



*Briefing to:  
The Modeling and Simulation Community*

***TRANSPORTATION M&S  
FOR THE DTS  
PROVIDING END-TO-END FORCE  
PROJECTION ANALYSIS***

***R. KEITH SEAMAN  
STRANSCOM TCJ5  
3 JUNE 1999***

**REPORT DOCUMENTATION PAGE**

Form Approved OMB No.  
0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

<b>1. REPORT DATE (DD-MM-YYYY)</b> 03-06-1999	<b>2. REPORT TYPE</b> Briefing	<b>3. DATES COVERED (FROM - TO)</b> xx-xx-1999 to xx-xx-1999
--	-----------------------------------	---

<b>4. TITLE AND SUBTITLE</b> Transportation M&S for the DTS Providing End-to-End Force Projection Analysis Unclassified	<b>5a. CONTRACT NUMBER</b>
	<b>5b. GRANT NUMBER</b>
	<b>5c. PROGRAM ELEMENT NUMBER</b>

<b>6. AUTHOR(S)</b> Seaman, R. K. ;	<b>5d. PROJECT NUMBER</b>
	<b>5e. TASK NUMBER</b>
	<b>5f. WORK UNIT NUMBER</b>

<b>7. PERFORMING ORGANIZATION NAME AND ADDRESS</b> STRANSCOM TCJ5 XXXXX, XXXXXXX	<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>
--	---

<b>9. SPONSORING/MONITORING AGENCY NAME AND ADDRESS</b> United States Department of Defense Defense Modeling and Simulation Office 1901 N. Beauregard St., Suite 500 Alexandria, VA22311-1705	<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>
	<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>

<b>12. DISTRIBUTION/AVAILABILITY STATEMENT</b> APUBLIC RELEASE
---

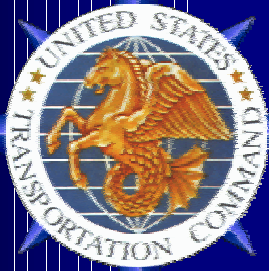
<b>13. SUPPLEMENTARY NOTES</b>
--------------------------------

<b>14. ABSTRACT</b> MOBILITY MODELING AND MOBILITY MODELING AND SIMULATION OVERVIEW SIMULATION OVERVIEW ? M&S ANALYSIS M&S ANALYSIS ? MOBILITY REQUIREMENTS STUDY 2005 MOBILITY REQUIREMENTS STUDY 2005 ? M&S DEVELOPMENT M&S DEVELOPMENT ? END-TO-END FORCE PROJECTION MODELING END-TO-END FORCE PROJECTION MODELING ? M&S MANAGEMENT FOR THE DTS M&S MANAGEMENT FOR THE DTS ? USTRANSCOM M&S MASTER PLAN USTRANSCOM M&S MASTER PLAN ? M&S FUTURE INITIATIVES M&S FUTURE INITIATIVES ? ACTD?S ACTD?S ? ALP ? JSIMS ? JWARS ? TPFDD-IN-AN-HOUR ? ALP ? JSIMS ? JWARS ? TPFDD-IN-AN-HOUR
--

<b>15. SUBJECT TERMS</b>
--------------------------

<b>16. SECURITY CLASSIFICATION OF:</b>	<b>17. LIMITATION OF ABSTRACT</b> Public Release	<b>18. NUMBER OF PAGES</b> 29	<b>19. NAME OF RESPONSIBLE PERSON</b> Fenster, Lynn lfenster@dtic.mil
			<b>19b. TELEPHONE NUMBER</b> International Area Code Area Code Telephone Number 703767-9007 DSN 427-9007

<b>a. REPORT</b> Unclassified	<b>b. ABSTRACT</b> Unclassified	<b>c. THIS PAGE</b> Unclassified	<b>19b. TELEPHONE NUMBER</b> International Area Code Area Code Telephone Number 703767-9007 DSN 427-9007
----------------------------------	------------------------------------	-------------------------------------	---



# ***MOBILITY MODELING AND SIMULATION OVERVIEW***

- **M&S ANALYSIS**
  - MOBILITY REQUIREMENTS STUDY 2005
- **M&S DEVELOPMENT**
  - END-TO-END FORCE PROJECTION MODELING
- **M&S MANAGEMENT FOR THE DTS**
  - USTRANSCOM M&S MASTER PLAN
- **M&S FUTURE INITIATIVES**
  - ACTD'S ... ALP ... JSIMS ... JWARS ... TPFDD-IN-AN-HOUR

# KEY RESPONSIBILITIES



*Single Manager for the Defense Transportation System*

- Air Refueling
- Joint Operational Support Airlift Scheduling
- Defense Courier Service



- Aeromedical Regulating
- Transportation Working Capitol Fund



**MILITARY SEALIFT  
COMMAND**



**MILITARY TRAFFIC  
MANAGEMENT COMMAND**



**AIR MOBILITY  
COMMAND**



# UNITED STATES TRANSPORTATION COMMAND DIRECTORATE OF PLANS AND POLICY (ISSUES)

7 Procurement  
Modernization

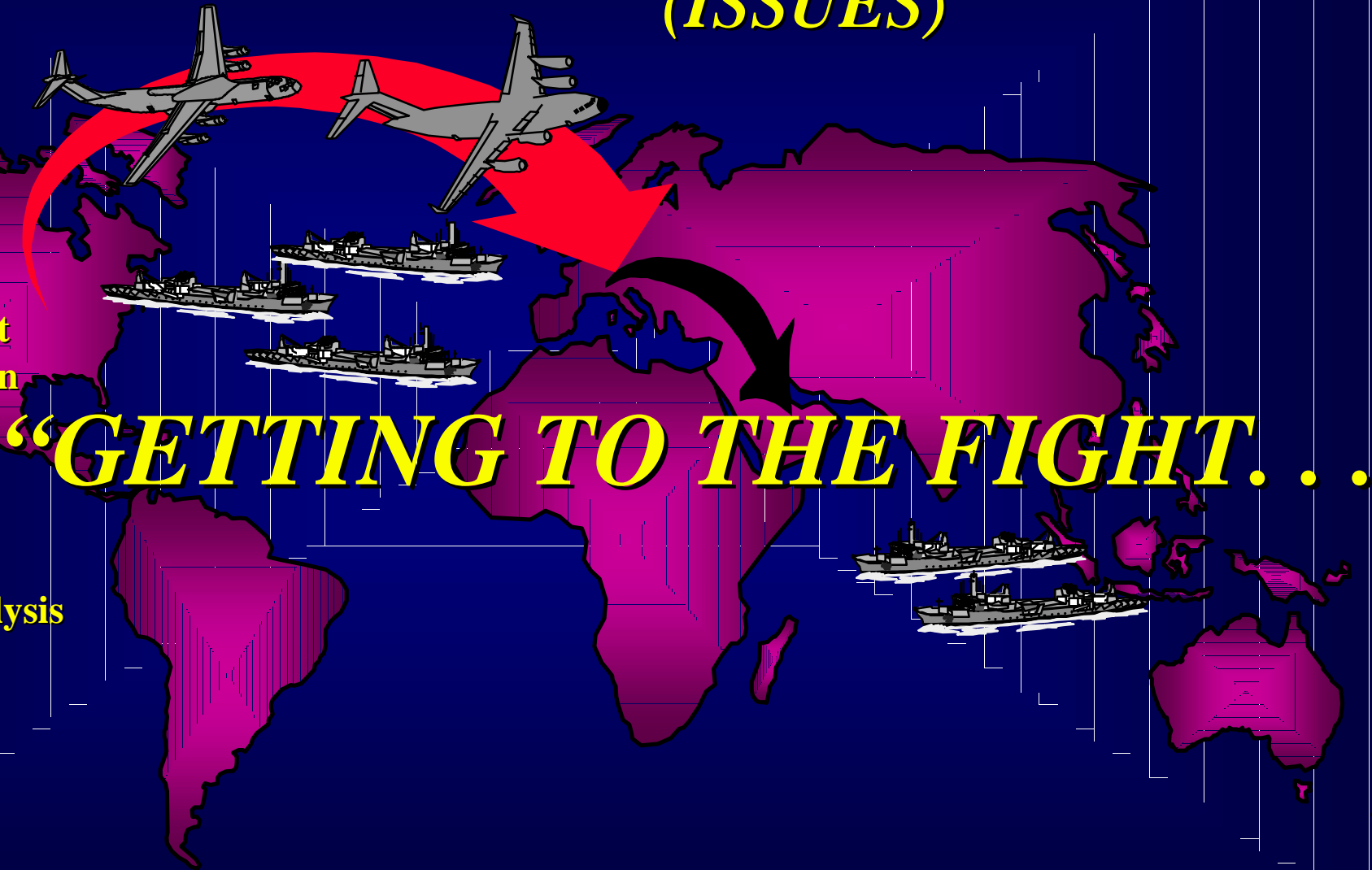
Infrastructure  
Route Basing

A  
D Attacks  
N: Future Analysis

n vs Actual  
ining

ater Airlift  
hnology

FDD Analysis



## “GETTING TO THE FIGHT...”



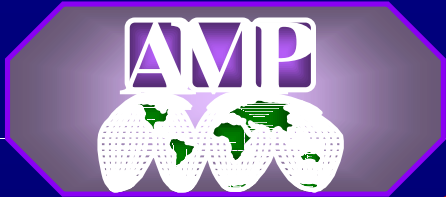
# ***MOBILITY MODELING AND SIMULATION REQUIREMENTS***

- **PROGRAMMATIC ANALYSIS**
  - MRS-05 ... QDR
- **DELIBERATE PLANNING**
  - REFINEMENT CONFERENCE
- **EXERCISES**
  - USFK EXEVAL99 ... TURBO CHALLENGES ... AGILE LION
- **WARGAMES**
  - FOCUSED LOGISTICS WARGAME (FLOW) ... PW ... GEIV
- **EXECUTION ANALYSIS**
  - MCC ANALYSIS SUPPORT (DESERT STORM LIKE)

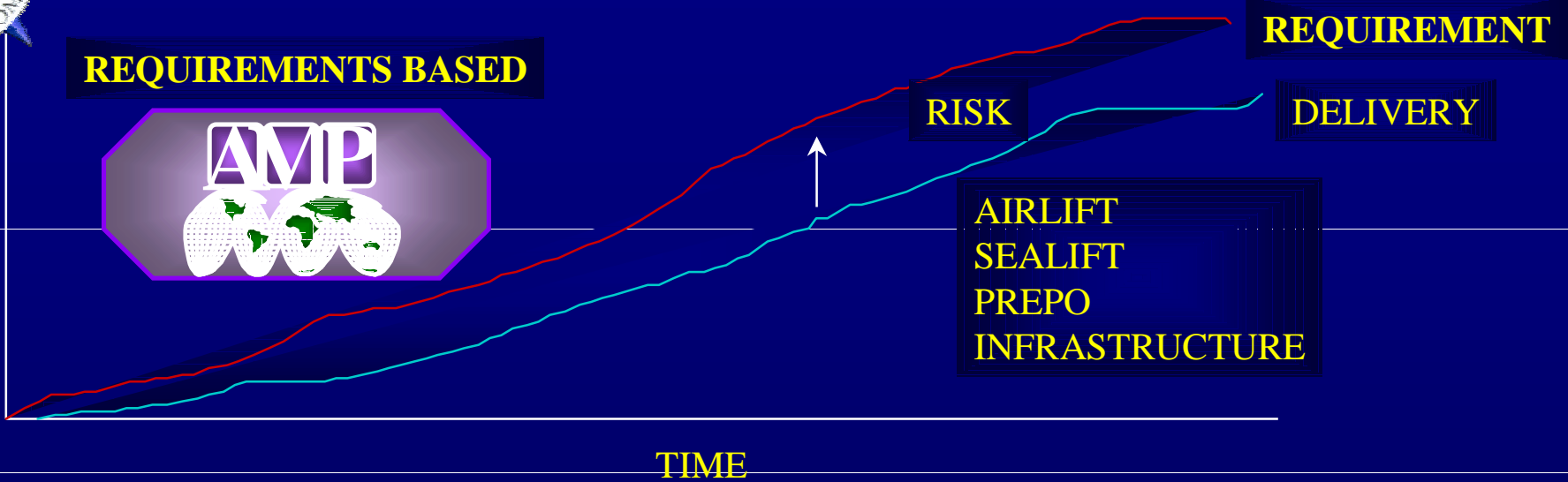


# TRANSPORTATION ANALYSIS

## REQUIREMENTS BASED



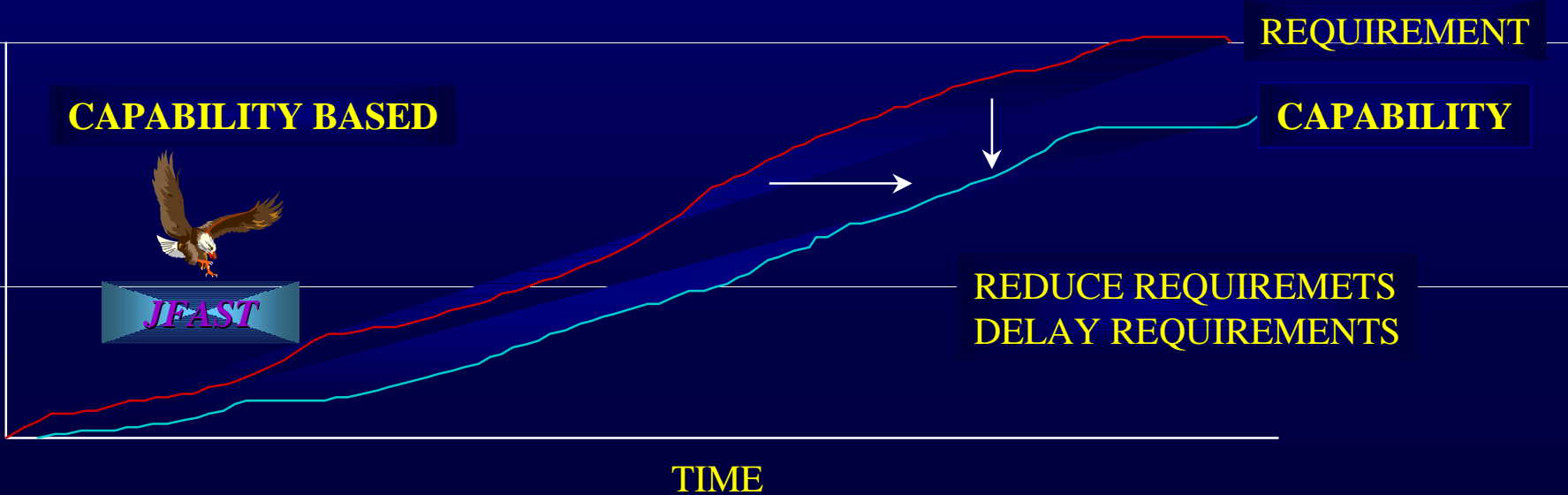
C  
A  
R  
G  
O



## CAPABILITY BASED



C  
A  
R  
G  
O







# **FORCE PROJECTION BUSINESS**

## **PROVIDING END-TO-END ANALYSIS**

**CONUS**

**STRATEGIC**

**THEATER(S)**



**1991 ... DOD LACKS TOOLS FOR "END-TO-END" MOBILITY MODELING**

**1994 ...PART OF GTN FUTURE OPERATIONS CAPABILITY**



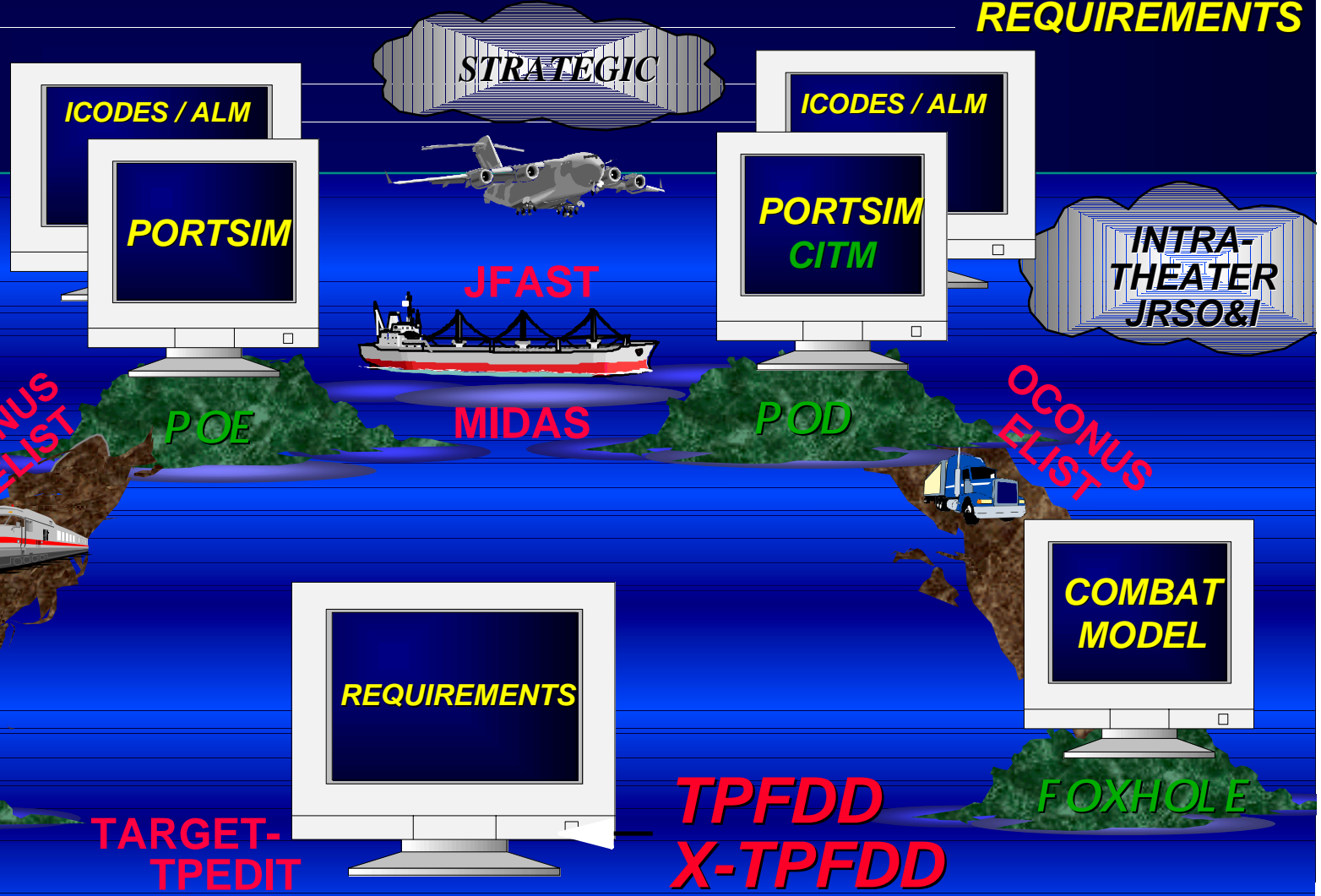
# MODEL INTEGRATION OVERVIEW

## AMP / FPM

PROACTIVE  
PREDICTIVE  
TRANSPORTATION  
REQUIREMENTS



ALYSIS  
PLANNING  
TRAINING  
EXECUTION



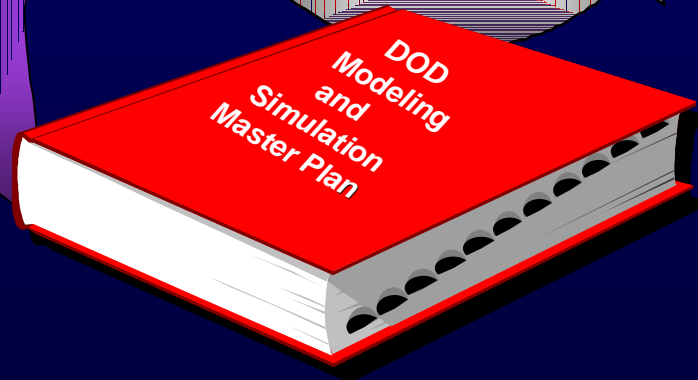
# TRANSPORTATION ANALYSIS, MODELING & SIMULATION



PBD 870



## TAMS

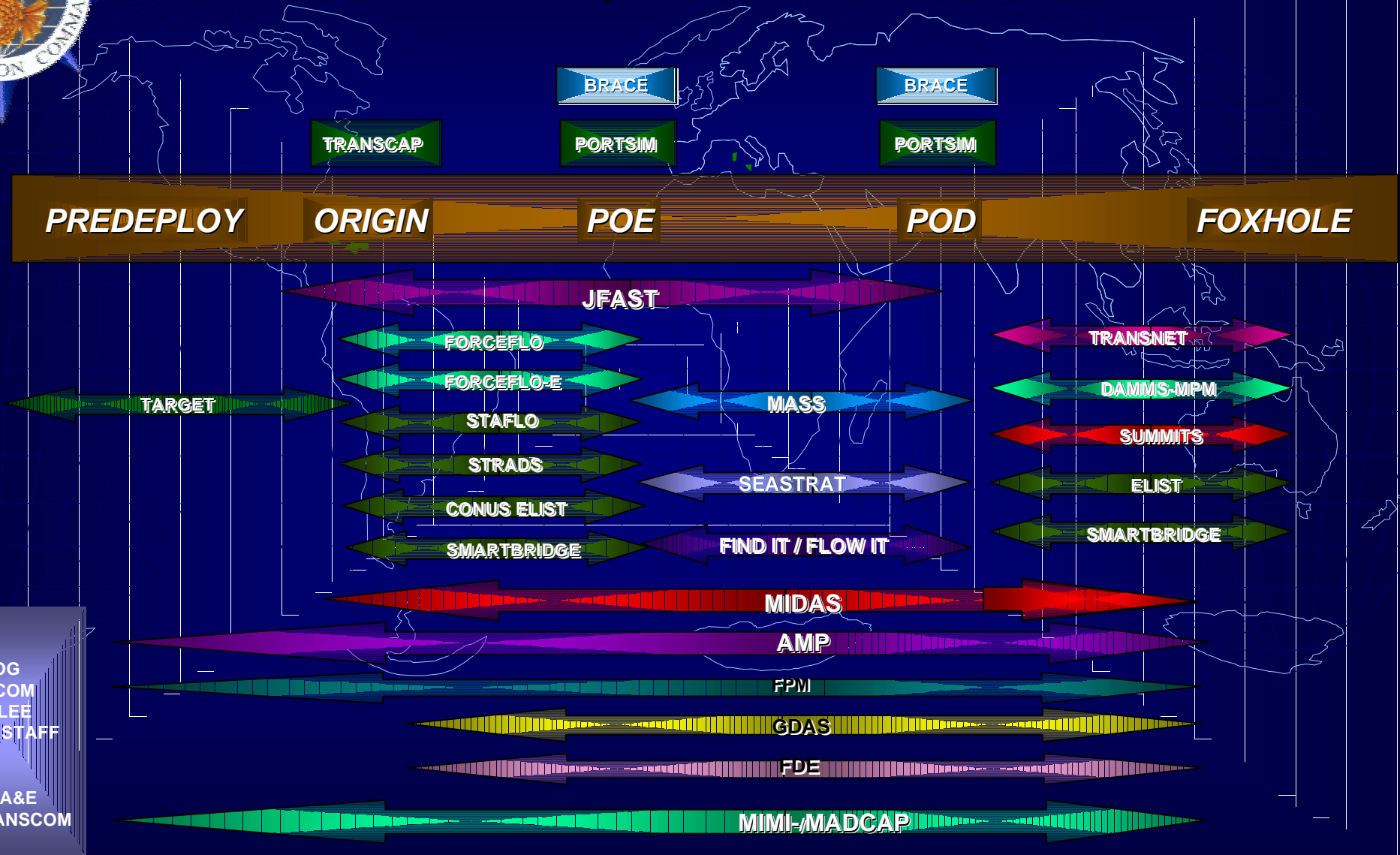


1996



# TRANSPORTATION ANALYSIS, MODELING & SIMULATION

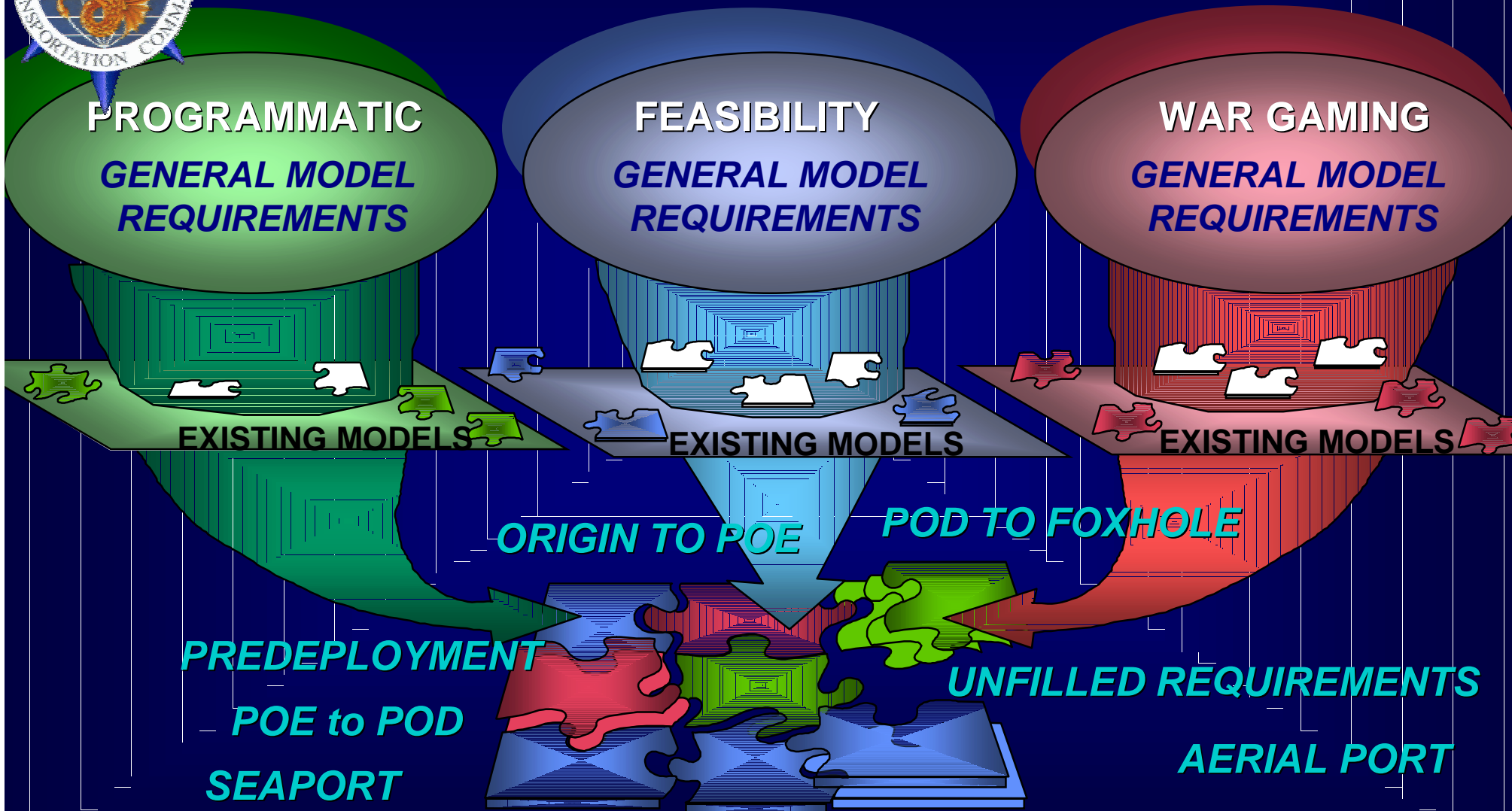
## "As-Is" System Data Collection





**TRANSPORTATION ANALYSIS, MODELING & SIMULATION**

**DEVELOP END-TO-END ALTERNATIVE**



**ALTERNATIVES FOR COMMON MODEL SUITE**



# USTC M&S DRIVERS

*TCC Requirements & Capabilities*

*USTC Strategic Plan*

*USTC Business Rules*

*TAMS*

*TAFIM*

*GTN*

*DII COE*

*HLA*

*SHADE*

*JWARS*

*JTA*

*VV&A*

*Data Standards & Quality*

*JSIMS*

*Security*

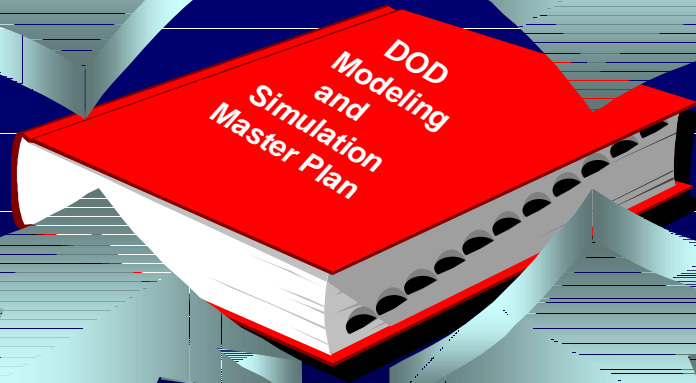
*OSD Studies*

*Wargames*

*Exercises*

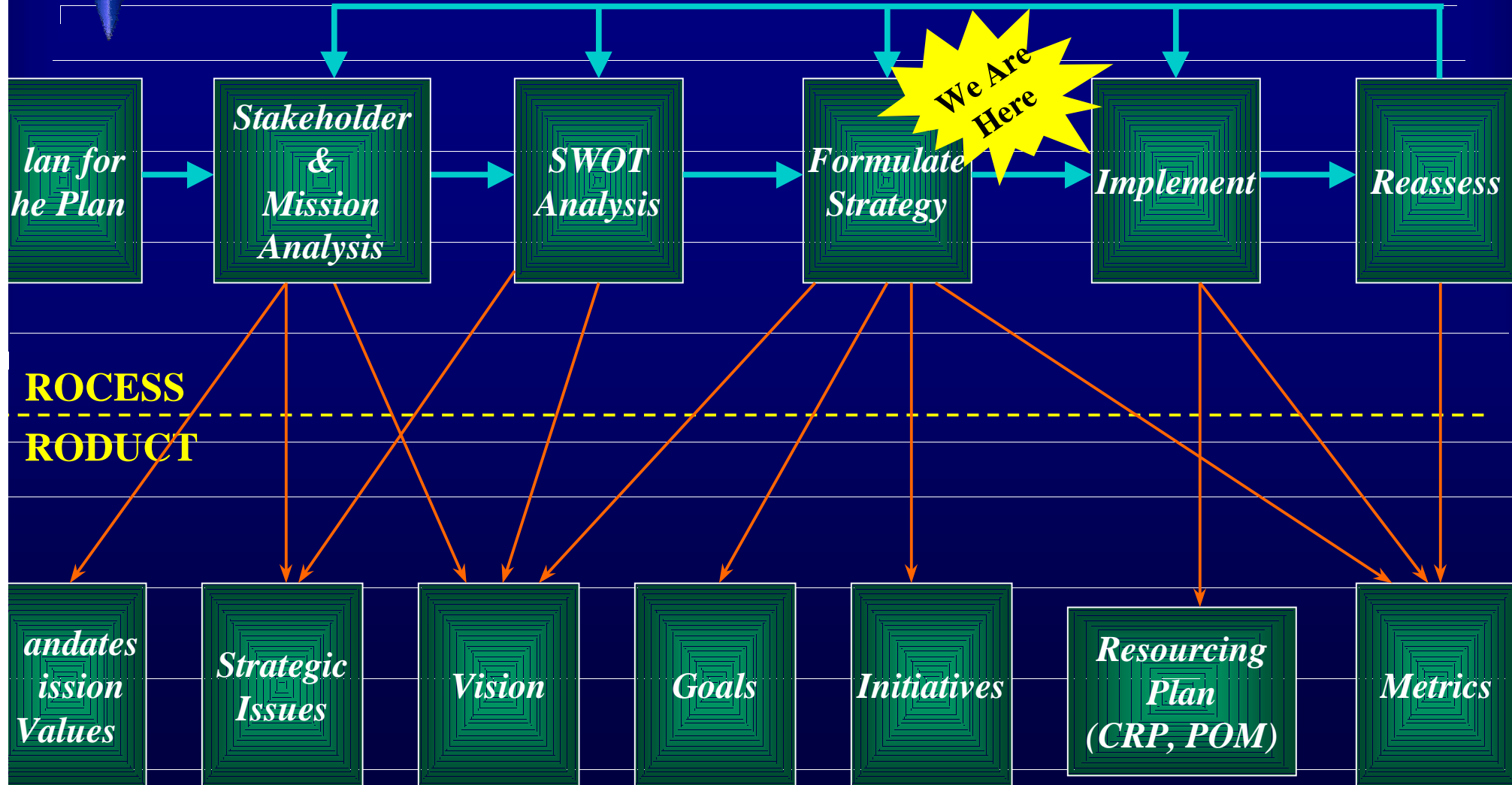
*DOD MSMP*

*Advanced Technology Initiatives*





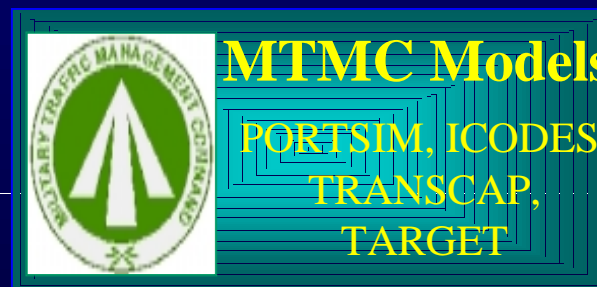
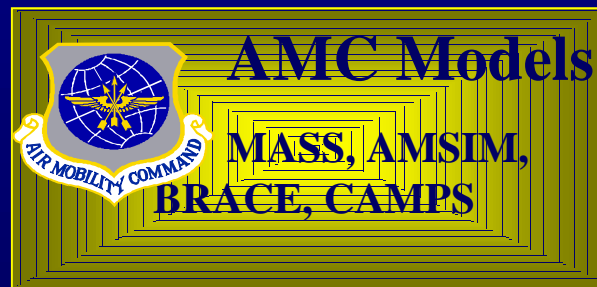
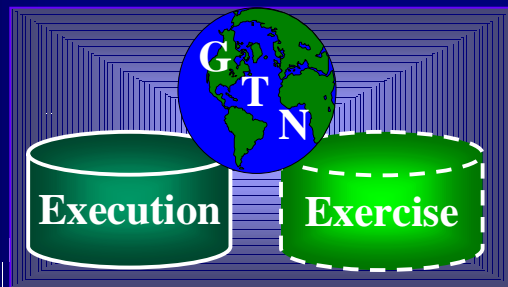
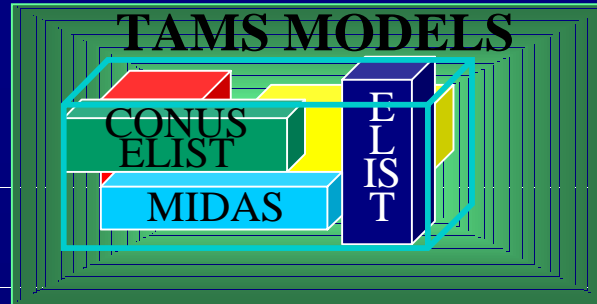
# MSMP DEVELOPMENT APPROACH







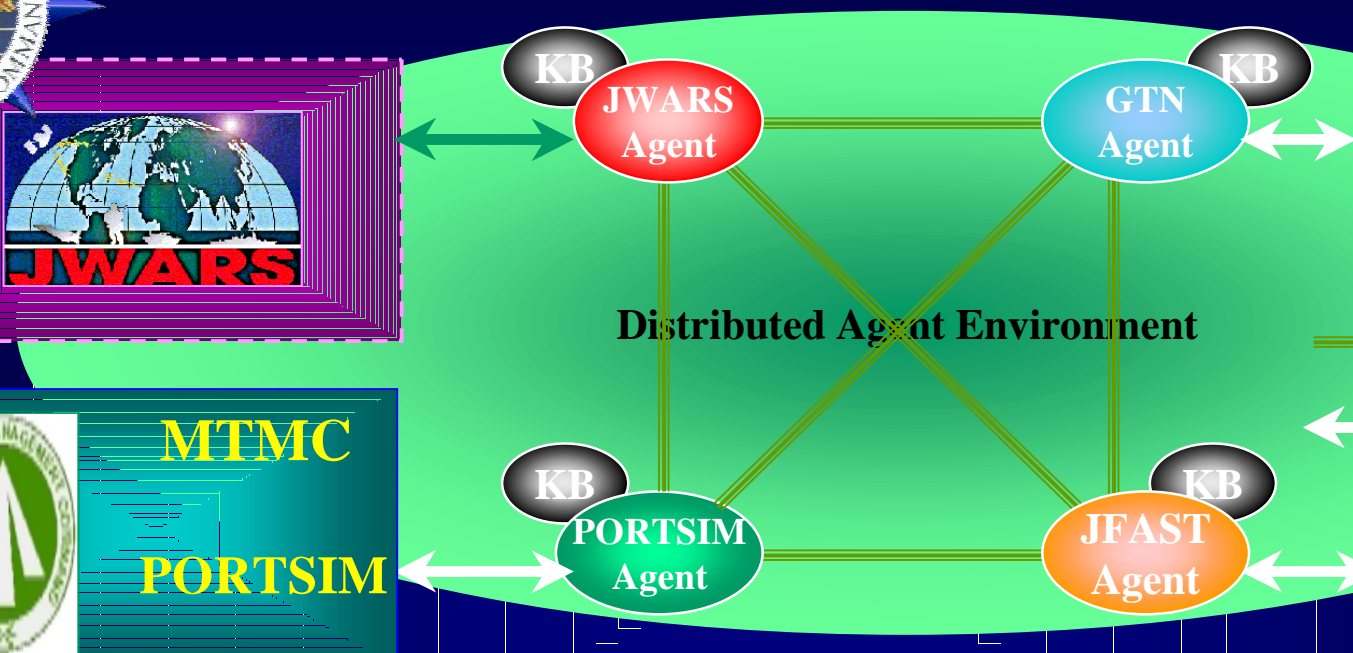
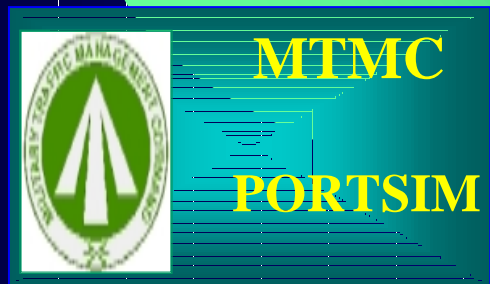
# CURRENT ENVIRONMENT



**Single, Focused M&S Vision for the DTS:**  
*single M&S environment of interoperable, collaborative models and execution systems capable of providing accurate and consistent answers at the required breadth and depth of the DTS domain.”*



# M&S AGENT ARCHITECTURE



- **Flexible Plug-in Environment**

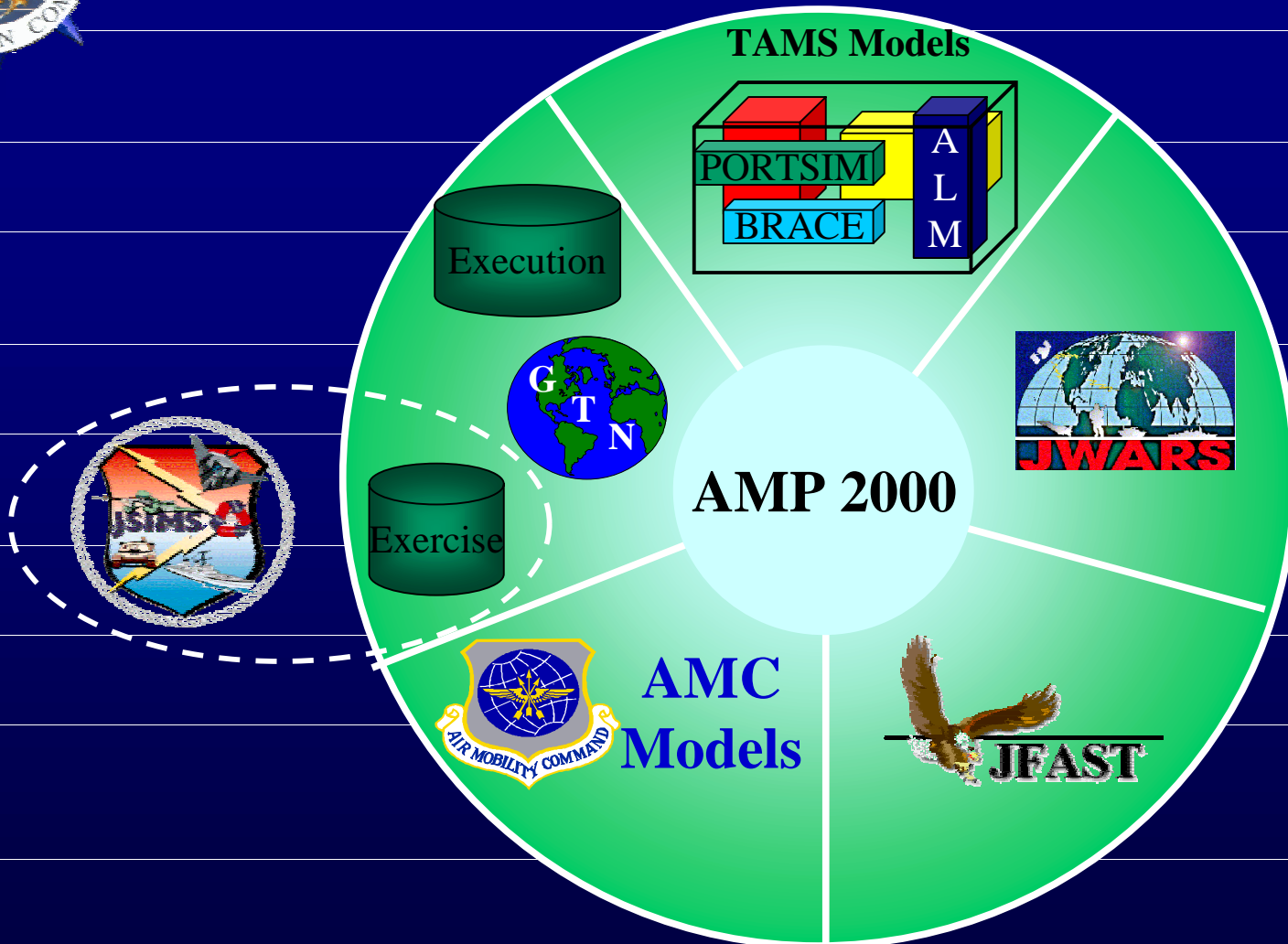
- No Hard Interfaces to Maintain (4 Agents in lieu of 6 Interfaces)
- Knowledge Base (KB) provides Rules to Translate b/w Global Agent Model and Domain Models

- **Agent Behaviors**

- Intelligent Data Retrieval, Mediation, Aggregation
- Remote Invocation of Models (Setup, Run, Return Results)



# BRINGING IT ALL TOGETHER





# ***FUTURE DTS ENVIRONMENT***

- ***FOCUSED ON FORT TO FOXHOLE***
- ***RESPONSIVE AND FLEXIBLE***
- ***USE BEST BUSINESS PRACTICES***



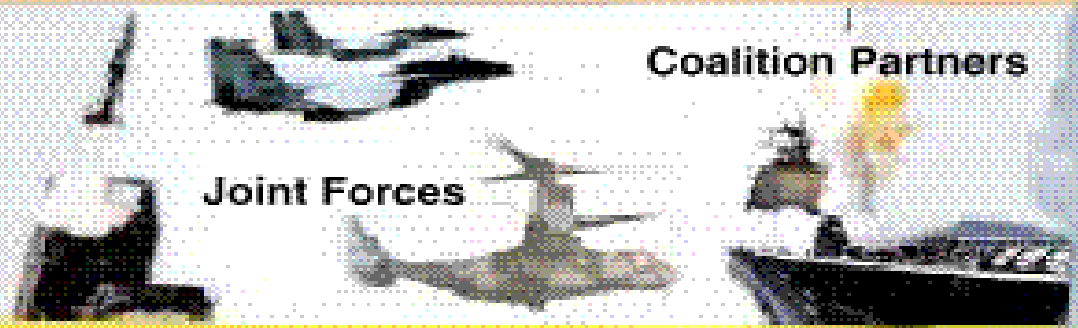
***S SINGLE MANAGER OF THE DTS, CINCTRANS CHARGED WITH INTEGRATING DTS OPERATIONS, PROCEDURES, AND PROCESSES***

# JOINT VISION 2010



Information Superiority

Technological Innovations



Joint Forces

Coalition Partners

Dominant Maneuver

Precision Engagement

Focused Logistics

Full-Dimensional Protection

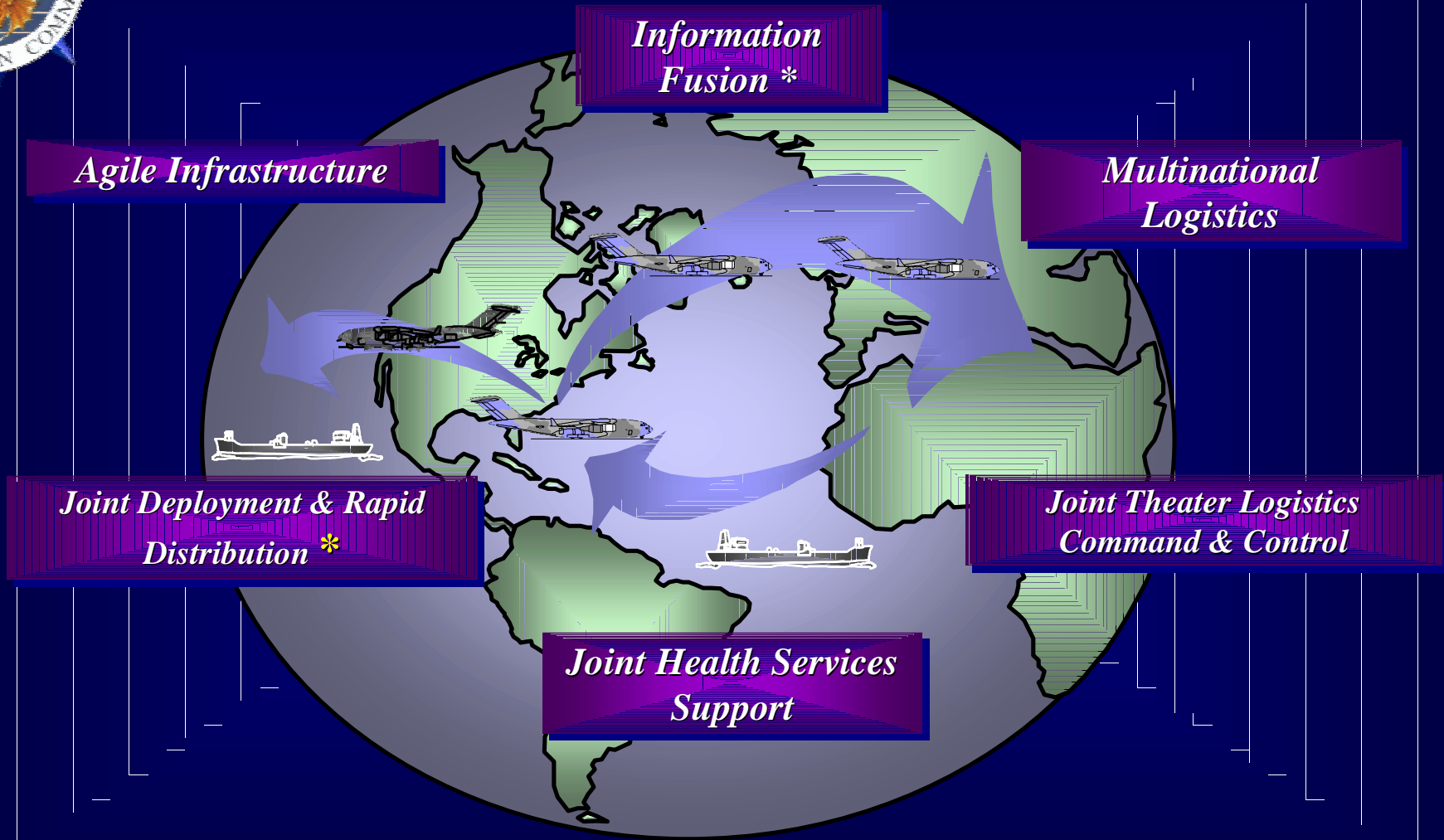
Massed

Effects

- **Advanced Logistics Project**
  - *Push the limits of technology*
  - *Cause a fundamental change in the way we do business*



# TENETS OF FOCUSED LOGISTICS



*\* Key USTRANSCOM Role*





# ***GLOBAL VIEW OF TRANSPORTATION***



**Global  
Information  
Exchange**

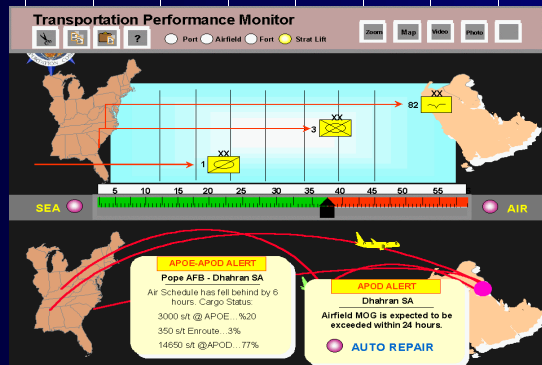
**Global  
Awareness**

**Dynamic  
Planning &  
Execution**

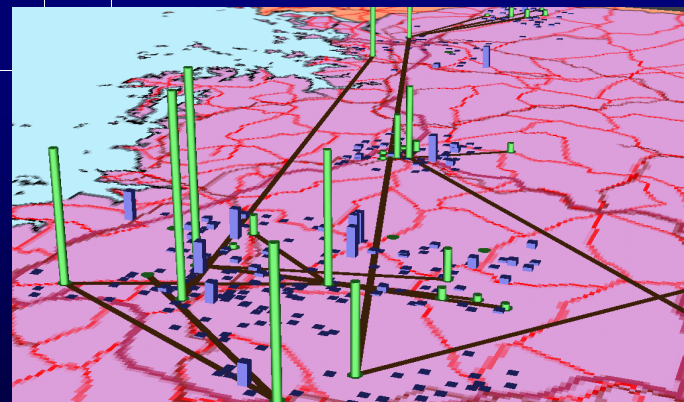
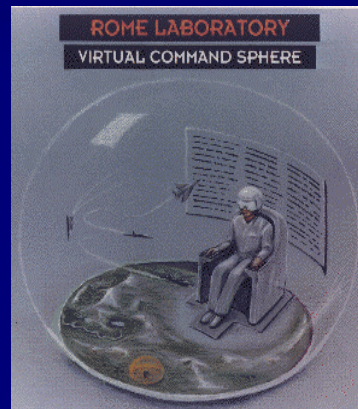
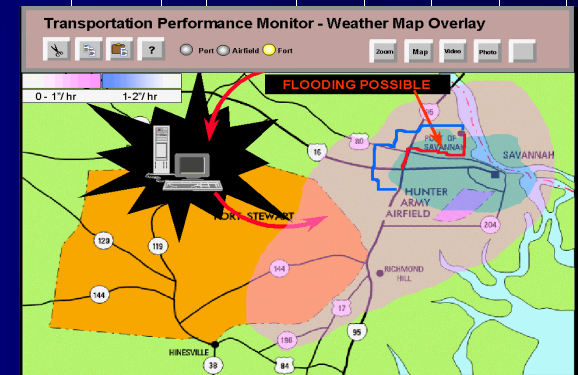


# AT2000 VISION: TRANSPORTATION COP (TCOP)

**Deployment Performance Monitor**



**Weather Overlay at Installation**



**Transportation Capability Mgr.**

**Transportation Performance Ins**





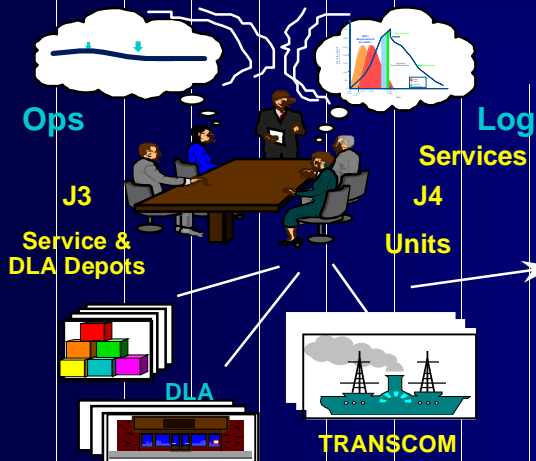
# VISIONARY CONCEPT

Overarching issue: Logistical control

– Managing the pipeline

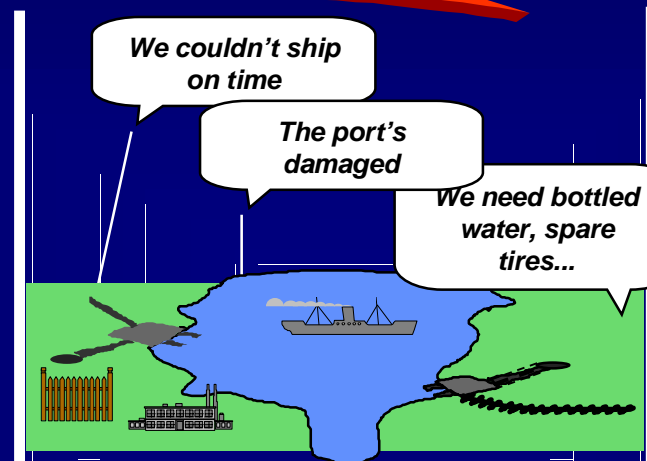
– Visibility into the process

## Planning the pipeline



## Develop Plan

- Collaboratively analyze tradeoffs of multiple Logistics COAs
- Globally optimize
- Executable detail



## Monitor Execution

- Detect plan deviation
- Identify affected plan components
- Notify key players
- Execute IAW Plan
- Manage flow
- Create plan sentinels



## Replan

- Redirected flow
- Locally optimal fixes
- Done in time to matter



IN-STORAGE

IN-PROCESS

IN-TRANSIT

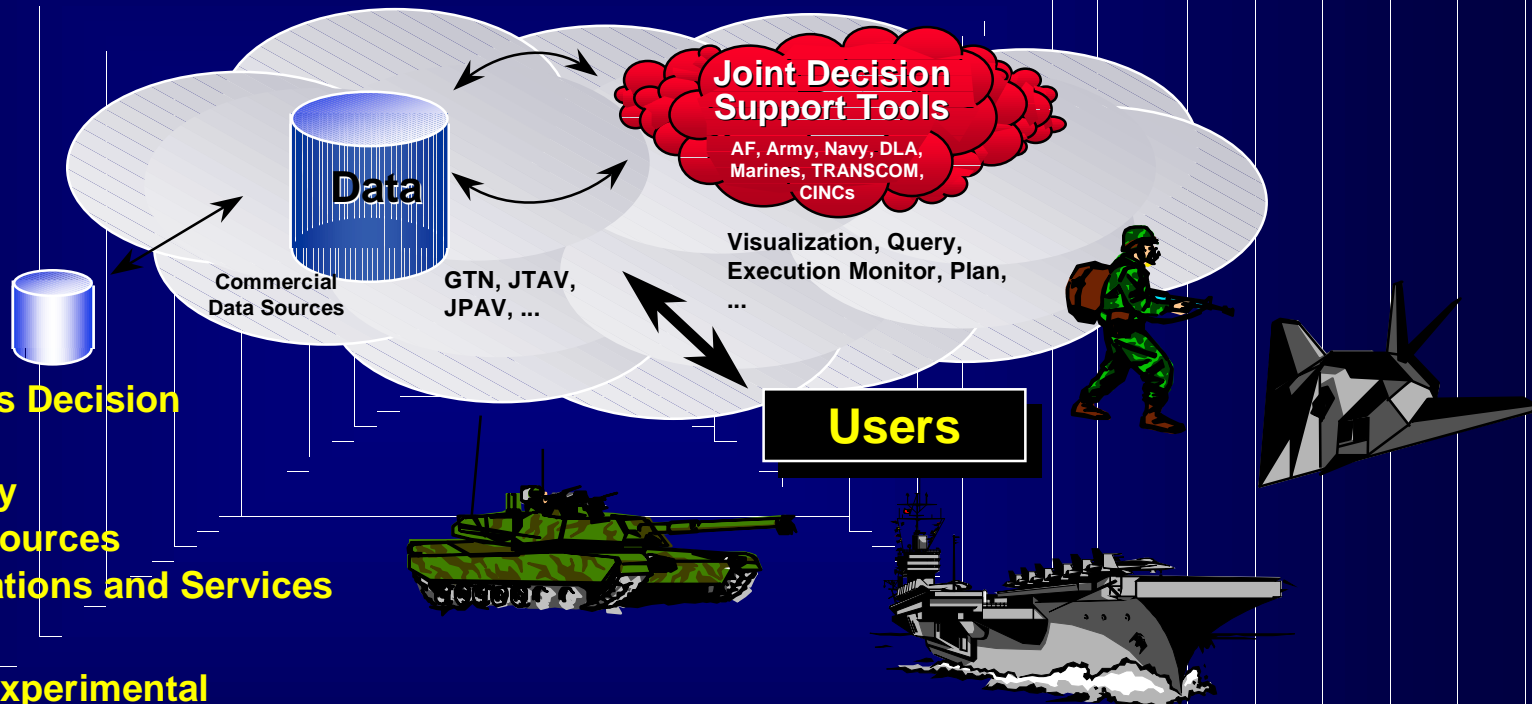
IN-THEATER



# Joint Logistics Advanced Concept Technology Demonstration (JL-ACTD)

**GCSS**

**DISN Backbone**  
(ATM SIPRnet and NIPRnet)



## Goals

- **Develop Joint Logistics Decision Support Tools**
  - Common User Query
  - Access to all Data Sources
  - Transparent Applications and Services
  - Any User/Any Box
- **Implement a Flexible Experimental Environment for Assessing Technology Impact on Logistics Operational Capability**
- **Work Trade-Offs, Users Derive Requirements**

**FY 96 - 97**  
Logistics  
Anchor Desk  
(LAD) Phase  
I

**FY 98 - 99**  
Joint Decision  
Support Tools  
Phase II

**FY 00 - 02**  
Real-Time  
Focused  
Logistics  
Phase III

# JWARS MISSION



**MISSION:**

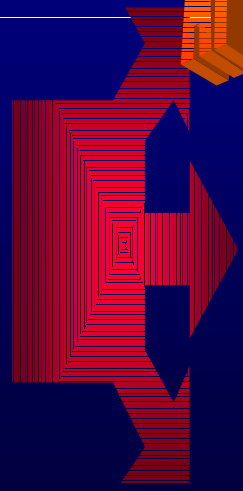
DEVELOP STATE-OF-THE-ART CLOSED-FORM SIMULATION ANALYSIS TOOLS

- JOINT, CAMPAIGN-LEVEL WARFARE
- REPRESENT UNIQUE JOINT FUNCTIONS & PROCESSES
- ADDRESS JOINT DOCTRINE
- MODEL FUTURE WARFARE

**USERS:**

- JOINT STAFF
- SERVICES
- CINCs
- OSD
- JTFs
- Other DoDorg's
- Industry

**APPLICATIONS:**

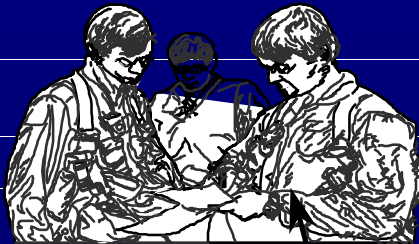


1. Planning and execution
  - Deliberate planning
  - Crisis action planning
2. Force assessment
3. System effectiveness and trade off analysis
4. Concept and doctrine development and assessment



# JSIMS TRAINING ENVIRONMENT

Training Audience



**JSIMS**

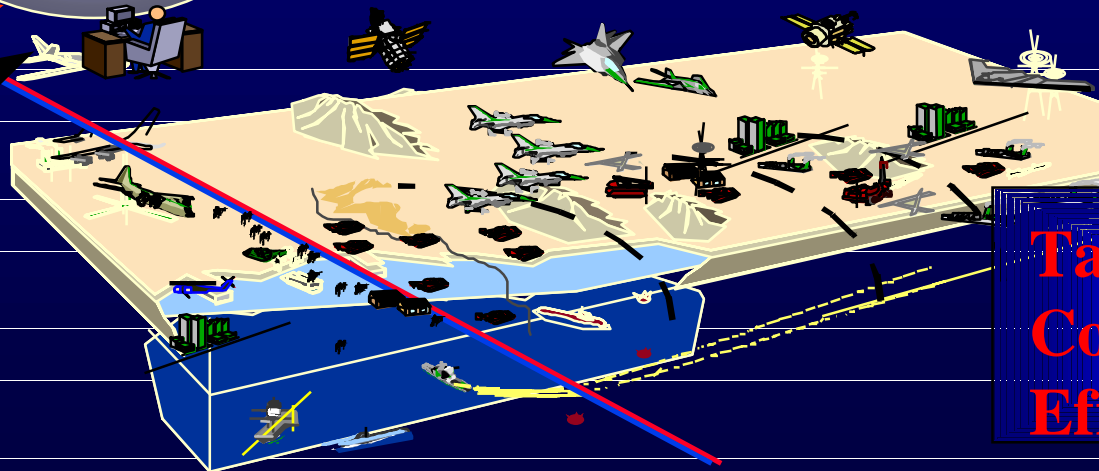
Multiple Sides & Factions



## C<sup>4</sup>I systems

- GTN CSDB 1Q FY99
- GTN Rel. 5 FY01

Exercise Control



**Tailorable  
Composable  
Efficient**

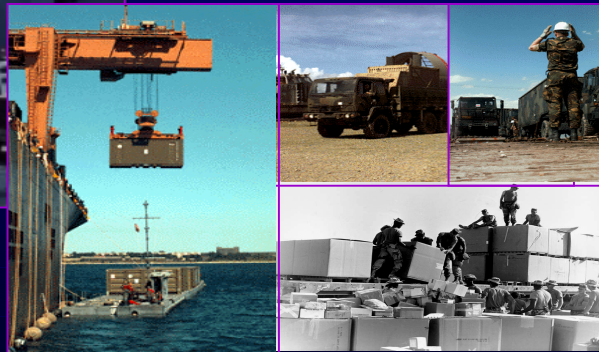
**A joint, distributed, synthetic battlespace for all DoD players**



# ***TPFDD IN AN HOUR***

***AN ENABLER FOR A***

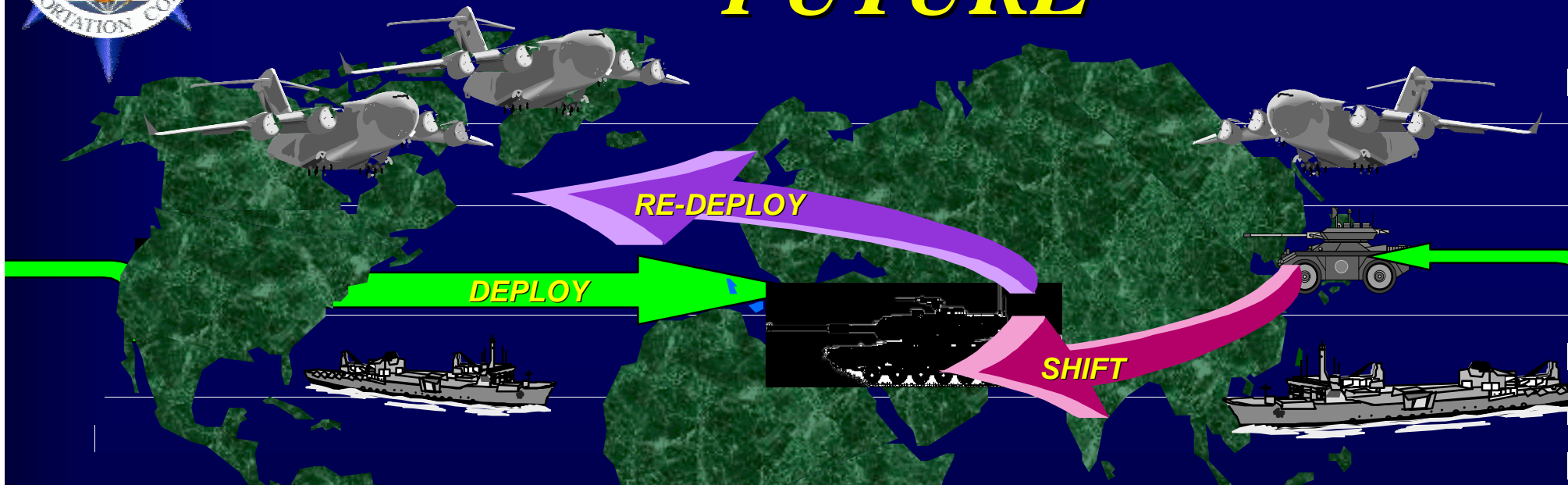
***... More Responsive  
Joint  
Deployment  
Process***







# ***FORCE PROJECTION FUTURE***



## **OPERATIONAL OUTPUT**

- **TREND ANALYSIS...PREDICTIVE ANALYSIS...TPFDD HR**
- **VISIBILITY OF ASSETS AND REQUIREMENTS**
- **COLLABORATIVE PLAN & EXECUTE**
- **INFLUENCE DECISIONS & REDUCE UNCERTAINTY**



***DTS 2010 . . . on the way***

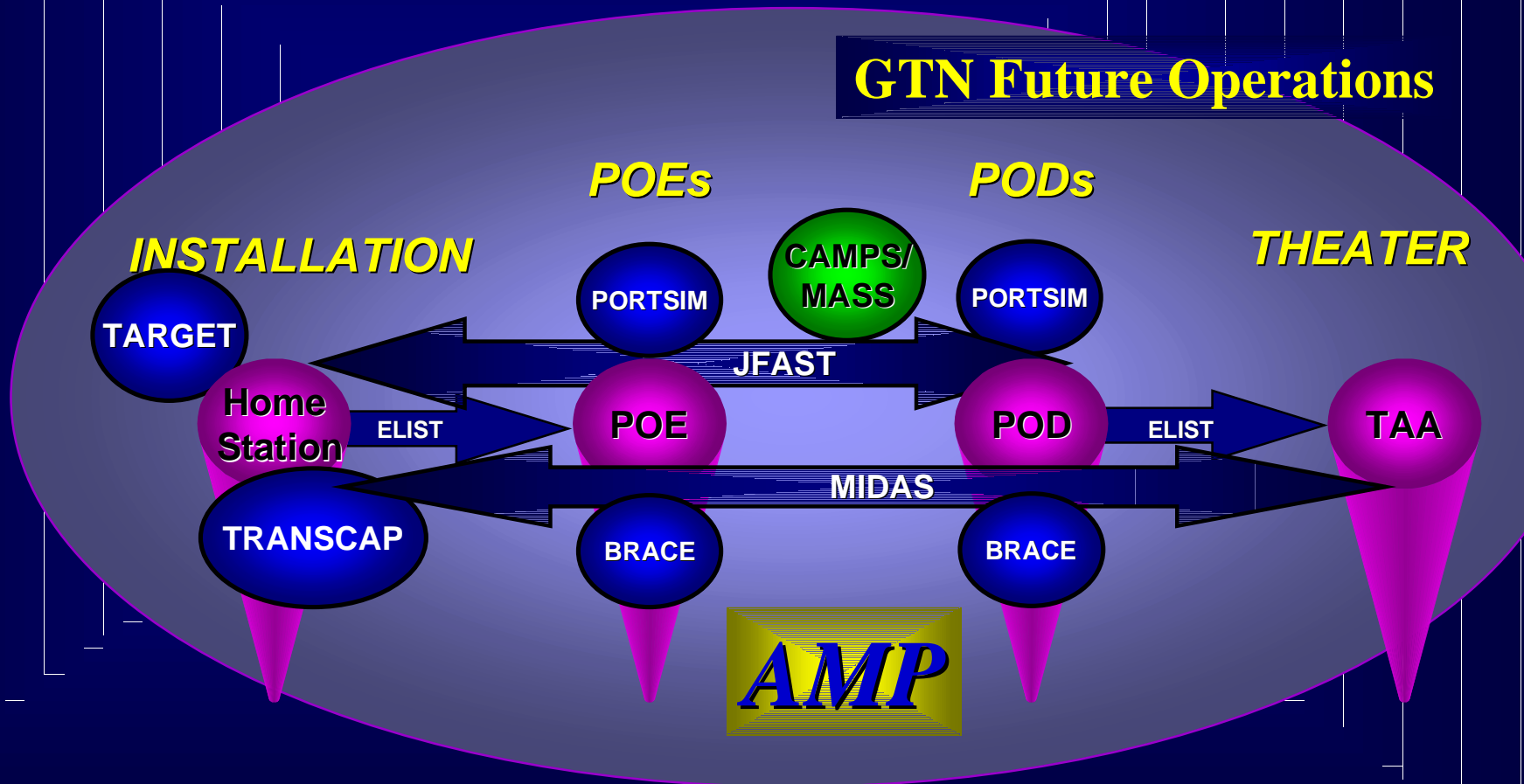




# TRANSPORTATION ANALYSIS, MODELING & SIMULATION SYSTEM RECOMMENDATIONS

## GRATION STEMS

CAMPS  
CE MASS  
ST  
AS  
TSIM  
GET  
NSCAP  
T (CONUS)  
T (OCONUS)



= MIGRATION SYSTEMS



= SUPPORTING SYSTEMS