXPLOIT COLLECTED THEATER STRATEGIC INFORMATION		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.3.1	Conduct Technical Processing & Exploitation		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.3.2	Collate Theater Strategic Information		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.3.3	Correlate Theater Strategic Information		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4	PRODUCE THEATER STRATEGIC INTELLIGENCE & PREPARE INTELLIGENCE PRODUCTS		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.1	Evaluate, Integrate, Analyze, & Interpret Theater Information		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.1.1	Identify theater issues & threats	[3.15]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.1.2	Determine enemy's theater strategic capabilities	[3.15]	3		Y			Y	Y	Y	Y	Y	Y
ST 2.4.1.3	*Produce instability forecast for theater area of interest*	[1.1]	I	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 2.4.1.4	*Produce impact forecast for proposed plans*	[1.1]	I	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.1.5	*Evaluate risks & 'worst case'*	[2.7]	I	Y	Y			Y	Y	Y		Y	Y
ST 2.4.2	Prepare Intelligence Product for Theater Strategic Use		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.2.1	Provide theater strategic indications & warnings	[1.1]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PB	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
ST 2.4.2.2	Provide theater current intelligence		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.2.3	Provide theater general military intelligence		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.4.2.4	Provide target intelligence for theater planning & execution		3		Y			Y	Y	Y	Y	Y	Y
ST 2.4.2.5	Provide scientific & technical intelligence for planning & execution		3										Y
ST 2.5	DISSEMINATE & INTEGRATE THEATER STRATEGIC INTELLIGENCE		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.5.1	Provide Finished Theater Strategic Intelligence		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.5.2	Provide Follow-on Intelligence Support to Theater Strategic Planners & Decision Makers		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 2.6	EVALUATE INTELLIGENCE ACTIVITIES IN AOR		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 3	EMPLOY THEATER STRATEGIC FIREPOWER		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 3.1	PROCESS THEATER STRATEGIC TARGETS		2.1							Y		Y	
ST 3.1.1	Select Strategic Targets in the Theater for Attack	[3.7]	2.1							Y		Y	
ST 3.1.2	Assign Join/Multinational Theater Firepower		2.1							Y		Y	
ST 3.1.3	Conduct Theater Combat Assessment		2.1							Y		Y	Y
ST 3.2	ATTACK THEATER STRATEGIC TARGETS		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 3.2.1	Conduct Lethal Attack on Strategic Targets		2.1						Y	Y		Y	
ST 3.2.2	Conduct Nonlethal Attack on Theater Strategic Targets		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 3.2.2.1	Conduct theater psychological activities	[3.17]	2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 3.2.2.2	Conduct theater electronic attack (EA)		2.1					Y	Y	Y	Y	Y	Y
ST 3.2.2.3	Attack theater information systems		3					Y	Y	Y	Y	Y	
ST 3.2.3	Integrate Theater Strategic Firepower		2.1						Y	Y	Y	Y	

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
ST 4	SUSTAIN THEATER FORCES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.1	COORDINATE FIXING & MAINTENANCE OF EQUIPMENT		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2	COORDINATE MANNING		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2.1	Integrate Field Services		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2.2	Provide Health Service Support	[6.5]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2.2.1	Manage theater joint blood program		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2.2.2	Coordinate patient evacuation from AOR		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2.2.3	Manage medical & dental services, laboratories & supply		3	Y	Y	Y	Y	Y	Y	Y	Y		Y
ST 4.2.3	Reconstitute Theater Forces	[7.4]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.2.4	Conduct Training of Joint Forces		3	Y	Y			Y	Y	Y	Y	Y	Y
ST 4.3	DISTRIBUTE SUPPLIES/SERVICES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.3.1	Provide Movement Services within AOR	[6.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.3.2	Provide Supplies & Services for Theater Forces	[6.2]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.3.2.1	Allocate all classes of supply per theater strategic plan		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.3.2.2	Build up stockage levels for theater campaign		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.3.2.3	Provide maintenance services & parts for theater campaign		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.4	MAINTAIN SUSTAINMENT BASE		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 4.4.1	Determine Number and Location of Sustaining Bases		2.1	Y	Y			Y	Y	Y	Y		Y
ST 4.4.2	Provide Civil-Military Engineering in Theater	[6.4]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		Y
ST 4.4.3	Provide Law Enforcement & Prisoner Control		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 4.4.4	Manage & Integrate Third Party Logistics		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
ST 5	PROVIDE THEATER STRATEGIC COMMAND & CONTROL		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.1	OPERATE & MANAGE COMMUNICATIONS & INFORMATION SYSTEMS	[3.9]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.1.1	Communicate Strategic & Operational Decisions & Information	[3.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.1.2	Manage Theater C4 Systems for Communicating Strategic Orders & Information		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.1.3	Maintain Strategic Information, Data & Force Status		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.1.4	Monitor Worldwide & Theater Strategic Situation		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.2	ASSESS ENVIRONMENT [add emphasis on NGOs/PVOs, etc.]		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.2.1	Review Current Situation	[3.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.2.2	Assess National & Multinational Strategy		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 5.2.3	Review National Security Considerations		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 5.2.4	Review International Security Considerations		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 5.2.5	Project Future Theater Campaigns or Strategic Operations		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 5.3	DETERMINE STRATEGIC DIRECTION		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.1	Conduct Strategic Estimate		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.1.1	Develop theater courses of action & prepare staff estimates		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.1.2	Analyze & compare theater courses of action		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.1.3	Select/modify theater course of action & prepare commander's estimate		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.1.4	*Estimate probability of mission success*	[2.8]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.1.5	*Estimate cost of mission*	[1.2]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.2	Develop Theater Strategic Concepts		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NBO
ST 5.3.2.1	*Identify firm mission elements & elements in flux*	[2.1]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.2.2	*Identify transition criteria*	[2.3]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.3	Issue Planning Guidance		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.3.4	Prepare & Coordinate Theater Strategy, Campaign Plans or Operation Plans, & Orders		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.4	PROVIDE STRATEGIC DIRECTION TO THEATER FORCES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.4.1	Issue Theater Strategic Operations Plans, Orders & ROE	[2.2]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.4.2	Synchronize Joint Operations & Subordinate Campaign Plans		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.4.3	Establish, or Participate in, a Joint, Combined, or Multinational Force		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.4.3.1	Augment the joint force staff	[3.1]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.4.3.2	Activate theater boards, committees & cells	[3.1]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.5	EMPLOY THEATER-WIDE COMMAND & CONTROL WARFARE [PSYOPs]	[3.17]	2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 5.5.1	Plan & Integrate Theater-Wide IW		3		Y			Y	Y	Y	Y	Y	Y
ST 5.5.2	Plan & Integrate Theater C2W		3		Y			Y	Y	Y	Y	Y	Y
ST 5.5.3	Control Theater IW/C2W Operations		3		Y			Y	Y	Y	Y	Y	Y
ST 5.6	PROVIDE PUBLIC AFFAIRS IN THEATER	[3.16]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.6.1	Plan & Provide for External Media Support & Operations		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.6.2	Coordinate Command/Internal Information Programs		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.6.3	Plan & Conduct Community Relations Programs		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 5.6.4	Provide for Combat Camera in Theater		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 6	PROVIDE THEATER PROTECTION		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

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ST 6.1	PROVIDE THEATER AEROSPACE AND MISSILE DEFENSE		2.1		Y			Y	Y	Y	Y	Y	
ST 6.1.1	Process Theater Aerospace Targets		2.1		Y			Y	Y	Y	Y	Y	Y
ST 6.1.2	Provide Airspace Control Measures		2.1		Y			Y	Y	Y	Y	Y	Y
ST 6.1.3	Provide Space Support Requirements		2.1		Y			Y	Y	Y	Y	Y	
ST 6.1.4	Provide for Theater Air Defense		2.1		Y			Y	Y	Y	Y	Y	
ST 6.1.5	Provide Theater Missile Defense		2.1		Y			Y	Y	Y	Y	Y	
ST 6.1.6	Support Integrated Tactical Warning & Attack Assessment in AOR		3		Y			Y	Y	Y	Y	Y	Y
ST 6.2	PROVIDE PROTECTION FOR THEATER STRATEGIC FORCES & MEANS		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.2.1	Prepare Strategically Significant Defenses		2.1		Y					Y	Y	Y	
ST 6.2.2	Remove Strategically Significant Hazards		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.2.3	Protect Use of Electromagnetic Spectrum		2.1		Y			Y	Y	Y	Y	Y	Y
ST 6.2.4	Provide Positive Identification of Friendly Strategic Forces in Theater		2.1	Y	Y			Y	Y	Y	Y	Y	Y
ST 6.2.5	Provide Security for Theater Forces & Means		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.2.5.1	Integrate counterreconnaissance theater-wide		3		Y			Y	Y	Y	Y	Y	
ST 6.2.5.2	Secure & protect theater installations, facilities & systems		2.1	Y	Y	Y		Y	Y	Y	Y	Y	
ST 6.2.5.3	Secure & protect theater air, land & sea LOCs	[5.1]	2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.2.6	Conduct Personnel Recovery in AOR		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 6.2.6.1	Operate theater JSRC		3	Y	Y			Y	Y	Y	Y	Y	Y
ST 6.2.6.2	Provide civil search & rescue		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 6.2.6.3	Provide combat search & rescue		3	Y	Y			Y	Y	Y	Y	Y	Y
ST 6.2.6.4	Support evasion & escape		3	Y	Y			Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

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ST 6.2.7	*Establish NBC Protection in Theater*		2.1		Y			Y	Y	Y	Y	Y	
ST 6.2.8	Protect Personnel & Equipment & Minimize Safety & Health Risks		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 6.3	SECURE THEATER SYSTEMS & CAPABILITIES		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 6.3.1	Employ Theater Operations Security (OPSEC)		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.3.2	Employ Theater Signal Security (SIGSEC)		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.3.3	Supervise Communications Security (COMSEC)		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 6.3.4	Employ Concealment Techniques for Theater Forces/Facilities		3		Y			Y	Y	Y	Y	Y	
ST 6.3.5	Protect Theater Information Systems		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 6.4	CONDUCT DECEPTION IN SUPPORT OF THEATER STRATEGY AND CAMPAIGNS		2.1		Y			Y	Y	Y	Y	Y	Y
ST 6.4.1	Protect Details of Theater Strategy & Campaign Plan & Operations		2.1		Y			Y	Y	Y	Y	Y	Y
ST 6.4.2	Misinform Adversary Regarding Conduct of Theater Strategy, Campaigns & Unified Operations		2.1		Y			Y	Y	Y	Y	Y	Y
ST 6.4.3	Assess Effect of Theater Deception Plan		2.1		Y			Y	Y	Y	Y	Y	Y
ST 7	ESTABLISH THEATER FORCE REQUIREMENTS & READINESS		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1	RECOMMEND WARFIGHTING & OTHER REQUIREMENTS & TEST CONCEPTS		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.1	Provide OPLANS for Mobilization & Deployment Planning & Execution	[4.1]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.2	Determine Deployment Requirements		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.3	Tailor Joint Forces for Deployment		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.3.1	*Determine deployment timing*	[4.2]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.3.2	*Determine deployment priorities*	[4.3]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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ST 7.1.3.3	*Determine tooth to tail ratio*	[6.1]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.4	Determine & Validate Forces & Cargo to be Deployed or Redeployed		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.4.1	*Determine redeployment priorities: effectiveness vs availability/ feasibility*	[7.1]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.5	Determine Theater Warfighting & Other Needs, Solutions & Concepts		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.6	Determine Theater Force Size & Structure Requirements		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.6.1	*Determine force structure, heavy vs light forces, weapons mix*	[2.4]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.6.2	*Determine active/reserve mix to meet force requirements, to include tailoring*	[2.5]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.1.7	Establish Joint Mission Essential Task List (JMETL)		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.2	MAINTAIN & REPORT READINESS OF THEATER FORCES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.2.1	Maintain & Report Force Readiness	[2.6]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.2.2	Assess & Report Military Capability		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 7.2.3	Conduct Joint After Action Reporting		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8	DEVELOP & MAINTAIN ALLIANCE & REGIONAL RELATIONS		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 8.1	FOSTER ALLIANCES & REGIONAL RELATIONSHIPS & SECURITY ARRANGEMENTS		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 8.1.1	Enhance Regional Politico-Military Relations		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 8.1.2	Promote Regional Security & Interoperability		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 8.1.3	Develop Headquarters or Organizations for Coalitions		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 8.2	PROVIDE SUPPORT TO ALLIES, REGIONAL GOVERNMENTS, INTERNATIONAL ORGANIZATIONS OR GROUPS		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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ST 8.2.1	Conduct Security Assistance Activities	[6.6]	2.1	Y	Y	Y		Y	Y	Y	Y		
ST 8.2.2	Conduct Civil Affairs in Theater	[5.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		
ST 8.2.3	Coordinate Foreign Disaster Relief	[5.6]	3	Y	Y	Y			Y	Y	Y		
ST 8.2.4	Provide Humanitarian Assistance	[5.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		
ST 8.2.5	Provide Nation Assistance Support	[5.6]	2.1	Y	Y	Y		Y	Y	Y	Y		
ST 8.2.6	Provide Military Civic Action Assistance	[5.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		
ST 8.2.7	Assist in Restoration of Order	[5.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		
ST 8.2.8	Support Peace Operations in Theater		2.1	Y	Y								
ST 8.2.8.1	Support multilateral peace operations		2.1	Y	Y								
ST 8.2.8.2	Conduct peacekeeping		3	Y									
ST 8.2.8.3	Conduct peace enforcement		2.1		Y								
ST 8.2.9	Coordinate Theater Foreign Internal Defense Activities		3								Y		
ST 8.2.10	Coordinate Multinational Operations Within AOR	[3.8]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.2.11	Cooperate With & Support Nongovernmental Organizations (NGOs) in AOR	[3.8]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.2.12	Cooperate With & Support Private Voluntary Organizations (PVOs) in AOR	[3.8]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.3	OBTAIN SUPPORT FOR U.S. FORCES & INTERESTS		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.3.1	Arrange Stationing of U.S. Forces		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.3.2	Establish Bilateral or Multilateral Arrangements		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
ST 8.3.3	Arrange Sustainment Support for Theater Forces		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.3.4	Obtain Multinational Support Against Nonmilitary Threats		2.1	Y	Y	Y		Y					Y

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ST 8.4	PROVIDE THEATER SUPPORT TO OTHER DOD & GOVERNMENTAL AGENCIES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.4.1	Advise & Support Counterdrug Operations in Theater		3					Y	Y	Y	Y		
ST 8.4.2	Assist in Combating Terrorism		2.1					Y	Y	Y	Y		
ST 8.4.3	Coordinate Evacuation of Noncombatants from Theater	[6.7]	3	Y	Y	Y	Y					Y	Y
ST 8.4.4	Counter Weapon & Technology Proliferation		2.1					Y	Y	Y	Y	Y	
ST 8.5	COORDINATE & INTEGRATE REGIONAL INTERAGENCY ACTIVITIES	[6.6]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.5.1	Coordinate & Integrate Policy for the Conduct of Theater Operations		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.5.2	Facilitate US Information Exchange in Region		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.5.3	Establish Theater Interagency Cooperation Structure		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ST 8.5.4	Perform Theater Consequence Management		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1	CONDUCT OPERATIONAL MOVEMENT & MANEUVER		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.1	CONDUCT OPERATIONAL MOVEMENT		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.1.1	Formulate Request for Strategic Deployment to Theater of Operations/JOA		2.1										
OP 1.1.2	Conduct Intratheater Deployment & Redeployment of Forces Within Theater of Operations/JOA	[7.2]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.1.3	Conduct Theater of Operations/JOA Reception, Staging, Onward Movement & Integration (RSOI)		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.1.3.1	*Maintain tooth to tail ratio*	[6.1]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.2	CONDUCT OPERATIONAL MANEUVER		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.2.1	Transition Joint Forces to & from Tactical Battle Formations		2.1		Y			Y	Y	Y	Y	Y	Y
OP 1.2.2	Posture Joint Forces for Operational Formations		2.1		Y			Y	Y	Y	Y	Y	Y

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OP 1.2.3	Concentrate Forces in Theater of Operations/JOA	[5.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.2.4	Conduct Operations in Depth		2.1		Y				Y	Y	Y	Y	
OP 1.2.4.1	Plan & execute show of force		2.1		Y				Y	Y	Y	Y	Y
OP 1.2.4.2	Plan & execute demonstration		2.1		Y				Y	Y	Y	Y	Y
OP 1.2.4.3	Conduct forcible entry: airborne, amphibious & air assaults	[5.9]	2.1		Y							Y	Y
OP 1.2.4.4	Reinforce & expand lodgment		2.1		Y								Y
OP 1.2.4.5	Conduct raids in JOA	[5.9]	3									Y	Y
OP 1.2.4.6	Conduct penetration, direct assault & turning movements		3										
OP 1.2.4.7	Conduct direct actions in JOA	[5.9]	3									Y	Y
OP 1.2.4.8	Conduct unconventional warfare in theater of operations/JOA	[5.9]	3									Y	Y
OP 1.2.5	Conduct Offensive Operations in Theater of Operations/JOA		3										
OP 1.2.6	Conduct Defensive Operations in Theater of Operations/JOA		3		Y							Y	Y
OP 1.2.7	Conduct Retrograde Operations in Theater of Operations/JOA		3	Y	Y							Y	Y
OP 1.3	PROVIDE OPERATIONAL MOBILITY		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.3.1	Overcome Operationally Significant Barriers, Obstacles & Mines		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 1.3.2	Enhance Movement of Operational Forces		2.1		Y			Y	Y	Y	Y	Y	Y
OP 1.4	PROVIDE OPERATIONAL COUNTERMOBILITY		2.1		Y			Y	Y	Y	Y	Y	
OP 1.4.1	Employ Operational System of Obstacles		2.1		Y			Y	Y	Y	Y	Y	Y
OP 1.4.2	Plan & Execute Quarantine/Embargo	[5.9]	2.1		Y			Y	Y	Y	Y	Y	
OP 1.4.3	Plan & Execute Blockade	[5.9]	2.1		Y			Y	Y	Y	Y	Y	
OP 1.5	CONTROL OR DOMINATE OPERATIONALLY SIGNIFICANT AREA		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y

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OP 1.5.1	Control Operationally Significant Land Area		2.1		Y			Y	Y	Y	Y	Y	Y
OP 1.5.2	Gain & Maintain Maritime Superiority in Theater of Operations/JOA		2.1		Y			Y	Y	Y	Y	Y	Y
OP 1.5.3	Gain & Maintain Air Superiority in Theater of Operations/JOA		2.1		Y			Y	Y	Y	Y	Y	Y
OP 1.5.4	Isolate Theater of Operations/JOA		2.1		Y								
OP 1.5.5	Assist Host-Nation in Populace & Resource Control		2.1	Y	Y	Y		Y	Y	Y	Y		Y
OP 2	DEVELOP OPERATIONAL INTELLIGENCE, SURVEILLANCE & RECONNAISSANCE		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.1	DETERMINE & DIRECT OPERATIONAL INTELLIGENCE ACTIVITIES	[3.10]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.1.1	Determine & Prioritize Operational Priority Intelligence Requirements (PIR)		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.1.2	Determine & Prioritize Operational Information Requirements (IR)		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.1.3	Prepare Operational Collection Plan		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.1.4	Allocate Intelligence Resources in Theater of Operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.2	COLLECT OPERATIONAL INFORMATION	[3.10]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.2.1	Collect Information on Operational Situation		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.2.2	Directly Support Theater Strategic Surveillance & Reconnaissance Requirements		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.2.2.1	*Activate HAST*	[4.5]	1			Y							
OP 2.3	PROCESS & EXPLOIT COLLECTED OPERATIONAL INFORMATION		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.3.1	Conduct Technical Processing & Exploitation in Theater of Operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.3.2	Collate Information		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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OP 2.3.3	Correlate Information		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.3.3.1	Develop enemy operational intentions	[3.12]	2.1		Y			Y	Y	Y	Y	Y	Y
OP 2.3.3.2	develop operational target information		2.1		Y			Y	Y	Y	Y	Y	Y
OP 2.3.3.3	Identify enemy vulnerabilities		2.1		Y			Y	Y	Y	Y	Y	Y
OP 2.3.3.4	*Estimate readiness*	[2.6]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4	PRODUCE OPERATIONAL INTELLIGENCE & PREPARE INTELLIGENCE PRODUCTS		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.1	Evaluate, Integrate, Analyze, & Interpret Operational Information		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.1.1	Identify operational issues & threats	[3.15]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.1.2	Determine enemy's operational capabilities & course of action	[3.15]	3	Y	Y			Y	Y	Y	Y	Y	Y
OP 2.4.1.3	*Identify centers of gravity*	[3.14]	1	Y	Y	Y		Y	Y	Y	Y	Y	
OP 2.4.1.4	*Identify infrastructure improvement requirements*	[5.5]	1			Y	Y			Y	Y		
OP 2.4.1.5	*Establish cultural awareness*	[3.11]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.2	Prepare Intelligence Products for Theater of Operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.2.1	Provide indications & warning for theater of operations/JOA	[1.1]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.2.2	Provide current intelligence for theater of operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.4.2.3	Provide general military intelligence for theater of operations/JOA		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 2.4.2.4	Provide target intelligence for theater of operations/JOA		3		Y			Y	Y	Y	Y	Y	Y
OP 2.5	DISSEMINATE OPERATIONAL INTELLIGENCE REPORTS		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.5.1	Provide Finished Intelligence for Theater of Operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 2.5.2	Provide Follow-on Intelligence Support to Theater of Operations/JOA Planners & Decision Makers		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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OP 2.6	EVALUATE INTELLIGENCE ACTIVITIES IN THEATER OF OPERATIONS/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 3	EMPLOY OPERATIONAL FIREPOWER		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 3.1	CONDUCT JOINT FORCE TARGETING		2.1		Y				Y	Y		Y	Y
OP 3.1.1	Establish Joint Force Targeting Guidance		3		Y				Y	Y		Y	Y
OP 3.1.2	Assign Joint/Multinational Operational Firepower Resources		3		Y				Y	Y		Y	Y
OP 3.1.3	Develop Operational Targets	[3.7]	3		Y				Y	Y		Y	Y
OP 3.1.4	Prioritize High Payoff Targets	[5.7]	2.1		Y				Y	Y		Y	Y
OP 3.1.5	Publish Tasking Order(s) for Employment of Operational Firepower		2.1		Y				Y	Y		Y	Y
OP 3.1.6	Conduct Operational Combat Assessment		2.1									Y	Y
OP 3.1.6.1	Assess battle damage on operational targets		2.1									Y	Y
OP 3.1.6.2	Assess munitions effects on operational targets		2.1									Y	Y
OP 3.1.6.3	Assess reattack requirement		2.1									Y	Y
OP 3.1.7	Develop Fire Support Coordination Measures		2.1		Y				Y	Y		Y	Y
OP 3.2	ATTACK OPERATIONAL TARGETS		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 3.2.1	Attack Operational Land/Maritime Targets		2.1									Y	Y
OP 3.2.2	Conduct Nonlethal Attack on Operational Targets		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 3.2.2.1	Employ PSYOP in theater of operations/JOA	[3.17]	2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 3.2.2.2	Employ electronic attack (EA) in theater of operations/JOA		2.1									Y	Y
OP 3.2.3	Attack Enemy Aircraft & Missiles (Offensive Counter Air)		3									Y	Y
OP 3.2.4	Suppress Enemy Air Defenses		2.1		Y				Y	Y		Y	Y
OP 3.2.5	Interdict Operational Forces/Targets		3		Y				Y	Y		Y	Y

Table 40. UJTL applicability to OOTW categories

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	UJTL TASK	TASK #	Ver	PK	PB	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
OP 3.2.5.1	Conduct air interdiction of operational forces/targets		2.1		Y				Y	Y		Y	Y
OP 3.2.5.2	Conduct surface/subsurface firepower interdiction of operational forces/targets		2.1		Y				Y	Y		Y	Y
OP 3.2.5.3	Conduct special operations interdiction of operational forces/targets		2.1		Y				Y	Y		Y	Y
OP 3.2.6	Provide Firepower in Support of Operational Maneuver		2.1									Y	Y
OP 3.2.7	Integrate/Synchronize Operational Firepower		2.1									Y	Y
OP 4	PROVIDE OPERATIONAL SUPPORT		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.1	COORDINATE SUPPLY OF ARMS, AMMUNITION & EQUIPMENT IN THEATER OF OPERATIONS/JOA		2.1		Y			Y	Y	Y	Y	Y	
OP 4.2	SYNCHRONIZED SUPPLY OF FUEL IN THEATER OF OPERATIONS/JOA		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.3	PROVIDE FOR MAINTENANCE OF EQUIPMENT IN THEATER OF OPERATIONS/JOA		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4	COORDINATE SUPPORT FOR FORCES IN THEATER OF OPERATIONS/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.1	Coordinate Field Services Requirements		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.1.1	Coordinate theater of operations/JOA support for personnel		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.1.2	Manage mortuary affairs in theater of operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.2	Provide for Personnel Services		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.3	Provide for Health Services in Theater of Operations/JOA	[6.5]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.3.1	Manage joint blood program in theater of operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.3.2	Manage flow of casualties in theater of operations/JOA	[5.4]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.3.3	Manage health services resources in theater of operations/JOA	[5.4]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.4.4	Reconstitute Forces		2.1		Y				Y	Y		Y	Y

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UJTL #	UJTL TASK	TASK #	Ver	PK	PB	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NBO
OP 4.4.5	Train Joint Forces & Personnel		2.1	Y	Y			Y	Y	Y	Y	Y	Y
OP 4.4.5.1	*Conduct mission rehearsals*	[5.8]	i						Y			Y	Y
OP 4.5	MANAGE LOGISTIC SUPPORT IN THEATER OF OPERATIONS/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.5.1	Provide for Movement Services in Theater of Operations/JOA	[6.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.5.2	Supply Operational Forces	[6.2]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.5.3	Establish Evacuation Policy Procedures for Theater of Operations/JOA		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.6	BUILD & MAINTAIN SUSTAINMENT BASES		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.6.1	Determine Number & Location of Sustaining Bases in Theater of Operations/JOA		2.1	Y	Y			Y	Y	Y	Y	Y	Y
OP 4.6.2	Provide Civil-Military Engineering	[6.4]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		Y
OP 4.6.3	Expand Capacity of PODs & Allocate Space in the Theater of Operations/JOA		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.6.4	Provide Law Enforcement & Prisoner Control	[6.7]	2.1	Y	Y	Y			Y	Y	Y	Y	Y
OP 4.6.5	Provide for Real Estate Management		3										
OP 4.6.6	Manage Contracts & Contract Personnel		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.7	PROVIDE POLITICO-MILITARY SUPPORT TO OTHER NATIONS, GROUPS & GOVERNMENT AGENCIES		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.7.1	Provide Security Assistance in Theater of Operations/JOA		2.1	Y	Y	Y		Y	Y	Y	Y	Y	
OP 4.7.2	Coordinate & Provide CMO Support in Theater of Operations/JOA	[3.8, 4.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		Y
OP 4.7.2.1	*Support humanitarian operations*	[5.6]	i	Y	Y	Y	Y	Y	Y	Y	Y		Y
OP 4.7.2.2	*Provide indigenous/client/refugee support*	[6.7]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.7.3	Provide Support to DOD & Other Government Agencies	[6.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

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UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
OP 4.7.4	Plan & Transition to Civil Authorities	[7.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		Y
OP 4.7.5	Coordinate Politico-Military Support	[6.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 4.7.6	Coordinate Civil Affairs in Theater of Operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y		
OP 5	EXERCISE OPERATIONAL COMMAND & CONTROL		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.1	ACQUIRE & COMMUNICATE OPERATIONAL LEVEL INFORMATION & MAINTAIN STATUS	[3.9]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.1.1	Communicate Operational Information	[3.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.1.2	Manage Means of Communicating Operational Information		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.1.3	Maintain Operational Information & Force Status		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.1.4	Monitor Strategic Situation		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.2	ASSESS OPERATIONAL SITUATION		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.2.1	Review Current Situation (Project Branches)	[3.6]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.2.1.1	*Maintain up to date values for MOEs, probability of success & end-state status*	[3.5]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.2.2	Formulate Crisis Assessment		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.2.3	Project Future Campaigns & Major Operations (Sequels)		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3	PREPARE PLANS & ORDERS		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.1	Conduct Operational Mission Analysis		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.1.1	*Develop mission*	[2.1]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.1.2	*Develop MOEs for mission*	[2.1]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.1.3	*Estimate probability of success*	[2.8]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.1.4	*METT-T*	[3.13]	i	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 40. UJTL applicability to OOTW categories

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UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
OP 5.3.2	Issue Planning Guidance		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.3	Determine Operational End State	[2.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.4	Develop Courses of Action/Prepare Staff Estimates	[3.2, 3.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.5	Analyze Courses of Action	[3.4]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.6	Compare Courses of Action	[3.4]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.7	Select or Modify Course of Action	[3.4]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.8	Issue Commander's Estimate		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.3.9	Prepare Campaign or Major Operations & Related Plans & Orders		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.4	COMMAND SUBORDINATE OPERATIONAL FORCES		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.4.1	Approve Plans & Orders		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.4.2	Issue Plans & Orders		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.4.3	Provide Rules of Engagement	[2.2]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.4.4	Synchronize/Integrate Operations		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.4.5	Coordinate/Integrate Components, Theater & Other Support		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5	ORGANIZE A JOINT TASK FORCE	[3.7]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5.1	Develop a Joint Task Force Command & Control Structure		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5.1.1	*Establish command arrangements & span of control*	[3.1]	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5.2	Develop Joint Force Liaison Structure	[3.8]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5.3	Integrate Joint Force Staff Augmentees		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5.4	Deploy Joint Force Headquarters Advance Element		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.5.5	Establish Command Transition Criteria & Procedures	[2.3]	2.1	Y	Y	Y	Y	Y	Y	Y	Y		Y

Table 40. UJTL applicability to OOTW categories

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UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
OP 5.5.6	Establish or Participate in Task Forces		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.6	EMPLOY OPERATIONAL COMMAND & CONTROL WARFARE (C2W)		2.1									Y	Y
OP 5.6.1	Plan & Integrate Operational C2W		2.1									Y	Y
OP 5.6.2	Control C2W Operations		2.1									Y	Y
OP 5.7	COORDINATE & INTEGRATE JOINT/MULTINATIONAL & INTERAGENCY SUPPORT		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.7.1	Ascertain National or Agency Agenda		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.7.2	Determine National/Agency Capabilities & Limitations		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.7.3	Develop Multinational Intelligence/Information Sharing Structure		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.7.4	Coordinate Plans with Non-DOD Organizations		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.7.5	Coordinate Host-Nation Support		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 5.7.6	Coordinate Coalition Support		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 5.7.7	Coordinate Civil Administration Operations		3	Y	Y	Y		Y	Y	Y	Y		Y
OP 5.8	PROVIDE PUBLIC AFFAIRS IN THEATER OF OPERATIONS/JOA	[3.16]	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.8.1	Manage Press Relations in Theater of Operations/JOA		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 5.8.2	Coordinate Combat Camera Activities		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6	PROVIDE OPERATIONAL PROTECTION		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.1	PROVIDE OPERATIONAL AEROSPACE & MISSILE DEFENSE		2.1		Y							Y	Y
OP 6.1.1	Process/Allocate Operational Aerospace Targets		2.1		Y							Y	Y
OP 6.1.2	Integrate Joint/Multinational Operational Aerospace Defense		2.1		Y							Y	Y
OP 6.1.3	Provide Airspace Control		2.1		Y							Y	Y

Table 40. UJTL applicability to OOTW categories

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UJTL #	UJTL TASK	TASK #	Ver	PK	PE	HA/DR-For	DR-Dom	CD	CT	CI	NA	General	NEO
OP 6.1.3.1	Employ positive control measures		2.1		Y							Y	Y
OP 6.1.3.2	Employ procedural control measures		2.1		Y							Y	Y
OP 6.1.4	Counter Enemy Air Attack in Theater of Operations/JOA		2.1		Y							Y	Y
OP 6.1.5	Conduct Operational Area Missile Defense		2.1		Y							Y	
OP 6.1.6	Integrate Tactical Warning & Attack Assessment in Theater of Operations/JOA		3		Y							Y	Y
OP 6.2	PROVIDE PROTECTION FOR OPERATIONAL FORCES, MEANS & NONCOMBATANTS	[5.2]	2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.2.1	Prepare Operationally Significant Defenses		2.1	Y	Y				Y	Y	Y	Y	Y
OP 6.2.2	Remove Operationally Significant Hazards		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.2.3	Protect Use of Electromagnetic Spectrum in Theater of Operations/JOA		2.1	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.2.4	Provide Positive Identification of Friendly Operational Forces Within Theater of Operations/JOA		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.2.5	Conduct Evacuation of Noncombatants from Theater of Operations/JOA		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.2.6	Establish Disaster Control Measures		2.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.2.7	Establish NBC Protection in Theater of Operation/JOA		2.1	Y	Y				Y	Y	Y	Y	
OP 6.2.8	Coordinate & Conduct Personnel Recovery		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.2.8.1	Provide civil search & rescue		3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OP 6.2.8.2	Provide combat search & rescue		3	Y	Y				Y	Y	Y	Y	Y
OP 6.2.8.3	Support evasion & escape		3	Y	Y				Y	Y	Y	Y	Y
OP 6.3	SECURE SYSTEMS & CAPABILITIES IN THEATER OF OPERATIONS/JOA		3	Y	Y	Y		Y	Y	Y	Y	Y	Y

Table 40. *UJTL applicability to OOTW categories*

				Peace Ops		HA/DR Ops		National Integrity Ops				Mil Cont Ops	
UJTL #	**UJTL TASK**	**TASK #**	**Ver**	**PK**	**PB**	**HA/DR-For**	**DR-Dom**	**CD**	**CT**	**CI**	**NA**	**General**	**NEO**
OP 6.3.1	Employ Operations Security (OPSEC) in Theater of Operations/JOA		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.3.1.1	Determine essential elements of friendly information (EEFI)		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.3.1.2	Determine critical information		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.3.1.3	Conduct vulnerability analysis		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.3.1.4	Select OPSEC measures		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.3.1.5	Implement OPSEC measures		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.3.2	Supervise Communications Security (COMSEC)		3		Y			Y	Y	Y	Y	Y	Y
OP 6.3.3	Employ Signal Security (SIGSEC) for Operational Forces		3	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 6.3.4	Protect Information Systems in Theater of Operations/JOA		3	Y	Y			Y	Y	Y	Y	Y	Y
OP 6.4	CONDUCT DECEPTION IN SUPPORT OF SUBORDINATE CAMPAIGNS & MAJOR OPERATIONS		2.1		Y			Y	Y	Y	Y	Y	Y
OP 6.4.1	Develop Operational Deception Plan		2.1		Y			Y	Y	Y	Y	Y	Y
OP 6.4.2	Conduct Operational Deception		2.1		Y			Y	Y	Y	Y	Y	Y
OP 6.4.3	Assess Effect of Operational Deception Plan		2.1		Y			Y	Y	Y	Y	Y	Y
OP 6.5	PROVIDE SECURITY FOR OPERATIONAL FORCES & MEANS		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 6.5.1	Provide Counterreconnaissance in Theater of Operations/JOA		2.1		Y							Y	Y
OP 6.5.2	Protect & Secure Flanks, Rear Areas & COMMZ in Theater of Operations/JOA		2.1		Y			Y	Y	Y	Y	Y	Y
OP 6.5.3	Protect/Secure Operationally Critical Installations, Facilities & Systems		2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 6.5.4	Protect & Secure Air, Land & Sea LOCs in Theater of Operations/JOA	[5.1]	2.1	Y	Y	Y		Y	Y	Y	Y	Y	Y
OP 6.5.5	Integrate Host-Nation Security Forces & Means			Y	Y	Y		Y	Y	Y	Y	Y	Y

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64. MAJ(P) Joel Parker, HQ US Special Operations Command, ATTN: SOJ5-C, 7701 Tampa Point Blvd, MacDill AFB, Fl 33621-5323
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82. Mr. Clayton Thomas, Headquarters, US Air Force, Assistant Chief of Staff for Studies and Analyses, ATTN: AS/SAS, The Pentagon, Room 1E386, Washington, DC 20330-1570.
83. Mr. E. P. Visco, Office of the Deputy Undersecretary of the Army (Operations Research), SAUS-OR, Room 1E643, 102 Army Pentagon, Washington, D. C. 20310-0102
84. Mr. Jerome Visser, Office of the Secretary of Defense, Program Analysis and Evaluation (PA&E), Room 2C270, The Pentagon, Washington, DC 20301-1800
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99. Director, US Army Ballistic Research Laboratories, ATTN: SLCBR-D, Building 305, Aberdeen Proving Ground, MD 21005-5066.
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176. DRSD Resource Center, 1099COM, RM S07, MS7615
177. K-25 Site Records, K-1034A, MS7301-RC
178. K-25 Site Records, K-1034A, MS7301-RC (OSTI #1)
179. K-25 Site Records, K-1034A, MS7301-RC (OSTI #2)