

*Analysis for Non-Traditional  
Security Challenges:  
Methods & Tools*

**Military Operations Research  
Society (MORS) Workshop**

**Synthesis Panel  
Outbrief**

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1

*Agenda*

- **Workshop Goals, Panel Goals & Composition**
  - **Insights on Nature of the Problem**
  - **Selected Findings, Recommendations**
  - **Summary**
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2

## *Workshop Objectives*



- **Illuminate user Non-traditional modeling and simulation gaps and deficiencies in the context of the defense security challenges and emerging changes in the defense strategy**
  - **Identify areas of user commonality**
  - **Capitalize on Joint/Service/Agency toolsets and ongoing model development for the larger community**
  - **Develop partnerships to share future M&S**
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3

## *Workshop Guidance*



- **Get the right match of stakeholders, technologists and thinkers into each WG**
  - **Encourage participation by innovative people with new ideas/new tools**
  - **Shape the meeting toward the goal of investing in common usable products to advance our ability to aid decision making**
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4

## *Panel Goals, Objectives, Scope*

- **Goals**

- ◆ Provide an overview of the entire Workshop

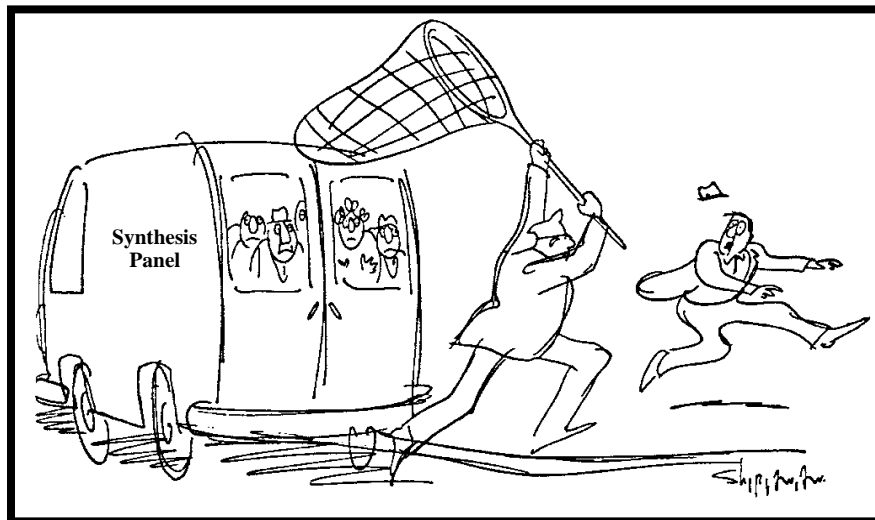
- **Objectives**

- ◆ Clarify the nature of the problem by conducting internal panel discussions
- ◆ Capture the framing issues based on the presentations at the Plenary
- ◆ Derive key themes, findings, and recommendations from the results of the individual panels

- **Scope**

- ◆ Focus on support for Strategic/Departmental level decision making
- ◆ Future challenges and recommendations

## *Recruiting Was Tough...*



*"But I want to be with a real Working Group!"*

## *Synthesis Panel Composition*

- Renee Carlucci – MCCDC
  - Sunny Conwell – N81(Synthesis Panel Co-chair)
  - Lee Dick – N81 (Workshop Chair)
  - Jeff Hamman – JHU APL
  - Jim Harris – AF/A9 (Workshop Co-Chair)
  - Greg Keethler – LM
  - Roy Reiss – AF/A9 (Synthesis Panel Co-chair)
  - Roy Rice – TBE
  - Vince Roske – IDA
  - Bill Sentlinger – OSD JDS
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## *Speaker Perspectives from the Plenary*

- **Keynote – VADM Chanik**
    - ◆ We are re-balancing future force capabilities
    - ◆ “Fighting the Long War” focuses on key points that have not been addressed in traditional warfare analysis (Building relationships, Early preventive measures). How these are addressed in M&S tools/methods is a critical question.
    - ◆ In the current security environment success requires integration of all US Government capabilities and greater cooperation with allies and partners
    - ◆ The QDR has specific end states desired.
      - How are these evaluated using traditional tools and methods?
      - How differently are these non-traditional warfare questions to previous traditional warfare questions?
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## *Perspectives from the Plenary*

### ● Applicability of Ops Analysis Techniques - Dr Hanley

- ◆ Traditional OA techniques do apply to the non traditional challenges:
  - Multidisciplinary teams
  - Analytic Methods: Operational Statistics, Operational Experiments, Analytic Wargaming; Complex Sciences, Military "Soft" Power (Social & Economic Sciences)
  - "Hemibel thinking" – Factor of 3 improvement
- ◆ Criteria for investing in simulations of "soft" military power
  - Internal Validity
  - Usability
  - Extensibility
  - Replication of results

### ● Cyber Warfare – Dr Kass

- ◆ Cyberspace is the only facet/environment that the US has peer competitors
- ◆ It is the only entirely manmade environment that we operate in

### ● 2006 Quadrennial Defense Review –Col Kelly

- ◆ Integrated, augmenting, & complementary analysis
- ◆ Employ a broad array of analytic methods and tools

## *Perspectives from the Plenary*

### ● Service Perspectives

- ◆ AF – Dr Henningsen
  - *The Non-Traditional Security Challenge* requires us to think of our enemies and ourselves as a part of a "complex system" With many interdependent parts
  - To analyze a complex system, we must first understand its behavior Not only behavior of the parts...but how they form the behavior of the whole
- ◆ Navy – Mr Barber
  - What methods, techniques and tools can be applied to answer questions associated with non-traditional challenges
  - How do we get trusted results that decision makers are willing to use
  - Where we don't have accepted methods and tools how do we fill the gaps
- ◆ USMC – Dr Akst
  - The inability to assess the interdependency of military, civilian, and multi-national efforts during the conduct of stability operations is the major analytic shortcoming
  - Success needs to be clearly defined and translated into quantitative MOEs **before** analysts can build models

## *Perspectives from the Plenary*

### ● Service Perspectives

#### ◆ Army – Dr Markowitz

##### → Strategy Mix and Integration

– Scenario Mix; Force Management; Force Planning; Acquisition; Stationing + Integrated Global Posture and Basing

– Each area requires different analysis techniques

##### → Common themes: complex environment, non combatants, C4ISR

### ● Common Themes/Additional Insights

◆ This is not a new problem but it is still not well understood

◆ Need to understand the problem before building the model

◆ Success requires integration of all US Government capabilities and greater cooperation with allies and partners

## *The Working Groups: An Assessment*

◆ Did we get we get the right match of stakeholders, technologists and thinkers into each WG?

→ Overall workshop had a diverse group

→ With diversity comes more time reaching a common frame of reference

→ Involving the other government organizations a work in progress

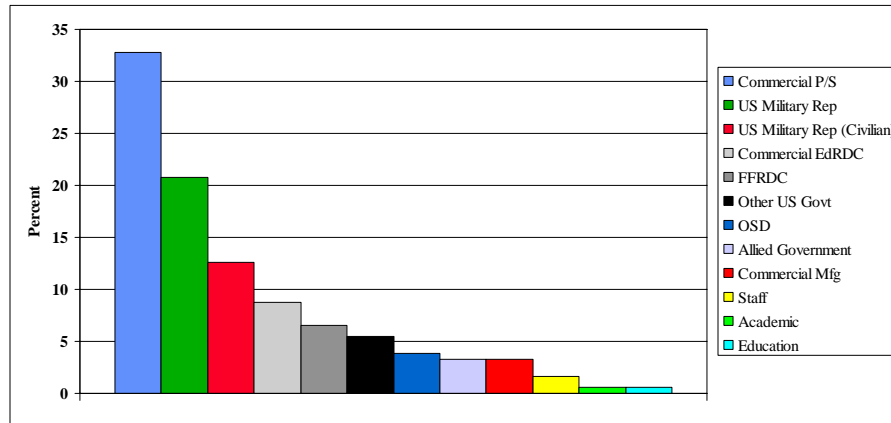
◆ Working Group pre-workshop prep

→ Catastrophic WG: Stakeholder survey's to frame discussion

→ Deterrence WG: low response rate a problem

→ Irregular WG: innovative use of scenarios to focus discussion

## Attendee Demographics



13

## The Working Groups: Common themes



- **Scoping DoD mission**
  - ◆ Is some cases DoD is supporting organization
  - ◆ Defining capabilities expected from DoD
- **What are decision maker's key issues and what are the suitable measures**
- **Defining interaction with other government, NGOs international organizations**
  - ◆ Roles and responsibilities
  - ◆ Different organizational structures & cultures
  - ◆ Information/data providers
- **Methods**
  - ◆ Analytic Wargaming
  - ◆ Non-M&S methods (risk analysis, cost-benefit analyst, social networks, game theory)
  - ◆ Integration across an ensemble of models/tools

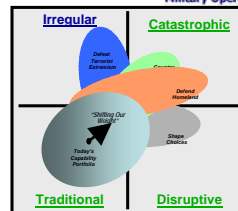
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## *The Working Groups: Common themes*

- PEOPLE
  - ◆ Need more diverse analytic teams w/ more social science experience
- DATA
  - ◆ Where is it? How to acquire? What is available?
  - ◆ Interaction between data, models and metrics
- V&V
  - ◆ How to accomplish V&V for new tools
  - ◆ Need to develop ways to accomplish V&V on methods and data

## *The Problem is Not New*

- But it does reflect a shift  
Department's priorities



- What is non-traditional in the “non-traditional” challenges?
  - ◆ Interdependence and relationships with other non-defense organizations
  - ◆ A “complex system” with many interdependent parts, influenced by many factors – ours and theirs
  - ◆ Importance of perception
  - ◆ Increased use of social science methods
  - ◆ Less data available (Some capabilities can be difficult to measure)
  - ◆ Link between methodology, metrics and decision makers

## *In Summary*

- **Accomplishments:**

- ◆ The Workshop made progress against objectives:
  - Review of current tools
  - Identify gaps in skill sets and requirement for more diverse OR teams
- ◆ To paraphrase the psychiatrist in “Portnoy’s Complaint”: “Now, we are ready to begin...”

- **Residual Challenges**

- ◆ Reach out to a broader community (e.g., Inter-agency, coalition) continue to broaden open and collaborative environments
- ◆ Regard this workshop as part of a sequence, continue the work started in the past workshops and analytical methodology working group
- ◆ Continue to develop analytical methodologies to analyze non-traditional challenges
- ◆ Methodologies to facilitate assessing and balancing risk
- ◆ VV&A should address methodologies and data as well as tools

## *Closing thoughts: Quotes from the workshop...*

- **Agent Based Modeling:**

- ◆ “DoD is in the caboose. Most trains don’t have a caboose.”

- **V&V**

- ◆ “Some of this may be like measuring ‘elephant repellent’, you think it’s working because you don’t see any elephants.”

- **Data Polling**

- ◆ “Even if you had the data, you wouldn’t have confidence: did they tell you what they thought, or what they thought you wanted them to think, or what they thought their government wanted them to think?”

