

# MILITARY OPERATIONS RESEARCH SOCIETY



## MORS Workshop Training Transformation: Analysis and Assessment in New Operational Environments

28-30 September 2004

Science Applications International Corporation (SAIC)  
McLean, Virginia

### Chairs:

Fred Hartman, FS and Annie Patenaude

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## INTRODUCTION

From 28 through 30 September, 2004, the Military Operations Research Society conducted a workshop at Science Applications International Corporation in McLean, VA, in support of the Joint Assessment and Enabling Capability (JAEC) with the goal of developing an approach for managing and implementing the organizational concepts, analytical measures and methods, scientific and technological innovations, and assessment capabilities for the assessment of Training Transformation (T2).

## BACKGROUND

In today's information age and new globalization environment, success is defined more by force adaptability and agility rather than solely by industrial age scale and scope. Secretary Rumsfeld emphasizes this point in a recent Wall Street Journal article by stating, "We are fighting the first wars of the 21st century with a DoD that was designed for the challenges of the mid- to late-20th century." Force Transformation, therefore, is about becoming more adaptable and agile thru application of rapidly evolving capabilities and technologies, and the T2 initiative is a key enabler for the overall success of DoD Transformation.

On June 10, 2003, The Deputy Secretary of Defense approved the DoD Training Transformation Implementation Plan in order to enable T2. This plan designates three program capabilities to carry out the T2 Initiative:

- 1) ***Joint National Training Capability (JNTC)***. The JNTC mission is to prepare units and staffs collectively to improvise, adapt, and achieve unity of effort — with appropriate joint context — allowing global training and mission rehearsal to support operational needs.
- 2) ***Joint Knowledge Development and Distribution Capability (JKDDC)***. The JKDDC will prepare individuals to think intuitively "joint" by creating, storing, distributing, and applying knowledge through a dynamic global network.
- 3) ***Joint Assessment and Enabling Capability (JAEC)***. The JAEC will assess, analyze, and enable training transformation initiatives for people, organizations and processes and enable transformation.

Within this new training system, JNTC (unit and staff training) and JKDDC (individual training) are the major capability production and distribution engines supporting COCOM needs. Naturally, these two capabilities operate within an extended DoD policy and program environment; an environment that can effect desired outcomes.

To facilitate desired training system throughput and capability delivery, leading ultimately to training system transparency to force operations, JAEC is charged with measuring T2 progress through assessment, analysis, and enabling effectiveness and efficiency. To properly conduct assessments, we must be able to determine measures of effectiveness, measures of performance, and measures of merit. In order to enable effectiveness, we must thoroughly understand and enable training objectives, training

audiences, and training tools. JAEC assessment will include analysis for planning operations and planning exercises with robust after action review processes and a broad set of tools. In order to enable training planning, we must develop an understanding of the framework and structure the metrics for training within that framework. All new training systems and C4I architectures should accommodate the ability to incorporate training. Training should become a transparent facet through the enterprise services piece of the global grid.

Dr. David Chu delivered a challenge to the MORS community at the June 2003 MORS Symposium to use their Military Operations Research background to conduct assessments and make recommendations to improve T2, specifically he asked that MORS:

- Examine scientific and technological innovations to include the incorporation of new net-centric tools, processes, and methods in current and future operations.
- Assess new analytical methods and measures to improve joint training effectiveness and joint readiness, enhance adaptability/intuitively joint response, employ new joint operational concepts, and prepare for cross-cultural and organization interoperability.

This workshop was the initial response to that challenge.

## **OVERVIEW**

The workshop was conducted in three phases: (1) a one-day mini-symposium to present the current state of the need for the JAEC; (2) a two-day workshop with four tracks, representing different aspects of analysis and assessment, attended by an invitation only sample of military, government, industry, and academia; and then finally (3) a one-day synthesis meeting of the track leads and workshop sponsor to identify and organize common themes, second and higher order issues, and to consolidate recommendations.

The mini-symposium was kicked off with a presentation by Dr. David Chu, Under Secretary of Defense for Personnel and Readiness, who focused on the transformation of the total force and the requirements for training to get inside the natural cycles of other transformation efforts in order to become an enabler for agile change. Following Dr. Chu were:

|                     |   |
|---------------------|---|
| Mr. Ken Krieg       | Director, Program Analysis and Evaluation                   |
| Mr. Walt Hollis, FS | Deputy Under Secretary of the Army (Operations Research)    |
| Dr. Paul Mayberry   | Deputy Under Secretary of Defense (Readiness)               |
| Mr. Dan Crowley     | President, Lockheed Martin Simulation, Training and Support |
| MajGen Jack Catton  | J7, Joint Staff   |
| CAPT Al Kolpacke    | JFCOM   |

Some major themes and challenges for transformed training emerged as we listened to the candid presentations from the speakers:

- It is not merely about transforming how we train; we must also transform the manner in which training is assessed. We must transition to a system that measures outputs and, eventually, outcomes. In addition to measuring collective training results, we must continue to measure individual training readiness. Individual and collective training must be synchronized in order to ensure that training efforts are continually adding to the capabilities of the total force.
- To be able to track the progress of training and education, the Department of Defense Readiness Reporting System (DRRS) must be responsive and adaptable to Service inputs. Key to maintaining an accurate picture of readiness in DRRS is organizing collective and individual Joint and Service training information into a common view to allow existing training efforts to run efficiently in their native environments, yet align with the top level goals for readiness.
- The role of simulations must become more well-defined in qualitative and quantitative terms. While simulations (large-scale or focused) have great potential to provide easily accessible and distributable training stimuli, they also consume many resources to do so. Assessment must be able to characterize and measure the contribution of simulations with respect to the training requirements and current state of readiness in order to be effective. We must be able to distinguish between when more is better and more is more with respect to the use of simulations.
- One of the priorities for the Department is setting up the Standing Joint Force Headquarters (SJFHQ) — how to organize and how to train. Training must not only be aligned to the requirements for the “core elements” of the SJFHQ, but also address the individual needs of the individual augmentees with respect to the Joint Training Continuum that drives the growth of Joint operations proficiency a knowledge as a corporate knowledge within the DoD.

To conclude the mini-symposium, Mr. Dan Gardner, Director, Readiness and Training Policy Programs in OSD (P&R) led a panel consisting Service representatives: BG Bill Weber (Army), Mr. Jeff Bradshaw (Air Force), Dr. Mike Bailey (USMC), and CAPT Mike Mara (Navy). The Services discussions provided a basis for the working groups to consider the status of Training Transformation and how it is being implemented.

The working groups were organized along the functional boundaries set out by Dr. Chu:

|                 |  |
|-----------------|--|
| Working Group 1 | New Organizational Concepts                                    |
| Working Group 2 | New Analytical Methods and Measures                            |
| Working Group 3 | Scientific and Technological Innovations                       |
| Working Group 4 | Implications of Capabilities-based Planning and Analysis to T2 |

Working Group 1, New Operational Concepts for Assessment, was Co-Chaired by Dr. Beth Biddle and Mr. Don Bouchoux. The investigation, supporting briefings, and subsequent discussions covered four broad topic areas:

- 1) Organization for Joint Training/Training Transformation, Role of Joint Tasks as Providing a Common Language, Evaluation of Training Events.
- 2) Sharing of Training and Test Range Resources, Funding Alignments.
- 3) Reserve Component Mobilization Policies and Training Strategies.
- 4) Continuous Adaptive Learning. Working Group 1 developed recommended plans of action for each of these concerns.

Working Group 2, New Analytical Methods and Measures, was Co-Chaired by LTC Mike Kwinn and Mr. Dean Free. Working Group 2 implemented two concepts in their group dynamics, which led them to a well-considered and useful solution. The group used *Value Focused Thinking* (Keeney, 1992) to identify the functions to be measured. This leads to a multi-dimensional approach to assessment. Affinity Diagramming allowed the working group to develop the top level of the hierarchy. The working group then split into sub-groups to address each of the top level functions, breaking them down further to identify objectives and, finally, metrics. Working Group 2 focused on the development of a methodology for analyzing training development to support transformation. They then used this methodology to identify the metrics they recommended using for this analysis. The hierarchy and the metrics will allow analysts to determine the relative value of the initiative.

Working Group 3, Scientific and Technological Innovations, was Co-Chaired by Dr. Amy Henninger and MAJ Doug Matty. Working Group 3 heard briefings from subject matter experts to examine the re-engineering of organizational policies and procedures to be key in improving efficiency (in terms of cost and time) of training and education. Working Group 3 determined that the ability to focus and prioritize requirements, the ability to reuse components and the ability to evoke creative contracting procedures to be the biggest drivers in accelerating the requirement to action cycle time. The biggest ROI to enable rapid scenario generation and consistent synthetic battlefield representations will come from the ability to define common data models and repositories and the ability to energize NIMA. Once accomplished the development of tools to automate or aid in the development of scenarios is more readily achievable.

Working Group 4, Implications of Capabilities Based Planning and Analysis to T2, was Co-Chaired by LT Alex Hoover and Mr. Bob Gregg. Working Group 4's specific near term recommendation is to develop and then publish/maintain a "Joint Capabilities List" that complements the various joint and service task lists. Working Group 4 directly addressed more specific issues that resulted in thoughtful recommendations including how to use the Universal Task List to support training.

The Synthesis Group was chaired by Roy Reiss and consisted of the chairs of the individual working groups and the workshop sponsors. The key trends identified across the working groups were:

- **Blurring of traditional training roles and responsibilities**
  - To operate as a total force, the Service, COCOM, and Joint forces need to leverage the commonalities among their processes and focus their specific training efforts on dealing with their unique requirements. These

requirements now span all levels of warfare and extend beyond the training roles defined in Title X.

- **No common definitions and understanding of new terms**
  - We are hobbled by lack of commonly accepted lexicon and standards; we need a common up to date glossary of terms to enable synchronizing Service and Joint training information.
- **Service vs. joint training may be an artificial distinction**
  - OSD must focus on warfighting capabilities vice historic service responsibilities. These priorities serve several masters; they must to support COCOM mission requirements and training gaps, the Joint Learning Continuum, and the Service requirements.
- **Metrics to evaluate the relevant effectiveness of the learning**
  - Feedback must capture proficiencies and improvements to the learning environment. These assessments should evolve from Universal Joint Task List to a Capabilities Based Planning based system. This is especially important due to the current lack of a mapping from capabilities to measurable training outputs.
- **Making training more relevant and timely**
  - Collaboration in training between the Joint Force and the Services must make exercises/events more meaningful with respect to the operational context.
- **Synchronized training efforts should be composable**
  - Use small events (focused on specific capabilities) as building blocks to create larger events as an integrating of the small events/exercises as opposed to a standalone activity. This will enable changing the overall training model to: Train - Mobilize - Tailor - Deploy.

## **FINDINGS**

Dr. Mayberry concluded that the workshop had accomplished some tremendous progress on the challenges that Dr. Chu laid out. He appreciated the full and robust range of issues and recommendations of the workshop. He appreciated that the notion of blurring the line between training and operations emerged in the discussions. The characteristics of the current force demonstrate that it is adaptable and changeable. We need to ensure the training environment is also active, changeable, and tailorable. We may be focused on making it adaptive, but perhaps not as focused on making it tailorable. How do we recognize that not everyone needs to have the same level and intensity of training?

Dr. Mayberry also liked the ideas proposed on making progressions of exercises more robust in each successive iteration. This allows for continuation of training and emphasis on exercise problems over longer time periods. Although we can develop metrics and evaluate outputs, we shouldn't under-rate the importance of the commander's sense of outcomes. They have lived the operational and can sense the training of the unit. Another aspect of our progressive training is to ensure we continue to train leaders to make those kinds of professional judgments consistently and reliably. What we need is the intermediate evaluation metrics that allow us to measure the training results.

Based on the trends in the working groups, the Synthesis Group took the specific recommendations from individual groups and organized them into a set of actionable recommendations. The following recommendations are offered for the way ahead:

- Develop a defined set of training roles and responsibilities that go beyond the minimum requirements set forth in Title X, that address the core competencies for the Joint Staff and the unique requirements of the individual Combatant Commanders.
- Develop a common glossary and standards for the reporting and analysis of training information to synchronize the collection and assessment of training efforts from the Service level up.
- Focus on the current evolving warfighting capabilities vice historic Service responsibilities.
- Develop a mechanism to characterize and track the variation in the context of the deployed capabilities and the core capabilities of the SJFHQ.
- Develop an integrated overall sustained training plan that links events (large and small) by comparing and contrasting the content and context of the training to move toward a system of centralized brokering of requirement to capabilities.
- Implement policies, procedures, and metrics to measure change management.

These recommendations can be implemented by each the three Training Transformation engines, JAEC, JNTC, and JKDDC, within their respective assessment capabilities. They set the path for both addressing the TC AoA gaps and developing the T2 engines into self-sustaining and improving capabilities within the DoD training environment.

## **FOLLOW-UP TO THE WORKSHOP**

Many of the recommendations from the working groups have been integrated into the JAEC operations. The metric development process developed in Working Group 2 was instrumental in developing the metric structure for the 2005 Assessment of Training Transformation. The adaptive planning work identified in Working Group 1 has been considered in JKDDC assessment development. Other actions continue to have an impact on the analysis in Training Transformation.

**MORS Workshop**  
**Training Transformation: Analysis and Assessment in New Operational**  
**Environments**

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**Acronyms**

|            |  |
|------------|--|
| C4I        | Command, Control, Communications, Computers and Intelligence       |
| COCOM      | Combatant Command  |
| DoD        | Department of Defense  |
| DRRS       | Department of Defense Readiness Reporting System                   |
| JAEC       | Joint Assessment and Enabling Capability                           |
| JFCOM      | US Joint Forces Command  |
| JKDDC      | Joint Knowledge Development and Distribution Capability            |
| JNTC       | Joint National Training Capability                                 |
| MORS       | Military Operations Research Society                               |
| NIMA       | National Geospatial-Intelligence Agency                            |
| OSD        | Office of the Secretary of Defense                                 |
| OSD (P&R)  | Office of the Secretary of Defense (Personnel and Readiness)       |
| ROI        | Return on Investment   |
| SJFHQ      | Standing Joint Force Headquarters                                  |
| T2         | Training Transformation  |
| TC AoA     | Training Capabilities Analysis of Alternatives                     |
| USD (AT&L) | Under Secretary of Defense (Acquisition, Technology and Logistics) |
| USMC       | United States Marine Corps   |



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**Terms of Reference**

**1. Background**

**Training Transformation**

In today's information age and new globalization environment, success is defined more by force adaptability and agility rather than solely by industrial age scale and scope. Secretary Rumsfeld emphasizes this point in a recent Wall Street Journal article by stating, "We are fighting the first wars of the 21<sup>st</sup> century with a DoD that was designed for the challenges of the mid- to late-20<sup>th</sup> century." Force Transformation, therefore, is about becoming more adaptable and agile thru application of rapidly evolving capabilities and technologies, and the Training Transformation (T2) initiative is a key enabler for the overall success of DoD Transformation.

To achieve training system transparency in joint force operations, the Deputy Secretary of Defense established the following training transformation objectives to better enable joint operations:

- Strengthen joint operations by better preparing forces for new warfighting concepts
- Continuously improve joint force readiness by aligning joint education and training capabilities and resources with combatant command needs
- Develop individuals and organizations that intuitively think jointly
- Develop individuals and organizations that improvise and adapt to emerging crises
- Achieve unity of effort from a diversity of means

On June 10, 2003, The Deputy Secretary of Defense approved the DoD Training Transformation Implementation Plan in order to enable T2. This plan designates three program capabilities to carry out the T2 Initiative:

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In addition to the capabilities of the T2 initiative, a major effort was undertaken by DoD in the summer of 2003 to conduct a “Training Capabilities Analysis of Alternatives” (AoA). The Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) directed the AoA to examine cost-effective methods for meeting joint and Service training requirements. The AoA Senior Advisory Group (SSG) is co-chaired by the USD (P&R) and the Commander, US Joint Forces Command. The AoA report will be completed in July 2004 and will provide background for the MORS T2 special meeting. The emerging results of the AoA effort have provided key insights into the existing gaps in training based on both current and future operational needs and will provide the corresponding training system enhancements with improved capabilities to fill those needs. The AoA provides a robust analytic underpinning for the future direction of T2 and specifies programs to meet the expanded training requirements for future military operations.

More information and background on Training Transformation is available at [www.t2net.org](http://www.t2net.org).

## **2. Goals and Objectives**

As a beginning dialog in developing more appropriate tools and metrics associated with this emerging environment, Dr. David Chu delivered a challenge to the MORS community at the June 2003 Annual Symposium to use their Military Operations Research background to conduct assessments and make recommendations to improve T2, specifically he asked that MORS:

- Examine scientific and technological innovations to include the incorporation of new net-centric tools, processes, and methods in current and future operations.
- Assess new analytical methods and measures to improve joint training effectiveness and joint readiness, enhance adaptability / intuitively joint response, employ new joint operational concepts, and prepare for cross-cultural and organization interoperability.

This is an exciting time for Military Operations Research Analysts as we are preparing to meet the challenges of Force Transformation. We, as a community, have been invited to conduct analysis of the Performance Assessment related capabilities of the Training Transformation initiative to help insure success.

In the course of this special meeting we will focus on making assessments across four areas and align these topics with the four working groups:

- New organizational concepts
- New analytical methods and measures
- Scientific and technological innovations
- Implications of capabilities based planning and analysis

The working groups will then apply their assessments to a set of draft recommendations to add depth and breadth to our final recommendations.

### **3. Approach**

A Mini-Symposium and Workshop will be held 28-30 September 2004 at Science Applications International Corporation in McLean, VA. The one-day mini-symposium will focus on providing state of the initiative discussions led by senior leadership in the Department. The two-day workshop will utilize the information gleaned from the mini-symposium and other invited speakers combined with the talents and experience of the MORS community to make recommendations on the topics discussed in the Goals and Objectives. A Senior Advisory Group will participate in roundtable discussions prior to the meeting to draft a set of responses to be used as a framework in producing the final recommendations.

#### ***1<sup>st</sup> Day Mini-Symposium***

The meeting will commence with a one-day mini-symposium to include discussions from the MORS Proponent, the OSD Office of Personnel and Readiness, and discussions on Implementation from the Military Services and Agencies.

#### ***2<sup>nd</sup> and 3<sup>rd</sup> Day Workshop***

The mini-symposium will be followed by a two-day workshop where participants will listen to invited speakers and meet in working groups to further examine specific topics, including the overarching issues of the workshop.

Speakers will be invited to provide insights on the following topics:

- Integrated training and education systems
- Innovative approaches for measuring modern warfare training and education needs
- Ways to improve requirement-to-action cycle time
- Optimizing warfighter intellectual capability throughput
- How to minimize training system operating costs
- What indicators can be used to predict new capabilities
- On-line gaming for both individual and collective training
- Rapid scenario generation developments and direction
- Common synthetic battlefield representation developments and direction

- Maximizing life-cycle cost effectiveness of training systems
- Exploring alternative training acquisition strategies
- Examining measures of merit/measures of performance for training
- Exploring/optimizing training alternatives
- Wargaming innovations for training

**Working Groups.**

Working Group 1      New Organizational Concepts  
 Working Group 2      New Analytical Methods and Measures  
 Working Group 3      Scientific and Technological Innovations  
 Working Group 4      Implications of Capabilities-based Planning and Analysis to T2

**Synthesis Group.** The Synthesis Group will provide collective top level recommendations based on the discussions of the working groups and keynote speakers.

**Roundtable Discussion Group.** This group will meet twice prior to the September workshop and participate in the synthesis group at the workshop.

**4. Agenda (tentative)**

Tuesday, 28 September 2004

0700 Registration and Continental Breakfast  
 0800 MORS Welcome  
 0830 Overview on T2 Direction—OSD Perspective  
 0915 T2 Direction—An Industry Perspective  
 1000 Break  
 1030 Sponsor Welcome and Keynote Introduction  
 1100 Keynote Presentation  
 1200 Lunch  
 1300 T2 Implications to Joint Staff  
 1345 T2 Implications to PAE  
 1430 Break  
 1500 Service comments and panel discussion  
 1700 Mixer

Wednesday, 29 September 2004

0715 Continental Breakfast  
 0800 User/Customer Panel Discussion  
 0900 Workshop Overview  
 0915 Introduce Roundtable Members  
 0930 Roundtable discussion briefing  
 1000 Break  
 1015 Introduce agenda and first speaker

1020 Speaker 1  
1040 Speaker 2  
1100 Speaker 3  
1120 Speaker 4  
1140 Speaker 5  
1200 Lunch in Working Group Rooms  
1300 Speaker 6  
1320 Speaker 7  
1340 Speaker 8  
1400 Working Group Discussion, First Revision of Draft Product  
1700 Working Group Chair, Co-Chair and Synthesis Group Hot Wash

Thursday, 30 September 2004

0715 Continental Breakfast  
0800 Presentation by Synthesis Group of Revised Recommendations  
0830 Speaker 9  
0850 Speaker 10  
0910 Speaker 11  
0930 Break  
1000 Working Group Discussion, Second Revision of Draft Product  
1200 Lunch in Working Group Rooms  
Prepare Outbriefs  
1400 Break  
1430 Outbriefs from Working Groups with discussion  
1600 Outbrief from Synthesis Group  
1630 Closing Remarks from Dr Chu  
1700 Workshop Adjourn

Friday, 1 October

0800 Working Group Chairs and Synthesis Chair prepare and submit annotated briefings.

## **5. Attendees**

Attendees will be by invitation only. Attendees will include invited experts from OSD, all Services, the Joint Staff, University Affiliated Research Centers, Federally Funded Research and Development Centers, Operational Commanders, DoD contractors and others. Workshop chairs will control membership of their sessions in conjunction with the organizing committee. Workshop attendance will be limited to 150 people.

## **6. Products**

Several Products will be generated from the workshop:

- The initial product will be a briefing on Thursday, September 30<sup>th</sup> to invited executives from OSD, the Joint Staff, and the Service Staffs.
- An Executive Summary in the form of a text document and a scripted briefing for the MORS Sponsors addressing the workshop objectives, findings, conclusions, and recommendations will be prepared within 30 days of the conclusion of the workshop.

- A proceedings document containing summaries of all sessions and annotated copies of appropriate briefing slides and presentations.
- An article summarizing the meeting and its findings will be produced and submitted to *PHALANX* in time for the next deadline after the meeting. A presentation will be made in a Special Session at the 73<sup>rd</sup> MORSS.

## **7. Planning and Organizing Committee**

### ***Workshop Co-Chairs:***

Fred Hartman, FS  
Annie Patenaude

### ***Synthesis Group Chair:***

Roy Reiss

## **8. Administrative**

Name: Training Transformation: Analysis and Assessment in New Operational Environments

Dates: 28-30 September 2004

Location: Science Applications International Corporation, McLean, VA

Fees:

One-Day Mini-Symposium Only: US Federal Government \$115; All Others \$230

Full 3-Day MS and Workshop: US Federal Government \$225; All Others \$450

Classification: Unclassified