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Final Report: MORS Workshop on OOTW Analysis & Modeling Techniques
MacDill Air Force Base January 28-30 1997
Dr. Cyrus J. Staniec Program Chair #
###Introduction
Purpose: Report the results of the OOTWAMT Workshop to the MORS Sponsors

Outline:
- Workshop Purpose
- Background
- Working Group Structure
- Workshop Highlights
- Working Group Summaries
- Summary
- Findings and Recommendations
- Conclusions
Hartley documents 2 Workshops sponsored by PACOM. The Workshops: Categorized OOTW Missions, Developed Attributes for each Mission Category, Identified Tasks for Mission Categories, Linked Analysis Tool Requirements to Tasks, Provide Baseline for MORS Workshop.
MORS OOTW Workshop Mission (per TOR)
Collectively: Recommend a [Way Ahead] to attain OOTW Analysis Capabilities

Working Groups: Recommend tools and techniques in their functional areas

Provide detailed report to MORS Sponsors

Purpose: Improve the ability to perform analysis and conduct OOTW mission planning by:

- Recommending a roadmap for acquiring necessary analysis capabilities.
- Extending development of OOTW analysis capabilities by building on requirements.
- Progressing toward tools for OOTW analysis.
- Investigating, suggesting, and refining techniques and tools.
- Identifying associated requirement and sources for data.
Working Group Assignments
Groups: Analytical Categories
WG 1: Mission Definition and MOE/MOP/ROE Determination
WG 2: Force Planning Tools
WG 3: Logistic and Mobility Planning Tools
WG 4: Effectiveness Measurement and Course of Action Analysis
WG 5: C4ISR Tools and Methods
WG 6: Operational Cost Estimation
WG 7: Impact Analysis
Groups: Integrating
WG 8: OOTW Data Bases and Data Availability
WG 9: Executive Planning Reviewe
Review analytical needs identified by USPACOM workshop. Suggest analysis approaches/tools to address each need. Examine existing tools and suggest enhancements and validity of approaches for general OOTW application. Recommend actions for analytic/tool development and ideas for OOTW Roadmap. Address data types required and where found.
OOTW MODULE OF THE OOTW MODEL
WHAT DECISIONS MADE, CALCULATIONS OR ALGORITHMS REQUIRED FOR EACH DECISION LEVEL
FROM WHO
INPUTS AND OUTPUTS CAN BE INTERNAL OR EXTERNAL
What Working Groups Should Determine
THE WORKING GROUP RECOGNIZED THAT THERE WERE SPECIFIC INFORMATION NEEDS FOR THE THREE DECISION LEVELS OF NATIONAL, THEATER/CINC, AND OPERATIONAL COMMAND AND CONTROL/MANAGEMENT. THE WORKING GROUP SET OUT TO DETERMINE THE PROCESS FOR CONSOLIDATING AND ANALYZING DATA. SPECIFIC MODELS THAT MIGHT BE APPLICABLE TO EACH TASK WERE IDENTIFIED. THE LOGISTICS PROCESS WAS SIMILAR FOR ALL 16 OOTW MISSIONS. NO ATTEMPT WAS MADE TO IDENTIFY VARIANCES BETWEEN OOTW MISSION AREAS. INPUTS MUST BE ABLE TO SATISFY THE INFORMATION REQUIREMENTS PECULIAR TO THE RESPECTIVE DATA NEEDS OF EACH LEVEL, INDIVIDUALLY AND/OR COLLECTIVELY. PROCESS OUTPUTS WILL BE MADE AVAILABLE TO MULTIPLE DECISION LEVELS BY BOTH PUSH AND PULL METHODS, INTERNAL AND EXTERNAL TO THE DECISION MAKING ORGANIZATIONS. IN SOME CASES, THIS WILL BE AN ITERATIVE PROCESS WHERE LOGISTICS AND MOBILITY ARE CONSIDERED A MODULE OF A LARGER OOTW TOOL KIT, AS DEPICTED ON THE NEXT SLIDE.
Tuesday, January 28: Plenary Session Welcomes: MORS President, OSD Sponsor
Plenary: MG Brown, SOCOMPACOM
Workshop Overview (Dr. Dean Hartley)
Plenary: Lt Gen Zinni, CENTCOM
Working Groups
Evening Mixer

Wednesday, January 29: Working Group Sessions

Thursday, January 30:
Working Group Wrapups/ Reports
Working Group Chair Wrapup
MORS conduct an open decision support tools symposium aimed at demonstrations of working tools.

Designate a JAMIP-like process to manage OOTW-related developments.

OOTW data requirements should be incorporated in the DoD Joint Data System.

Take steps to determine whether operations research analysts are properly trained to deal with the differing challenges of OOTW.
Include analysts throughout all OOTW, including in the field. F: An integrated force planning and logistics planning tool should be implemented. CAPS and useful methodology found in FAST-OR appear to provide a good foundation for starting this action. G: Study groups should sort out the models for infrastructure analysis, supply and service estimating, and lift requirements to determine "legacy" models for joint maintenance. H: Continue research in Domain Analysis of OOTW missions to support development of Course of Action analysis tools.
Plan for and develop an orchestrated spectrum of tools to support the mix of tasks associated with C7I3SR.

J: Build a tool to provide early rough estimates of the incremental cost of a specific proposed OOTW, and refine DFAS cost breakdown structures for more accurate and consistent costing.

K: Construct and execute a vigorous program of research and implementation of tools for impact analysis based on the recommendations of WG-7. Include a review and validation of the user requirements for tools in this area.

L: Devise and execute a program focused on Situational Awareness for OOTW by integrating the proposed C7I3SR, impact analysis, and data development programs.
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Recommendation A: MORS conduct an open decision support tools symposium aimed at demonstrations of working tools. Rationale: A tools-only focus, in demonstration mode like the INFORMS software displays, open to all participants (government, international, NGO) will allow user to examine existing tools and explore potential basis for long term development.
Recommendation B: Designate a JAMIP-like process to manage OOTW-related developments. Rationale: Such a body and process will provide positive leadership, set major requirements and manage resources, avoid duplication while ensuring interoperability with other critical systems and full functionality, and will integrate data requirements into existing processes. This body will also provide a managerial-level link to other government and outside agencies.
General Recommendations (A - L)
Recommendation C: OOTW data requirements should be incorporated in the DoD Joint Data System. Rationale: Centralized management of data requirements (not centralized location of data) will help ensure availability of data and compatibility with major tools, will facilitate coordination and communication with outside organizations/data providers, will provide standards for gathering of historical data, and will be able to provide guidance on issues like (de)classification of data.
General Recommendations (A - L)
Recommendation D: Take steps to determine whether operations research analysts are properly trained to deal with the differing challenges of OOTW. Rationale: Military Operations Research training provides a solid foundation in theory, but until recently, the focus of practice has been warfare. OOTW provides a disparate set of issues, measures, and complications which most analysts have not faced. Therefore, revisions to training may be beneficial.
General Recommendations (A - L)
Recommendation E: Include analysts throughout all OOTW, including in the field. Rationale: The operator/analyst team constitutes a prime analysis tool. On scene, the analyst can help with real time problem solving, and can also take on duties like gathering or coordinating gathering of complete and consistent data for historical reference and analysis.
Recommendation F: An integrated force planning and logistics planning tool should be implemented. CAPS and useful methodology found in FAST-OR appear to provide a good foundation for starting this action. Rationale: WG 2 and 3 reviewed these models in light of requirements and found useful, but incomplete functionality. There is a good basis for an integrated, full functionality tool without starting from scratch.
OOTWAMT General Recommendations (A - L)
Recommendation G: Study groups should sort out the models for infrastructure analysis, supply and service estimating, and lift requirements to determine legacy models for joint maintenance. Rationale: WG 3 found a rash of models of varying intent and capability in these areas. Sorting through these models based on requirements and capabilities will lead to standardization and consolidation for joint uses.
Recommendation H: Continue research in Domain Analysis of OOTW missions to support development of Course of Action analysis tools. Rationale: WG 4 evaluated many existing models, but found none that generally satisfy requirements. Other tools (e.g. commercial) still warrant investigation, but the attributes and measures of OOTW need to be better specified to allow general tool building.
Recommendation I: Plan for and develop an orchestrated spectrum of tools to support the mix of tasks associated with C7I3SR. Rationale: As noted by LtGen Zinni, there is a need for tools to support the generation of non-traditional, flexible C2 organizations that can adapt to changing conditions (e.g., changes in missions). Furthermore, the increased demands of multi-faceted actors in OOTW places a greater demand on the information management function. Finally, physical management of communications connectivity among many players requires planning and execution tools. It is clear that failure to orchestrate these efforts would result in an inadequate capability.
General Recommendations (A - L)
Recommendation J: Build a tool to provide early rough estimates of the incremental cost of a specific proposed OOTW, and refine DFAS cost breakdown structures for more accurate and consistent costing. Rationale: The knowledge exists to build this tool now, providing decision-makers better visibility into the resource implications of decisions. Building this first model will naturally lead to more refined models spanning other applications. The details are outlined in the WG6 report.
General Recommendations (A - L)
Recommendation K: Construct and execute a vigorous program of research and implementation of tools for impact analysis based on the recommendations of WG-7. Include a review and validation of the user requirements for tools in this area.

Rationale:
Tools in this area seem to have significant value to preparing for and supporting the successful execution of OOTW, but are the least well developed. Many models were examined, but only a couple were promising in the near term. Theory building, more detailed workshops, further surveys, and better data and data analysis are recommended for research before building other tools.
Analysis and Modeling Techniques
Object2

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