M&S Requirements to Support the Quadrennial Defense Review

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AF/AXOC
24 May 00
### Purpose and Scope

Explore Role of Joint Collaborative Analysis (JCA) and Modeling and Simulation in Air Force QDR Preparations

### Subject Terms

M&S Requirements to Support the Quadrennial Defense Review

### Supplementary Notes

APUBLIC RELEASE

### Limitation of Abstract

Public Release

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Purpose and Scope

Explore Role of Joint Collaborative Analysis (JCA) and Modeling and Simulation in Air Force QDR Preparations

- Joint Collaborative Analysis Objectives
- The Challenges
- AF QDR Organization and Processes
- Key JCA Enablers
Joint Collaborative Analysis

(JCA) Objectives:

- To systematically bring together Service and Joint analytic communities to elevate the quality of analysis available to decision makers.
- To establish a process that draws the players in the “market economy” into the field of view.
Purpose and Scope

Explore Role of Joint Collaborative Analysis (JCA) and Modeling and Simulation in Air Force QDR Preparations

- Joint Collaborative Analysis Objectives
- The Challenges
- AF QDR Organization and Processes
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The Analytic Nexus

Can Collaborative Analysis Help Illuminate Path Ahead?

Different and much better?

More of the same, but better?

Vision

Guidance

Effects Based Operations

End-State Costs

Current Program

Desired Effects

Current Modernization

FUTURE WARFARE

Can Collaborative Analysis Help Illuminate Path Ahead?
Trends for Analyses & Analysts

- Analysis needs growing
- In-house analyst numbers shrinking

Can Collaborative Analysis Help Relieve the Pressure?
### Determining the Questions?

#### QDR 97

<table>
<thead>
<tr>
<th>Category</th>
<th>Questions</th>
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<tbody>
<tr>
<td>Strategy</td>
<td>- What are the key issues?</td>
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<td>- How do the issues interrelate?</td>
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<td>- What are the questions the Air Force must answer for each issue?</td>
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<td>- What are the analytical tasks to answer each question?</td>
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<td>- Who is best capable of conducting each analytical task?</td>
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<td>- How are these efforts integrated?</td>
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<td>- Etc. ...</td>
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#### QDR 01

<table>
<thead>
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<th>Category</th>
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*AFSAA - Air Force Studies and Analysis Agency*
Challenges in Review: Working on an Answer

“A Must! I count on it daily”
Col Rich Hanley

“Sixx munths ago we couldn’t spell QDR -- now we’re expurts thanks to this book.”
AFSAA
QDR Organizational Structure and Processes: AF/QR

- CVA
  - Lt Gen Begert
  - Senior Advisory Group

- QR
  - Brig Gen Deptula
  - Brig Gen Bath

- Operations
- Special Issues
- Exec Support

- Contract Support

- QRY
  - Assessments Division
    - Col Wong

- QRO
  - Outreach Division
    - Lt Col Condray

- QRJ
  - Joint Issues Division
    - Col Gunzinger

- QRP
  - Programming and Budget Division
    - TBD

- QRR
  - Total Force Division
    - Col Barkes

26 Off (Active)
4 Enlisted (Active)
4 Off (ARC)
1 Enlisted (ARC)
35 Total
All Totally Connected Through Corporate Process and IRSS/BHIS

AF QDR EXCOM

Shared Work Environment
- News
- Events
- Analyses
- Issue Forums

MAJCOMS

ASG

XOR/AQP Work Cell
XOI/AQI Work Cell
XPP/XOC Work Cell
DPP/MIM Work Cell
XOO Work Cell
XOQ Work Cell
XOR/AQP Work Cell
ILX/MII Work Cell

Modernization
Information Superiority
Force Gen., Capability, & Structure
Human Resources
Readiness
Strategy and Risk Assessment
Transformation, Innovation & Joint Exp
Mobility & Sustainment Infrastructure
Developing a Study
Baseline and Fiscal Constraints

MAJCOM Budget (unconstrained growth)

- H = High: upper realm of possibility
- B = Baseline: assumes X% annual real growth
- M = Middle: represents 0% real growth
- L = Low: minimum level for capability survival

FISCAL YEAR

Current FYDP

First POM affected by QDR results

unconstrained
plus up X% growth
0% per year
decrement
Air Force Models

Model used in QDR
in white

THUNDER
TACWAR JICM

SUPPRESSOR LCOM MASS JEMM
CFAM SIAM EADSIM CAPS
SWEG SPAAT NETRULES GIANT SEAS

BRAWLER GUARDIAN SOAP ISAAC
SHAZAM (2) MIL-AASPEM 2 JSEM SMAT
TRAP TEAM ESAMS MOSAIC GTSIMS RADGUNS

HUNDREDS OF ENGINEERING MODELS
(NOT IN THE TOOLKIT - BY DESIGN)

High resolution models feed aggregate models

High Resolution => Aggregate

Campaign
Mission
Engagement

24 May 00
# QDR Analysis Model Flow

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<th>Nov '99</th>
<th>Dec '99</th>
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MTW and Near Peer baselines complete
Executive and AO level information handling system for QDR related activity

- On both Classified (non-NATO) & Unclassified networks
  - Unclassified System “rolled out” to all users 1 May
  - Anticipate Classified system “roll out” mid-May
- “dot mil” and password protected (note: AF QDR contractors granted access through individual IP addresses)
Key JCA Enablers: Understanding Limitations and Opportunities

- Limited time is the enemy of collaborative analysis
- Essential elements of collaborative analysis
  - Senior leadership buy-in
  - Feedback loops
  - Open communication processes
  - Capture mechanisms
- Constrained resources, unconstrained thinking
  - Game theory applications
    - Fair division
    - Borrowing and leveling (see trade-space)
    - “Conditional” altruism

Translating Theory into Practice
Challenges

- How to analyze and incorporate RMA
- Data requirements
- Increasing number and complexities of analyses
The DPG depicts 23 Illustrative and Long Range Planning Scenarios

- Major theaters of war (MTW), regional conflicts (RT), and small scale contingencies (SSC)

- Many of these scenarios are not supported with appropriate data on Threat and Allied forces

- Data for the “bedrock” scenarios, MTW East & West, took six months to deliver for MRS-05

- Data for upcoming defense reviews should be more readily available
Key Enablers of the Vision:
Achieving Consistency Across Multiple Methodologies

Right Decision
Right Time

Relevant and Affordable

Battlelabs
Tech Demos
Wargames
Exercises
Modeling
Analysis
Simulation

Combat Operations
Lessons Learned

Bosnia
OAF
Kosovo

Analysis

Simulation

Modeling

Battlelabs
Tech Demos
Wargames
Exercises

Relevant and Affordable
Joint Collaborative Analytic Process

- Agreed upon scenarios and data
- Work together on baseline development
- Cooperation already in place
  - COSAGE and SABSEL data development
  - AF and Army working together on TMD for QDR
- OSD, Joint Staff and Services can run their own excursions from agreed upon baselines
- Establish process to incorporate insights from more detailed or unique models
The Way Forward

- The scope of QDR issues and number of potential scenarios has the potential to overwhelm independent analytic efforts.
- An inclusive, integrated teaming process with early and aggressive analytical preparation provides the opportunity for enlightened decision making concerning:
  - Simultaneously exploration of the strategy of engagement (SSCs) and major conflict (MTWs).
  - Balanced consideration of RMA and future challenges.
  - Maximized understanding of asymmetric and non-intuitive challenges.