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Dave Taylor Attended

**U.S. ARMY
SIMULATION, TRAINING AND
INSTRUMENTATION COMMAND
(STRICOM)**



**U.S. NAVY
NAVAL AIR
WARFARE CENTER TRAINING SYSTEMS
DIVISION
(NAWCTSD)**

**U.S. AIR FORCE
TRAINING SYSTEMS PRODUCT
GROUP
(TSPG)**



*Present the First
JOINT DEPARTMENT OF DEFENSE
ADVANCE PLANNING
BRIEFING TO INDUSTRY*

April 30 - May 2, 1996

Hyatt Orlando Hotel in Kissimmee, Florida

Event #61M



**NATIONAL
TRAINING
SYSTEMS
ASSOCIATION**

**AN AFFILIATE OF THE
AMERICAN DEFENSE
PREPAREDNESS
ASSOCIATION**



**STRICOM / NAWCTSD / USAF TSPG
ADVANCE PLANNING BRIEFING TO INDUSTRY**

AGENDA

April 30 - May 2, 1996

Hyatt Orlando Hotel

Kissimmee, Florida

NTSA Event #61M

MONDAY, APRIL 29, 1996

5:00-8:00 PM Registration

Hyatt Orlando Hotel

TUESDAY, APRIL 30, 1996

6:30 AM Registration and Continental Breakfast

8:00 Welcome
First Joint DOD APBI on Simulation & Training
RADM Fred Lewis, USN (Ret.)
Executive Director, NTSA

8:10 Acquisition Reform Panel
Dr. Kenneth J. Oscar
Deputy Assistant Secretary of the Army
Procurement
Honorable John W. Douglass
Assistant Secretary Navy for Research,
Development and Acquisition
Mr. Blaise Durante
Deputy Assistant Secretary of the Air Force
Management Policy and Program Integration
Moderator: RADM Fred Lewis

Big prob to use credit cards.
up to \$25k purchases.
Credit card purchase up to 25k.
www.acqref.ngv.mil Acquisition Home Page.
80% of cost of operating & ship is
people cost.

10:15 Break

10:30 Acquisition Reform for Training Systems: Results of Non-Government Standards
Integrated Product Team
Mr. Bill Curtice

Director of Engineering, USAF TSPG
Training Systems NGS-IPT Government Leader

Mr. Al Gagne
Al Gagne & Associates
NGS-IPT Industry Leader

11:00 Multi-Service Training Technology Roadmap

Mr. Stan Goodman
Deputy Project Manager, Distributed Interactive Simulation

11:30 Luncheon

20100311175

TUESDAY, APRIL 30, 1996

- 1:00 PM** **Navy Welcome, Introduction, and Business Organization**
CAPT Mark Yerkes, USN
Commanding Officer, NAWCTSD
- 1:30** **Navy/Marine Corps Aviation Programs**
CAPT Tom Freeland, USN
Program Director, Aviation Programs, NAWCTSD
- 2:00** **Surface Programs**
CDR Patrick Rearden, USN
Program Director, Surface Programs, NAWCTSD
CAPT Maurice Gauthier, USN
Program Manager, LPD-17
Ms. Connie Gregan Clavier
Director, LPD-17 Logistics and Configuration Management
- 2:45** **Break**
- 3:00** **Marine Corps Programs**
COL Robert Tyler, USMC
Program Director, Marine Corps Programs, NAWCTSD
COL Paul Hauover, USMC
Director, Marine Corps Modeling & Simulation Management Office
- 3:45** **Undersea Programs**
Mr. Leo Harris, Program Director
Undersea Programs NAWCTSD
- 4:15** **Modeling & Simulation, C⁴I, and Joint Programs**
CAPT Gary Quick
Program Director, Battle Force Programs, NAWCTSD
- 4:45** **Closing Remarks**
CAPT Mark Yerkes, USN
Commanding Officer, NAWCTSD
Reception immediately following.

**STRICOM / NAWCTSD / USAF TSPG
ADVANCE PLANNING BRIEFING TO INDUSTRY**

AGENDA

April 30 - May 2, 1996

Hyatt Orlando Hotel

Kissimmee, Florida

NTSA Event #61M

WEDNESDAY, MAY 1, 1996

- 6:30 AM** Continental Breakfast
- 8:00** USAF Welcome
Col Ron Price ASD MW
Deputy Director, USAF TSPG
- 8:10** Air Force Simulation and Training Overview
Col Ronnie Stanfill, USAF
Chief, Warfighting Support Division
Directorate of Modeling, Simulation and Analysis
HQ USAF
- 8:30** A Path to Revolutionary Training
Mr. Bill Curtice
Director of Engineering
USAF TSPG
- 8:50** Combat Air Forces Simulation and Training Requirements
Col Steve Robertson
Chief, Operations Support Division, Air Combat Command
- 9:20** Air Education and Training Command Simulation & Training Requirements
Mr. Pat Bowden
Deputy Director, Requirements
- 9:40** Break
- 10:00** Air Mobility Command Simulation and Training Requirements
LtCol Richard Peterson
Aircrew Operations and Training Division
- 10:20** Air Force Special Operations Command Simulation and Training Requirements
Col Philip Glenn
Chief, Operations and Training Division
- 10:30** Air Force Test Range Simulation Initiatives
Mr. Neil Christianson
Chief, Investments Division, AF Development Test Center

WEDNESDAY, MAY 1, 1996

- 11:10** **Aeronautical Systems Center Modeling Simulation and Analysis Initiatives**
Mr. Steve Wourms
Chief Systems Engineer, Analysis Division, Directorate of Development Planning
Aeronautical Systems Center
- 11:30** **Luncheon**
- 12:45** **Joint Modeling and Simulation System (J-MASS) Update**
Dr. Jerry Arnett
J-MASS Program Manager, Directorate of Development Planning, Aeronautical Systems Center
- 1:00 PM** **Industry and the Technology Planning Integrated Product Team (TPIPT) Process**
Mr. John Griffin
Director, Development Planning, Aeronautical Systems Center
- 1:15** **Aircrew and Maintenance Simulation and Training Systems R & D**
Col Lynn Carroll
Chief, Aircrew Training Research Division, Armstrong Laboratory
- 1:45** **Aircrew and Maintenance Training Systems New Business**
LtCol Holly Connor
Training Systems Management Division, Commodities Directorate, Ogden Air Logistics Center
- 2:00** **Manpower, Personnel & Training Systems New Business**
Dr. Jeff Kantor
Deputy Director, Human Systems Program Office, Human Systems Center
- 2:30** **Break**
- 2:50** **Training Range and Threat Systems New Business**
LtCol Greg Kuntz
System Program Director, Air Combat Training Systems, Aeronautical Systems Center
- 3:20** **Air Force Space Command Simulation and Training Requirements**
LtCol John Puffenbarger
Chief, Training Acquisition Branch, Directorate of Requirements
- 3:40** **Space Training Systems New Business**
Capt John Hawkins
Space Technology Planning Integrated Product Team, Directorate of Development Planning,
Space and Missile Systems Center
- 4:00** **Simulation and Wargaming Systems New Business**
Mr. Guy Giroux
Chief, Wargaming and Simulation Integrated Product Team Simulation, Wargaming and
Modeling Program Office, Electronic Systems Center
- 4:15** **Closing Comments**
Col Ron Price, Deputy Director
USAF TSPG
- 4:30** **Adjourn**

**STRICOM / NAWCTSD / USAF TSPG
ADVANCE PLANNING BRIEFING TO INDUSTRY**

AGENDA

April 30 - May 2, 1996

Hyatt Orlando Hotel

Kissimmee, Florida

NTSA Event #61M

THURSDAY, MAY 2, 1996

6:30 AM Continental Breakfast
8:00 STRICOM Overview
BG Peter Franklin, USA
Commanding General, STRICOM
8:30 Foreign Military Sales
Mr. John Daniele
Project Director, Foreign Military Sales
8:50 Logistics Outlook
Mr. Lou Sucich
Director of Logistics
9:20 Research and Development
Mr. Ed Trier
Director of Engineering
9:40 Break
10:00 Instrumentation, Targets & Threat Simulators
Mr. Henry Jehan
Deputy Project Manager-Instrumentation Targets and Threat Simulations (PM ITTS)
10:30 Distributed Interactive Simulation
Mr. Stan Goodman
Deputy Project Manager, Distributed Interactive Simulation (PM DIS)
11:00 Training Devices
COL Noble Johuson, USA
Project Manager-Training Devices
(PM TRADE)
11:30 Combined Arms Tactical Trainers
COL James Shiflett, USA
Project Manager, Combined Arms Tactical Trainer (PM CATT)
12:00 Luncheon

THURSDAY, MAY 2, 1996

- 1:15 PM** **Joint Modeling and Simulations**
CAPT Drew Beasley, USN
Program Manager, Joint Simulation System (JSIMS) Joint Program Office
- 1:45** **U.S. Army National Guard**
COL Frank Cook
Chief, Army National Guard Training Division
- 2:45** **Opening Remarks**
Mrs. Patty Belvin
U.S. Army Training Support Center
- 2:50** **USA Training and Doctrine Command (TRADOC) Overview**
Mr. Bob Seger
Assistant Deputy Chief of Staff for Training
- 3:00** **Warfighter XXI Campaign Plan**
COL Dave Marlin, USA
Director, Battle Command Training
- 3:35** **Warrior XXI Campaign Plan**
COL Jim Gunlicks, USA
Director, Training Development & Analysis
- 4:10** **Break**
- 4:25** **WARNET XXI Campaign Plan**
COL Clark Grimsley, USA
ASTC Director Device Management
- 4:50** **Panel (Questions & Answer) Session**
Moderators:
BG Joe Frazar
Mr. Bob Seger
- 5:30** **Adjourn**

Advance Planning Briefing to Industry

Acquisition Reform for Training System Acquisition

Non-Government Standards Integrated Product Team

NGS-IPT

**Al Gagne - Gagne & Associates
Bill Curtice - ASC/YW**

30 April 1996

Overview

- **Background**
- **NGS-IPT Panels**
- **Training Systems and Devices Panel**
- **Key Practices**
- **Findings**
- **Ongoing Activities**

**Quality Leadership Team
Training Systems Process Improvement Group**

TRAINING SYSTEMS AND DEVICES

***COMMERCIAL
ACQUISITION PRACTICES
INITIATIVE***

Commercial Acquisition Practices Initiative

Training Systems & Devices Panel

■ **JOINT GOVERNMENT / INDUSTRY WORKING SUB-GROUP**

- **Reporting To:** Sponsoring TSPIG and QLT Organizations
Joint Technical Coordinating Group (JTTCG) for TSD

■ **USAF TRAINING SYSTEM PROCESS IMPROVEMENT GROUP (TSPIG)**

- **Sponsored by:** Training System Product Group (ASC/YW, OO-ALC/LIR)

■ **QUALITY LEADERSHIP TEAM (QLT)**

- **Sponsored by:** Naval Air Warfare Center Training Systems Division
Army Simulation Training & Instrumentation Command

■ **TRAINING CORPORATIONS - VICE PRESIDENT LEVEL**

Participants - TSPIG / QLT

GOVERNMENT

- **TSPG**
 - ASC/YW
 - OO-ALC/LIR

- **NAWC-TSD (Orlando)**

- **STRICOM (Orlando)**

INDUSTRY

- **McDonnell Douglas Trng Syst**
- **Loral Akron**
- **Hughes/Link**
- **Lockheed / Martin**
- **Flight Safety**
- **Northrup-Grumman**
- **Reflectone**
- **Cubic Defense Systems**
- **AAI**
- **EER**
- **Loral Quintron**
- **Pulau**
- **ECC International**
- **SAIC**

TSPIG / QLT Charter -

- **Define Commercial Practices Framework**
- **Exploit Existing Commercial Training Model**
 - Use where applicable and allowed by law
 - Supplement for unique military acquisition needs
- **Define Extent To Which Implementation Possible**
 - By Changing Only Existing Practice
 - By Changing Policy and Regulation
 - By Changing Law
- **Build Briefing To Carry Forward**

Existing Commercial Model

For Training Systems and Devices

■ **FRAMEWORK BUILT ON STANDARD PRACTICES**

• **Standard Device Definitions**

- Establish Functional Capability
- Establish Use and Application
- Establish Some Basic Hardware Characteristics

• **Standard PIDS Format**

• **Standard Air Platform Performance Data Package**

• **Standard Test and Certification Practices**

• **Standard CLS Support Data Package**

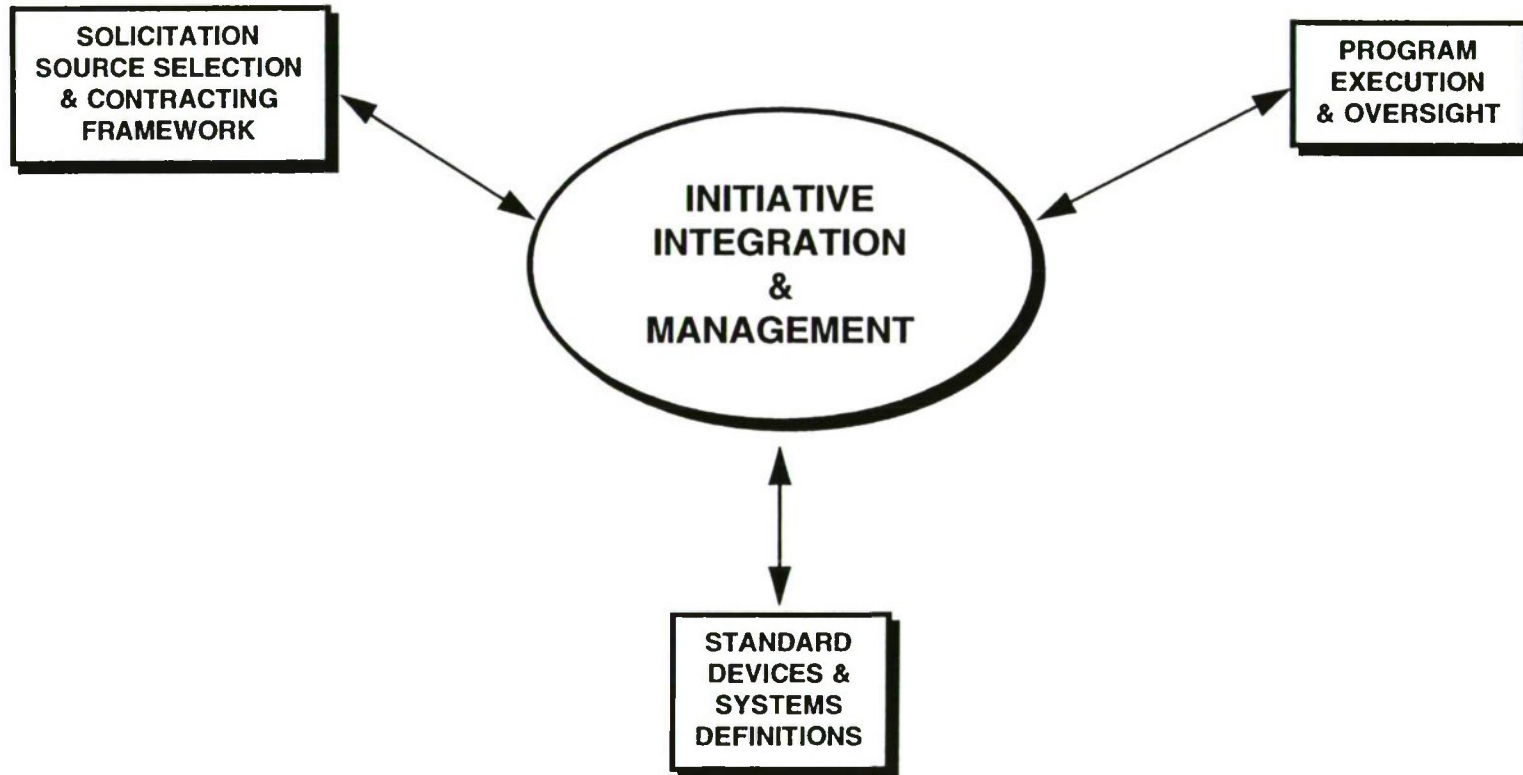
■ **OPERATION: Source Control, Trust, Blackball**

■ **HIGH EFFICIENCY: Half the Time, Half the Cost**

COMMERCIAL ACQUISITION INITIATIVE

for
TRAINING SYSTEMS AND DEVICES

QLT / TSPIG

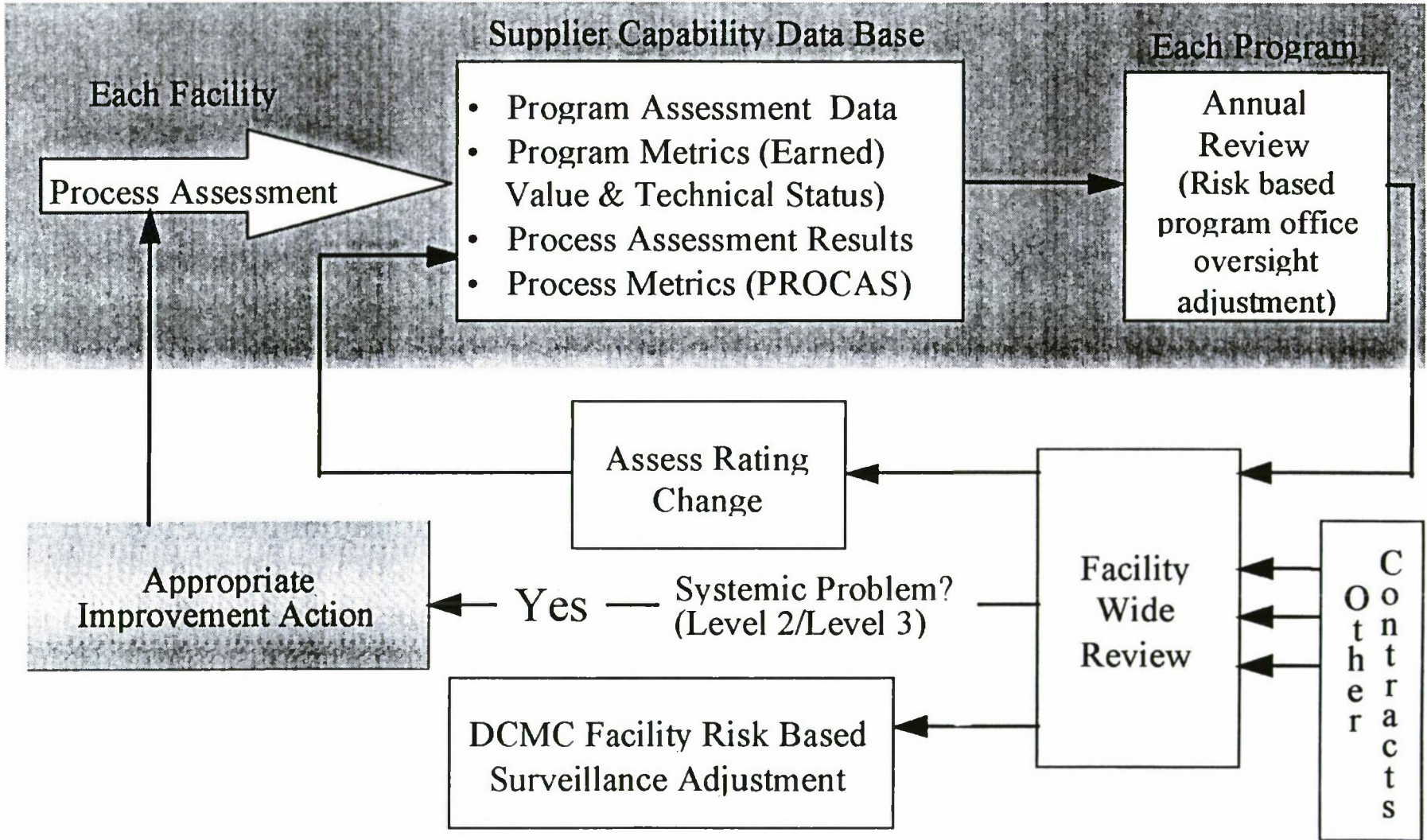


Non-Government Standards IPT

- Chartered AFMC/CC & CODSIA March 95
- Address the Perry Memo on Specs and Standards
- *.....to define a business environment which takes advantaged of the efficiencies of commercial practices to improve our military acquisition environment.*
- *.....The environment allows suppliers to compete and be selected based upon their innovative designs and process excellence, and not government dictated practices, within the limits of public law....*
- Industry -- DLA -- JLC
 - Joint Aeronautical Commanders Group

NGS-IPT Risk Based Management Concept

Training Systems & Devices Panel



Discovery!!!

- **NGS-IPT IN FRONT OF US!**
- **MUCH BROADER THAN SPECS & STDS**
- **WE'RE PLOWING THE SAME GROUND**

Proposed Merger

Training Systems & Devices Panel

AFMC CHARTERED

* NON-GOVERNMENT STANDARDS IPT

TRAINING SYSTEMS AND DEVICES

* COMMERCIAL ACQUISITION PRACTICES INITIATIVE

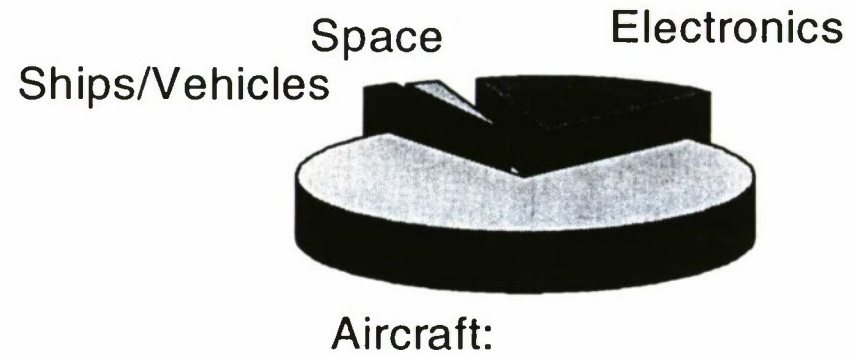
NGS-IPT Membership Composition

- **Mix of Business Sectors**
 - Aeronautical
 - Aerospace
 - Command, Control, Communication, and Computer (C⁴ I)
- **Tri-Service Membership @ SES Level**
 - JACG Lead
- **Industry Membership @ VP, Director and Senior Manager Level**
 - Prime Contractors
 - Major Subcontractors
 - Vendors
- **Cross Functional Representatives**
 - Tech Management
 - Business Management
 - Contracting
 - Program Management
 - Commodity/Reprocurement
 - Program Management
- **Advisers**
 - AIA/CODSIA
 - Government
 - Industry

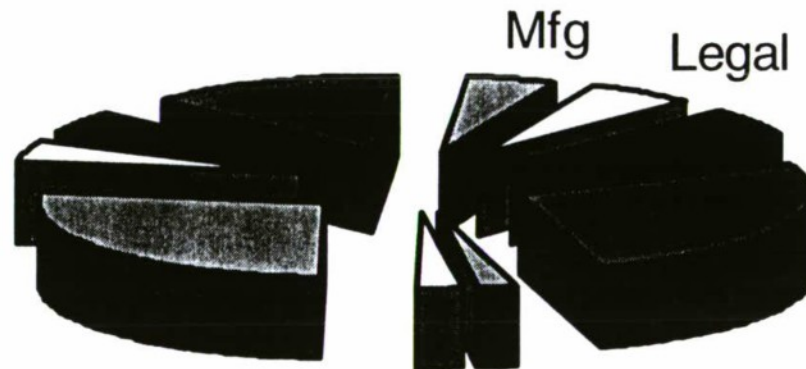
NGS-IPT Composition

Systems & Devices Panel

Business Sectors



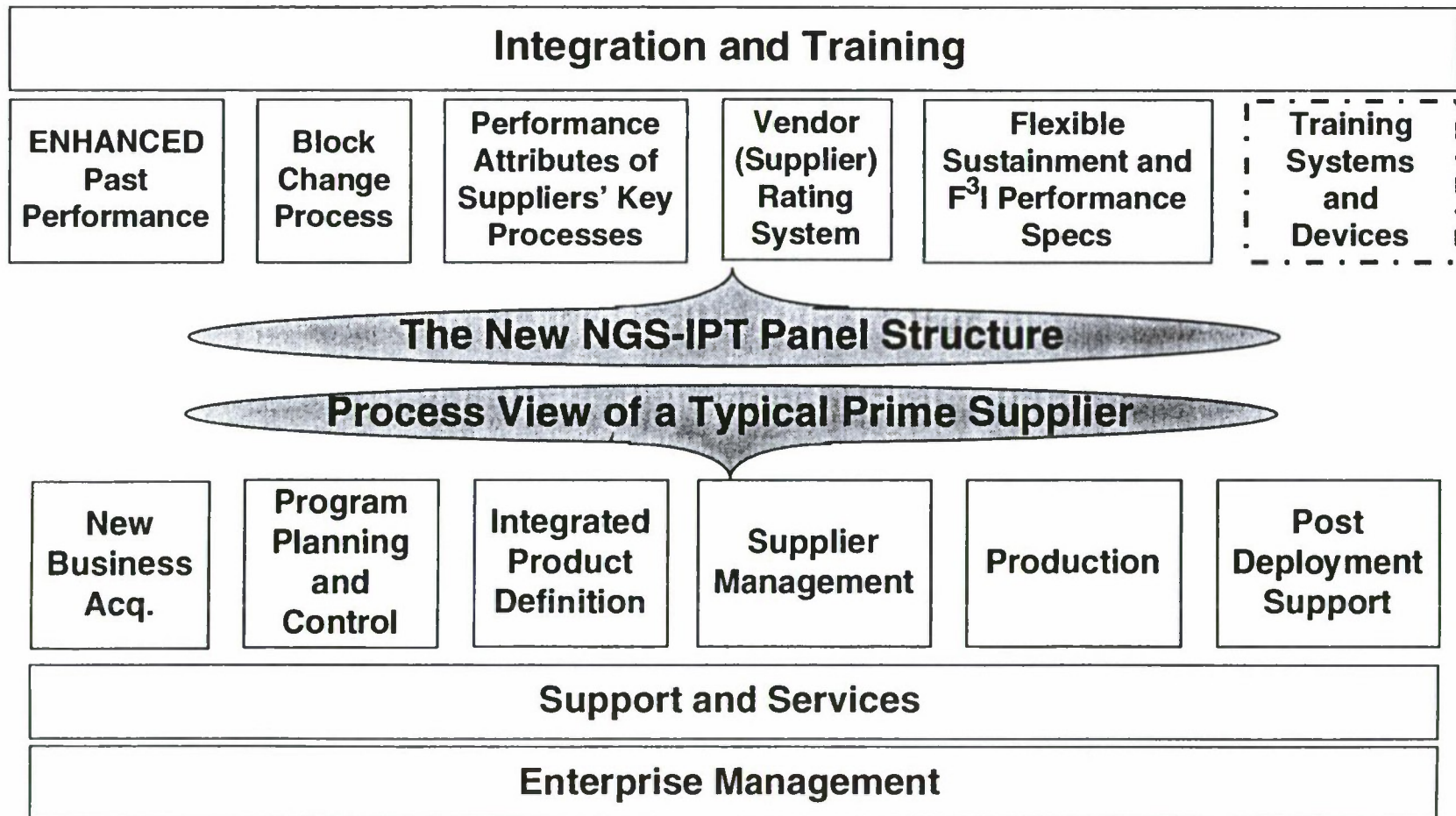
Functional Disciplines



NGS-IPT Implementation Structure

Training Systems & Devices Panel

- Transfer Process Ownership to Industry;
- Reinforce Integrated Product Development; and
- Develop Implementation Mechanics



Supplier Rating

- **Develop a prime contractor capability assessment system to be used by DoD Programs by benchmarking the best of class vendor rating systems.**

- **Co-Chairs**

- **Government: Morris Goodrich, OO-ALC**
- **Industry: Jim Edwards, Northrop-Grumman**

Performance Attributes - Key Practices

- **Determine specific performance attributes and candidate metrics of suppliers' key processes.**

■ **Co-Chairs**

- **Government: Gary Adams, ASC/ENSI**
- **Industry: Keith Adrien, GE**

Block Change

- **Product:** Develop procedure for implementing plant-wide changes to processes, converting from MIL-STD to commercial/company/industry processes, across multiple contracts, for multiple DOD customers *and other applicable government agencies.*

- **Co-Chairs**

- **Government:** Leantha Sumpter, NAVAIR
- **Industry:** Nick Kuzemka, Lockheed Martin

Enhanced Past Performance

- **Product:** Develop implementation plan and the mechanisms to expand use of past performance as discriminator in formal source selection.

- **Co-Chairs:**

- **Government:** Dick Findley, NAVAIR
- **Industry:** Paul Graves, Boeing

Flexible Sustainment - F³I Specs

Training Systems & Devices Panel

- **Product:** Build a tactical implementation plan including acquisition strategy options for flexible sustainment using F³I specs in a NGS environment.

- **Co-Chairs:**

- **Government:** Captain Bruce Hawk, NAVAIR
- **Industry:** Frank Goodell, Boeing

Integration and Training

- Integrate effort of other panels into a consistent acquisition approach and develop accompanying training modules.

- **Co-Chairs:**

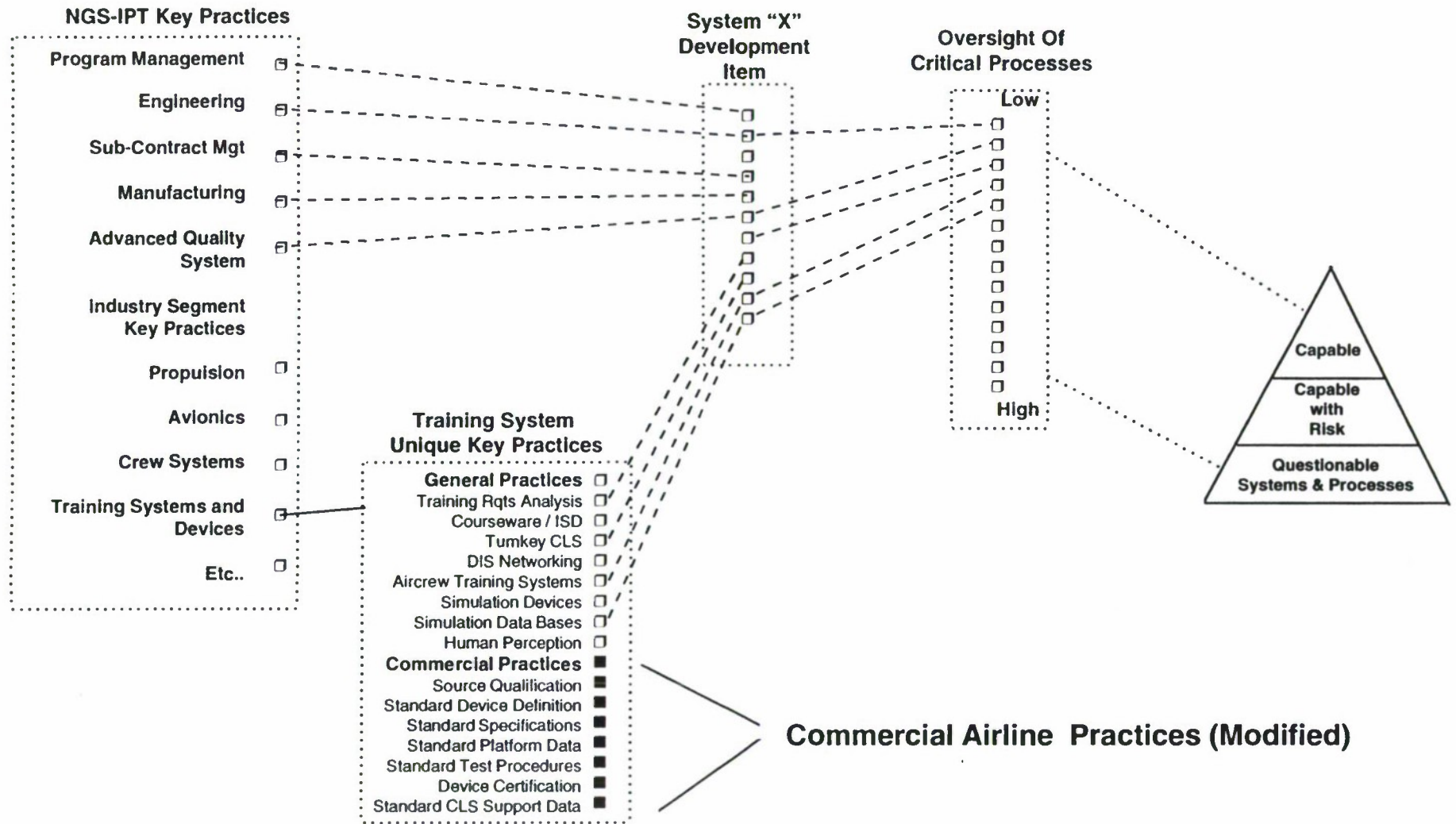
- **Government:** John Halpin, SES, ASC/EN
- **Industry:** Jim Sinnett, McDonnell Douglas

Rationale For Merger:

- **Extensive common ground**
 - Purpose
 - Results
 - General Approach
 - Similar scope on a reduced scale
- **NGS-IPT On Faster Train.....Same Up- Brief Path....With better steam**
 - Reduce confusion with single approach
 - United front, better use of resources
 - Need to be compatible
- **Existing Commercial Practices**
 - Training systems currently rely on commercial industry
 - HW and SW
 - Development processes (modified HW/SW/CW)
 - Commercial airlines (IATA) model in place
- **Training Systems are Microcosm of Total Weapon Systems**
- **Have unified, tri-service, government - industry support base**

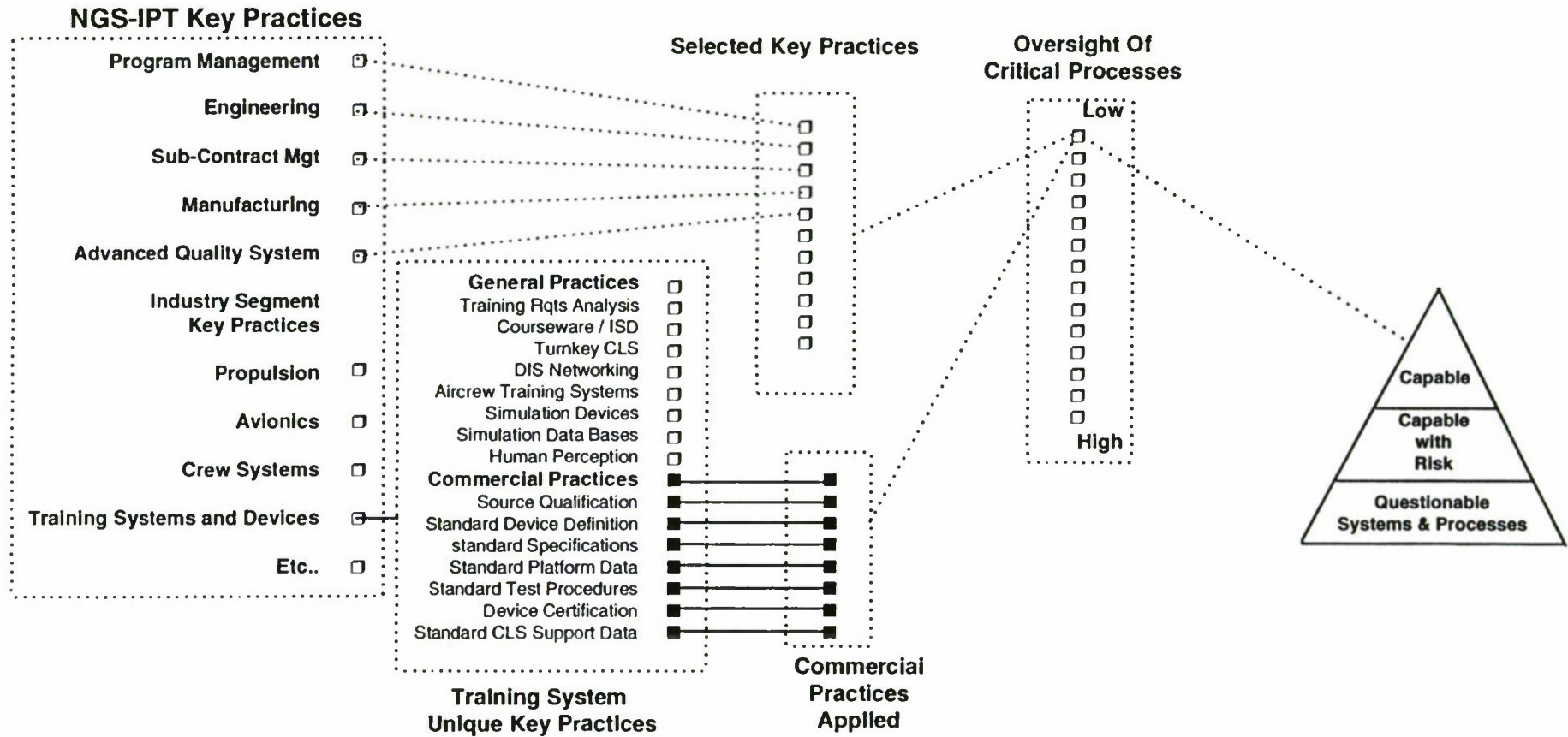
NGS-IPT Application Concept

Training Systems & Devices Panel



Application with Commercial Practices

Training Systems & Devices Panel



Role: Training Systems & Devices Panel

- **Lead Industry Segment - Application of NGS-IPT Concept**
- **Tailor & Apply NGS-IPT Practices For Acquisition of:**
 - Training (Guaranteed Student - Through-Put)
 - Training Systems (Integrated - Devices, Courseware, ISD)
 - Training Devices (Simulators, Maintenance Trainers)
 - Device Sub-systems (Visual, Radar, EW)
- **Insure Training System Development Needs Incorporated**
 - NGS-IPT Functional Flow for Weapons Systems
- **Incorporate Option: Commercial Practices, Airline Style**
- **Support Other Panels**
 - Key Practices
 - Core Competencies

Training Systems and Devices

- **Product:** Develop a comprehensive implementation plan to apply NGS-IPT concepts to the Training/Simulation Industry as a first trial case.

- **Players:**

Government

Walt Chambers	STRICOM
Jim Clemens	NAWC-TSD
Bill Curtice	ASC/YWE
Paul Larsen	OO-ALC/LIK
Paul Little	NAWC-TSD
Larry Streadbeck	OO-ALC/LIR

Industry

George Burgess	Lockheed Martin
Budd Conyers	ECC
Al Gagne	Hughes Link
John Little	Lockheed Martin
Sam Malene	Loral-Akron
Dick Walter	Loral - Akron

Commercial Practice Option

- Existing Commercial Practice Used By Airlines
- Applicable For Some Military Acquisitions
- Supported by FAA, IATA

- Significantly Streamlines Acquisition Practice

- Based On Standard Practice
 - Device Definitions
 - Prime Item Development Specifications Format
 - Weapons System Platform Data
 - CLS Support Data Package
 - Test and Certification Procedures

Key Business Practices

- **Build Small Quantities**
- **Concurrent Development**
- **Delivery before platform**
- **Design Data Sourcing**

- **Commercial Airline Practice**
 - Standard Device Definitions
 - Standard Platform Data Package
 - Standard Test Procedures
 - Standard Development Spec Format
 - Standard CLS Data Package

Core Competencies

Training Systems & Devices Panel

- **Instructional System Dev.**
- **Training Requirements Analysis**
- **Courseware Development**
- **Training System Integration**
 - Teaming, Software Specialties
- **Aircrew Simulator Development**
- **Environmental Simulation**
 - Real World Database
 - Leading Edge Visual/EO
 - Distributed Interactive Simulation (DIS)
- **Distributed Simulation (Network)**
- **Maintenance Training Devices**
- **CLS Competencies**
 - Training Delivery & System Operations
 - Maintenance & Modifications

Approach Comparison

	CHARACTERISTICS	LIMITATIONS
COMMERCIAL	<ul style="list-style-type: none"> ■ Rapid Award ■ Minimal Buyer Oversight ■ Little Schedule Risk ■ Minimum Buyer Resources ■ Completely Performance Based ■ Leverages Airline Industry Investments ■ Benefits from FAA/Ind Process Maint. ■ System strongly supports device acquisition 	<ul style="list-style-type: none"> ■ Not suited to programs with: <ul style="list-style-type: none"> • Floating Functional Requirements • High Risk Development ■ Does not incorporate ALL key processes <ul style="list-style-type: none"> • Therefore.... not applicable to buys requiring specialized processes ■ Optimized for aeronautical training sector only- may not be suited for other sector buys
NGS-IPT	<ul style="list-style-type: none"> ■ Deals with ALL bidders ■ Modulates oversight with perceived risk ■ Supports all training sectors 	<ul style="list-style-type: none"> ■ Full source selection required ■ Significant Overhead Costs ■ Longer delivery schedules - allow for increased oversight & approval cycles

Key Practices Definition

- Offered *In Addition To* Core Processes of the NGS-IPT

- Built Upon Core Processes
 - Program and Data Management
 - Systems Engineering
 - Advanced Quality Systems
 - Manufacturing
 - Procurement & Sub-Contract Management
 - Logistics Support & Sustainment

- For Each:
 - A Description of the Key Practice
 - Contractor Attributes Required to Successfully Apply
 - Criteria for Successful Execution

TSD Key Practices

- **Training System Development and Integration**
- **Training System Requirements Analysis**
- **Courseware Development**
- **CLS Competencies**
 - Systems Operation (TSSC)
 - Training Delivery; Student Through-Put/TMS/Instruction
 - Maintenance
 - Modifications
- **Environmental Simulation**
- **Simulation Devices**

Findings: (Individuals & Government Panel Members)

Training Systems & Devices Panel

- **Adopt the NGS-IPT Acquisition Framework**
- **Use of Commercial Practices**
- **Competition in Contracting Act (CICA)**
- **Weapon System Design and Performance Data**
- **Use of Ada for Software Development**

NGS-IPT Acquisition Framework

■ **OBSERVED:**

- **Consistent With Training Industry Commercial Practices**
 - F³I
 - Vendor Ratings
 - Flexible Sustainment
 - Performance Based Requirements
 - CLS
 - Key Supplier Processes
 - Risk Based Oversight

■ **RECOMMENDED:**

- **That Industry Members Support the NGS-IPT Recommendations**
- **That Service Acquisition Arms Adopt the NGS-IPT Practices**
 - Apply Immediately For New Business
 - Support Block Change For Existing Contracts

Commercial Practice

■ **OBSERVED:**

- **Industry Has Well Established, Robust, Performance Based System**
- **Can Support Military Acquisition**
 - Expand To Meet Military Unique Requirements
 - Apply Directly For Some Systems

■ **RECOMMENDED:**

- **Use of Commercial Practices Where Applicable**
- **Use Of Commercial Documentation Practices to Military Acquisitions**
- **Pilot Program**

Competition in Contracting Act

■ **OBSERVED:**

- **Best Commercial Practice and CICA Inconsistent**
- **Appropriately Structured Vendor Qualification... If Supported By Law..**
 - Eliminate Frivolous Submittals by Non-qualified Suppliers
 - Reduce Proposal Costs
 - Reduce Government Manpower in Source Selection
 - Maintain Qualified Competition
- **HR 1670 Supports CICA Changes**

■ **Recommended.....IF HR 1670 Enacted Into Law:**

- **Formation of Government/Industry Team**
- **Define Vendor Qualification Procedures Based on Language of Law**

Weapon System Design & Performance Data

Training Systems & Devices Panel

- **Timely Availability Crucial To Trainer Development**
- **Most Contracts Suffer Late Deliveries**
- **Trainer Concurrency Affected**
- **Life Cycle Platform Data Delivery Inherent In Commercial System**

- **Recommended:**
 - **High Priority Be Given to Timely Procurement of Weapon System Platform Data**

Use of Ada For Software Development

■ **OBSERVED:**

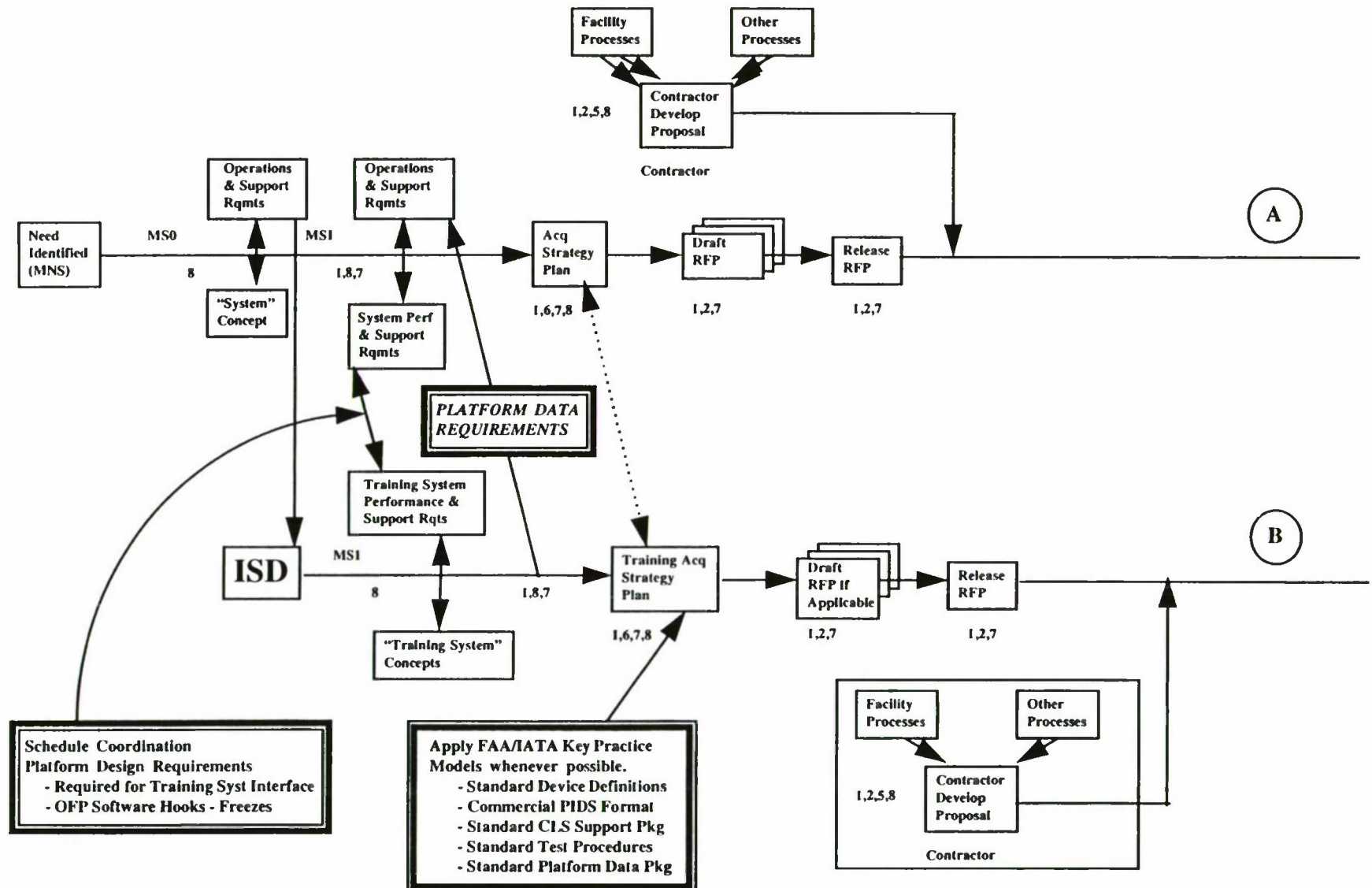
- **Commercial Practices Based On Commercial Software Languages and Environments**
 - C++
 - Object Oriented Environment
- **Quality of Commercial Environments Now Surpass Ada**
 - Efficiency
 - Utility
- **All Systems Now Under CLS**
- **Developers Should Be Given Latitude**
 - Select Language and Environment
 - Optimize Best Life Cycle Cost

■ **RECOMMENDED:**

- **Revision of Policy - Support Optional Use of Commercial Standards**

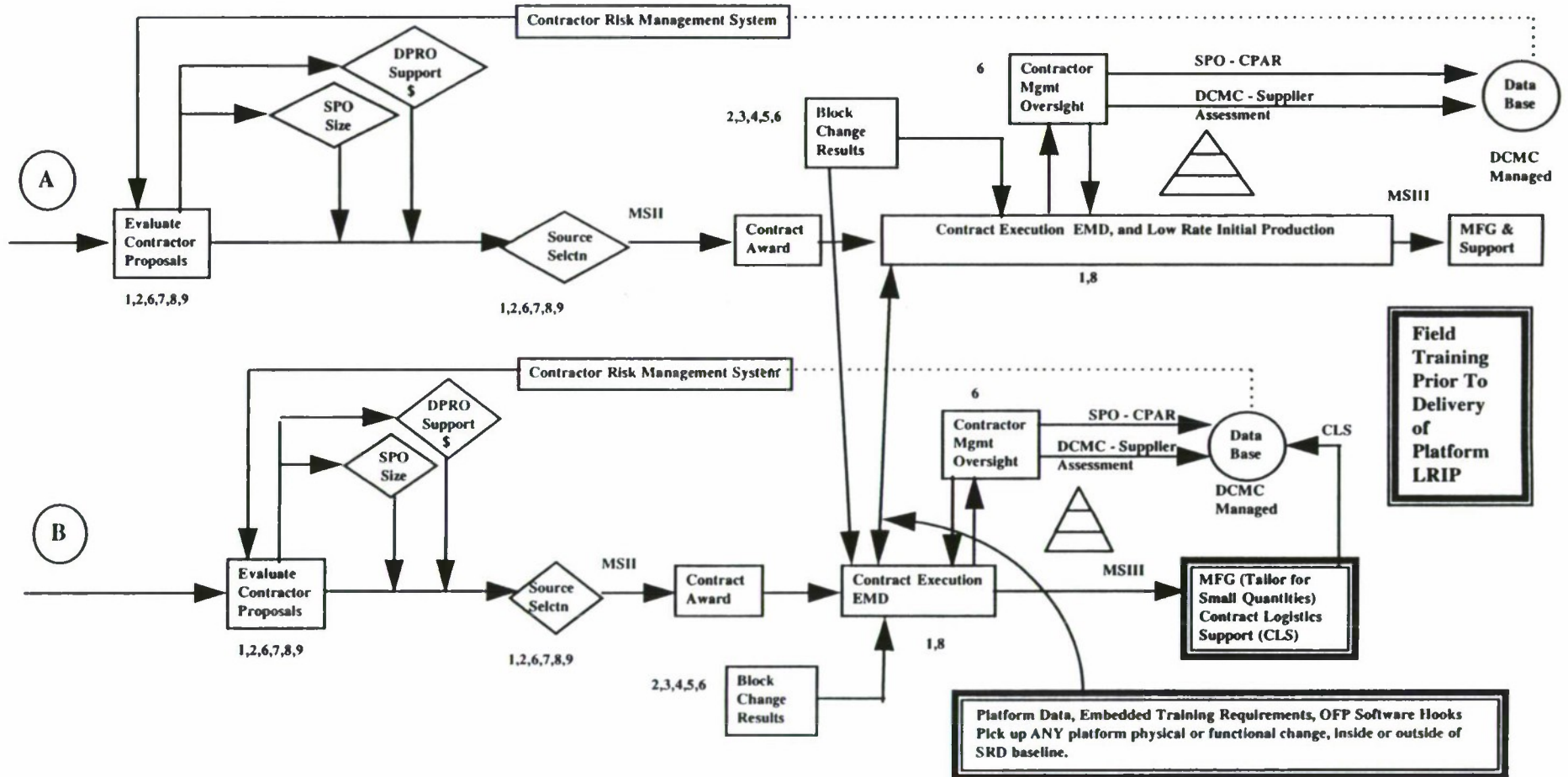
Development Hooks

Training Systems & Devices Panel



Development Hooks

Training Systems & Devices Panel



Progress?

- **NGS-IPT Implementation**
- **Block Change Proposals**
- **TSPG Revised Practices Policy**
- **Omnibus Contracting** > *push for more.*
- ...
- ...

- **Cultures Change Slowly**

Final Report

- **Published 29 February 1996**

- **Training Systems and Devices Panel - Appendix M**

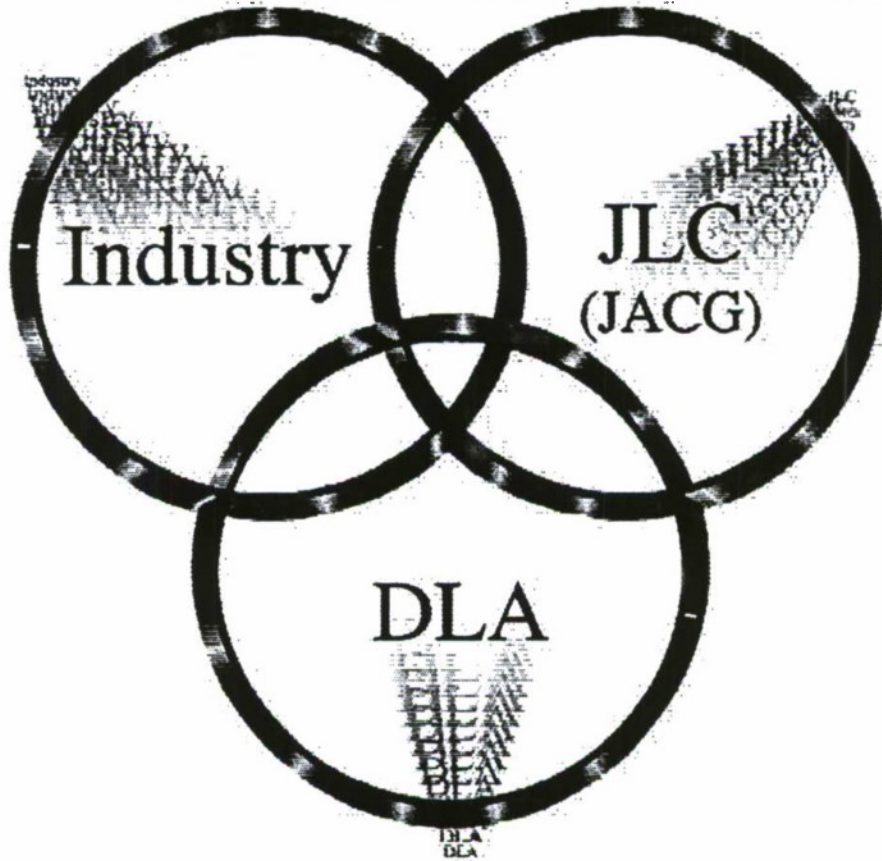
- **Available As Hypertext File**
 - Adobe Acrobat
 - NGSRPT.pdf

- **Two WWW URL Addresses**
 - <http://www.wpafb.af.mil/ngs/>
 - ftp://ftp.wpafb.af.mil/pub/sys_eng_docs/NGS/

- **Last Resort:** Bill Curtice, 513-255-4591 x235, CURTICWL@ASC-YW.WPAFB.AF.MIL

JOINT AERONAUTICAL
COMMANDERS GROUP

Non-Government Standards



Integrated Product Team

FINAL REPORT
29 FEBRUARY 1996

APPENDIX M

TRAINING SYSTEMS AND DEVICES PANEL

Table of Contents

1.0 INTRODUCTION.....	3
2.0 HISTORY AND BACKGROUND.....	3
3.0 ROLE OF THE TRAINING SYSTEMS AND DEVICES PANEL IN THE NGS-IPT.....	4
4.0 UNIQUE CHARACTERISTICS OF THE TRAINING SYSTEMS INDUSTRY.....	4
5.0 TRAINING INDUSTRY COMMERCIAL PRACTICES.....	5
5.1 The Commercial Environment.....	5
5.2 The Commercial Infrastructure.....	6
5.2.1 Platform Data.....	7
5.2.2 CLS Support Package.....	7
5.2.3 Acceptance Test Procedures/Device Qualification.....	7
5.3 Comparison: The NGS-IPT Framework with Existing Commercial Practice.....	7
6.0 KEY BUSINESS PRACTICES FOR THE TRAINING SYSTEMS INDUSTRY.....	8
6.1 Key Practice #1: Training System Development and Integration.....	9
6.2 Key Practice #2: Training System Requirements Analysis.....	10
6.3 Key Practice #3: Courseware Development.....	10
6.4 Key Practice #4: CLS Competencies.....	11
Sub-Practice: Systems Operations (TSSC Operations).....	11
Sub-Practice: Training Delivery; Student Through-Put/TMS/Instruction.....	11
Sub-Practice: Maintenance.....	12
Subpractice: Modifications.....	12
6.5 Key Practice #5: Environmental Simulation.....	13
<u>Attribute #1</u>	13
<u>Attribute #2</u>	14

TRAINING SYSTEMS

<u>Attribute #3</u>	14
6.6 Key Practice #6: Simulation Devices	14
7.0 FINDINGS AND RECOMMENDATIONS.....	15
7.1 The NGS-IPT Recommended Acquisition Framework.....	15
7.1.1 Finding.....	15
7.1.2 Government Members' Recommendation.....	15
7.2 Commercial Practices	15
7.2.1 Finding.....	15
7.2.2 Government Members' Recommendation.....	16
7.3 Competition in Contracting Act (CICA)	16
7.3.1 Finding.....	16
7.3.2 Government Members' Recommendation.....	16
7.4 Weapon System Design and Performance Data	16
7.4.1 Finding.....	16
7.4.2 Government Members' Recommendation.....	16
7.5 Use of Ada for Software Development.....	17
7.5.1 Finding.....	17
7.5.2 Government Members' Recommendation.....	17
8.0 APPLICATION OF NGS-IPT CONCEPTS.....	17

Figures

Figure M-1. NGS-IPT Framework and Flow of Activities.....	18
---	----

Tables

Table M-I. Comparison of Full Commercial to NGS-IPT Business Practices.....	8
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1.0 INTRODUCTION.

The Training Systems and Devices Panel (TSDP) addressed application of the NGS-IPT framework to the acquisition of training systems and devices. This report reflects the observations, advice, and opinions of individual members of the panel, and in some cases the recommendations and/or consensus of the Government members of the panel. The report does not indicate, describe, or accept, and should not be interpreted as indicating, describing, or accepting, any group deliberations or discussions as a source of agreement, consensus, advice, or recommendations of the group as a whole. Sections following are:

- 2.0 Panel History and Background
- 3.0 Panel Role in the NGS-IPT
- 4.0 Unique Characteristics of the Training Systems Industry
- 5.0 Description of the (existing) Commercial Practices Option
- 6.0 Key Business Practices of the Training Systems Industry
- 7.0 Findings and Recommendations
- 8.0 Application of NGS-IPT concepts to training acquisitions.

2.0 HISTORY AND BACKGROUND.

The Training Systems and Devices Panel was originally formed in March of 1995 as a joint government-industry Commercial Acquisition Practices Initiative Team under the auspices of the Air Force Training System Product Group, the Naval Air Warfare Center-Training Systems Division, and the Army Simulation, Training and Instrumentation Command. The team was chartered to define and analyze commercial acquisition practices used by government and industry, to identify and prioritize cost drivers, and to recommend changes. In June 1995 the Commercial Practices Initiative was merged into the Non-Government Standards Integrated Product Team as the Training Systems and Devices Panel. Original team size was reduced from 38 participants (20 Industry, 18 Government) to a core team of 12 people. The panel re-focused its energy on issues concerning application of the NGS-IPT concepts within the training systems industry segment. See appendix for list of participants.

3.0 ROLE OF THE TRAINING SYSTEMS AND DEVICES PANEL IN THE NGS-IPT.

The Training Systems and Devices Panel assumed five core responsibilities. As the first “product” area represented on the NGS-IPT, it became the lead industry segment for application of IPT policies and concepts. Each was considered as it would apply to the acquisition of:

- Training: Training based on guaranteed student qualifications and system through-put levels.
- Training Systems: Integrated systems comprised of training devices, courseware, instructional materials, etc.
- Training Devices: Flight simulators, maintenance trainers, computer based interactive trainers, etc.
- Device Subsystems: Visual Image Generators, Radar Landmass Simulators, Threat Simulators, Motion, etc.
- CLS: Contract Logistics Support; the maintenance and modification of any installed training systems, equipment, devices, etc.

The NGS-IPT functional flow was examined, and determined to be sufficient to the needs of the training systems segment. The panel identified interrelational “hooks” between the weapon platform development process and the training system development process. Individual panel members served as advocates for selective application of existing commercial acquisition practices for flight training devices, the same commercial practices used by the airlines, and supported by the FAA, the International Airline Transport Association (IATA), and the International Civil Aviation Organization (ICAO).

4.0 UNIQUE CHARACTERISTICS OF THE TRAINING SYSTEMS INDUSTRY.

The following practices characterize the training systems industry:

Commercial Fabrication: Most military training equipment and system developments are now based on use of commercial off-the-shelf (COTS) subsystem elements. In most cases, the computers, network interface units, cockpit controls and displays, visual display systems, motion platforms, etc. selected by device developers are strictly COTS. In a larger sense, training device hardware elements are becoming commodities. Development challenge and risk for both systems and devices will lie in development of software and the transport and handling of system data.

Production: Most training systems and devices are acquired and produced in small quantities; devices are typically built a few at a time. Most training device programs have no “manufacturing” phase.

Concurrent Development: Training device developments usually start after the weapon platform has been defined (typically at the mid-DEMVAL phase). However, training device delivery is normally required prior to delivery of the weapon platform. Hence, trainer development cycles are very short when compared to the weapon system.

Design Data Sourcing: Training device and system developers are totally dependent on availability of weapon system platform design and performance data to support training device design and test. Timely availability of such data is crucial when concurrent development and early delivery are required. Commercial airframe suppliers view the timely provision of such data (to training system developers) as a necessary priority to meet overall business objectives; however, military system program offices often take a more narrow view, and neglect or defer acquisition of required platform data, making concurrent development (necessary to meet military training objectives) difficult or impossible.

Use of Commercial (Airline) Practices: Airlines use an established commercial system for acquisition of training devices. The military services have yet to embrace this acquisition approach. See section 5.0, below.

5.0 TRAINING INDUSTRY COMMERCIAL PRACTICES.

Airlines around the world acquire training devices and systems using an established acquisition system supported by the Federal Aviation Agency (FAA) the International Airline Transport Association (IATA), and the International Civil Aviation Organization (ICAO). This commercial system is built on the use of five standard documents which address training device performance requirements, device design specifications, air platform design and performance data, test and certification procedures, and contract logistics support data. Government members of this panel recommend the NGS-IPT acquisition framework support a “toggle” or “option” to apply such commercial practices where and when applicable. Panel members believe some aspects of the commercial system can be applied to military buys without the need to modify existing commercial practice, existing government acquisition policy or law, while application of other aspects of the commercial system will require changes to the system, to policy, or to law.

5.1 The Commercial Environment.

The commercial acquisition system used by the airlines has evolved over the past decade. The commercial airline market is highly competitive, and training system support costs are spread over the number of seat miles flown by the operator. Many factors influence commercial trainer costs, but this report focuses on those factors applicable to the military acquisition environment which make a significant impact, and which can result in the elimination of high cost or risk.

When a carrier orders a new aircraft, particularly a development program such as the Boeing 777, the carrier must provide training for flight crews and maintenance personnel in a timely manner that results in the aircraft being received and put into service without delay driven costs. Interest cost on grounded equipment, replacement crew training on older equipment, substitution of equipment required to maintain schedules, and idle crews are factors which drive startup costs beyond what is reasonable by any measure.

Carriers must have trained people available at the right point in time. Accordingly, they procure training equipment in ways such as to minimize risk of the above cost drivers, consistent with availability of platform data and the delivery schedules of competent providers. Carriers rely on qualified vendors whose very existence is based on a proven track record of performance. Neither the carrier or the vendor can cut corners on quality because of performance based requirements levied and evaluated by third parties (the FAA). Carriers meet in industry forums, (ATA, IATA, Aircraft User Symposiums), and the vendor who has delayed the introduction of a new fleet will be made known to all. Therefore, key practices and core competencies described in Section 6.0 of this appendix are rigidly implemented in the application of Commercial Practices which reduce cost and time required to solve the much more complex issues discussed above. The success or failure of the entire program is dependent on ALL players being responsible and qualified. Promises of future achievement are not weighed as heavily as past performance. Costs associated with a one day delay can easily be more costly than the entire cost of the training device. Therefore, proper priorities must be established in the procurement phase, and core competencies of qualified suppliers must rise to the top of the source selection criteria.

A supplier who can maintain a training device may not be qualified to build one, a courseware developer probably cannot maintain a device and a device manufacturer may not build subsystems. The commercial market place establishes roles and opportunities for all vendors, large and small, to provide the products and services that each does best, following the rules that *performance* will weed out those that cannot meet the challenge, without the risks and costs to the buyer, whether it be commercial or governmental.

5.2 The Commercial Infrastructure.

Commercial acquisitions are supported by five key documents. They are:

Standard Device Definitions: FAA Circular 120-40B defines airplane simulator qualifications and performance criteria for simulators used in support of airline training programs. This document defines the *functional performance requirements and device characteristics* required for various levels of flight training and pilot certification. It serves the industry as a top level performance specification.... a *pre-coordinated* specification which is known to all buyers and sellers alike. When a buyer solicits a bid from a vendor for a “Level D simulator for a B-777 tail number xyz”, there should be no question on either side regarding device capabilities, functional characteristics, intended use, or application. Air Force Pamphlet 36-2211 extends the FAA concept of standard device definitions to address devices supporting training for military transport aircraft.

Standard Format for Prime Item Development Specifications: Training device manufacturers, working through their trade associations and the IATA, have standardized the format for prime item development specifications, the specifications provided as part of a vendor’s bid or proposal. The prescribed spec format is very comprehensive, addressing details of functional performance, design, and construction. Vendor specifications typically reference a large number of both government and non-government specifications and standards. When a buyer solicits more than one vendor for bids, he can expect to receive development specifications in a common format which line up with each other, section by section.

5.2.1 Platform Data.

Current, timely air platform design and performance data is required to support development of training devices and systems. Airline buyers recognize this, and require airframers to provide platform data as an integral part of any aircraft sale. IATA/ICAO has established a standard data requirements set, which is far more robust than that developed for most military trainer acquisitions. As a part of an aircraft sale, airframers normally make the platform data available to training device developers at a nominal cost. Data is provided ahead of air platform deployment to support timely trainer development. Airframers also maintain the data packages for the life cycle of the airframe, issuing change notices to data holders (in the training industry) as platform changes occur.

5.2.2 CLS Support Package.

Training Device and System developers normally provide a contract logistics support package to airlines purchasing their equipment. The CLS package normally includes virtually all the design and fabrication drawings developed for the trainer, all commercial manuals associated with sub-systems, operator manuals, and comprehensive software documentation. Data is provided on a *limited rights* basis; airlines are free to use the data to maintain or modify the training devices, but are prohibited from using the data to fabricate new devices or systems.

5.2.3 Acceptance Test Procedures/Device Qualification.

Commercial aircraft training device test and qualification requirements are pre-defined by the FAA in Circular 120-40B. Both the buyer and the seller know well in advance of the sale exactly what the FAA requires for device test and qualification to any given functional performance level. Both also know what periodic (annual, semi-annual) tests and qualification will be required throughout the life cycle of the trainer. All tests are cut and dried. Sellers understand that they have to please both the FAA inspectors and the buyer in qualifying the device. Buyers accept the FAA qualification as necessary and sufficient.

5.3 Comparison: The NGS-IPT Framework with Existing Commercial Practice.

Panel members believe most elements of existing commercial practice are compatible, if not complimentary, of the standard NGS-IPT acquisition framework. Government members recommend a “toggle” be placed within the acquisition framework which enables the Services to switch to commercial practice where practical and to the extent supported by law. Table M-I compares characteristics and limitations of each system.

Table M-I. Comparison of Full Commercial to NGS-IPT Business Practices.

<p>Commercial Characteristics:</p> <ul style="list-style-type: none"> - Supports rapid contract award - Requires minimal buyer oversight - Little schedule risk - System completely performance based - System leverages airline industry investment - System benefits from FAA/Industry process maintenance - System strongly supports device acquisitions - Requires minimum buyer resources <p>NGS-IPT Characteristics:</p> <ul style="list-style-type: none"> - Deals with ALL bidders - Modulates oversight with perceived risk - Supports all training sector 	<p>Commercial System Limitations:</p> <ul style="list-style-type: none"> - Not suited to programs with <ul style="list-style-type: none"> - Floating functional requirements - High risk development - Does not incorporate ALL key processes <ul style="list-style-type: none"> - Therefore not applicable to buys requiring specialized processes - Optimized for aeronautical training sector only - may not be suited for other training sector buys <p>NGS-IPT Limitations:</p> <ul style="list-style-type: none"> - Full Source Selection required - Significant overhead costs - Longer delivery schedules - allow for increased oversight and approval cycles.
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6.0 KEY BUSINESS PRACTICES FOR THE TRAINING SYSTEMS INDUSTRY.

This section summarizes the key business practices and core competencies common to the training industry segment. It includes a description of each key practices, its performance attributes, and the criteria by which one could judge successful implementation.

These key practices are offered *in addition* to the core processes identified by the NGS-IPT at large. The processes below are built upon the core processes, to include program and data management, systems engineering; advanced quality systems, manufacturing, procurement/subcontract management; logistics support/sustainment and others described by the NGS-IPT Key Process document. Suppliers are expected to have many core processes, which are aggregated to form the key training systems processes shown below.

The training systems and devices (TSD) unique elements of the Systems Engineering practice are training system development and integration; training requirements analysis; simulation devices; environmental simulation; courseware; and contractor logistics support (CLS). The TSD unique development is defined to encompass all phases of the training system characterization in support of a weapon system acquisition program. The basic core specific enabling practices including performance, functional and interface requirements of the program, are specified by technical and training requirements documents in support of the required operating environments. These core

TRAINING SYSTEMS

enabling practices for hardware, software and courseware are a part of the primary components needed to train an individual, team, or organizational element and are appropriate for both training systems and devices in virtual or constructive training programs.

The following practices emphasize and provide a disciplined approach to engineering design, analysis, verification, production, and life cycle management of training systems and devices.

6.1 Key Practice #1: Training System Development and Integration.

Description: This practice provides the ultimate user with the analysis of training requirements, training methodology, materials, resources, equipment and their integration to consistently produce qualified personnel to meet the requirements of the weapon platform roles and missions. The training system is composed of an integrated combination of all necessary curriculum materials, related instructional elements, facilities, equipment, management, students, instructors and sustaining support required to conduct training for the specified training objectives. Interactive courseware (ICW), part task trainers (PTT) and full task trainers (FTT) are usually included as part of the overall training system.

Attributes:

- experience in managing subcontractors, teammates and internal disciplines required to ensure the timely and concurrent delivery of the weapon platform training system with the actual user required training capability
- the ability to analyze a Training System Requirements Analysis (TSRA), design, and build the curriculum, simulation components, and training and evaluation methods
- manage the training system development interface which includes: courseware, full and part task trainers, instructors, students, and interfaces with the weapon system being simulated in a dynamic environment (including in-flight training or in support of in-flight training)
- the ability to obtain needed data early in the program, obtain concurrency with the weapon system being simulated and provide for life maintenance and update
- the ability to apply software technology and interfaces for sub-systems being implemented

Criteria:

- degree of currency of training system with weapon system
- degree to which weapon system training requirement has been fully characterized by the training system used by the student
- timely production of students fully meeting weapon system performance goals

6.2 Key Practice #2: Training System Requirements Analysis.

Description: TSRA is the process used to determine what instruction/training is needed. Training task performance requirements are analyzed and a training task listing developed. Simply put, the difference between what incoming students know, and what the task requires, determines what training is necessary. In a broader sense, TSRA further defines the training system concept and the total training system configuration so that all training system functions are defined.

Attributes:

- the ability to provide an acceptable training requirements definition process
- the ability to provide derived training requirements
- the ability to provide an accurate definition of expected training resource requirements

Criteria:

- Training system functions are defined for the particular task application. Passing grade is obtained on a system requirement review (SRR).

6.3 Key Practice #3: Courseware Development.

Description: Courseware is defined as all training materials such as technical data, textual, audio/visual instructional, and computer based instructional materials that are used to train a particular task. Courseware is developed to meet the instructional goals outlined during the TSRA process. The development process includes the incremental writing, coding, and programming of each lesson in conjunction with reviews and tryouts to confirm that requirements are being met.

Attributes:

- the ability to achieve the objective or instructional completeness for which it was designed in a way that optimizes training effectiveness and efficiency
- the ability to complement successfully the total training system concept and be integrated into the full training system

Criteria:

- Data collection activity is needed to determine a metric set. Data includes:

Number/priority of technical discrepancies

Timelines of response

Number of Changes

Cost

Student/Instructor feedback on training effectiveness is an important qualitative metric.

6.4 Key Practice #4: CLS Competencies.

General Description: This effort consists of Training Systems Sustainment throughout their “life cycle”. While internal/organic DOD sustainment is still a factor and will be utilized, the thrust of this document is “Contracted Logistics Support (CLS)” or Contractor Operation and Maintenance of Simulations (COMS). The key sub-practices within this key practice area are:

- a) Training Systems Support Center (TSSC) operations,
- b) Student Through-put/Training management Systems (TMS)/Instruction,
- c) Maintenance, and
- d) Modifications.

Sub-Practice: Systems Operations (TSSC Operations).

Description: Training Systems Support Center (TSSC) operations involve managing the single-site stand-alone hardware and software resources utilized to develop/test training “mission” changes and configuration system software changes. New software loads are subsequently run on the actual training system and if successful, exported to related training sites. The TSSC is a prime repository and configuration control point for all manuals, engineering drawings, software media, and data utilized by the systems.

Attributes:

- the ability to accomplish missionization changes
- the ability to accomplish configuration controlled changes
- the ability to validate software changes on an installed system

Criteria:

- timely and effective completion of TSSC assigned tasks

Sub-Practice: Training Delivery; Student Through-Put/TMS/Instruction.

Description: Student Through-Put deals with all aspects of training as a crew member moves through the training curriculum. Training Management System (TMS) expertise deals with any of several computerized student tracking systems covering such aspects as schedules, grades, retesting, competencies, etc. Instruction deals with the effective use of devices, courseware, and classroom time to effectively train students. Instructors are used to operate, monitor, provide feedback, and insert faults and threats during training missions.

Attributes:

- the ability to utilize effectively and maintain a TMS in scheduling, grading and re-testing students
- the ability to acquire and/or provide appropriately skilled personnel
- the ability to recommend alternative training solutions

TRAINING SYSTEMS

Criteria:

- the successful first pass completion of proficiency or check ride testing

Sub-Practice: Maintenance.

Description: All aspects of organizational, Intermediate, and Depot level maintenance of Training Systems. Can be accomplished by on-call, on-site, or in-plant or by a mix of contractor resources. Responsible for other functions formerly performed by organic DOD Service personnel such as:

- a) Run I/O station and replicate tower, FAC, and other A/C,
- b) Perform security/custodial functions,
- c) Accomplish janitorial functions for facilities.

Attributes:

- the ability to preserve all aspects of design integrity throughout the system operational life
- the ability to initialize/operate all aspects of the training system
- the ability to replicate all control tower responses/calls to students
- Acquire/provide the appropriately skilled personnel;
- Conduct training of these personnel; and
- Perform the required tasks; i.e., maintenance, modification, configuration management, operation, and training of simulators /training systems.

Criteria: Performance is measured utilizing the following metrics:

- Ability to maintain a Contractor Performance Factor (CPF) or “system availability rating of” 95%. CPF is based on an equation involving operational ready time (ORT), non-chargeable downtime (NCD), and chargeable downtime (CD);
- Completion of Preventative Maintenance (PM) tasks;
- Quality of completed maintenance; and
- Cleanliness of assigned equipment and areas.

Subpractice: Modifications.

Descriptions: Training Systems Modifications are significantly of two types:

- a) Weapon Systems Compatibility modifications, and
- b) Training Systems unique modifications affecting such things as Visual Systems, Motion bases, and data bases.

The modification contractor must be able to simulate weapon changes with a combination of software and hardware, stimulate actual weapon equipment to gain the desired results, or change courseware or Instructional materials as approved by the respective Service.

Attributes:

- the ability to simulate weapon system changes through a combination of software and hardware changes to the training system
- the ability to utilize actual weapon system components and stimulate them to acquire the intended results
- the ability to track weapon changes and propose a corresponding training system change

Criteria:

- concurrent delivery of platform configuration changes
- the successful completion of any required ATP/fidelity checks

6.5 Key Practice #5: Environmental Simulation.

Description: The environmental simulation process develops the subsystems which provide for the artificial simulation environment. A supplier would develop the attributes and components necessary to satisfy the system requirements for elements such as:

- 1) Visual Out The Window (OTW). Forward Looking Infra-Red (FLIR) and other optical sensor systems
- 2) Electromagnetic sensors, including Radar and Electronic Warfare
- 3) Acoustic sensor systems
- 4) Data Bases to support the operation of provided sensors and all other supporting environmental information (e.g., atmosphere)
- 5) Network Interoperability for integrated simulation operations using prescribed interface protocols.

The attributes and components necessary to complete these systems development activities should be adequate and sufficient to meet the needs of the TRA and the performance specification. These systems and supporting data development activities may be completed with a combination of developed and off the shelf products which are in place to meet the requirements. These components are integrated into the total simulation environment by the integration under the Simulation Device practice.

Attribute #1.

Developed product line, or ability to develop a product line for associated components for each system.

Criteria:

- The “Catalog” product(s) are available and “compliant”.
- A viable technology and product growth plan

- Developed systems are flexible enough to adapt to system requirements.
- Architecture is robust and extensible with future growth potential.

Attribute #2.

Capability to manipulate various source data and build it into operationally useful formats and data sets.

Criteria:

- Manages and manipulates data with various input and output formats to the level of fidelity, functionality and completeness required

Attribute #3.

Ability to develop software and hardware architectures and systems interfaces which allow for interaction with the external simulation environment.

Criteria:

- Demonstrates interaction of dissimilar systems to effect the operation of each other.
- Capability to develop and produce systems which allow for proper interfacing and Interoperability.
- Demonstrate understanding of protocols, interface technology and implementation in a distributed environment.

6.6 Key Practice #6: Simulation Devices

Description: Simulation devices are defined as:

- The trainee station,
- simulation software and computer/interface system,
- instructor/operator station and supporting instruction,
- operation and maintenance subsystems, and
- components combined to train tasks allocated to specified devices.

The simulation device may be a full task or part task trainer for weapons system operator or maintainer training. Simulation device development applies the six key processes to achieve the static and dynamic fidelity level of simulation needed to support the required training capability. In addition to simulating required systems/subsystems of the weapon platform, other friendly and hostile threat platforms and their interaction may be simulated and interfaced with other environment simulation systems, including Distributed Interactive Simulation (DIS) using predetermined protocol standards.

Attributes:

The ability of the simulation device to achieve the training requirements for which it was designed in a way that optimizes training effectiveness and efficiency

Criteria:

- the successful first pass completion, by all students trained or tested, of at least 95%

7.0 FINDINGS AND RECOMMENDATIONS.

The following are the key findings and recommendations were made sole by the government members of the Training Systems and Devices Panel with input from the industry panel members.

7.1 The NGS-IPT Recommended Acquisition Framework.

7.1.1 Finding.

Acquisition concepts developed by the Government members of the NGS-IPT strongly support training industry segment implementation of commercial practices. Concepts of F3I, vendor ratings, and flexible sustainment have been practiced within the commercial training industry for almost 20 years, and performance based requirements and contract logistics support have been the norm for military procurements for almost a decade. NGS-IPT mechanisms associated with Key Supplier Processes, Risk Based Oversight, and Source Selection are all consistent with the training systems industry segment desire to adopt commercial acquisition practices.

7.1.2 Government Members' Recommendation.

Government members of the panel recommend that constituent industry members support the NGS-IPT recommendations. They further recommend that the Service acquisition arms for training (USAF Training System Product Group, Army STRICOM, Navy NAWC-TSD and PMA-205) adopt the NGS-IPT practices immediately for new business, and employ the block change process (either by plant, or by product line) to rebaseline existing contracts where practical.

7.2 Commercial Practices

7.2.1 Finding.

Individual members of the panel observed that industry has a well established, robust, performance based commercial practice which can be used to reduce the cost and schedule of similar military training acquisitions. Panel members believe this commercial model can be expanded to meet many military unique requirements without losing its benefits and it can be implemented immediately for some systems.

7.2.2 Government Members' Recommendation.

The government members recommend use of commercial practices where applicable, and extension of supporting commercial documentation to military applications. They also recommend the Services execute a pilot program to prove use of commercial practices for military acquisitions.

7.3 Competition in Contracting Act (CICA)

7.3.1 Finding.

Panel members observed that use of best commercial practice and the Competition in Contracting Act (CICA) are inconsistent. Military contracts experience a wide variance of product quality and contractor performance as a result of novice entrants supported by CICA. Appropriately structured vendor qualification, if supported in law, would eliminate frivolous submittals by non-qualified suppliers, reduce proposal costs included in overheads passed on the government on other contracts, and reduce the amount of manpower required by the government for formal source selection, while maintaining qualified competition. House bill HR 1670 supported some changes in CICA to allow for verification of vendor qualification and past performance in a pre-source selection evaluation.

7.3.2 Government Members' Recommendation.

Passage of House Bill 1670 is still pending as of the publication of this report. At such time as this bill is enacted into law, Government panel members recommend formation of a joint Government/ Industry team to define vendor qualification procedures based on the final language adopted by Congress.

7.4 Weapon System Design and Performance Data

7.4.1 Finding.

Panel members found that the timely availability of weapon system design and performance data is crucial to training system development. Most military training system contracts suffer late deliveries and performance deficiencies due to lack of required data. Military trainer configurations are not kept current with changes to the weapon platform due to late delivery of platform data. Life cycled aircraft performance and design data delivery to trainer developers and maintainers is a mandatory, inherent element of commercial practice.

7.4.2 Government Members' Recommendation.

Government members of the panel recommend that priority be given to timely procurement of weapon system platform data, concurrent with platform development.

7.5 Use of Ada for Software Development

7.5.1 Finding.

Panel members observed that commercial trainer development practice is based on use of commercial software languages and development environments (typically C++ in an object oriented environment). Panel members believe commercial development environments have now surpassed those available to Ada programmers in terms of efficiency and utility (i.e., it is now easier to achieve Ada goals and objectives using commercial software development environments, than if using environments offered by Ada providers.) Members opined that since military training devices and systems are maintained under contract logistics support, developers should be accorded the latitude to select the software language and development environment offering the best life cycle cost benefit.

7.5.2 Government Members' Recommendation.

Government panel members recommend revision of policy as necessary to allow optional use of commercial software development standards.

8.0 APPLICATION OF NGS-IPT CONCEPTS.

The NGS-IPT framework and flow of activities is shown below, tailored to development of training systems or devices. The "top" flow line reflects NGS-IPT concepts applied to acquisition of a weapon system; the flow below it shows acquisition of the training system or device, and the lines connecting each are the "hooks" between the two acquisition processes, where flow of data or information is required.

TRAINING SYSTEMS

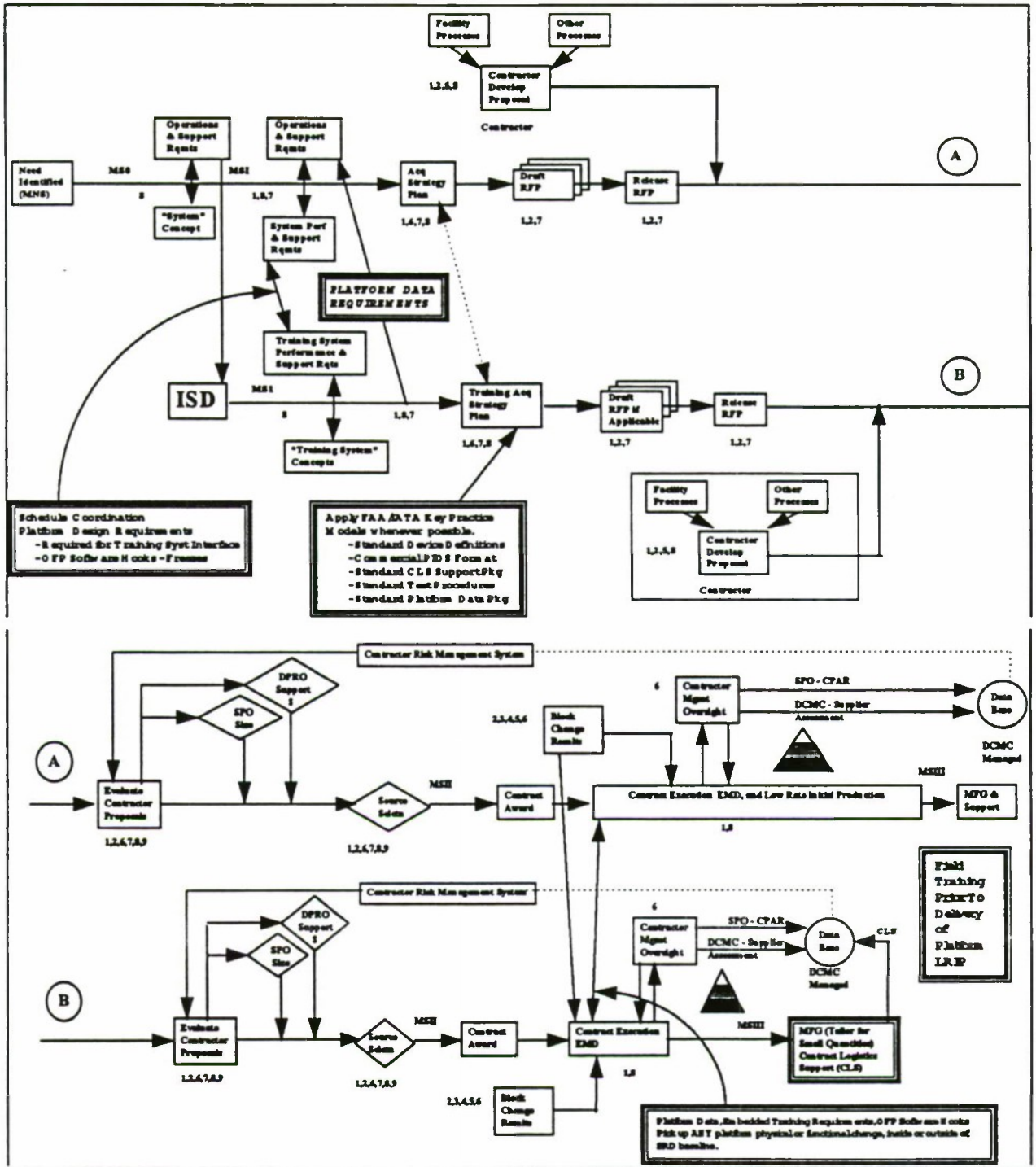


Figure M-1. NGS-IPT Framework and Flow of Activities.

ADVANCED PLANNING BRIEFING for INDUSTRY



TRAINING SYSTEMS
TECHNOLOGY
ROADMAP

SPONSORED BY

THE JOINT TECHNICAL COORDINATING GROUP
FOR
TRAINING SYSTEMS AND DEVICES

Overview

- **JTCG-TSD**
- **Background**
- **Roadmap purpose**
- **Technology management**
- **Current Product**

JLC

Joint Logistics Commanders



- o "... identify opportunities for joint programs .."
- o "... suggest establishment of standards and common architectures .."
- o "... Maintain cognizance of all activities .. which involve R D & A .."
- o "... will ensure coordination and exchange of information .."

JTCG-TSD

MARCORSYSCOM

NAWC-TSD

PMA-205

STRICOM

TSPG

Background

- **STARTED - Air Force Process**

- Linkage of training vision with technology requirements
- Presented at previous I/ITSEC and industry conference

- **MANY STAKEHOLDERS & SUPPORTERS**

- USAF Training System Product Group (TSPG), Labs, MAJCOMS, TPIPTs
- NAWC-TSD
- STRICOM
- PMA-205
- MARCORSYSCOM
- JAST

Purpose

- **Support All Stakeholders**
- **Communicate Vision of Future Training**
- **Guide Technology Investment**
- **Support Program Definition**
- **Support Development Planning Processes**

- **Stimulate Discussion and Communication**

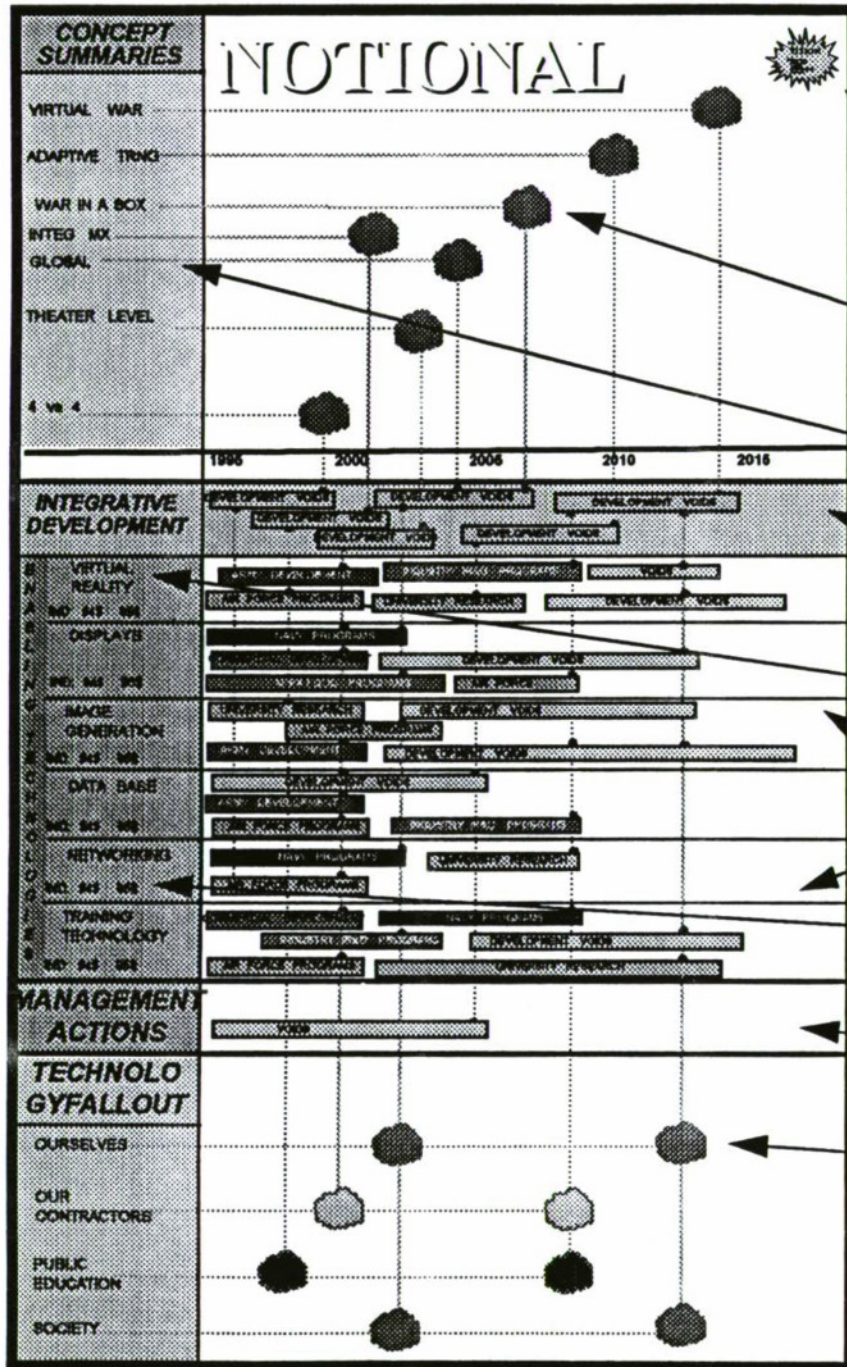
INDUSTRY

SERVICES
R&D

LABS

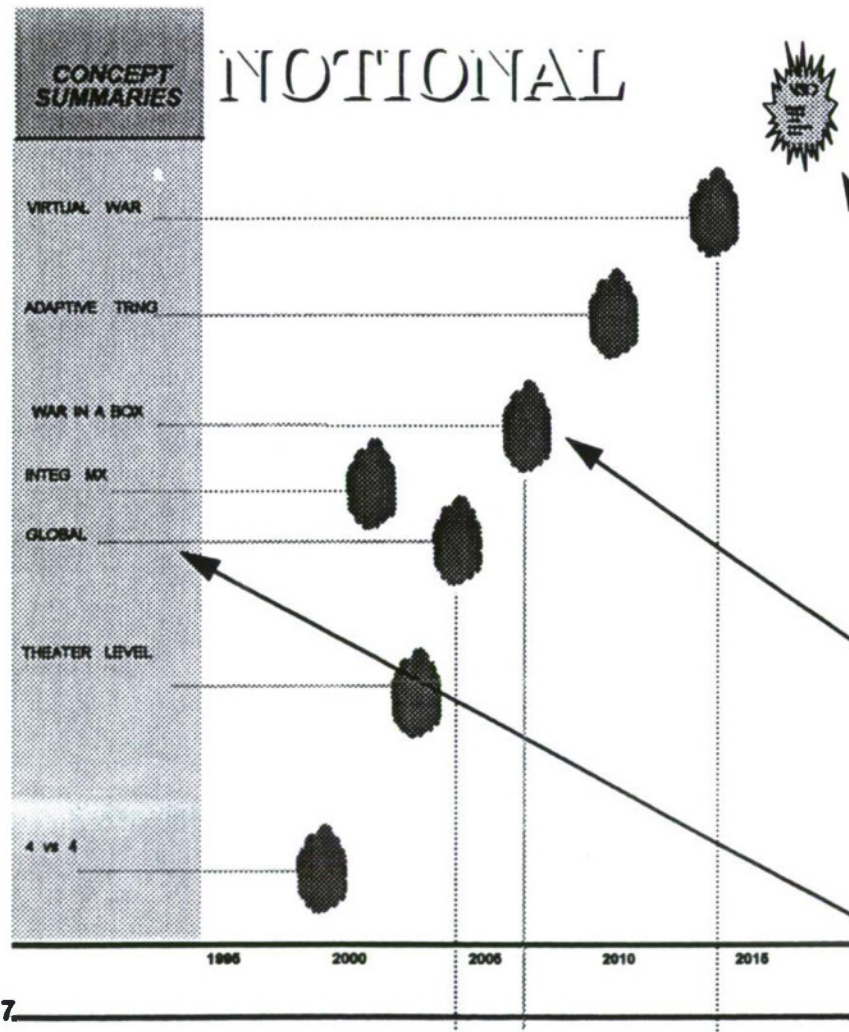
ACADEMIA

ROADMAP SNAPSHOT CHART



- VISION
- EVOLUTIONARY STEPS
- CONCEPT SUMMARIES
- INTEGRATIVE DEVELOPMENTS
- ENABLING TECHNOLOGIES
- DEVELOPMENT PROGRAMS
- INDUSTRY INVESTMENT
- MANAGEMENT ACTIONS
- TECHNOLOGY FALLOUT

*CHART SHOWS PROCESS STATUS.....
.....ONLY AT ONE POINT IN TIME*



ROADMAP
SNAPSHOT CHART

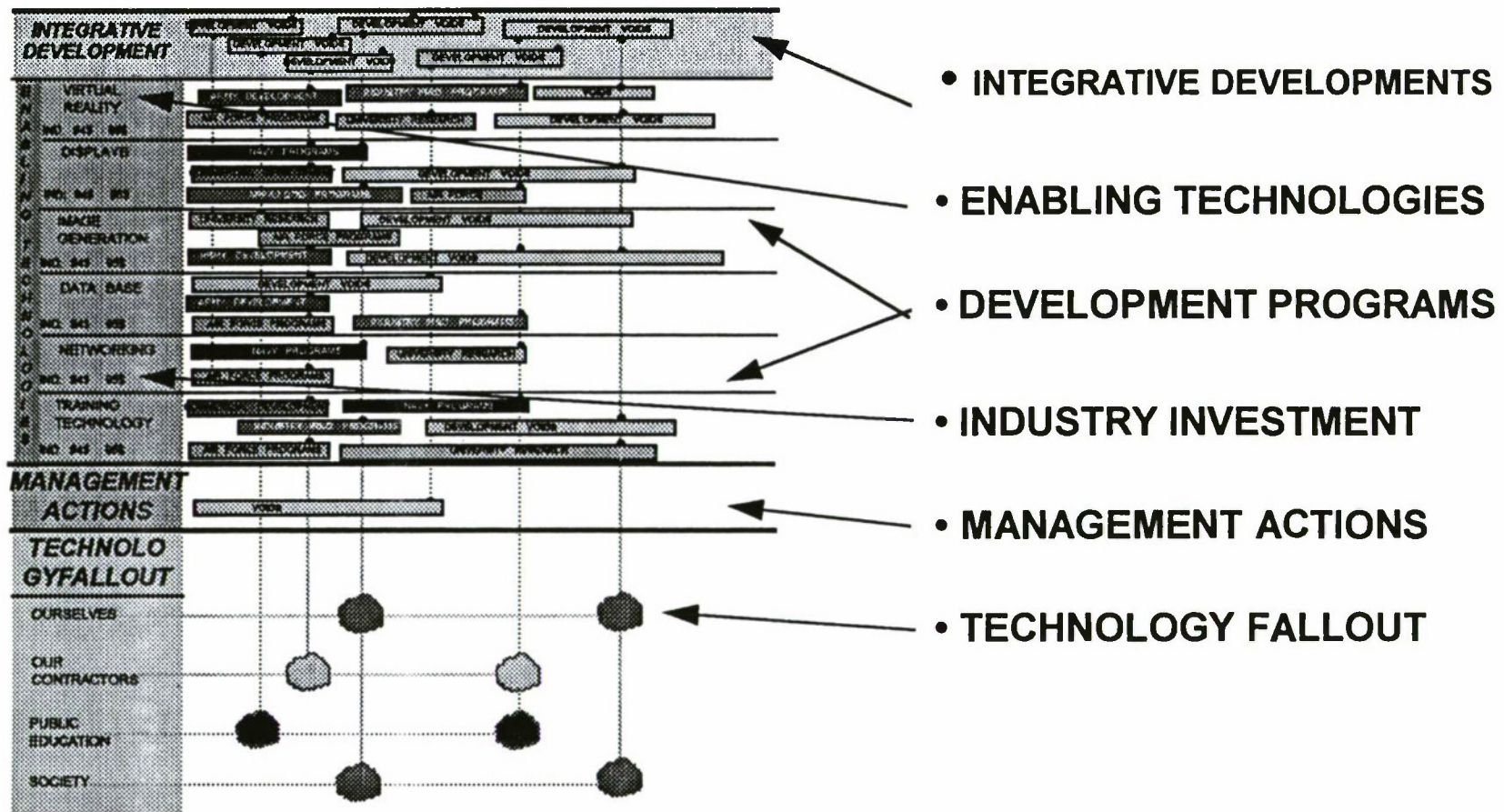
VISION

EVOLUTIONARY STEPS

CONCEPT SUMMARIES

CONCEPT DESCRIPTION		
---	---	---
---	---	---

JOINT TECHNICAL COORDINATING GROUP TRAINING SYSTEMS AND DEVICES



Technology Management Sponsorship

JOINT TECHNICAL COORDINATING GROUP - TRAINING SYSTEMS AND DEVICES

- **All Service Training Visions and Concepts**
 - Existing “Future Concept Clouds” represent all services
- **Continues to show applicable development activities**
- **Chart becomes one element of a Joint technology management process**
- **Activity sponsored by JTTCG-TSD**

Technology Management Process Elements

- **Joint Technologist Working Groups**
 - By Enabling Technology
 - Validate development programs on roadmap chart
 - Define technology voids
 - Includes Government technology experts

- **Annual Government / Industry R&D Conference**
 - Government Presentations To Industry - Visions and Voids
 - Industry Presentations to Government - Proprietary

- **Updated Roadmap**
 - Project Descriptions
 - Void Descriptions

- **Select Most Important Joint Technology Needs**
 - Charter Sub-Groups to Define Specific R&D Requirements
 - Build Advocacy Package

- **Brief to JLC**
 - Secure Endorsement

- **Advocate to Likely Sponsors**
 - MAJCOMS, ARPA, DMSO, INDUSTRY
 - Secure Funding

- **Execute Programs as Approved**
 - Assign each approved program to one Service as Executive Agent

Annual Schedule

JOINT TECHNICAL COORDINATING GROUP - TRAINING SYSTEMS AND DEVICES

PUBLISH NEW CHART	SELECT JOINT TECH NEEDS		BUILD ADVOCACY PACKAGE	BRIEF JLC	ADVOCATE DEVELOPMENT	INITIATE R&D		TECHNOLOGY WORKING GROUPS VALIDATE NEEDS & IDENTIFY NEW VOIDS		GOVERNMENT INDUSTRY R&D CONFERENCE		
APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APRIL

Current Products

- **Available Today**

- New Multi-Service Roadmap Snapshot Chart
- Project Descriptions Pamphlet
- Comment Forms
- Project Recommendation Forms

- **Also Available on Web**

- At <http://tspg.wpafb.af.mil>
- Project Forms
- Comment Forms

Summary

- **JTCG-TSD has adopted an active, joint technology management process**

- **Industry Invited as active partner**

- **We encourage you to:**
 - **Participate in this Joint R&D Management Process**
 - » **Government “Technology Voids” briefing in open forum**
 - » **Industry IR&D briefings to Mult-Service Representatives Only**
 - **Consider the roadmap in planning your technology investment**

Points of Contact

JOINT TECHNICAL COORDINATING GROUP - TRAINING SYSTEMS AND DEVICES

Telephone No/cc mail

- **ARMY**

- Ed Trier STRICOM

- (407)-384-3800/triere@stricom.army.mil

- **Air Force**

- Bill Curtice TSPG

- (513)-255-4591/curticwl@asc.yw.wpafb.af.mil
x235

- Liz Martin Armstrong Lab

- (602)-988-6561/martin@alhra.af.mil

- **Navy**

- Bill Harris NAWC-TSD

- (407)-380-8376/bill_harris@ntsc.navy.mil

- Cmdr Dixie Mays PMA-205

- (703)-604-2245/maysdj.jfk@navair.navy.mil
x3005

- **Marines**

- Joe Santilli MARCORSSYSCOM (407)-380-4234/joe_santilli@ntsc.navy.mil

ADVANCED PLANNING BRIEFING TO INDUSTRY



CAPT MARK YERKES
Commanding Officer

(407) 380-8328

mark.yerkes@ntsc.navy.mil

<http://www.ntsc.navy.mil>



WHY ARE WE HERE?



$$R = f (E + / * T)$$



NAWCTSD

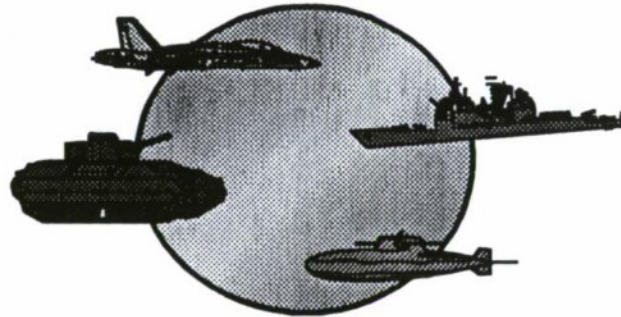


- To be the principal Navy center for research, development, test and evaluation, acquisition and product support of training systems
- To provide interservice coordination and training systems support for the Army and Air Force
- Other functions and tasks as directed:

– DoD VETT

– TIDES

– AIM SSO



– Navy DIS Agent

– NAVAIR/NAWC
M&S Lead

The world class leader in training, simulation and modeling systems, and provider of choice for quality products and services to our customers' total satisfaction.



NAWCTSD HISTORY



-
- 1941** **Established as Special Devices Desk-Bureau of Aeronautics**
 - 1946** **Moved to Port Washington, N.Y.**
 - 1950** **Army Memorandum Of Agreement signed**
 - 1965** **Moved to Orlando**
 - 1970** **Marine Corps representation established**
 - 1975** **Air Force representation established**
 - 1985** **State of Florida Center of Excellence established**
 - 1988** **Relocated to Central Florida Research Park**
 - 1993** **Naval Air Warfare Center Training Systems Division**



NAWC

Training Systems Division

NAVAL AIR WARFARE CENTER

Security

24 Hour DoD Police Force

Closed Circuit TV

Infrared Detection System

Perimeter Access Control System

Parking

1000 Spaces



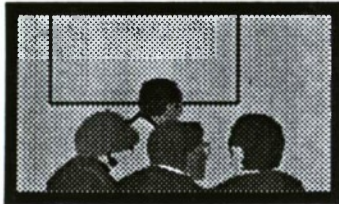
AUTOMATION/ COMMUNICATIONS



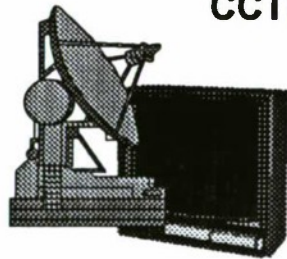
**PC UPGRADE/
WINDOWS
MIGRATION**



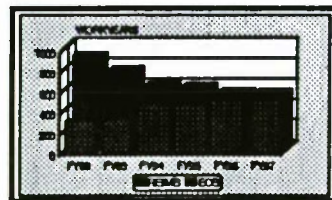
2 VTCs INSTALLED



CCTV



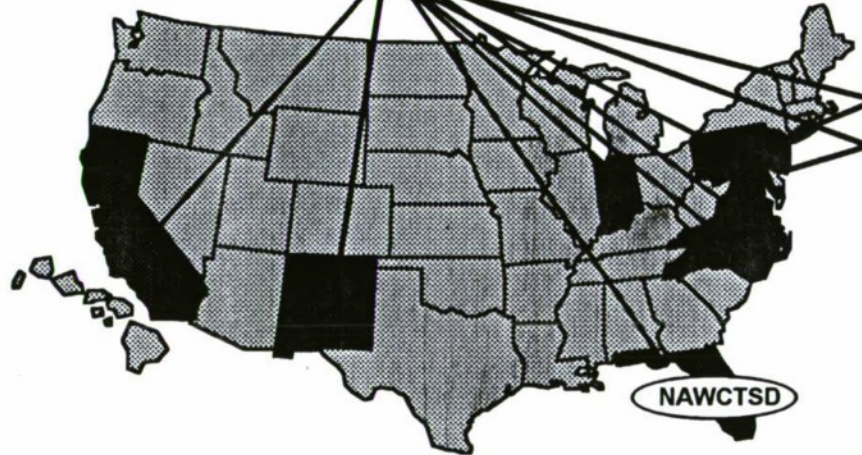
**CORPORATE
METRICS**



**32,000
DIRECT**



ADDRESSES



ALTAIRS



ATOS



**REMOTE PCs
1-800 #**

JAMS



**VOICE
MAIL**



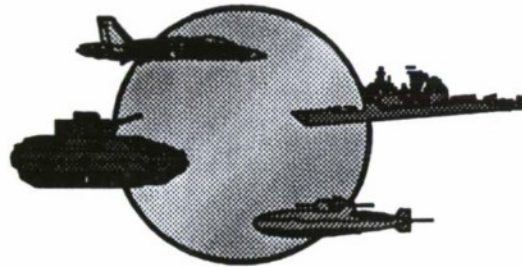
PINs ASSIGNED



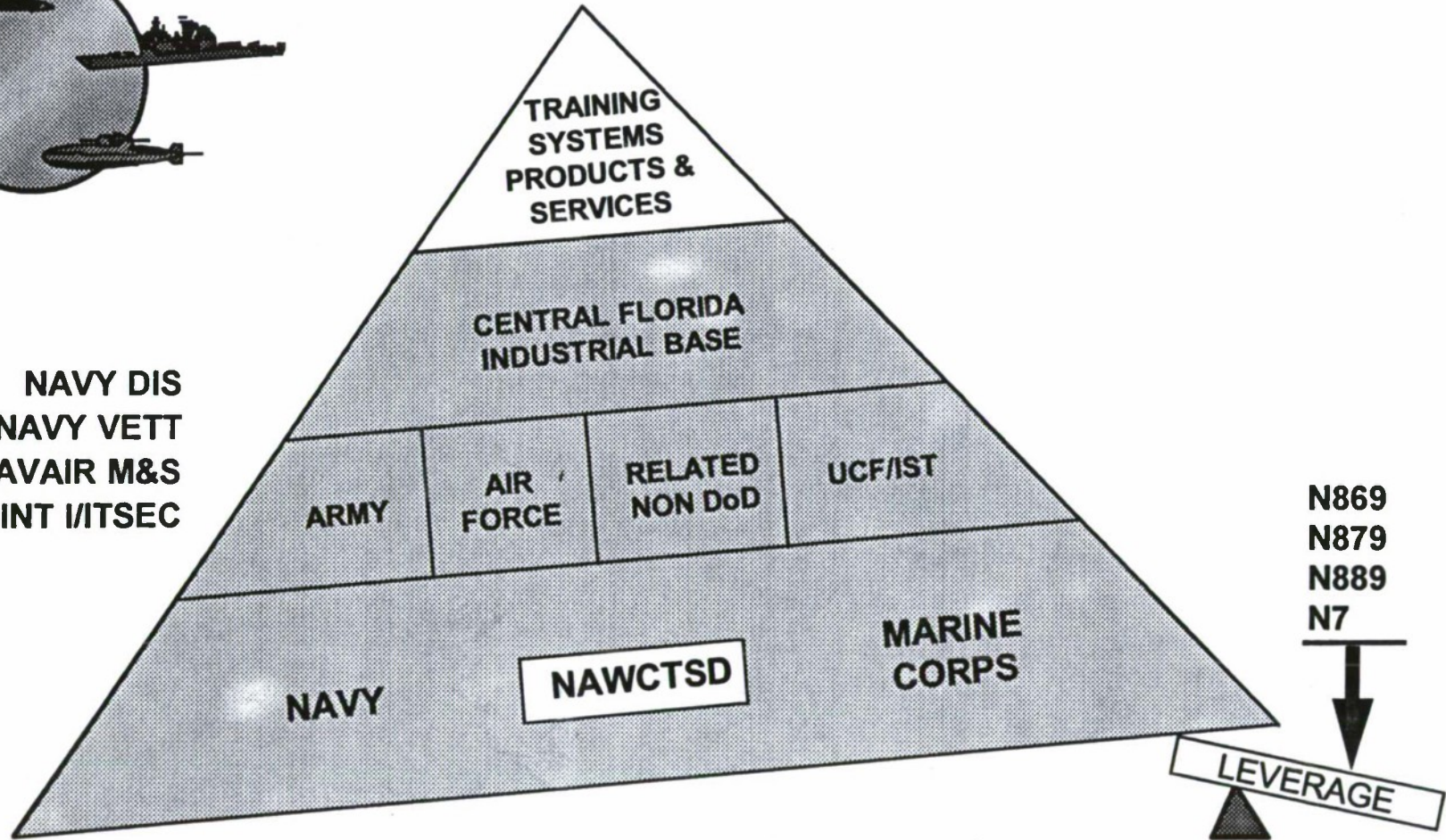


NAWCTSD

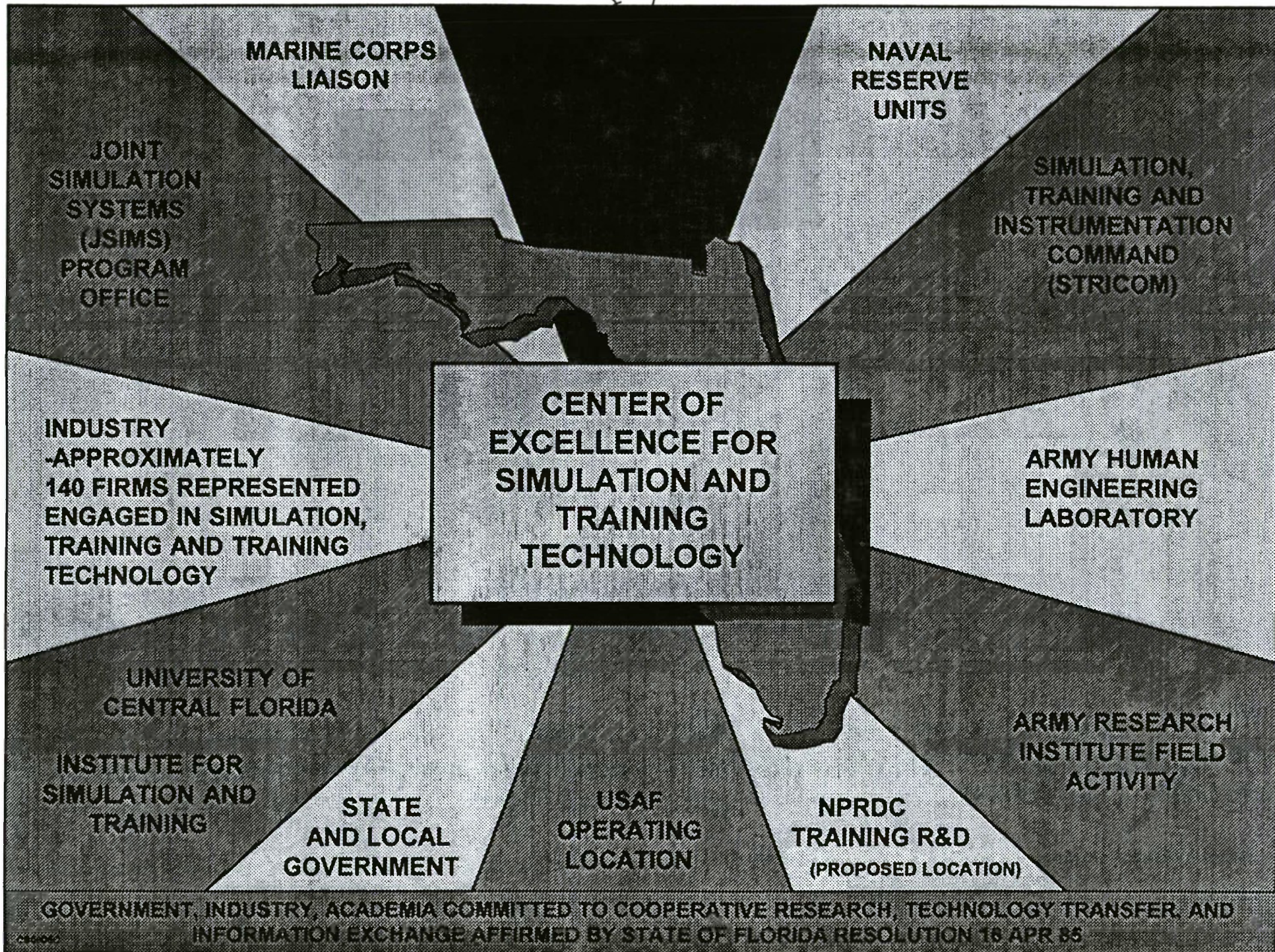
LEVERAGING THE CENTER OF EXCELLENCE



NAVY DIS
NAVY VETT
NAVAIR M&S
JOINT I/ITSEC

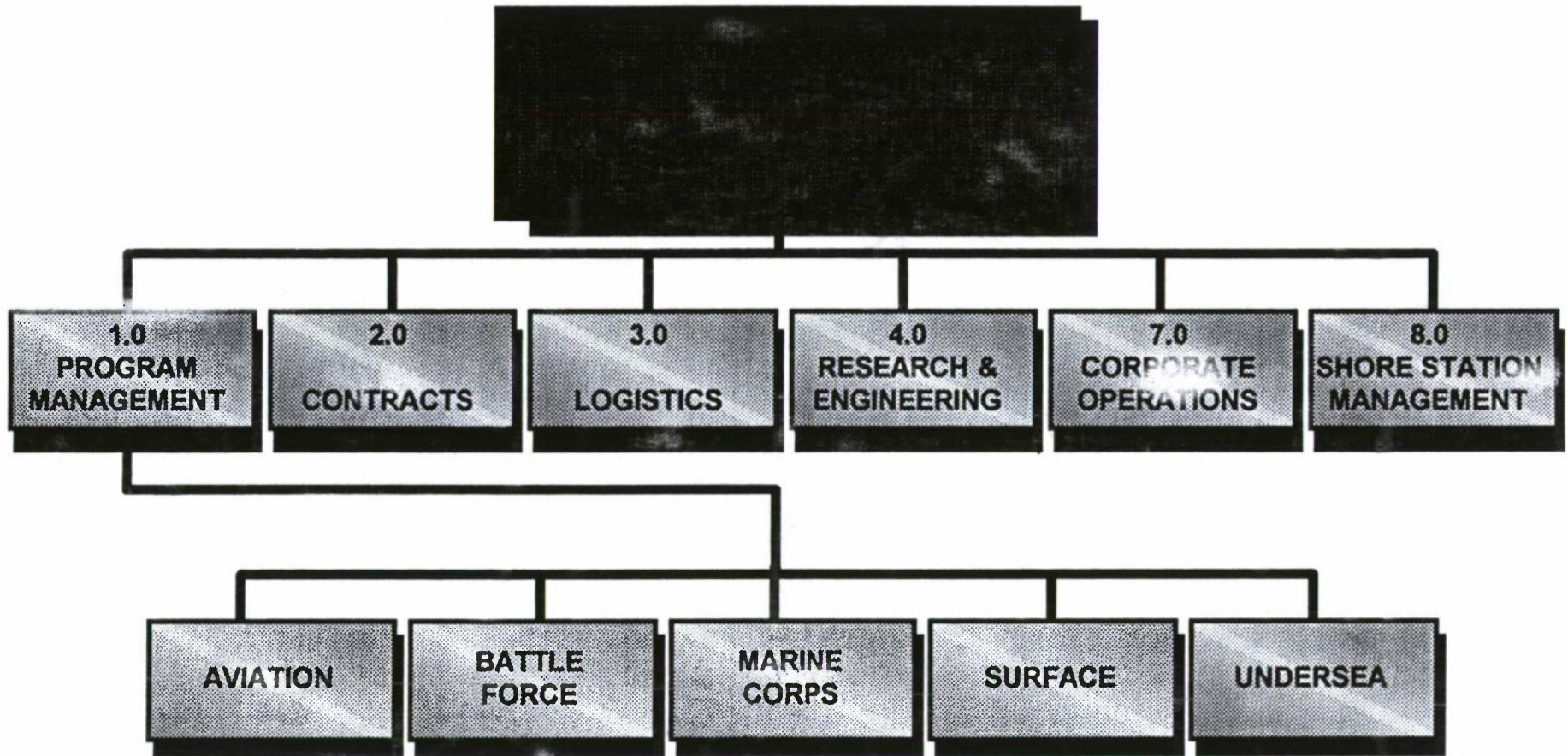


STATE OF FLORIDA/NAVY CENTER OF EXCELLENCE



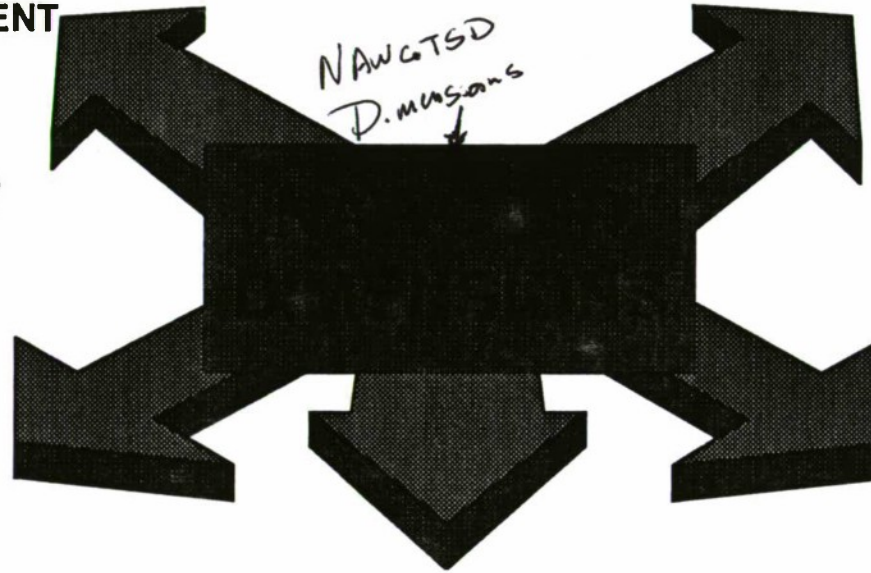


NAWCTSD



FRONT-END ANALYSIS
RESEARCH & DEVELOPMENT
ENGINEERING
LOGISTICS
PROJECT MANAGEMENT
FINANCIAL MANAGEMENT
CONTRACTING
FIELD SUPPORT

AVIATION
SURFACE
UNDERSEA
MARINE CORPS
BATTLEFORCE/C41/SEW



FORMAL EDUCATION
32 PHD, 221 MAST, 463 BACH

ENGINEERS
COMPUTER SCIENTISTS
INSTRUCTIONAL SYSTEMS
ECONOMISTS
PROGRAM MANAGERS
CONTRACTING OFFICIALS
OPERATIONAL MILITARY
LOGISTICIANS
PHYSIOLOGISTS
PSYCHOLOGISTS
ATTORNEYS

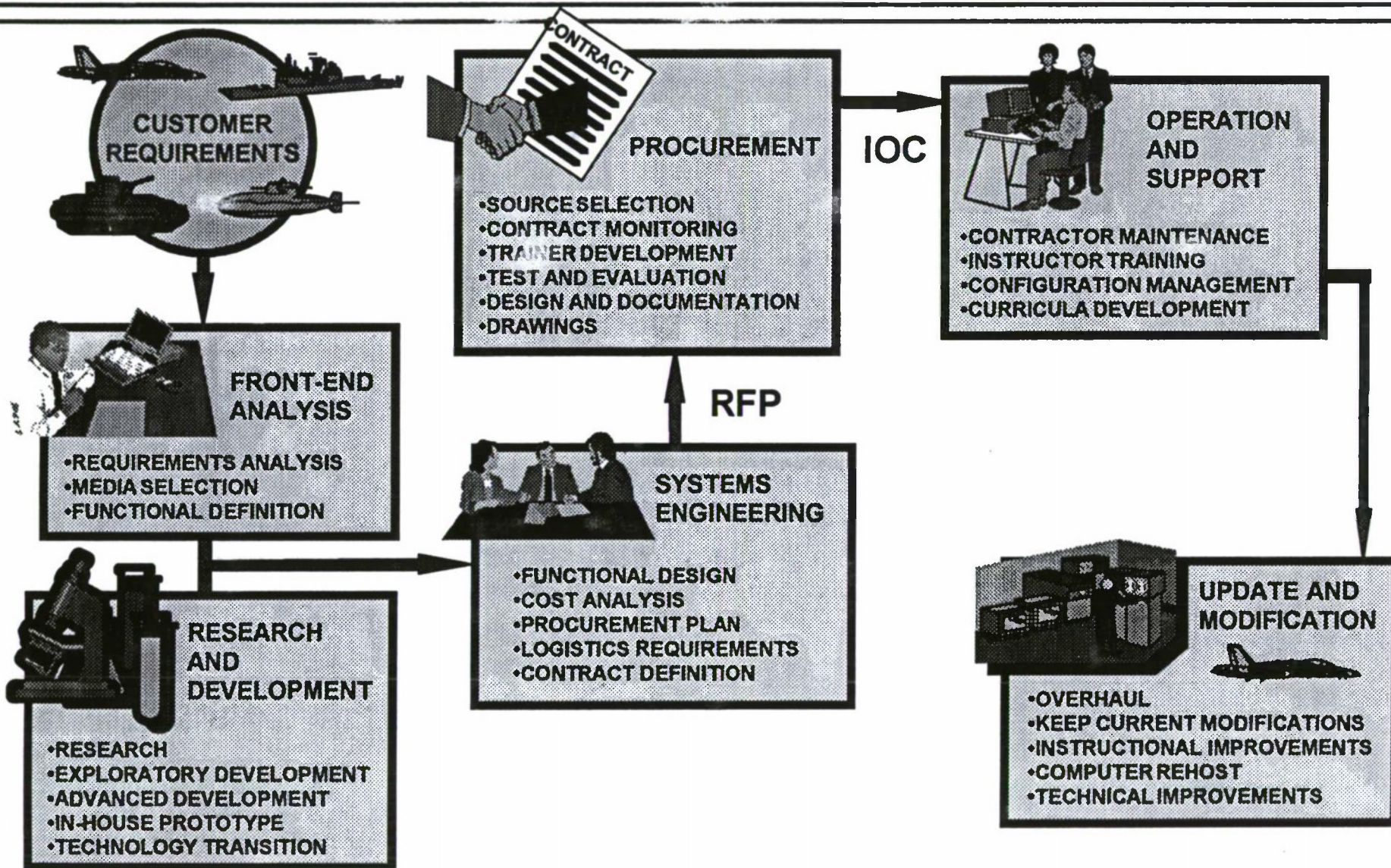
USN
USMC
AIR FORCE
ARMY
COAST GUARD
FMS

DMSO
OSD
ARPA
NSA
NASA
FAA

DIS
ARTIFICIAL INTELLIGENCE
ICW
EMBEDDED SIMULATIONS
HELMET MOUNTED DISPL
VOICE RECOGNITION
VIRTUAL ENVIRONMENT
DISTANCE LEARNING
REUSABLE SOFTWARE

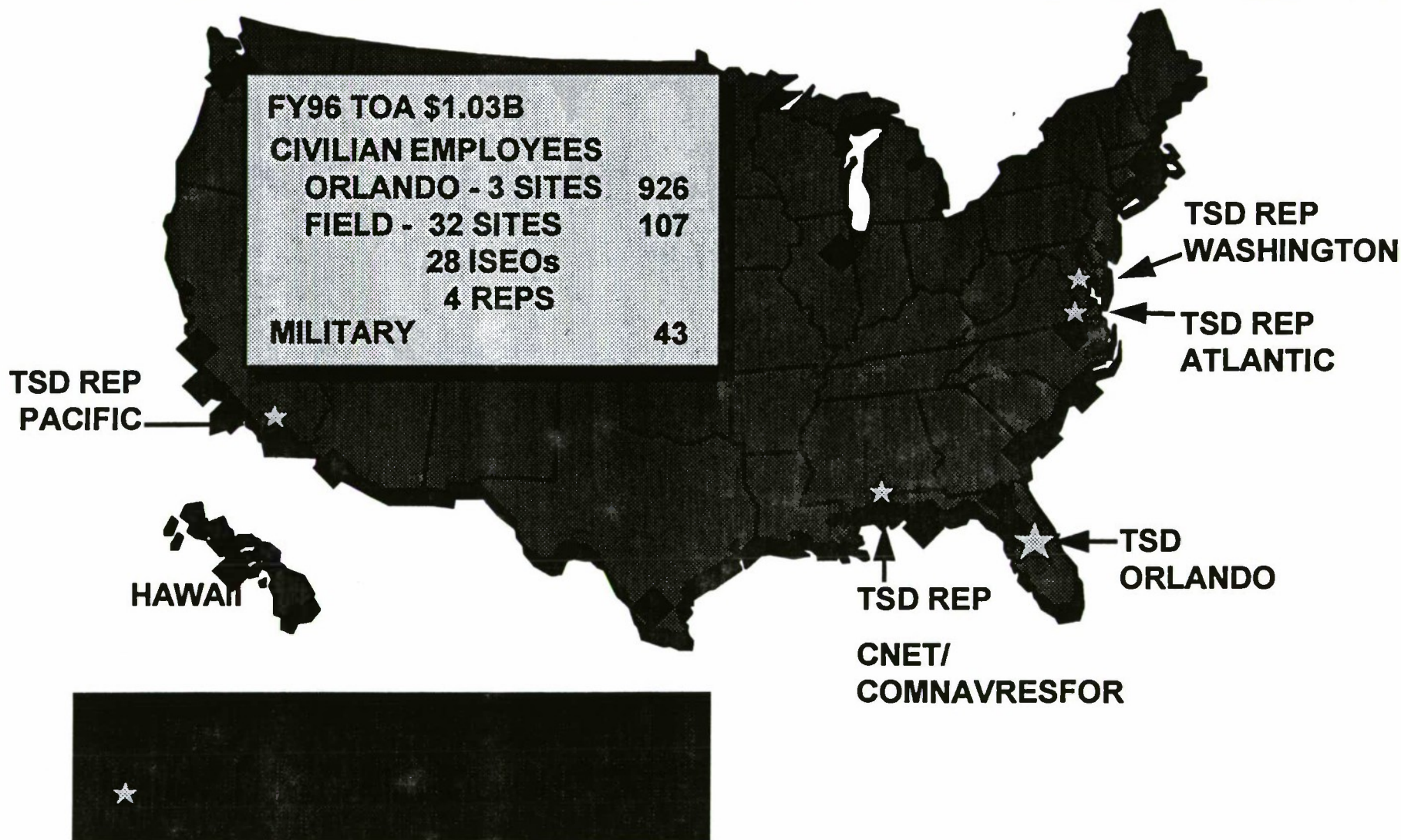


THE ACQUISITION PROCESS AT NAWCTSD





NAWCTSD FIELD SUPPORT





NAWCTSD

MAJOR PROGRAMS

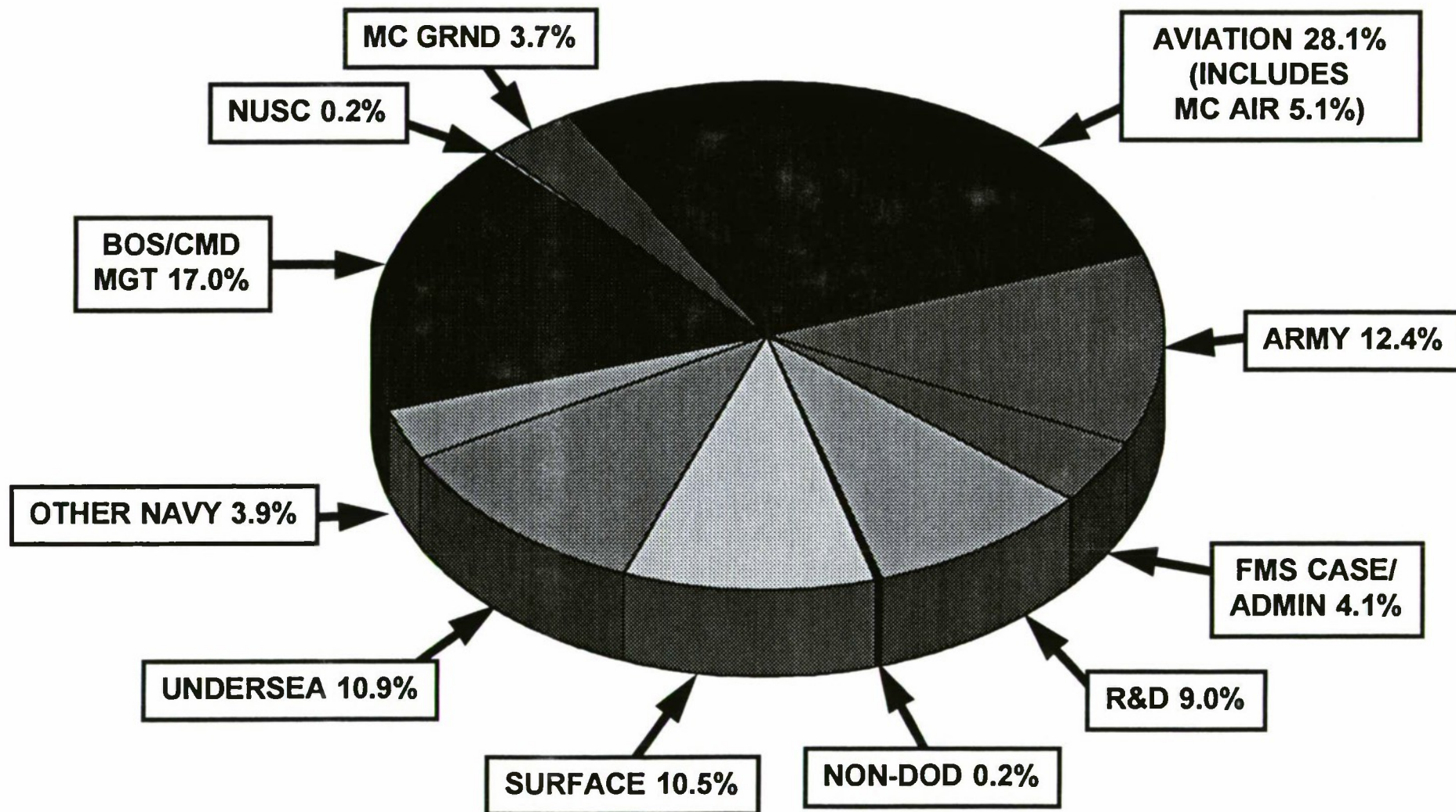


AVIATION	USMC	SURFACE	UNDERSEA	BATTLEFORCE	RESEARCH & TECHNOLOGY
AV-8B	M-60	CIWS	TRIDENT	* E-3/E-6A	INSTRUC TECH
AV-PHYS	IST	BARGE FERRY	SSN-688	* JTCTS	NETWORKING
A-SCHOOL	* PGTS	PIERSIDE	SEAWOLF	EP-3/ES-3 (MAST)	TADMUS
ATC	M1A1	PROPULSION	NEW SSN	* WISSARD	EMBEDDED TRNG
AH-1W	UMTS	FIRE FIGHTING	IUSS	* UAV	VIRTUAL ENVIRONS
EA-6B	ISMT	USCG BUOY TENDER	PERISCOPE	* M&S	SENSOR SIM
E-2C/C-2A	AAAV	LCAC	ACOUSTIC TRNG	C2P	WEAPON TEAM SIM
CH-46	LAV-AD	SDVT	NAVIGATION-PILOTING	EW	SCENARIO DEV
CH-63	LAV-AT	COMS	SHIP CONTROL	* TIDES	SIMSICK
CACT	LAV-AG	BFTT	SUB-BFTT	CRYPTOLOGIC	AIRCREW COORD
COMS/CSI	CAST	TACDEW	DAMAGE CONTROL	OTT	STARS
F-14	AAV	FORWARD OBSERVER	AIM	DIS	SBIR
HH-66	MILES	ASW TEAM TRAINERS	COMS	AUTEC	TECHNOLOGY TRANSFER
HH-60J	* TTES	USCG ON SCENE COORD	CIS	CADB	DISTRIBUTED/JOINT TRNG
ISD/CW	DFO/MULE	BRIDGE/CIC	SUB-EMPLOYMENT	COMS	(MDT?)
JAST	COMS	RADAR NAVIGATION	CHTA	* JTASC	
* JPATS	CVATS	AIM	SUB HM&E	FAA	
KC-130	EMERALD LIGHT	LPD17	TORPEDO ROOM		
LSO	TSA(USCG GRND)	USCG COASTAL PTRL BOAT			
MH-63	USMC DIS	DIVER HELD SONAR			
P-3		CONSTRUCTIVE MECH MAINT			
SH-2G		21ST CENTURY COMBATANT			
SH-3H		MARKSMAN TRAINER			
SH-60B/F		USCG ICEBREAKER			
S-3		USCG ACCES			
T-2C		USCG SCCS			
TH-67C					
T-46					
T-34/44A					
UNFO					
UH-1N					
V-22					

*NAWCTSD JOINT PROJECTS



FY96 WORKYEARS BUDGETED TOTAL 1033





INTERNATIONAL PROGRAMS

Training Material Cases (54) Value \$290M
Prospective Cases [30] Value \$165M



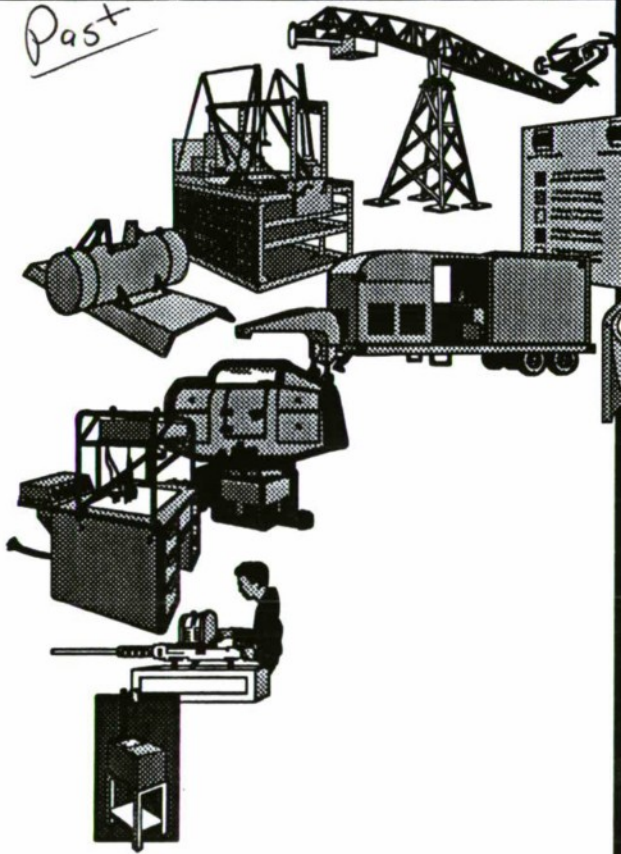
- REDUCES COST & RISK; POTENTIAL FOR LEVERAGING
- PROMOTES INTEROPERABILITY & COOPERATION WITH ALLIED SERVICES
- CREATES FUTURE SALES OPPORTUNITIES



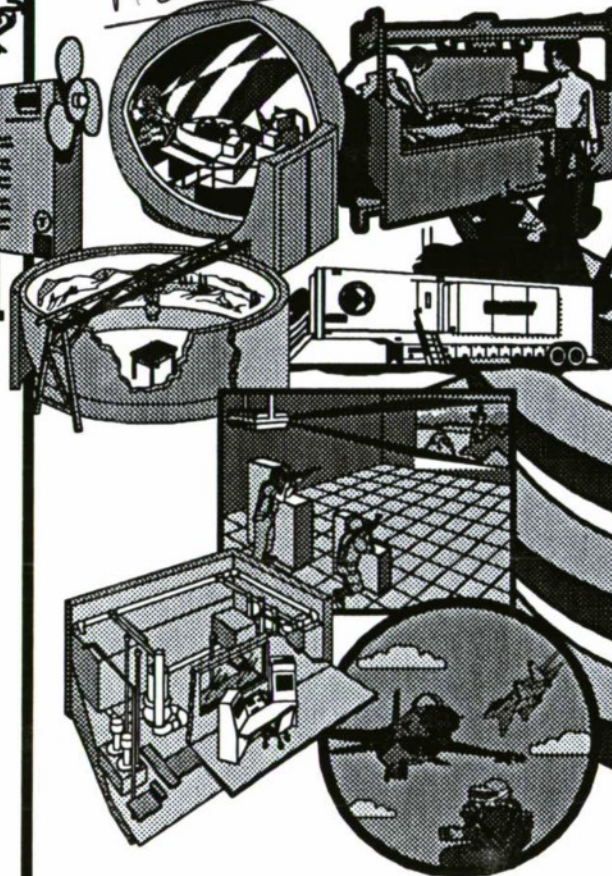
TRAINING SYSTEMS



Past



Present



Future



- **SMALLER**
- **RECONFIGURABLE**
- **TRANSPORTABLE**
- **INTEGRATED**
- **DISTRIBUTED**



WHY ARE WE HERE?



$$R = f (E + / * T)$$



Advanced Planning Briefing to Industry

30 April 1996



CAPT Tom Freeland
Aviation Program Director
Naval Aviation Systems TEAM
Orlando
(407) 380-8109

thomas_freeland@ntsc.navy.mil

<http://www.ntsc.navy.mil>



MISSION



Acquire products and product support for

**Naval Aviation
Training Systems**

Naval Air Warfare Center Training Systems Division, Orlando, Florida



PROGRAMS and SPONSORS



Program	Sponsors
F-14D	N88 PMA-241 (PMA-205)
A-6E/EA-6	N88 PMA-234 (PMA-205)
E-2/C-2	N88 PMA-231 (PMA-205)
P-3/S-3	N88 PMA-290 (PMA-205)
SH-60B/F / SH-2G	N88 PMA-299 (PMA-205)
JPATS	N88 PMA-273 (PMA-205)
F/A-18	N88 PMA-265 (PMA-205)
T-45	N88 PMA-273 (PMA-205)
UNFO	N88 PMA-200 (PMA-205)



PROGRAMS and SPONSORS



ATC

T-2/A-4

T-44/T-34

AH-1W

**AV-8B
205)**

CH-46

CH-53/MH-53

KC-130

UH-1N

V-22 W/MAINT

N88 PMA-213 (PMA-205)

N88 PMA(F)-225 (PMA-205)

N88 PMA(F)-227 (PMA-205)

N88 PMA-276 (PMA-205)

N88 PMA-257 (PMA-

N88 PMA(F)-226 (PMA-205)

N88 PMA-261 (PMA-205)

N88 PMA(F)-226 (PMA-205)

N88 PMA(F)-225 (PMA-205)

N88 PMA-275 (PMA-205)



PROGRAMS and SPONSORS



GENL AV'N/A-SCH/LSO

HH-60J/HH-65

PHYSIOLOGY

WATER SURVIVAL

JAST

COMS/CSI/CACT

N889 PMA-205

COAST GUARD

N889/BUMED (PMA-205)

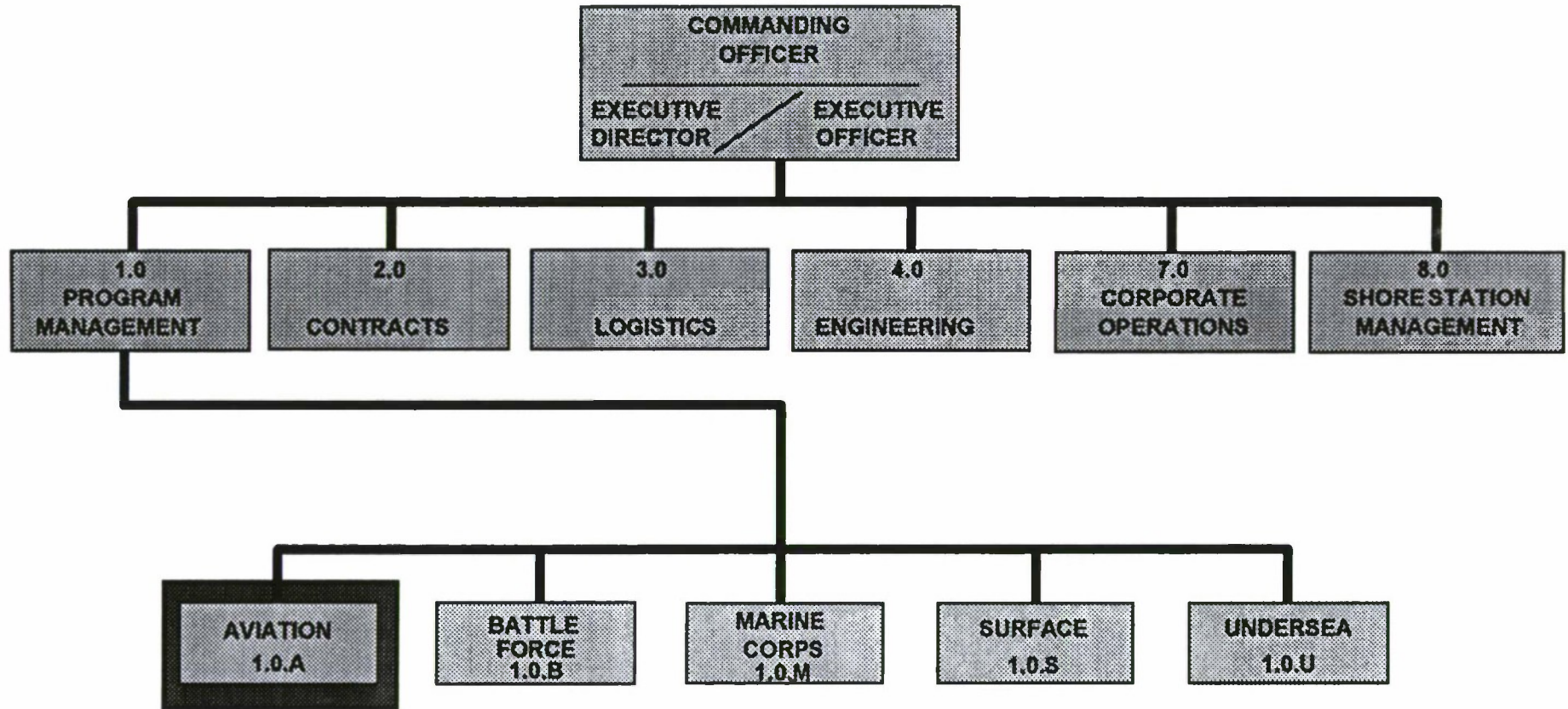
N889/BUMED (PMA-205)

JAST PROGRAM OFFICE

TYCOM

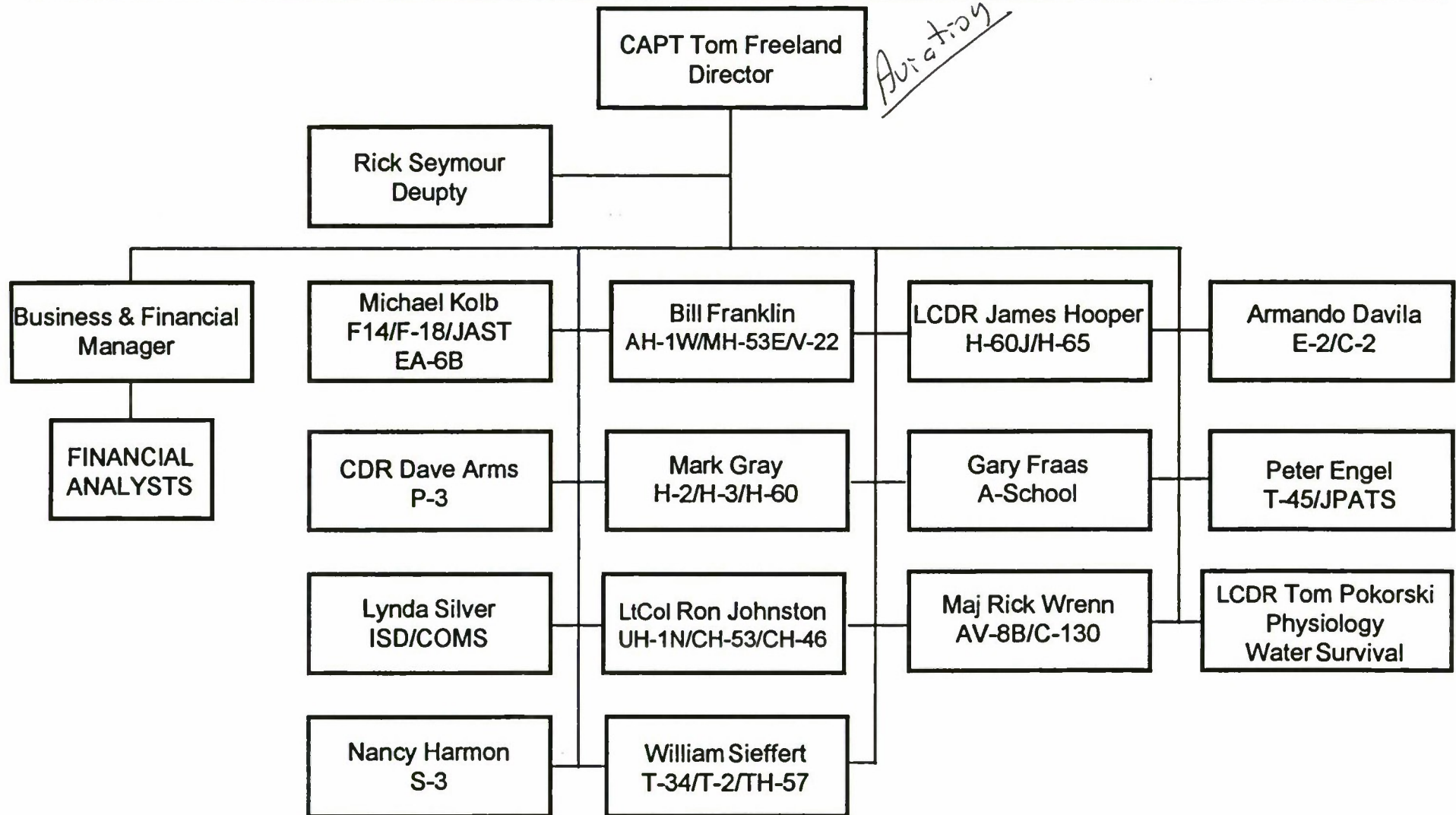


NAWCTSD





1.0.A





FOCUS



- **TRAINER CURRENCY**
 - **Contracting Efficiencies**
 - **Long Term Partnerships**
 - **In Service Engineering**
- **TRAINER RELOCATION**
 - **FRS Single Siting**
 - **BRAC**
- **TRAINER OPERATIONS / MAINTENANCE**
 - **COMS**
 - **CSI/CACT**
 - **ISD**



ACQUISITIONS



General Aviation Trainer Programs

	CA	FUNDED
AE SCHOOL 6E36-40 Electrical System Trainers - Hands-On Hardware and CBT.	1/97	YES
LSO 2H111 - Rehost/Block Upgrade	1/98	YES

Program Manager: Gary Fraas (407) 380-4225 / DSN 960-4225

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: E-2C

	CA	FUNDED
C-2A	2/98	NO
- OFT S/N 2		
E-2C WST (15F8A/C)	3/98	NO
- Cooperative Engagement		
E-2C WST (15F8A/B/C)	3/99	NO
- Mission Computer Upgrade/SATCOM Integration		

Program Manager: Armando Davila (407) 380-4497 / DSN 960-4497

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: EA-6B

	CA	FUNDED
Block 89A Upgrade - Major systems improvements affects all EA-6B training devices	6/97	YES
2F122 Conversion/Low Cost WST for Iwakuni	12/97	YES
2F114 Visual System Update - Retrofit 2F114 Visual System into 2F119A	2/98	YES
15E34A Test Equipment Replacement	3/99	YES

Program Manager: Mike Kolb (407) 380-8152 / DSN 960-8152

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: F-14B/A

	CA	FUNDED
2F169 Visual System Upgrade	2/98	YES

Program Manager: Mike Kolb (407) 380-8152 / DSN 960-8152

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: CH-53

CH- 53D OFT

- Move to Hawaii
- Block Mod including GPS,
ARC210, #2 Eng Fire Det, NVG
EXT lights, Crashworthy seats

CA	FUNDED
8/96	NO
2/99	YES

Program Manager: LtCol Ron Johnston (407) 380-4230 / DSN 960-4230

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: UH-1N

UH-1N WST	CA	FUNDED
- COMNAV Phase B Electronic (Glass) Cockpit to Reduce Weight and Pilot Workload, Maximum Commonality with AH1W Glass Cockpit	7/98	YES

Program Manager: LtCol Ron Johnston (407) 380-4230 / DSN 960-4230

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: CH-46

CH-46E APT

**- Block Mod including GPS,
NVG/HUD, ARC-210, NVG COMP
cockpit**

CA

1/99

FUNDED

YES

Program Manager: LtCol Ron Johnston (407) 380-4230 / DSN 960-4230

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: P-3

2F140 and 2F87(F)	CA	FUNDED
- Add GPS system to the five (5) 2F140 and six (6) 2F87(F) trainers	3/98	NO
2F87(F)		
- Replace Visual system in six (6) 2F87(F) and two (2) 2F142(F) trainers	4/98	NO

Program Manager: CDR David Arms (407) 380-4241 / DSN 960-4241

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ACQUISITIONS



Weapon System: P-3

	CA	FUNDED
All P-3 Training Devices		
- Provide Software/Hardware Engineering and Technical Services to P-3 for modification and support of ASW/ASUW trainers	1/99	NO
2F140 SLEP		
- Modify four (4) 2F140 trainers to delete obsolete parts to provide better operation and support.	3/99	NO

Program Manager: CDR David Arms (407) 380-4241 / DSN 960-4241

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ISD/COMS/CSI/CACT Programs



	Contract Award
KC-130 COMS	7/96
SH-60B/F COMS	7/96
AIRLANT CSI	7/96
CT-39/C-9B CACT	8/96
UC-12B/C & C-20D CACT	8/96
* CH-46/53 COMS	9/96
E-6A COMS	9/96
General Aviation/ASW ISD IQC	10/96
NATRACOM COMS	12/96

*** New**

Program Manager: Lynda Silver (407) 380-4484 / DSN 960-4484

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ISD/COMS/CSI/CACT Programs



	Contract Award
AV-8B COMS	6/97
E-2C COMS	6/97
S-3A/B COMS	6/97
AIRESFOR COMS	6/97
P-3C COMS (Barber's Pt)	6/97
CNATRA CSI	7/97
H-1 COMS	5/98
P-3C COMS (Brunswick)	5/98
Helo COMS	5/98
C-20G/C-130T COMS	8/98

Program Manager: Lynda Silver (407) 380-4484 / DSN 960-4484

Naval Air Warfare Center Training Systems Division, Orlando, Florida



ISD/COMS/CSI/CACT Programs



	Contract Award
F/A-18 COMS	6/99
F-14A/D COMS	6/99
C-20G CACT	6/99
Helo ISD IQC	10/99
Aviation Physiology COMS	3/00
P-3C COMS (Jax & Whidbey)	5/00
AIRPAC CSI	6/00
NATTC COMS	7/00
Photo School COMS	7/00
Tactical Air ISD IQC	10/00

Program Manager: Lynda Silver (407) 380-4484 / DSN 960-4484

Naval Air Warfare Center Training Systems Division, Orlando, Florida



Surface Warfare Training Systems Business Opportunities



Surface Warfare Program

*Sent EMAIL on
5-9-96 (Daw-Taylor)*

CDR Patrick Rearden

Surface Program Director

(407) 380-8361

patrick_rearden@ntsc.navy.mil

<http://www.ntsc.navy.mil>



Surface Training Business Environment



◆ OPNAV Sponsor **Funding Reductions**

- 60% cut in past three years; shore trainers, devices
- Focus: Cost reduction; life cycle (COMS/Mods)

◆ Opportunity - **Diversification**

- Coast Guard: Performance Technology ^{Some development being done.} Center
- BFTT, MCM: Analyses, software, “desktop options”
- Foreign Military Sales: Traditional devices

*Human Factors Analysis
Send Email to
DR Bearden
Ask for info on the programs.*

◆ Opportunity - **New Ship Development**

- Advanced ship class work: embedded technologies, total ship training



TSD's Advanced Ship Class Objectives



- ◆ Establish a **Vision, Strategy** and Integrated Operating **Plan** for Surface Ship Training
- ◆ **Develop and Maintain** a Cross-Functional Core Team Linked to all Program Offices
- ◆ Achieve **Cost and Training Efficiencies**
 - Introduce, analyze and refine embedded technologies
 - Common systems, reduced costs, no/low risk implementation



Near-Term Surface Training Systems Opportunities



◆ LPD-17 (PMS-317)

- RFP Released, 8 April 1996
- Contract Award, Autumn 1996
- Integrate Existing Systems, Organizations, Standards and Resources
- Efficient ship training: Surface, USMC, Aviation

◆ Smart Ship

use as a research ship??

- Low-cost/risk alternatives to reduce crew workload
- FY 96/97 installation on USS Yorktown and Harry Hill
- Web Site: <http://www.dt.navy.mil/smartship>

*Currently
Doing Human
Factors
Research.*



Long-Term Surface Training Systems Opportunities



◆ SC-21 (PMS-400R)

- Concept Exploration (MS 0) phase; define ship mission, characteristics

**

– Integrate training technologies within ship systems

◆ CV(X)

- Concept Exploration (MS 0) phase; integrate SC-21 technologies
- Define the ship and aircraft embarked



Changing Nature of Surface Training



◆ Traditional:

- Build training devices to replicate equipment
- Result: Unaffordable shore-based training systems

◆ Emerging:

- Work with Shipyard or Systems Prime Contractor to integrate training into each ship
- Plan all warfare area training simultaneously
- **Result:** Total Ship Training
- **Result:** Reduced training costs and shore dependency, uniformity

ADVANCED PLANNING BRIEFING TO INDUSTRY



ROBERT R. TYLER, COL USMC
NAWCTSD MARINE CORPS PROGRAM DIRECTORATE
30 APRIL 1996

Robert_Tyler@ntsc.navy.mil

<http://www.ntsc.navy.mil>



CMC PLANNING GUIDANCE



COMMANDANT'S FOCUS:

- WINNING WARS
- MAKING MARINES

COMMANDANT'S FIVE PILLARS:

- WARFIGHTING
- PEOPLE
- CORE VALUES
- TRAINING AND EDUCATION
- NAVAL CHARACTER



STRATEGY



HOW WE GET THERE:

Jointness

Technology to enhance:

Speed

Protection

Lethality

Tactical Mobility

Training and Education:

Simulations

Virtual Reality

Models

Warfighting Games

Interactive Training

Warfighting Lab



ADVANCED AMPHIBIAN ASSAULT VEHICLE (AAAV)



The AAAV program is presently in source selection. Our role is to support the program manager relative to the vehicle's training requirements. It is anticipated that there will be requirements for various training systems/devices during the program's life cycle.

Training Technology currently doing research.



COMBAT VEHICLE TRAINING SYSTEMS (CVTS)



CVTS:

Programs

- **Combat Vehicle Appended Training Systems (CVATS)**
- **Combat Vehicle Institutional Training System (CVITS)**

Purpose

- **to satisfy the individual and collective training requirements for the AAV, LAV-25, & M1A1 platforms**



COMMANDANT'S WARFIGHTING LABORATORY (CWL)



CWL is an ongoing program under CG, MCCDC that is intended to:

- serve as the integrating ground for new technologies**
- be the focal point for warfighting refinements**
- ensure that emerging technologies for the individual Marine are brought into service expeditiously and effectively**
- be responsible for development, field testing, and implementation of future operational/functional concepts, and potential doctrinal, organizational, training, educational, and support solutions.**



EMERALD LIGHT



Emerald Light is an initiative to enhance interoperability between services force projection training and achieve DOD commonality in live training centers. It consists of two phases:

** * ** **Phase I - demonstrate the capability to analyze effectiveness of instrumentation for force on force training and allow empirical analyses of new tactics and operational systems. (January 97)**

Frank's concept!! **Phase II - instrument and provide CTC After Action Review capability to MCAGCC , 29 Palms. (September 00)**



RANGE INSTRUMENTATION SYSTEMS (RIS)



RIS will provide a state - of- the - art automated data collection and analysis system that will:

- support the control of missions/exercises by collecting data from instrumented entities.**
- be interoperable with other ground and air range instrumentation systems in an ADS environment to support combined operations and training.**
- incorporate instrumented live fire training within the exercise.**

Initial operating capability in FY00 at MCAGCC. Camp Lejeune in FY01, Camp Pendleton FY02, and Quantico in FY 03.



TEAM TARGET ENGAGEMENT SIMULATOR (TTES)



TTES is a developmental interactive system which provides the means to insert a dismounted combatant into the synthetic environment. Future efforts will include:

- Improving software**
- Integrating dynamic terrain capabilities**
- Developing an instructor shell**
- Improving the visual system**
- Networking multiple systems**



CONCLUSIONS



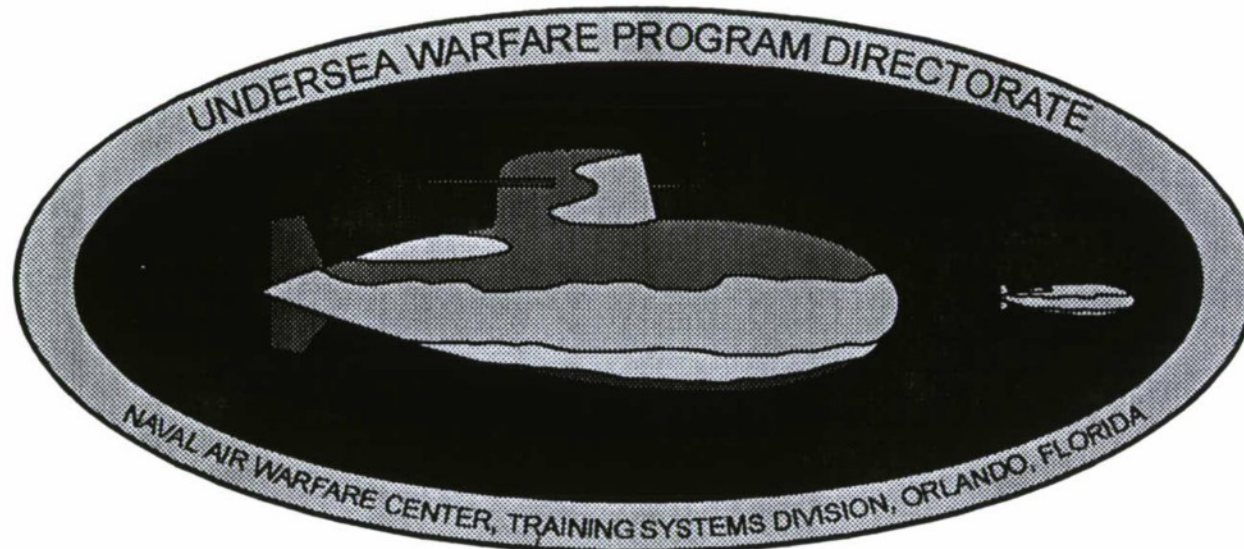
Our policies are based on a long-range view with a singular focus on where and what we want the Marine Corps to be in the 21st century.

We will use improvisation, creativity, innovation, and advances in technology to meet the known and unknown challenges ahead of us.

We look to you, as part of our team, to help us meet our requirements and achieve our goals.



Naval Air Warfare Center Training Systems Division



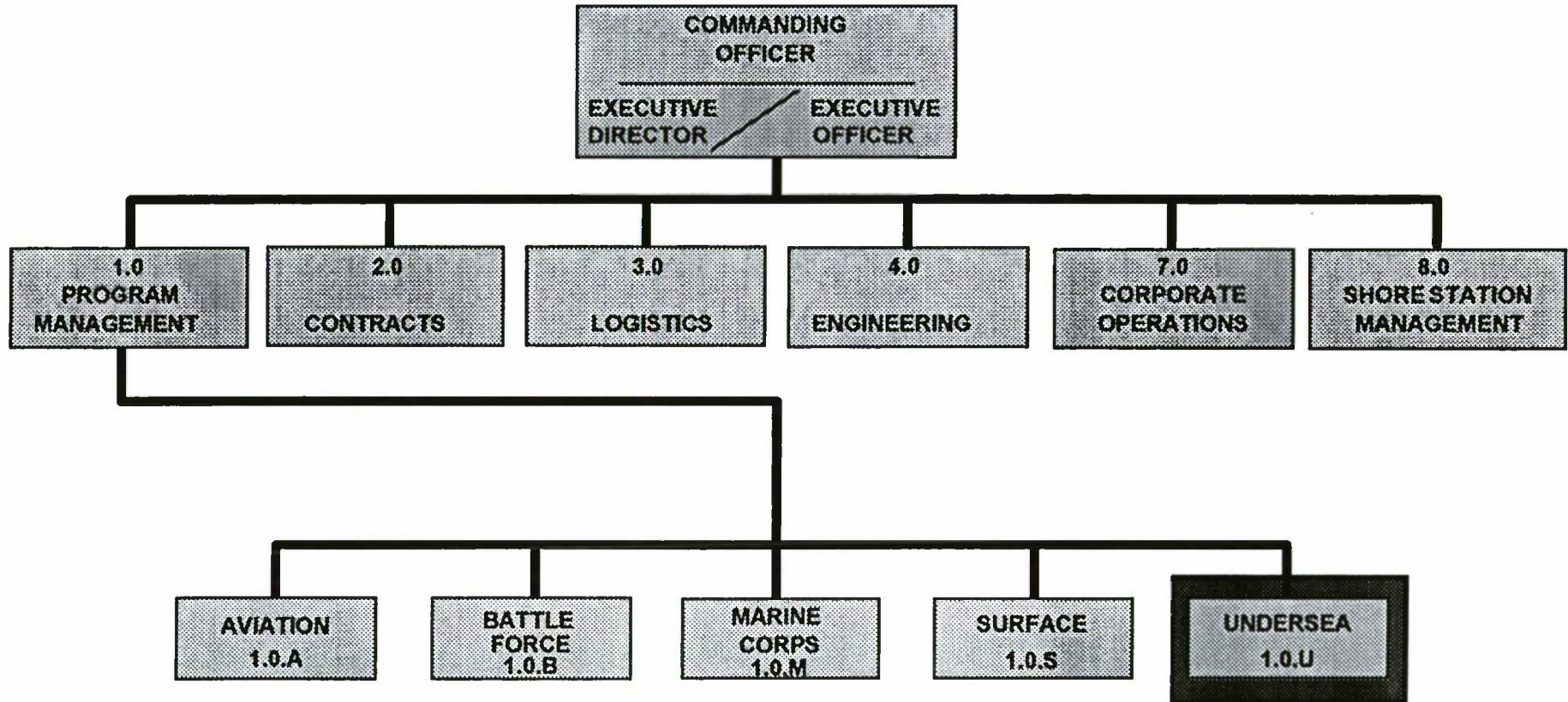
Undersea Program Advanced Planning Brief to Industry

Leo Harris - Undersea Program Director
(407) 380-8262

leo_harris@ntsc.navy.mil <http://www.ntsc.navy.mil>



NAWCTSD





Undersea Program Acquisition Planning



- **NSSN Ship Control Operator Trainer**
- **VE Submarine Ship Handling Trainer**
- **Submarine Piloting & Navigation Trainer**
- **Submarine Contractor Instructor,
Maintenance and Training Support(CIMTS)**
- **Submarine Contractor Operations and
Maintenance of Simulators (COMS)**



NSSN Ship Control Operator Trainer



-
- Supports New Attack Submarine (NSSN) Ship Control Pilot/Co-Pilot Operational Concept
 - Supports Normal and Casualty Ship Control Operations
 - Requires Motion Capability
 - Planned Contract Award: Feb 1998



Virtual Environment Submarine Ship Handling Trainer



- **Supports Submarine Officer of the Deck(OOD) Training in Surfaced Ship Handling Skills**
- **Using VE and Helmet Mounted Display Technologies**
- **Providing 360 Degree Views in Restricted Waterways/Channels with Appropriate Traffic**
- **Providing Instructional Feedback Capabilities**
- **Plan to Procure Five(5) Units**
- **Planned Contract Award: Feb 2000**



Submarine Piloting & Navigation Trainer



-
- Replacement for Existing SPAN Trainers
 - Supports Harbor Navigation & Piloting Training
 - Provides Radar Landmass and Periscope Visual Capability
 - Integrates with Virtual Environment Submarine Ship Handling Trainer
 - Plan to Procure Five (5) Units
 - Planned Contact Award: Feb 2001



Submarine Contractor Instructor, Maintenance and Training Support



- **Instructional Services using Government Materials and Methodologies**
- **Conducted at Seven(7) Training Commands**
- **Maintenance of Selected Technical Training Equipment**
- **Technical/Admin Support for Curriculum, Admin Systems, and Reference Centers**
- **Contract for One (1) Year Plus Four (4) One Year Options**
- **Planned Contract Award: Jan 1997**



Contractor Operation & Maintenance of Simulators



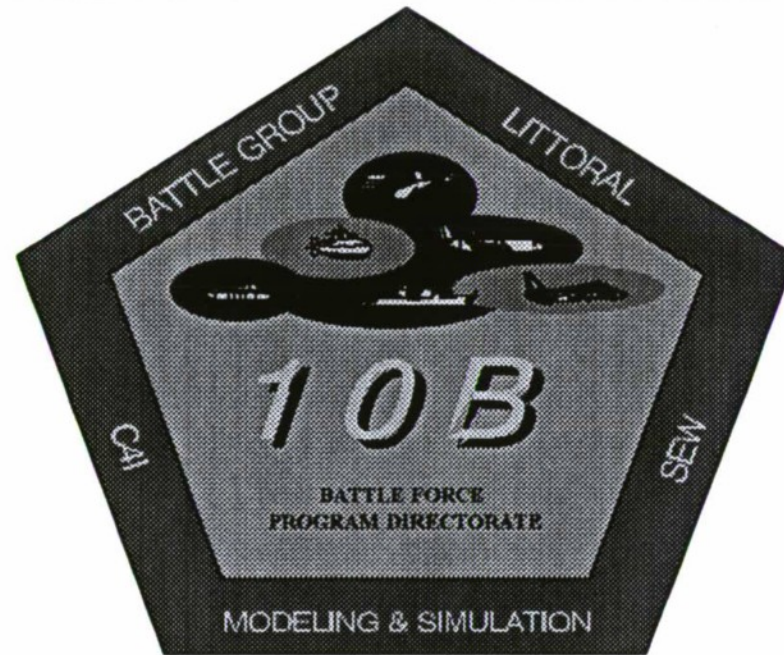
COMS

- Preventive and Corrective Maintenance of Training Systems and Selected Facility Systems
- Supply Support
- Provisioning of Selected Training Consumables
- Two Contracts Supporting Six(6) Sites
- Each Contract for One (1) Year Plus Four (4) One Year Options
- Planned Contract Award:
 - East Coast (Two Sites) Jul 1996
 - West Coast (Four Sites) Oct 1997



Advanced Planning Briefing to Industry

30 April 1996



CAPT Gary Quick
Battle Force Program Director
Naval Aviation Systems TEAM
Orlando
(407) 380-8102

gary_quick@ntsc.navy.mil

<http://www.ntsc.navy.mil>

Naval Air Warfare Center Training Systems Division, Orlando, Florida



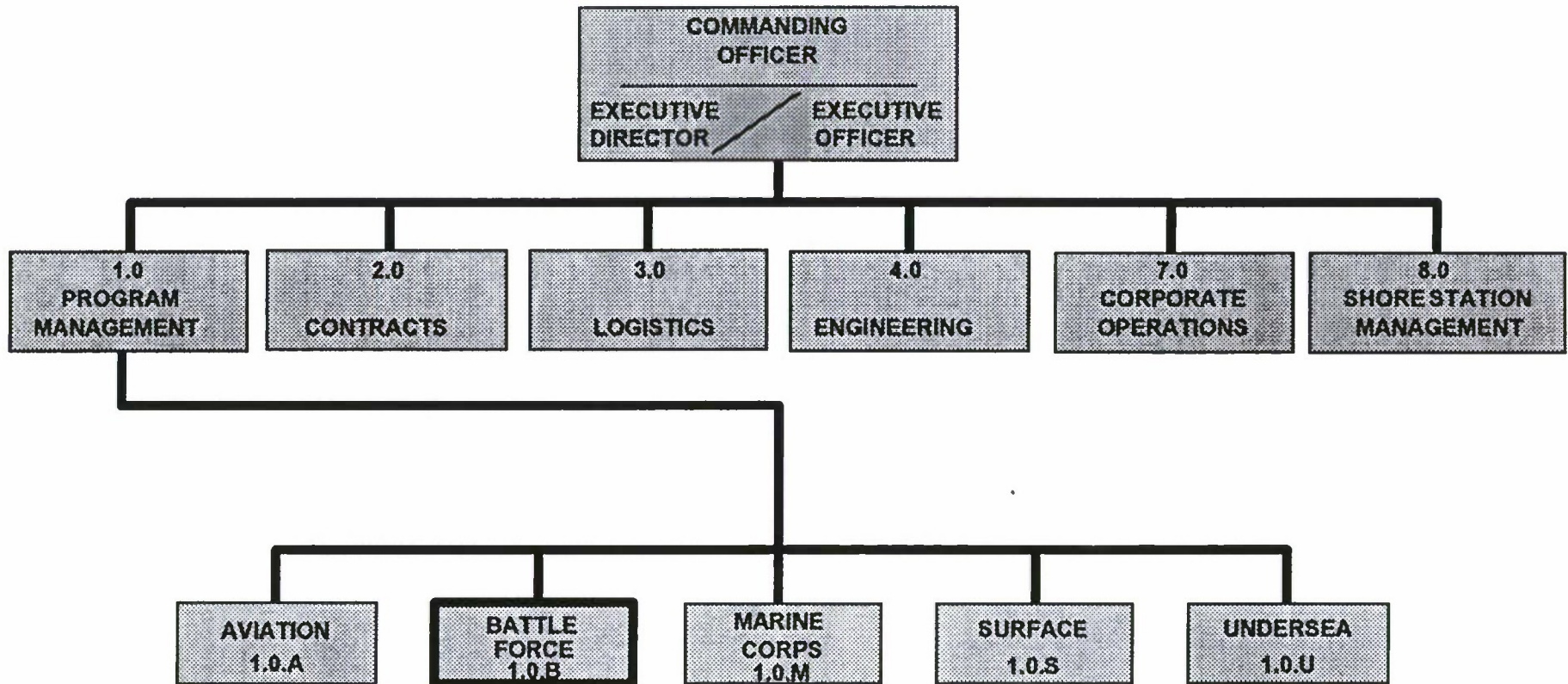
MISSION



**DEVELOP TRAINING SYSTEMS AND
PRODUCTS WHICH PROMOTE NAVY AND
JOINT SERVICE INTEROPERABILITY,
C4ISR, AND BROKER TRAINING
TECHNOLOGY DATA AND INFORMATION**



NAWCTSD



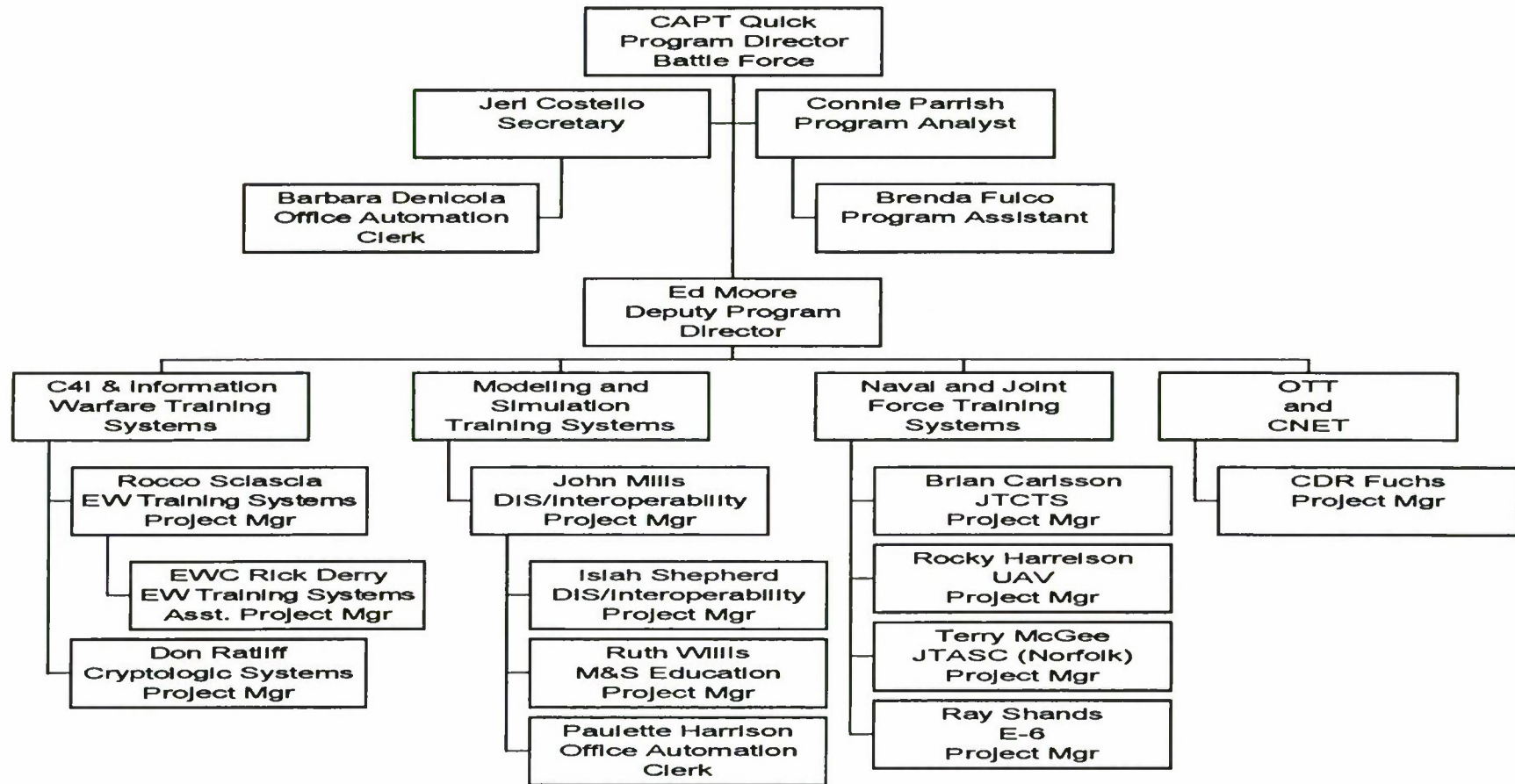
Naval Air Warfare Center Training Systems Division, Orlando, Florida



BATTLE FORCE



CODE 10B Battle Force Program Directorate





PROGRAM SPONSORS



PROGRAM

SPONSOR/CUSTOMER

C4I & IW TRAINING

COMMAND & CONTROL PROCESSOR (C2P)
CRYPTOLOGIC TRAINING SYSTEMS
EW TRAINING SYSTEMS
THREAT/INTELLIGENCE DATA EXTRACTION SYSTEM (TIDES)

OPNAV N62G/PEO-SCS
OPNAV N889/NAVAIR
OPNAV N889/NAVAIR
OSD /NAVAIR

MODELING & SIMULATION

MODELING & SIMULATION (NAVY's AGENT FOR DIS)

OPNAV N6M,, DMSO, ARPA, NAVAIR

NAVAL & JOINT FORCES

JOINT TACTICAL COMBAT TRAINING SYSTEM (JTCTS)
TACAMO (E-6A)
UNMANNED AERIAL VEHICLE (UAV)
WHAT IF SIMULATOR SYSTEM FOR ADVANCED R&D (WISSARD)
MOBILE INSHORE UNDERSEA PROGRAM (MIUW)
NASA WIND TUNNEL

OPNAV N889/NAVAIR
OPNAV N889/NAVAIR
OPNAV N889/PEO (CU)
ARPA /NAVAIR
OPNAV N866/ NAVRESFOR
NASA /FAA

OTT & CNET

OFFICE OF TRAINING TECHNOLOGY

OPNAV N75 /CNET



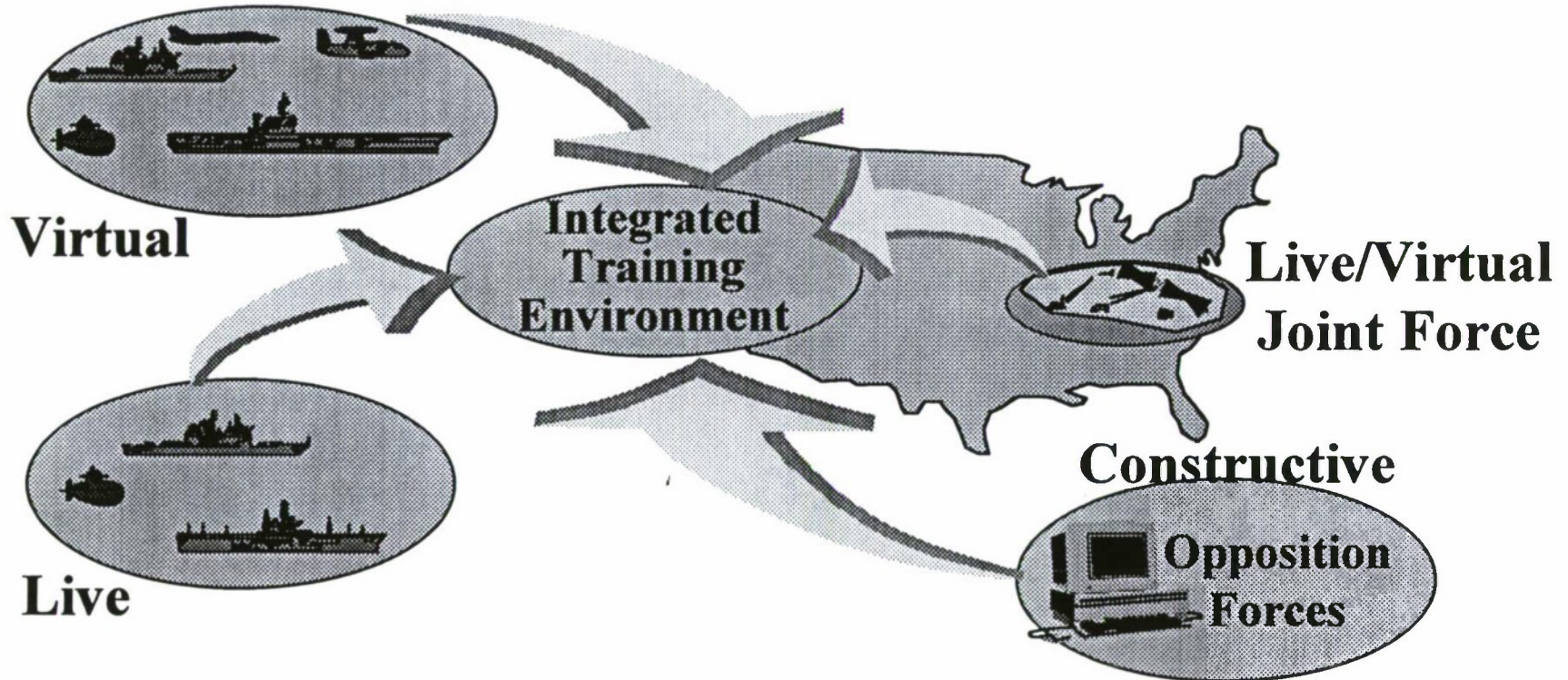
CURRENT ACTIVITIES



- SIMULATION BASED ACQUISITION
- INTEROPERABILITY - DIS & DIS ++
- OFFICE TRAINING TECHNOLOGY (OTT)
- CNET - TRAINING TECHNOLOGY ASSESSMENT
- JOINT TRAINING



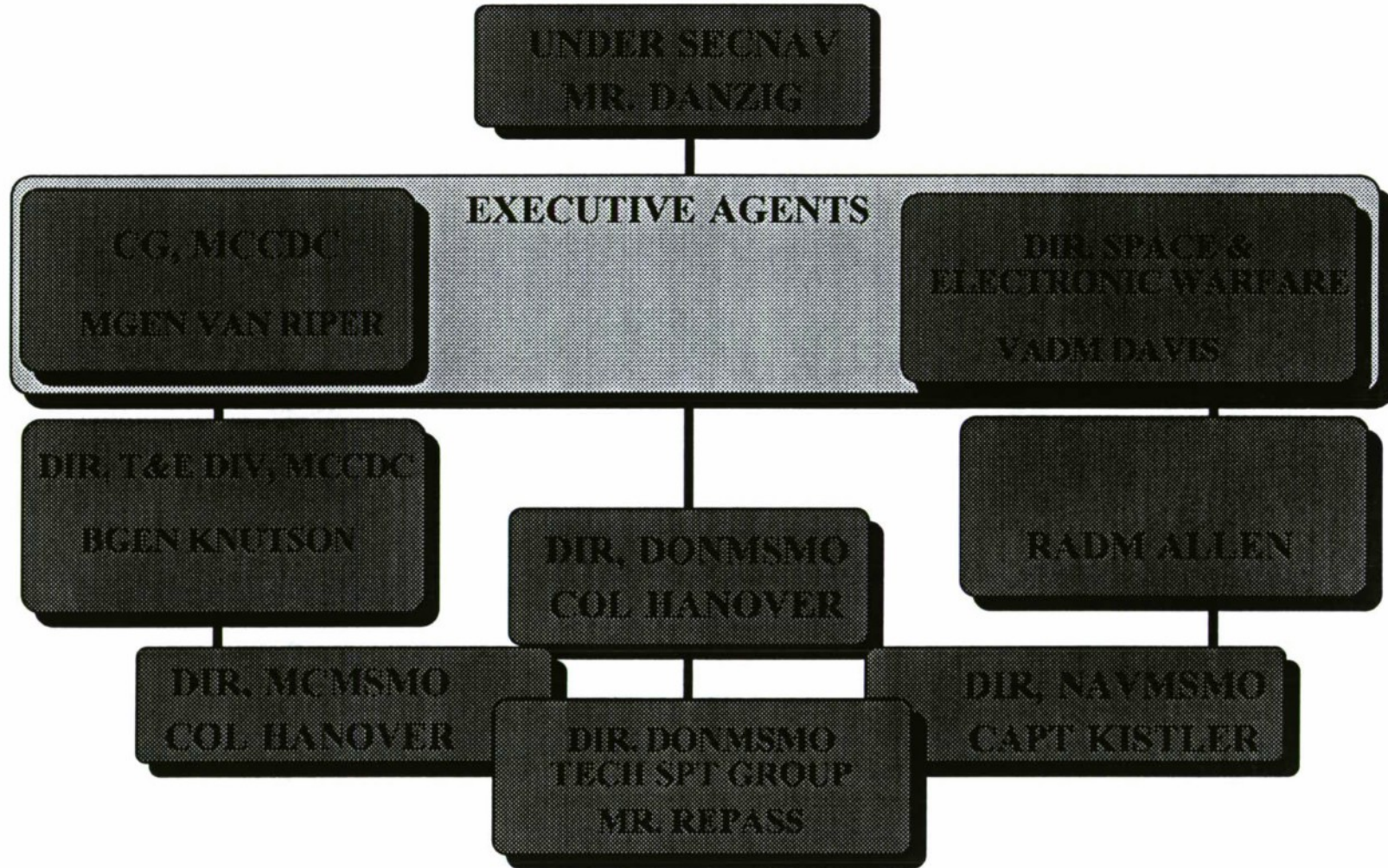
NAVY Modeling & Simulation FOR TRAINING ... Improved Joint Warfighting Skills



**Combine Live, Virtual, and Constructive
Joint Forces to achieve core Naval
competencies**

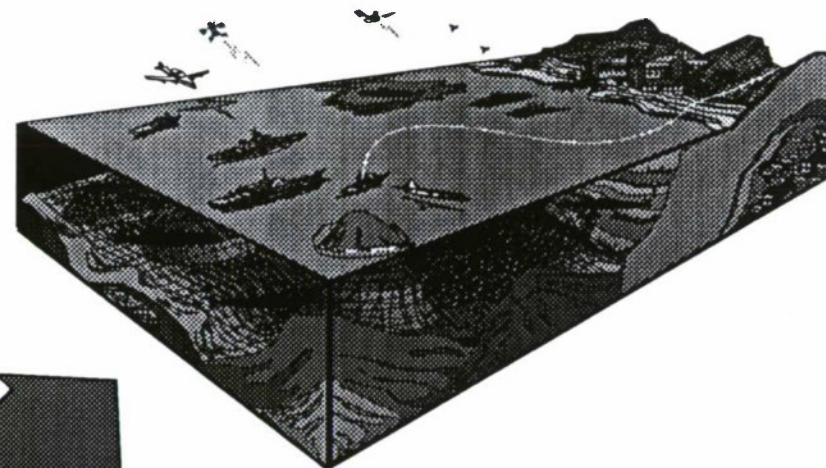


Department of the Navy M&S Organization

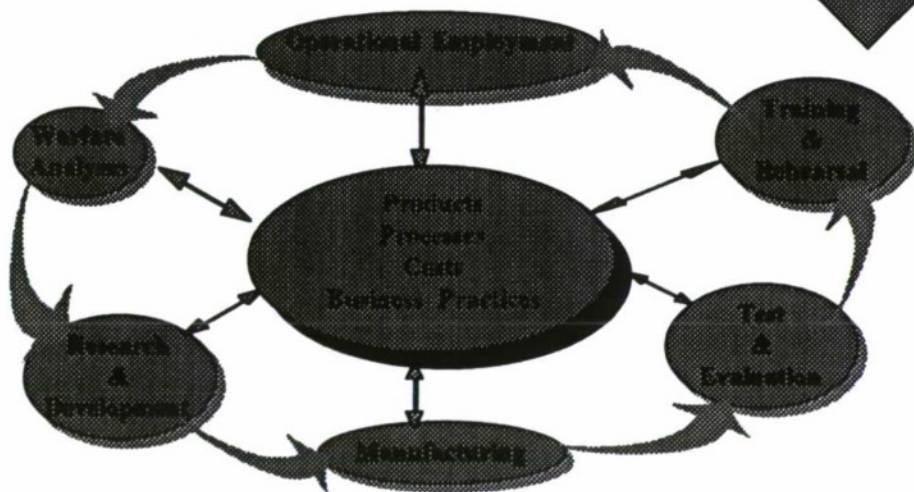




NAVY Modeling & Simulation FOR ASSESSMENT



Synthetic Battlespace



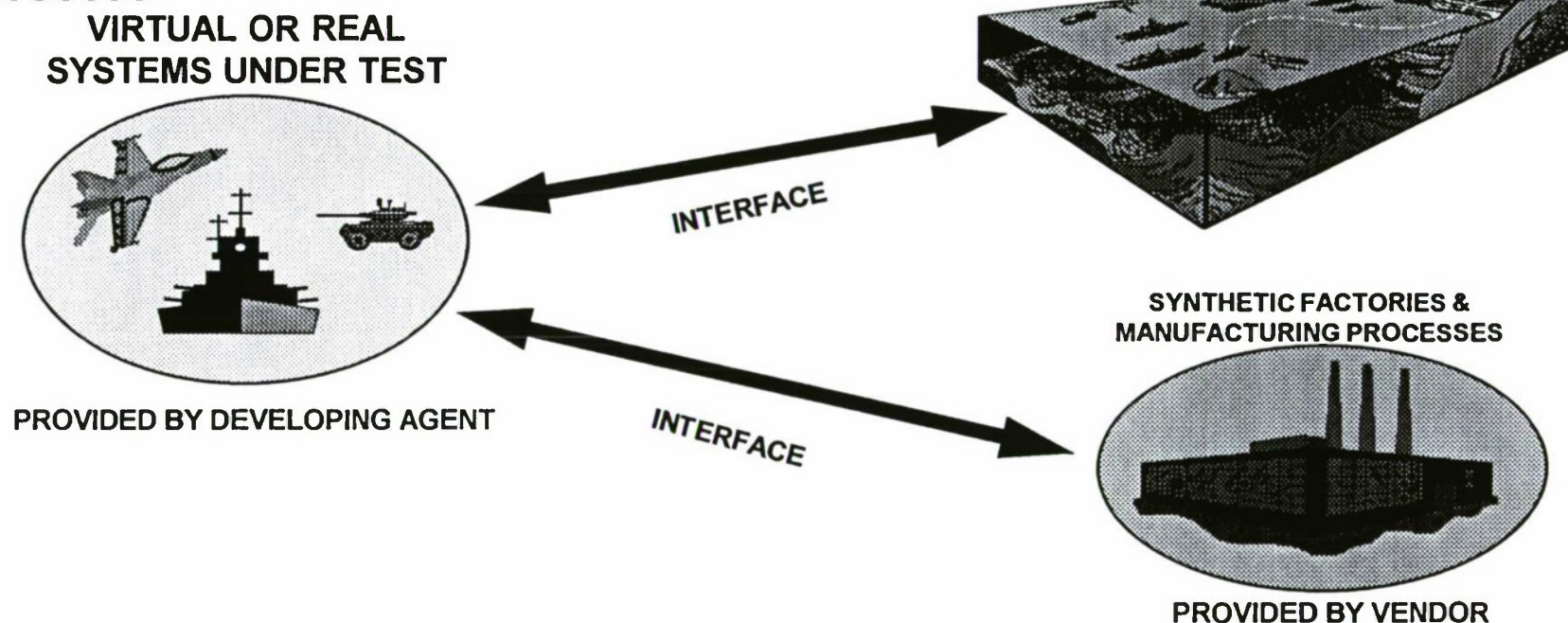


Modeling and Simulation



NAVY Modeling & Simulation FOR ACQUISITION

- Rapidly evaluate design iterations
- Optimize for performance, producibility, and affordability before building
- Enable a collaborative design & business process





Office of Training Technologies (OTT) SPIDER



- Seamless Product Information, Data Exchange and Repository (SPIDER), Navy WWW site.
- Clearinghouse of information on training technology issues.
- Tool to assist government, industry, and academia leverage their capabilities in the area of emerging technologies.
- Provide network links to technology sites for industry and academia in addition to DOD.
- Goal is to “Broker” training technology information and issues, and participate in Training Technology Assessment process



TRAINING DELIVERY TECHNOLOGY REVIEW



- Navy wide effort to reduce training costs through the use of new technologies.
- TSD tasked with developing tools to identify, evaluate, and provide a cost analysis of technology options (mini-FEA).
- Emphasis for FY97 will continue with supporting CNO in the reduction of training costs through the use of technology in the delivery of training. With follow-on efforts on selected courses to:
 - Conduct full Front End Analysis (FEA)
 - Courseware design and revision
 - Expand applications of the Electronic Classroom



Joint Tactical Combat Training System



- Large scale tactical training system capable of multi-mission/ multi-level training.
 - Battle group commanders
 - All warfare area commanders
 - Operator training
- Two types of systems
 - At - Sea
 - Fixed range
- System interconnect air/surface and subsurface assets for a complete training scenario.
- Capable of combining live, virtual and constructive elements into the training scenario.



WEB SITES for more Information



OTT Seamless Product Information, Data Exchange and Repository (SPIDER)

[HTTP://www.sc.ist.ucf.edu/~ott/](http://www.sc.ist.ucf.edu/~ott/)



Standards for Interoperability of Distributed Simulations

[HTTP://www.sc.ist.ucf.edu/~STDS](http://www.sc.ist.ucf.edu/~STDS)



Defense Modeling and Simulation Office

[HTTP://www.dmsomil](http://www.dmsomil)

Air Force Program

Advance Planning Briefing to Industry

Orlando FL 1 May 1996

*Col Ron Stanfill
AF/XOMW
Col Ronnie Stanfill
Directorate of Modeling,
Simulation & Analysis,
AF Agency for
Modeling & Simulation
will be in Orlando.*



Revolutionizing Training in the Air Force

Anything Short of War is Training

XOM



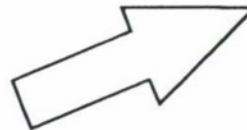
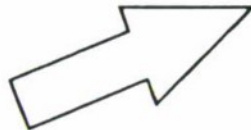
What is Revolutionary?

Achieving combat proficiency by the seat of the pants.

Distributed Mission Training

Event Driven Training

Red Flag

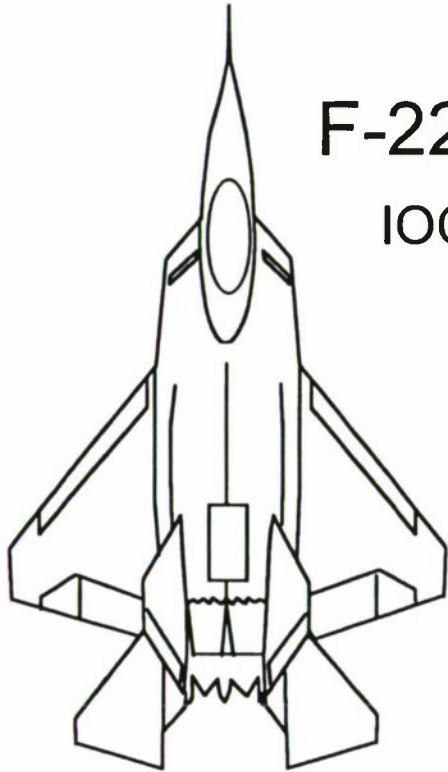


Making combat proficiency training an integral part of the weapon system.

XOM



Weapon System Training Constraints



F-22

IOC: Nov 04

Operating Costs

- **High O&M costs**
- **Attrition Risk**
- **Advanced Weapons Cost**

Operating Constraints

- **Supersonic Cruise**
- **Airspace/Range Limitations**
- **Environmental Concerns**

Electronic Warfare Constraints

- **Compromise**
- **Exploitation**
- **Availability**



Training Elements



Live: Real People in Real Systems

Virtual: Real People in Simulated Systems

Constructive: Simulated People in Simulated Systems

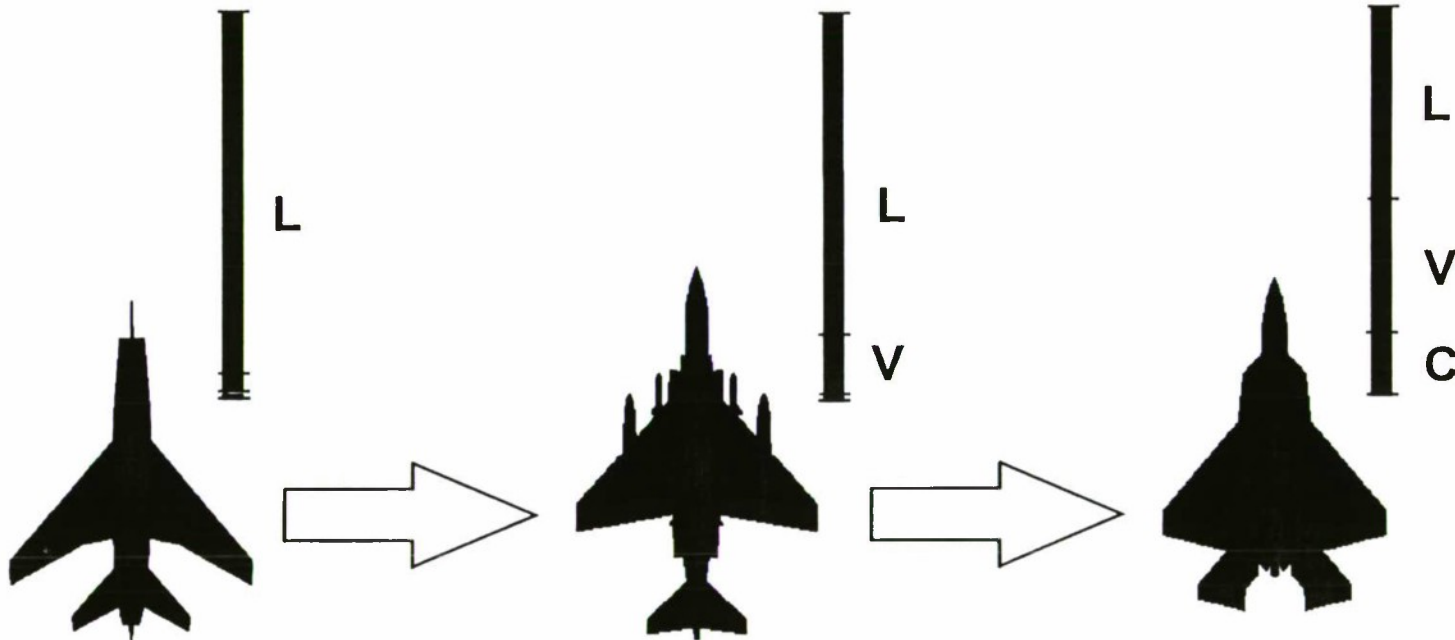


What is Revolutionary?

Event Driven
Training

Red Flag

Distributed Mission
Training



XOM



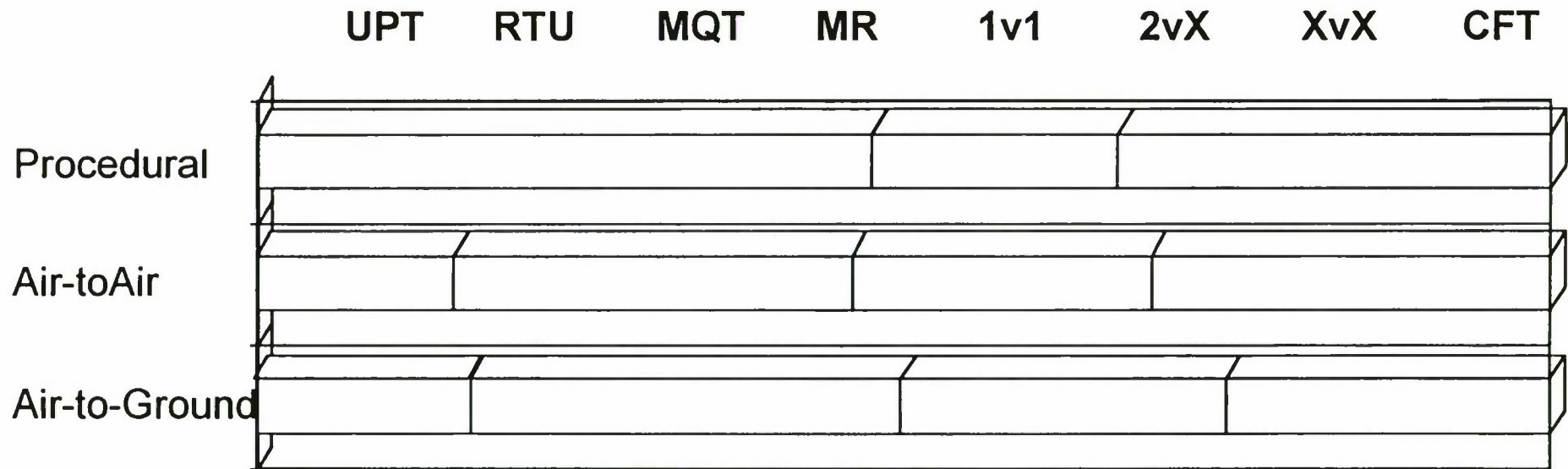
This Revolutionary System is Combat Training



XOM



Overall Assessment of Current Simulator Training

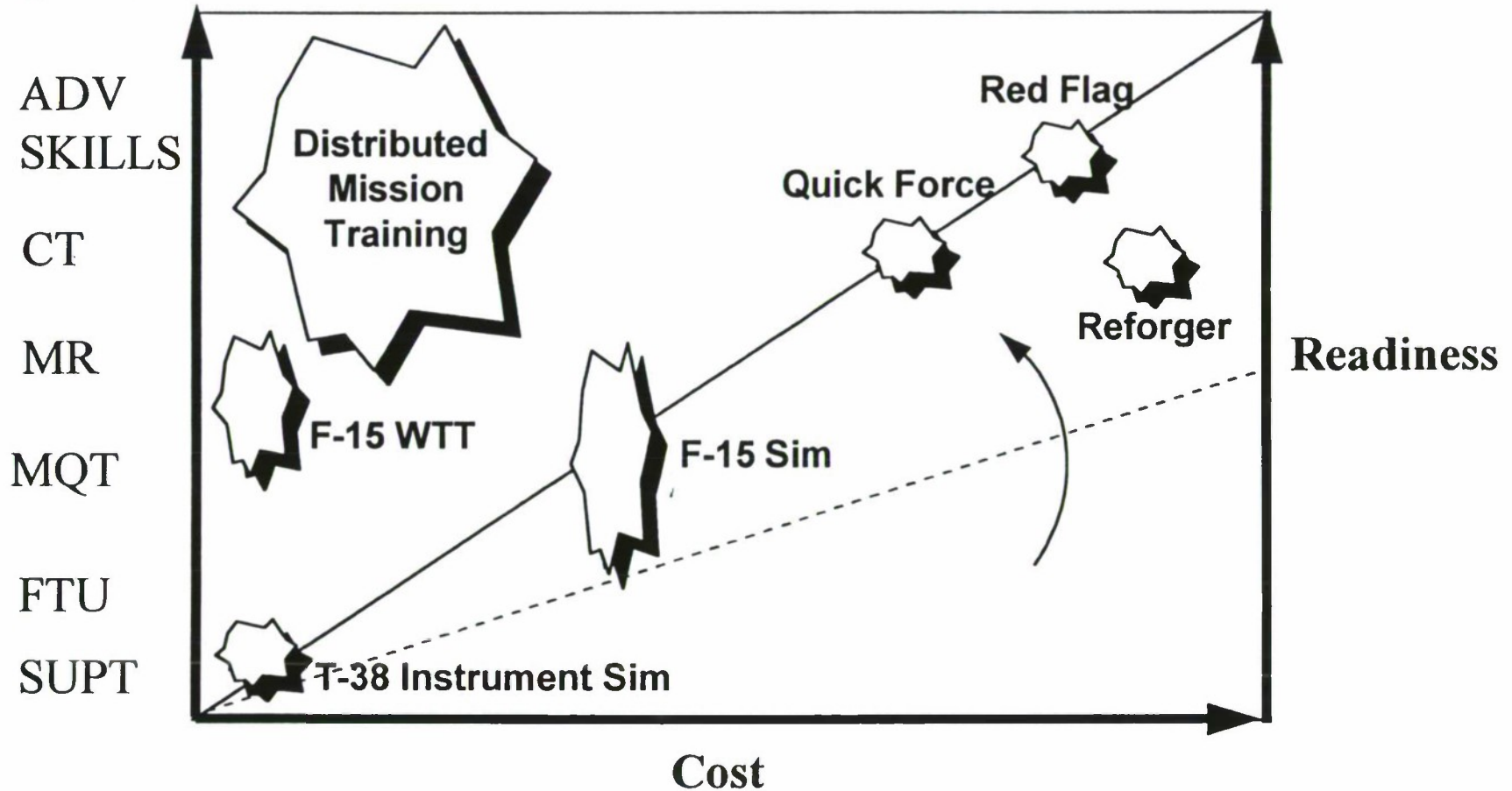


- Not Applicable
- Supported by Simulation
- Partially Supported by Simulation
- Currently not supported by Simulation



Combat Proficiency Training

Training
Complexity



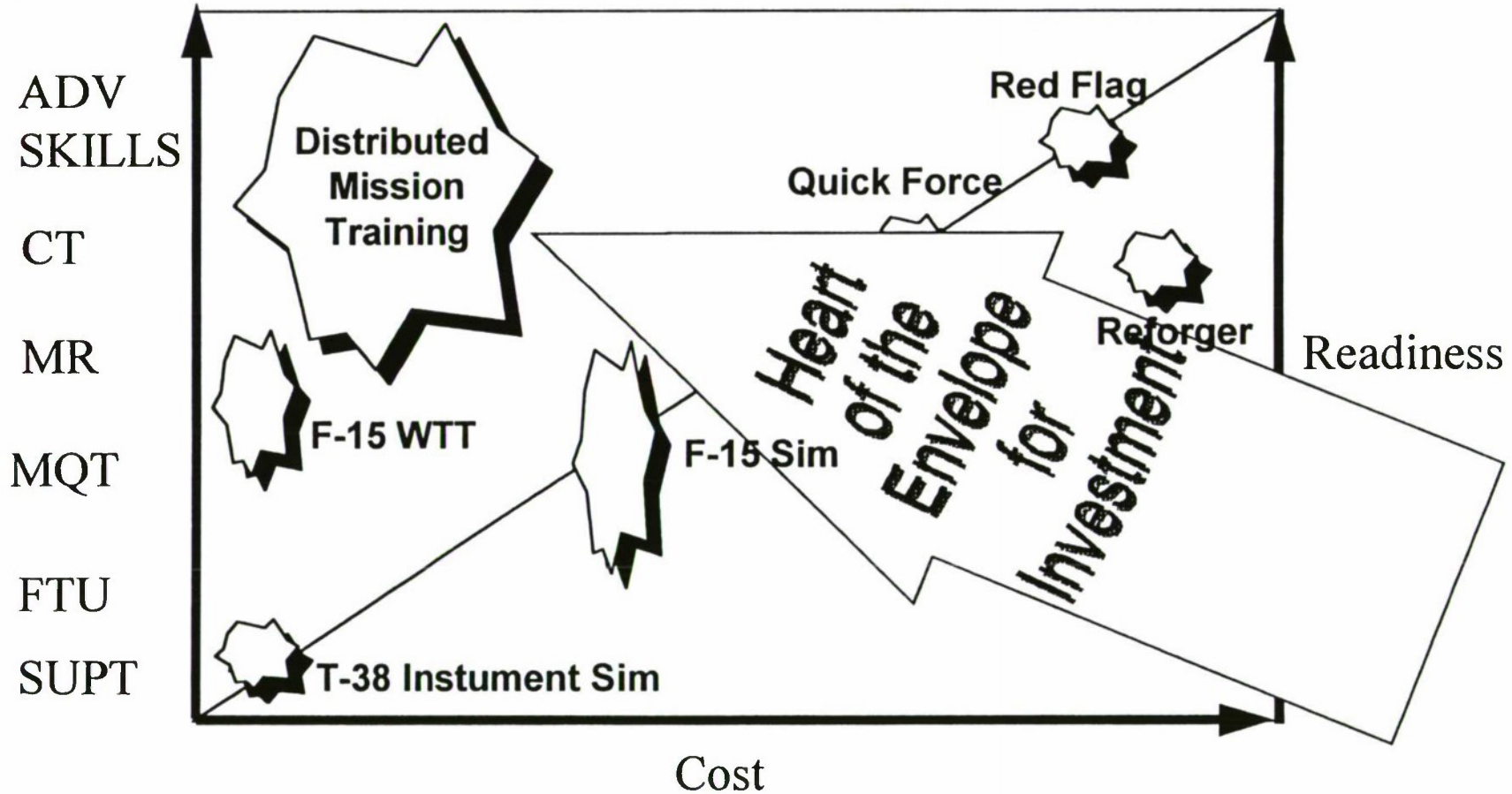
Readiness

Cost

XOM

Combat Proficiency Training

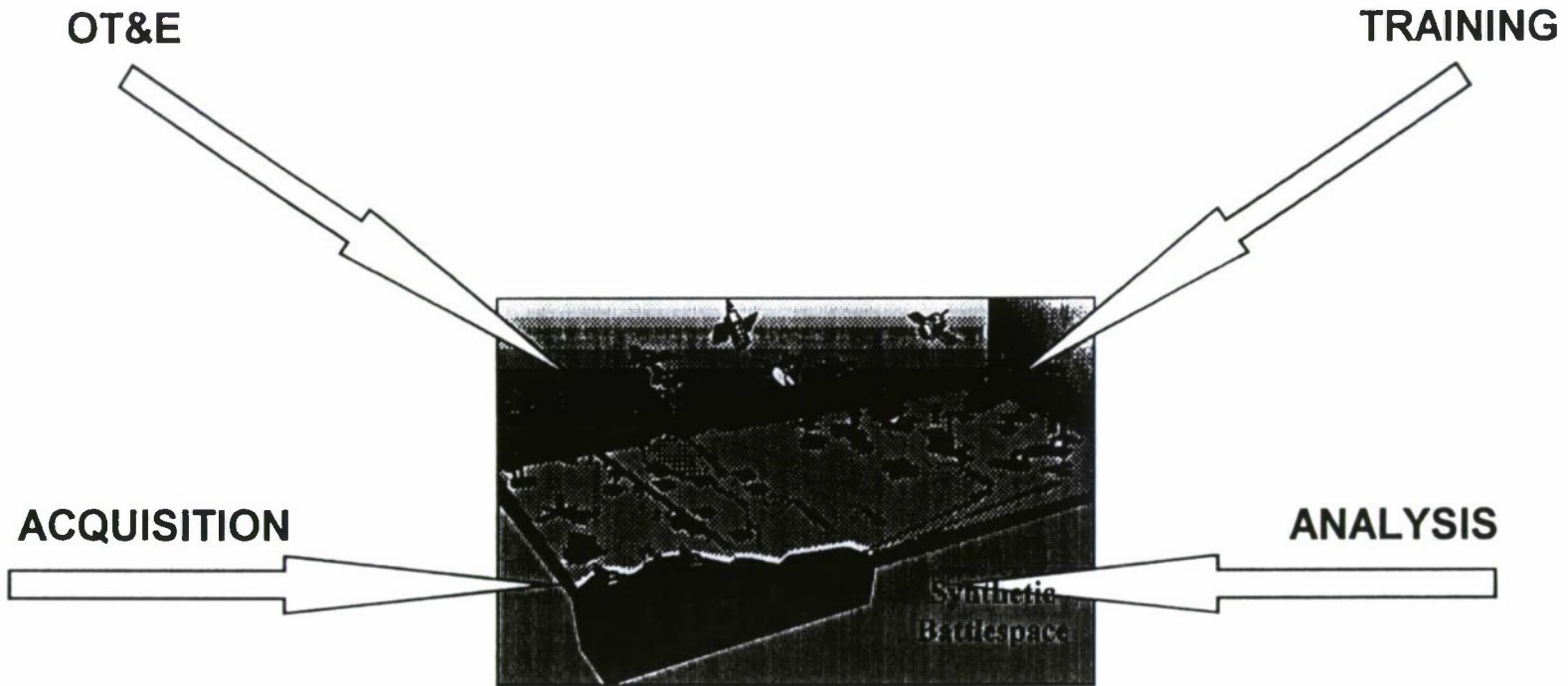
Training
Complexity



XOM

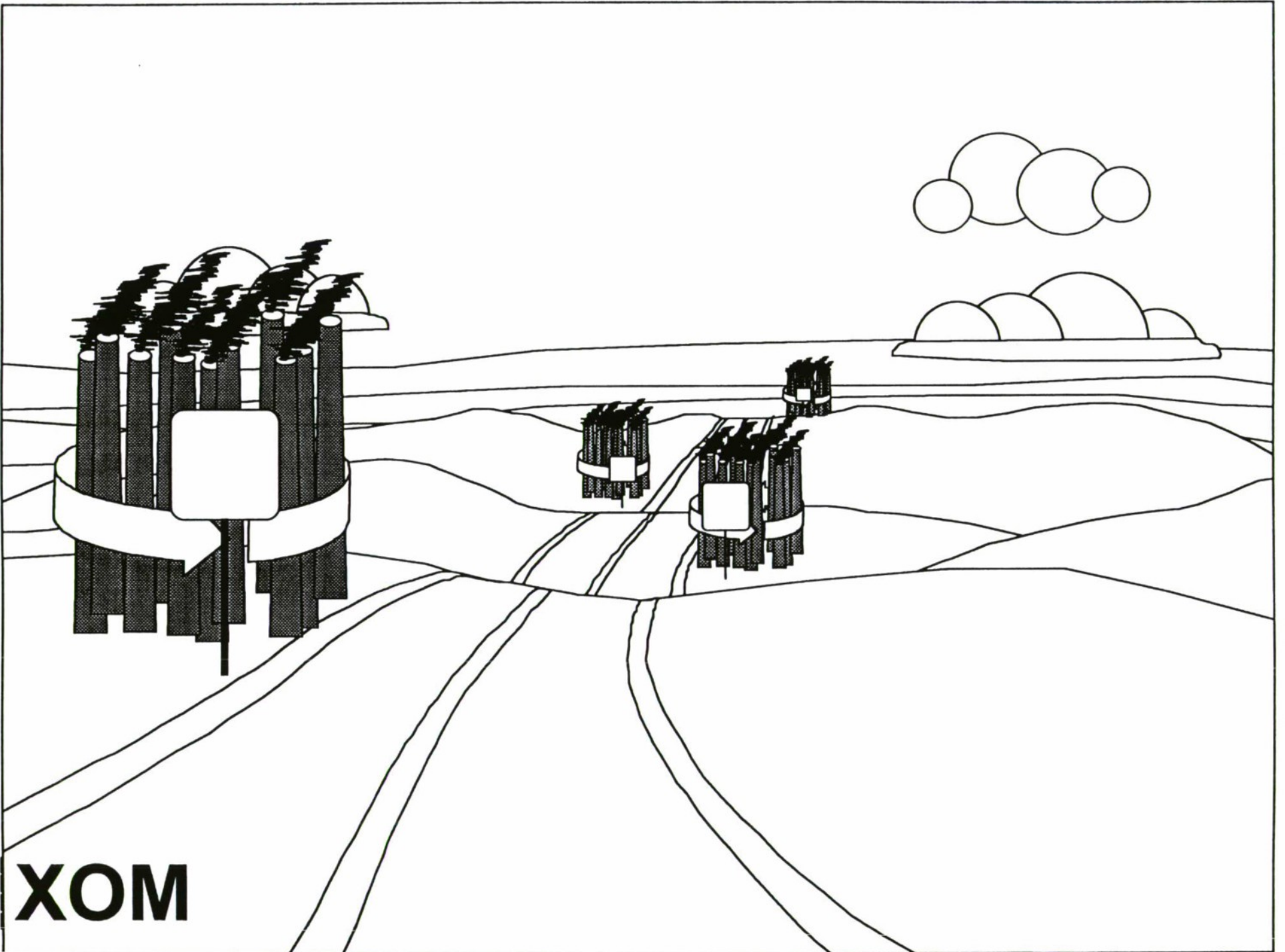


Joint Synthetic Battlespace



XOM

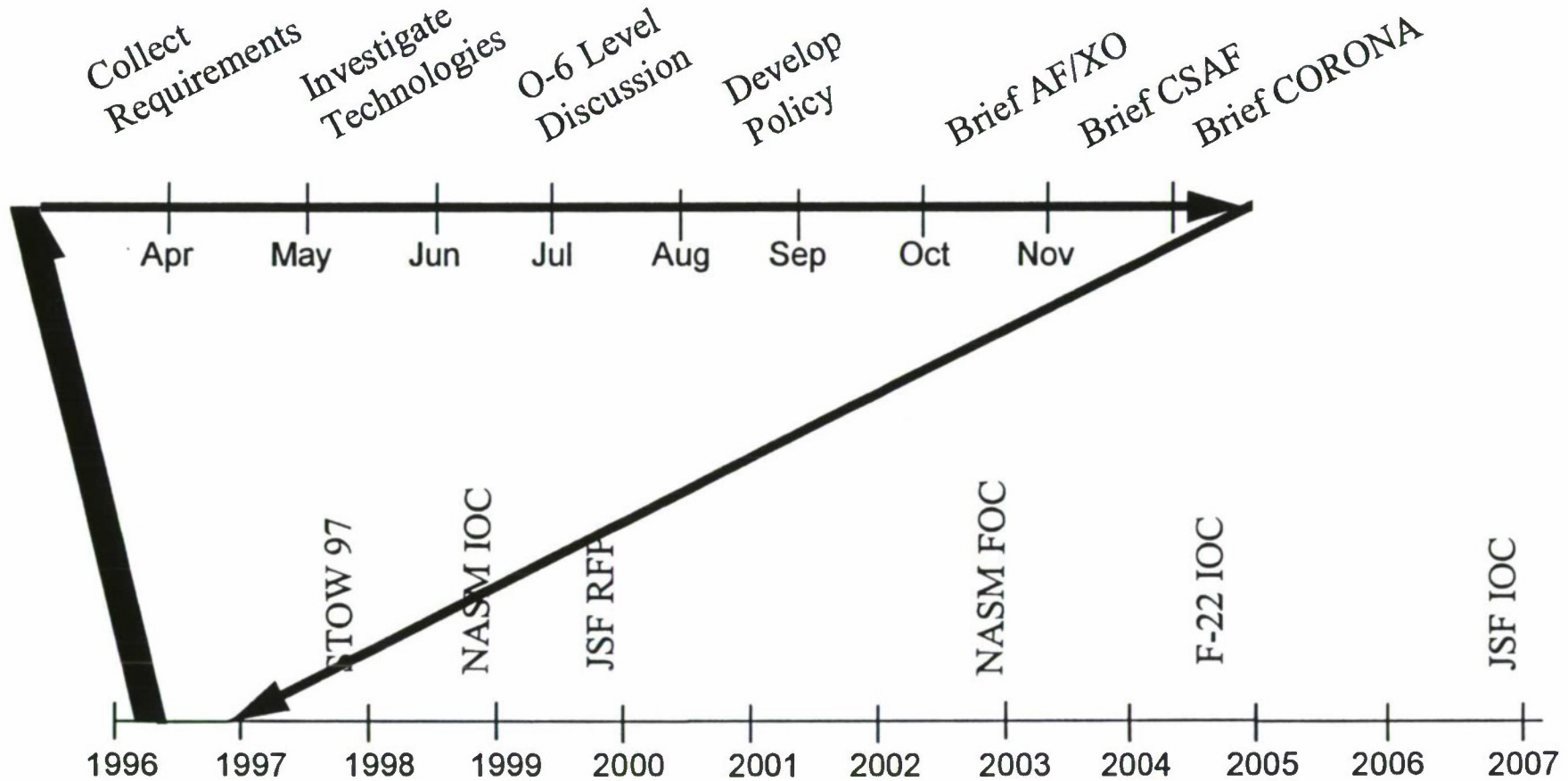




XOM

Revolutionizing Training

Timeline for Action



XOM



Synergy

- Appropriate application of Air and Space Power critical to National Interests
- Impacts on competition for scarce DoD \$\$
- Decisions on Roles and Missions issues
- Need revolutionary approach to training that integrates acquisition, OT&E, and analysis in the Joint Synthetic Battlespace

Recommendations

- CSAF charge AF/XOM with the responsibility and authority to:
 - Identify a plan and the processes to revolutionize training
 - Integrate the M&S in acquisition, OT&E, and analysis to develop a roadmap to the JSB

XOM



A Path to Revolutionary Training

Advance Planning Briefing to Industry

Orlando FL 1 May 1996

Presentation not available at Press Time

Combat Air Forces Simulation and Training Requirements

Advance Planning Briefing to Industry

Orlando FL 1 May 1996

Presentation not available at Press Time

Air Education and Training Command Requirements

Advance Planning Briefing to Industry

Orlando FL 1 May 1996

Presentation not available at Press Time

Air Mobility Command

Advance Planning Briefing to Industry

Orlando FL 1 May 96



Lt Col Rich Peterson
AMC/DOT



AMC Simulation & Training

Advance Planning Briefing to Industry

Orlando FL 1 May 96

“I want to eliminate all non-revenue
generating flying training.”

► Gen Ronald Fogleman Oct '92



AMC Trainer Inventory

Advance Planning Briefing to Industry

Orlando FL 1 May 96

<u>Weapon Sys</u>	<u>Type</u>	<u>Quantity</u>
C-5	WST	7
C-5	CPT	4
C-17	WST	4
C-17	CSS	1
C-17	LMPTT	1
C-141	WST	6
C-141	OFT	2
C-141	CPT	7



AMC Trainer Inventory (cont)

Advance Planning Briefing to Industry

Orlando FL 1 May 96

<u>Weapon Sys</u>	<u>Type</u>	<u>Quantity</u>
C-5/C-141	ARPTT	7
KC-10	WST	4
KC-10	CPT	3
KC-10	BOPTT	3
KC-135	OFT	19
WC-135	OFT	1
KC-135	BOPTT	<u>2</u>
	TOTAL	71



Utilization for Currency

Advance Planning Briefing to Industry

Orlando FL 1 May 96

Percent of Pilot Currency Logged in Trainers

	<u>Emer</u>	<u>VFR/Inst</u>	<u>AR</u>	<u>Msn</u>
C-5/C-141				
AC	90	0/57	33	0
FP	90	0/57	---	0
CP	100	0/42	---	0
C-17	100	100/80	33	50
KC-10	100	0/28	0	0
KC-135				
AC	90	0	0	0
CP	100	0	---	---



Simulator Upgrade Program

Advance Planning Briefing to Industry

Orlando FL 1 May 96

Training Need

Ability to perform VFR and mission tasks except in aircraft

Training Shortfall

Training device fidelity not adequate for task

Proposed Solutions

Upgrade simulators and other trainers, acquire additional devices where appropriate

Program Assessment

$\$250M \leq x \leq \$330M$



Reality Meter



AMC Upgrade Standard

Advance Planning Briefing to Industry

Orlando FL 1 May 96

AMC -- FAA Level-C (Plus Enhanced Visual Systems)

Reduce Risk Of Trading Aircraft Flying Hours

- ▶ Regardless Of AMC Experience Levels

Continuation & Refresher Training

- ▶ Pilots Log Credit For Airline-Type Events
- ▶ Compensate For Low-Time Monthly Average

Address Airlift & Tanker Mission Training

- ▶ Air Refueling & Formation



Near Term Summary

(1-2 yrs out)

Advance Planning Briefing to Industry

Orlando FL 1 May 96

➤ Projected Schedule:

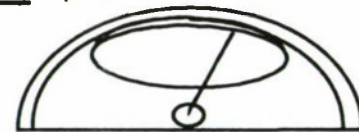


➤ Type Award Anticipated: FFP

➤ Requirement Document: CMNS

➤ Program Size: $\$240M \leq x \leq \$340M$

➤ Funding Status/Stability:



Reality Meter



Near Term Program Summary

(1-2 yrs out)

Advance Planning Briefing to Industry

Orlando FL 1 May 96

- Deliverables: 30 Visual IGs
 - 29 Displays
 - 22 Computer Systems
 - 17 Motion Bases
 - Upgraded Aero
 - Misc
- Contact Info
 - ◆ AMC, Lt Col Letica, Phone (618) 256-5696



Upgrade Flow Plan

Advance Planning Briefing to Industry

Orlando FL 1 May 96

FY94 FY95 FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03

Aero Data

[Contract]

[Level C (2)]

[Air Refuel (5)]

[Integrate (37)]

Visual Sys

[C-5 (7)]

[KC-135 (4)]

[KC-10 (4)]

[KC-135(6)][KC-135(9)]

Motion Sys

[KC-135 (2)]

[KC-135 (15)]

Computer Rehost

[C-5 (12)]

[KC-135 (20)]



Utilization for Currency

Advance Planning Briefing to Industry

Orlando FL 1 May 96

Future Pilot Currency Logged in Trainers

	<u>Emer</u>	<u>VFR/Inst</u>	<u>AR</u>	<u>Msn</u>
C-5/C-141				
AC	100	50/57	50	50
FP	100	50/57	---	50
CP	100	50/42	---	50
C-17	100	100/80	66	50
KC-10	100	50/50	50	50
KC-135				
AC	100	50/50	50	50
CP	100	50/50	---	---



Flying Hour Reductions

Advance Planning Briefing to Industry

Orlando FL 1 May 96

Completion Of Active-Duty Upgrades in FY02

<u>Aircraft</u>	<u>Fly Hrs/Year</u>	<u>\$M Per Year</u>
C-141	1223*	4.1*
* Average C-141 Hours & Savings (FY97-01)		
C-5	908	6.5
KC-10	3301	13.5
KC-135	<u>5621</u>	<u>12.3</u>
TOTALS	8750	32.3

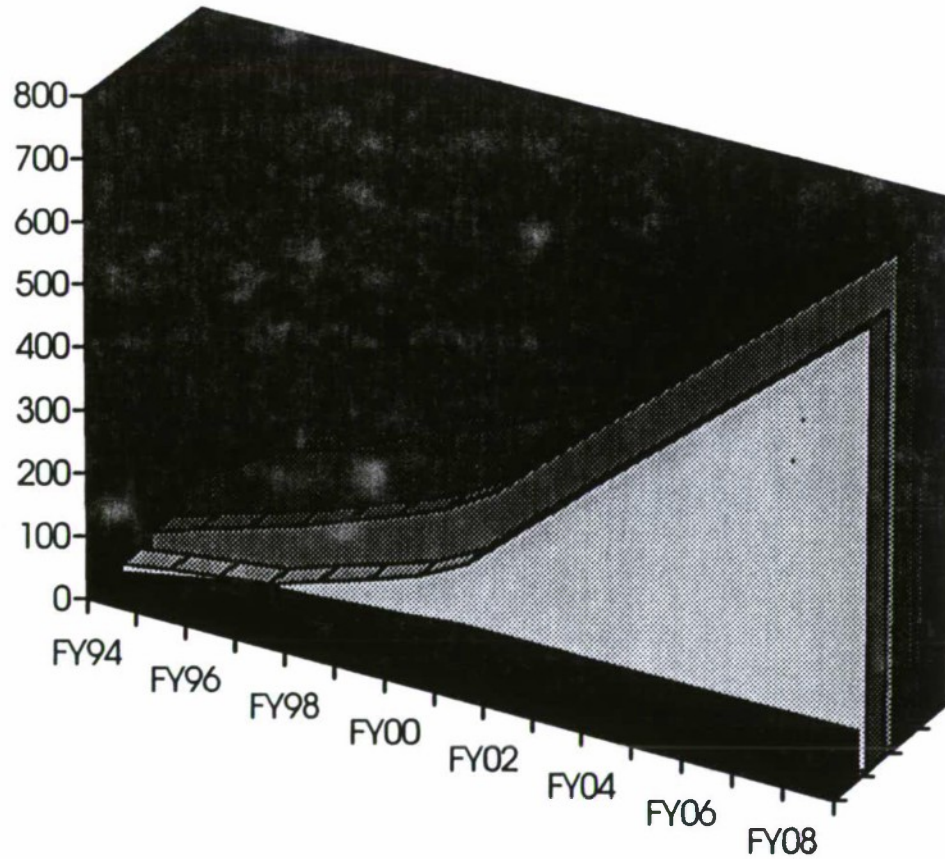
Flying Hour Program Reduced By \$32.3M Per Year



Cost vs Savings

Advance Planning Briefing to Industry

Orlando FL 1 May 96



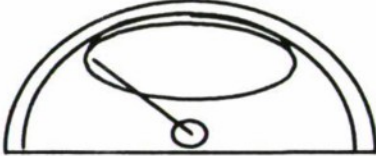


Long Term Program Summary

(3-5+ yrs out)

Advance Planning Briefing to Industry

Orlando FL 1 May 96

- Projected Schedule: FY 05
- Requirement Document: AMMP
- Projected Program Size: ? \leq \$40M
- Funding Status/Stability: 
- POCs:
 - ◆ AMC, Lt Col Letica, Phone (618) 256-5696



Future Needs

Advance Planning Briefing to Industry

Orlando FL 1 May 96

Training Need

Ability to interact with other
trainers/players

Training Shortfall

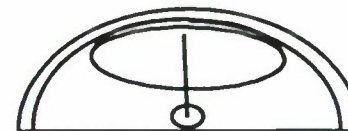
Current devices support
only ownship training

Proposed Solutions

Networked trainer capability

Program Assessment

$\$5M \leq x \leq \$20M$



Reality Meter



Future Needs

Advance Planning Briefing to Industry

Orlando FL 1 May 96

Training Need

Ability to train other crew positions outside of aircraft

Training Shortfall

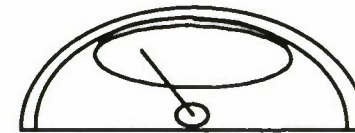
Current training requires aircraft. Inability to train emergencies

Proposed Solutions

Virtual reality trainers

Program Assessment

$\$5M \leq x \leq \$20M$



Reality Meter

AMERICA'S SPECIALIZED AIR POWER



A STEP AHEAD IN A CHANGING WORLD

DOD ADVANCE PLANNING BRIEF FOR INDUSTRY



1 May 1996

Simulation and Training
Requirements

Col Philip E. Glenn
Chief, Operations Training



OVERVIEW

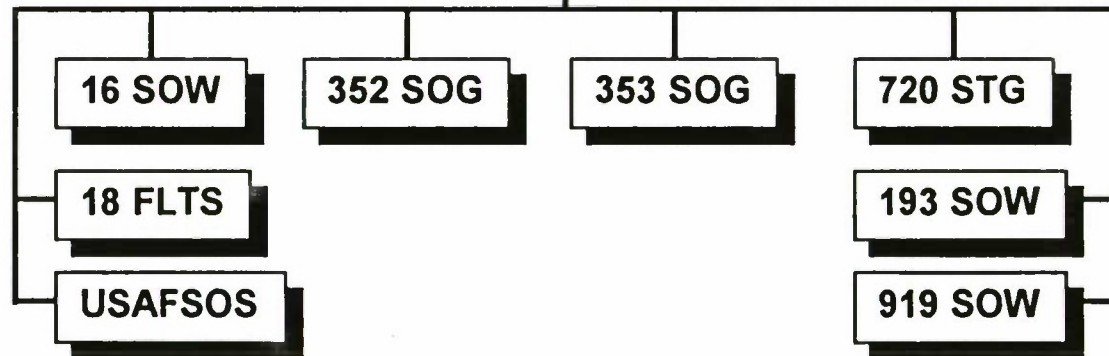
- **COMMAND MISSION**
- **TRAINING STRATEGY & FACILITIES**
- **COMMAND VISION**
- **INDUSTRY OPPORTUNITIES**
- **REQUIREMENTS PROCESS**



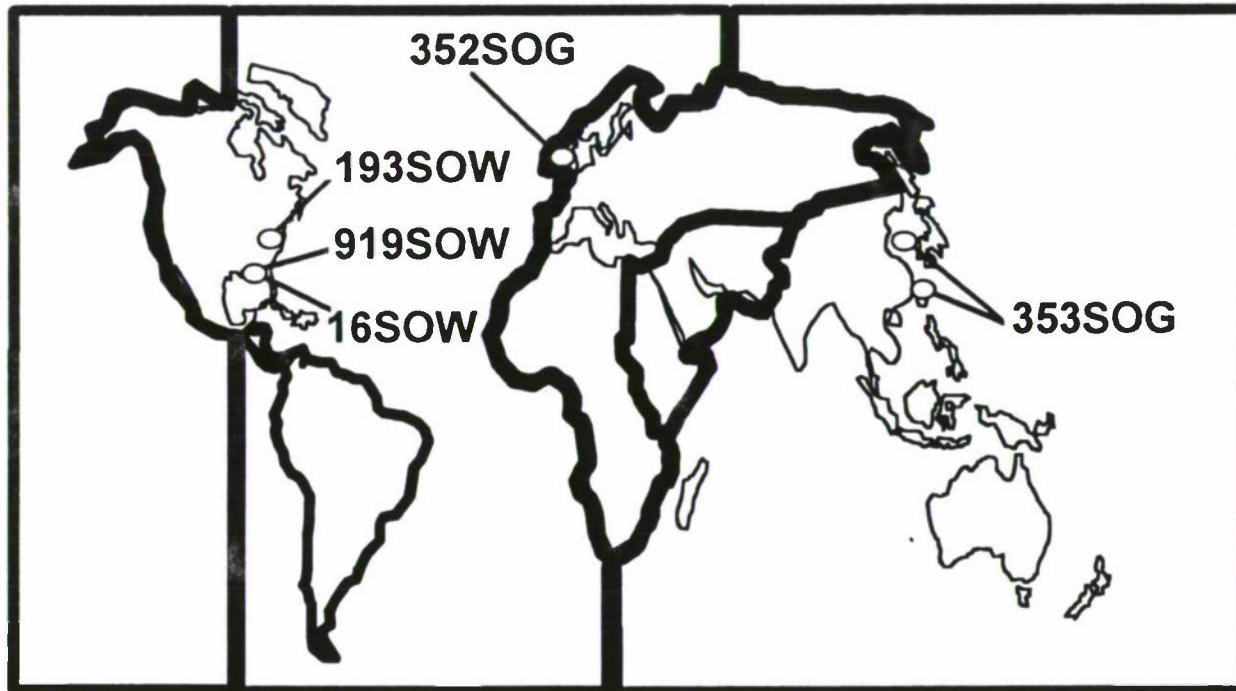
AIR FORCE SPECIAL OPERATIONS COMMAND

USSOCOM

AFSOC



AFSOC UNITS AND AREAS OF RESPONSIBILITY



STRENGTH

	UNITS	PEOPLE
ACTIVE DUTY		
CONUS	42	7910
OVERSEAS	14	1833
TOTAL ACTIVE DUTY	56	9743
AIR RESERVE COMPONENTS		
RESERVES	14	1383
NATIONAL GUARD	15	1037
TOTAL ARC	29	2420
TOTAL REPORTING TO AFSOC	85	12163



AFSOC AIRCRAFT



AFSOC AIRCRAFT LOCATIONS

16 SOW

352 SOG

353 SOG

EGLIN

MC-130P 8

MILDENHALL

MC-130H 4
MC-130P 4
MH-53 5
C-130E 1

OSAN

MH-53 5

HURLBURT

AC-130H 7
AC-130U 10
MC-130E 6
MC-130H 10
MH-53 19
MH-60 8
C-130E 2

KADENA

MC-130H 4
MC-130P 4
C-130E 1

PRIMARY AUTHORIZED AIRCRAFT ON 1 OCT 95



AFSOC AIRCRAFT LOCATIONS AIR RESERVE COMPONENTS

193 SOW
PA ANG

919 SOW
AFRES

HARRISBURG, PA
EC-130E 3*
C-130H 2

DUKE FIELD, FL
MC-130P 4
MC-130E 6
C-130E 2
C-130H 1

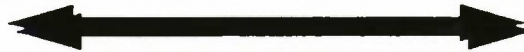
PRIMARY AUTHORIZED
AIRCRAFT ON 1 OCT 95

3 OF 6 TOTAL EC-130E MODIFIED TO WORLDWIDE COLOR TV
STANDARD. REMAINING 3 TO BE MODIFIED BY FY98



PRINCIPAL SPECIAL OPERATIONS MISSIONS

PEACE



WAR

**DIRECT ACTION (DA)
SPECIAL RECONNAISSANCE (SR)
UNCONVENTIONAL WARFARE
(UW)**

**FOREIGN INTERNAL DEFENSE (FID)
COMBATTING TERRORISM (CT)
COUNTERPROLIFERATION OF WEAPONS
OF MASS DESTRUCTION (WMD)**

**PSYCHOLOGICAL OPERATIONS
CIVIL AFFAIRS**



COLLATERAL SPECIAL OPERATIONS ACTIVITIES

PEACE



WAR

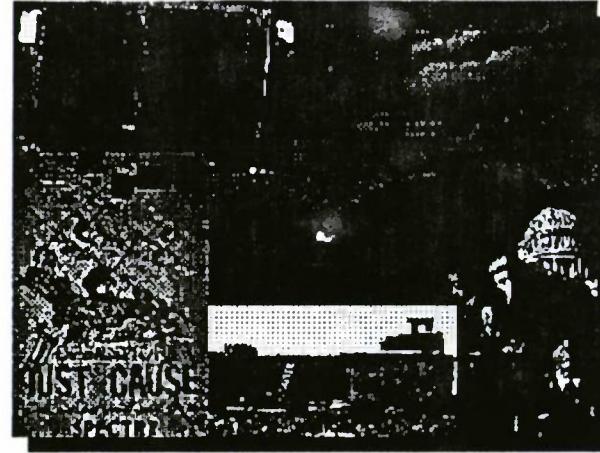
**HUMANITARIAN ASSISTANCE
PERSONNEL RECOVERY (SAR/CSAR)
SPECIAL ACTIVITIES**


COALITION SUPPORT

**SECURITY ASSISTANCE
COUNTERDRUG
PEACE OPERATIONS**



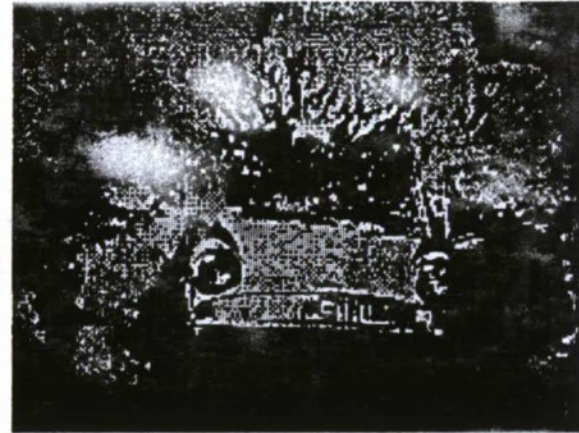
RECENT AND CURRENT OPERATIONS



- 
- ★ 1989 - JUST CAUSE - PANAMA
 - ★ 1990 - DESERT SHIELD/STORM - KUWAIT
 - ★ 1991 - PROVIDE COMFORT - IRAQ
 - ★ 1992 - RESTORE HOPE - SOMALIA
 - ★ 1993 - DENY FLIGHT - BOSNIA
 - ★ 1993 - PROVIDE PROMISE - BOSNIA
 - ★ 1993 - CONTINUE HOPE - SOMALIA
 - ★ 1994 - SUPPORT DEMOCRACY - HAITI
 - ★ 1994 - SUPPORT HOPE - RWANDA
 - ★ 1994 - UPHOLD DEMOCRACY - HAITI
 - ★ 1995 - UNITED SHIELD - SOMALIA
 - ★ 1995 - JOINT ENDEAVOR - BOSNIA

SPECIAL OPS

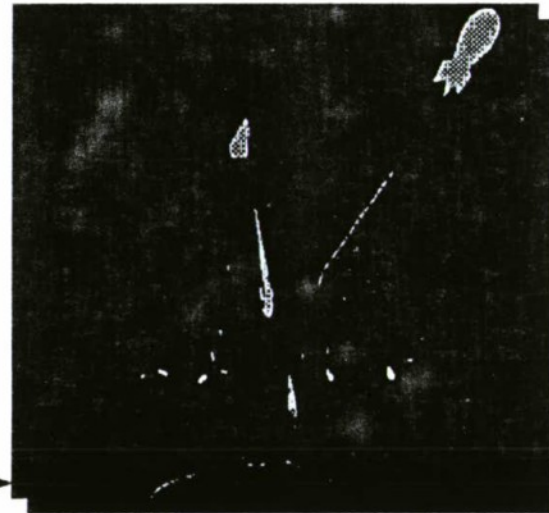
The Tip of the Spear...



***...the Force of
Choice***



COMMAND TRAINING STRATEGY



Education and Training Requirements

- TECHNICAL
- PROFESSIONAL DEVELOPMENT



Technical Training

● AIRCREW

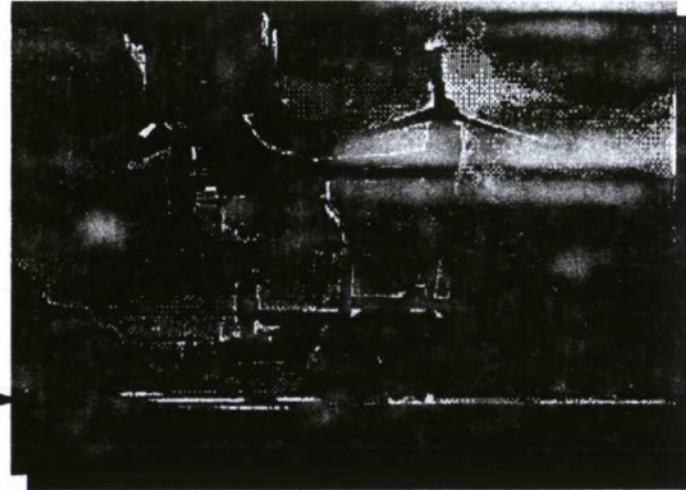
- Initial Qualification
- Initial Mission Qualification
- Upgrade
- Refresher
- Continuation

● OTHERS

- Tech School
- On-The-Job
- Continuation

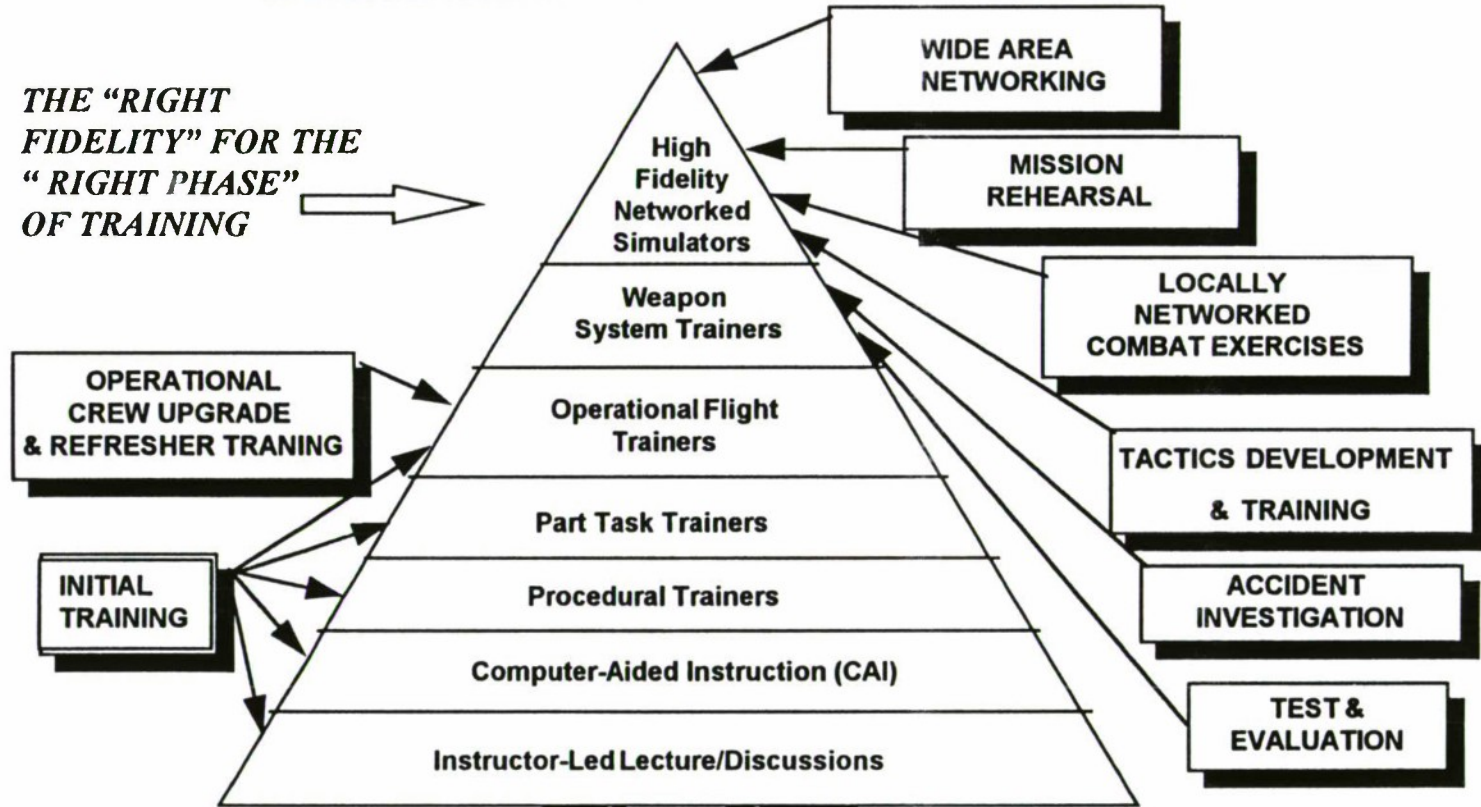


AFSOC TECHNICAL TRAINING



AFSOC TRAINING PYRAMID

THE "RIGHT FIDELITY" FOR THE "RIGHT PHASE" OF TRAINING



AFSOC FORMAL TRAINING LOCATIONS



**Kirtland AFB, NM
(AETC)**

- *Initial Mission Qualification*
- *Upgrade Training*

**Little Rock AFB, AR
(ACC)**

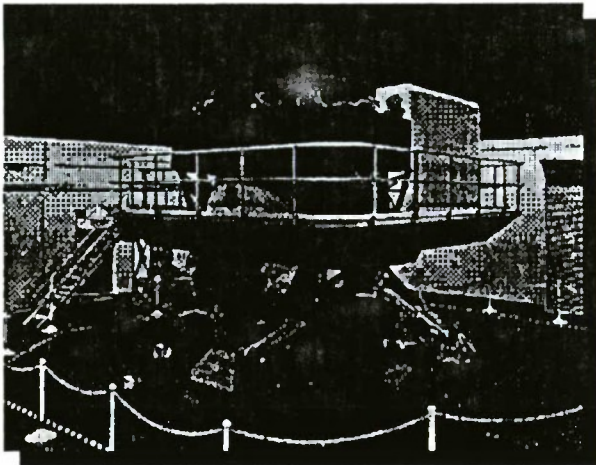
Basic C-130 Qual

**Hurlburt Field, FL
(AFSOC)**

- *Initial Mission Qualification*
- *Upgrade Training*



KIRTLAND TRAINING

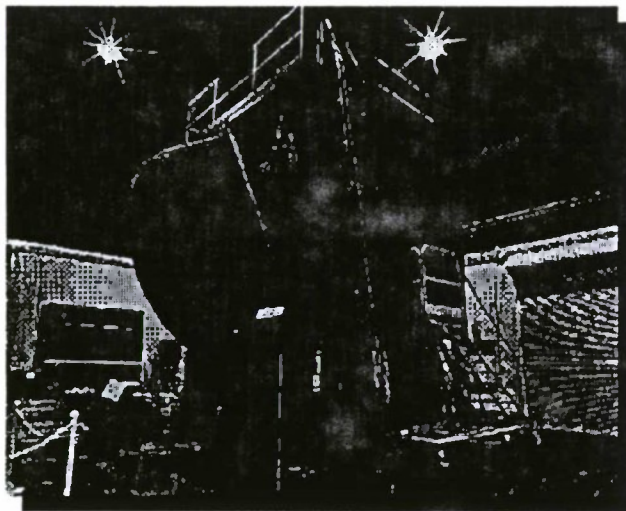


MC-130H Weapon System Trainer

- ◆ MC-130H Talon II
- ◆ MC-130P Combat Shadow
- ◆ MH-53J Pave Low
- ◆ MH-60G Pave Hawk



HURLBURT TRAINING



MC-130H Mission Rehearsal Device

- ◆ **MC-130E Talon I**
- ◆ **AC-130H Spectre**
- ◆ **AC-130U Spectre**



***AFSOC PROFESSIONAL
DEVELOPMENT***



Professional Development

COMMANDO EDGE

EDUICATION + DEVELOPMENT + GROWTH =
AN ENHANCED SPECIAL OPERATOR



COMMANDO EDGE

PURPOSE:

**DEVELOP A FORCE ABLE TO ARTICULATE
ROLES OF SPECIAL OPERATIONS IN JOINT
CONVENTIONAL/ UNILATERAL MISSIONS**



COMMANDO EDGE

How It Works

- **PRESCRIBED CURRICULUM**
 - **REQUIRED COURSES/ EXPERIENCE**
 - **ELECTIVES**

- **EXISTING AF PROGRAMS**



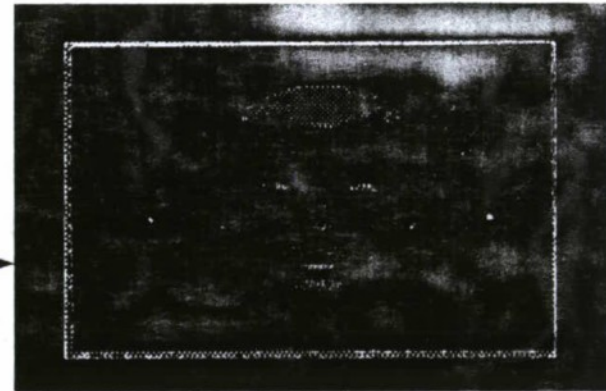
COMMANDO EDGE

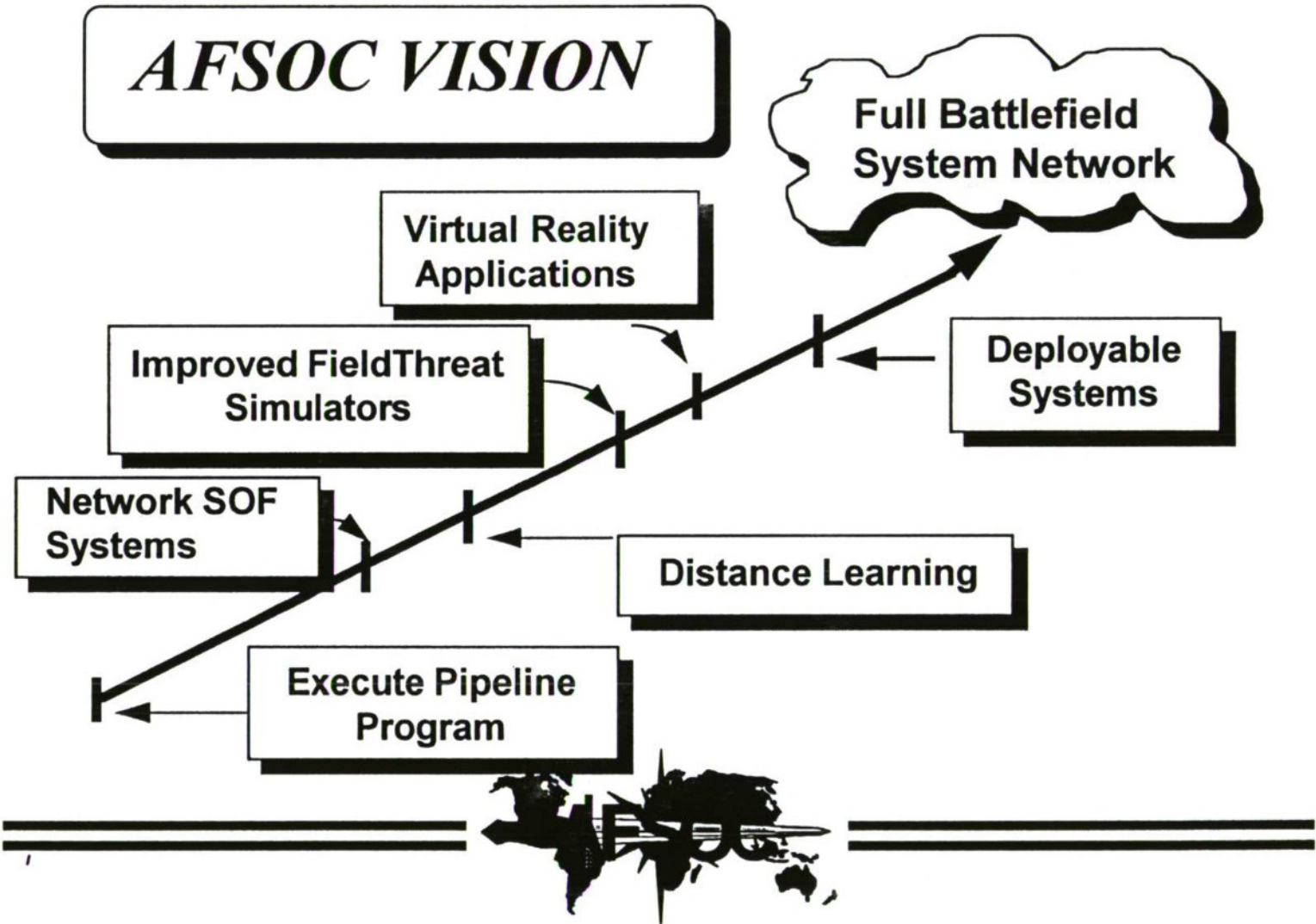
AIRCREW OFFICER EXAMPLE

	SOS	ACSC	AWC
COMMANDO EDGE	LEVEL	LEVEL I	LEVEL II
<u>PREREQUISITES:</u> MISSION READY PME FOR GRADE AIR COMMANDO ORIENTATION ISOC	<u>REQUIRED:</u> CCC JOINT SOF EX PARTICIPATE IN- BILAT JTX JCS EX <u>2 ELECTIVES</u>	<u>REQUIRED:</u> LEVEL I PARTICIPATE IN- BILAT JTX JCS EX FIELD EXPERIENCE DIT AFID <u>2 ELECTIVES</u>	<u>REQUIRED:</u> LEVEL I & II CRM JPOC JOINT EX AS- PLANNER LIAISON MISSION CC <u>1 ELECTIVE</u>



*COMMAND VISION
FOR
MODELING AND
SIMULATION*





INDUSTRY

OPPORTUNITIES



AC-130H Training

Training Need

AC-130H Menuing Device
For Tactical Aircrew

Training Shortfall

No Part-Task Trainers

Proposed Solutions

Trainer That Replicates
Crew Stations

Program Assessment

Funding: $\$1.5M \leq x \leq \$1.7M$

Reality Check: Good



Maintenance Training

Training Need

Off-Aircraft Training

Training Shortfall

No Maintenance Training
Devices

Proposed Solutions

CBT or Artificial
Intelligence Tutors

Program Assessment

Funding: No Estimate

Reality Check: Average



AC-130U Training

Training Need

AC-130U Aircrew Tng
Device

Training Shortfall

No Weapon System
Trainer (WST)

Proposed Solutions

Acquire WST

Program Assessment

Funding: $\$55M \leq x \leq \$70M$

Reality Check: Good



Virtual Reality

Training Need

**Part-Task Trainer Devices
(PTT)**

Training Shortfall

**Unit-Level Training
Devices**

Proposed Solutions

Virtual Reality PTT

Program Assessment

Funding: No Estimate

Reality Check: Average



Mission Rehearsal

Training Need

**Deployable Mission
Rehearsal Devices
(MRD)**

Training Shortfall

No Deployable MRD

Proposed Solutions

**Develop Deployable
and Reconfigurable
MRD**

Program Assessment

Funding: No Estimate

Reality Check: Average



Distance Learning

Training Need

**Ability To Train Widely
Dispersed Units**

Training Shortfall

**No Distance-Learning
Capability**

Proposed Solutions

**Acquire Distance
Learning Capability**

Program Assessment

Funding: No Estimate

Reality Check: Above Average



System Networking

Training Need

Ability To Network Weapon
System Trainers

Training Shortfall

Inability To Train Full
Mission Scenario

Proposed Solutions

Develop System Network

Program Assessment

Funding: No Estimate

Reality Check: Above Average



Threat Simulation

Training Need

**Ability To Simulate Ground
Fires Aimed At Aircraft**

Training Shortfall

**Lack of Realistic Training
For Full Aircrew Complement**

Proposed Solutions

**Develop Mobile Ground
Threat Simulator That
Is Scoreable On Aircraft**

Program Assessment

Funding: No Estimate

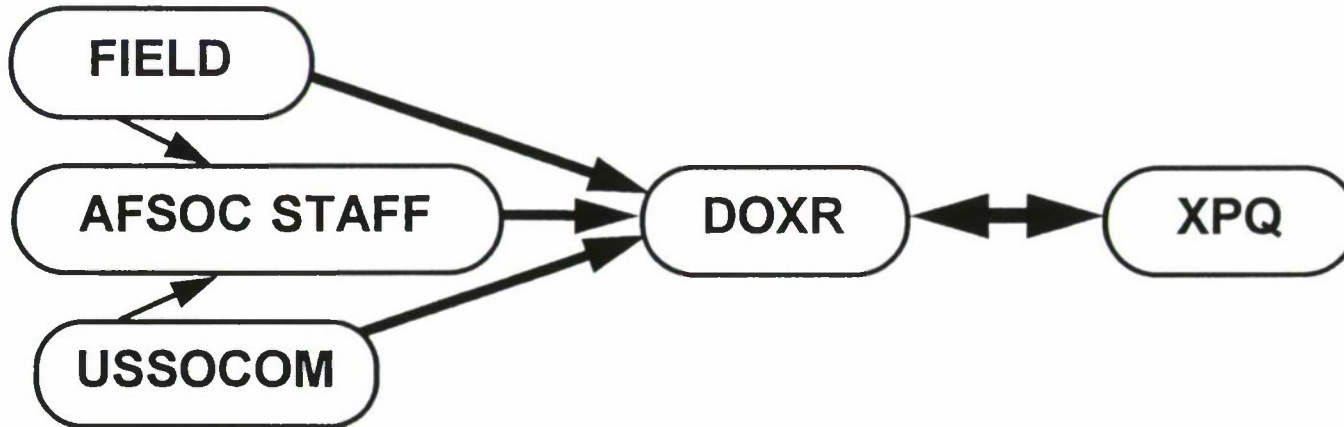
Reality Check: Average



***AFSOC REQUIREMENTS
PROCESSING***



REQUIREMENTS FLOW



REQUIREMENTS DEVELOPMENT

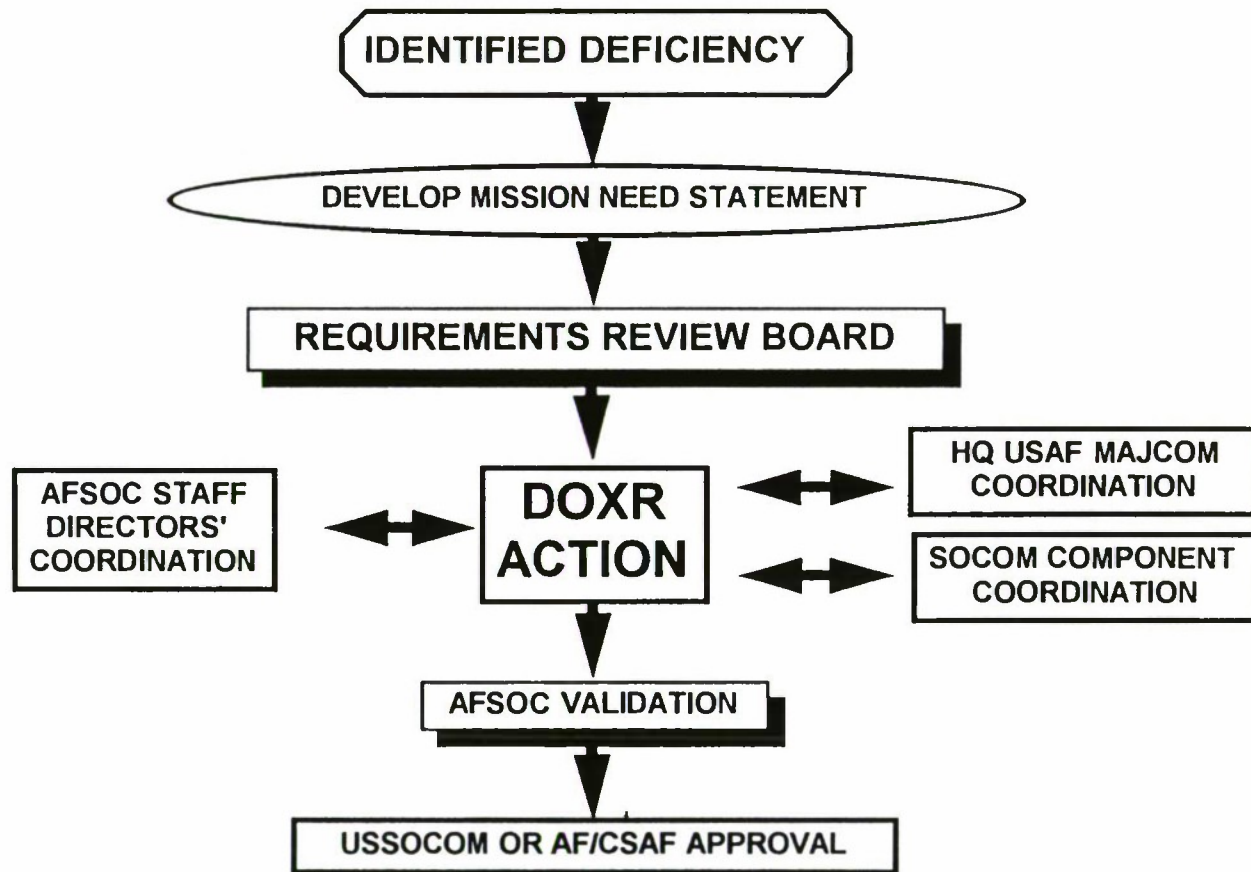
COMMAND MANAGEMENT

MNS → ADM → COEA → ORD → PMD → PROGRAM EXECUTION

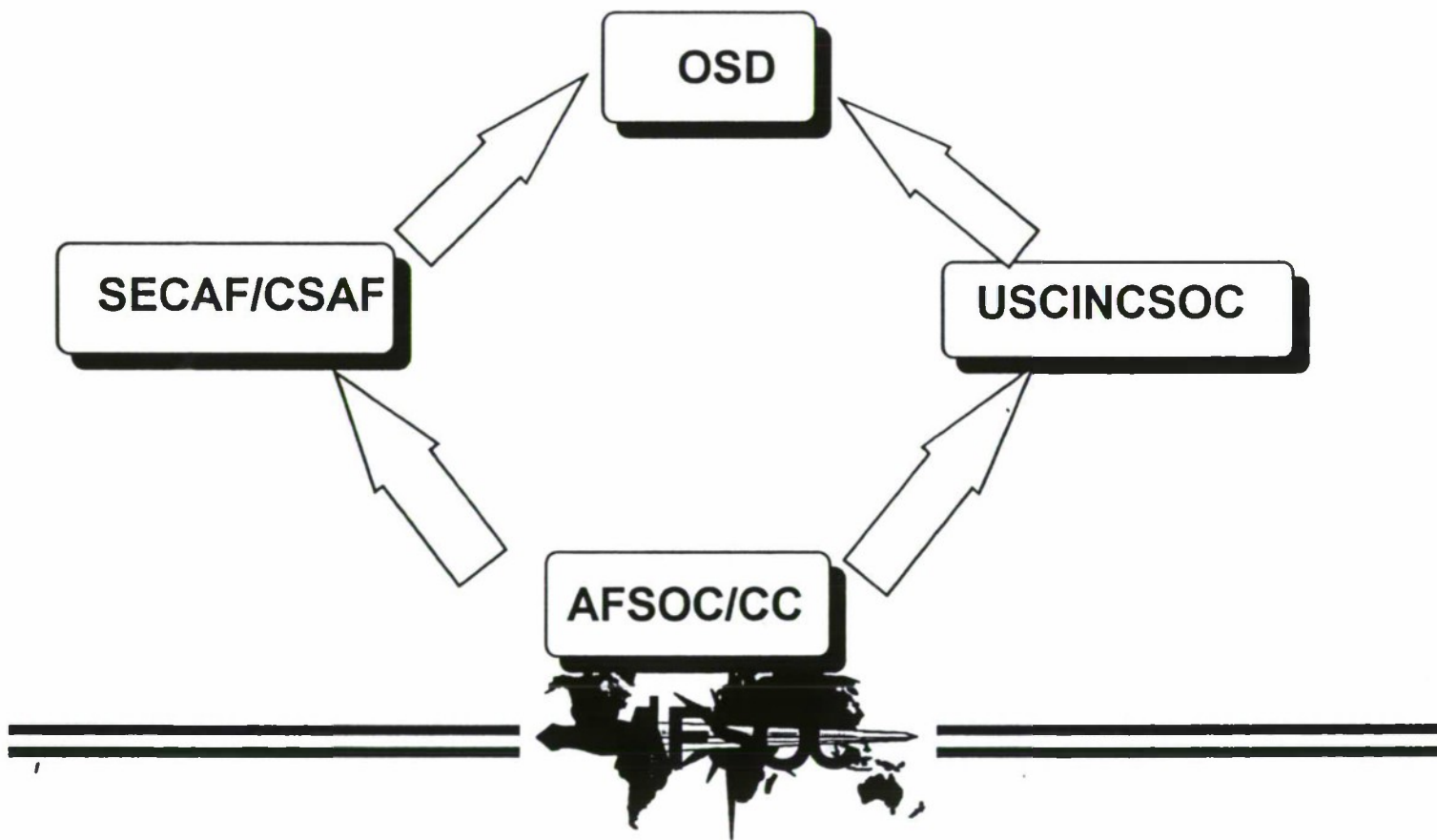
UPDATE FOR EACH MILESTONE



VALIDATION PROCESS



AFSOC'S DUAL POM PROCESS



Additional Information
Points of Contact

→ *Modeling and Simulation:* Major Donald

- Phone: 904-884-2181
- e-mail: dojdonal@hqafsoc.afsoc.mil

→ *Requirements:* Lt Col Spence

- Phone: 904-884-4077
- e-mail: dodspenc@hqafsoc.afsoc.mil



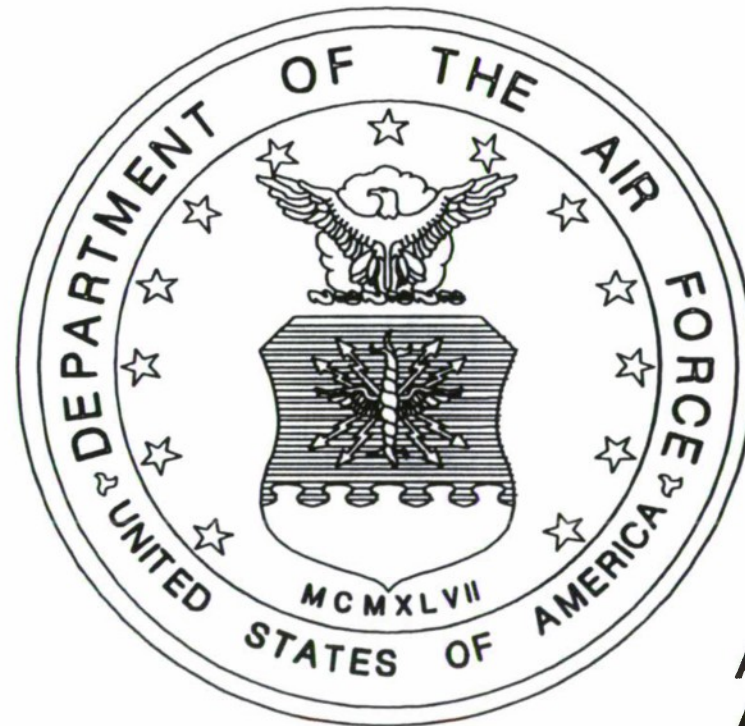
*AMERICA'S SPECIALIZED
AIR POWER*



**A STEP AHEAD IN A
CHANGING WORLD**



Modeling and Simulation In Support of Weapons Systems Life cycle T&E Perspective



A. NEIL CHRISTIANSON
AFDTC/DRI
EGLIN AFB FL



PURPOSE

- ◆ **PROVIDE A PERSPECTIVE ON THE USE OF MODELING AND SIMULATION TO SUPPORT THE LIFE-CYCLE OF THE MODERN WEAPON SYSTEM**



OUTLINE



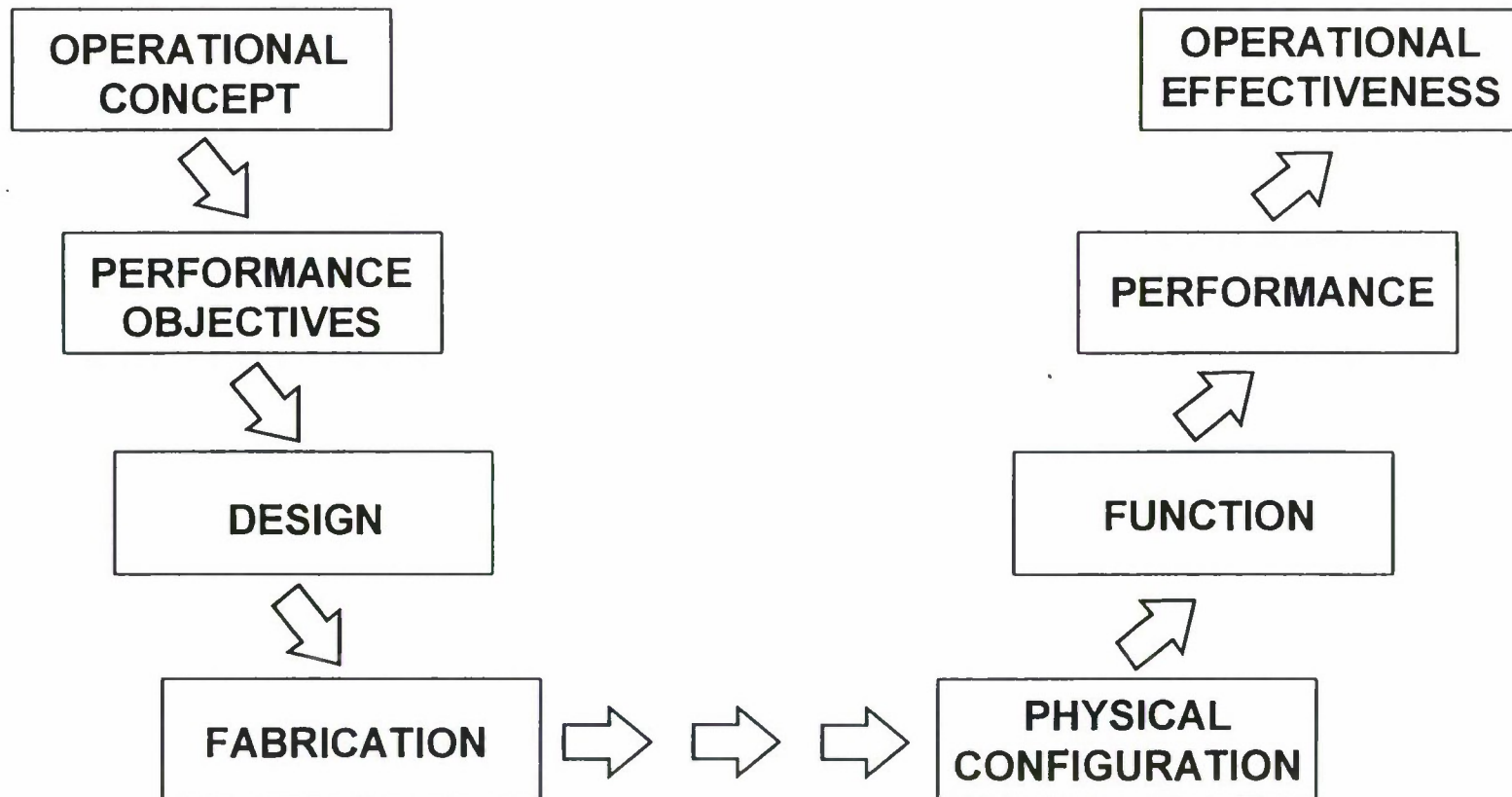
-
-
- ◆ **CONCEPTS OF T&E M/S**
 - ◆ **M/S ARCHITECTURE**
 - ◆ **M/S APPLICATIONS**
 - ◆ **SUMMARY**



Concepts of T&E M/S

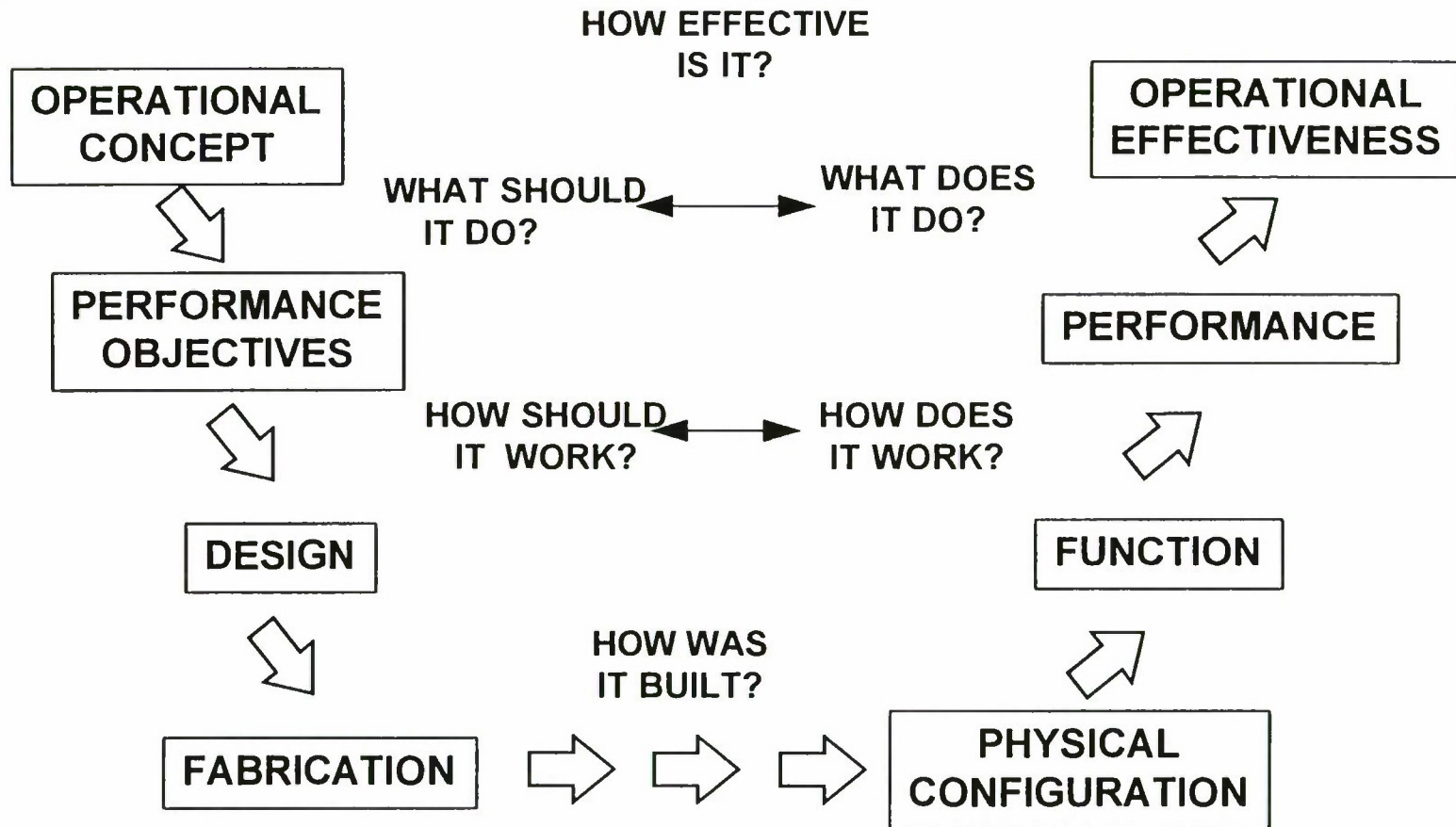


CONCEPT TO REALITY



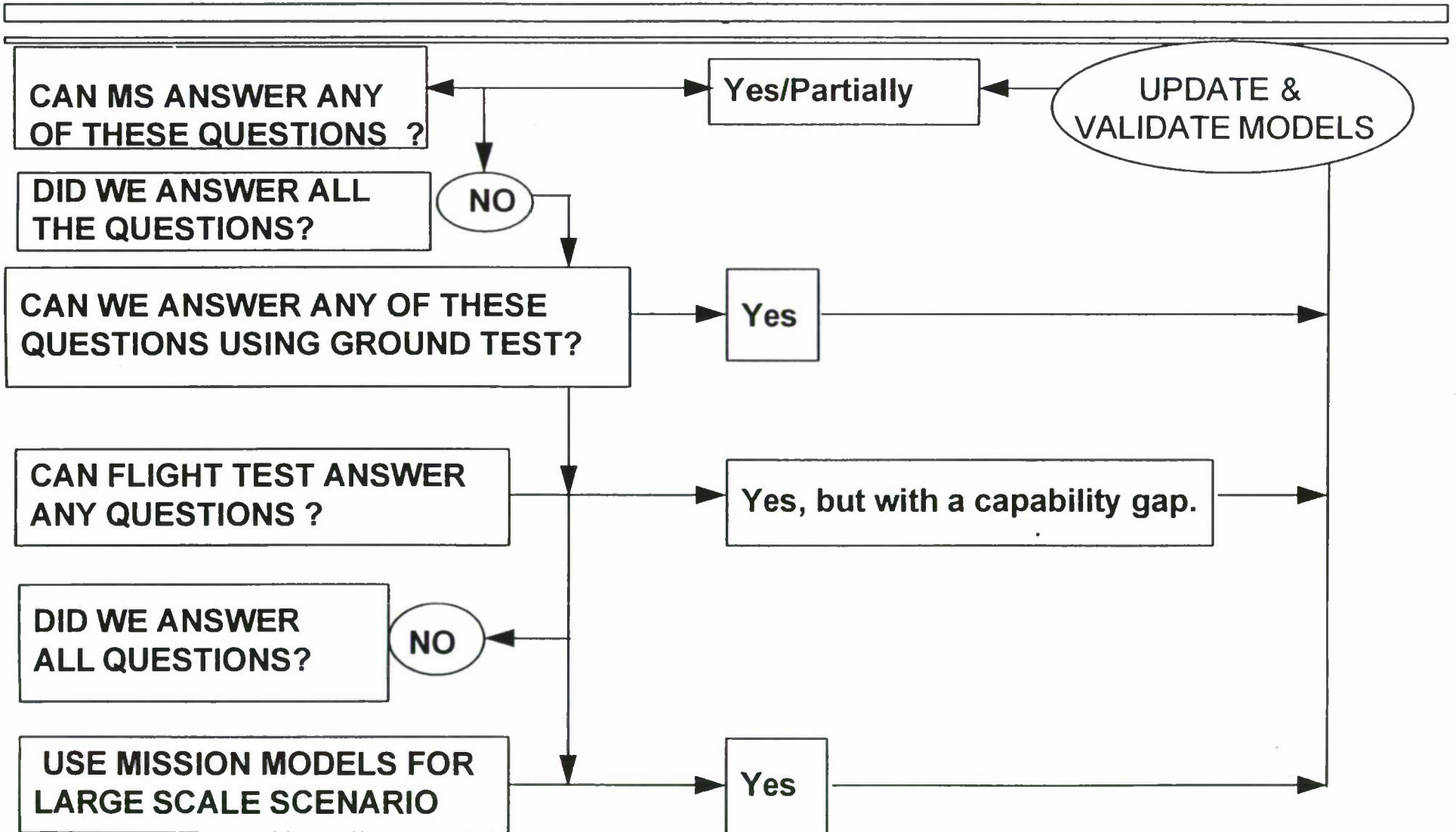


ROLE OF T&E





M/S USE IN WEAPONS TEST METHODOLOGY

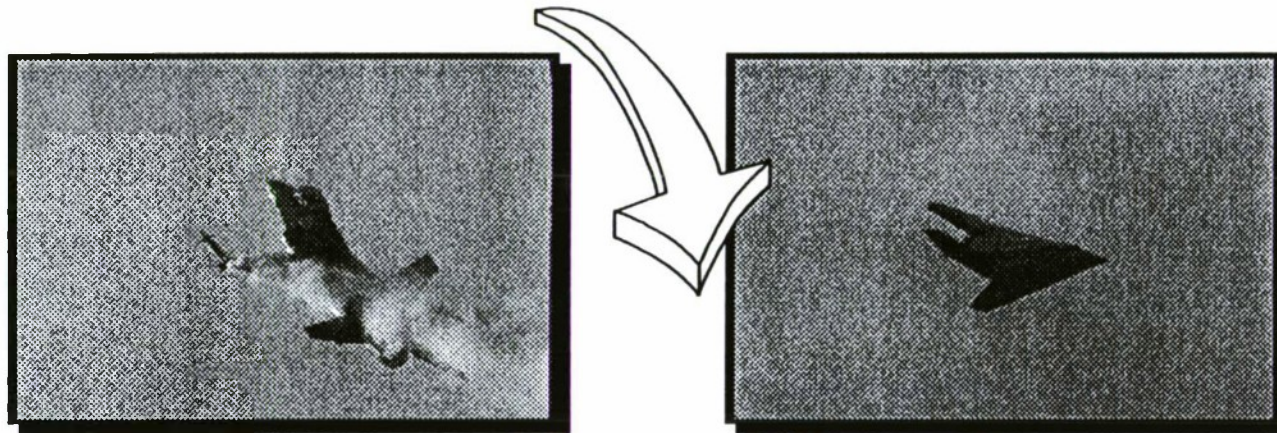




FUNDAMENTAL T&E ROLE



- **Provide Accurate and Timely Information To Decision-Makers**
- **Support the Iterative Development Process (Integral Part Of The SPO-Contractor Team)**
- **Determine Operational Suitability and Effectiveness**



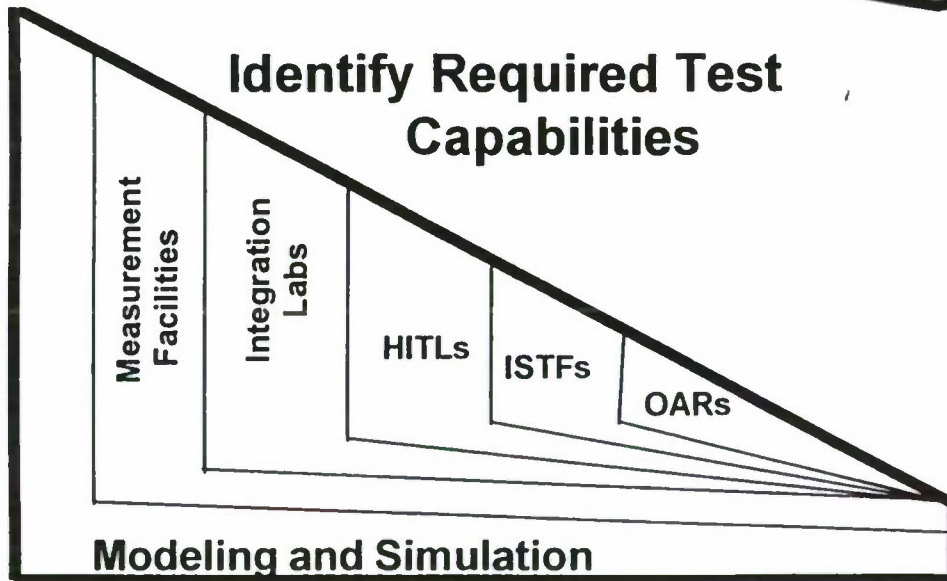
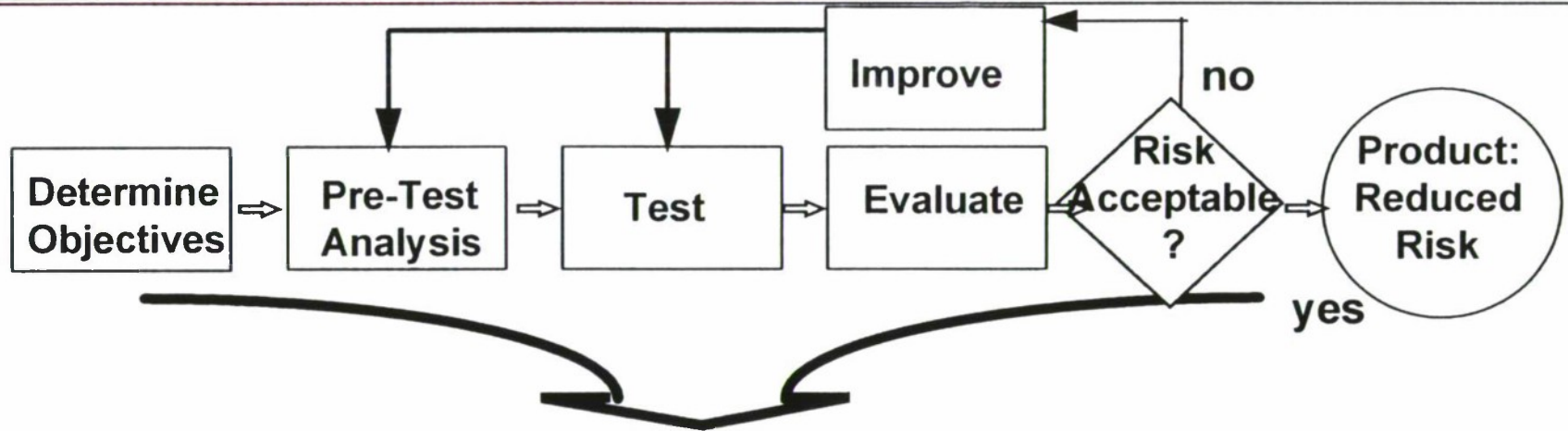
Ultimately, Warfighter Combat Effectiveness



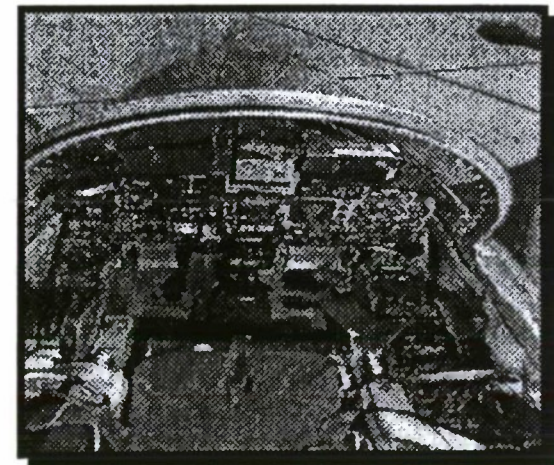
APPLICATION OF TEST PROCESS METHODOLOGY



Air Force Test Process



Plan/Conduct Tests

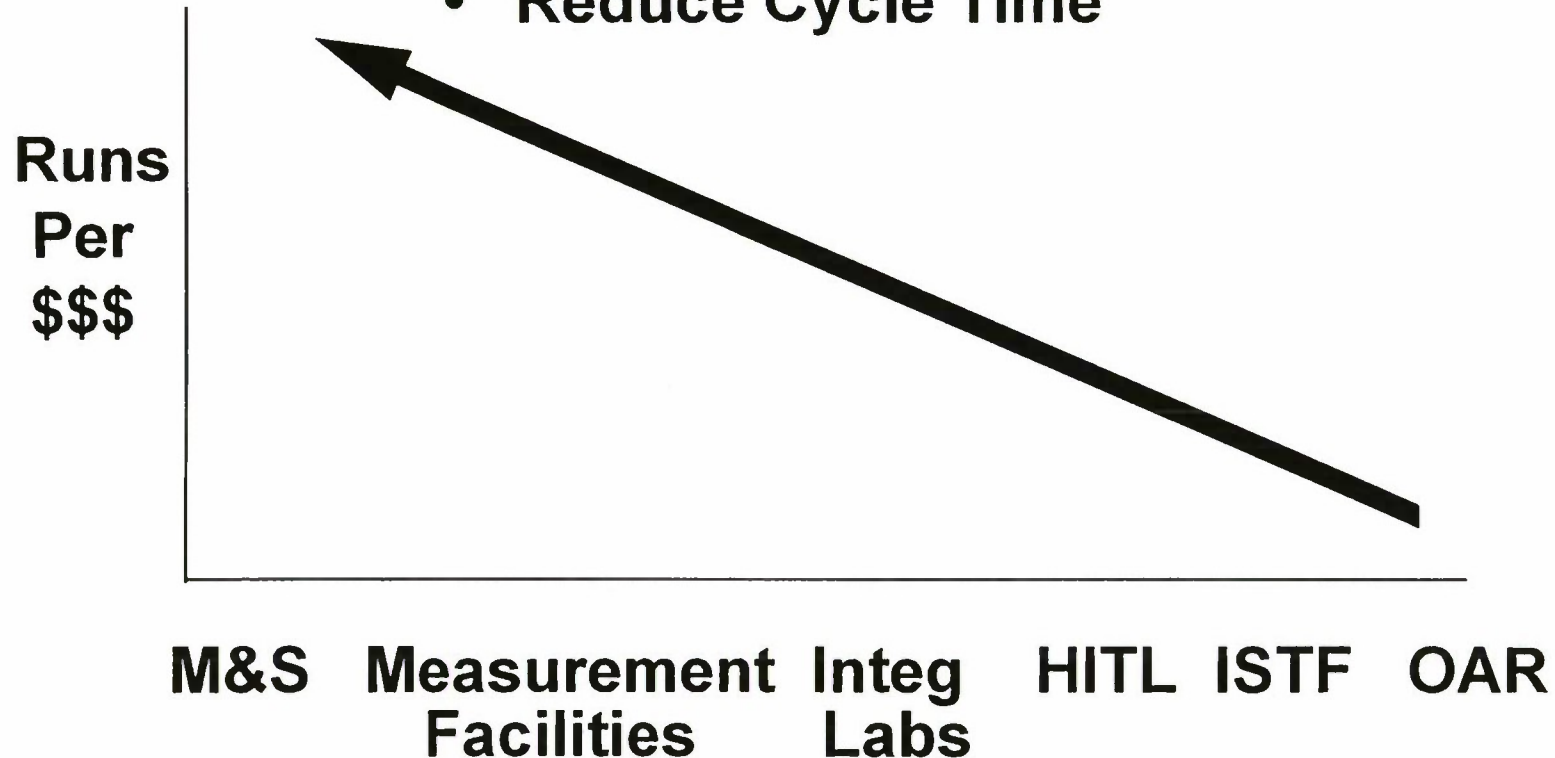




MODELING & SIMULATION (Why The Emphasis?)



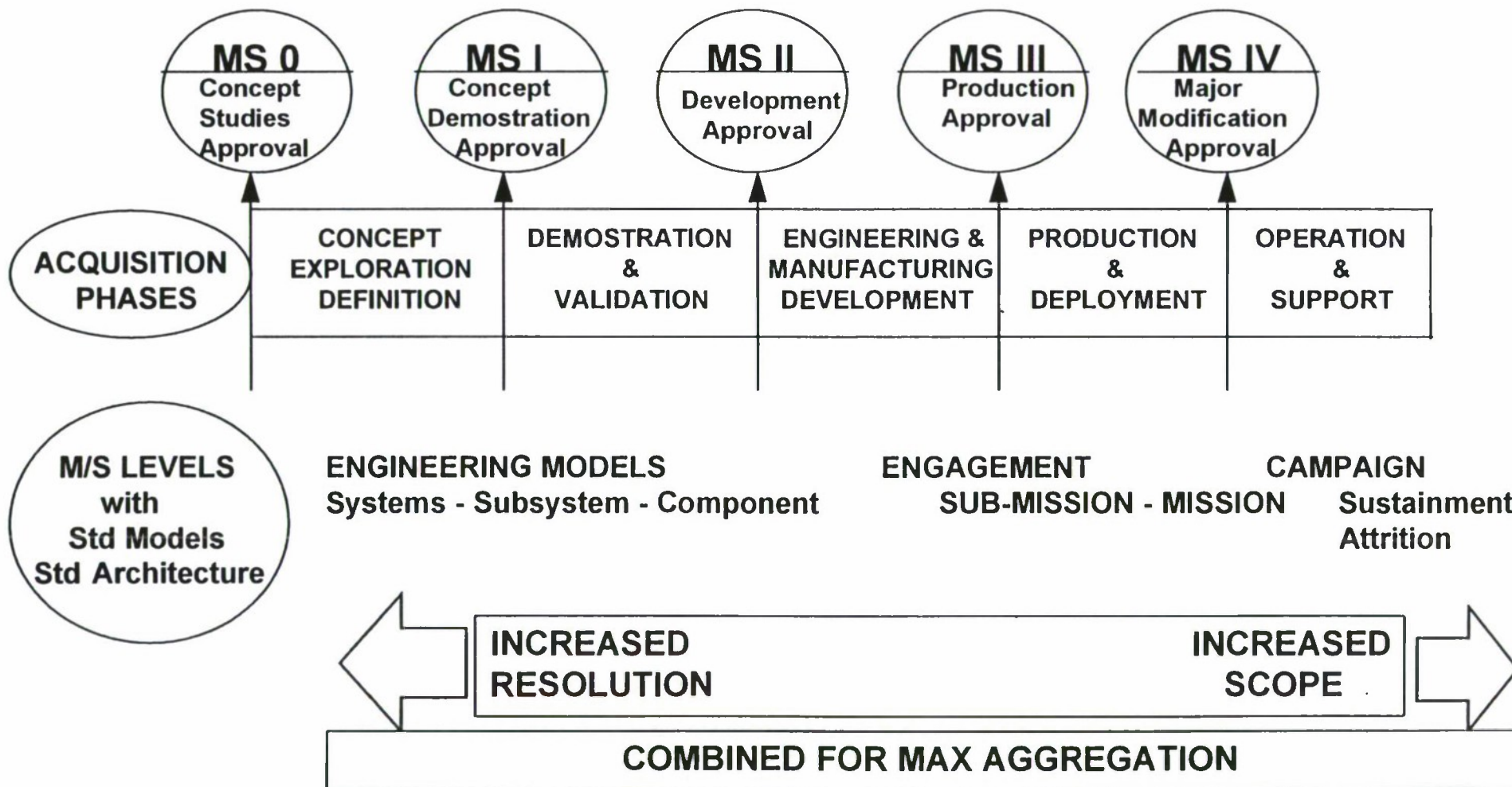
- Reduce Cost
- Reduce Cycle Time





WEAPONS ACQUISITION AND MODELS & SIMS

- Employing M&S at all Levels





AF 4 Star - M&S REVIEW FINDINGS



-
- ◆ **Customer and supplier at all M&S levels**
 - ◆ **Internal supplier and customer--system level**
 - ◆ **External supplier and customer--higher levels**
 - ◆ **Variety of M&S tools support**
 - ◆ **Laboratories**
 - ◆ **Product Centers**
 - ◆ **Test Centers**
 - ◆ **Logistics Centers**
 - ◆ **Funded out of projects/programs**



AF 4 Star - M&S REVIEW Recommendations



-
- ◆ **Endorse Vision of an Integrated M&S Capability**
 - ◆ **Enhance training simulation technology**
 - ◆ **UPGRADE KEY MODELS AND DATABASES**
 - ◆ **SUPPORT ARCHITECTURE AND STANDARDS DEFINITION**
 - ◆ **IMPLEMENT DISTRIBUTED SIMULATION CAPABILITY**



M&S Architecture



M/S USERS & USE



-
-
- ◆ **WARFIGHTER** - COEA
- WARGAMES

 - ◆ **DEVELOPER** - CONCEPT VALIDATION
- SYSTEM TRADEOFFS
- SYSTEM PERFORMANCE

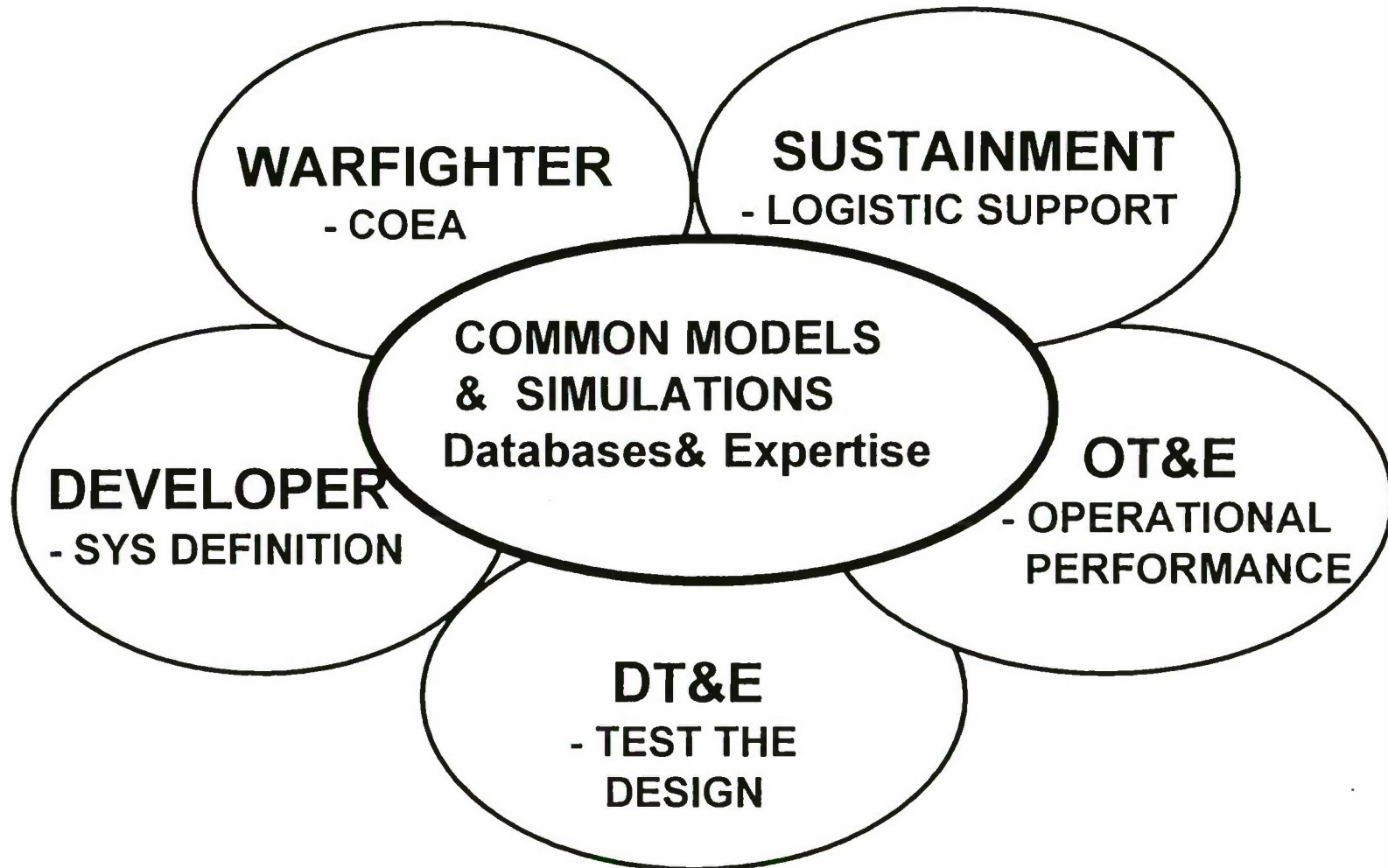
 - ◆ **DT&E** - TEST DESIGN
- PRE-TEST ANALYSIS/PREDICTION
- SCENARIO SIMULATION

 - ◆ **OT&E** - OPERATIONAL PRE-TEST ANALYSIS/PREDICTION
- INCREASED SCENARIO DENSITIES/FIDELITY

 - ◆ **SUSTAINMENT** - LOGISTICS TRADEOFFS
- ATTRITION RATES
- STOCK PILE INVESTIGATION/VALIDATION



AN INTEGRATED SYSTEMS APPROACH TO M/S

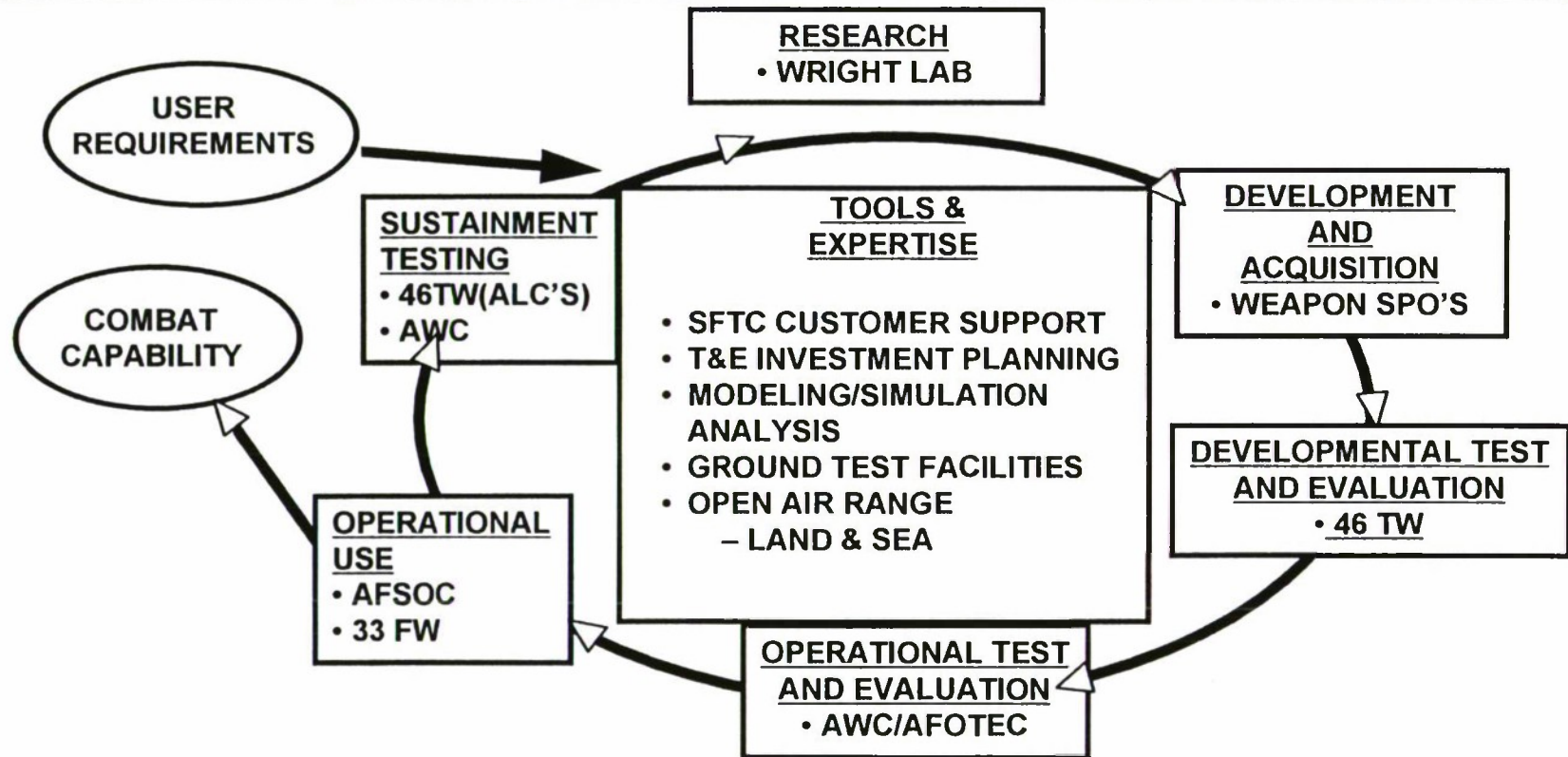




M&S Applications



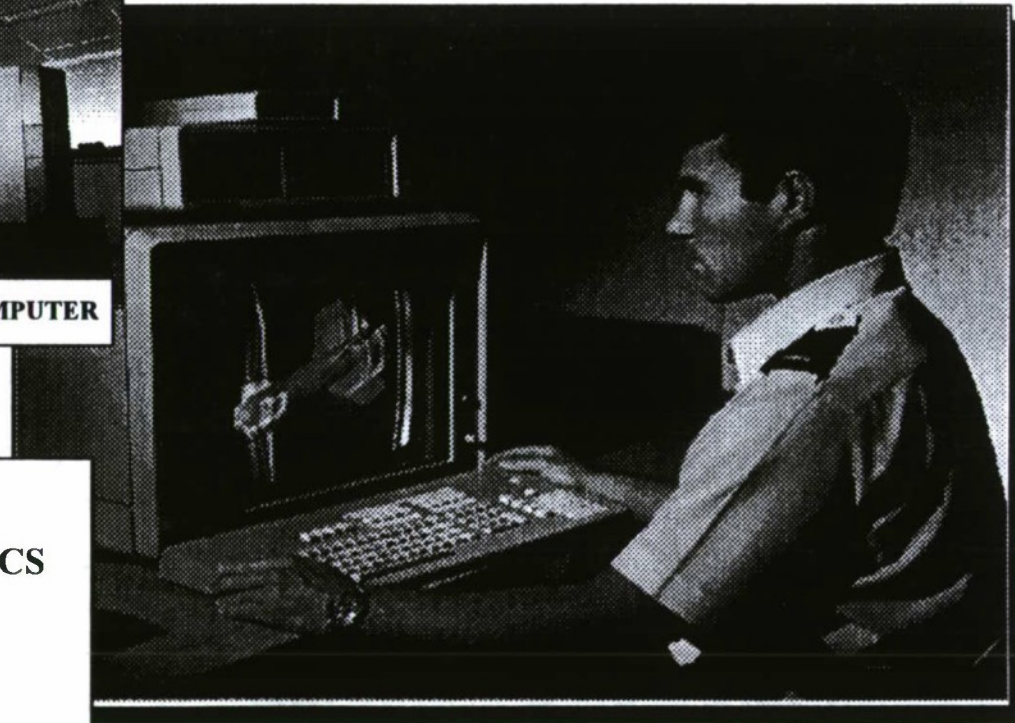
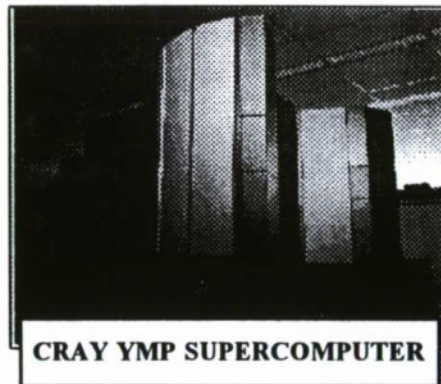
TEAM EGLIN WEAPONS DEVELOPMENT/ ACQUISITION/DEPLOYMENT



BOTTOM LINE: FULL LIFE CYCLE CAPABILITY



FREEMAN COMPUTER SCIENCES CENTER

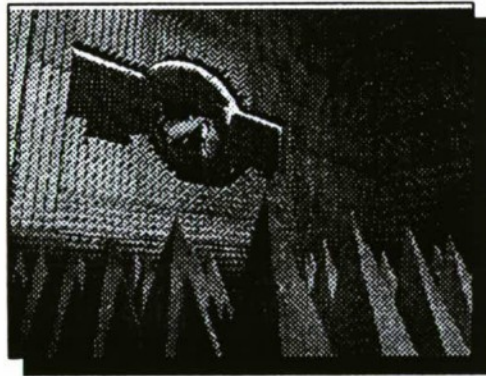


**STATE OF THE ART
SUPERCOMPUTER AND GRAPHICS
VISULIZATION CAPABILITIES
AVAILABLE FOR THE USE TO**

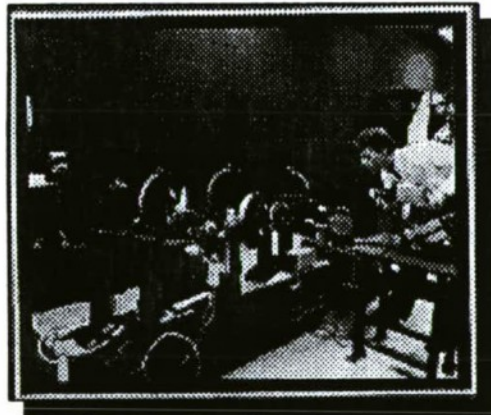
- **MODEL**
- **SIMULATE**
- **VALIDATE CONCEPTS**
- **MAKE ASSESSMENTS**



GUIDED WEAPONS EVALUATION FACILITY (GWEF)

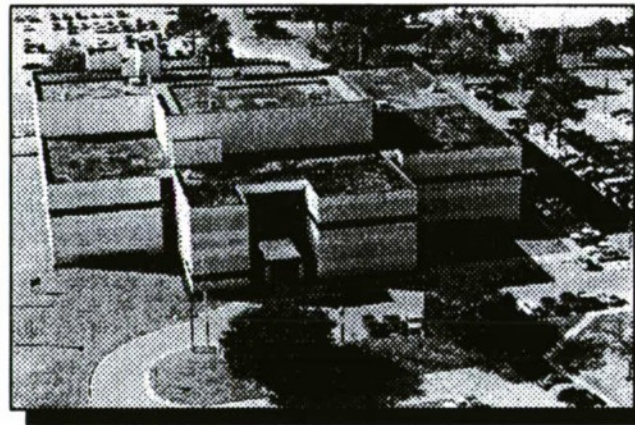


ANECHOIC CHAMBERS

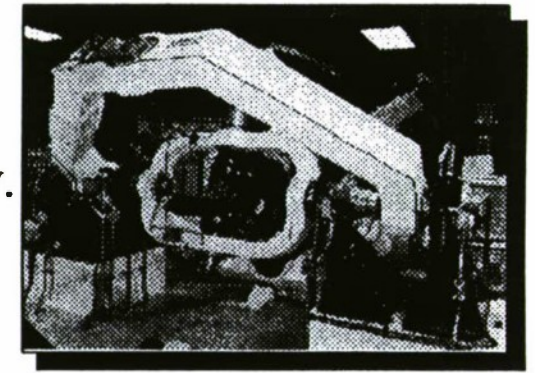


PARAMETRIC MEASUREMENT SYSTEMS

DIGITAL AND HARDWARE -IN-THE-LOOP SIMULATION, CHARACTERIZATION AND COUNTER-COUNTERMEASURE TESTING OF GUIDED WEAPONS IN A SECURE FACILITY.



COMPLETE SPECTRAL, MULTI-FUNCTIONAL TEST FACILITY



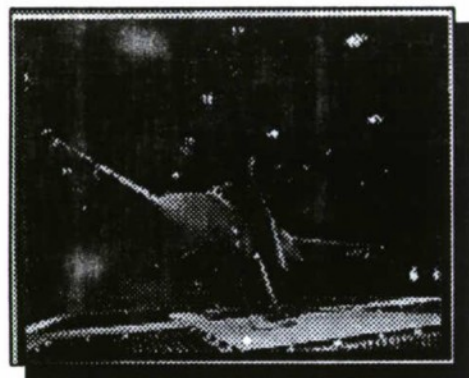
FLIGHT MOTION SIMULATORS



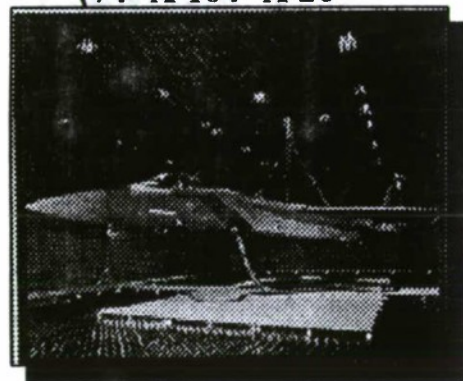
COMPUTER SYSTEMS



PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONIC SYSTEMS (PRIMES)

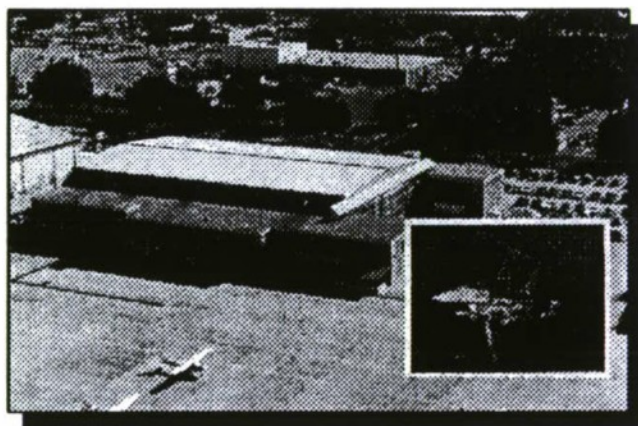


ANECHOIC CHAMBERS
(74' X 104' X 26')

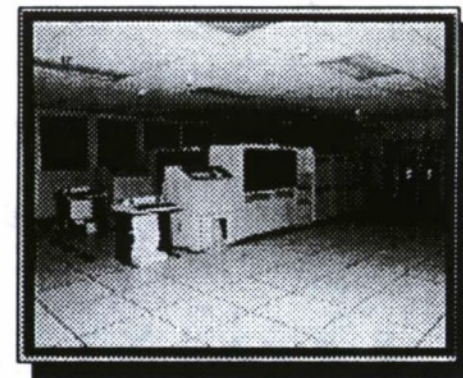


EMI/EMC TESTING

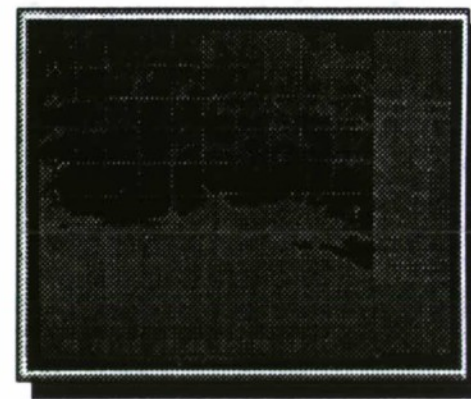
**PROVIDE COST EFFECTIVE TOOLS AND
TECHNIQUES FOR TEST AND EVALUATION
OF INTEGRATED WEAPONS SYSTEMS
IN A REALISTICALLY DENSE, SECURE
CONTROLLED ENVIRONMENT .**



PRIMES FACILITY



DATA PROCESSING LAB



**DYNAMIC SCENARIO
DISPLAY**

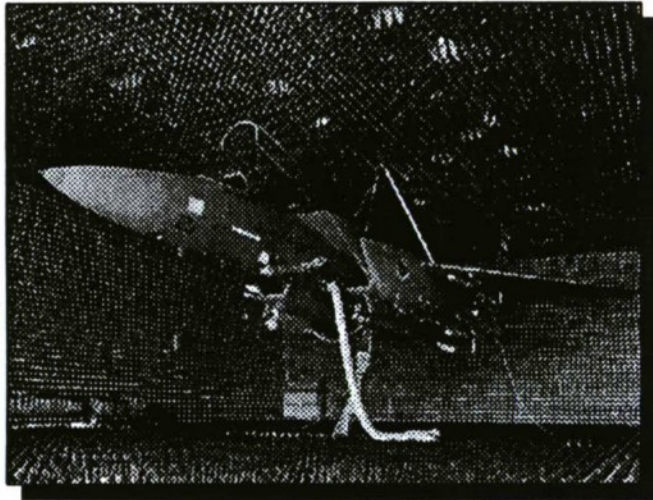


GWEF-PRIMES LINK

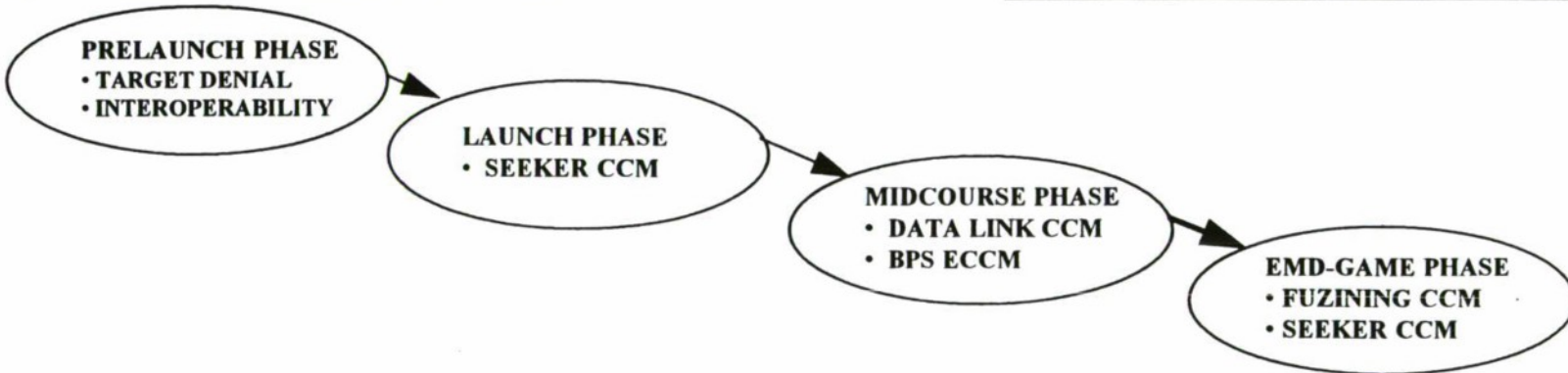
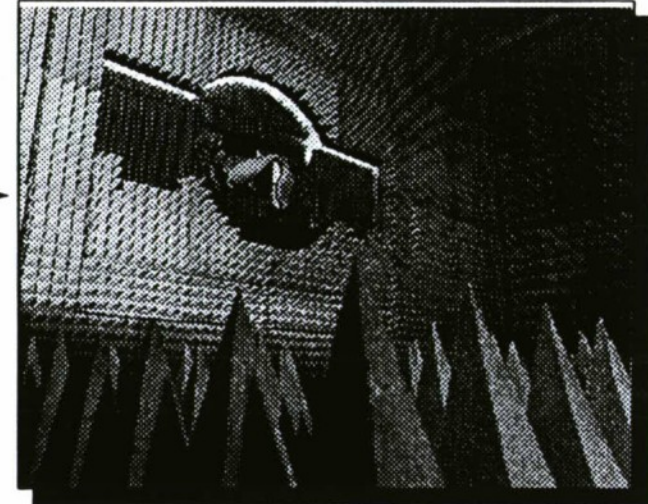


PRIMES

GWEF

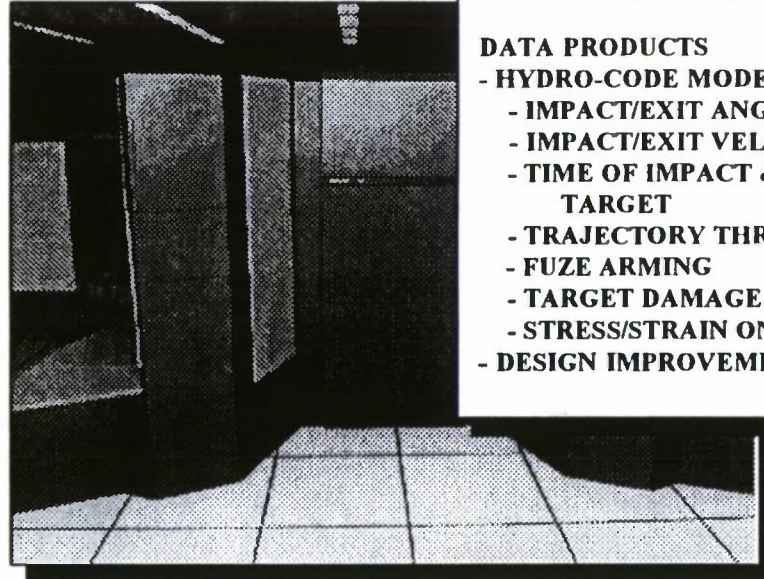
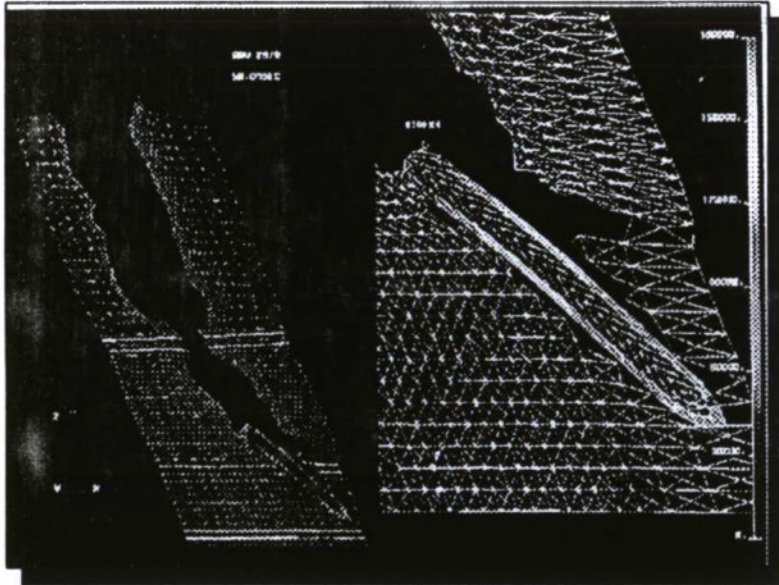


**FIBER OPTIC
LINK**





DIGITAL MODELING AND SIMULATION GBU-28



- DATA PRODUCTS**
- HYDRO-CODE MODELING PREDICTS:
 - IMPACT/EXIT ANGLES
 - IMPACT/EXIT VELOCITIES
 - TIME OF IMPACT & EXIT FROM TARGET
 - TRAJECTORY THROUGH TARGET
 - FUZE ARMING
 - TARGET DAMAGE
 - STRESS/STRAIN ON WARHEAD
 - DESIGN IMPROVEMENT

**MAINTAINS COMPUTATIONAL EXPERTISE TO ASSIST
MODELLERS AND SIMULATORS**

- GBU-28 SIMULATIONS OF EXPECTED PERFORMANCE
- SIMULATED PENETRATORS, EXPLOSIVE AND FUZES COULD SURVIVE
IMPACT AND DETONATE

**AIRFOIL
GROUP**

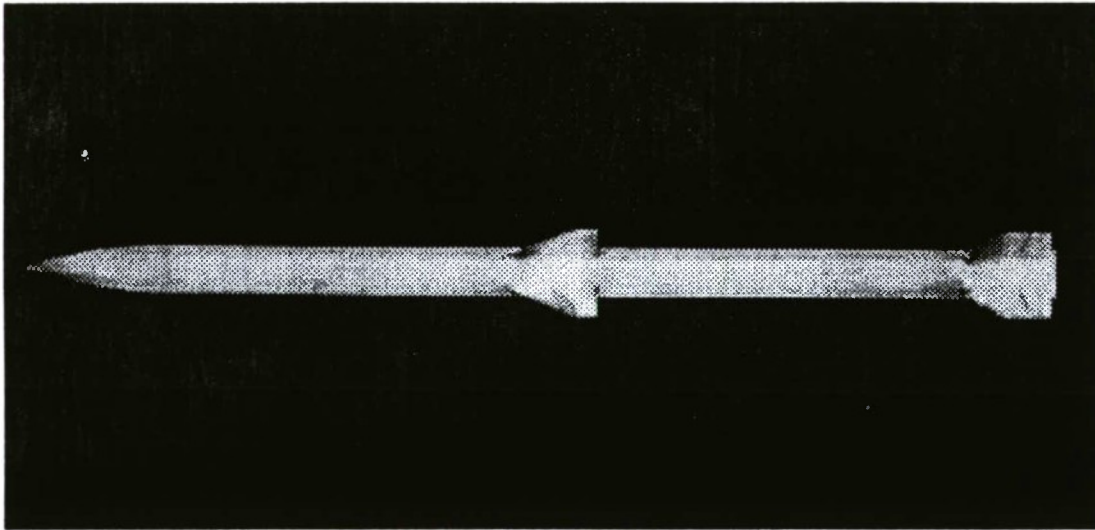
FUZE

WARHEAD

**GUIDANCE &
CONTROL**



MODELING AND SIMULATION AMRAAM



DATA PRODUCTS

AERO PERFORMANCE

- TIME OF FLIGHT
- MISSILE TRAJECTORY
- END GAME ENCOUNTER GEOMETRY

SEEKER PROCESSING PROBABILITY OF:

- GUIDE
- FUZING
- KILL

MISSILE ENVELOPES
LETHALITY
AIRCRAFT INTERFACE
DEFINITION

SEEKER

GUIDANCE
AND
CONTROL

TARGET
DETECTION
DEVICE

WARHEAD

ROCKET
MOTOR

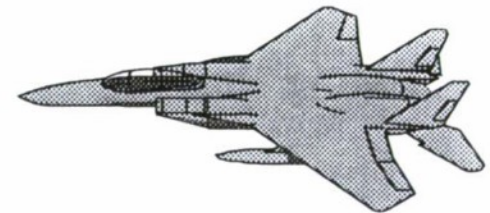


BENEFITS OF M&S



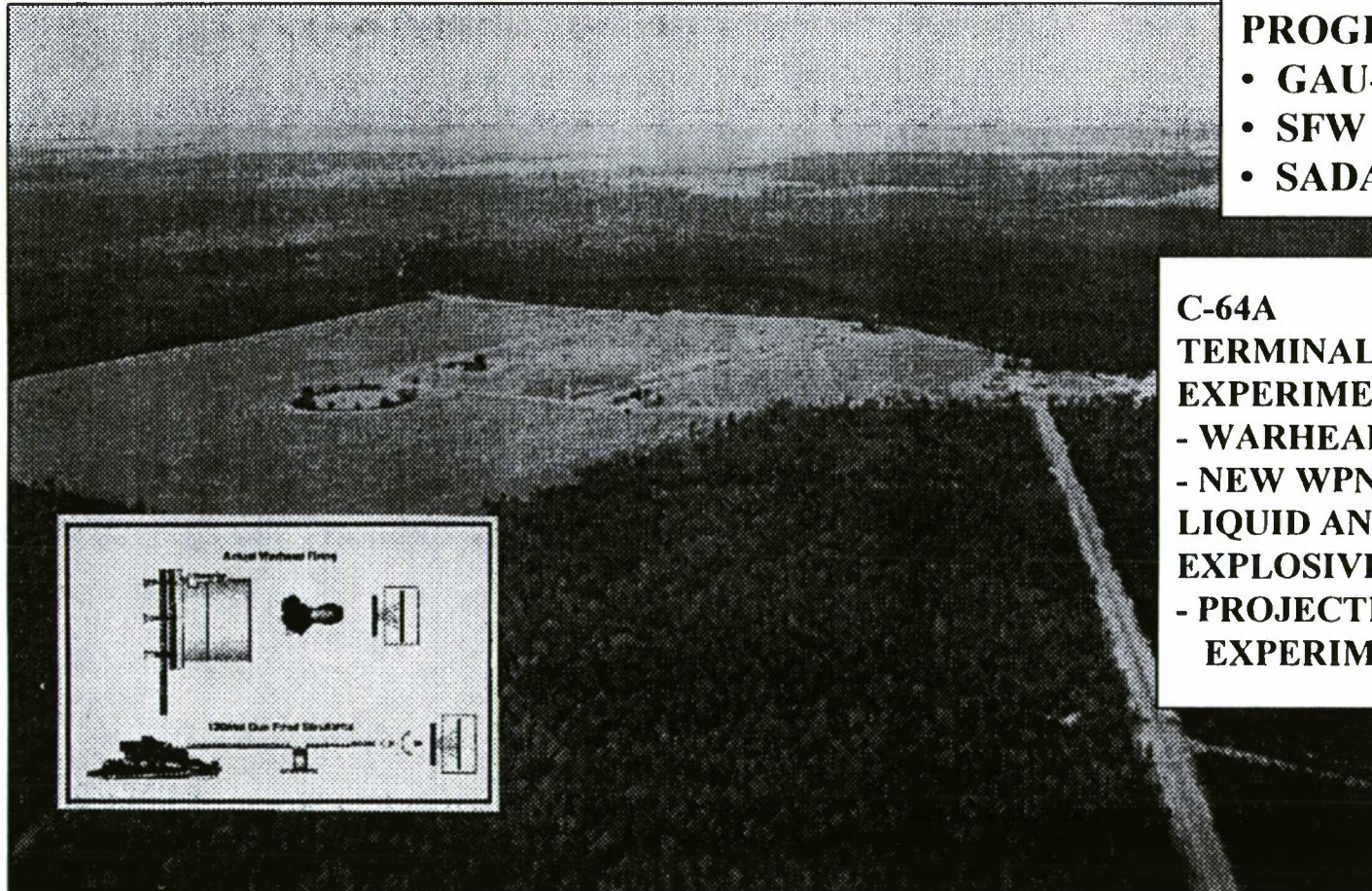
AMRAAM P³I At AFDTC

- **Simulation Results Provide Pre-Launch Prediction of Mission Effectiveness Based on Mission Scenario**
 - **Captive Flight Test Requirements Reduced**
 - **Elimination of 12 Captive Flights, One Launch Mission**
 - **Saved \$2.5M Test Assets and \$250K In Analysis/Range Costs**





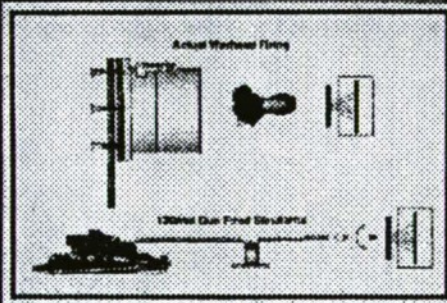
TERMINAL EFFECTS RANGE



PROGRAMS SUPPORTED

- GAU-8 API
- SFW
- SADARM

C-64A
**TERMINAL EFFECTS AND
EXPERIMENTATION FACILITY**
- WARHEAD EXPERIMENTS
- NEW WPN CONCEPTS WITH
LIQUID AND SOLID
EXPLOSIVES
- PROJECTILE BALLISTIC
EXPERIMENTS





TERMINAL EFFECTS SUPPORT MODELS



-
-
- ◆ POINT BURST DAMAGE ASSESSMENT MODEL (PDAM)
 - ◆ DEVELOPED BY AF IN EARLY 70s
 - ◆ PROVIDES TARGET VULNERABILITY & MUNITIONS EFFECTIVENESS DATA
 - ◆ MUNITIONS INFORMATION LIBRARY AND EVALUATION SYSTEM (MILES)
 - ◆ MUNITIONS EVALUATION AND PERFORMANCE DATABASE
 - ◆ LETHALITY EVALUATION AND ANALYSIS PROGRAM SUITE
 - ◆ TARGET AND BACKGROUND INFORMATION LIBRARY SYSTEM
 - ◆ GROUND TARGET AND BACKGROUND SIGNATURE DATABASE (TABILS)
 - ◆ CONTAINS OVER 400 GBYTES OF EO/ER, MMW, AND SEISMIC, ACOUSTIC, MAGNETIC IMAGERY AND SIGNATURES



FLYOUT MODEL INFORMATION CENTER



-
- ◆ REPOSITORY OF STANDARD HIGH FIDELITY SAM AND AAA FLYOUT MODELS
 - ◆ SERVICES INCLUDE
 - ◆ SOFTWARE DEVELOPMENT
 - ◆ CONFIGURATION CONTROL
 - ◆ MODEL DISTRIBUTION
 - ◆ V&V DOCUMENTATION DISTRIBUTION



KEY ACQUISITION MODELS AND SIMULATIONS (KAMS)



-
-
- ◆ **TOTAL WEAPON SYS TEST ENVIRONMENT (TWSTE)**
POC: MR DAVID SCHOCH ORG: 46TW/TSWW PH: (904) 882-9354

 - ◆ **TARGET AND BACKGROUND INFO LIBRARY SYS (TABILS)**
POC: MR IAN TALBOT ORG: 46OG/OGML PH: (904) 882-9243

 - ◆ **POINT BURST DAMAGE ASSESSMENT MODEL (PDAM)-VV&A**
POC: MR BOB STOVALL ORG: 46OG/OGML PH: (904) 882-9243

 - ◆ **MUNITIONS INFO LIBRARY AND EVALUATION SYS (MILES)**
POC: MR IAN TALBOT ORG: 46OG/OGML PH: (904) 882-9243

 - ◆ **FLYOUT MODEL INFO CENTER (FMIC)**
POC: MR BOBBY JONES ORG: 96CG/SCTO PH: (904) 882-4617



C4I NETWORKS AND LINKS (UNFUNDED)



PROGRAM DESCRIPTION

Improved communications network infrastructure (inter and intrabase) to expand linking with other facilities.

- ⇒ Realtime data links to support C4ISR testing**
- ⇒ A Defense Simulation Internet node**
- ⇒ Additional high-speed T-1 lines**
- ⇒ Implement a SIPRNET point of presence**

SCHEDULE

	FY96	FY97	FY98	FY99	FY00	FY01	FY02
NETWORKS & LINKS		△			△		



C4ISR BATTLE LAB (UNFUNDED)



PROGRAM DESCRIPTION

Expansion of current C4ISR support capabilities

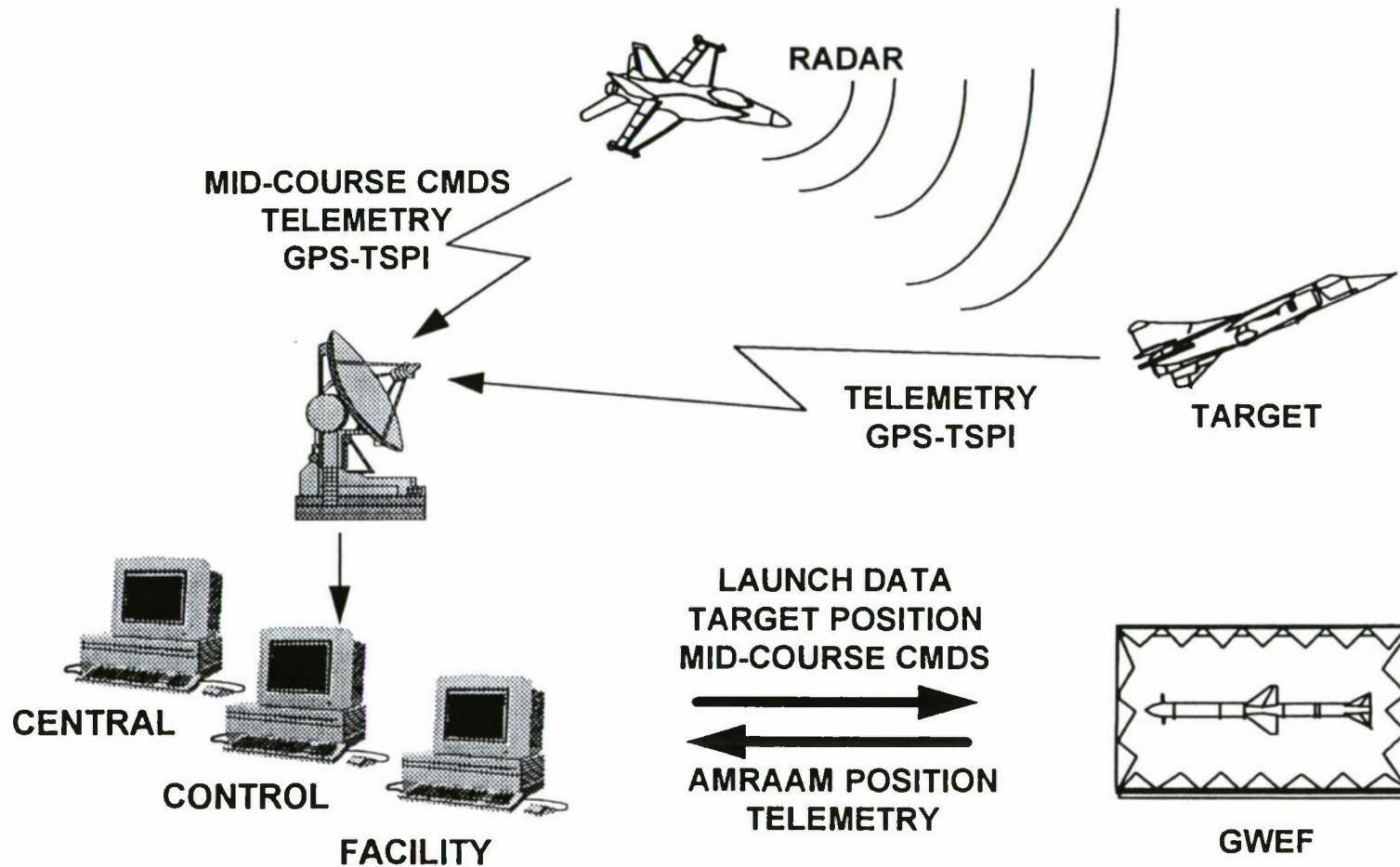
- ⇒ **12 SunSPARC workstations with peripherals**
- ⇒ **Workstations to support new common C4ISR design**
- ⇒ **LANs installed for processing up to TopSecret/SCI**
- ⇒ **Hub in Bldg 380 will be linked to PRIMES and 53rd Wing facility at Hurlburt.**

SCHEDULE

	FY96	FY97	FY98	FY99	FY00	FY01	FY02
C4ISR			△			△	

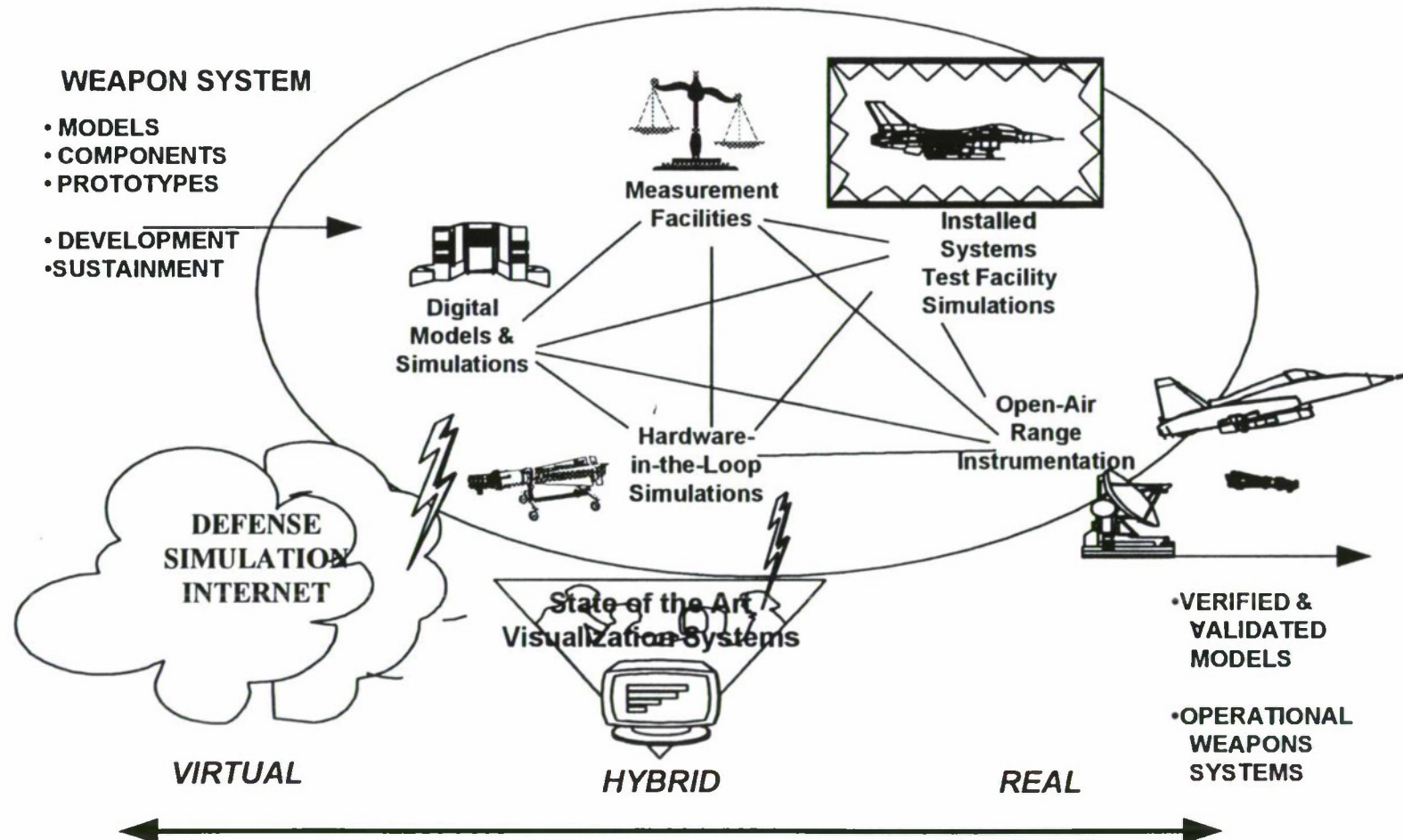


JADS SYSTEM INTEGRATION AMRAAM TEST SCENARIO





VISION --- "HIGHLY INTEGRATED T&E COMPLEX"





Summary



SUMMARY



◆ AFDTC

- M&S BEING INTEGRATED INTO ALL PHASES OF THE T&E PROCESS TO SUPPORT LIFE CYCLE OF WEAPONS SYSTEMS
 - OWNS KEY M&S T&E FACILITIES/ CAPABILITIES
 - AF COE FOR M&S APPLICATIONS RELATING TO ARMAMENT/MUNITIONS TEST AND EVALUATION
-
- ◆ AFDTC APPLIES 4-STAR INTEGRATED M&S APPROACH TO T&E IN SUPPORT OF WEAPONS ACQUISITION AND SUSTAINMENT



***AERONAUTICAL SYSTEMS CENTER
MODELING, SIMULATION, AND
ANALYSIS INITIATIVES***



**STEVEN J. WOURMS
DEVELOPMENT PLANNING DIRECTORATE**

1 MAY 1996



PRESENTATION OVERVIEW



Advance Planning Briefing to Industry

Orlando FL 1 May 96

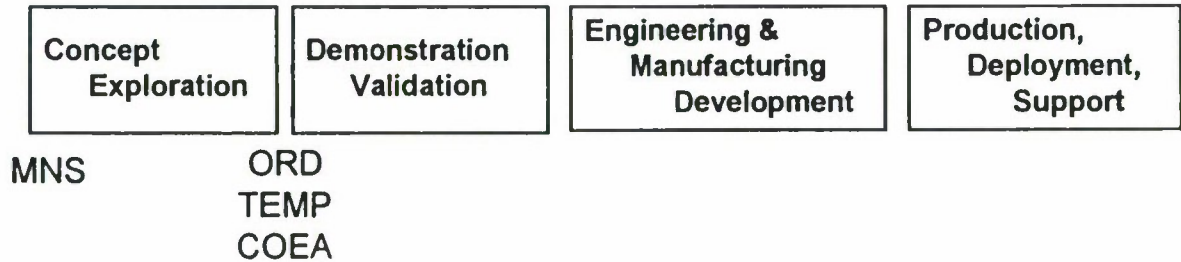
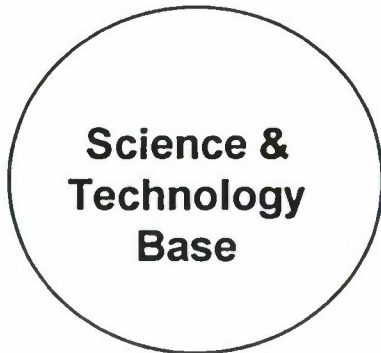
- BREADTH OF ASC PARTICIPATION IN AERONAUTICAL SYSTEM DEVELOPMENT
- BREADTH OF MODELING, SIMULATION, AND ANALYSIS (MS&A) EXPERTISE
- FEDERATION OF MS&A ORGANIZATIONS



BREADTH OF ASC PARTICIPATION IN AERONAUTICAL SYSTEM DEVELOPMENT



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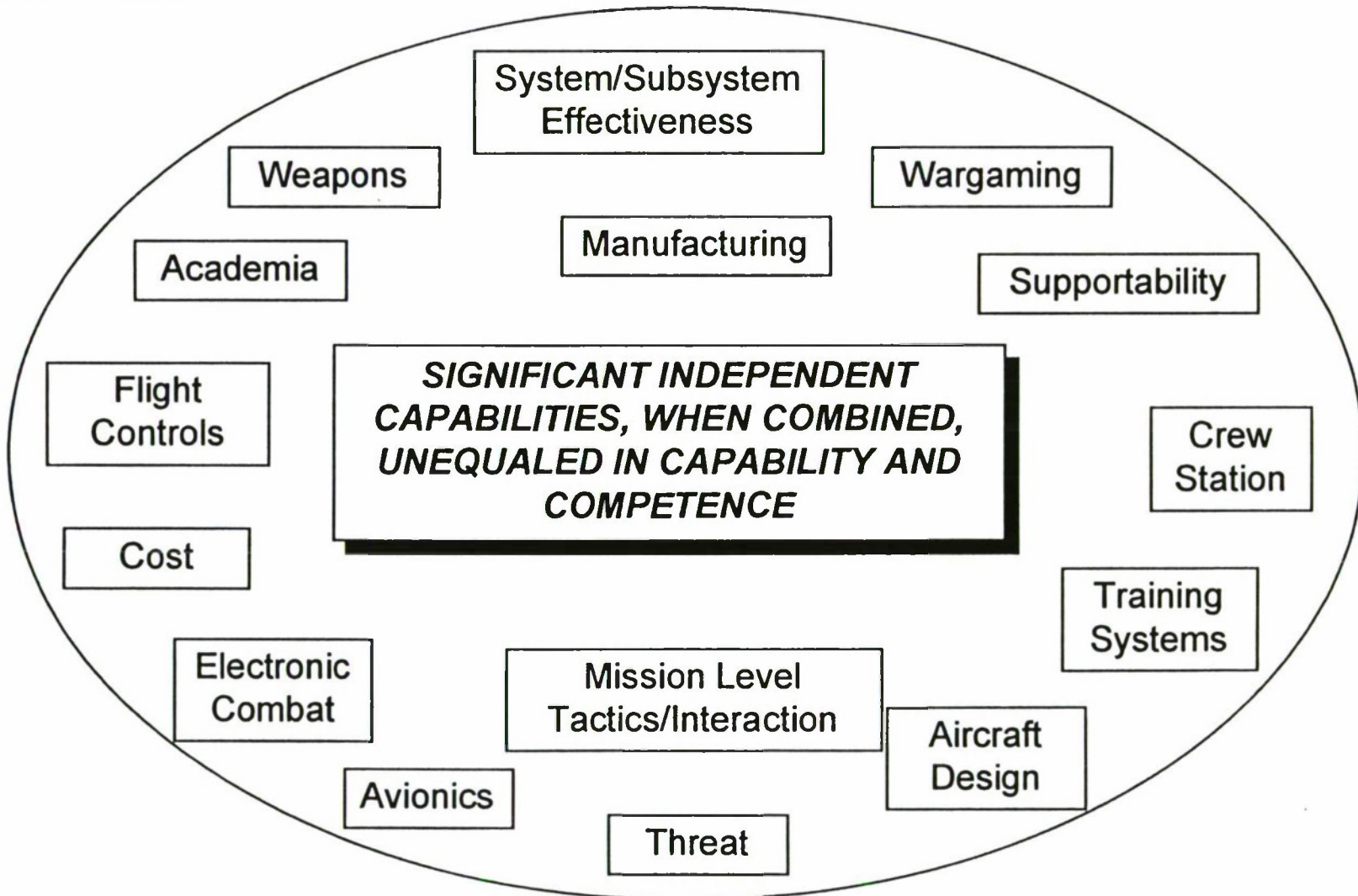
BREADTH OF MS&A EXPERTISE

ASC PLUS TENANT ORGANIZATIONS AT WRIGHT-PATT



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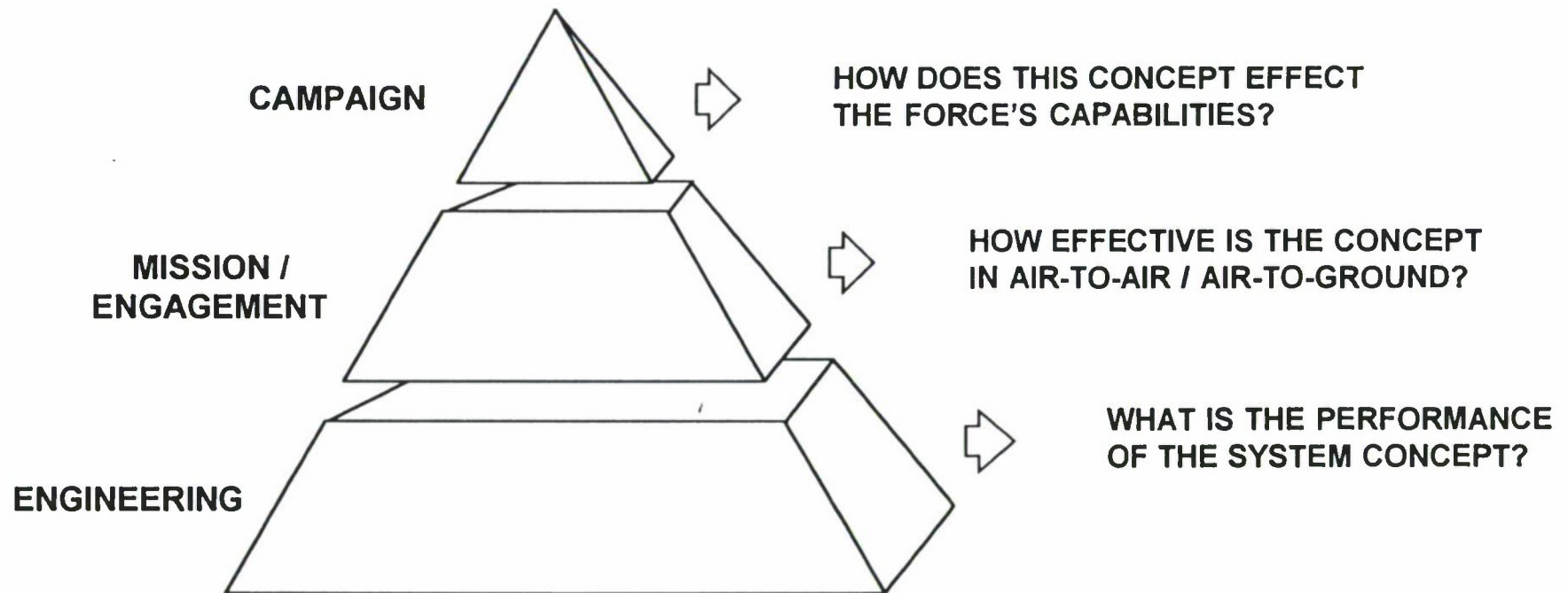


ANALYSIS HIERARCHY



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ASC MS&A EXPERTISE COVERS ENTIRE ANALYSIS PYRAMID



ASC POISED FOR WORLD-WIDE DISTRIBUTED INTERACTIVE SIMULATION PARTICIPATION



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AFIT *	AL/CF *	ASC/AL
ASC/ENFC	ASC/LN	ASC/RA
ASC/XRA	ASC/XRD	ASC/XRJ
NAIC *	ASC/YW	WL/AAS
WL/FIG	WL/MN	WL/MT



**PROPOSED ASC
SIMULATION AND
ANALYSIS FACILITY**



★ -- Non-ASC WPAFB Tenants
☆ -- Major DoD M&S Sites



ASC SIMULATION AND ANALYSIS FACILITY (SIMAF)



Advance Planning Briefing to Industry

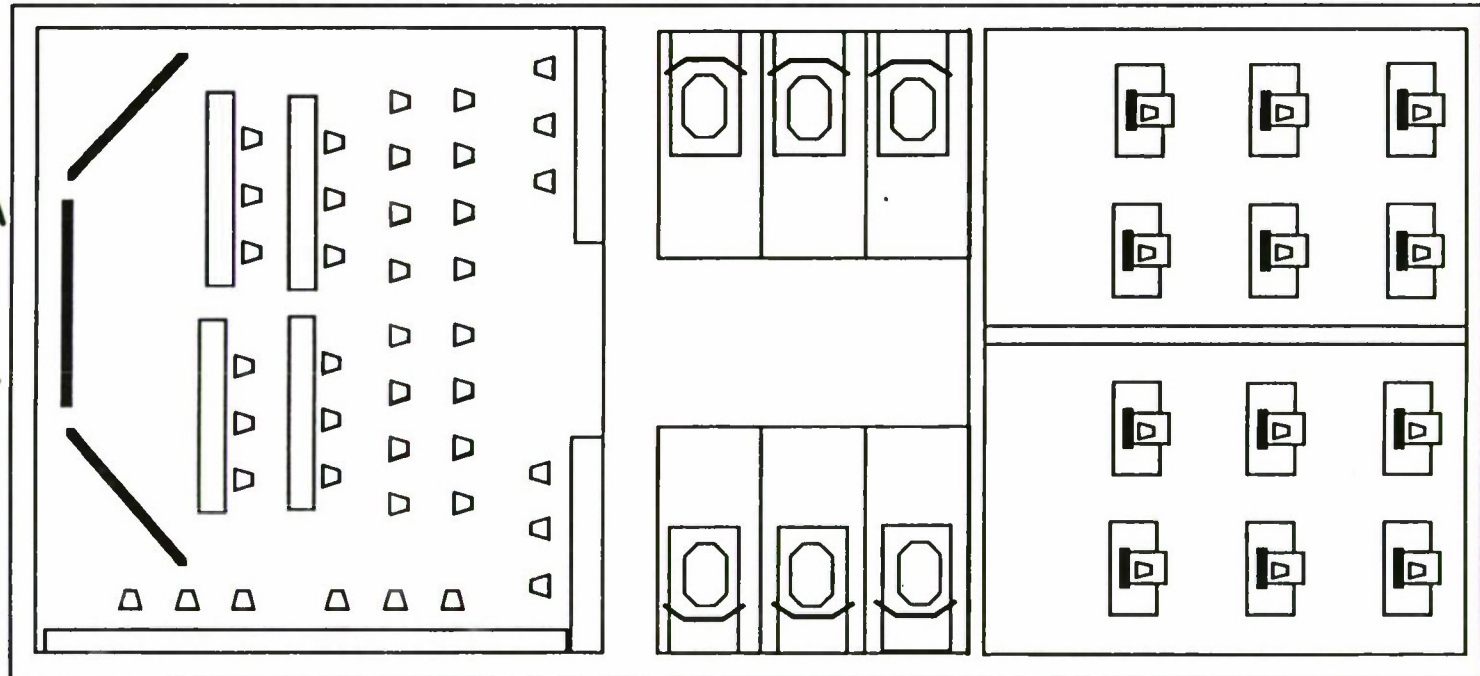
Orlando FL 1 May 96

OTHER
WRIGHT-
PATT
FACILITIES

Battle Staff Display

Reconfigurable
Simulators

Analysis Center



OTHER DoD
FACILITIES



FEDERATION OF MS&A ORGANIZATIONS



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- **INTEGRATION OF ASC FACILITIES AND CAPABILITIES**
 - ◆ **“DISTRIBUTED, COLLABORATIVE MS&A FEDERATION”**
 - **DISTRIBUTED: FACILITIES REMAIN IN CURRENT LOCATIONS**
 - **COLLABORATIVE: INTERCONNECTED ASSETS WORKING COMMON PROJECTS**
 - ◆ **ACQUISITION AND LABORATORY**
 - **SYSTEMS ACQUISITION MISSION UNIT (SAMU) -- ACQUISITION FUNCTION**
 - **WRIGHT LABORATORY (WL) -- AVIONICS, FLIGHT DYNAMICS, MANUFACTURING TECHNOLOGY, MATERIALS, AND PROPULSION DIRECTORATES**
- **CO-OPT NON-ASC ORGANIZATIONS LOCATED AT WRIGHT-PATT**
 - ◆ **AIR FORCE INSTITUTE OF TECHNOLOGY (AIR UNIVERSITY)**
 - ◆ **ARMSTRONG LABORATORY (HUMAN SYSTEMS CENTER)**
 - ◆ **NATIONAL AIR INTELLIGENCE CENTER (AIR FORCE INTELLIGENCE COMMAND)**

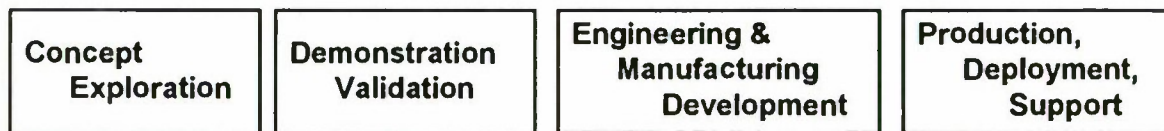
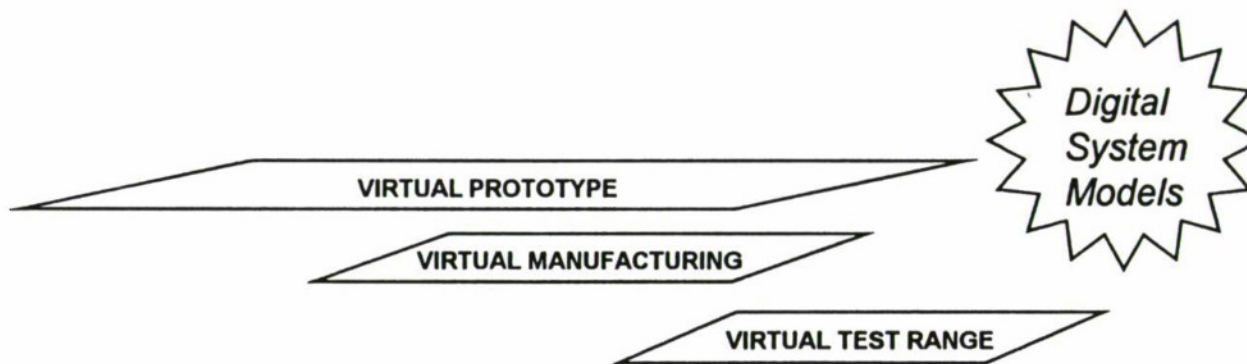
MS&A DEEMED AN ASC “CRITICAL PROCESS”



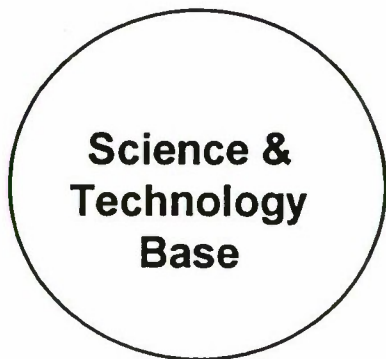
ASC VISION: EMPLOY MS&A FROM CONCEPTION THROUGH SUSTAINMENT



Advance Planning Briefing to Industry Orlando FL 1 May 96



MNS
ORD
TEMP
COEA





SUMMARY



Advance Planning Briefing to Industry

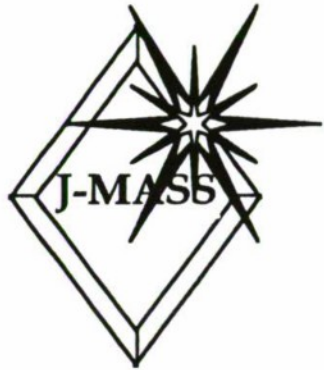
Orlando FL 1 May 96

- ASC HAS SIGNIFICANT MS&A CAPABILITIES AND FACILITIES IN PLACE
- MS&A DEEMED ASC "CRITICAL PROCESS"
 - ◆ CROSS-CENTER FEDERATION OF EXISTING ORGANIZATIONS
 - ◆ SIMULATION AND ANALYSIS FACILITY IN FY97
 - ◆ CO-OPT NON-ASC WPAFB TENANTS
- GOAL: BECOME RECOGNIZED AS THE CENTER OF EXPERTISE FOR MODELING, SIMULATION, AND ANALYSIS OF AERONAUTICAL SYSTEMS



**Update on
Joint Modeling and Simulation System
(J-MASS)
1 May 1996**

**Dr Jerry Arnett
ASC/XRJ
J-MASS Program Mgr
DSN 785-3969 FAX 3682
Comm. (513) 255-3969
arnettjb@rerw.wpafb.af.mil**



Background

- **AF 4-Star Summit on M&S endorsed J-MASS, June 1995**
- **Dr. Pat Sanders, Dep. Dir., Model & Simulation/Software Evaluation , Memo, dtd 7 Sep. 95**
- **Dr. Paul G. Kaminski, Under Secretary of Defense, Acquisition and Technology, Memo, dtd 14 Nov 95**



J-MASS Features

- **Based on an open systems architecture emphasizing flexibility, commonality, model reuse and interoperability for the acquisition and T&E communities**
- **Modular/object oriented design for models & model components**
- **Designed to exploit modern visual programming techniques**
- **Supports “Plug-and-Play” model object interaction**
- **Systems Software Specification developed by a tri-Service committee**



PMD Direction

HQ AF/TE dated 28 Feb 1995

- **Develop, deliver, and support a software system and tools which implement the J-MASS architecture**
- **Object-based technology**
- **Multi - Language**
 - **Near Term Ada and C++**
- **Interoperable Models**
- **Varying Levels of Detail**
- **Various Levels of Simulation**
 - **Mission Level thru Engineering**



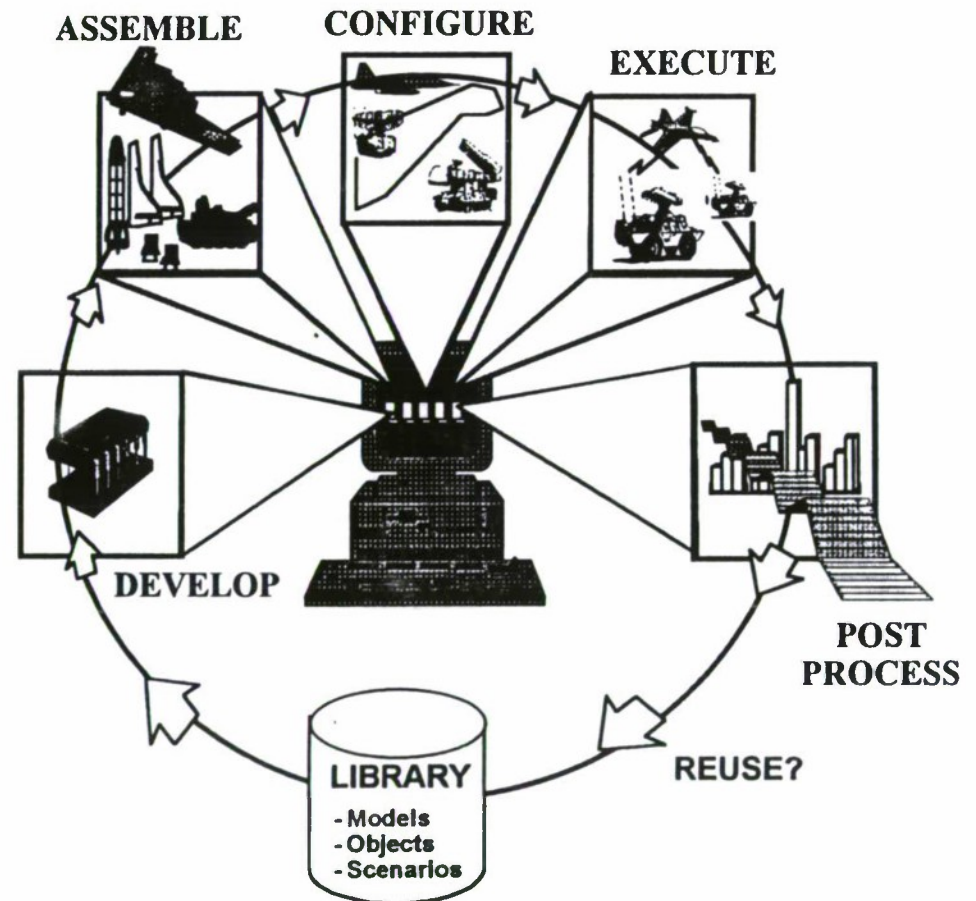
J-MASS Functional Objectives

Modeling and Simulation

System to:

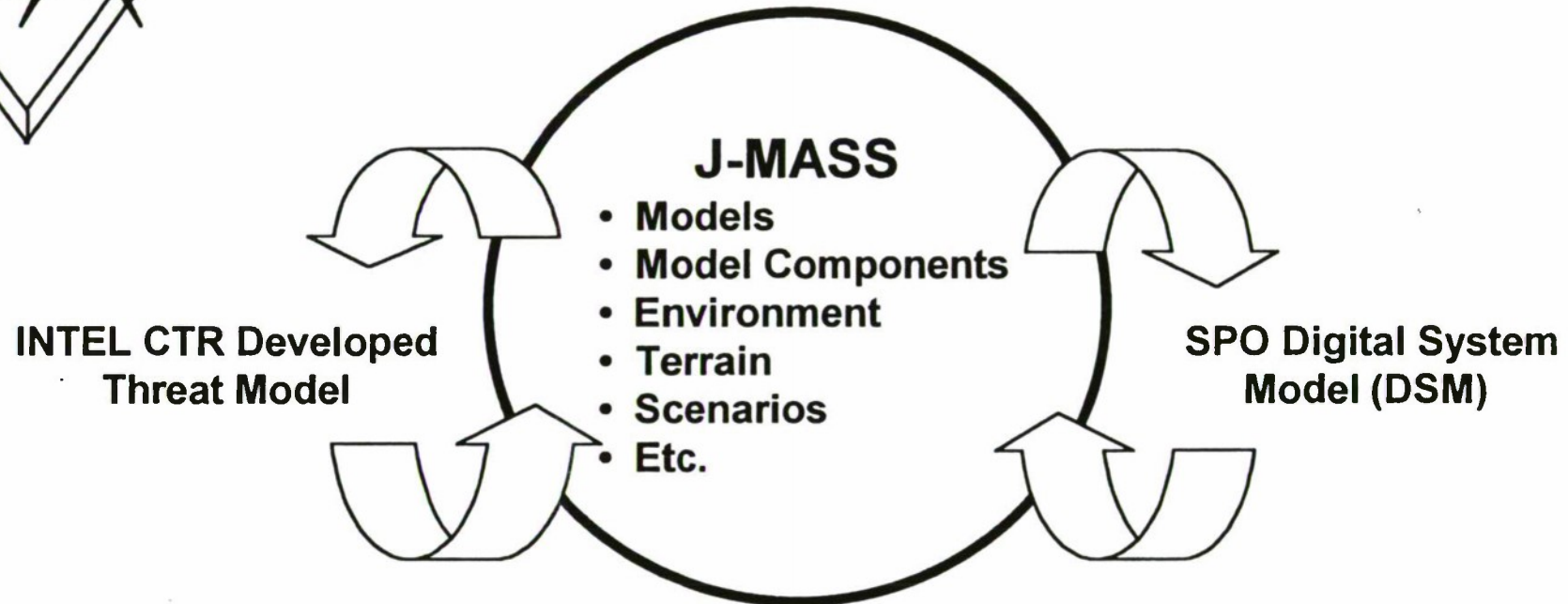
- Provide analysts and modelers with tools to do their job
- Provide a modeling and simulation reuse library (MSRL) to help locate and distribute models and model components
- Provide operational support in system operation, model development, software maintenance and testing

System Concept





How It Will Be Used



- J-MASS compliant Threat Model
- Pointer in J-MASS library directs user to intelligence center POC for model.
- Documentation tells appropriate use for the model & VV&A status
- J-MASS compliant DSM
- DSMs can often be built from “objects” available from the J-MASS library
- Documentation tells appropriate use for the model & VV&A status
- DSMs will “play” with J-MASS compliant threats in J-MASS simulations



Benefits of Using J-MASS

- **Simulation objects mimic real world objects**
- **Decreased model development time**
- **General model structure is now visual**
 - **Makes it possible to visually verify correctness of structure**
- **Standard interfaces to increase reusability**
 - **Allows plug replaceability of model components**
- **Library of models and model components**
- **Field extensibility allows site-developed tools to be incorporated**
- **Operational support, training & user documentation**



Development Status

- Release Summary
 - First Operational Release of J-MASS
 - Release 3.0
 - Distribution initiated 11 March 96
 - Release 3.0a Distribution expected May 96
 - Release 3.0b Distribution expected Sep 96



J-MASS Information

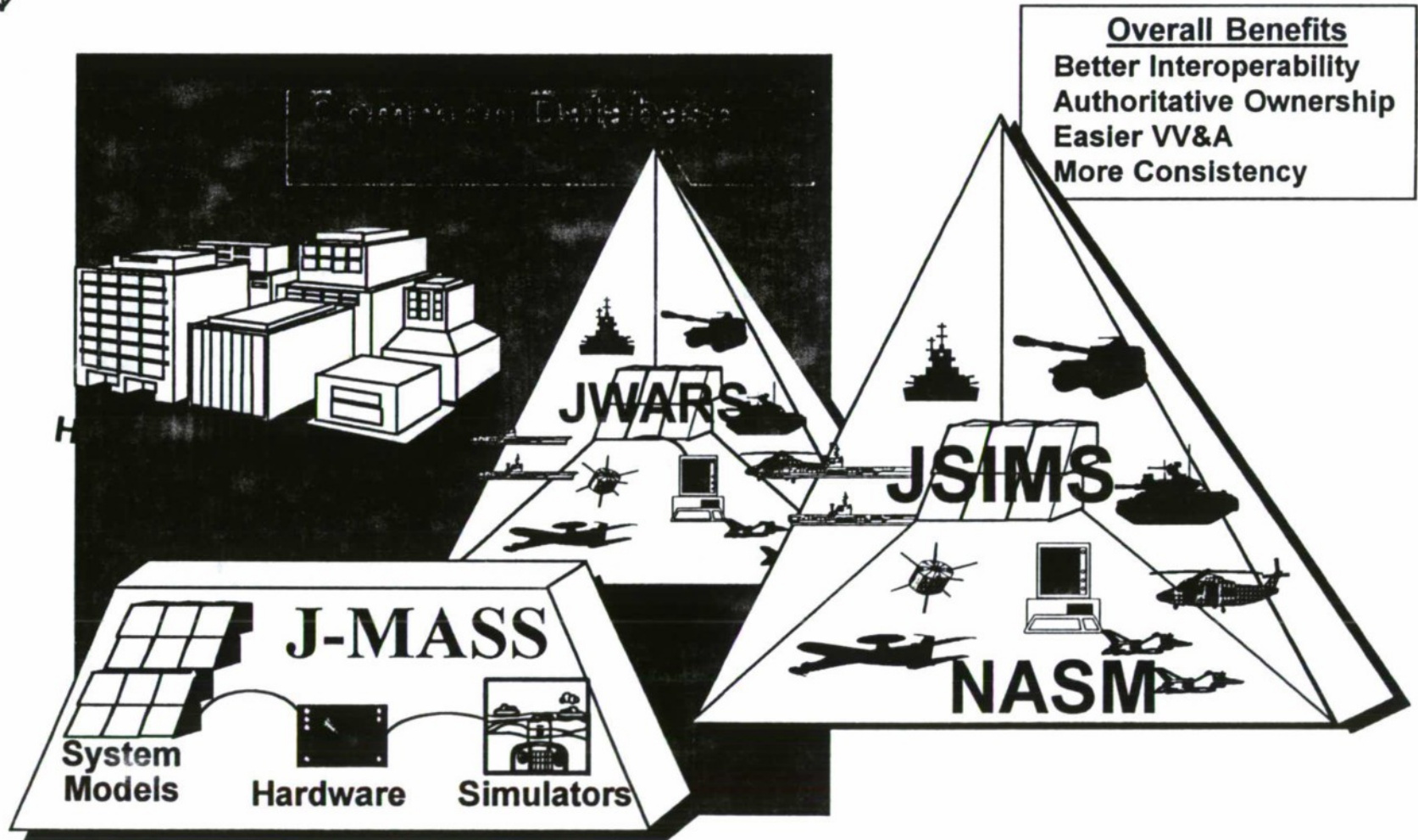
- **Visit J-MASS on the web:**
<http://www.jmass.wpafb.af.mil>
- **For additional information contact:**
Mike Hucul
Ph: (513) 255-3969, Ext. 3080
Fax: (513) 255-3682
E-mail: huculmp@rerw.wpafb.af.mil



Backup



Air Force Standard Modeling & Simulation Architecture

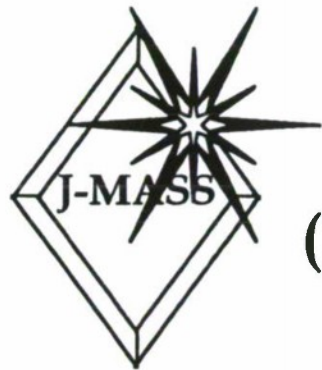




OSD T&E Memo

(Dr. Pat Sanders, Dep. Dir., Model & Simulation/Software Evaluation , dtd 7 Sep. 95)

- **DoD invested significant funds in software architecture development**
- **Essential at this time for community to build on effort**
 - **Further development of MSIC++ halted, capabilities incorporated in J-MASS 3.0**
 - **Future models developed for EMD and T&E built to J-MASS architecture**
 - **VV&A of all models will be accomplished**
- **Near-term objectives:**
 - **Establish Joint Program Office**
 - **Form Senior Steering Group (General/Flag Officer or SES level)**



OSD Letter to HQ USAF/TE

**(Dr. Paul G. Kaminski, Under Secretary of Defense,
Acquisition and Technology, dtd 14 Nov 95)**

- ◆ **Firmly believe that M&S should be an integral part of development and T&E. Key factor to reduce cycle time and manage acquisition risks**
- ◆ **In order to facilitate interoperability and affordability need:**
 - ◆ **Common Standards, Interfaces, & Infrastructure Environment**
- ◆ **J-MASS serves as such a simulation environment**
- ◆ **Standard, credible digital representations of threat systems as well as suitable digital system models of the weapon systems being acquired are non-negotiable requirements for acquisition community.**
 - ◆ **Produce J-MASS compatible representation of system**



J-MASS Capability

Release 3.0

- Model Component Development Tool (MCDT) improved to support C++ & Ada
- Single C++ / Ada Automated Code Generator
- Configuration Tools Improved / Expanded
- Graphical Scenario Generation
- Graphical Execution Monitoring
- Additional Post Processing Tools



J-MASS Capability

Release 3.0 (cont.)

- Batch Processing - Experiment Manager (p)
- Documentation of all Modified Code
- Commercial Quality User's Manuals
- Complete System Testing and Test Models
- Supported on Sun with Solaris 2.4 - Mar 96
- Supported on SGI with IRIX 5.4 - May 96

(p) - partial capability



J-MASS Capability

Release 3.0a

- Models built in 3.0 upward compatible to 3.0a
- Supports distributed processing on SUN computers
- Model Simulation Reuse Library activation and support
- Initial IR model capability
- Reverse Engineering Tool to support JMASS 2.0 (Ada)



J-MASS Capability

Release 3.0a (cont.)

- Batch Processing - Experiment Manager, Ada and C++
- Additional batch processing tool (FAST), Ada and C++
- Field Extensibility for tools (p)
- Operational support
- User manual updates and training

(p) - partial capability



J-MASS Capability

Release 3.0b

- Models built in 3.0/3.0a upward compatible to 3.0b
- Terrain Masking (WGS84 & DTED Terrain)
- Distributed / heterogeneous Ada/C++ simulation
- C++ Simulation Controller (No Ada code)
- Common Journal Files
- Support key DIS 2.0 PDUs



J-MASS Capability

Release 3.0b (cont.)

- Improvements to Model Development Tool
- Reverse Engineering Tool (Ada and C++)
- Player Association Tool (graphically connect players to form teams/simulations)
- Field Extensibility
- Common SUN and SGI Load



Industry and the TPIPT Process



*Has some
fall out money
\$150k??*

Mr. John Griffin, SES
Director
ASC Development Planning



Overview



- Modernization Planning Process
 - What
 - Who
 - How - specifically how TPIPTs fit into plan
 - Schedule
 - Additional Information
 - Summary



Revolutionizing Training

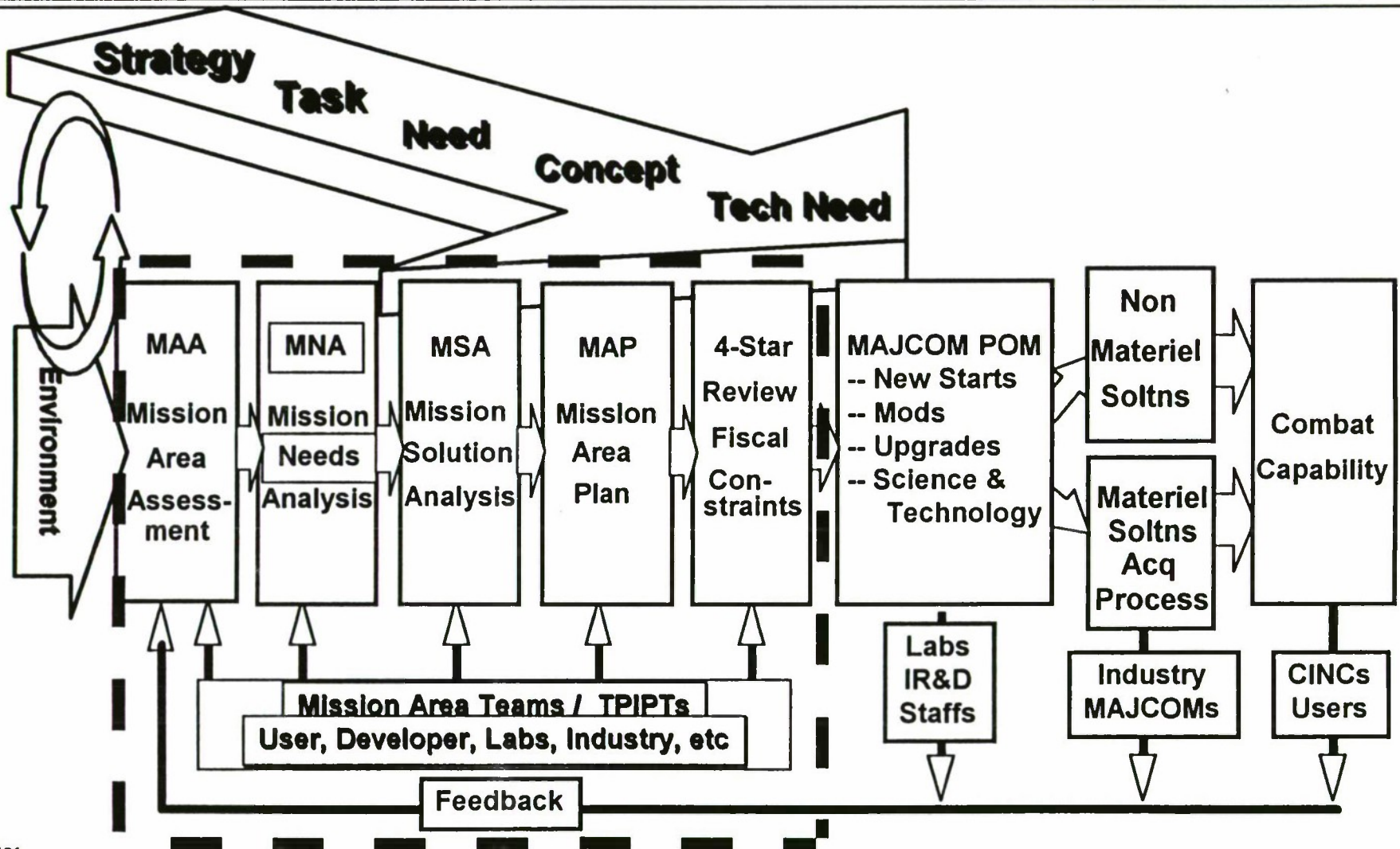


- Possible Changes in Philosophy and Training Paradigm
- Desire to Exploit Current and Future Technologies
- Expand Joint Service Capability

WE WANT INDUSTRY'S HELP!



MODERNIZATION PLANNING PROCESS FLOW





STRATEGY-TO-TECHNOLOGY METHODOLOGY



- STRATEGY TO TASK (MISSION AREA ASSESSMENTS)
- TASK TO NEED (MISSION NEED ANALYSIS)
- NEED TO CONCEPT/SOLUTION (MISSION SOLUTION ANALYSIS)
- CONCEPT/SOLUTION TO TECHNOLOGY (TECHNOLOGY ASSESSMENT)



TECHNICAL PLANNING INTEGRATED PRODUCT TEAM



MAT

Team Leader (O-6) T&E
Intel Industry
Logistics Financial
Advisors Legal
TPIPT Chief Others

TPIPT MEMBERS

- ALCs
- SPO'S
- LABs
- DEVELOPMENT PLANNERS
- MAJCOM'S
- INDUSTRY

TPIPT ACTIVITIES

- Formulate concepts/solutions
- Identify Enabling Technologies
- Perform quantitative/qualitative analysis
 - Using models and simulation
- Assess risk
- Identify and prioritize Technology Needs



AFMC TPIPTs



ASC

- 1 - AEROSPACE CONTROL
- 2 - AIR-TO-SURFACE
- 3 - SPECIAL OPERATIONS
- 4 - MOBILITY
- 5 - AIRCREW TRAINING
- 6 - RESCUE
- 7 - AIR BASE SYSTEMS
- 8 - ELECTRONIC COMBAT

HSC

- 1 - HUMAN SYSTEMS INTEGRATION
- 2 - ENVIRONMENTAL, SAFETY, &
OCCUPATIONAL HEALTH
- 3 - OPERATIONAL MEDICAL
SUPPORT

SMC

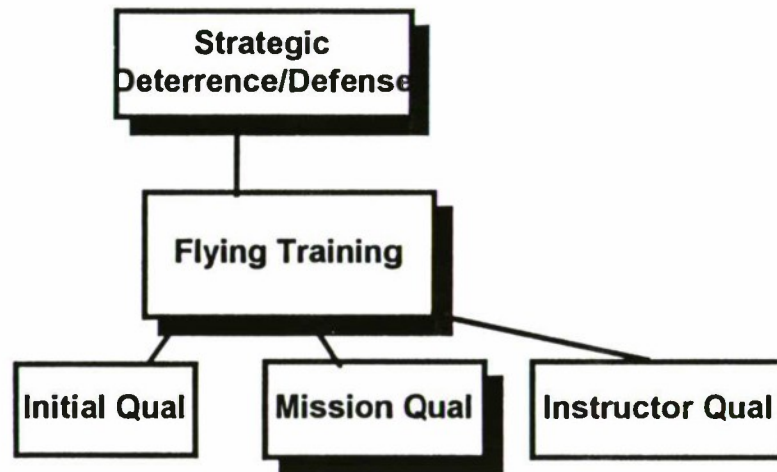
- 1 - FORCE ENHANCEMENT
- 2 - SPACE CONTROL
- 3 - SPACE FORCES SUPPORT
- 4 - FORCE APPLICATION
- 5 - SPACE TRAINING

ESC

- 1 - THEATER BATTLE MANAGEMENT
- 2 - RECCE/SURVEILLANCE/INTELL
- 3 - STRATEGIC AIR DEFENSE
- 4 - MODELING/SIMULATION
- 5 - WEATHER
- 6 - INFORMATION WARFARE



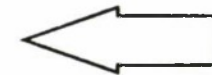
STRATEGY-TO-TASK



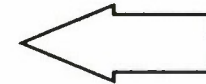
National Strategy



Mission Areas



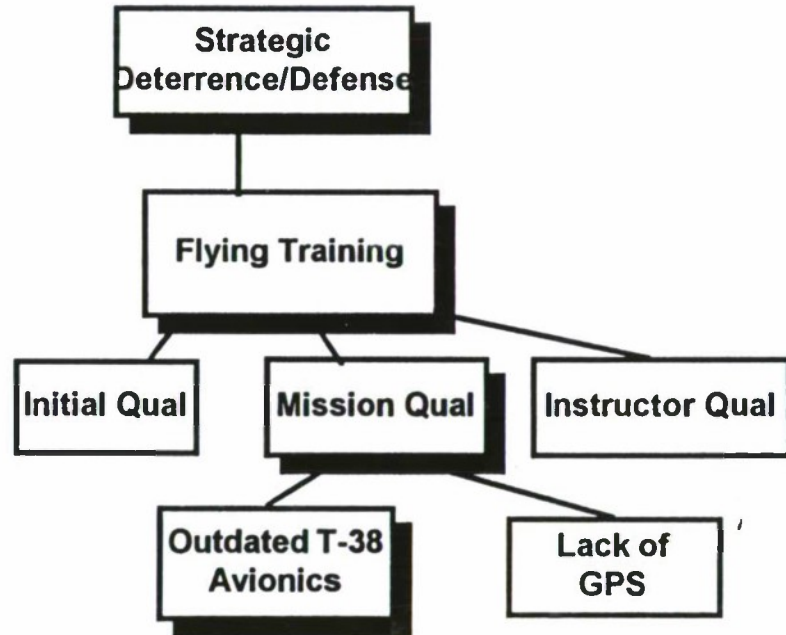
MAA Tasks



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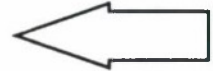
TASK-TO-NEED



National Strategy



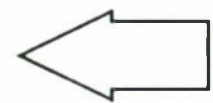
Mission Areas



MAA Tasks



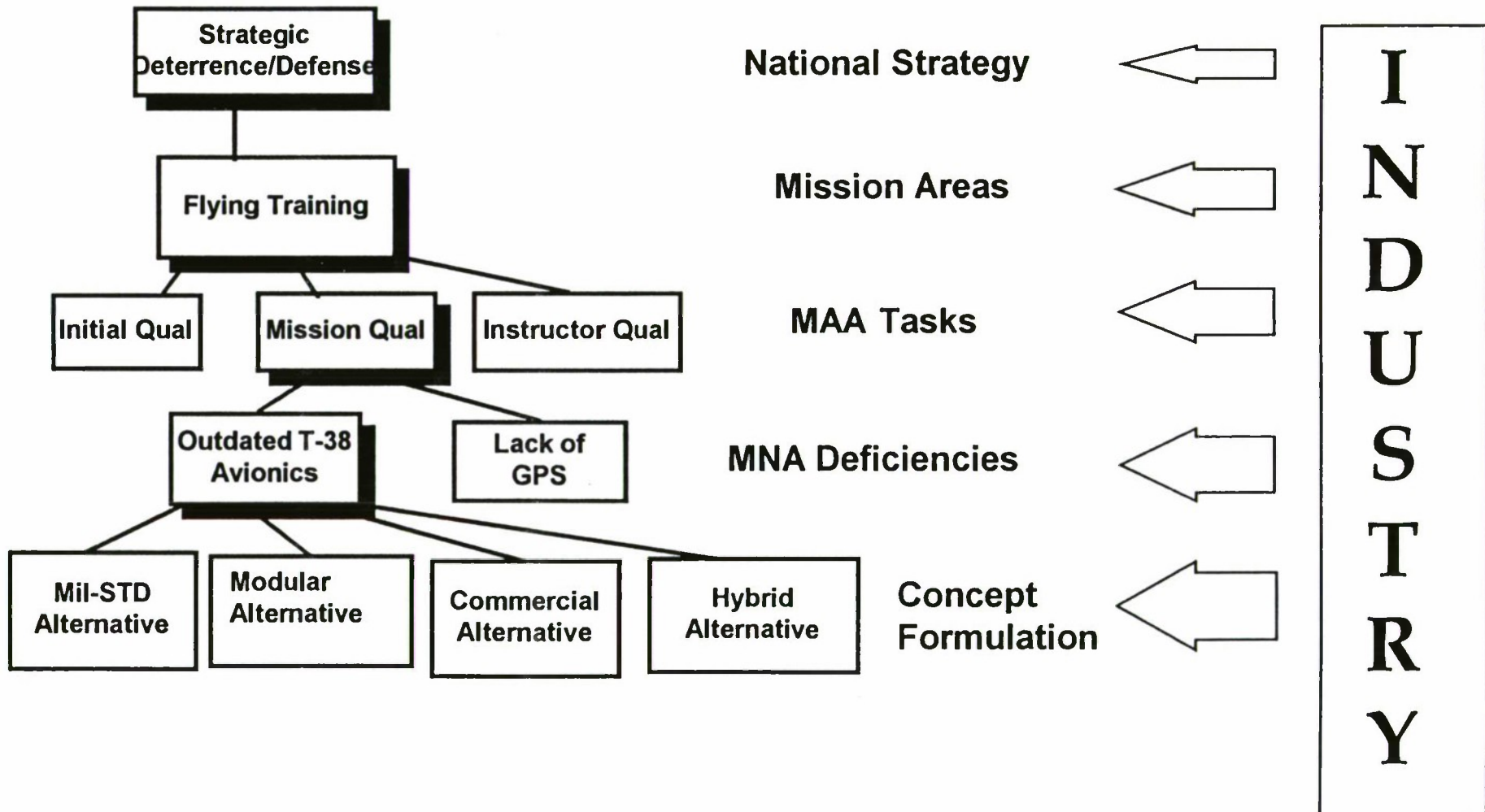
MNA Deficiencies



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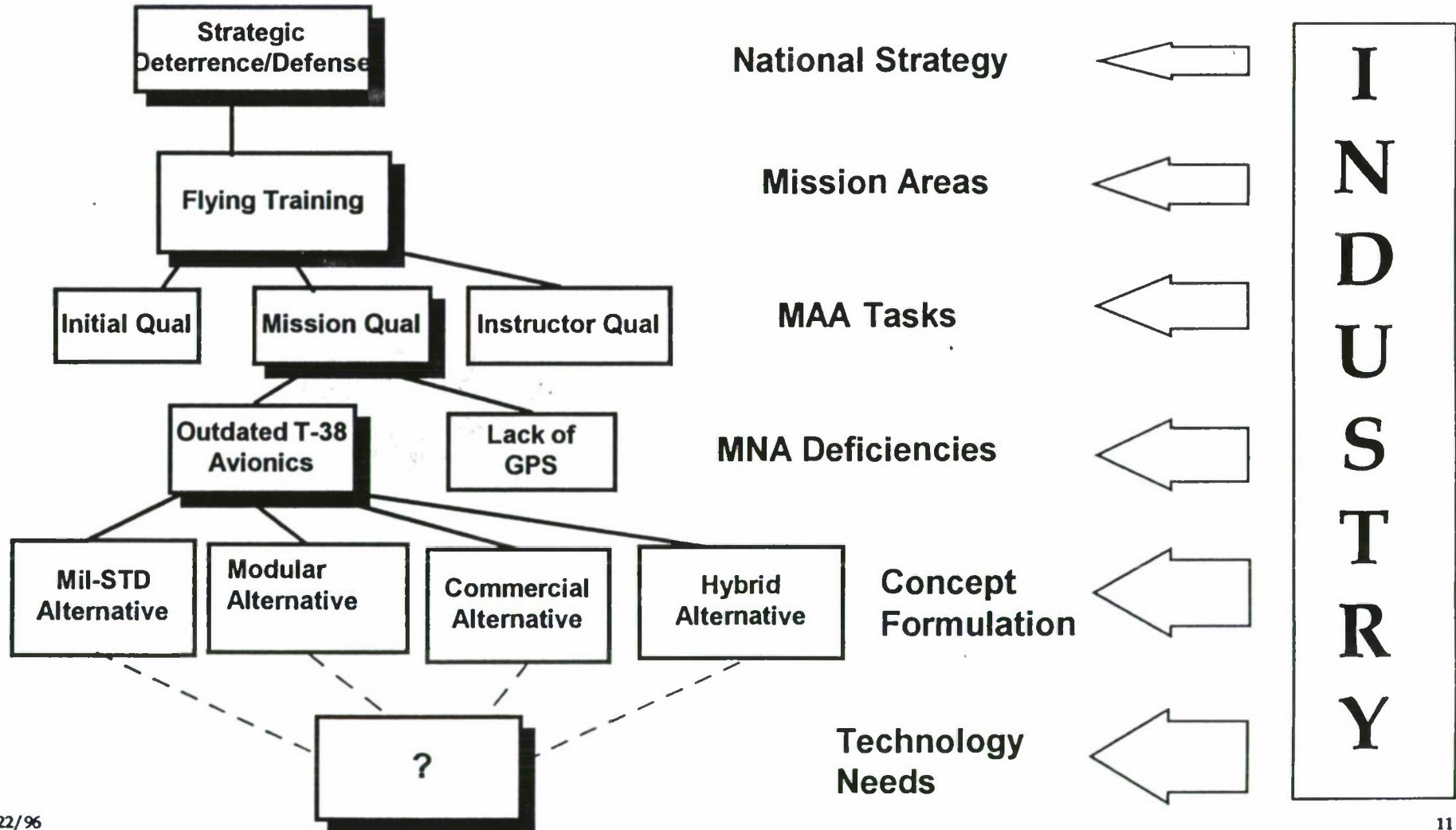


DEFICIENCY-TO-CONCEPT





CONCEPT-TO-TECHNOLOGY





ASC Call For Concepts



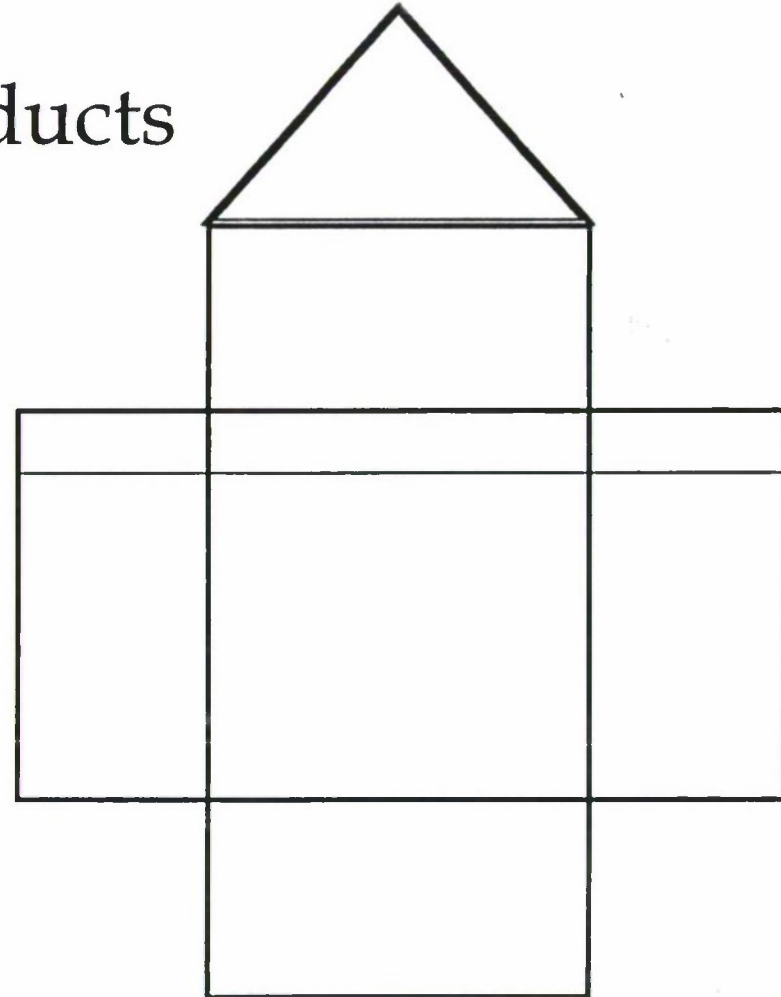
- Via EMAIL,
we need to
get on this
list.*
- CBD Announcement / Gov't Letter
 - Distributed MAJCOM Deficiencies
 - Reviewed Submitted Concepts
 - Evaluated Concepts
 - Transition Concepts
 - Feedback to Industry
 - Publish Development Plan



Quality Function Deployment

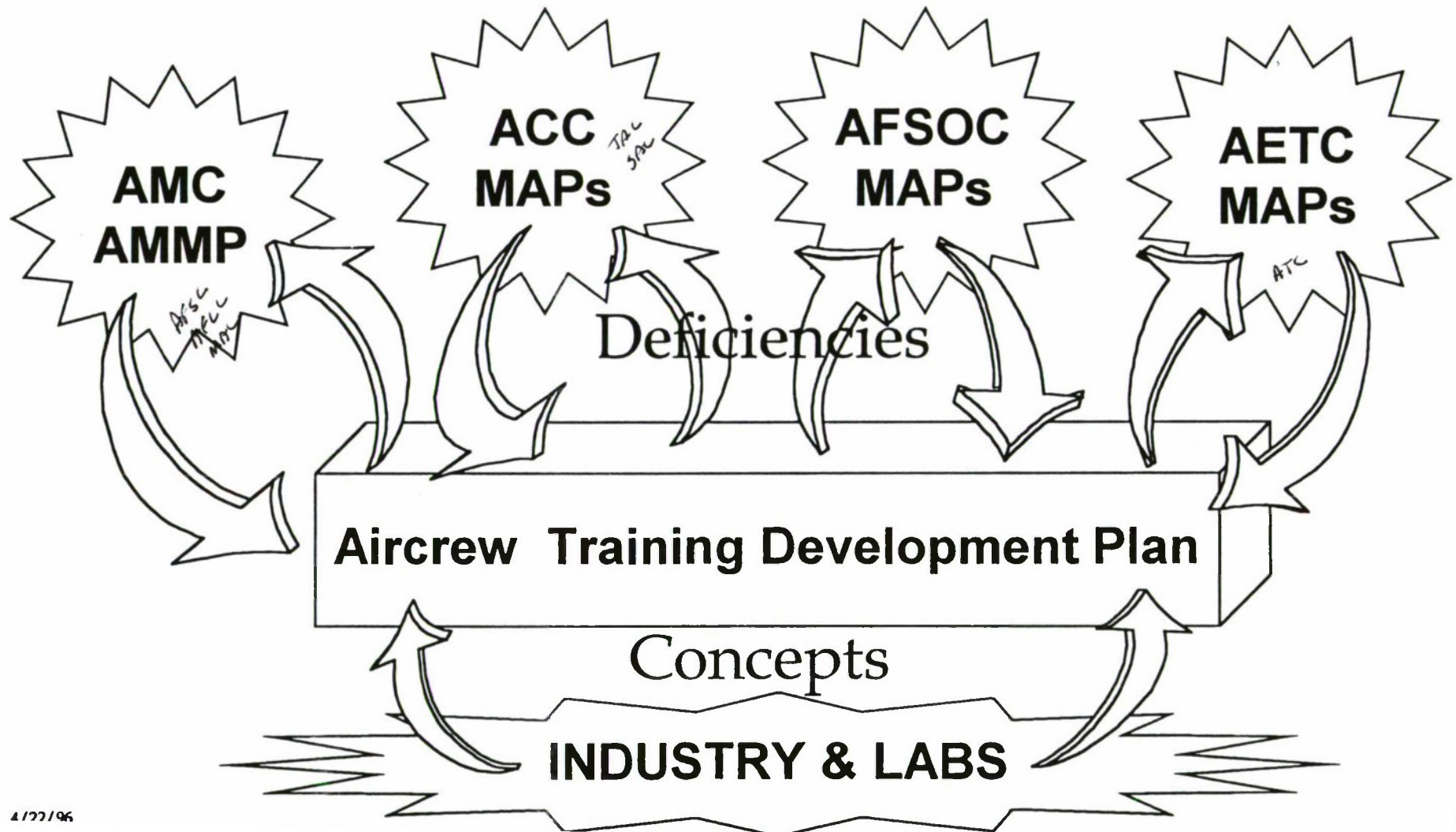


- House of Quality Products
 - Prioritized Concepts / Solutions
 - Traceable Documentation



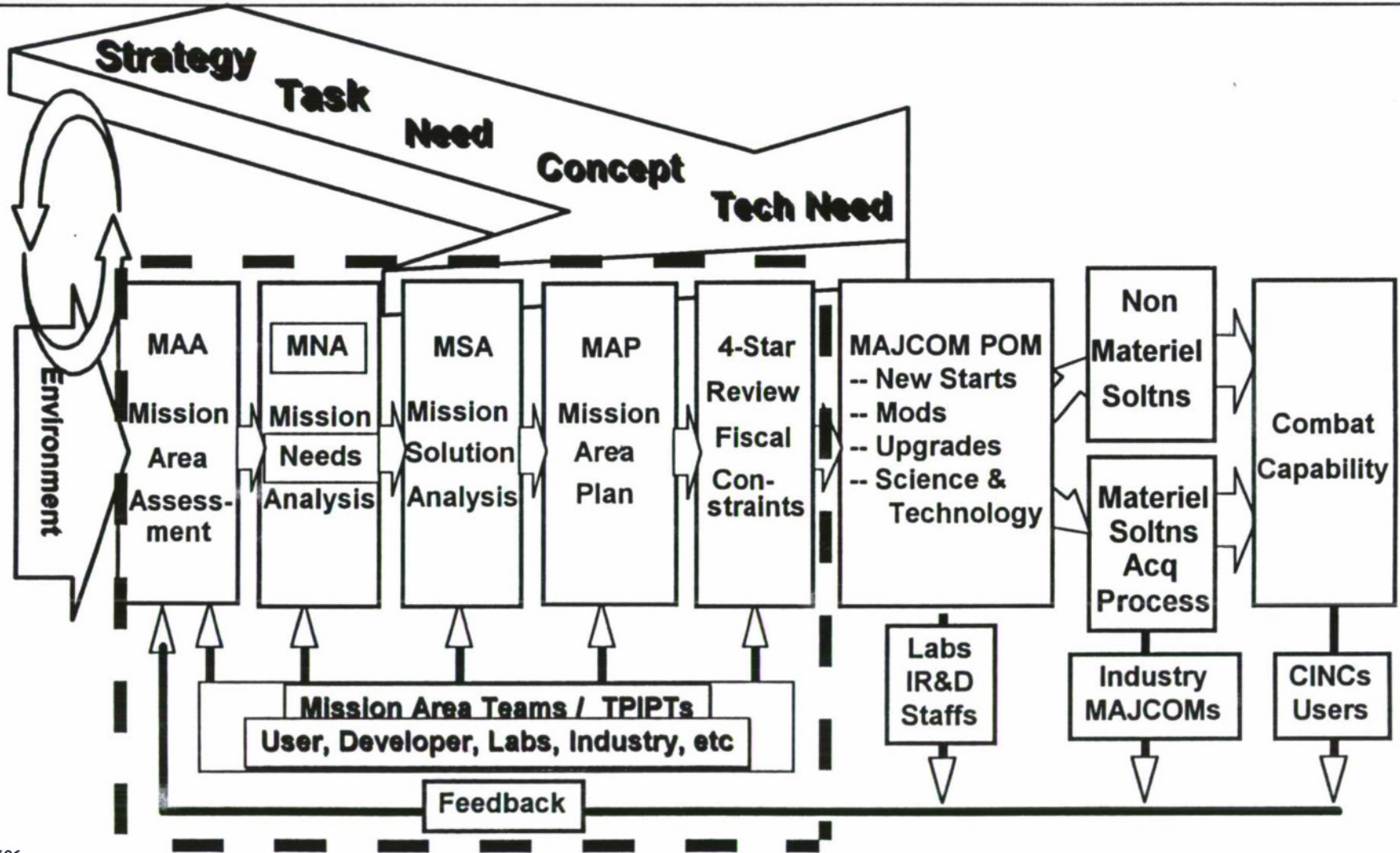


AF FLYING TRAINING DEFICIENCIES





MODERNIZATION PLANNING PROCESS FLOW

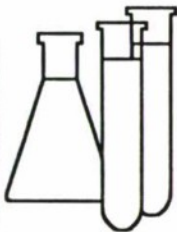




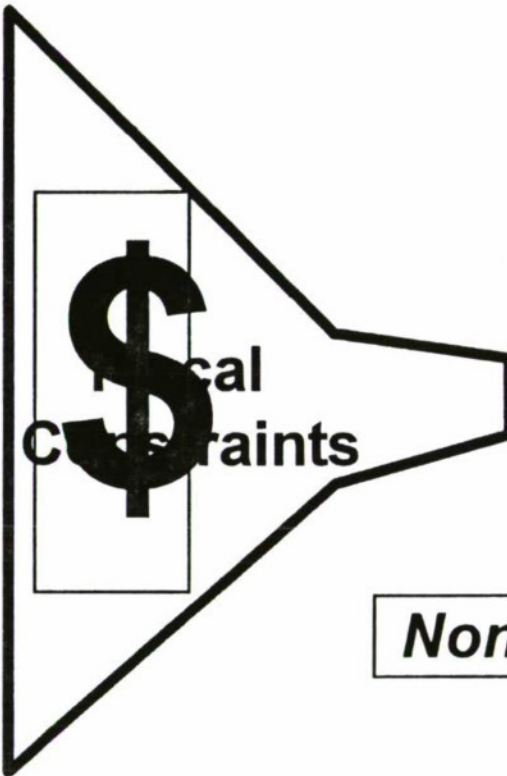
Senior Leadership Force Structure Planning



Unconstrained



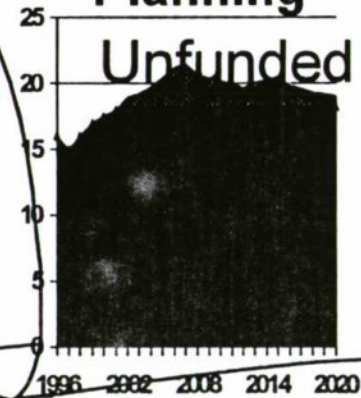
Set of
Preferred
Options



Materiel Options

Goal:

Relevant
Planning

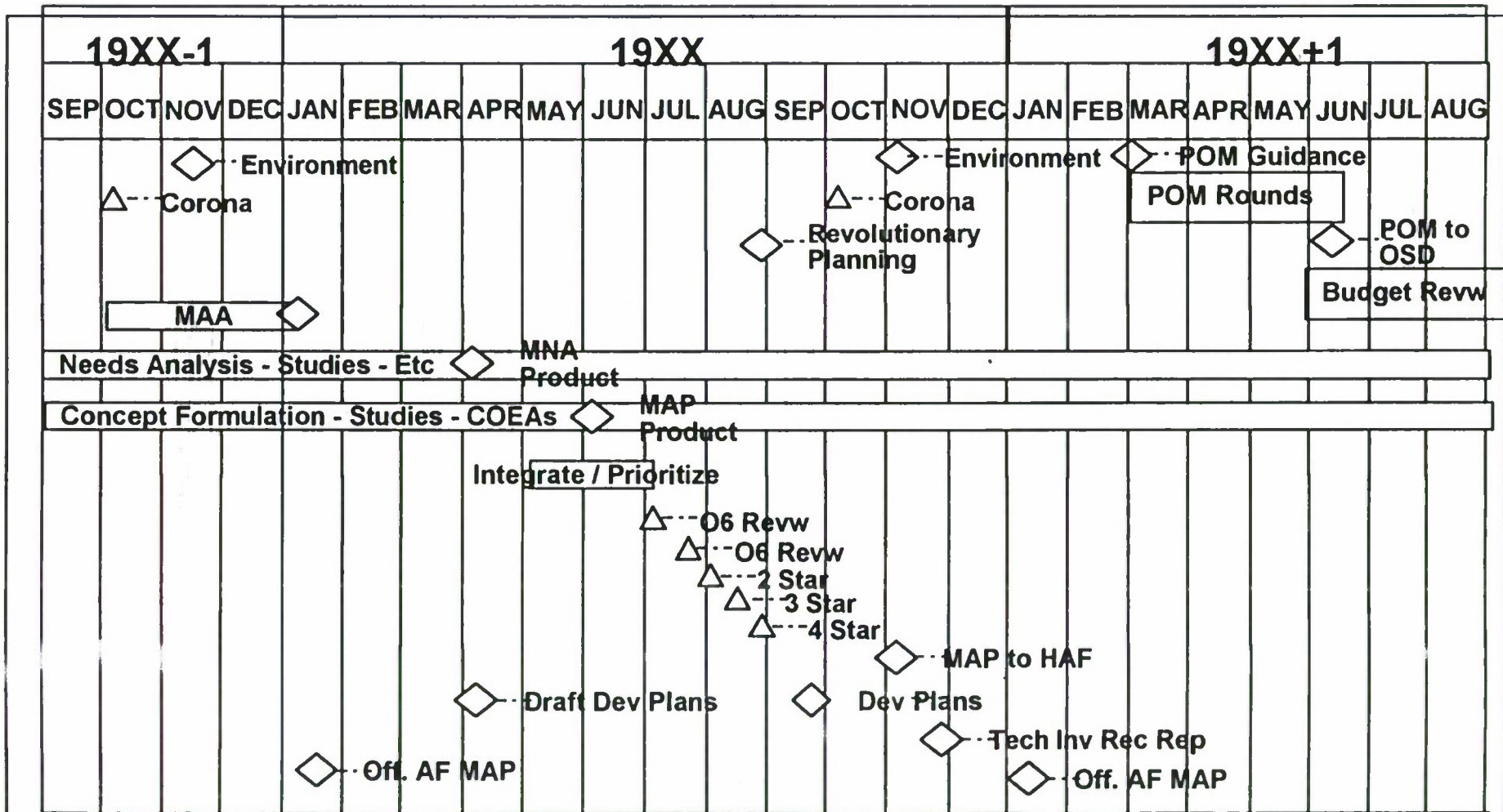


Non-Materiel Options

Force Structure
Readiness
Strategy
Tactics
Diplomacy



Modernization Planning Schedule





Aircrew Training TPIPT



Lt Col Timothy Choate, Chief

Voice: Comm (513) 255-3124

DSN 785-3124

FAX: (513) 476-7889

E - Mail : ascxrt@ase.wpafb.af.mil

Wright-Patt Homepage:

<http://www.wpafb.af.mil>

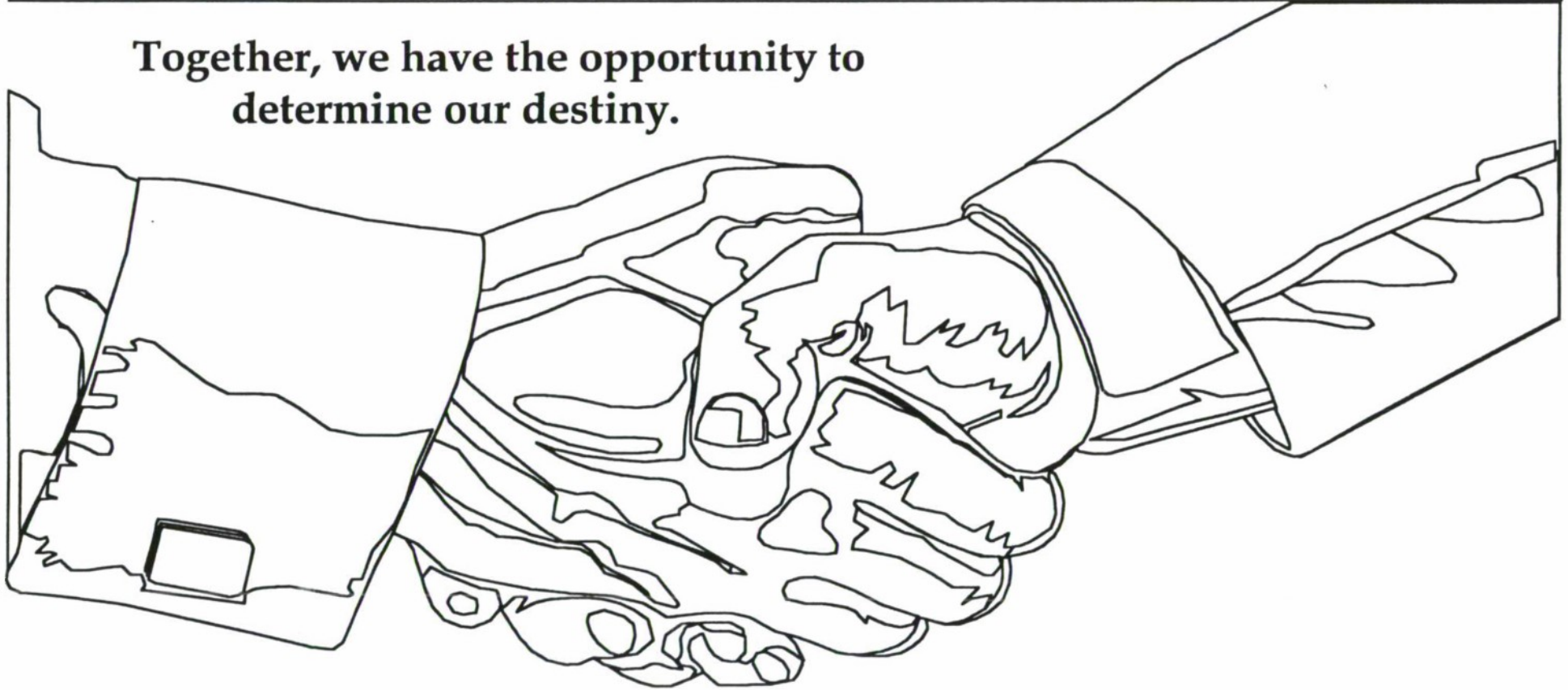
For Detailed information click on the hyper-text
"ASC Public Access Information"



Modernization Planning Process



**Together, we have the opportunity to
determine our destiny.**



Future Planning is a Team Process!



ARMSTRONG LABORATORY
Celebrating 26 Years



REVOLUTIONIZING TRAINING



ADVANCE PLANNING BRIEFING TO INDUSTRY

**ARMSTRONG LABORATORY
AIRCREW TRAINING RESEARCH DIVISION**

COL LYNN CARROLL



OVERVIEW



- **REVOLUTIONIZING TRAINING PERSPECTIVE**
- **MAJOR R&D PLAYERS AND ACTIVITIES**
- **SPECTRUM OF R&D AREAS OF ACTIVITIES**
- **MAJOR CHALLENGES TO CREATING NEW MARKETS**
- **FUNDING CHALLENGES TO SUPPORT NEW MARKET**
- **MARKETING OPPORTUNITIES**
- **50TH ANNIVERSARY OF THE AIR FORCE**
- **AL/HRA FOLLOW-ON CONTRACT**
- **SUMMARY**



PERSPECTIVE



-
- FOCUS MUST BE ON NATIONAL DEFENSE AND WARFARE
 - PREPARATION FOR WARFARE DICTATES THAT PEACETIME OPERATIONS AT ALL LEVELS MUST BE INTEGRATED
 - PEACETIME OPERATIONS MUST EQUAL WAR, FOR EVERYONE
 - NOT ONLY MUST WARRIORS “TRAIN THE WAY WE INTEND TO FIGHT,” BUT LEADERS MUST “LEAD THE WAY WE INTEND TO FIGHT,” BUREAUCRATS MUST “MANAGE THE WAY WE INTEND TO FIGHT” AND INDUSTRY MUST “SUPPORT THE WAY WE INTEND TO FIGHT”
 - THEN, REVOLUTIONIZING TRAINING CAN TAKE PLACE IN THE PROPER PERSPECTIVE AND WE CAN PROPERLY USE TECHNOLOGY FOR SOLUTIONS AND TO REDUCE COSTS



MAJOR R&D PLAYERS



- TWO PRIMARY ASPECTS OF TRAINING R&D ARE - WARRIOR EFFECTIVENESS (HUMAN INTEGRATION) AND TECHNOLOGY DEVELOPMENT
- FOUR SUPER LABORATORIES - ARMSTRONG, PHILLIPS, ROME AND WRIGHT SUPPORT THOSE ASPECTS
- INDUSTRY IR&D AND ACADEMIA CONTRIBUTE SIGNIFICANTLY
- SUBSTANTIAL DEVELOPMENT OCCURS WITHIN ONGOING ACQUISITION AND SUSTAINMENT PROGRAMS
- INTEGRATED NATURE OF WARFARE REQUIRES A MORE INTEGRATED APPROACH TO TRAINING AND SUPPORTING R&D



SPECTRUM OF R&D



-
- **AFFORDABLE SYNTHETIC OPERATIONS ENVIRONMENTS**
 - NEXT GENERATION, MULTI-SPECTRAL IMAGE GENERATORS
 - FULL FIDELITY, SURROGATE LEVEL WEAPON SYSTEMS
 - ELEGANT CUEING SYSTEMS
 - TARGET IDENTIFICATION AND MANEUVERING CAPABLE VISUALS
 - SECURE, LONG-HAUL NETWORKS

 - **DISTRIBUTED TRAINING USE AND EFFECTIVENESS**
 - TRAINING GUIDELINES FOR USING DISTRIBUTED TRAINING
 - TRANSFER OF TRAINING STUDIES
 - SIMULATOR VERSUS WEAPON SYSTEM TRAINING COMPARISON
 - USER-FRIENDLY, DATA COLLECTION CONTROL/INSTRUCTOR STATIONS

 - **EMERGING AREAS OF INVESTMENT**
 - SPACE, INFORMATION DOMINANCE, MAINTENANCE, INTELLIGENCE
 - UNINHABITED COMBAT AERIAL VEHICLES HUMAN FACTORS/TRAINING
 - NEXT GENERATION TRAINING SYSTEMS AS DECISION AIDS
 - INTELLIGENT TUTORS, AUTOMATED PERFORMANCE FEEDBACK SYSTEMS



MAJOR CHALLENGES



-
- CHANGE THE AIR FORCE TRAINING PHILOSOPHY
 - OVERCOME PREVIOUS DISAPPOINTMENTS WITH SIMULATORS
 - FIND FUNDING TO REVOLUTIONIZE TRAINING
 - ESTABLISH NEW MARKETS FOR TRAINING TECHNOLOGIES
 - CREATE OPEN ENVIRONMENT FOR DEVELOPMENT AND REDUCE PROPRIETARY ASPECTS OF TRAINING SYSTEMS
 - CHANGE ACQUISITION APPROACH AND USE TRAINING SYSTEM DEVELOPMENT TO ASSIST DECISION PROCESS
 - GOVERNMENT AND INDUSTRY MUST TEAM TO REVOLUTIONIZE TRAINING IN THE AIR FORCE



FUNDING CHALLENGES



-
- **THERE COULD BE APPROXIMATELY \$2-3B AVAILABLE IN THE AF OVER THE NEXT 5-10 YEARS TO REVOLUTIONIZE TRAINING**
 - **ARMY DEMONSTRATED THAT FUNDING CAN BE FOUND**
 - **TRAINING INDUSTRY WILL SEE NONE OF IT UNLESS THE AIR FORCE IS CONVINCED THAT:**
 - **REVOLUTIONIZING TRAINING IS THE RIGHT THING TO DO**
 - **INDUSTRY CAN DELIVER AN INTEGRATED SOLUTION (NOT JUST PIECES AND PARTS)**
 - **HELP US MARKET THAT MESSAGE AS WELL AS PRODUCTS**
 - **INDUSTRY SHOULD LOBBY FOR A TRAINING CZAR IN THE AF TO BE THE FOCAL POINT FOR TRAINING PHILOSOPHY, VISION, POLICY, COORDINATION, INTEGRATION AND TO CHAMPION TRAINING AND FUNDING**



MARKETING OPPORTUNITIES



- IF WE WORK TOGETHER, EVERY DAY IS A MARKETING OPPORTUNITY
- TRADE SHOWS SUCH AS I/ITSEC SHOULD HIGHLIGHT INTEGRATED APPLICATIONS, NOT JUST STAND ALONE PRODUCTS
- INDUSTRY SHOULD LOBBY LEADERSHIP TO CONVINCING THEM OF THE NEED FOR REVOLUTIONIZING TRAINING
- AIR FORCE MUST SHOW SINGLE FACE TO INDUSTRY TO ENSURE UNITY OF PURPOSE AND VISION IN TRAINING
- AFA SPONSORED 50TH ANNIVERSARY OF THE AIR FORCE



AF 50TH ANNIVERSARY



-
- **AFA SPONSORED ANNIVERSARY AT LAS VEGAS, 22-24 APR 97**
 - **TRADE SHOW ENVIRONMENT ATTENDED BY ALL LEADERSHIP**
 - **OPPORTUNITY TO SHOWCASE TRAINING TECHNOLOGIES AND APPLICATIONS IN AN INTEGRATED FORUM**
 - **USE ADVANCED DISTRIBUTED SIMULATION TO BRING IN SITES FROM AROUND THE WORLD TO SHOWROOM FLOOR**
 - **TAKE ADVANTAGE OF INDUSTRY/LAB COLLABORATIVE EFFORT TO BUILD 4-SHIP AS CENTERPIECE OF SHOW**
 - **DEMONSTRATES INTEGRATED TRAINING CAPABILITIES TO MILITARY AND CIVILIAN LEADERSHIP AND DECISIONMAKERS**
 - **DEMONSTRATES OUR ABILITY TO WORK TOGETHER**



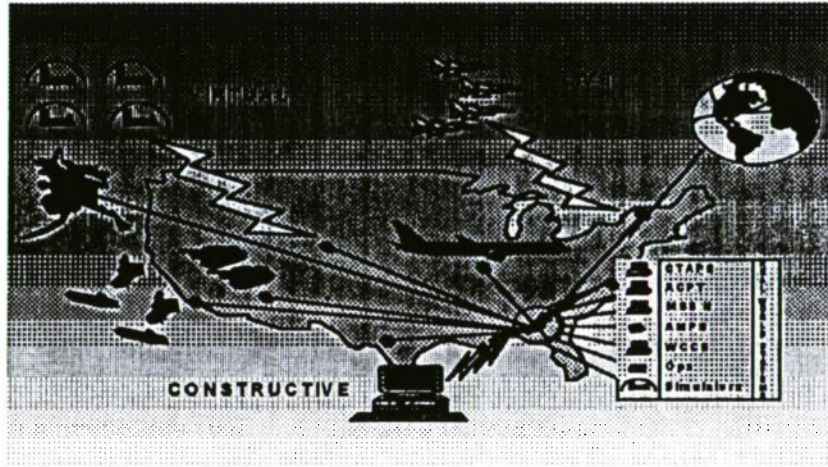
AL/HRA FOLLOW-ON CONTRACT



- **REVOLUTIONIZE TRAINING IN THE AIR FORCE**
- **CONTRACT POTENTIAL OF \$200-300M OVER 7 YEARS**
- **EXPAND WARFIGHTER TRAINING R&D ENVIRONMENT**
- **CREATE WARFIGHTER TRAINING DECISION SUPPORT CENTER**
- **SUPPORT ACQUISITION, SUSTAINMENT AND MODERNIZATION PROGRAMS AND PROCESSES**
- **INTEGRATE LABORATORY INITIATIVES WITH OTHER LAB, INDUSTRY AND ACADEMIC PROGRAMS**
- **CONNECT “BELOW WING” WARFIGHTERS WITH “WING AND ABOVE” WARFIGHTERS FOR TOTALLY INTEGRATED SYSTEM**



REVOLUTIONIZING TRAINING IN THE AIR FORCE



OBJECTIVES:

- BASELINE - TRAINING THE WARFIGHTER
 - WARFIGHTER TRAINING EFFECTIVENESS
 - DISTRIBUTED MISSION TRAINING
 - NIGHT VISION GOGGLE TRAINING
- DEVELOP AND VALIDATE NEW TRAINING PHILOSOPHY
 - CREATE WARFIGHTER TRAINING DECISION SUPPORT CENTER
 - DEVELOP FUTURE WARFIGHTER TRAINING ENVIRONMENT
 - INTEGRATE WITH ALL LEVELS OF WARFIGHTER TRAINING
 - ESTABLISH UTILITY OF TRAINING ENVIRONMENT TO JTFCC
 - CONDUCT FLYING HOUR TRADEOFF & TRANSFER OF TRNG STUDIES

FUNDING (\$M)

PE	FY96	FY97	FY98-03
TOTAL	9.3	9.3	(\$200 - 300M POTENTIAL)

SELECTED MAJOR MILESTONES:

- FY98 - STANDUP WARFIGHTER TRAINING DECISION SUPPORT CENTER
 - DEFINE FUNCTIONAL REQUIREMENTS
- FY99 - PROTOTYPE UNIT TRAINING ENVIRONMENT (FACILITIES, TOOLS)
 - CONDUCT TRAINING EFFECTIVENESS STUDIES (FY99-03)
- FY00 - DEVELOP & INTEGRATE LIVE, VIRTUAL, CONSTRUCTIVE VENUES
 - INTEGRATE UNIT TRAINING ENVIRONMENT WITH WING AND ABOVE FUNCTIONS
- FY01 - INTEGRATE AND VALIDATE MODELS FOR "WAR IN A BOX"
- FY02 - VALIDATE NEW TRAINING PHILOSOPHY
- FY03 - DEVELOP AND VALIDATE HORIZONTAL OPTIMIZATION STRATEGY FOR CAREER TRAINING SPECTRUM
 - TRANSITION PHILOSOPHY, TECHNOLOGIES, METHODS TO USERS



SUMMARY



- **INCREASING NEED FOR WARFIGHTER TRAINING R&D**
- **EXCELLENT POTENTIAL FOR EXPANDED TRAINING MARKETS**
- **OPPORTUNITIES ABOUND FOR COLLABORATIVE EFFORTS BETWEEN INDUSTRY AND LABORATORIES**
- **IF WE WORK TOGETHER, WE CAN CREATE NEW MARKETS FASTER THAN IF WE WORK SEPARATELY**
- **WE MUST SUPPORT AND NURTURE THE CONCEPT OF REVOLUTIONIZING TRAINING OR IT WON'T HAPPEN**
- **50TH ANNIVERSARY AND TRADE SHOWS NEED INTEGRATED ACTIVITIES TO BUILD CONFIDENCE IN TRAINING SOLUTIONS**

Aircrew and Maintenance Training New Business

Advance Planning Briefing to Industry

Orlando FL 1 May 1996

Presentation not available at Press Time



MANPOWER, PERSONNEL & TRAINING SYSTEMS: NEW BUSINESS

DR JEFFREY KANTOR
HUMAN SYSTEMS PROGRAM OFFICE
HUMAN SYSTEMS CENTER
BROOKS AFB, TEXAS



BRIEFING TOPICS



HUMAN SYSTEMS CENTER

NEAR TERM PROGRAMS

- INTELLIGENT TUTOR SYSTEMS
- INTEGRATED RESOURCE REQUIREMENTS MODEL

FAR TERM PROGRAM

- GLOBAL TRAINING NETWORK

FUTURE DIRECTIONS



HUMAN SYSTEMS CENTER: MAJOR UNITS



Human Systems Center
BGen Robert P. Belihar

Commander



Armstrong Laboratory
Dr. Brendan Godfrey
Director



**Human Systems
Program Office**
Col Mahlon Long
Director



**USAF School of
Aerospace Medicine**
Col Tommie Church
Commander



70 Air Base Group
Col Robert Hudson
Commander



HUMAN SYSTEMS PROGRAM OFFICE MISSION



ENGINEERING & MANUFACTURING DEVELOPMENT, PRODUCTION, AND SUSTAINMENT OF

- INTELLIGENT TUTORING & TNG MGT SYSTEMS
- LIFE SUPPORT SYSTEMS
- CHEMICAL BIOLOGICAL DEFENSE SYSTEMS
- AEROMEDICAL SYSTEMS
- ENVIRONMENTAL QUAL SYSTEMS
- DESIGN AND TEST OF AIR FORCE UNIFORMS

BROAD CUSTOMER BASE

- ALL MAJCOMs & AIR STAFF
- OTHER PRODUCT CENTERS
- OTHER US GOVERNMENT AGENCIES
- FOREIGN COUNTRIES



WHAT IS AN INTELLIGENT TUTOR?

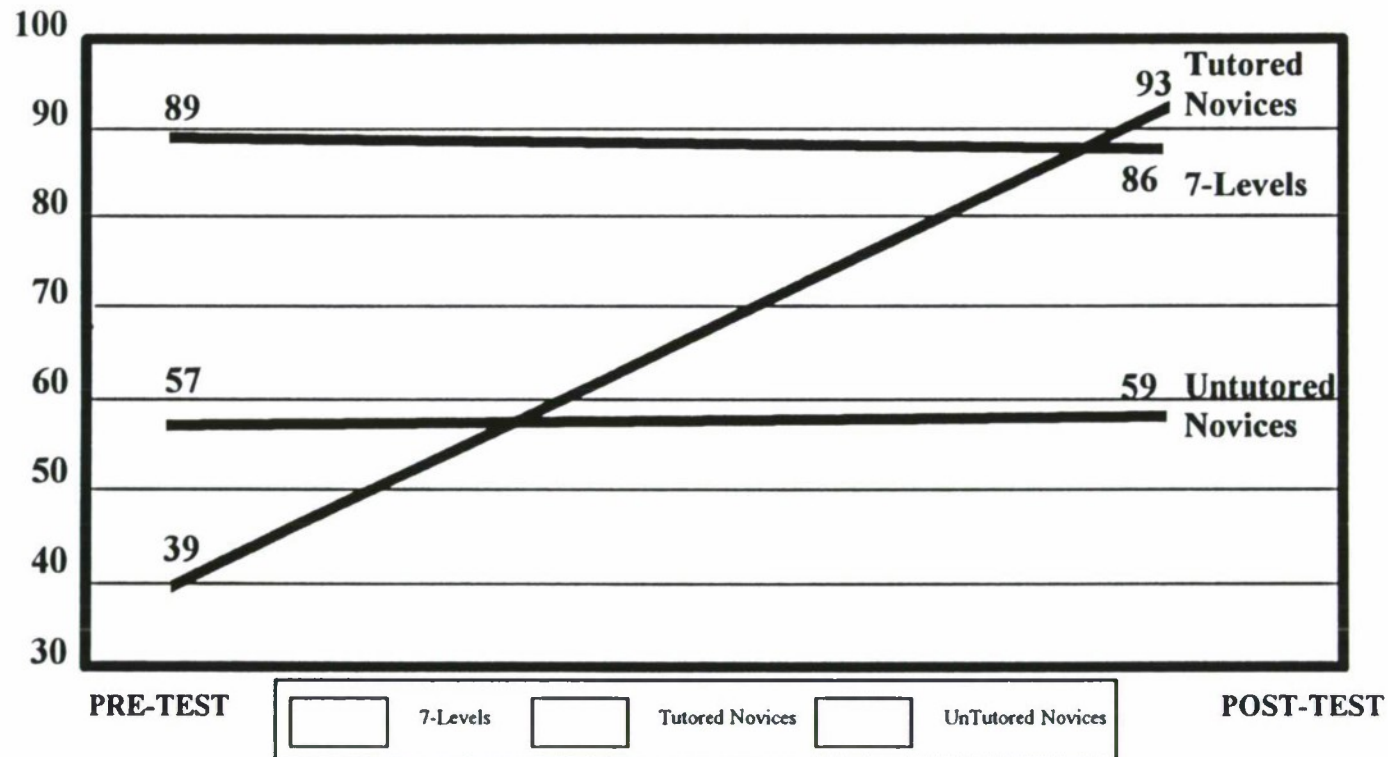


A MODEL OF HUMAN THINKING AND LEARNING
EVOLUTIONARY STEP FORWARD IN COMPUTER BASED
TRAINING

- TEACHES STRATEGIES NOT PROCEDURES
- INCORPORATES REAL WORLD EXPERTISE
- PRESENTS PROBLEMS IN A REALISTIC SIMULATION
- USES ARTIFICIAL INTELLIGENCE TO GIVE EACH STUDENT PERSONALIZED INSTRUCTION

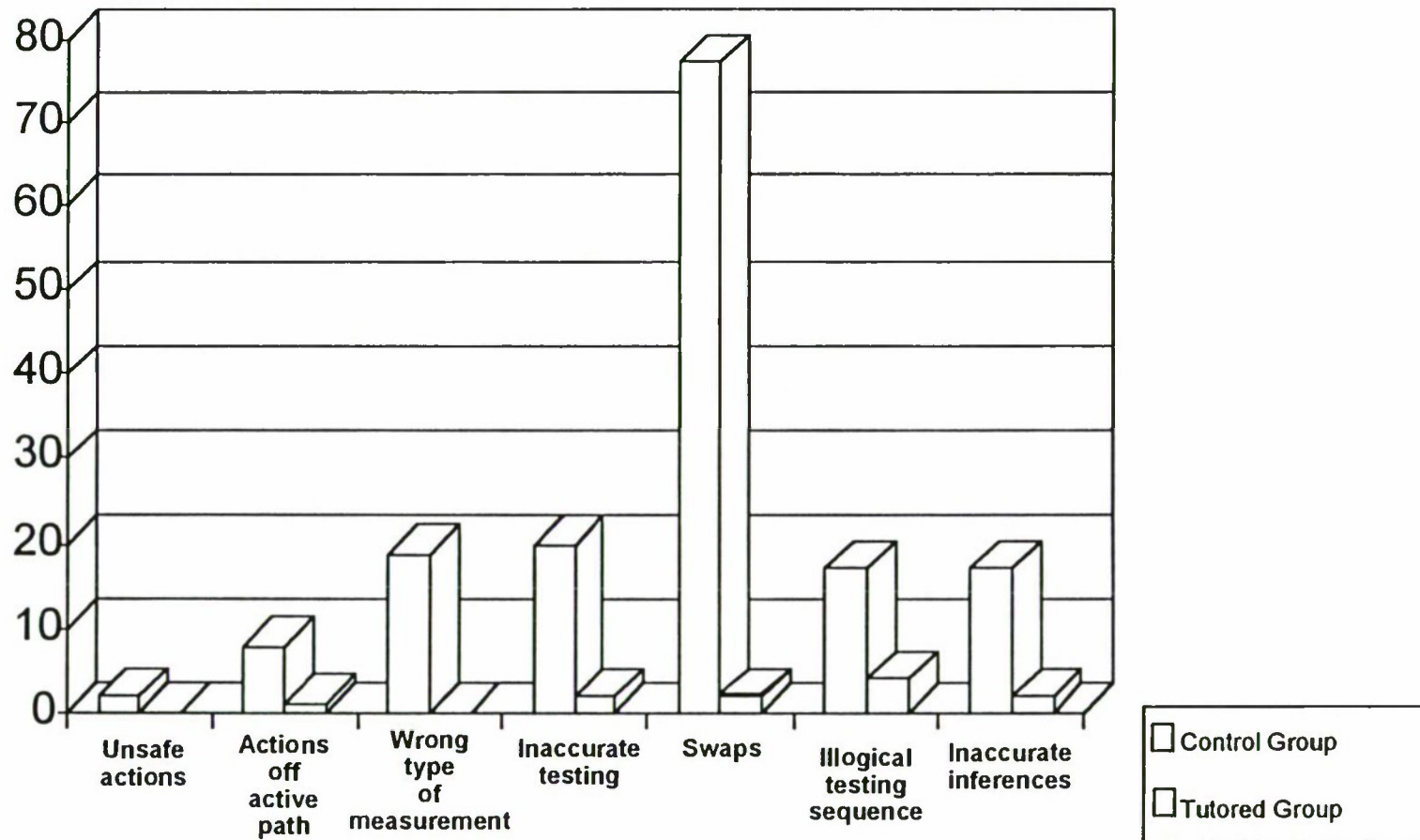


FIELD TEST RESULTS AVIONICS TROUBLESHOOTING TUTOR





VIOLATIONS OF EXPERT STRATEGIES





EXAMPLE PROGRAMS



PROGRAM

- COMBAT AIR FORCES
- AIR INTELLIGENCE AGENCY
- AIR FORCE SPECIAL OPERATIONS COMMAND

APPLICATION

F-15/16 SYSTEMS
TROUBLESHOOTING

TACTICAL INFO BROADCAST
SYSTEM

AN/APQ 158 TF/TA RADAR



INTELLIGENT TUTOR PROGRAM



CONTRACTING APPROACH

- RFP RELEASE: FY96
- TYPE CONTRACT: IDIQ / CPAF
- SIZE: \$24M

FUNDING STATUS: GOOD

POC: CAPT HOLLY FUNK (E-MAIL: FUNKH@DIAMOND.BROOKS.AF.MIL)

ADD'L INFO: [HTTP://WWW.BROOKS.AF.MIL/](http://WWW.BROOKS.AF.MIL/)

- SAN ANTONIO RFP & ACQUISITION HIGHWAY (SARAH)



INTEGRATED RESOURCE REQUIREMENTS MODEL (IRRM)



FORECASTS FLYING TRAINING REQUIREMENTS IN SUPPORT OF AETC MODERNIZATION MASTER PLAN

- 5-10 YEAR LOOK AHEAD VS CURRENT 2 YR LOOK
- NUMBER OF AIRCRAFT, SIMULATORS, CLASSROOMS, INSTRUCTORS
- OTHER BASE INFRASTRUCTURE (E.G. DORMITORIES, AIRSPACE)

INTEGRATES MODELING / SIMULATION OF

- FUTURE FORCE STRUCTURE
- FUTURE PERSONNEL STRUCTURE
- FUTURE ACCESSION AND TRAINING REQUIREMENTS
- CURRENT INFRASTRUCTURE AND CAPACITY



IRRM



CONTRACTING APPROACH

- RFP RELEASE: FY97
- TYPE CONTRACT: TBD
- SIZE: <\$5M

FUNDING STATUS: GOOD

POC: MR JOSE MARTINEZ

(E-MAIL: MARTINEZ@DIAMOND.BROOKS.AF.MIL)



FAR TERM PROGRAM: GLOBAL TRAINING NETWORK



PROVIDES TRAINING-ON-DEMAND, ANYTIME, ANYWHERE

- FULL RANGE OF TRAINING CAPABILITIES AT JOB SITE
 - UPGRADE, CONTINUATION & ANCILLARY
- TRAINING DELIVERY AND LIFE CYCLE MANAGEMENT

CAPITALIZE ON COMMERCIAL COMMUNICATION TECHNOLOGIES

SUPPORTS TOTAL FORCE TRAINING NEEDS

CONTRACTING APPROACH

- RFP RELEASE: FY99
- SIZE: \$10 - 20M

FUNDING BEING WORKED

POC: LT COL ZLOTKOWSKI (E-MAIL: ZLOTKOWJ@DIAMOND.BROOKS.AF.MIL)



FUTURE DIRECTIONS



INTELLIGENT TRAINING AUTHORIZING PACKAGES

EMBEDDED INTELLIGENT TRAINING SYSTEMS

COGNITIVE BASED TRAINING DEVELOPMENT



**Lt Col Greg Kuntz
System Program Director
Air Combat Training Systems
ASC/VXC**

**102 West D Ave, Suite 300
Eglin AFB FL 32542-6808
kuntz@eglin.af.mil
904-882-9391, Ext 5003**



AIR COMBAT TRAINING SYSTEMS

**FAMILY OF PROGRAMS IN
WHICH ELECTRONICS
EQUIPMENT IS PROCURED TO
PROVIDE MONITOR AND
DEBRIEF CAPABILITY FOR AIR-
TO-AIR AND AIR-TO-GROUND
COMBAT TRAINING EXERCISES
FOR THE WARFIGHTERS/USERS**



ASC/VXC PROGRAMS

- YUKON MEASUREMENT DEBRIEFING SYSTEM
- P4B PODS
- NELLIS AIR COMBAT TRAINING SYSTEM/TYNDALL RANGE EXPANSION (NACTS/TRE)
- KOREA (FMS)
- EGYPT (FMS)
- ADVANCED MESSAGE ORIENTED DATA SECURITY SYSTEM (AMODSM)
- ALPENA
- DECIMOMANNU
- ADVANCED DISPLAY AND DEBRIEFING SYSTEM (ADDS)
- TYNDALL MEASUREMENT AND DEBRIEFING SYSTEM
- RANGE AIRSPACE MANAGEMENT SYSTEM (RAMS)
- AIRCRAFT COMPATIBILITY UPGRADE (ACU)
- NATIONAL TRAINING CENTER/AIR WARRIOR UPGRADE
- JOINT TACTICAL COMBAT TRAINING SYSTEM (JTCTS)
- THREATS
 - MINI-MUTES
 - GROUND JAMMER
- GOLDWATER RANGE MEASUREMENT AND DEBRIEFING SYSTEM
- KADENA INTERIM TRAINING SYSTEM (KITS)

AIR WARRIOR UPGRADE (AWU)

PROG MGR: Mr. Tim Douglas

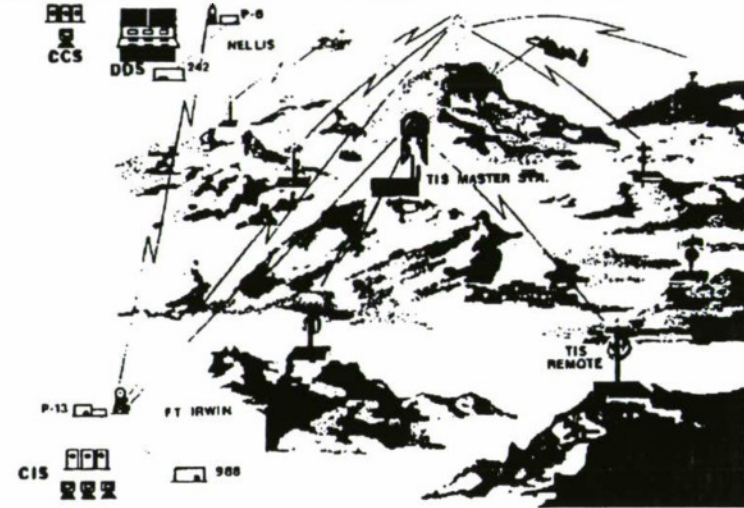
ORG: ASC/VXC

PHONE: DSN 872-9391/x5038

GENERAL

DESCRIPTION

THE AWU WILL INTEGRATE THE AIR WARRIOR MEASUREMENT AND DEBRIEFING SYSTEM (AWMDS) WITH THE NATIONAL TRAINING CENTER INSTRUMENTATION SYSTEM (NTC-IS). CURRENTLY THE AWMDS IS LIMITED TO PROCESSING AND DISPLAYING 700 GROUND PARTICIPANTS WHILE THE NTC-IS HAS THE CAPABILITY OF DISPLAYING UP TO 2000 GROUND PARTICIPANTS. THE AWU SHALL PROVIDE THE AWMDS THE 2000 GROUND PARTICIPANT PROCESSING AND DISPLAY CAPABILITY.



REQUIREMENTS

- UPGRADE EXISTING HARDWARE AND SOFTWARE TO PROVIDE CAPABILITY OF DISPLAYING 2000 INSTRUMENTED GROUND PARTICIPANTS.
- UPGRADE THE EXISTING COMMUNICATIONS LINKS TO ACCOMODATE TRANSFER OF DATA FOR UP TO 2000 GROUND PARTICIPANTS.
- UPGRADE THE COMPUTER SYSTEM TO AN OPEN ARCHITECTURE DESIGN.
- ENSURE THAT THE UPGRADE IS DIS COMPLIANT.

SCHEDULE

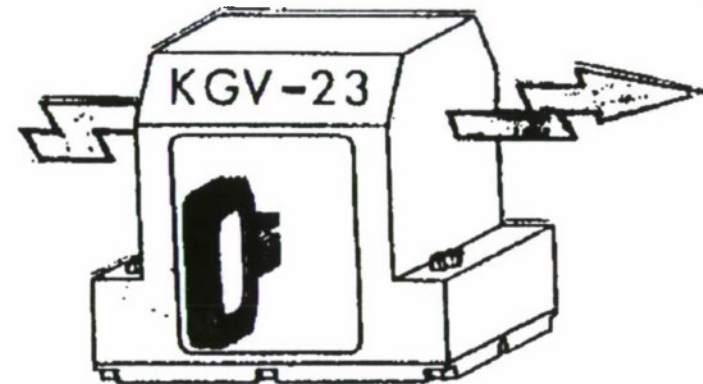
- | | |
|---------------------|-----------|
| ○ RELEASE DRFP | 28 JUN 96 |
| ○ RELEASE RFP | 01 OCT 96 |
| ○ RECEIVE PROPOSALS | 31 OCT 96 |
| ○ CONTRACT AWARD | 14 FEB 97 |

INTEGRATION OF AMODSM INTO AIR COMBAT TRAINING RANGES

PROG MGR: Bobby Tapley
ORG: ASC/VXC
PHONE: DSN 872-9391
EXT 5065

PROGRAM DESCRIPTION

AMODSM IS AN ENCRYPTION/DECRYPTION
DEVICE WHICH WILL PROVIDE ENCRYPTION
OF TELEMTRY DATA FOR AIR COMBAT
TRAININGS RANGES



REQUIREMENTS

INTEGRATION OF AMODSM INTO AN
ESTIMATED 650 PODS AND NINE GROUND
SYSTEMS FOR EXISTING USAF AIR COMBAT
TRAINING RANGES

SCHEDULE

ENGR DEV CONTRACT AWARD	14 JUN 95
EDMs UNITS	DEC 96
PRODUCTION UNITS	OCT 97
RELEASE INTEGRATION RFP	3RD QTR FY 97
CONTRACT AWARD	1ST QTR FY 98

PE: 0604735F/010897F

PROJ: 3320

28 Mar 96

Alpena ANG Training Range

PROG MGRS: Mr W. Tracy/J. Porche

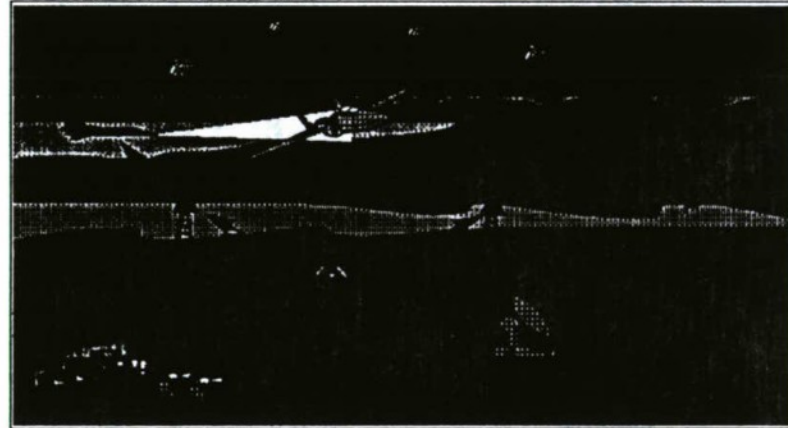
ORG: ASC/VXC

PHONE: DSN 872-9391/ext 5050/5068

GENERAL

DESCRIPTION

The Air National Guard (ANG) has a need for an Air Combat Training System (ACTS) in Michigan. The system will be used for both small exercises from other ANG units and for larger exercises operated out of Alpena Michigan. The system is to utilize current available technology and is to be conducive to upgrade in later years to permit additional features, simulations to be added to keep this system current with other USAF ACTS ranges.



REQUIREMENTS

- o Requirements Document not provided to date
- o Anticipated Number of Participants 36HAA/100LAA
- o Anticipated to be an untethered system
- o Anticipated to be a GPS system

SCHEDULE

- o Contract(s) Award 2Q/3QFY97
- o Testing 4Q/FY98
- o IOC Alpena Range 2Q/FY98
- o IOC "Other" ANG ranges 4Q/FY98
- o FOC Alpena Range, other ANG ranges 2Q/FY99



TRAINING AND SIMULATION FOR SPACE

**LT COL JOHN PUFFENBARGER
DIRECTORATE OF REQUIREMENTS**



OVERVIEW

- AIR FORCE SPACE COMMAND MISSIONS
- VISION FOR SPACE TRAINING
- MODELING AND SIMULATION



SPACE ROLES AND MISSIONS

SPACE FORCES SUPPORT

- LAUNCH
- SATELLITE OPERATIONS

SPACE-BASED FORCE ENHANCEMENT

- SURVEILLANCE & RECCE
- NAVIGATION
- COMMUNICATION
- WEATHER
 - TERRESTRIAL
 - SPACE

SPACE FORCE APPLICATION

- GROUND BASED NUCLEAR
DETERRENT
- CONVENTIONAL STRIKE

SPACE CONTROL

- SPACE SURVEILLANCE
- COUNTER SPACE
 - PROTECT
 - PREVENT
 - NEGATE
- MISSILE DEFENSE
 - WARNING
 - INTERCEPTION



NEW PERSPECTIVES ON TRAINING

- **SPACE SUPPORT TO THE WARFIGHTER**
- **NORMALIZED OPERATIONS AND TRAINING**
- **MISSION READY COMMANDERS**
- **STANDARDIZED DOCUMENTATION**

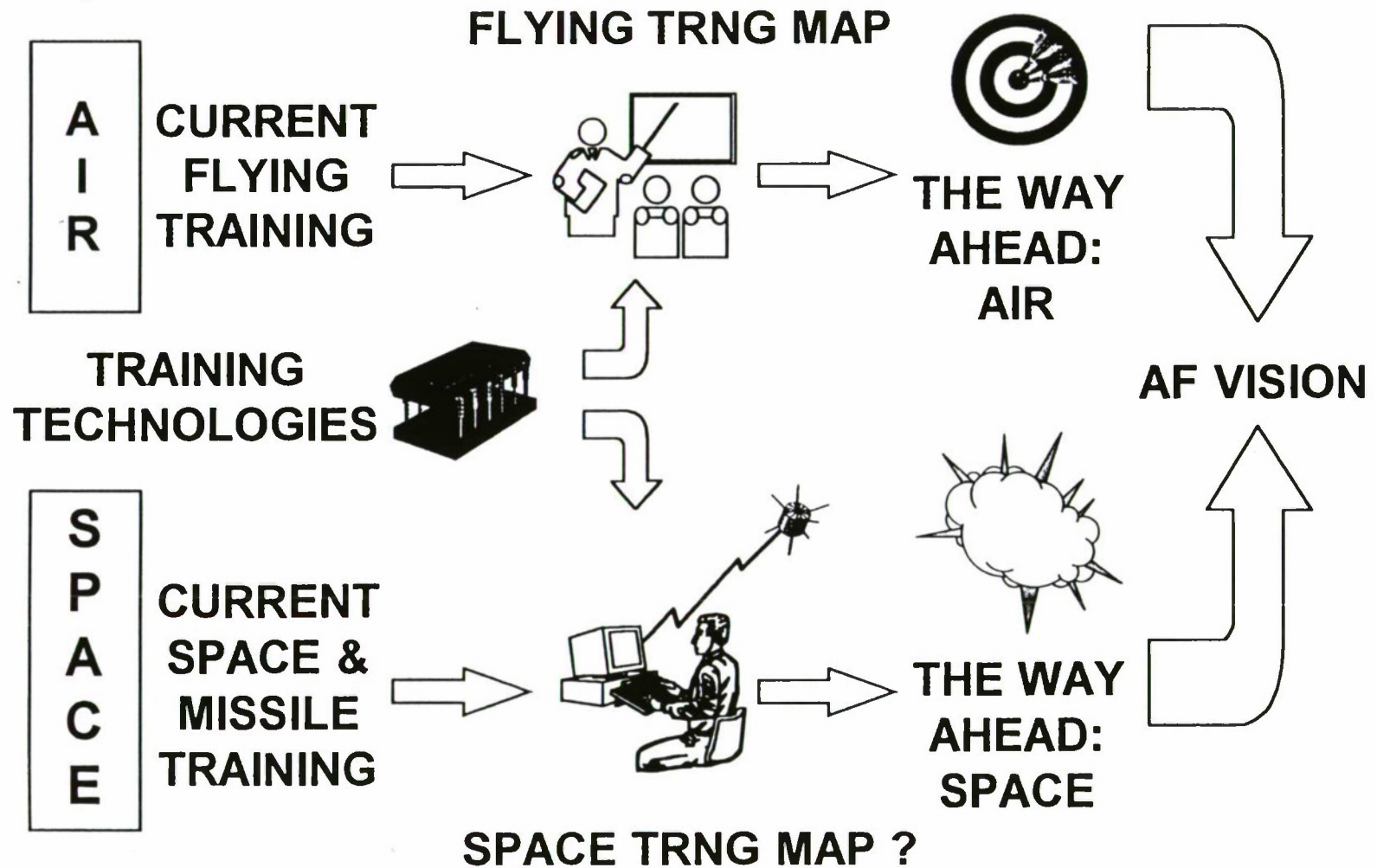


SPACE TRAINING INITIATIVE

- **PUT SPACE TRAINING ON PAR WITH FLYING TRAINING**
 - **AETC TRAINS INITIAL SKILLS**
 - **AFSPC OPERATES, EXERCISES, REHEARSES, SUSTAINS**
- **ENGAGE IN TRI-COMMAND EFFORT WITH AFMC AND AETC**
 - **SPACE TRAINING MAP (AETC)**
 - **SPACE TRAINING TPIPT (AFMC)**
 - **TRAINING COMPONENTS OF MAPS (AFSPC)**

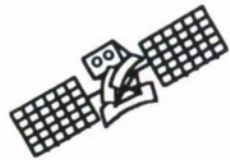


TRAINING VISION: AIR vs SPACE

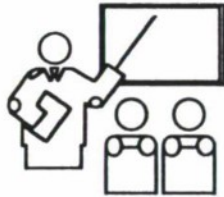




TEAM SOLUTION



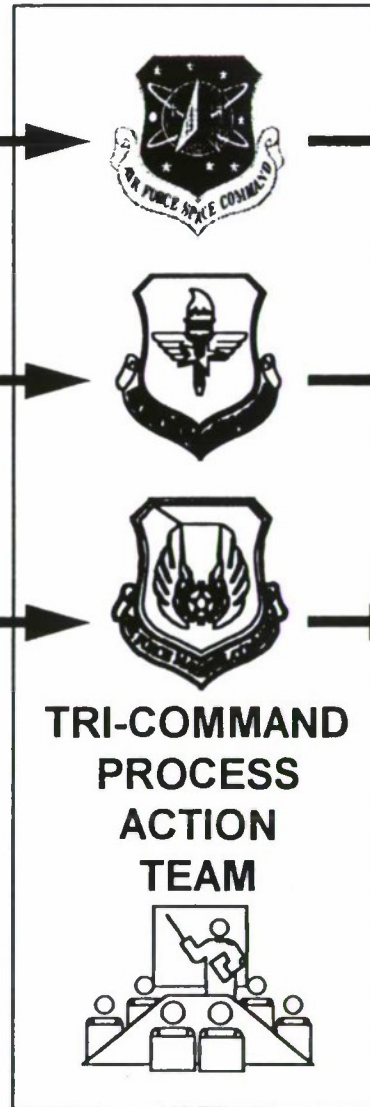
MISSION
OPS



TRAINING



TECHNOLOGY



SYSTEM
TRAINING
PLANS



MISSION
AREA PLAN



TECH PLANNING
INTEGRATED
PRODUCT TEAM
(TPIPT)

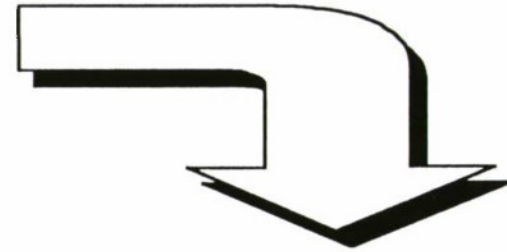




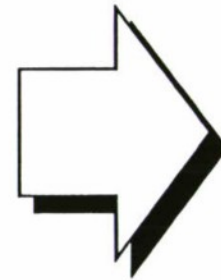
GOAL



**SYSTEM
TRAINING
PLANS**



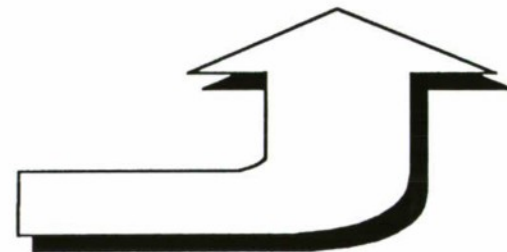
**SPACE TRAINING
MISSION AREA
PLAN**



**SPACE
TRAINING
VISION**



**SPACE TRAINING
TECHNOLOGY
DEVELOPMENT
PLAN**





TRAINING OBJECTIVES

- **NORMALIZED TRAINING**
 - **20 TRAINING DAYS (OR LESS) TO MISSION READY AT UNIT**
 - **OFF-LINE UNIT TRAINING EQUIPMENT WITH 95% TASK COVERAGE**
 - **TRAINING SUPPORTED BY OPERATOR TECHNICAL ORDERS**
- **AETC TRAINING AT VANDENBERG AFB**
 - **THE “SCHOOLHOUSE” FOR SPACE AND MISSILES**
 - **TRAINS INITIAL SKILLS**
 - **PRODUCES MISSION READY GRADUATES**



SPACE TRAINING INITIATIVE RESULTS

- **OPTIMIZES MODERNIZATION PLANNING PROCESS FOR SPACE TRAINING**
 - **MISSION AREA ASSESSMENT**
 - **MISSION NEEDS ANALYSIS**
 - **MISSION SOLUTION ANALYSIS**
- **CREATES TRAINING INFRASTRUCTURE**
 - **MISSION AREA PLAN (AETC)**
 - **SPACE TRAINING TECHNOLOGY PLANNING INTEGRATED PRODUCT TEAM (AFMC)**
 - **SPACE TRAINING SYSTEM SUPPORT OFFICE (AFMC)**



MODELING, SIMULATION & ANALYSIS

- **MODELING AND SIMULATION BRANCH (XPAM)**
 - **COMMAND FOCAL POINT FOR MS&A**
 - **POLICY AND GUIDANCE**
- **SPACE WARFARE CENTER (SWC)**
 - **EXECUTES MS&A PROJECTS**
 - **REPORTS TO MS&A BOARD**
- **MS&A BOARD**
 - **CLEARINGHOUSE FOR MS&A**
 - **MEMBERS FROM DO, DR, IN, LG, SC, SWC**



FRONTIER ARENA

- **FORUM FOR COOPERATIVE MS&A WITH OTHER SPACE STAKEHOLDERS**
- **ELECTRONIC CONFERENCE ON WWW**
 - **DEFENSE MODELING, SIMULATION & TACTICAL TECHNOLOGY INFORMATION ANALYSIS CENTER (DMSTTIAC)**
 - **PART OF DEFENSE MODELING & SIMULATION ORGANIZATION (DMSO) HOME PAGE**
 - **<http://dmsttiac.hq.iitri.com/enter/html/>**
 - **ACTS LIKE BULLETIN BOARD, ALLOWING REQUESTS, RESPONSES AND THIRD PARTY VIEWING**



POINTS OF CONTACT

base briefing at NTSA Cont.

- **TRAINING REQUIREMENTS BRANCH (DRRT)**
 - **LT COL JOHN PUFFENBARGER**
(719) 554-3271; DSN 692-3271
EMAIL: jpuffenb@spacecom.af.mil
- **OPERATIONS TRAINING BRANCH (DOTT)**
 - **LT COL MIKE HOCKETT**
(719) 554-5461; DSN 692-5461
EMAIL: mhockett@spacecom.af.mil
- **MODELING & SIMULATION BRANCH (XPAM)**
 - **LT COL WALT KOOZIN**
(719) 554-4004; DSN 692-4004
EMAIL: wkoozin@spacecom.af.mil



SUMMARY

- **TAKE ACTION TO FULLY REALIZE THE AF's MISSION AND VISION REGARDING SPACE**
- **IMPROVE THE PROCESS TO CAPTURE SPACE TRAINING AND SIMULATION REQUIREMENTS**
- **WORK WITH INDUSTRY TO ACQUIRE TRAINING AND SIMULATION CAPABILITY FOR SPACE**



Space and Missile Systems Center (SMC)

Space Training and Modeling & Simulation Activities

New Business

**Capt John Hawkins
Developmental Planning Directorate
SMC/XRT**



Overview

- **Space Training Technical Planning Integrated Product Team (TPIPT)**
- **Space Training System Support Office**
- **SMC Modeling & Simulation Office**



Space Training TPIPT Background

- **TPIPT created under Concept Development and Technical Planning Division (SMC/XRT) - 1 Dec 95**
- **Support Air Force Space Command (AFSPC) and Air Education and Training Command (AETC)**
 - **Technologies/concepts to meet training needs**



Space Training TPIPT Projects

- **Released Space Training deficiencies in the Human Systems Center Concept Call**
- **Space Training Concept Call**
 - **Release CBD this spring calling for White Papers**
- **Consolidate computer-based training, distance learning, modeling and simulation and other training technologies**
 - **POC for concepts/solutions to meet space training deficiencies**



AETC Space Training Deficiencies

PRI	TASK	DEFICIENCY
1	-Initial -Mission Qual -Advanced	Space crew operations training capability and nonconcurrent training systems limits ability to provide mission ready graduates.
2	Same as above	Training infrastructure and delivery methods fragmented, aging, and unresponsive.
3	Same as above	Lack adequate communications infrastructure to support future resident/nonresident computer-based instruction.
4	Same as above	Classrooms not configured to conduct interactive multimedia instruction (IMI).
-	Professional Military Education	Limited ability to demonstrate application of space systems in an educational environment.



AFSPC Space Training Deficiencies

PRI	MISSION AREAS	DEFICIENCY
1	Satellite Operations	Lack of efficient, realistic, standardized training.
2	Reconnaissance and Surveillance	Lack of trained exploitation and interpretation capability.



Space Training TPIPT Information

- **POCs:**
 - **Ms. Sharon Kolanowski, GS-12**
(310) 363-6228; DSN 833-6228
Email: kolanowssm@afbmd.laafb.af.mil
 - **Capt John Hawkins** *base building*
(310) 363-1168; DSN 833-1168
Email: hawkinsj@m105x4.laafb.af.mil
- **World Wide Web (WWW) Home Page Address:**
<http://www.afbmd.laafb.af.mil/xrt/xrts/index.htm>



Space Training System Support Office Background

- **Office created under Acquisition Logistics Directorate (SMC/ALY)- 1 Oct 95**
- **Work current and future acquisitions**
 - **Standardize Space Training Acquisition**
 - **Advise and Support SMC System Program Offices**
 - **SMC Wide Process Experts ***
 - **Create Cost Accounting Record**
 - **Analyze Contractor Developed Training * Documents**



Space Training System Support Office Organization

- **Organized By Mission Area**
 - **Space Control (Space Surveillance & Early Warning)**
 - **Space Support (Spacelift, Range, Air Force Satellite Control Network)**
 - **Force Enhancement (Satellite Operations, Navigation, Weather, Recon & Surveillance)**
 - **Force Application (ICBMs)**



Space Training Systems Support Office Projects

- **Spacelift Trainer**
 - **Work with AFSPC to acquire a computer-based trainer/part-task trainer for spacelift**
- **Contractor support**
 - **Studies**
 - **Database management**



Space Training Systems Support Office Information

- **POCs:**
 - **Chief: Mr. Caney Arnold, GS-13**
(310) 363-2502; DSN 833-2502
Email: arnoldc@m110x2.laafb.af.mil
 - **Capt Lisa J. Hawkins**
(310) 363-5442; DSN 833-5442
Email: hawkinslj@m110x2.laafb.af.mil
 - **Mr. Carl Attruia, GS-12**
(310) 363-2869; DSN 833-2869
Email: attruiacf@m110x2.laafb.af.mil



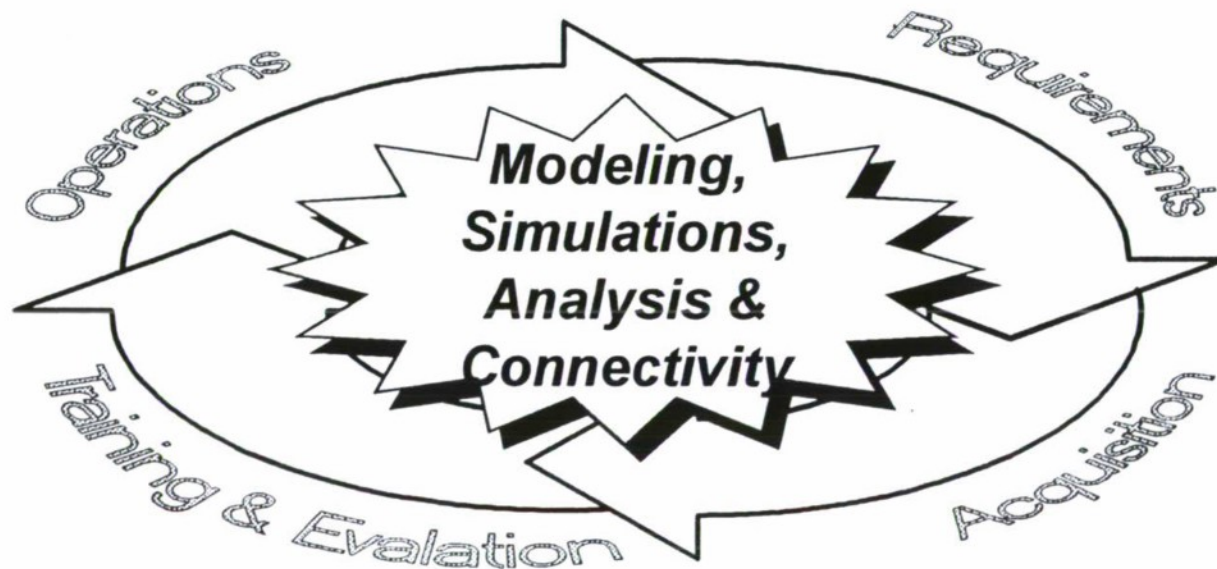
SMC Modeling & Simulation Office Background

- **Office merged with AF BMD M&S Office under Systems Engineering and Integration Division (SMC/XRE) - July 1995**
- **Frontier Arena**
 - **MS&A initiative involving SMC, AFSPC, and Phillips Laboratory**
 - **Bring space to the warfighter through distributed simulation**
 - **Closer cooperation between space and air warfighters, space system users, and space system developers**



SMC Modeling & Simulation Frontier Arena

- **Frontier Arena (Cont.)**
 - Providing accurate space modeling in wargames and exercises (analysis and training)
 - Showing benefits of current and potential future space systems to the warfighter





SMC Modeling and Simulation Campaign Analysis

- **Use METRIC (campaign analysis tool) to quantify the military value of space to the warfighter**
- **Opportunities:**
 - **Space-Based Radar study; compare results to DARO UAV study**
 - **Space-Based Laser study for BMDO**
- **Minimalist modeling**
 - **Spreadsheet & home-grown code analysis; one step up from “back of the envelope”**
 - **Quick turn-around, low resolution**
 - **Short timelines, low cost**



SMC Modeling & Simulation Needs from Industry

- **SMC M&S Office needs from industry:**
 - **Space systems models and simulations**
 - Stand-alone
 - Confederations with in-house tools
 - **Help updating and improving legacy models**
 - Implementation of DIS and DIS++ standards
 - Transition to HLA
 - **Distributed modeling and presentation centers**



SMC Modeling & Simulation Information

- **POCs:**
 - **SMC/XRE: Lt Rick Luce, (310) 363-8975**
Email: lucerc@afbmd.laafb.af.mil
 - **AFSPC/XPA: Lt Col Walt Koozin (719) 554-4004**
Email: wkoozin@spacecom.af.mil
 - **PL/VTQ: Capt Mark Snyder, (505) 846-5102**
Email: snyderm@maquis.plk.af.mil
- **WWW Home Page Address:**
 - **<http://www.afbmd.laafb.af.mil/xre/sevstrat/fa/index.html>**



Summary

SMC Needs



Your Help!



National Air and Space [Warfare] Model (NASM)

Guy Giroux

Tim Rudolph

8 March 1996



Overview

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **NASM Program Definition**
- **NASM Concept/Phasing**
- **Relationship with JSIMS**
- **Acquisition Streamlining**
- **NASM Objectives**
- **NASM Technical Requirements**
- **NASM Derived Requirements**
- **Summary**



What is NASM: Project Definition

NASM Program Office, 8 March 1996

HQ ESC/AVM

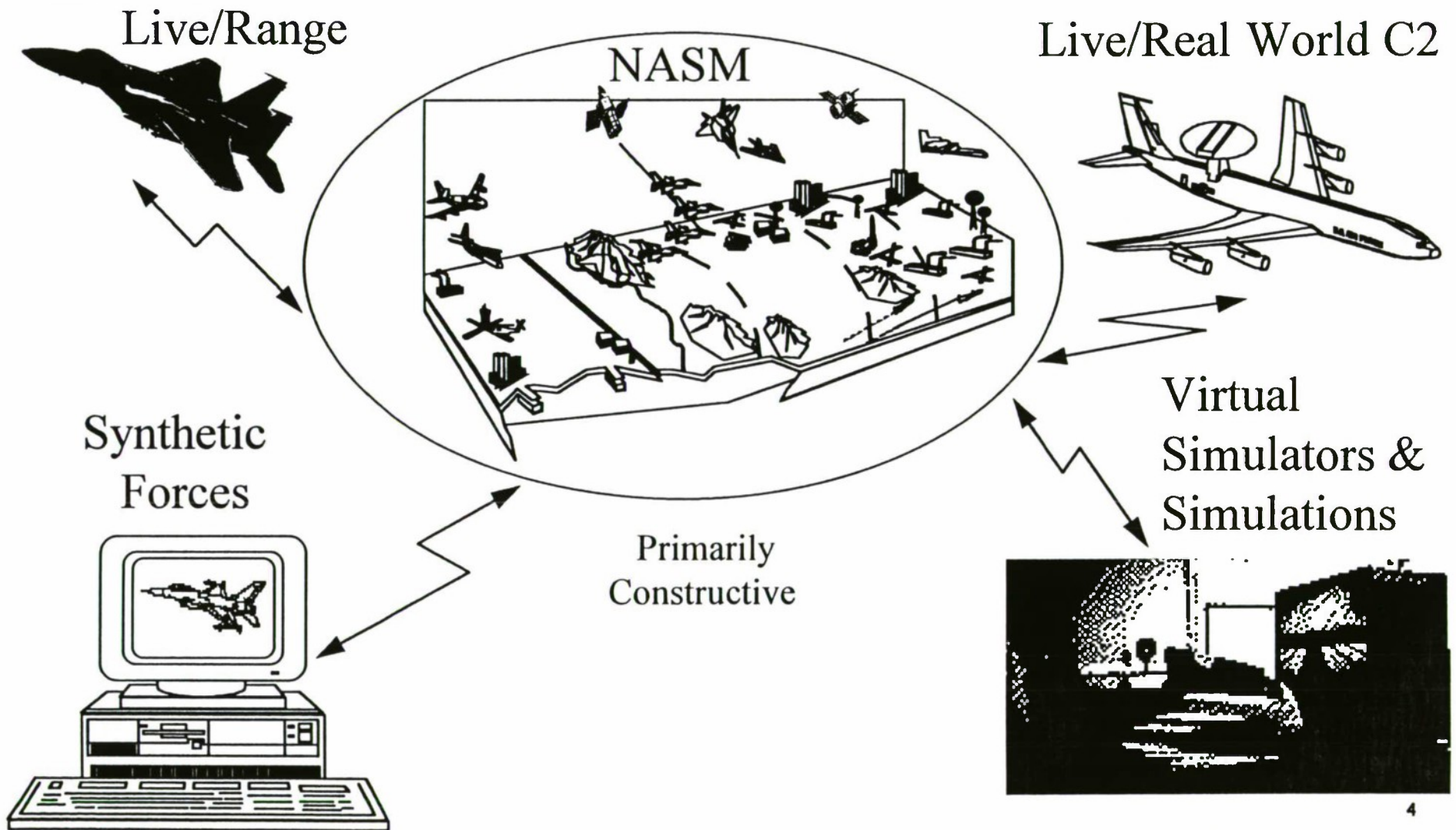
A project under the AF M&S Program to develop a simulation system of portable, interoperable and reusable components providing realistic representation of the full range of aerospace missions for Air Force specific and Air Force representation in joint training. The initial implementation will replace the Air Warfare Simulation (AWSIM) for battlestaff operational readiness training.



NASM Concept

NASM Program Office, 8 March 1996

HQ ESC/AVM

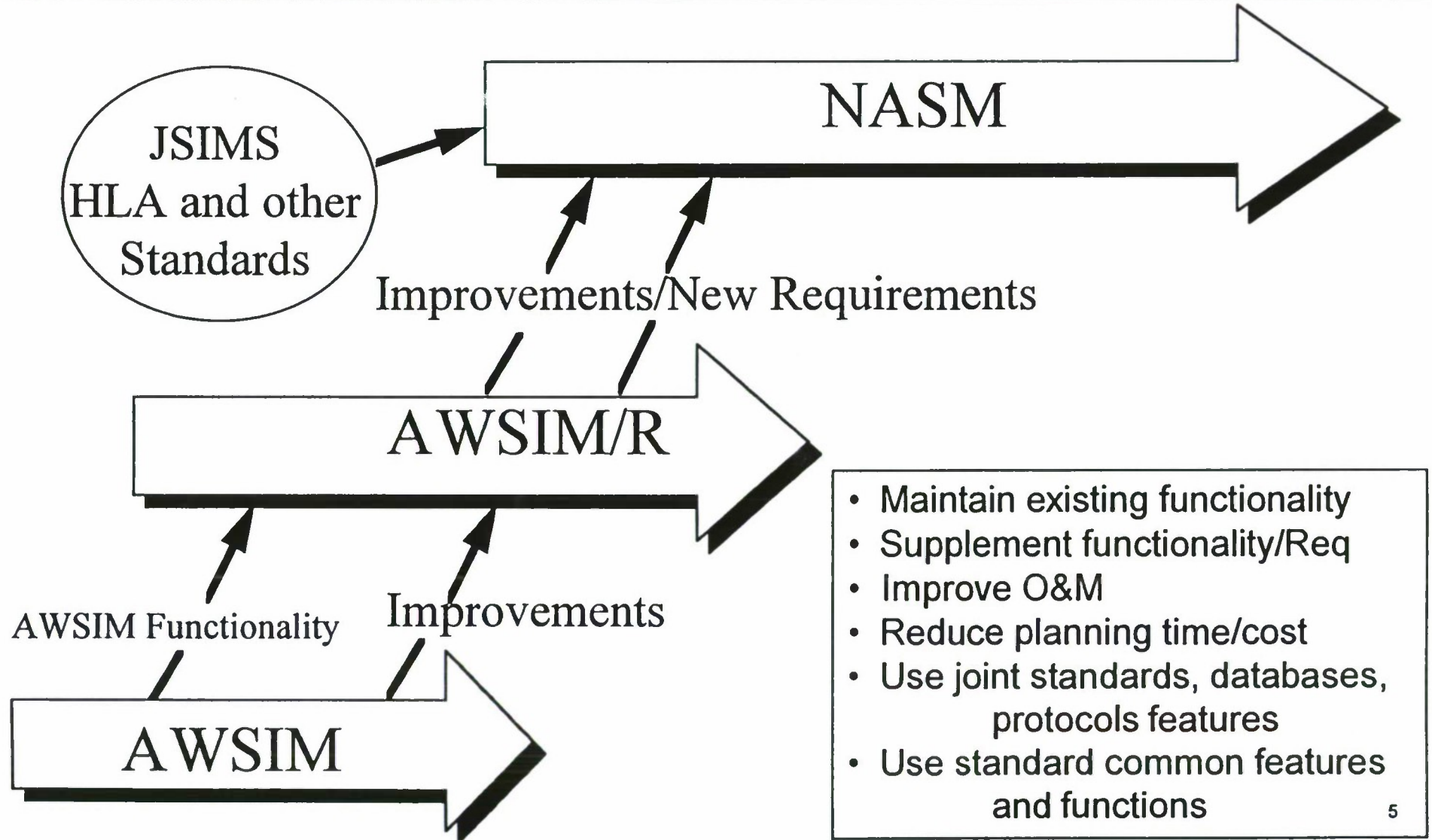




NASM Phasing

NASM Program Office, 8 March 1996

HQ ESC/AVM

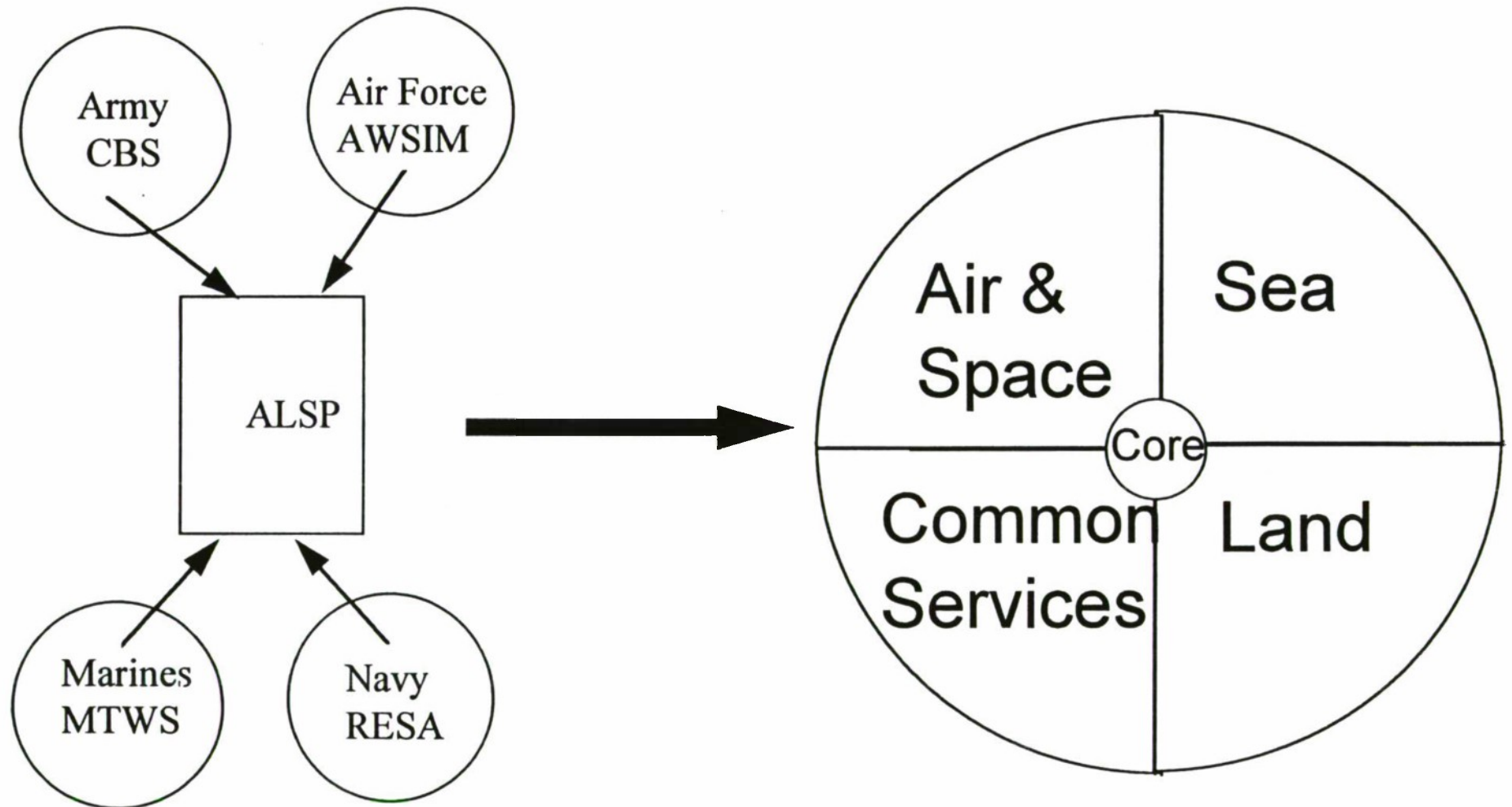




JSIMS/Service Relationship

NASM Program Office, 8 March 1996

HQ ESC/AVM

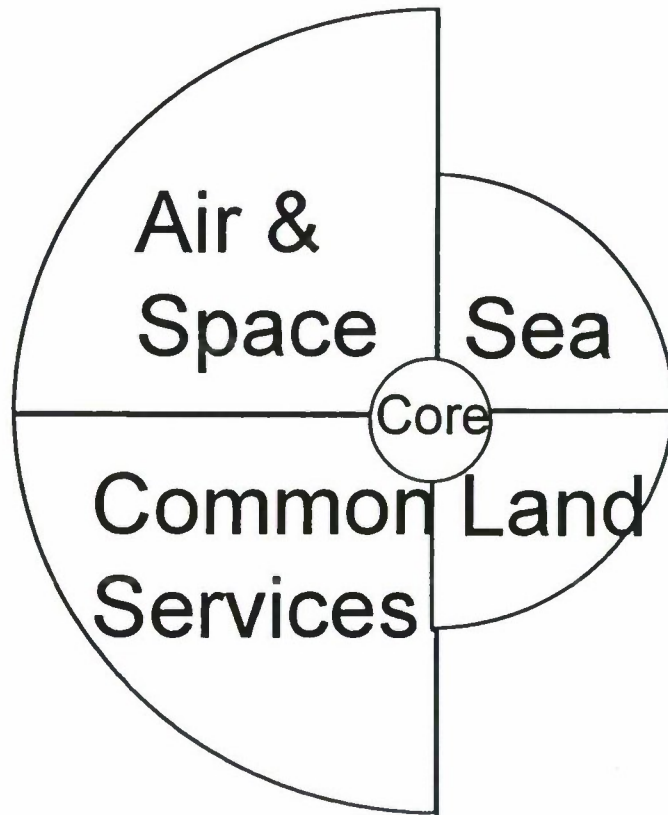




NASM for AF Exercises

NASM Program Office, 8 March 1996

HQ ESC/AVM



- **NASM plays in full (A&S)**
- **Other models play in SAF/CGF modes**
- **JSIMS RTI/Standards**
- **JSIMS Common “Core”**
- **JSIMS Common Services**
- **Less model-specific training**



JSIMS Mission

NASM Program Office, 8 March 1996

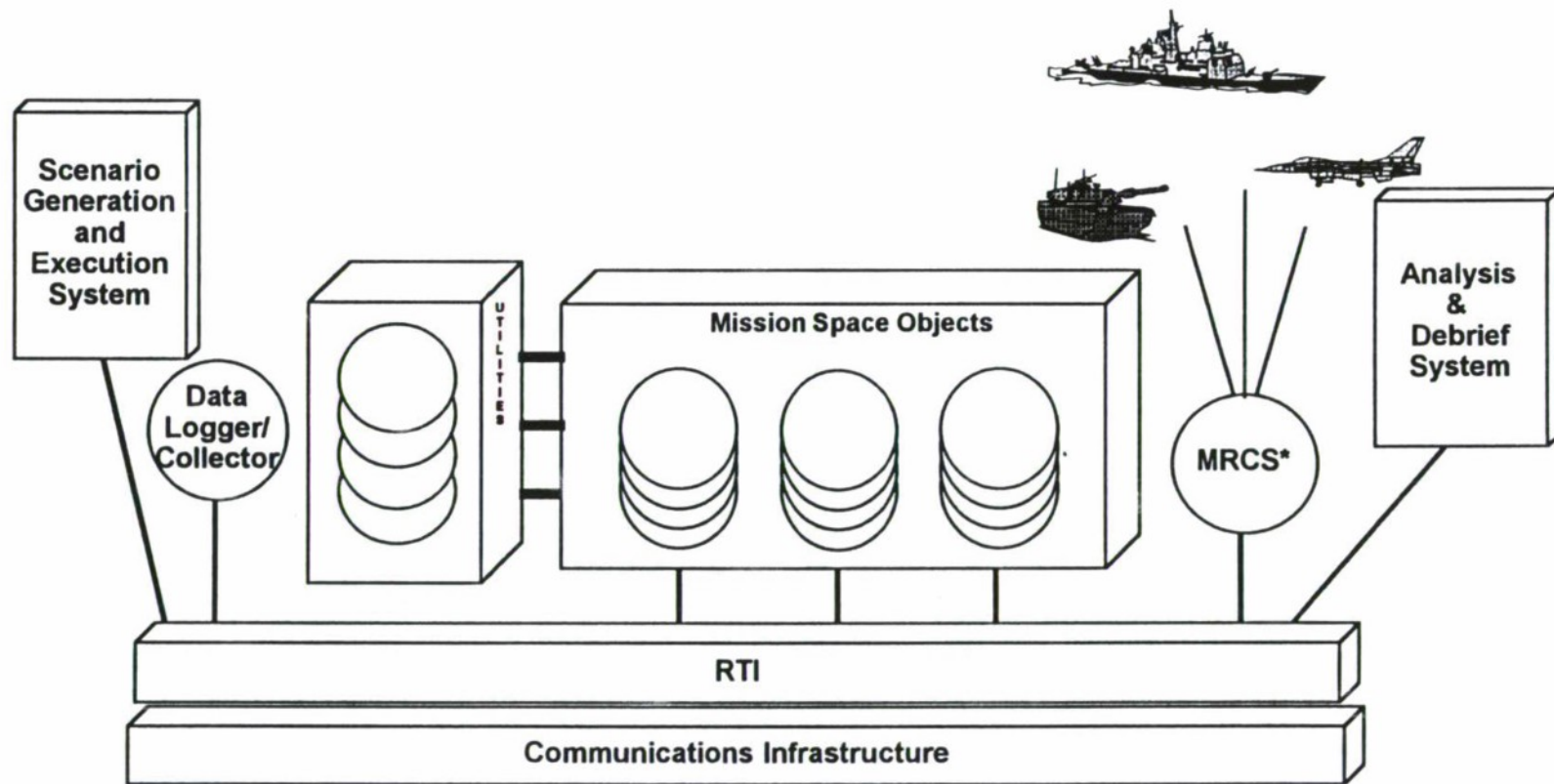
HQ ESC/AVM

- **Provide a distributed simulation capability to train CINC, Joint Task Force, and service component commanders and battle staffs**
 - ◆ Develop a common simulation environment to support joint and individual service training and mission rehearsal
 - ◆ Coordinate and integrate services' efforts in next generation simulation



JSIMS Notional Architecture

NASM Program Office, 8 March 1996 HQ ESC/AVM



* Modular Reconfigurable C4I Surrogate



NASM Acquisition Streamlining

NASM Program Office, 8 March 1996

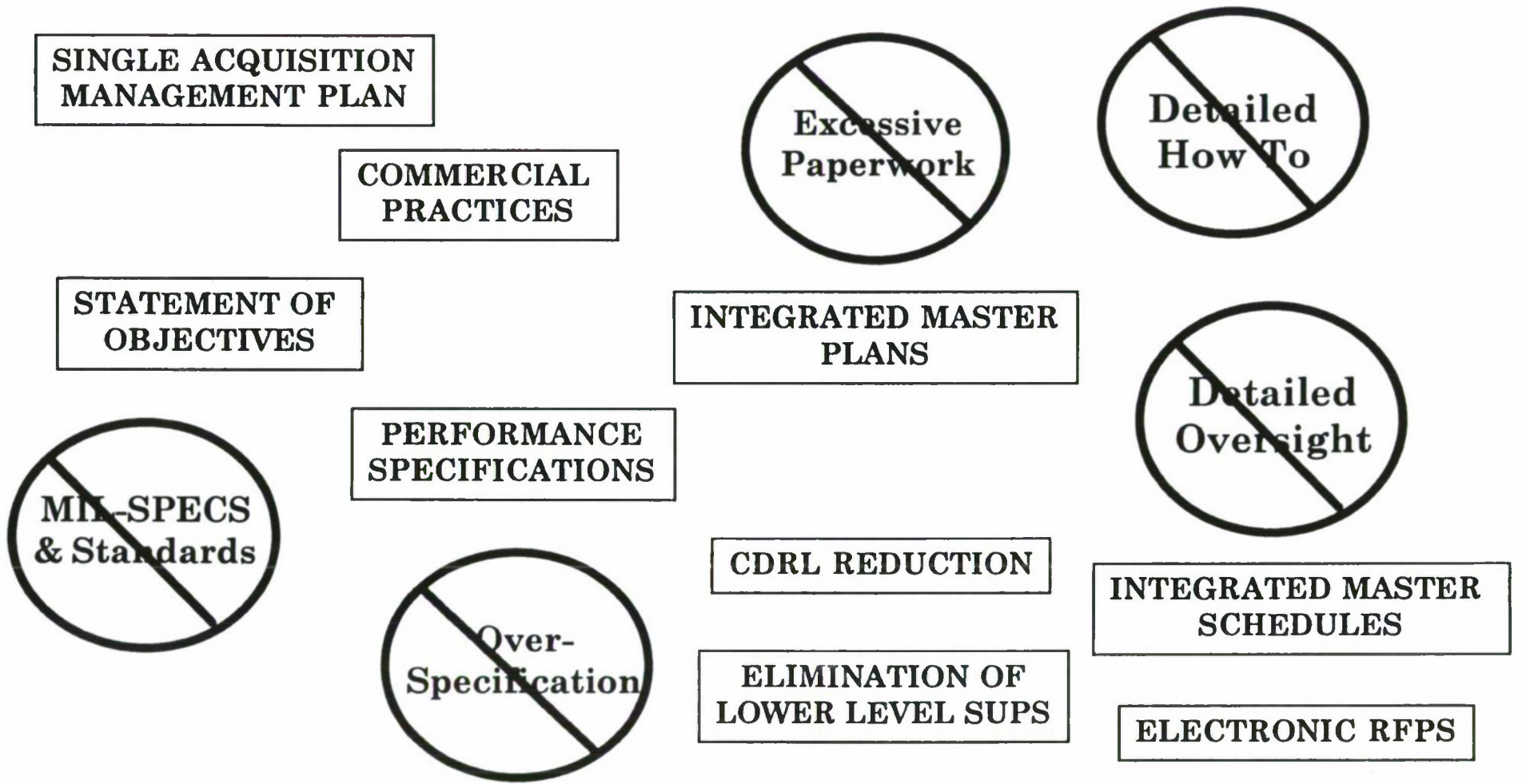
HQ ESC/AVM

- **NASM contract process incorporates new Streamlining Initiatives**
 - ◆ **Goals include:**
 - Reduced time for contract award
 - Contractor developed NASM system
 - Reduced number of Government approved documents



Air Force Streamlining Initiatives

NASM Program Office, 8 March 1996 HQ ESC/AVM

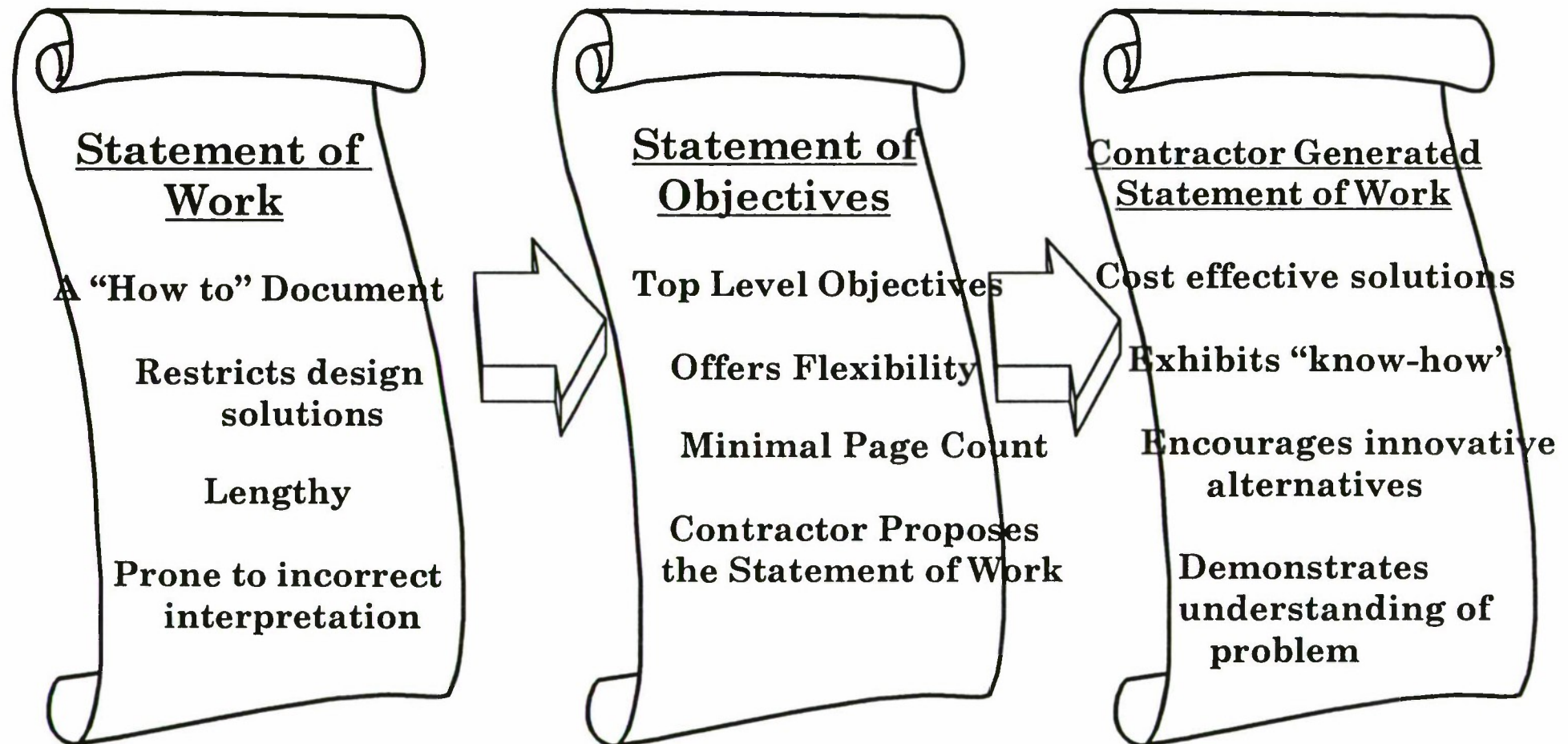




SOO and Contractor Generated SOW

NASM Program Office, 8 March 1996

HQ ESC/AVM





Streamlined Process

NASM Program Office, 8 March 1996

HQ ESC/AVM

- Requirements Baseline vs. Development Baseline
 - Government maintains the Requirements Baseline
 - Contractor maintains the Development Baseline

- Statement Of Objectives (SOO) vs. Statement of Work (SOW)
 - Government provides broad objectives and goals
 - Contractor proposes the way to meet the objectives

- Technical Requirements Document (TRD) vs. Specification
 - Government states overall technical requirements
 - Contractor develops specifications

- Contractor Proposed
 - Work Breakdown Structure (WBS)
 - Schedule
 - Reviews
 - Documentation
 - Milestones



NASM Objectives

NASM Program Office, 8 March 1996

HQ ESC/AVM

➤ **Statement Of Objectives (SOO) Highlights**

- ◆ Develop an expandable, scaleable simulation system to train battlestaffs at Wing level and above by IOC
 - System shall be Contractor developed, designed, and supported
- ◆ Develop a Contractor/Government team to manage NASM
 - Electronic access to data, visibility into all aspects of program
- ◆ Contractor proposed metrics will form the basis of award fee evaluations
- ◆ Comply with Defense Management Simulation Office (DMSO) High Level Architecture (HLA) Interface Specifications
- ◆ Provide Operations and Maintenance (O&M) for Legacy System(s)



Key Areas of Interest in Contractor's Proposal

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Process - Contractor Proposed**
- **Metrics - Internal Corporate Management Metrics**
- **Integrated Product Team (IPT)**
 - ◆ Government (Program Office and User) and Contractor
- **Past Performance**
 - ◆ Performance Risk Assessment Group (PRAG)
 - ◆ Software Capability Evaluation (SCE)
- **Risk Management**



Technical Requirements Document (TRD) Overview

NASM Program Office, 8 March 1996

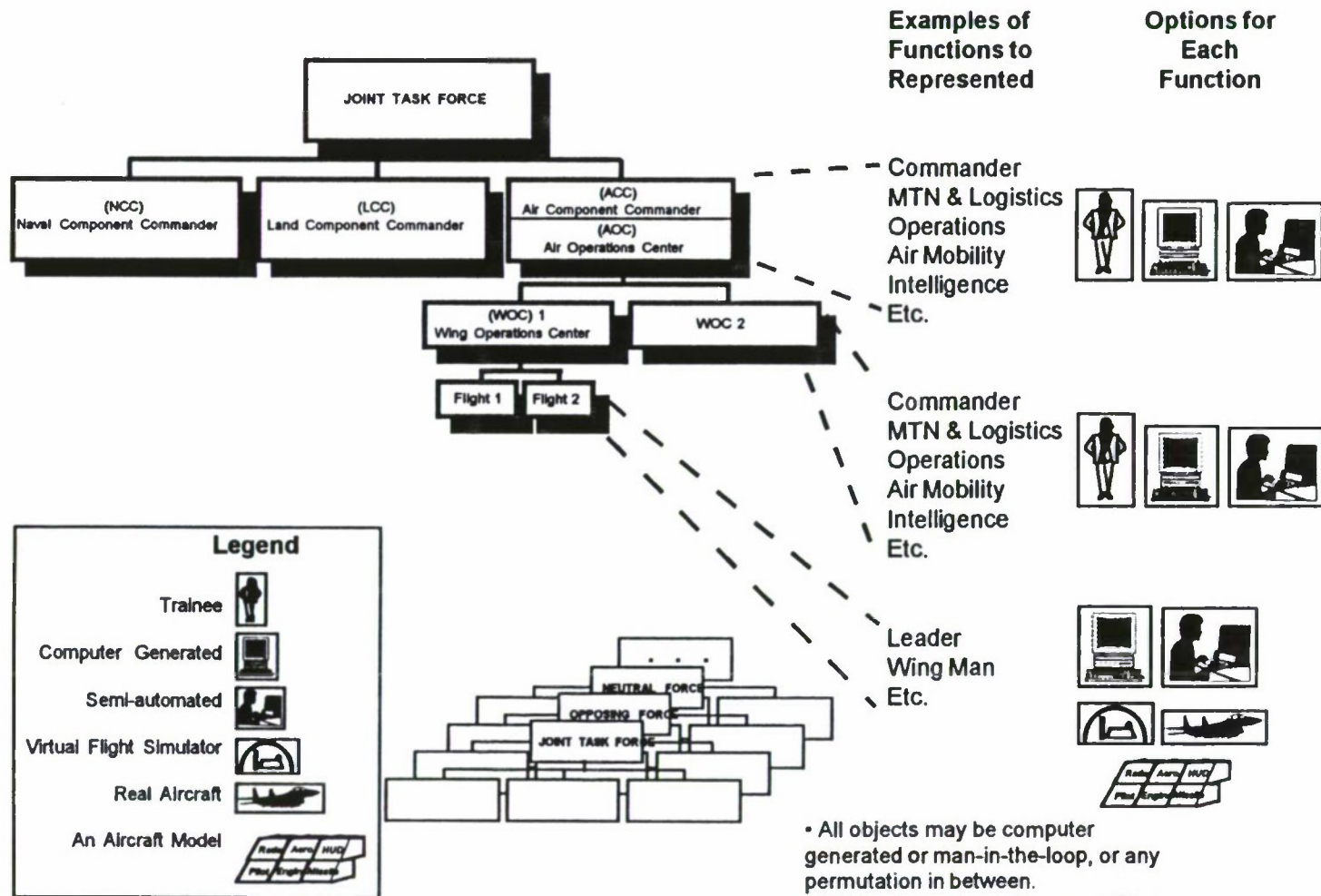
HQ ESC/AVM

- **Section 1 - NASM Overview**
- **Section 2 - References**
- **Section 3 - Requirements**
 - ◆ Shalls are contractually binding
- **Section 4 and 5 - Not Applicable**
- **Section 6 - Notes**
 - ◆ Design and implementation considerations
 - ◆ Not contractually binding
- **Appendices**
 - ◆ Glossary
 - ◆ IOC/FOC Functional Description
 - ◆ Acronym List



NASM Simulation World

NASM Program Office, 8 March 1996 HQ ESC/AVM



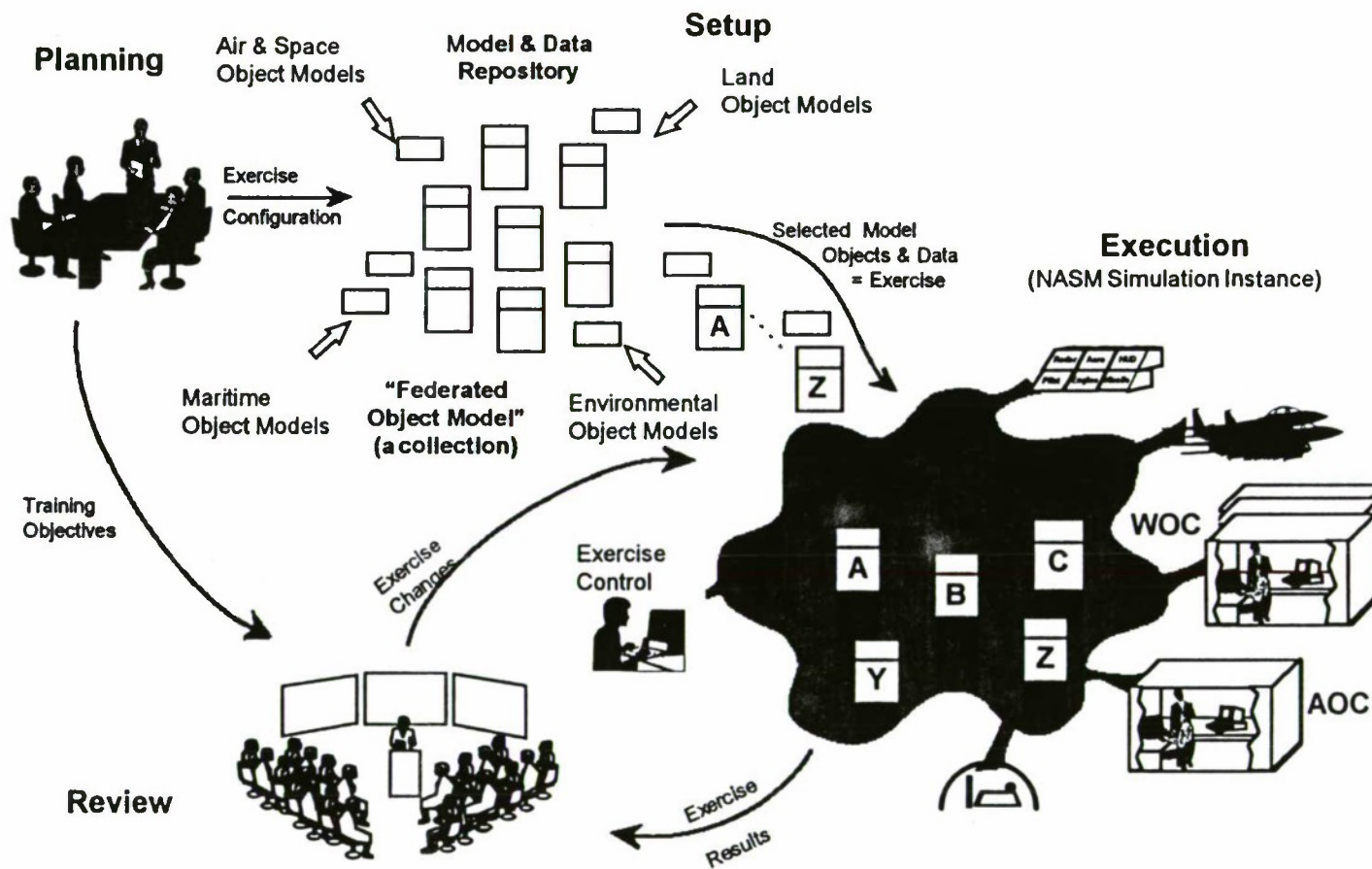
- All objects may be computer generated or man-in-the-loop, or any permutation in between.
- All blue force simulation capability is available for each friendly and opposing force.



Functional Clustering

NASM Program Office, 8 March 1996

HQ ESC/AVM





System Requirements

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Provide effective training for commanders and battlestaffs for aerospace, Military Operations Other Than War (MOOTW), information warfare, and special operations missions**
- **Accurately simulate all aspects of the battlespace**
 - ◆ assets (equipment, sensors, communication links)
 - ◆ forces
 - ◆ space
 - ◆ environment
 - ◆ logistics
 - ◆ interactions with real world systems
- **NASM entity representation ranges from sub-components to aggregate units**
 - ◆ Provide multiple levels of consistent aggregation/deaggregation mechanisms (effects & behavior)



System Requirements (Continued)

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Provide interfaces with real world C4I systems**
- **Provide interfaces with constructive models and virtual simulations/simulators via the DOD High Level Architecture (HLA) Interface Specification**
- **Provide distributed, collaborative pre-exercise, exercise, post-exercise (after action review) environment**
 - ◆ **Distributed game control and simulation execution**



System Development Approach

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Compliant with DoD Modeling & Simulation (M&S) High Level Architecture (HLA) Interface Specification**
 - ◆ Close cooperation with JSIMS and other Development Agents
- **Iterative spiral development coordinated with users**
- **Prototypes conducted to identify/mitigate high risk areas**
- **Software development process**
 - ◆ Use of Ada
 - ◆ Use software maturity matrix
 - ◆ Best commercial practices
- **Reuse opportunities**
 - ◆ Significant reuse of new software (object based)
 - ◆ Possible reuse/leveraging design/data of existing model



Derived Requirements

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Functional capability to realistically and accurately represent the full range of aerospace power (AFM 1-1, including MOOTW)**
- **Battlestaff training & readiness**
 - ◆ Train as we fight (real world C4I system interfaces)
 - ◆ Train where we fight (distributed simulation)
- **Capability for distributed collaborative exercise planning, distributed game control, and after action reviews**
- **Interface with Joint & Service models in the next generation federation compliant with DoD High Level Architecture (HLA)**



Derived Requirements (Cont.)

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Semi-Automated Forces (SAFOR) of friendly & Opposing Forces (OPFOR)**
- **Expanded operations capabilities**
 - ◆ Execute slower, near & faster than real time
 - ◆ Multiple concurrent levels of security & access
 - ◆ Multiple levels of resolution & fidelity



Architectural Principles

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Object-oriented technology**
- **Use of Commercial Off The Shelf (COTS), Government Off The Shelf (GOTS)**
- **Logical time as a subset of discrete event**
 - ◆ <, =, > realtime
- **Scalability**
 - ◆ Seminar education to major exercise
 - ◆ MOOTW to 2 Major Regional Conflicts (MRCs)
- **CGF & SAFOR configurability**
- **NASM architecture will be extensible & flexible to incorporate additional functionality and evolve to address additional M&S user communities and operational needs.**



16
30
43%

Summary

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **NASM is a forward reaching, expandable system to meet training and educational needs**
 - ◆ Reduced cost
 - ◆ Reduced staffing requirements
 - ◆ Streamlined acquisition process
- **Relationship with JSIMS**
- **NASM Technical Requirements**



NASM

NASM Program Office, 8 March 1996

HQ ESC/AVM

Back-up Charts



NASM Objectives

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Embrace acquisition reform initiatives**
 - ◆ Opportunity for Contractors to plan the program development without jumping through Government hoops
 - ◆ Opportunity for innovation and reduced cost
 - ◆ Documents in Contractor format
 - ◆ “Zero” based CDRLS with the following exceptions:
 - Cost information required by the FAR
 - IMS
 - Few additional CDRLs required for system baseline
 - ◆ Contractor proposed deliverables
 - Government will not approve documents, review & comment only



NASM Contract Overview

NASM Program Office, 8 March 1996

HQ ESC/AVM

- **Contractor will propose key aspects of the award fee plan**
 - ◆ Frequency of award fee periods
 - ◆ Evaluation criteria

- **Source Selection**
 - ◆ New ESC streamlined proposal process
 - Technical proposals due 45 calendar days following RFP release
 - Final technical proposals due following technical information exchange with Offerors
 - Cost proposals due upon request following acceptance of technical proposals



General Information

NASM Program Office, 8 March 1996

HQ ESC/AVM

➤ Program Schedule:

- ◆ RFP Release Apr 96
- ◆ Technical Proposals Due 45 days following
- ◆ Cost Proposal Due Upon request
- ◆ Contract Award Aug 96
- ◆ NASM IOC Sep 99
- ◆ Annual Software Release Sep 00
- ◆ Annual Software Release Sep 01
- ◆ Annual Software Release Sep 02
- ◆ NASM FOC Sep 03

National Air and Space (Warfare) Model (NASM)

25 January 1996

PROGRAM DESCRIPTION:

Develop the new United States Air Force (USAF) distributed system, air/space model to provide the functional capability to realistically represent the full range of aerospace power applications in a joint synthetic battlespace for both Air Force specific and joint training. NASM will be developed for use by USAF commanders and battlestuffs (up to and including Joint Forces Air Component Commanders (JFACCs)), and other organizations in support of training and readiness, education, development of doctrine and practice of operational art, situation assessment, and the formulation, assessment, and rehearsal of operational plans. The current legacy USAF component model, Air Warfare Simulation (AWSIM), was developed in the early 1970s and is supported and used by the Warrior Preparation Center and the USAF Battlestaff Training School. NASM's design will overcome the current limitations of AWSIM and provide a modern foundation upon which to base the further future evolution of operational training and readiness.

As outlined in Commerce Business Daily (CBD) announcement "National Air and Space (Warfare) Model," dated 1 August 1995, NASM will be developed as a computer-based simulation system composed of portable, interoperable, and reusable components within a flexible common framework to integrate representations of the full range of Air Force missions. These missions may be stand alone or be tightly coupled with the Joint Simulation System (JSIMS). NASM must be able to provide a stand-alone Air Force training capability and also support the Air Force's joint training requirement. NASM will have the capability to interact with external live simulations, virtual simulators, and constructive models both within the Air Force and with the DOD JSIMS family of models. NASM will be scaleable to support JFACC and staff training down to the wing and mission level. NASM will support global, theater, and regional command center exercises, single echelon command and staff training activities, staff education and seminar training, and sustained training models. NASM will be flexible and extensible to incorporate additional functionality and evolve to address additional modeling and simulation user communities and operational needs (e.g., analysis, USAF deliberate planning, force requirements planning, the combat operations effectiveness analysis process, test and evaluation, and many aspects of logistics planning).

NASM will interface with real world C4I and support systems to provide resource efficient and intuitive interfaces for training in the places these operations would normally be conducted. The NASM domain will include the full spectrum of air and space warfare and those Operations Other Than War (OOTW) in which uniformed personnel could be tasked, providing the full range of USAF missions, including all those described in AFM 1-1 and other guidance.

NASM will provide a readily available, operationally realistic, distributed synthetic environment representation, force representation, and behavioral representation. The scope of NASM training will include the capabilities to provide distributed collaborative planning/scenario development (pre-exercise composition), simulation system execution (exercise), and the analysis of the exercise results (post-exercise).

The NASM development contractor will maintain and support the current Air Force standard air combat model, AWSIM (AWSIM is currently being re-engineered by ESC), until NASM is developed, delivered and accepted by the Air Force.

The NASM development contractor will actively participate as part of the NASM Integrated Product Team (IPT). As a IPT member, the contractor will interact with JSIMS and the other programs listed below (the list is not all inclusive and will be added to as the NASM program progresses).

Since the release of the CBD, the Government has changed the contract type contemplated for this effort. The Government now contemplates an eight year Cost Plus Award Fee type contract. The RFP for this effort will comply with the new Air Force acquisition streamlining initiatives. These initiatives will be explained in detail

during the Pre-Solicitation Bidders Conference. Some of the changes associated with this approach include releasing an RFP containing a Statement of Objectives (SOO) and Technical Requirements Document (TRD) instead of the traditional Statement of Work (SOW). The Contractor will submit the SOW with their proposal. The Contractor SOW shall outline their approach for conducting the program. While we anticipate the final contract award may contain a few CDRLs, we are being with a zero-based CDRL list. The Government will require access to Contractor data, however, that data will remain in Contractor format. Other changes to the acquisition process will be discussed in greater detail during the bidders conference.

REQUEST FOR PROPOSAL (RFP) #: F19628-95-R-0070

CURRENT SCHEDULE/EVENTS:

DRAFT RFP RELEASE DATE: Draft was available on HERBB as of 23 November 1995.

PRE-SOLICITATION BIDDERS CONFERENCE: To be held at Hanscom on 25 January 1996. Conference briefings will include an explanation of the Air Force's new streamlined acquisition initiatives often referred to as "Lightning Bolts." This date and the acquisition documentation may change so consult the HERBB for the latest updates.

ESTIMATED RFP RELEASE DATE: Mid-to-late May 1996

ESTIMATED CONTRACT AWARD DATE: Nov 96

RELATED PROGRAMS/EVENTS:

ARPA: ARPA's Synthetic Theater of War (STOW) is a related project involving the development of models for joint service use.

ALSP: ALSP is the current protocol for interfacing the services models. The Air Force's AWSIM, the Army's CBS, the Navy's RESA, the Marine Corps' MTWS, and other specialty models interfaced by ALSP are known collectively as the ALSP Confederation of Models.

WARSIM 2000: The Army's new campaign-level model, currently in development.

ENWGS: The Navy's new campaign-level model, currently undergoing testing.

MTWS: The Marine Corps' campaign-level model, currently undergoing testing.

POINTS OF CONTACT:

Programmatic questions should be referred to: Mr. Guy Giroux (617) 377-6421/NASM Program Manager or Capt Carolyn Kwieraga (617) 377-6423/Deputy Program Manager. Direct questions of a technical nature to: Mr. Tim Rudolph (617) 377-6434/Lead Engineer or Mr. Chi Ma (617) 377-6453. Questions concerning contractual matters to: Ms. Mariam Cameron, (617) 377-6602.

NOTE: The documents contained on this electronic bulletin board are the most current documents available and will be continually updated to accurately reflect the planned acquisition as it progresses. The currently loaded documents are being provided to industry to assist in the exchange of information, so continually check the electronic bulletin board for the latest information.



STRICOM

*Simulation Vers Real Training:
looking for tradeoffs
analysis. Cost & Benefit.
Higher efficiency at lower
cost. They are looking for
answers & analysis.*

Strategic Planning and Program Development Division



Chief: John Daniele



Supporting International Sales



Modern Triad

INDUSTRY

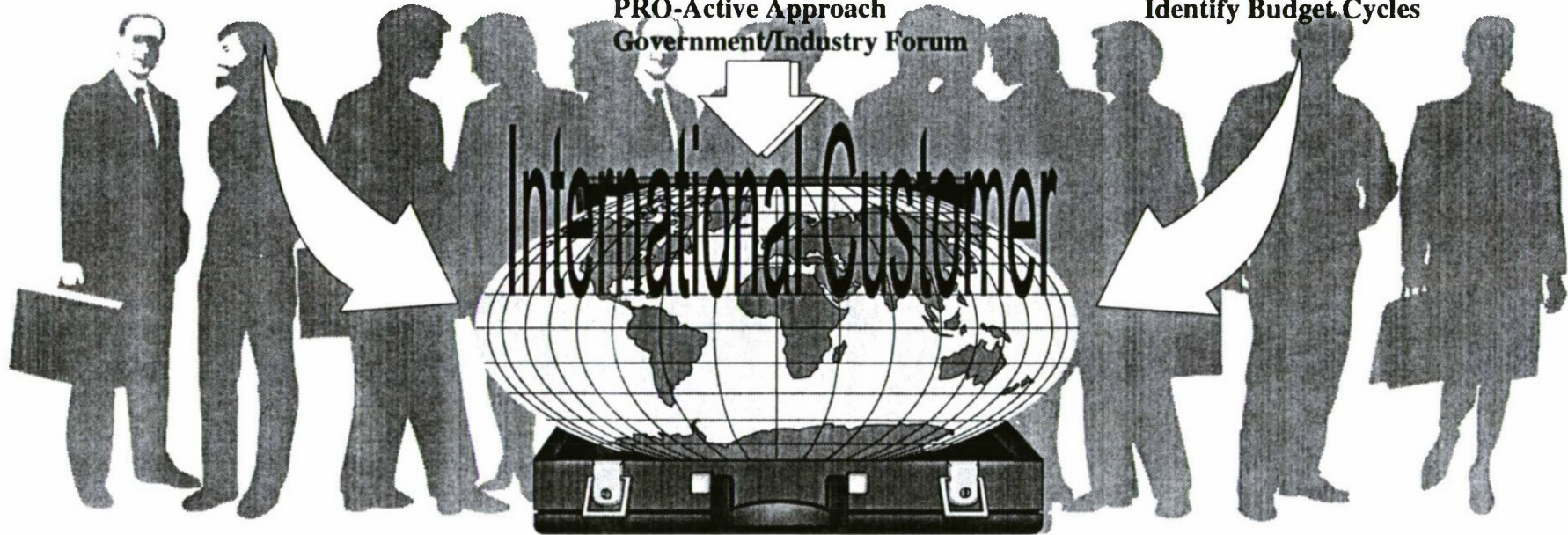
International Marketing
Quality Products and Service
Flexible Payment Methods
Offset Agreements

STRICOM SAMD

National Security Objectives
Foreign Policy Objectives
Total Package Approach
Backing and Support of U.S. Govt.
PRO-Active Approach
Government/Industry Forum

OVERSEAS SAO

Support Industry Marketing
Endorse U.S. Products
Facilitate Meetings
Identify Customer Needs
Identify Budget Cycles

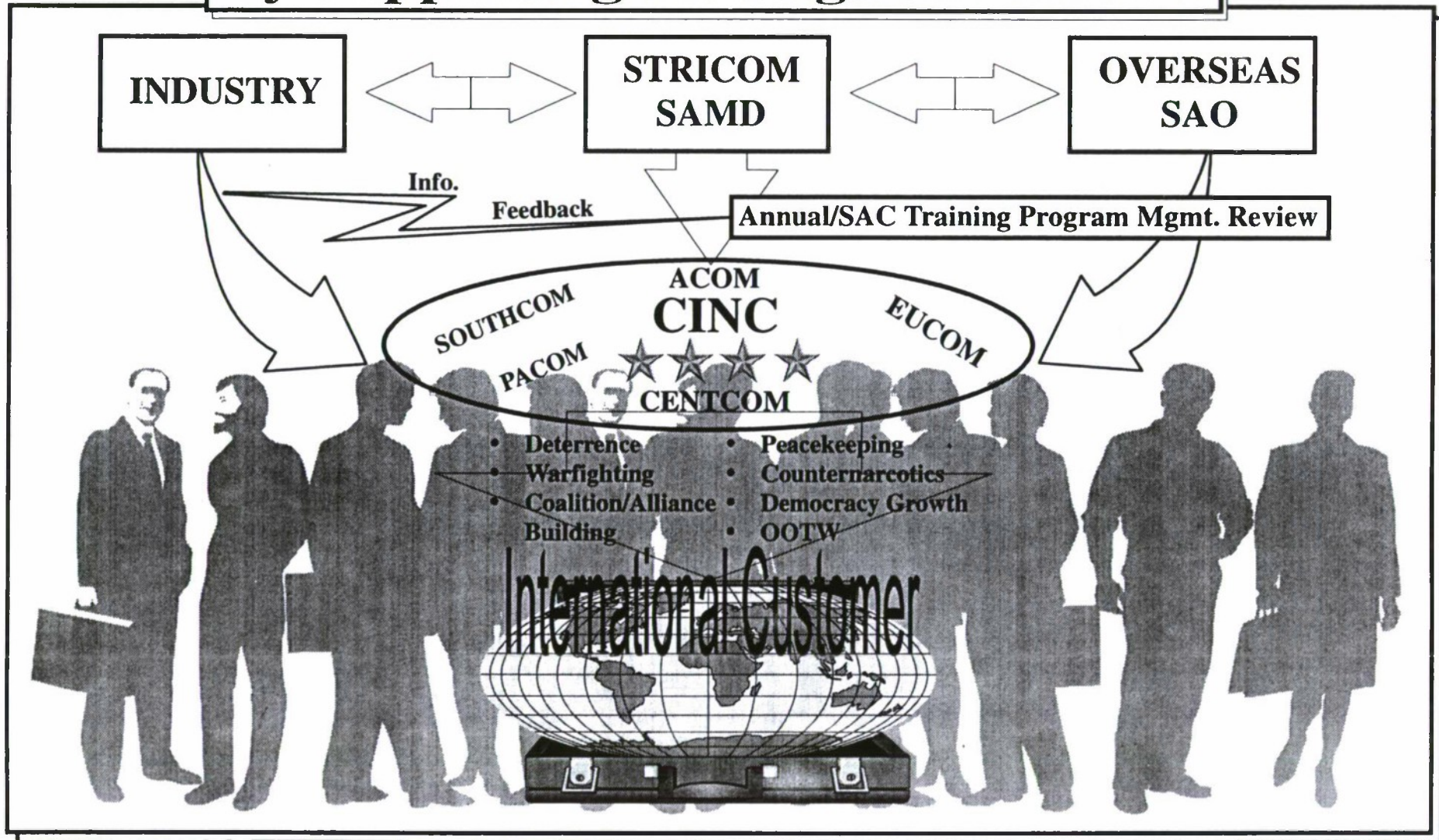




Supporting International Sales



By Supporting the Regional CINC's



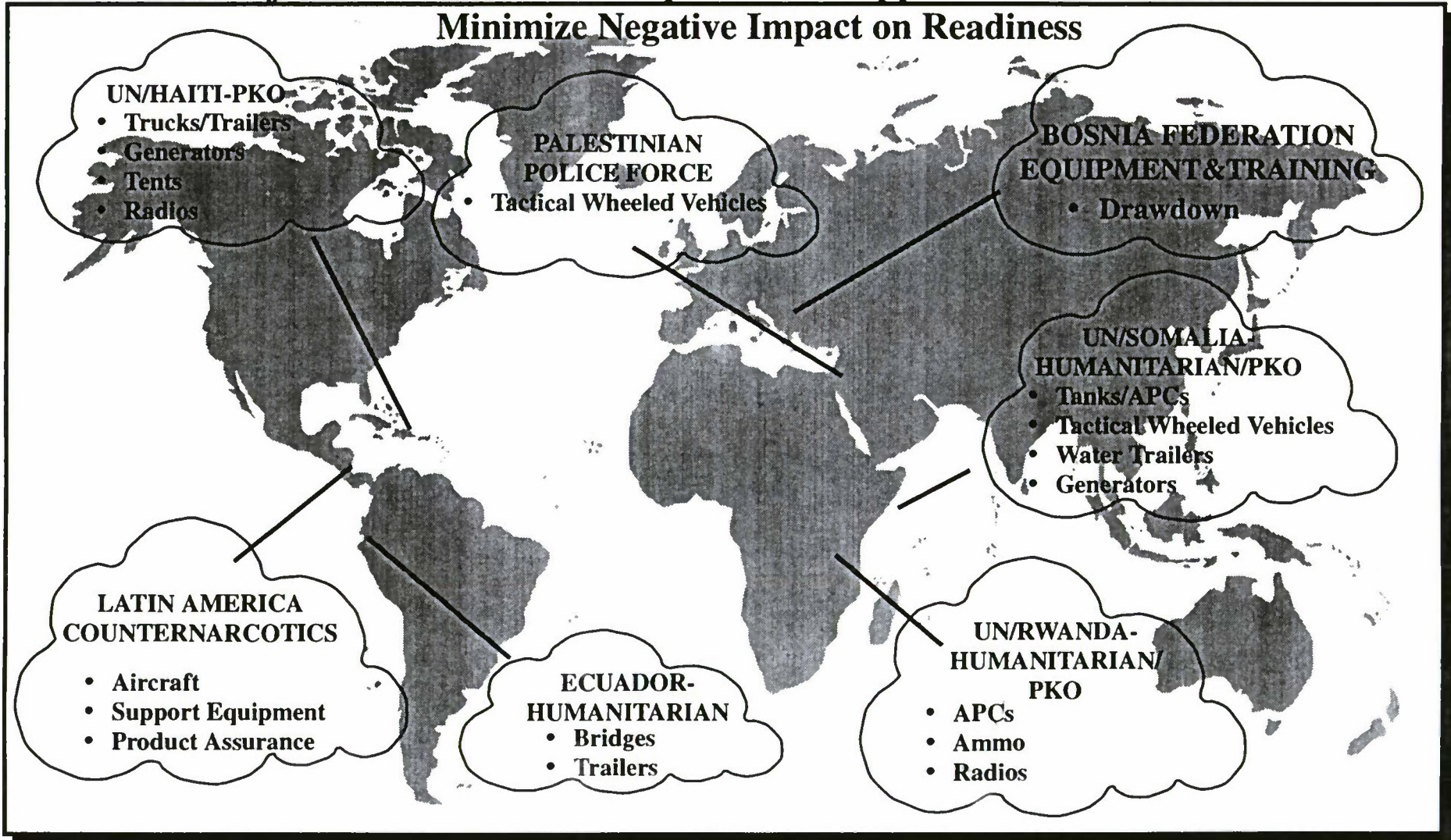


Recent Support for Operations Other Than War -- Drawdowns & Leases



Objectives: Maximize Response and Support

Minimize Negative Impact on Readiness





**Operations Other Than
War-OOTW Bosnia Federation
Equipment and Training Program**



**PRESIDENTIAL DETERMINATION (PD) 96 - 10 - \$100M DRAWDOWN
23 FEB 96**

LOT 1 (15 MAR)		LOT 2 (12 JUN)	
Machine Gun, M60	1,083	Tank, M60A3tts	45
CTG Linked 7.62m	2,000,000	APC, M113A2	80
Rifle, M16A1	46,100	Ammo, 105mm Heat	1,170
CTG, 5.56 mm	22,200,000	Ammo, .50 cal	40,280
Radio, PRC-77	1,100	Ammo, .50 cal TRNG	196,370
Radio, VRC-46	1,100	Grenade, Lnch Smoke	27,240
<hr/>		<hr/>	
\$69.7Million		\$25.9Million	

**Requirement- Tank Gunnery Training
Small Arms Training
Engagement Training
Command/Staff Training**



FMS Issue Cost Estimates



Army Study: FMS Case Close Out @ 83% of Original Estimate

Consequence: \$9B Sales \$1.53B in Foreign Budgets unavailable for Other Sales

STRICOM Study: FMS Case Close Out @ 77% of Original Estimate

Consequences: \$455M Sales = \$104M in Simulation Budgets Unavailable for Other Sales.

Estimating Methods

Cost Formula

Educated Guess

Finger in the Wind

Elements of Cost

Estimated Contract Cost (YOU!)

Inflation (WHO!)

FMS Administrative Add on (ME!)

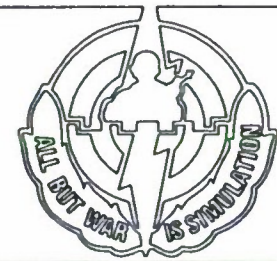
U.S. Govt. Program Mgmt. (ME!)

FUDGE!! (WHO!)

Challenge: Assume Greater Risk !!



LCCS



Life Cycle Contractor Support



LCCS CONTRACTS



- CONSOLIDATION OF SEVERAL TRAINING DEVICES, SIMULATORS, SIMULATIONS AND INSTRUMENTATIONS
- COMPETITIVE
- FIRM FIXED PRICE
- ONE YEAR W/FOUR ONE-YEAR PRICED OPTIONS
- BIDS FOR SERVICES BASED ON:
 - TYPES OF DEVICES
 - QUANTITY OF DEVICES
 - LOCATION OF DEVICES
 - UTILIZATION RATES
 - PERIOD OF PERFORMANCE
 - AVAILABILITY REQUIREMENTS



Life Cycle Contractor Support



STRICOM

**Directorate
for
Logistics**

All Army Training Devices, Simulators, and Simulations (TDSS) and training instrumentation supported by STRICOM are being considered under one of the following umbrella contracts:

Tactical Engagement/Instrumentation Ranges (TE/IR)
Command, Control, Communications & Intelligence (C3I)
Gunnery/Maintenance Trainers (GMT)
Battlefield Mobility/Target Acquisition (BM/TA)



LCCS WORLDWIDE

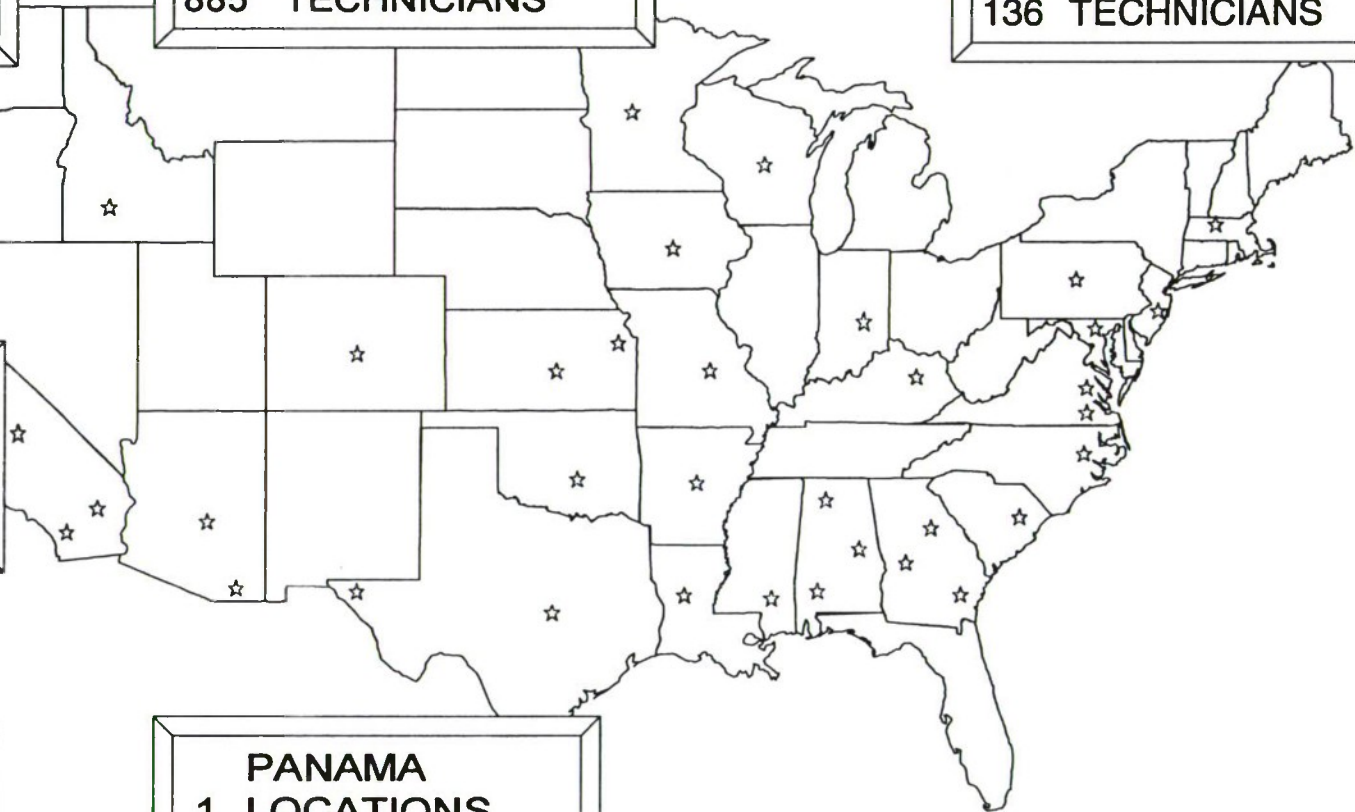


ALASKA
2 LOCATIONS
3 CONTRACTORS
4 TECHNICIANS

CONUS
37 LOCATIONS
7 CONTRACTORS
885 TECHNICIANS

EUROPE
16 LOCATIONS
5 CONTRACTORS
136 TECHNICIANS

HAWAII
2 LOCATIONS
3 CONTRACTORS
5 TECHNICIANS



KOREA
3 LOCATIONS
4 CONTRACTORS
14 TECHNICIANS

PANAMA
1 LOCATIONS
1 CONTRACTOR
2 TECHNICIANS

**FY 96 PROGRAM
\$125 MILLION**



PLANNED GROWTH IN LCCS CONCEPT



TURN KEY TRAINING

MILITARY UNIT

*Schedules & Transports
Soldiers to Contractor
Training*

CONTRACTOR

Trains Soldiers

MILITARY UNIT

receives

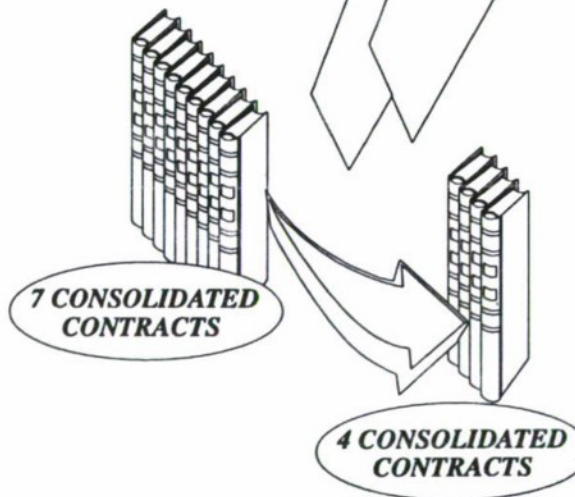
**TRAINED
SOLDIERS**

STANDARD SUPPORT

- ▶ *Supply*
- ▶ *Maintenance*
- ▶ *New Equip Trng*
- ▶ *Engineering Services*
- ▶ *Configuration/Data/Inv Mgmt*

**PDSS
RELOCATIONS
CONVERSIONS
MODS/UPGRADES**

**OPERATORS,
INSTRUCTORS,
ROLE PLAYERS,
FACILITY MGMT**





Current LCCS CONSOLIDATIONS



BATTLEFIELD MOBILITY/ TARGET ACQUISITION

FLIGHT SIMULATORS

- UH-1 MH-47
- CH-47 MH-60
- AH-1
- UH-60
- AH-64

ADFAC (I & II)

- WPN SYS DEV TRNR (HAWK)
- HAWK ADV TRNG SIM
- PATRIOT IMT
- STPT
- IFCST
- FIREFINDER OPER TRNR
- FIREFINDER MAINT TRNR
- FIREFINDER DS MAINT DEV
- MET DATA SYST OP TRNG
- MET DATA SYST MAINT
- ELEC INFO DEL SYST
- FIMT
- FOX

COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE

SIMNET

CCMSS

- BBS
- CBS
- SEOS
- MMT
- BMMT
- BEMT
- G2WS
- GRMT
- JANUS
- NCSRT
- ARTBASS
- TACSIM

FAMOPS

TACTICAL ENGAGEMENT/ INSTRUMEN. & RANGES

MILES

- BASIC
- M1/2/3
- AGES/AD1
- LTID
- MITS

CTC

- NTC-IS
- CMTC-IS
- JRTC-IIS
- AWSS

GUNNERY / MAINT TRNRS

- M1 COFT
- M1A1 COFT
- M2/M3, M2A1/M3A1 COFT
- M60A3 COFT
- ARMOR /BFV MT
- VIGS
- GUARDFIST I & II
(PROTOTYPE)
- FATMT
- M1 TDT
- M60A3 TDT
- TSFO
- PALADIN IMT
- PGT



PLANNED LCCS



OH - 58 CSMET
UH - 60 BEAT
UH - 60 COMPOSITE
JROMPS
GOTS
GIMT
MLRS TPT
FIREFINDER V8
UVA
DSCS

TQT/MT
CTS
IEWCS
CCTT
JRTC MOUNT
ASET IV
TWGSS/PGS
MILES AGES
PRIME
MILES 2000
OSV

JAVELIN
TSV
EST
PGTS
AGTS
A - FIST
M1A2 MT
M2A3/M3A3
FSCATT
MK - 19 GUNNERY



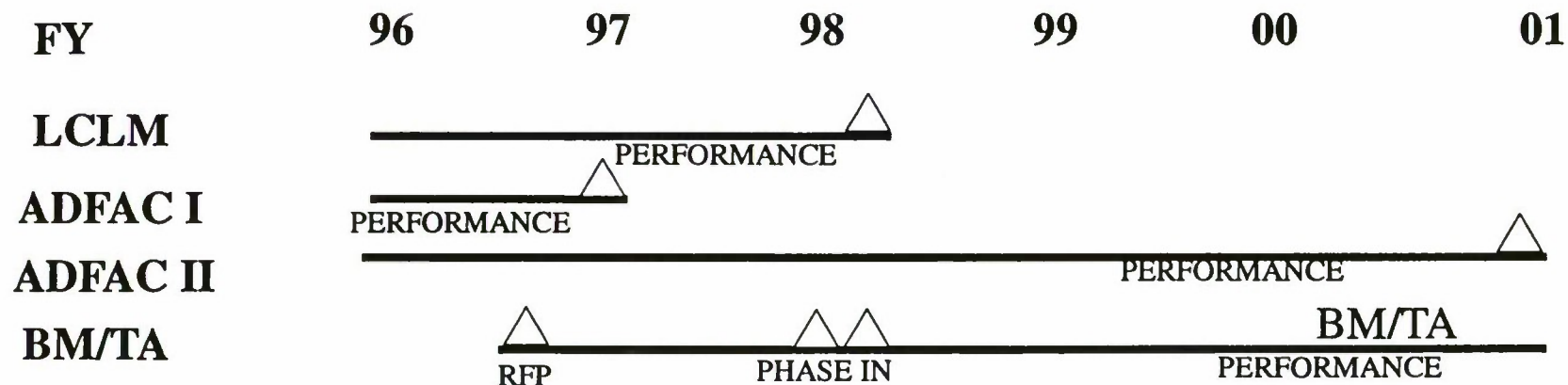
LIFE CYCLE CONTRACTOR SUPPORT BATTLEFIELD MOBILITY/TARGET ACQUISITION (BM/TA)



PURPOSE:

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

LCLM	SFTS (VISUAL) SFTS (NONVISUAL)	AV MAINT TRNRS TRANS MAINT TRNRS
ADFAC (I & II)	AIR DEFENSE ARTY TRNRS FIELD ARTY TRNRS	CHEMICAL TRNRS



FUNDING:

OMA 1 YEAR & 4 OPTION YEARS (MID RANGE \$50-150M)



LIFE CYCLE CONTRACTOR SUPPORT BATTLEFIELD MOBILITY/TARGET ACQUISITION (BM/TA)



ADDITIONAL SUPPORT

- AIRCRAFT ECP's and MWO's
- RELOCATION OF DEVICES
- INSTRUCTOR/OPERATORS



PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT BATTLE MOBILITY/TARGET ACQUISITION (BM/TA)



SYSTEM/FY	96	97	98	99	00	01
SFTS		LCLM	△			BM/TA
AV MAINT TRAINER		LCLM	△			BM/TA
TRANS MAINT TRAINER		LCLM	△			BM/TA
AIR DEFENSE ARTILLERY (ADFAC)	ADFAC (I)	△	ADFAC (II)	△		BM/TA
FIELD ARTILLERY TRNRS (ADFAC)	ADFAC (I)	△	ADFAC (II)	△		BM/TA
CHEMICAL TRNRS (ADFAC)	ADFAC (I)	△	ADFAC (II)	△		BM/TA
FSATS (ADFAC)	ADFAC (I)	△		ADFAC (II)		△
GUARDFIST II, IIA (ADFAC II)			ADFAC II			△



LIFE CYCLE CONTRACTOR SUPPORT COMMAND, CONTROL, COMMUNICATION and INTELLIGENCE (C3I)

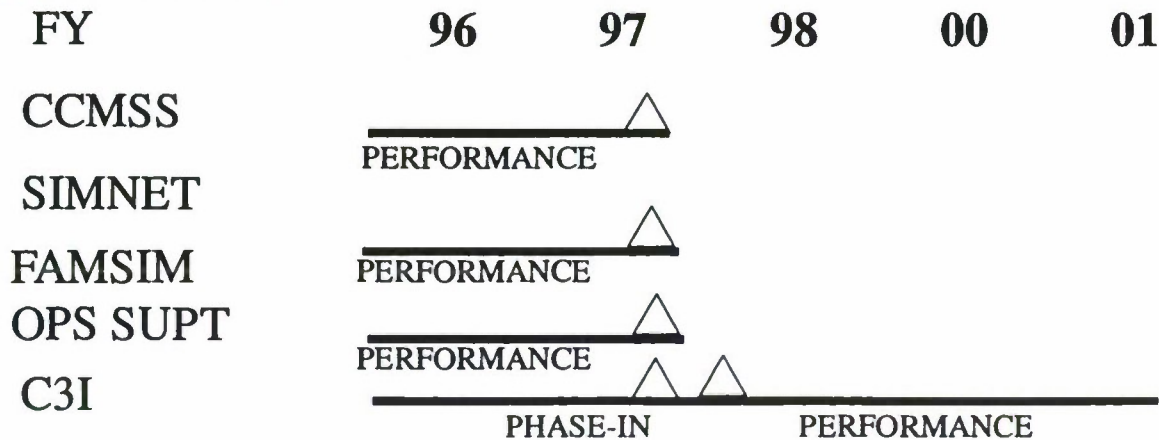


PURPOSE:

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

SIMNET	BMMT	NCSRT	DSCS
BBS	BEMT	ARTBASS	CTS
CBS	G2WORKSTATION	TACSIM	TQT/MT
SEOS	GUARD RAIL/MT	FAM OPS SUPT	IEWCS
MMT	JANUS	UAV	CCTT (QUICKSTART)
			CCTT

TIMELINES:



FUNDING: OMA 1 YEAR AND 4 OPTION YEARS (HIGH RANGE \$150M - 200M))



**LIFE CYCLE CONTRACTOR SUPPORT
COMMAND, CONTROL, COMMUNICATION
& INTELLIGENCE
(C3I)**



ADDITIONAL FUNCTIONS SUPPORTED WITHIN THE CONTRACT

- OPERATIONAL SUPPORT FOR FAMSIM DEVICES
- DEINSTALLATION-MOVEMENT-REINSTALLATION
- MODIFICATIONS/UPGRADES
- STOW / AWE / FORCE XXI



**PLAN FOR LIFE CYCLE CONTRACTOR
SUPPORT COMMAND, CONTROL,
COMMUNICATION AND INTELLIGENCE
(C3I)**



SYSTEM/FY	96	97	98	99	00	01
SIMNET	SIMNET	△		C3I		
BBS	CCMSS	△		C3I		
CBS	CCMSS	△		C3I		
SEOS	CCMSS	△		C3I		
MMT	CCMSS	△		C3I		
BMMT	CCMSS	△		C3I		
BEMT	CCMSS	△		C3I		
G2 WORK STATION	CCMSS	△		C3I		
GRMT	CCMSS	△		C3I		
JANUS	CCMSS	△		C3I		
NCSRT	CCMSS	△		C3I		
ARTBASS	CCMSS	△		C3I		
TACSIM	CCMSS	△		C3I		
FAM OPS SUPT	OPS	△		C3I		



PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT COMMAND, CONTROL, COMMUNICATION and INTELLIGENCE (C3I)



SYSTEM/FY	96	97	98	99	00	01
UAV		△				C3I
DSCS		△				C3I
CTS		△				C3I
TQT/MT			△			C3I
IEWCS			△			C3I
CCTT (QUICK START)				△		CCTT
CCTT				△		CCTT



LIFE CYCLE CONTRACTOR SUPPORT TACTICAL ENGAGEMENT, INSTRUMENTATION & RANGES (TEI&R)

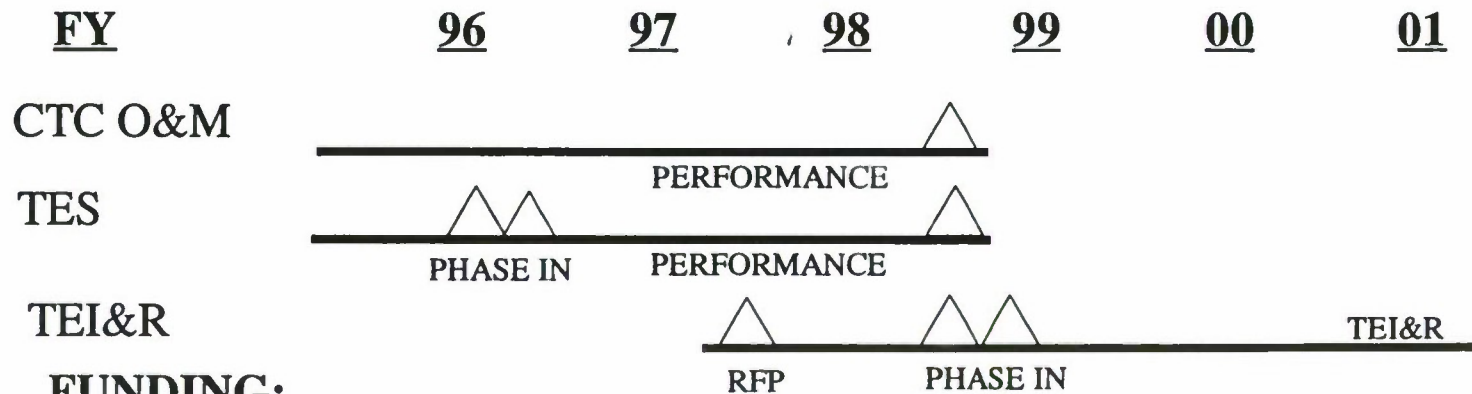


PURPOSE:

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

NTC-IS	OCCS	MILES	AGES II
CMTC-IS	JRTC-MOUT	MIT	PRIME
JRTC-IIS	JRTC-IS	SAWE-MILESII	MILES 2000
AWSS	ASET IV	TWGSS/PES	

TIMELINES:



FUNDING:

OMA 1 YEAR & 4 OPTION YEARS (HIGH RANGE - GREATER THAN \$200M)



LIFE CYCLE CONTRACTOR SUPPORT TACTICAL ENGAGEMENT, INSTRUMENTATION & RANGES (TEI&R)



ADDITIONAL SUPPORT

- FIRE MARKER PERSONNEL
- MOTOR POOL MAINTENANCE
- MILES WAREHOUSE
- TAF ANALYSTS
- SMOKE PLATOON PERSONNEL
- SAWE/MILES II TRAINERS
- VIDEO PRODUCTION PERSONNEL
- TAKE HOME PACKAGES
- CLASSROOM 21
- CIVILIANS ON THE BATTLEFIELD



PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT TACTICAL ENGAGEMENT, INSTRUMENTATION & RANGES (TEI&R)



SYSTEM/FY	96	97	98	99	00	01
NTC-IS	CTC O&M		△	TEI&R		
CMTC-IS	CTC O&M		△	TEI&R		
JRTC-IIS	CTC O&M △					
AWSS	CTC O&M		△	TEI&R		
OCCS	CTC O&M		△	TEI&R		
JRTC-MOUT	△	CTC O&M	△	TEI&R		
JRTC-IS	△	CTC O&M	△	TEI&R		
ASET IV	△	CTC O&M	△	TEI&R		
MILES	MILES △	TES	△	TEI&R		
MITS	MILES △	TES	△	TEI&R		
SAWE-MILES II	MILES △	TES	△	TEI&R		
TWGSS/PGS	△	TES	△	TEI&R		
AGES II	△	TES	△	TEI&R		
PRIME (COMPANY)	△	TES	△	TEI&R		
MILES 2000			△	TEI&R		



LIFE CYCLE CONTRACTOR SUPPORT GUNNERY/ MAINTENANCE TRAINERS (GMT)

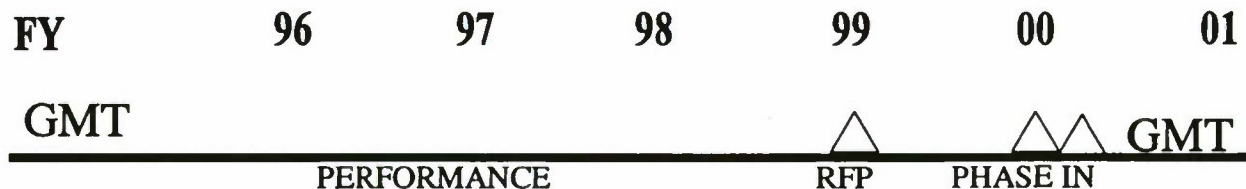


PURPOSE:

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

COFT	M1 TDT	TSV	A-FIST
ARMOR/BFV MT	M60A3 TDT	EST	M1A2 MAINT TNR
VIGS	TSFO	PGTS	M2A3/M3A3 MAINT
GUARDFIST I & II	PALADIN IMT	AGTS/M1A2	FSCATT
FATMT	PGT	AGTS/BFV	MK-19 GUNNERY

TIMELINES:



FUNDING:

OMA 1 YEAR & 4 OPTION YEARS (LOW RANGE \$25M - 50M)



LIFE CYCLE CONTRACTOR SUPPORT GUNNERY MAINTENANCE TRAINERS (GMT)



ADDITIONAL SUPPORT FUNCTIONS AVAILABLE

- TRAINER SITE SURVEY
- TRAINER PAD CONSTRUCTION
- TRAINER RELOCATION (DEINSTALLATION, MOVEMENT AND INSTALLATION)
- TRAINER MODIFICATION KITS: DEVELOPMENT
 PRODUCTION
 INSTALLATION
- SURGE SUPPORT
- INSTRUCTOR / OPERATORS



PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT GUNNERY/MAINTENANCE TRAINERS (GMT)



SYSTEM/FY	96	97	98	99	00	01
COFT		GMT			△	GMT
ARMOR/BFV MT		GMT			△	GMT
VIGS		GMT			△	GMT
GUARDFIST I & II (PROTO)		GMT			△	GMT
FATMT		GMT			△	GMT
M1 TDT		GMT			△	GMT
M60A3 TDT		GMT			△	GMT
TSFO		GMT			△	GMT
PALADIN IMT		GMT			△	
PGT	△	GMT			△	GMT
TSV	TSV △	GMT			△	GMT
EST	EST △	GMT			△	GMT
PGTS	PGTS		△ GMT		△	GMT
AGTS/M1A2	AGTS		△ GMT		△	GMT



PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT GUNNERY/MAINTENANCE TRAINERS (CONT) (GMT)



SYSTEM/FY	96	97	98	99	00	01
AGTS/BFVS				△ GMT	△	GMT
A - FIST				△ GMT	△	GMT
M1A2 MAINT TNR				△ GMT	△	GMT
M2A3/M3A3 MAINT TNR					△	GMT
FSCATT					△	GMT
MK-19 GUNNERY TNR						△ GMT



**DIRECTORATE
FOR
RESEARCH AND ENGINEERING
MANAGEMENT**

ADVANCE PLANNING BRIEFING FOR INDUSTRY

2 MAY 1996

**EDWIN A. TRIER
DIRECTOR**

STRICOM
17 APR 96

TOPICS

- Tech Base
 - ▶ Process
 - ▶ Focus
 - ▶ Leveraging
- New Solicitation
 - ▶ Requirements
 - ▶ Acquisition Strategy
 - ▶ Time Lines

BAA Update & Contract Schedule

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
Research Topics from E & PM's		▲		▲										
Tech Base Council Reviews			▲		▲									
Publish BAA Changes via Contracts				▲		▲								
White Paper Received				■		■								
Evaluate						■		■						
Proposal Request								▲		▲				
Evaluate								■		■				
Awards									■		■			

■ = FY 97 ■ = FY 96

BAA FOCUS

- STRICOM Focus Call: 12 April 1996
- Determine Focus for FY 97: Early May 1996
- Provide Focus to Industry: Early June 1996
 - ▶ CBD
 - ▶ Bulletin Board
- Review FY 96 White Papers
- Review FY 97 Submittals

COOPERATIVE AGREEMENT UNDER 10 U.S.C. 2371 & 2358

- Legal instrument transferring "thing of value" from the government to a recipient
- Substantial government involvement
- Not a substitute for a procurement contract
- Suitable for research relative to a specific system or area of potential interest

ADVANTAGES TO STRICOM

- Relationship allows sharing of costs between partners - leverage R&D funds - leverage private sector investment
- Exchanges of personnel - free flow of ideas between researchers
- Shares risk between all parties - everyone has a stake in outcome
- Agency retains control of research direction and emphasis but takes advantage of industry technological lead

ADVANTAGES TO INDUSTRY

- Dual use technologies developed can be used by Industry to develop commercial products
- Provides Industry partner with better understanding of technologies developed and military applications
- Use of Government funds to aid commercial R&D efforts
- Non-traditional military contractors encouraged to participate because commercial practices can be utilized
- Strengthens commercial and military industrial base

ADVANTAGES TO ACADEMIA

- Increase their research funds
- Allows for student - government - industry exchange of personnel
- Create areas of expertise at a particular university

INTELLECTUAL PROPERTY PROVISIONS

- Flexibility in Intellectual Property Rights
- General government goals
 - ▶ Gain knowledge of latest innovative research and technology
 - ▶ Stimulate joint government/industry/academia development of emerging dual-use technologies
 - ▶ Enable parallel development of commercial and military applications
 - ▶ Strike a reasonable balance between commercial and military interests

LIFE CYCLE ENGINEERING SUPPORT CONTRACT

WHY NOW?

- CECOM/Nations Contract Ends July 1997
- STRICOM/Nations has Low Ceiling
- SEI Contract - Retain Focus on DIS

Life Cycle Engineering Support Contract

Purpose

- Provide Engineering Support to STRICOM Programs in All Phases of the Life Cycle
- Supplement STRICOM Engineering Resources to Meet Customer Needs
 - ▶ Customers are Project Managers for Developmental Systems and Logistics Directorate for Deployed Systems
- Services to be Provided Include:
 - ▶ Systems, Project and Software Engineering Management
 - ▶ Software and System Architecture
 - ▶ Independent Verification and Validation
 - ▶ Specialty Engineering (Safety, Security, Facilities, EMI, Audio/Visual, Communications, Artificial Intelligence, Domain Engineering ...)
 - ▶ Post Deployment Software Support

CONTRACT FEATURES


- Competitive
- Best Value
- Past Performance Review
- Acquisition Streamlining Concepts will be Employed
- Proposal Will Consist of Both Written and Oral Presentations of Technical and Management Areas
- Basic Plus Four Options

PRELIMINARY SCHEDULE MILESTONES

- Issue Synopsis May 96
- Solicitation Package on Bulletin Board July 96
- Release RFP September 96
- Contract Award April 97



PM ITTS



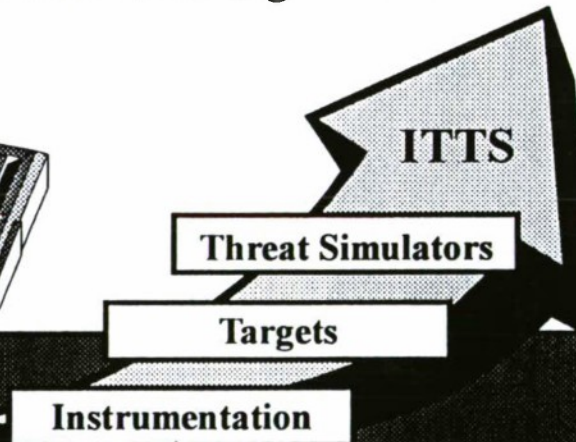
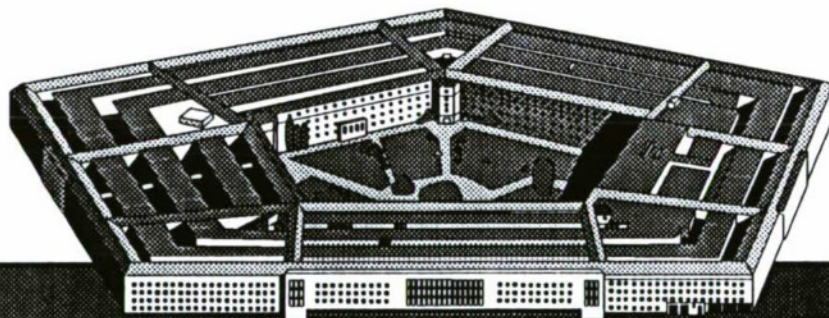
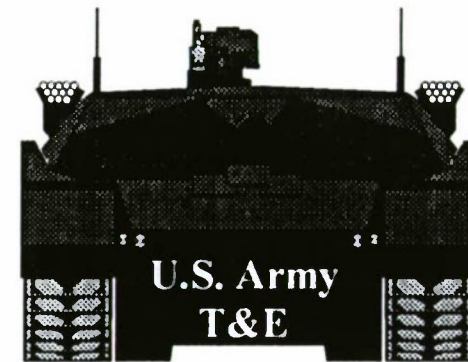
Advanced Planning Brief for Industry (APBI) 1996



Mission



- **Manage the Research, Development, Design, Acquisition, Fielding, Modification and Capability Accounting of Targets, Threat Simulators and Major Instrumentation Required for Technical and Operational Test and Evaluation for the U.S. Army.**
- **Operate and Maintain Targets for Test and Training**





PM ITTS (5)

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Project Manager for Instrumentation, Targets and
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e-mail: overstrl@stricom.army.mil
DPM: **Henry I. Jehan, Jr.**
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IMO (16)

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e-mail: tuttenm@stricom.army.mil



CONTRACTS



- PM ITTS submits contracts thru various procurement agencies
- **STRICOM/ NAWC** - Instrumentation
- **MICOM** - Targets & Threat Simulators
- **TECOM Test Centers** - Range facilities & Instrumentation



MAJOR TECHNOLOGY THRUSTS



- **Build the Virtual Test Environment**
 - VPG
 - VTTR
- **Populate the Virtual Test Environment**
 - Virtual Targets & Threat Simulators
- **Interface between existing Instrumentation and the Virtual Environment**
 - Live to Virtual, Live to Constructive



MAJOR TECHNOLOGY THRUSTS



- **Embedded Instrumentation**
 - HST
- **Emerging Technology Instrumentation**
 - Future Armor concepts
 - Liquid Propellants
 - Electric Drive Vehicles
 - Advanced Sensors
- **RF Injection for open air testing**



Instrumentation Management Office



- **Develops Major Instrumentation**
 - **Electromagnetic, Optical, Audio, Mechanical, Etc.**
 - **Detect, Measure, Record, Telemeter and Process**
 - **Analyze Physical Parameters or Quantities**
 - **Used for Technical or Operational Testing**



HARDENED SUBMINIATURE TELEMETRY AND SENSOR SYSTEM DEVELOPMENT



- **Program Description:** Define, design, develop, build and quantify prototype high G hardened data acquisition and telemetry system.
- **Timeline:**
 - Estimated RFP release: Feb 97
 - Estimated Contract Award: Oct 98
- **Funding:** Low
- **Status:** Ongoing Concept Exploration



FREQUENCY SURVEILLANCE SYSTEM



- **Program Description:** Surveillance of radio frequency spectrum used at WSMR.
- **Timeline:**
 - Estimated RFP Release: July 96
 - Estimated Contract Award Date: Feb 97
- **Funding:** Low
- **Status:** On Schedule



VIRTUAL TEST & TRAINING RANGE



- **Program Description:** This project will develop a concept and provide a demonstration of the techniques for creating a virtual test range environment. The project will explore the extension of the concept to interface with and support training.
- **Timeline:**
 - Estimated RFP Release: 4Q FY98
 - Estimated Contract Award: 2Q FY99
- **Funding:** Low
- **Status:** Performing requirements analysis

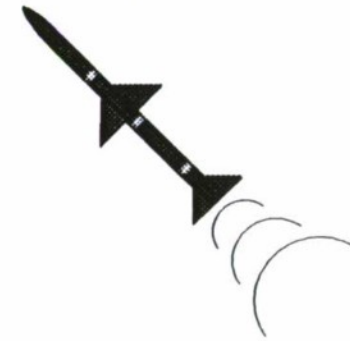
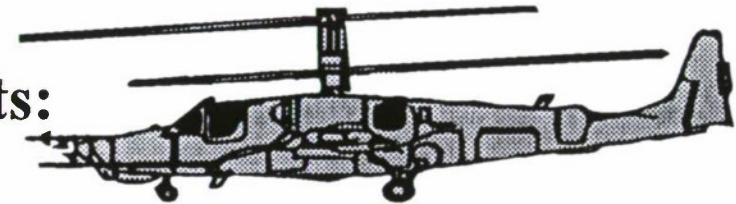


Targets Management Office



- **Develops, Fields, and Supports:**

- **Ground or Airborne Vehicles**
- **Supports Testing and Training**
- **Economical and Expendable**
- **Remotely Controlled or Stationary**
- **Often Destroyed in Test**



- **DOD Lead for Ground and Rotary Winged Target Development**



AERIAL TARGET FLIGHT SERVICES



- **Program Description:** Operation and maintenance contract for MQM-107/ MQM-34 subscale fixed wing target, QH-50 subscale helicopter targets, and the QUH-1 full scale rotary wing target. Target aircraft are flown at numerous CONUS/ OCONUS ranges to support ADA training, RDTE for the tri-services and foreign military sales requirements.
- **Timeline:**
 - Estimated RFP Release: Jan 99
 - Estimated Contract Award: Oct 99
- **Funding:** Low
- **Status:** On Schedule



HOKUM-X



- **Program Description:** Production of a full scale aerial target which emulates the Russian Ka-50 Helicopter. It will support major weapon system T&E.
- **Timeline:**
 - Estimate RFP Release: March 97
 - Estimate Contract Award: Jan 98
- **Funding:** Low
- **Status:** On Schedule



BATS

(Ballistic Aerial Target System)



- **Program Description:** A versatile, troop operated training target that can be flown at low and medium altitudes to simulate the trajectory of high performance threat aircraft. The BATS is used for training personnel in air defense gunnery and is mainly used for infrared homing systems such as CHAPARRAL and STINGER.
- **Timeline:**
 - Estimated RFP Release: March 97
 - Estimated Contract Award: Jan 98
- **Funding:** Low
- **Status:** On Schedule



MQM-107 PRODUCTION



- **Program Description:** Manufacture and integration of MQM-107 airframes, plus engineering services. Separate contract for engines.
- **Timeline:**
 - Estimated RFP Release: Jan 99
 - Estimated Contract Award: Jan 00
- **Funding:** Low
- **Status:** On Schedule



SCORING SERVICES AND HARDWARE



- **Program Description:** Scoring field operational services, engineering services and hardware required to support gunner qualification against sub-scale aerial targets. Contractor support entails the operation and maintenance of ground stations and scoring devices tailored to each target.
- **Timeline:**
 - Estimated RFP Release: May 96
 - Estimated Contract Award: Oct 96
- **Funding:** Low
- **Status:** On Schedule



NEW GENERATION ARMY TARGETRY SYSTEM (NGATS)



- **Program Description:** Mobile, transportable, and deployable system capable of continuous support during unit training periods. Will be used by unit commanders to support training worldwide during live fire exercises at home station, combat training centers and OCONUS theaters of operation.
- **Timeline:**
 - Estimated RFP Release: Nov 96
 - Estimated Contract Award: May 97
- **Funding:** Low
- **Status:** On Schedule



FOREIGN MATERIEL SPARES



- **Program Description:** These spares are required for the operation and maintenance of a fleet of Confederation of Independent States, wheeled and tracked military vehicles.
- **Timeline:**
 - Estimated RFP Release: May 96
 - Estimated Contract Award: Dec 96
- **Funding:** Low
- **Status:** On Schedule



TOWED TARGET ENGINEERING SERVICES



- **Program Description:** Engineering services required in support of the TMO Towed Target and infrared devices program.

- **Timeline:**

- Estimated RFP Release: Jan 97
- Estimated Contract Award: Oct 97

- **Funding:** Low

- **Status:** On Schedule

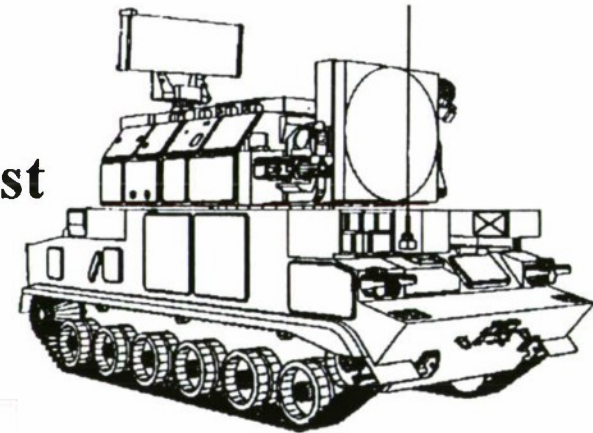


Threat Simulator Management Office



- **Develops and Fields**

- **Representative Threat Systems**
- **Provides Appearance of Actual Threat**
- **Prescribed Degree of Fidelity**
- **Used for Testing and Training**
- **Small Numbers and Relatively Expensive/Not Destroyed in Test**





XM17S THREAT SIMULATOR



- **Program Description:** Advanced Air-Defense System. Follow-on to the XM11S.
- **Timeline:**
 - Estimated RFP release: 1Q FY97
 - Estimated Contract Award: 1Q FY98
- **Funding:** Low
- **Status:** On schedule



VIRTUAL THREAT SIMULATIONS



- **Program Description:** Virtual simulations to fill battlefield densities of current & future Army Threat Simulators (i.e. XM330S, XM43S, XM15S, XM17S, XMC3S).
- **Timeline:**
 - Estimated RFP release: 1Q FY97
 - Estimated Contract Award: 1Q FY98
- **Funding:** Currently unfunded
- **Status:** Ongoing requirements analysis



TEAMING INTO THE 21ST CENTURY WITH



Distributed Interactive Simulation (DIS)

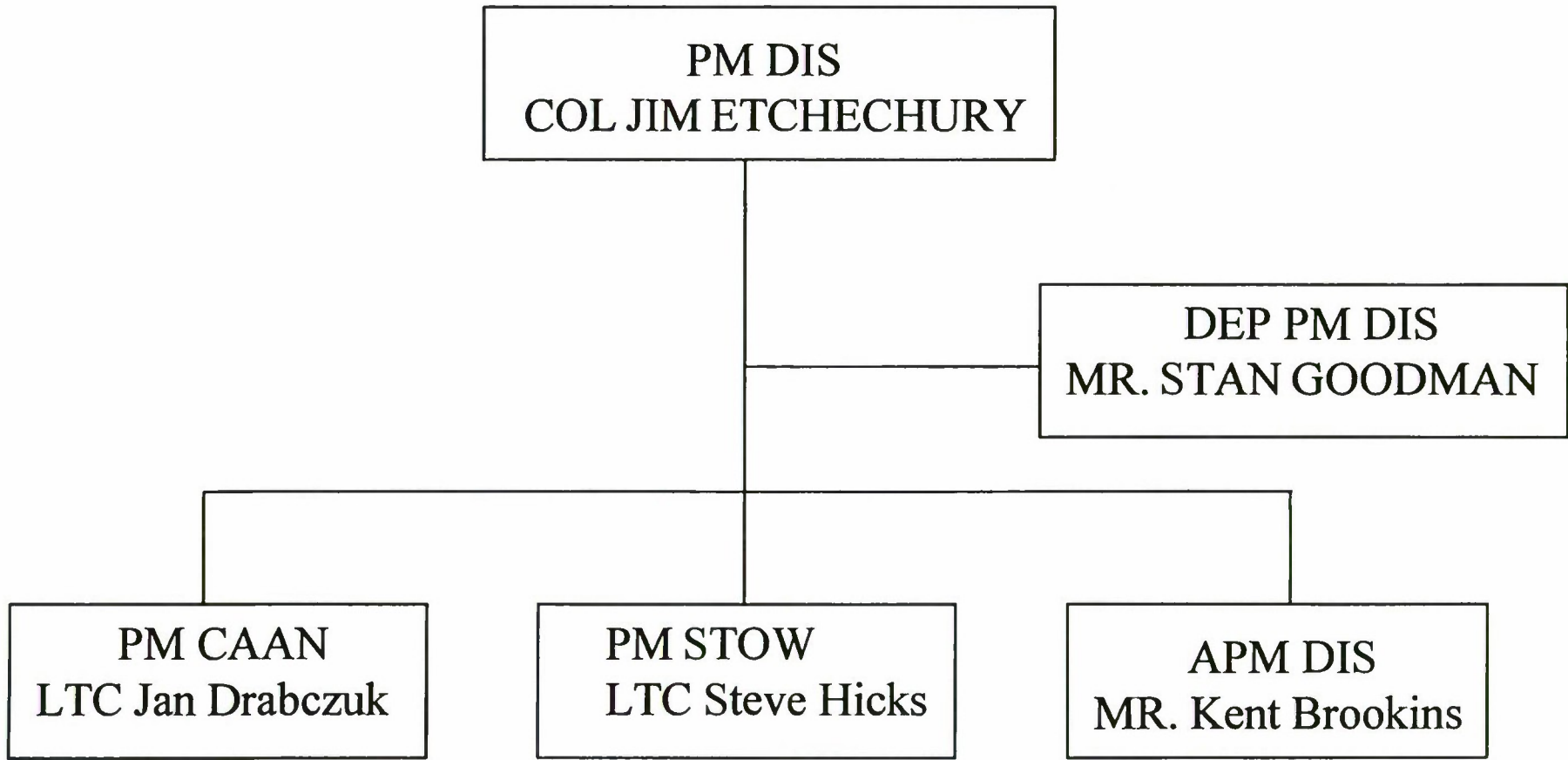


INDUSTRY DAY
30 APRIL - 2 MAY

Mr. Stan Goodman
Deputy PM DIS
STRICOM



ORGANIZATION





PM DIS MISSIONS



- DoD Lead For DIS Standards & Architecture.
- Army DIS Technical Manager.
- Maintains Army Modernization Plan & MDEP.
- Supports Army Master Plan.
- DIS Technical Configuration Management.
- Special Programs - - ModSAF and BLRSIM.
- Coordinates DoD Exploitation of Emerging Technologies.
- Collaborates with DMSO on HLA and DARPA on Developing Research.



PM DIS CONTRACT SUPPORT



- ADST II :

- Base Year and Four One-year Options.
- Indefinite Quantity DO Structure for Rapid Response / Flexibility.
- Three Testbeds and Contractor Base Facility.
- Conducts Customer Funded Developmental Work using DIS Technologies.

- SEI:

- Systems Engineering & Integration Services for DIS Technical Integration.
- Supports DIS Configuration Management and Databases.
- Supports ModPlan Investment & Technical Strategy.
- Executes Systems Experiments, Testing Support, VV & A Studies.



BACKGROUND



HISTORY

- March 1990, technology program established to develop DIS technology.
- March 1991, ADST contract awarded to Loral.
- ADST II is a follow-on to the current ADST contract.
- Awarded to Lockheed Martin 23 October 1995.

ADST II Scope

- Provide Laboratory Sustainment Effort (LSE) and Delivery Orders (DOs) Support.
- Changes incorporated to allow for a more robust LSE capability.

ADST II MISSION

- Provide an environment for development of technology to support DIS objectives resulting in increased credibility and use of the synthetic environment.
- Operational responsibility to support the existing CDFs and development of any future CDFs.





DELIVERY ORDER TYPES



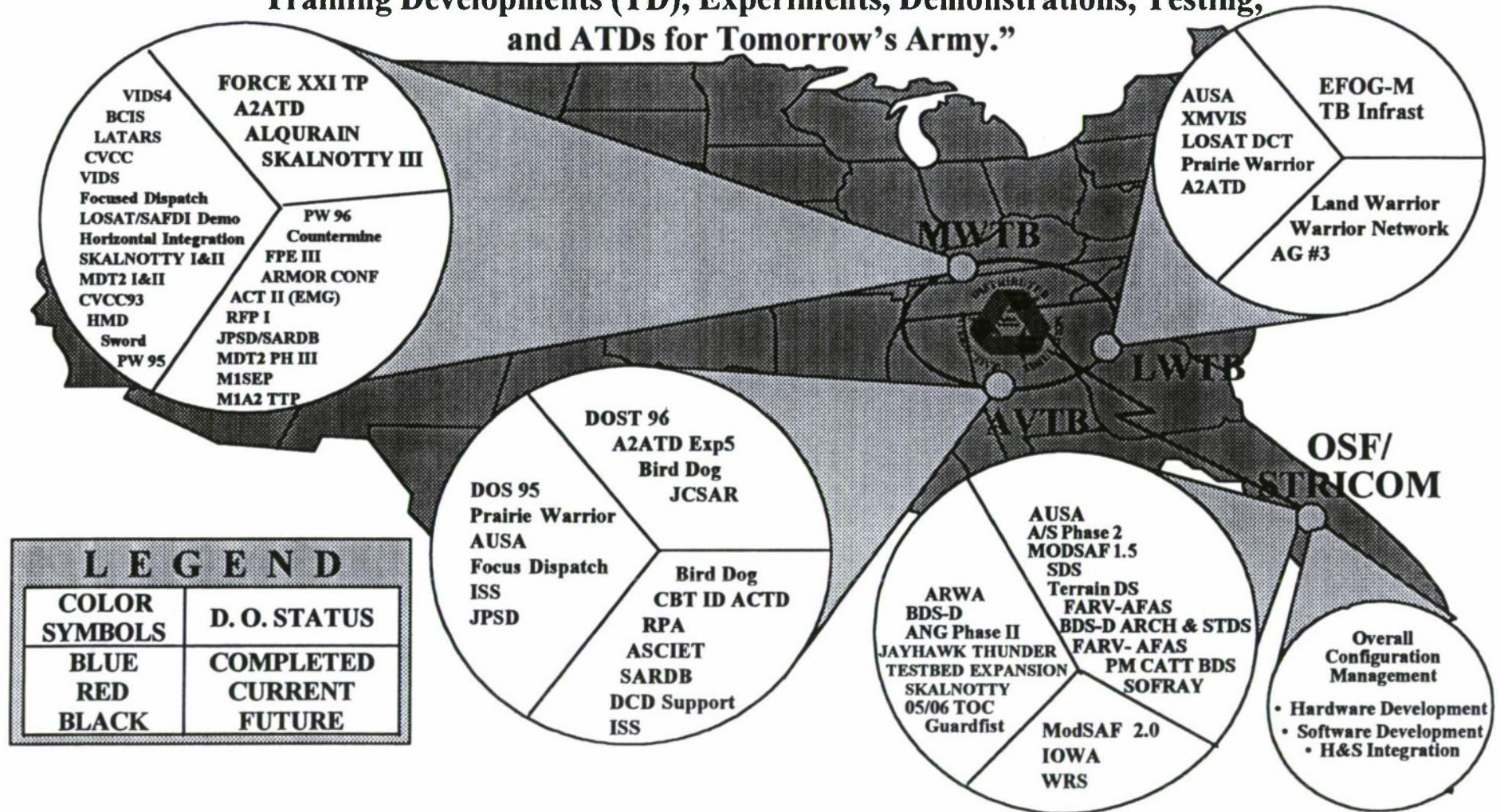
TYPE	CONTENT	COMPLEXITY FACTORS
Feasibility Analysis Study	<ul style="list-style-type: none"> •Continued Reqs Analysis. •Identify/Evaluate Alternatives. •WS/ROM for Alternatives. •FAS Report. 	<ul style="list-style-type: none"> •Study Oriented. •No Development.
Standard DO	<ul style="list-style-type: none"> •Engineering Development. •Experiment/Exercise. •Infrastructure Upgrades. 	<ul style="list-style-type: none"> •Formal Qual/Acceptance Testing. •SW Standards. •CM Process. •System Engineering Oversight.
Fast Prototype	<ul style="list-style-type: none"> •Significant Unknowns. •Engineering Development Models. •Cyclic Design-Build-Test. •Early Confirmation of Approach. 	<ul style="list-style-type: none"> •Cyclic Design-Build-Test. •Prototype Control CM. •Transition to Deliverable Product.
Demonstration	<ul style="list-style-type: none"> •Typically No Engineering Dev. •Similar to Fast Prototype. •Demonstration of Capabilities. •Use of Existing Assets. 	<ul style="list-style-type: none"> •Resource Scheduling. •Equipment Movement. •WAN Connectivity. •Use of Existing Assets.
Site Activation	<ul style="list-style-type: none"> •Mission Analysis. •Equipment Analysis. •Facilities Planning. •Reallocation of Assets. 	<ul style="list-style-type: none"> •Mission Analysis. •Equipment Analysis. •Facilities Planning. •Reallocation of Assets.



U.S. ARMY CORE DIS FACILITIES (CDFs)



“Where Today’s Army conducts Combat Development (CD), Materiel Developments (MD), Training Developments (TD), Experiments, Demonstrations, Testing, and ATDs for Tomorrow’s Army.”



LEGEND

COLOR SYMBOLS	D. O. STATUS
BLUE	COMPLETED
RED	CURRENT
BLACK	FUTURE



TECHNICAL ISSUES



- **Interoperability and Terrain Database Standards:**
 - Dissimilar Simulators (STRICOM focus to date on Virtual).
- **Modular, Reusable Software:**
 - Object-Oriented, MODSIM-Like Host Software.
 - Software Methodologies (Reengineering, Reuse, Domain Analysis).
- **Reconfigurable Level II Simulators for Sites:**
 - Rotary Wing, Armor, Fire Control, C2, CSS.
- **Dynamic Environment:**
 - Terrain Atmosphere; Impact on IG.
- **Seamless Simulation (Virtual <-> Constructive <-> Live):**
 - STRICOM focus on Virtual SIM and Virtual <-> Constructive Link.
- **SAFOR:**
 - Functionality Enhancements and C3.
 - SAF Merge (MODSAF and CCTT SAF).
- **Virtual Reality:**
 - Focused on Dismounted Infantry Applications.
- **Architecture Enhancements:**
 - High Level Architecture/ Platform Prototype Federations.
- **Validated Models.**



THE TEAM



LOCKHEED MARTIN

SAIC
Science Applications International Corporation

USERS

Core Team

INDUSTRY

TASC, Hughes Training, LB&M,
Mystech, Booz-Allen, Cubic Defense Systems, UDLP,
CGSD, RTI, Contraves, Paradigm, Dual, Nations, Sikorsky,
MaK Consortium, Quality Research.

Pre-Qualified
Teammates

INDUSTRY

SARCOS, Nichols Research,
Sparta, Veda, Acusoft, Illusion,
Coleman Research, Loral,
Cubic Applications.

ACADEMIA

U of Iowa, Clark University, Duke,
U of Central Florida, Georgia Tech,
U of Michigan, North Carolina State U,
U of North Carolina, North Carolina A&T,
Norfolk State University, U of Pennsylvania.

Other
Potential
Teammates

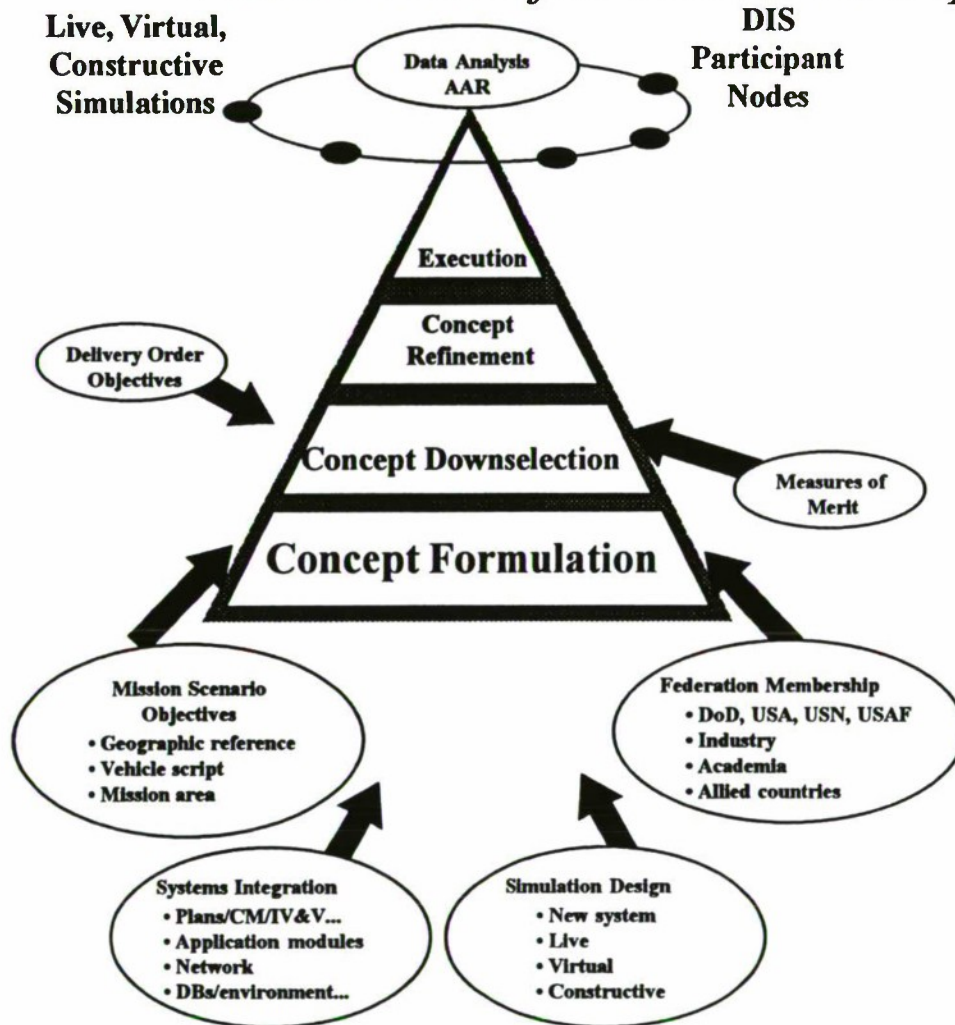
GOAL: Provide STRICOM with the optimum set of available resources to effectively support the DIS synthetic environment operation and maximize further development.



THE SEI PROGRAM



“Foster the use of DIS across the acquisition and operational domains!”



•End-to-end SEI Support Exercises & Milestones

•Core Services --

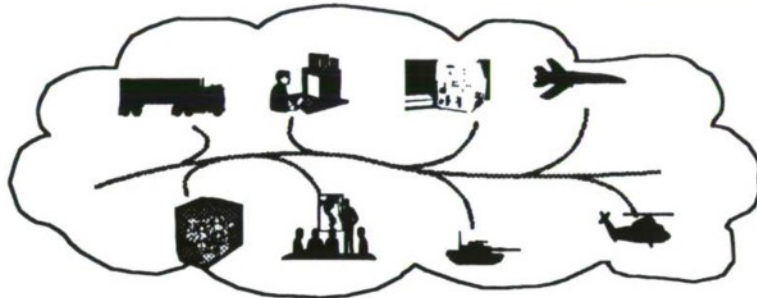
- Education
- Data collection and dissemination
- Integration support
- Certification testing
- Correlation metrics
- Test support

•SE/SI Services--

- Long-range planning
- Requirements analysis
- Feasibility analysis
- Architecture development
- Proof-of-concept demonstrations
- Independent V&V
- Technology insertion
- Integration of simulators(ions), instrumentation, and training devices
- Exercise support
- After action review



OPPORTUNITIES



- ★ STAY EDUCATED!
- ★ STAY CURRENT!
- ★ KNOW DIS!

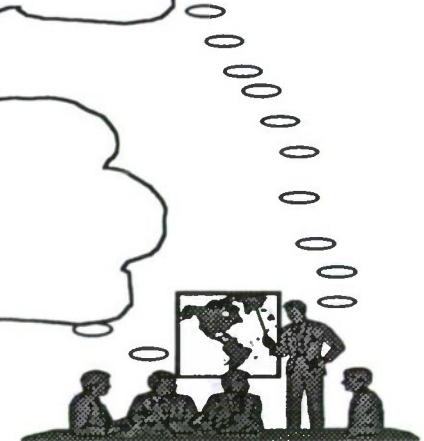
A Global Network of Seamless, Interactive, dissimilar Sim Sites working on the key phases of Military Ops.



TEAM AS SUB-CONTRACTOR:

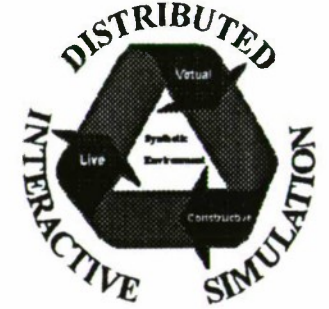
- ✓ ADST II.
- ✓ SEI.

- ✓ SIGN CRDAs.
- ✓ AMC RDECs.
- ✓ TRADOC BATTLE LABS





DIS INFORMATION MANAGEMENT



- **DMSTTIAC.**

- **RDE-NET.**



INTRODUCTION TO DMSTTIAC



- Technical domains of DMSTTIAC:

- Modeling, Simulation, and Training.
- Test and Evaluation.
- Tactical Technology.
- Special Operations.

- Chartered by the Office of the Under Secretary of Defense Acquisition and Technology OUSD (A&T).



- Key Organizations

Sponsors	Defense Technical Information Center (DTIC). Defense Modeling and Simulation Office (DMSO).
Technical Management	<i>Smart Weapons Management Office (SWMO).</i>
Contracting Agency	Defense Electronics Supply Center (DESC).
Operator	IIT Research Institute (IITRI) along with 14 Team members.

DMSTTIAC provides context-sensitive and timely information to customers through its technical experts, databases, and models.

POC: William G. Grigson, DMSTTIAC Orlando Operations, TEL 407-282-6400

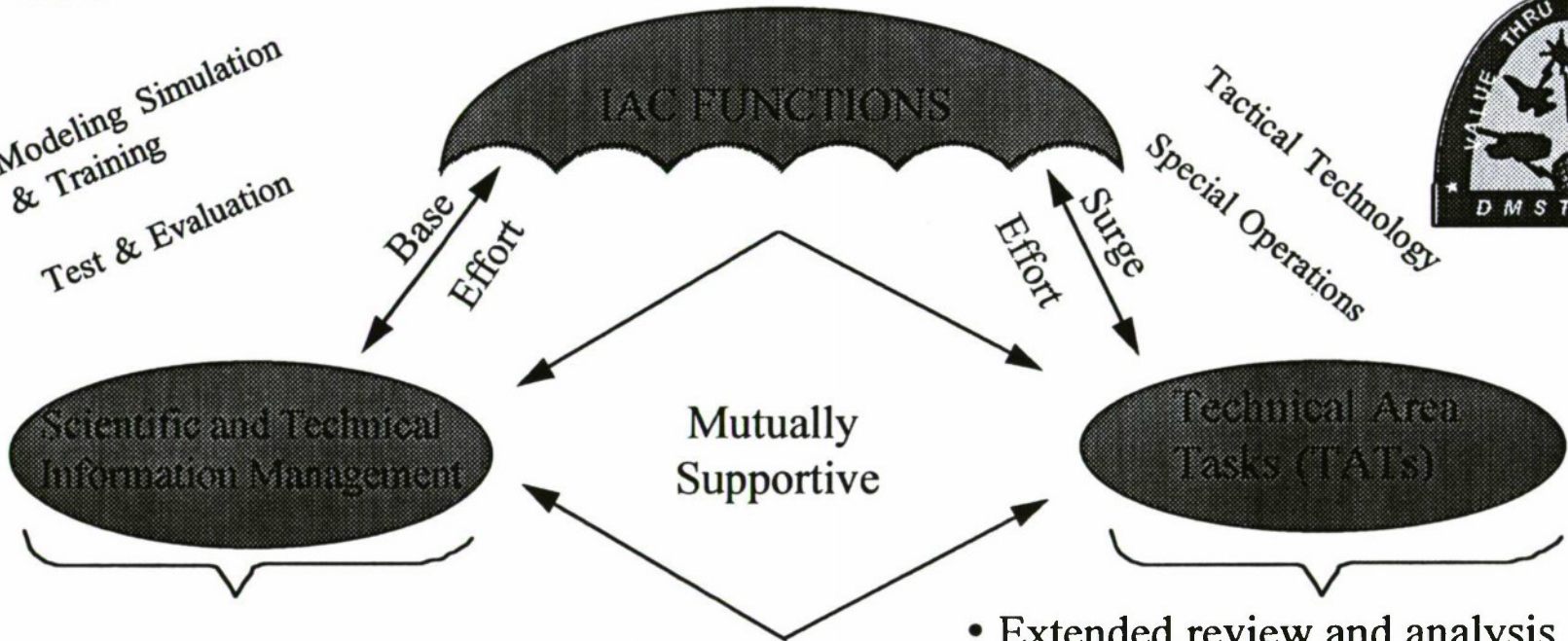


DMSTTIAC STRUCTURE



Modeling Simulation
& Training
Test & Evaluation

Tactical Technology
Special Operations



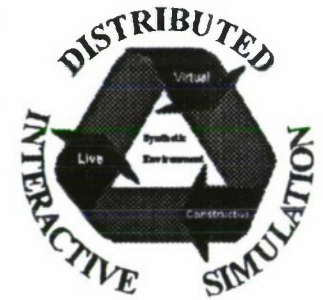
- Information acquisition, Access, and Collection.
- Information Processing and Management.
- Information Analysis.
- Information Dissemination.

- Extended review and analysis specific topics.
- Quick response to a Specific Requiring Agency need (s).
- Tasks individually tailored to need.
- Requires a staff of specialized experts.

Standardization Enhancement
Improved Productivity of Scientific and Engineering Community



RESEARCH, DEVELOPMENT & ENGINEERING NETWORK (RDE-NET)

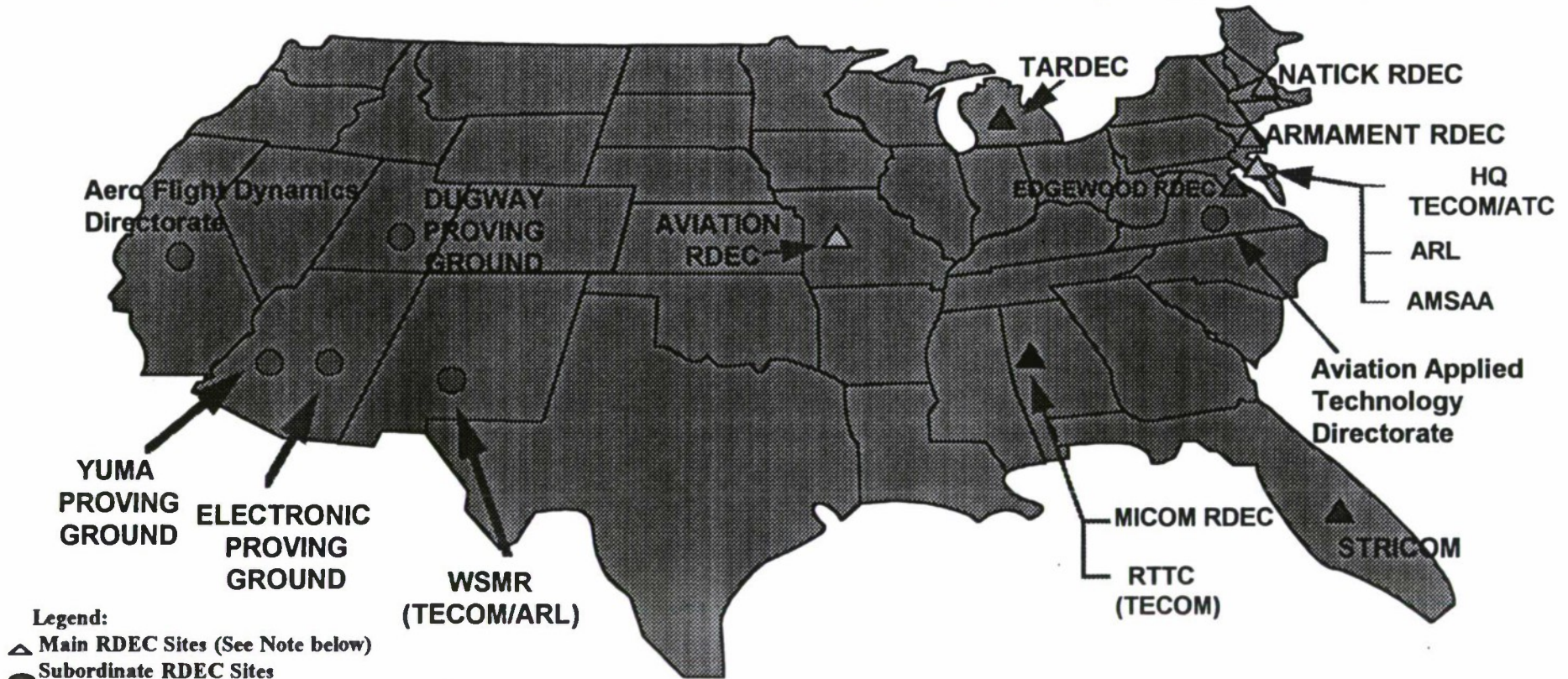


Purpose.

- Improve Integration of DIS within AMC.
- Promote AMC Synthetic Environment Capabilities.

Composition of Data.

- DIS, M&S, and Instrumentation facilities/hardware.
- General Capabilities and Organization Structure.
- Activities & Exercises (AWEs, ATDs, Experiments).
- DIS Lessons Learned, AAR, Calendar of Events.



Legend:

- ▲ Main RDEC Sites (See Note below)
- Subordinate RDEC Sites

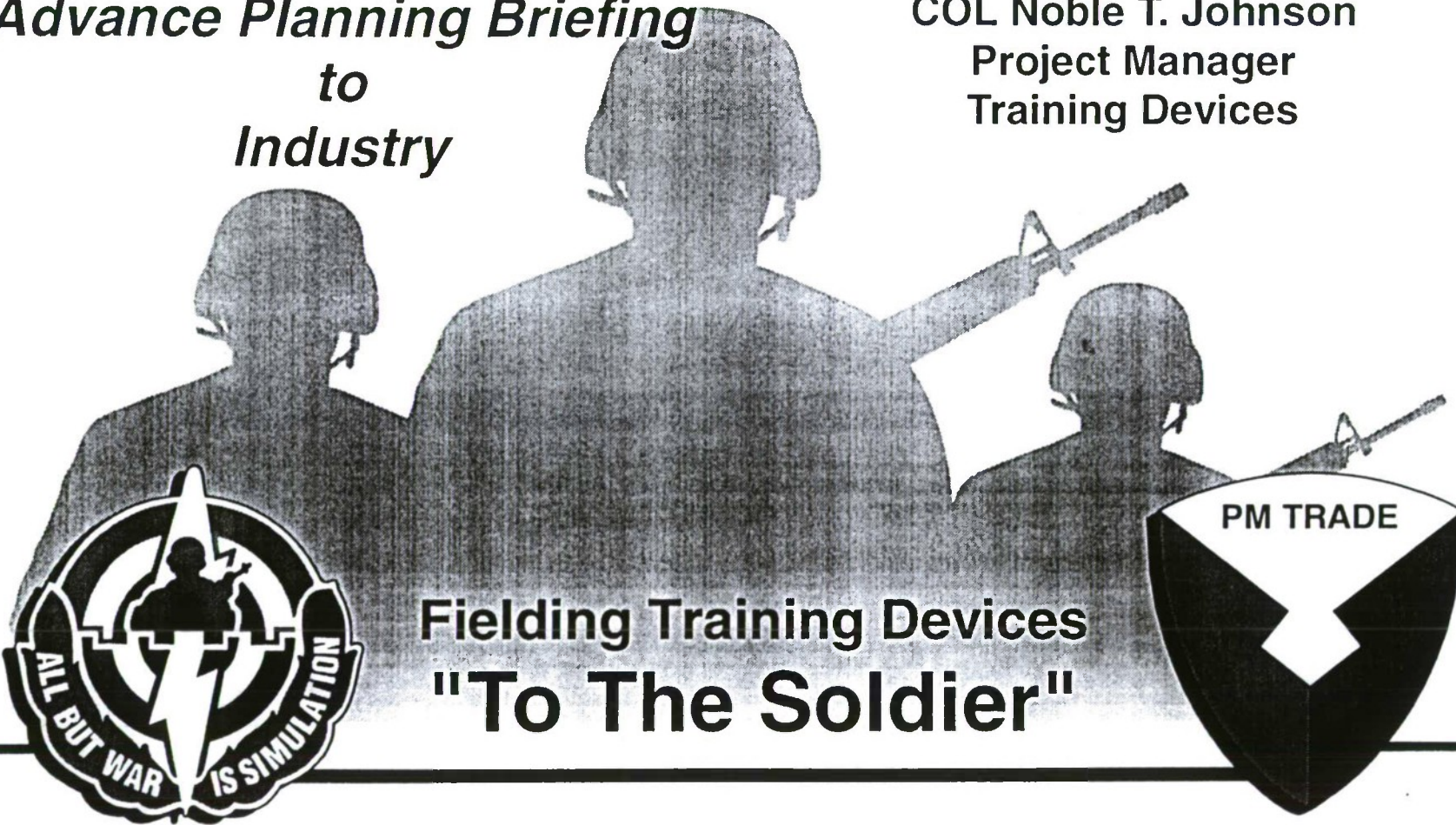
Note: Triangle Color Variety, used for clarity purposes only !



PM TRADE

*Advance Planning Briefing
to
Industry*

COL Noble T. Johnson
Project Manager
Training Devices



Fielding Training Devices
"To The Soldier"





PM TRADE
COL Noble T. Johnson (PM)
Mr. Bill Rucker (DPM)

- Chief Engineer
- Program Analysts
- Education Specialist

*** 2 Secretaries**

PM GCTS
Ground Combat Training Systems
LTC James Taylor (PM)
Ph. 380-8074 / E-mail TAYLOR3
MR. Tony Bradley (DPM)

*** 13 Project Directors**
*** 3 Secretaries**
*** 1 SME**

PM CSTS
Combat Support Training Systems
LTC Steve Kessinger (PM)
Ph. 380-8181 / E-mail KESSINGS
Mr. Steve Milburn (DPM)

*** 12 Project Directors**
*** 2 Secretaries**

PM ACTS
Air & Command Training Systems
LTC Craig Hanford (PM)
Mr. Don Jones (DPM)
Ph. 380-8079 / E-mail JONES1

*** 11 Project Directors**
*** 2 Secretaries**



Changes to Active Programs



CSTS

Combat Support Training Systems



Unchanged

CCTS

Close Combat Training Systems



GCTS

Ground Combat Training Systems

ACTS

Air Combat Training Systems



ACTS

Air & Command Training Systems

MIK 19 → MK 19

GUARDFIST III → GUARDFIST II

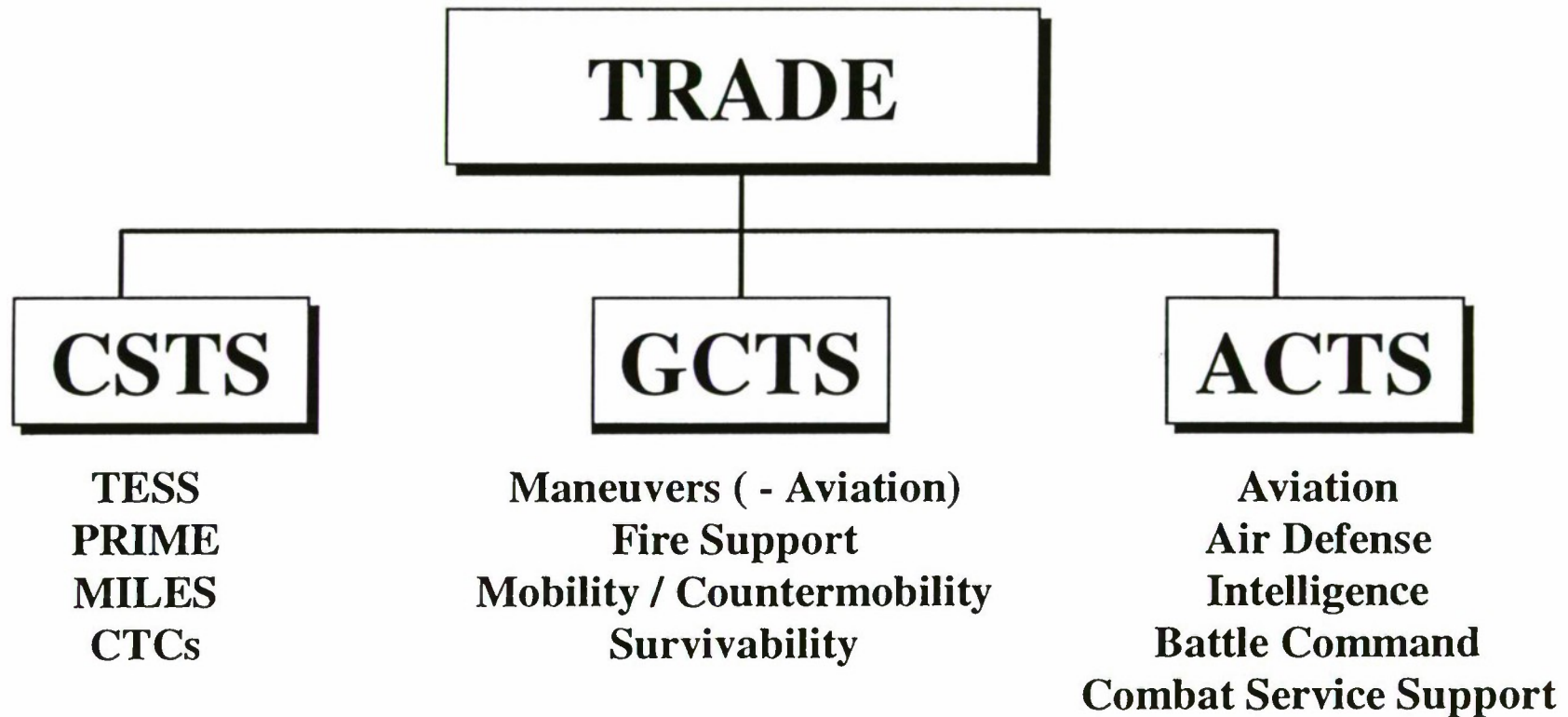
FSCATT → FSCATT

PRIME ← PRIME

DSCS → DSCS



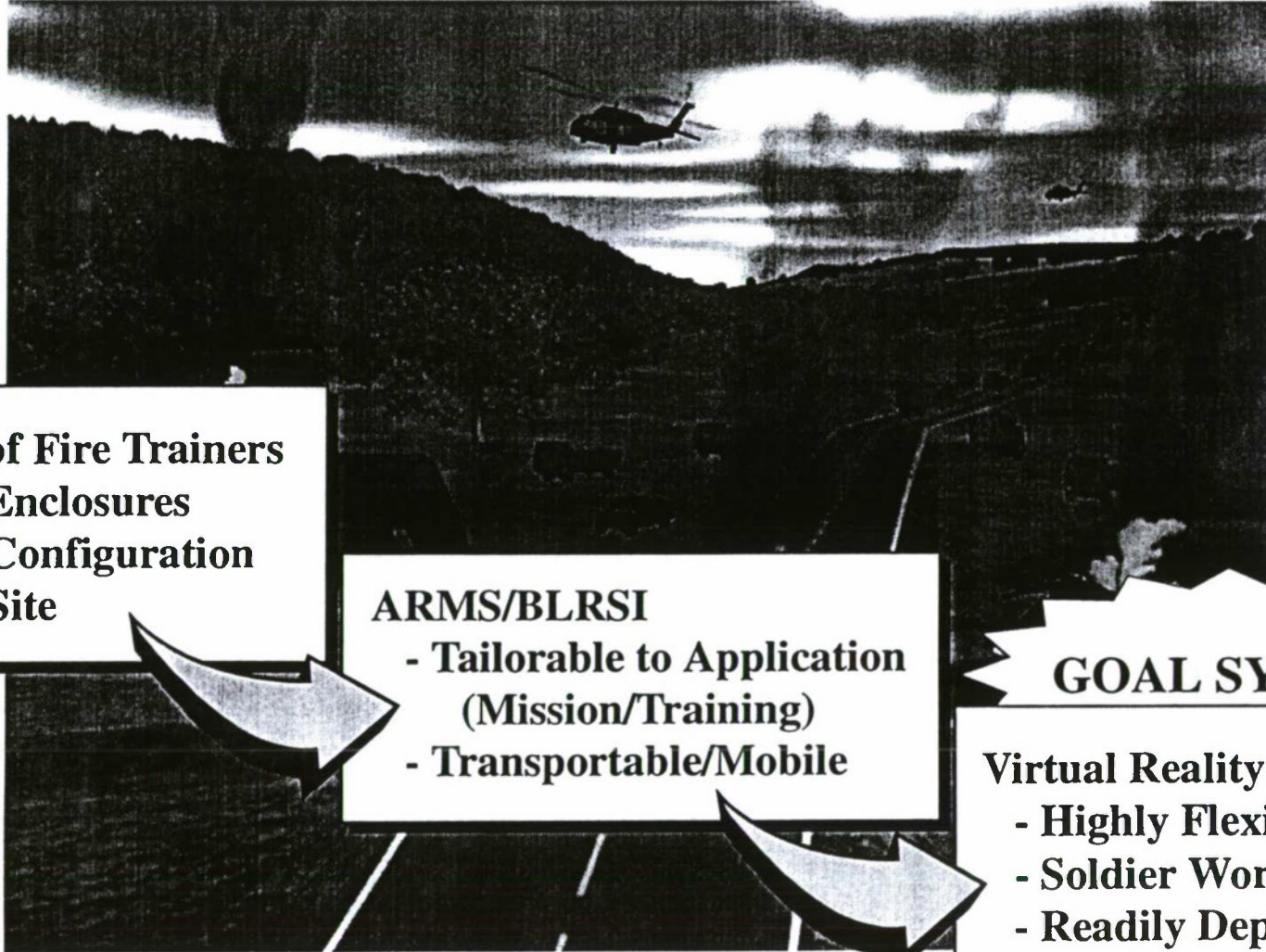
Alignment to Battle Operating Systems (BOS)





General Trend for Future Training Devices

Current State of Affairs



Conduct of Fire Trainers

- Rigid Enclosures
- Fixed Configuration
- Fixed Site

ARMS/BLRSI

- Tailorable to Application (Mission/Training)
- Transportable/Mobile

GOAL SYSTEM

Virtual Reality

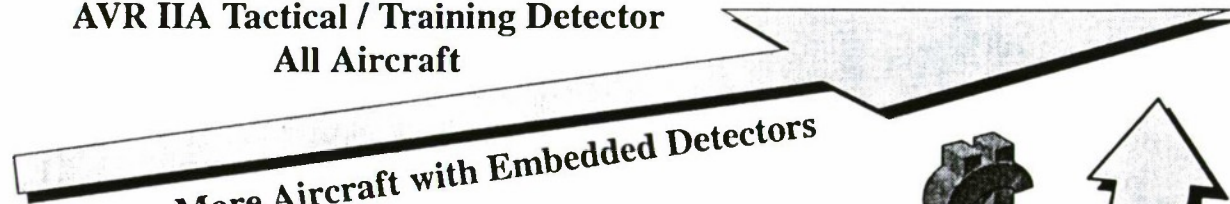
- Highly Flexible
- Soldier Worn
- Readily Deployable



Aircraft Embedded Sensors Save Training Hardware Dollars



AVR II Tactical Detector
AVR IIA Tactical / Training Detector
All Aircraft



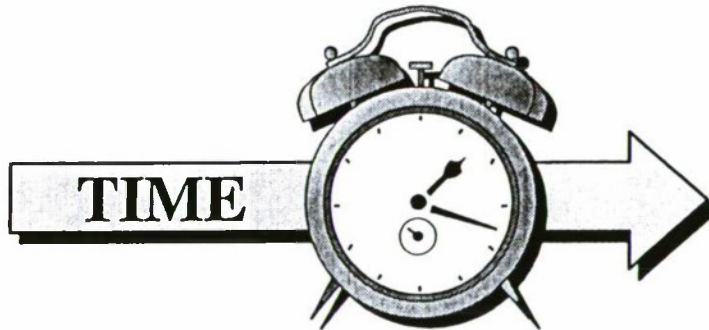
More Aircraft with Embedded Detectors



Training Instrumentation Costs



Savings to
PMAEC
OPA & O\$M



TIME

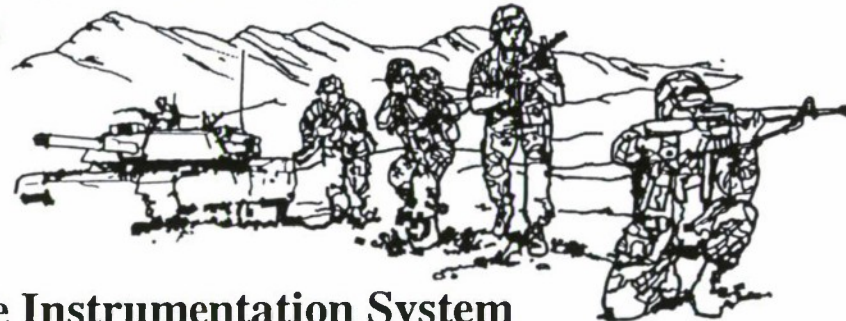
Fewer AGES Detector Belts Results in OPA & OMA Savings



IR&D Activities of Interest to PM TRADE



- **Thermal Imagery for Trainers**
 - Thermal Images for Tactical & Gunnery Trainers
 - Trainers for the Operation of Thermal Sights
- **Lightweight & Safe Batteries for On-Soldier Systems**
- **Low Intrusion Instrumentation for Vehicles**
 - Wireless LANS
 - KITS to be Installed During Retrofit / Upgrades
- **Advanced Target Signatures**
 - Thermal
 - Movement Behavior
 - Dirty Battlefield
 - Holographic Images
- **Homestation / Transportable Instrumentation System**
- **Deployable Training Range**
- **Training Analysis Feedback Systems (TAAF Analyst Assistant Systems)**
- **Simple Troop Movement Models to Energize Activities at CTCs**





Airborne Reconnaissance Low - Multifunction Sustainment Training System (ARL-M-STS)



- **PROGRAM DESCRIPTION:** Train crew members in the operation and employment of the ARL-M RC7 aircraft and mission equipment, for both mission-specific qualification training and sustainment training.

- **TIMELINE**
 - RFP FY97
 - Contract Award FY97
 - Prototype FY98
 - Full Production FY99

- **FUNDING:** Medium

- **STATUS:** Concept Formulation Phase Completed.
Milestone decision will be determined by PM ARL.
Funding must be secured by PM ARL.



Secure Mobile Anti-Jam Reliable Terminal - Tactical Training Device (SMART-T)



- **PROGRAM DESCRIPTION:** Train operator through DS maintenance for the SMART-T satellite communication system for the designated Military Operation Speciality personnel.

- **TIMELINE**
 - RFP FY97
 - Contract Award FY97
 - Prototype FY98
 - Full Production FY99

- **FUNDING:** Medium

- **STATUS:** Concept Formulation Phase
Training device study presently in progress.
Will determine number and cost/schedule.



Wolverine Trainer (also known as Heavy Assault Bridge)



- **PROGRAM DESCRIPTION:**

- Institutional training of MOS 12F on crew operations and maintenance based at Ft. Leonard Wood, Missouri

- **TIMELINE:**

- RFP FY 98
- EMD FY 98
- PROD FY 99

- **FUNDING:** Medium

- **STATUS:**

- Combined effort between STRICOM/PM TRADE, PM WOLVERINE and the Army Engineering School
- Contract Award estimated 2nd QTR FY98



Grizzly Trainer (also known as Breacher)



- **PROGRAM DESCRIPTION:**

- Institutional and unit training to qualify operators and maintainers based at Ft. Leonard Wood, Missouri
- Unit sustainment training will supplement and reinforce the skills learned in the institutional course
- Embedded training as a Pre-Planned Product Improvement

- **TIMELINE:**

- RFP FY 98
- EMD FY 98
- PROD FY 99

- **FUNDING:** Medium

- **STATUS:**

- Combined effort between STRICOM/PM TRADE, PM Grizzly and the Army Engineering School
- Contract Award estimated 2nd QTR FY98



Light Assault/Attack (Little Bird) Reconfigurable Combat Mission Simulator



- **PROGRAM DESCRIPTION:**

- One High Fidelity 6 DOF CMS
- Reconfigurable Cockpit (AH6 - MH - 6)
- USSOCOM Database Compatible
- DIS Network Complaint
- Weapon System Operation
- Upgradable to Support Future Aircraft

- **TIMELINE**

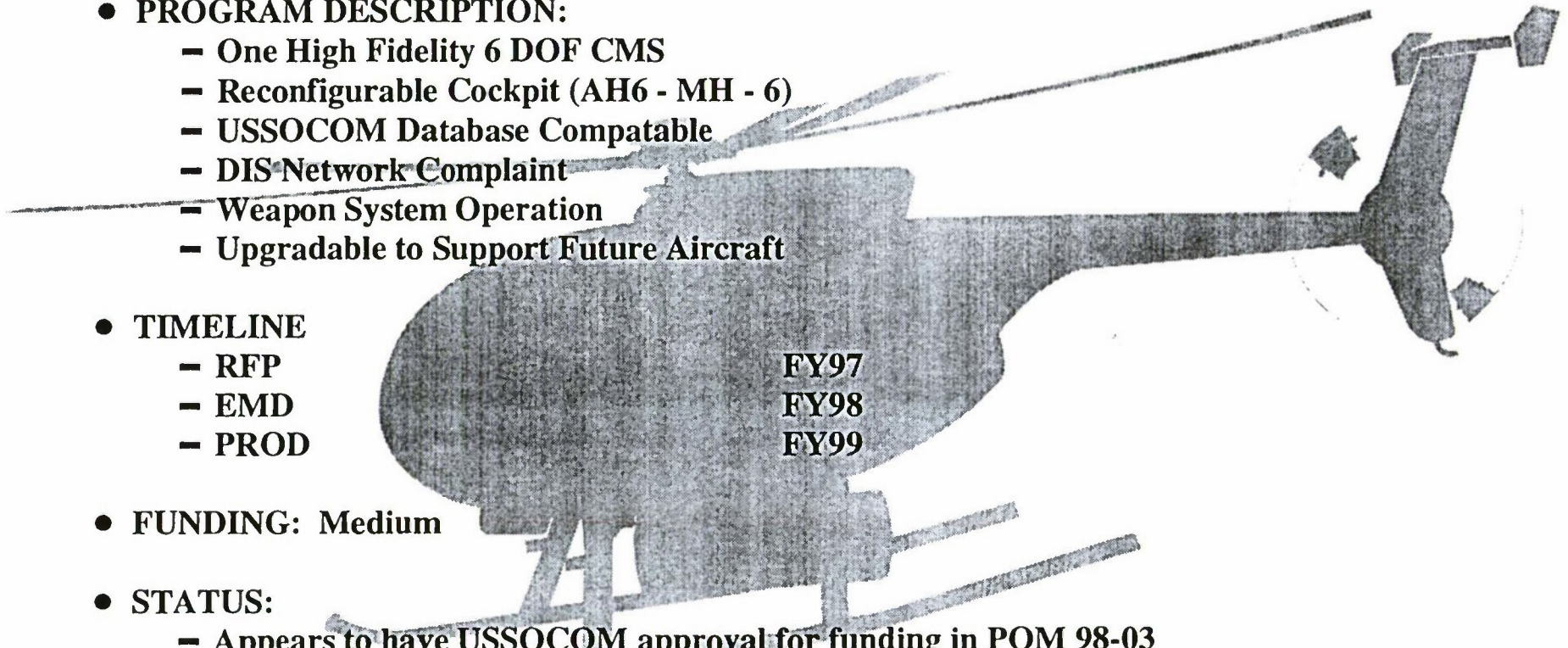
- RFP
- EMD
- PROD

FY97
FY98
FY99

- **FUNDING: Medium**

- **STATUS:**

- Appears to have USSOCOM approval for funding in POM 98-03
- Dialogue continues between 160th SOAR(A) and STRICOM on program formulation.





COMBAT MANEUVER TRAINING CENTER LIVE FIRE INSTRUMENTATION SYSTEM (CMTC LF-IS)

- **PROGRAM DESCRIPTION:**

- Provides similar objective feedback to training commanders via After Action Reports as Maneuver Training Systems at Hohenfels
- Links Live Fire Targeting, ranges and Grafenwoehr assets to the Hohenfels complex
- Provides increased levels of collective training proficiency in Combined Arms Warfighting by incorporating Indirect Fire Effects during Live Fire exercises

- **TIME LINE**

- MNS: FY 96
- ORD: FY 96
- RFP: FY 01
- EMD: FY 02-04
- PROD: FY 04-07

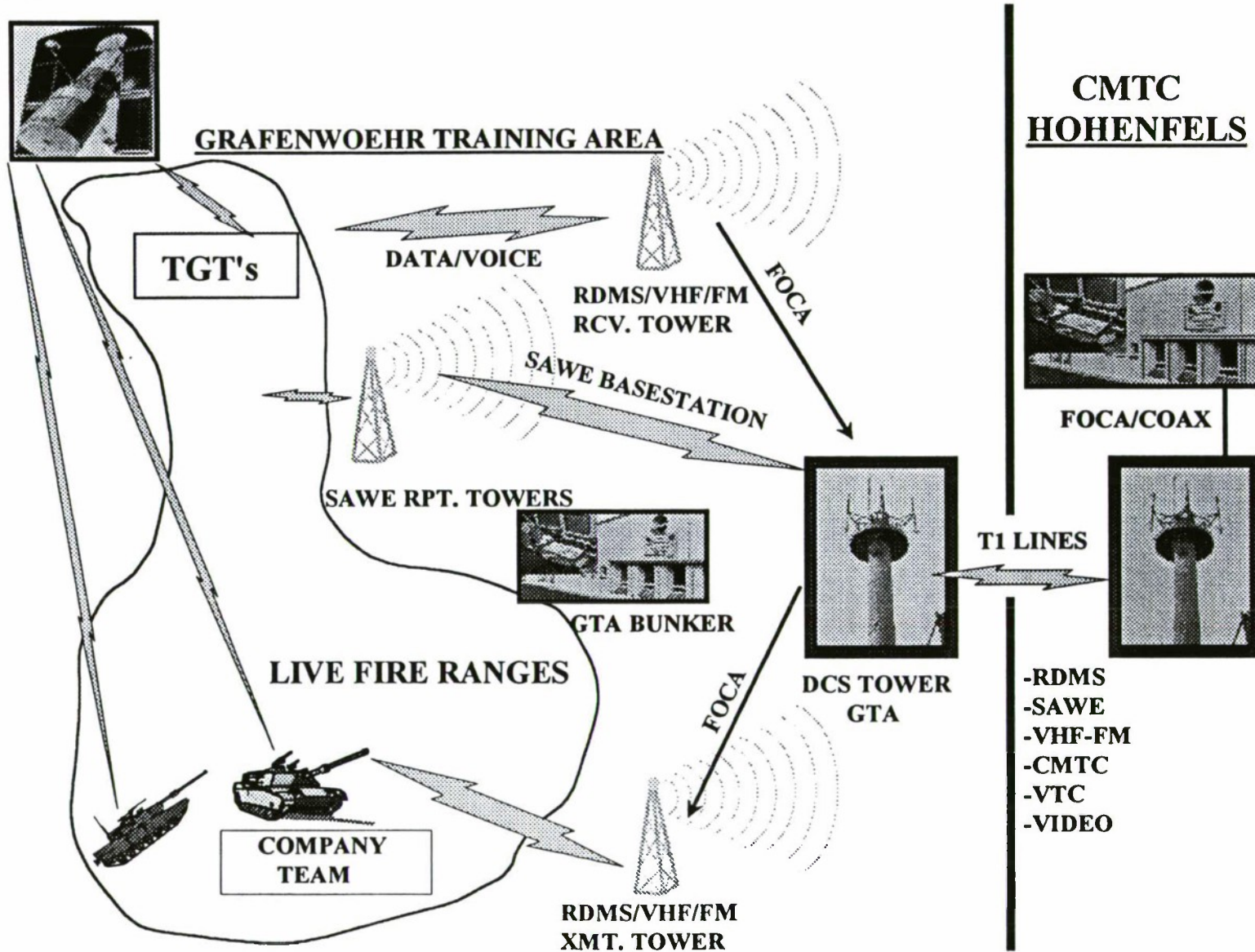
- **FUNDING: High**

- **STATUS:**

- ORD in approval cycles, concept exploration underway



COMBAT MANEUVER TRAINING CENTER LIVE FIRE INSTRUMENTATION SYSTEM





NATIONAL TRAINING CENTER - INSTRUMENTATION SYSTEM



- PROGRAM DESCRIPTION:

- Design, develop and field an Integrated Instrumentation system
- Consists of functions:
 - Exercise planning
 - System preparation
 - Exercise management
 - Training performance feedback
 - System support
- Collects data from:
 - Tactical Engagement Simulation (TES)
 - Observer/Controllers (OC)
 - External Systems
 - Joint Instrumentation Systems

- TIME LINE

- ORD: FY 95
- C/E: FY 96-01
- EMD: FY 02-03
- PROD: FY 04-07

- FUNDING: High

- STATUS:

- Minimal incremental upgrades for Army Warfighting Experiment 97-06 in FY 96. concept exploration underway.



Armor Training Devices - M1A2 SEP



Training Device Approach

- Will require limited ECP's/MWO to current TD's for display & 2nd GEN FLIR changes
- Current system technology does not allow radical TD changes to embedded training capability
- Mod current training devices to SEP configuration (AGTS, TWGSS, TSV, TDT, MTS, MILES 2000)
- Use M1A2SEP architecture to experiment with & plan for embedded/externally driven training integration on the M1A3

Issues

- Funding wedge is needed to upgrade the Hardware and Software of present trainers to SEP configuration



Armor Training Devices - M1A3



Training Device Approach

- Influence new turret design to accommodate semi-embedded/appended training device capability
- Reduce the numbers of stand alone training devices (Eliminate AGTS & CCTT modules, but retain AGTS & CCTT training computers & I/O systems)
- Limited by present M1A2 design to fully eliminate stand alone trainers

Issues

- System design must include training device considerations. Tank data bus & displays must be able to interface w/external systems for control outputs & display inputs.
- Funding wedge for training device procurement and upgrade
- Daylight channel displays & devices as sensors mature



Armor Training Devices - 21st Century



Training Device Approach

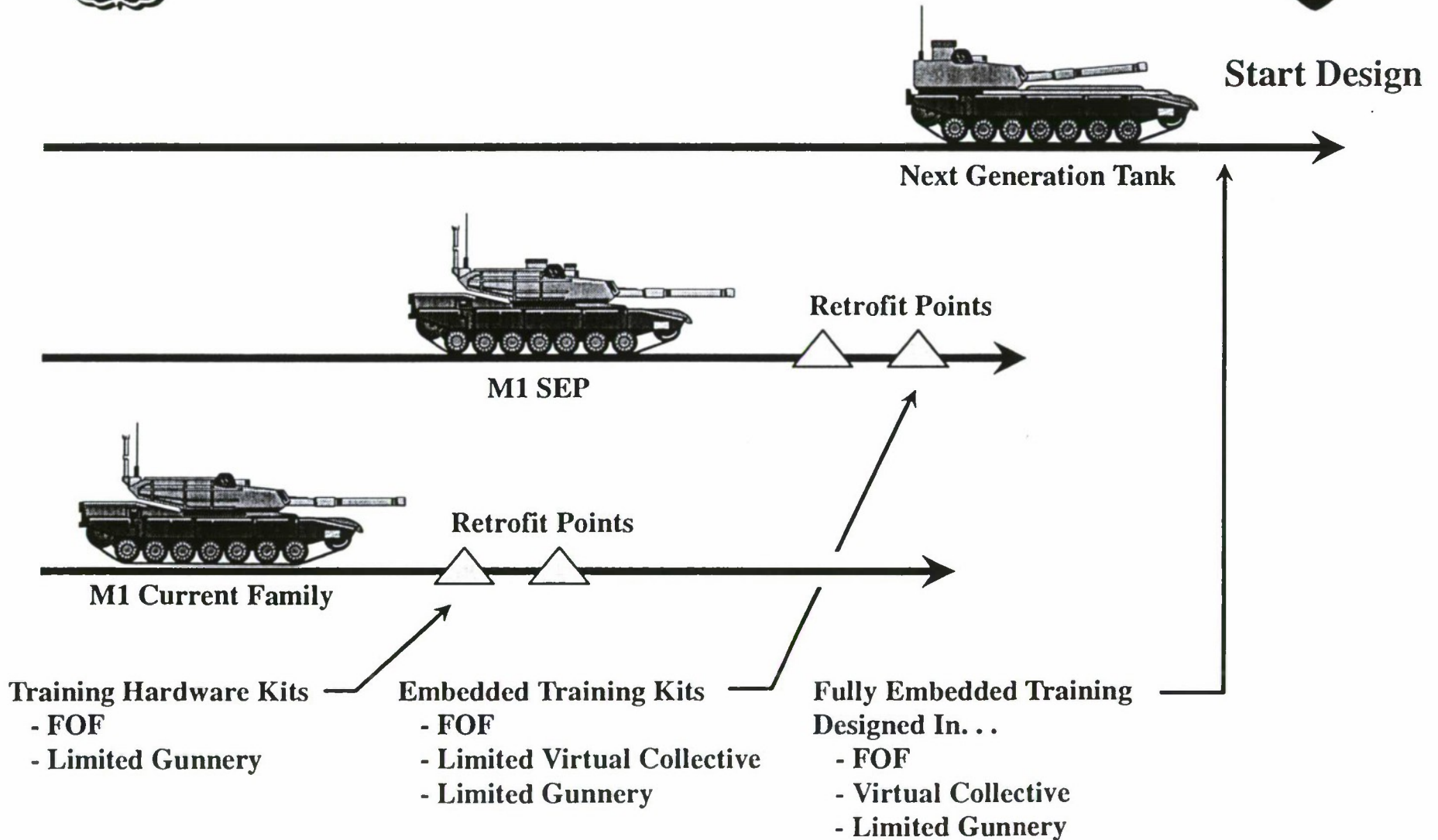
- Design in fully embedded gunnery capability
- Design in on-board force-on-force training and monitoring capability (i.e., TWGSS, MILES, TSV. . .)
- Internal fully functional diagnostics capability eliminates need for MTS

Issues

- Training considerations must be included in System design and funding profiles
- Must maintain partnership with industry to advance technology to meet embedded training needs



Evolution of Embedded Training





FA Weapons/Operator Training Systems



Current Cannon Trainer Technology

Weapon Type

	SIMULATORS	PART TASK TRAINER	CLASSROOM	INTERACTIVE COURSE WARE	EMBEDDED
M109A5	HCT*	HSOT*	Yes	None	None
M109A6 PALADIN	HCT*	Yes**/HSOT*	Yes	None	Yes**
CRUSADER	None	Yes***	Yes	None	Yes
ATCAS	Possible Development	Possible Development	Possible Development	Possible Development	Possible Development
M198	None	HSOT*	Yes	None	None
M102	None	HSOT*	Yes	None	None
M119	None	HSOT*	Yes	None	None

NOTE: * FSCATT HCT= Howitzer Crew Trainer HSOT= Howitzer Strap On Trainer
 ** Fire Control
 *** Crew station set



STRICOM Projects: "Current"



FSCATT

- Contract awarded Jun 95
- Development 33% complete
- M109A6 Howitzer Crew Trainer approved for development

CRUSADER

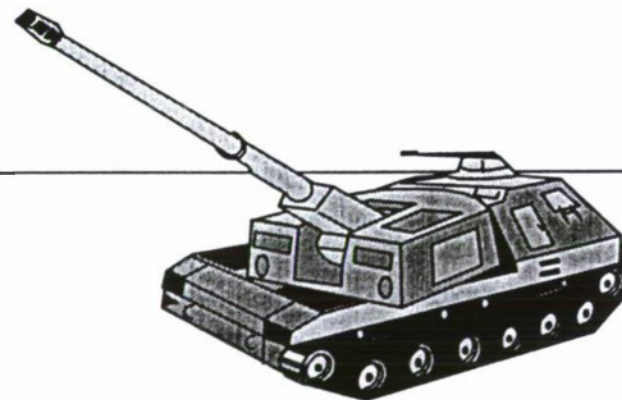
- MOA for training development
- Being added to ModSAF

GUARDFIST II

- Fielded throughout Active and Reserve units
- Recent software upgrade
- 1:1 sent to Bosnia

SAWE

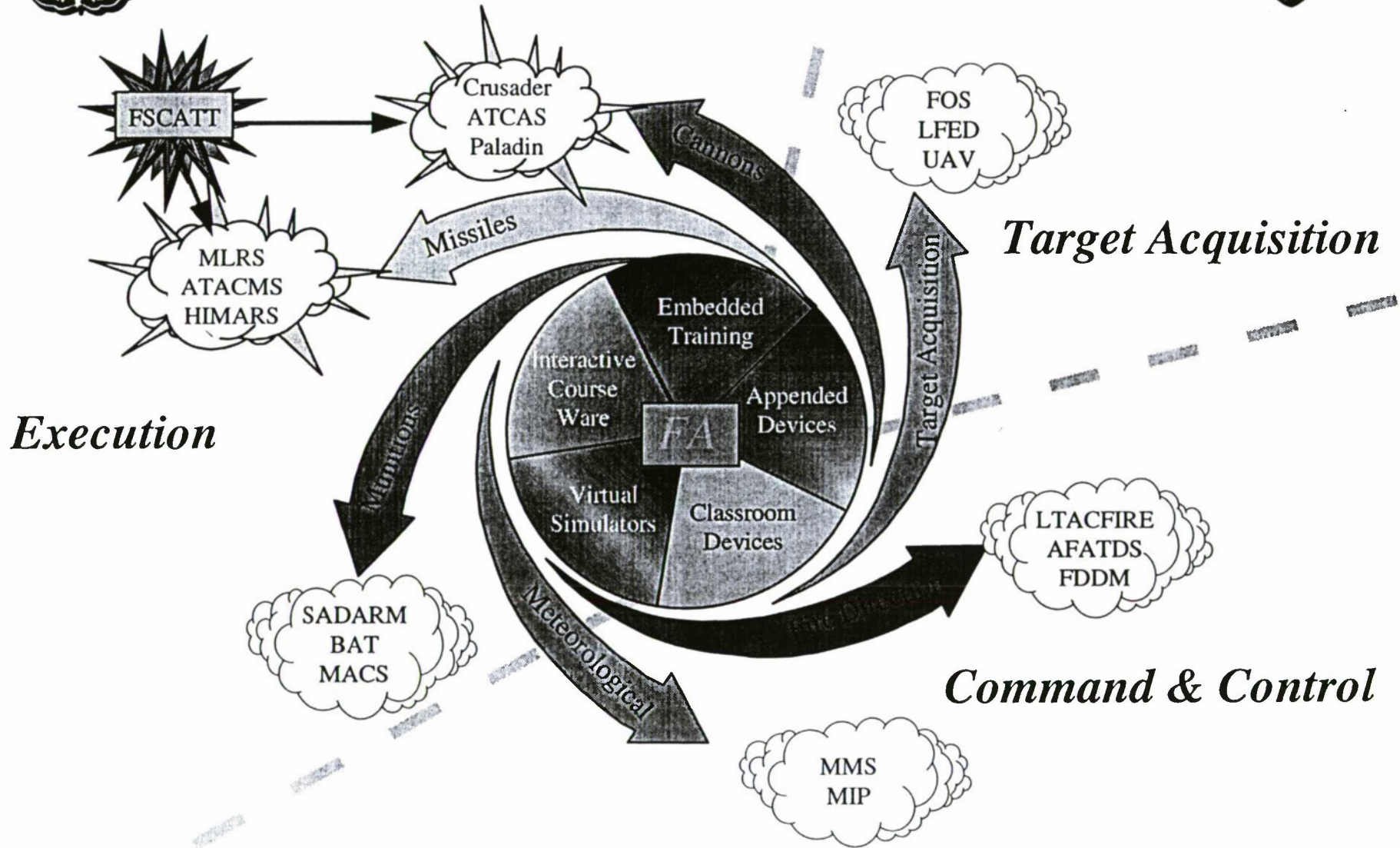
- Fielded to CMTTC
- Fielding to NTC
- Future fielding to JRTC





Field Artillery Training Devices

"Possibilities for the Future"



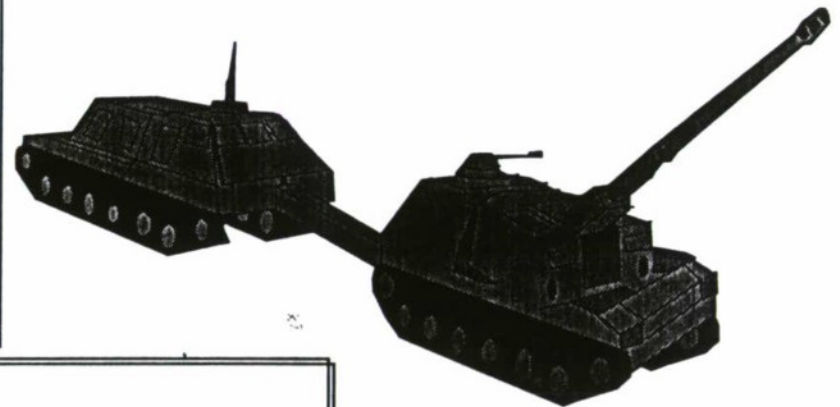


STRICOM Projects: *“Future”*



CRUSADER

- Market survey for embedded training
- Front end analysis
- Possible development of embedded training for individual and crew levels
- Possible development of operation and maintenance training devices at unit and institutional levels



ATCAS

- Front end analysis
- Training Support Requirement calls for:
 - > Embedded training for operation and maintenance procedures at individual and crew level
 - > Possible development of training devices for institutional and unit level training
 - > Must be DIS and CCTT compatible





COL James E. Shiflett

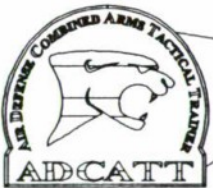
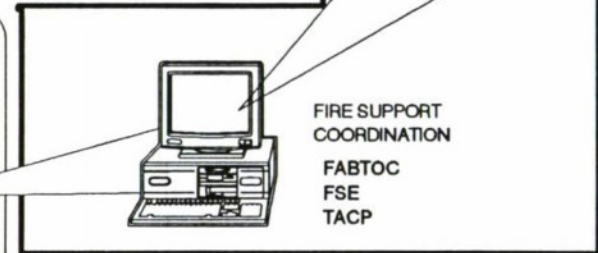
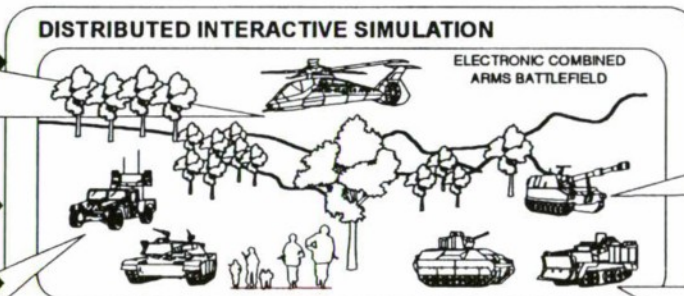
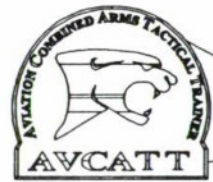
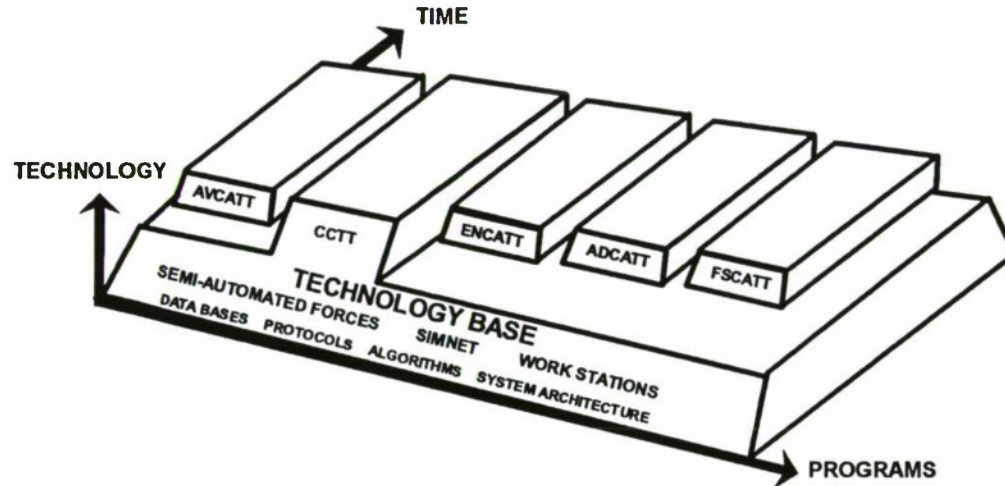
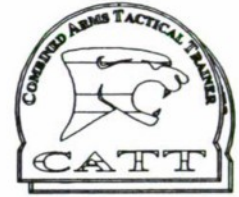
Project Manager



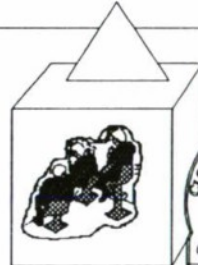
12350 Research Parkway
Orlando, FL 32826-3276
COM:(407) 384-3600 DSN: 970-3600
FAX: (407) 384-3611



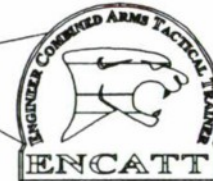
CATT Acquisition Strategy



INFANTRY



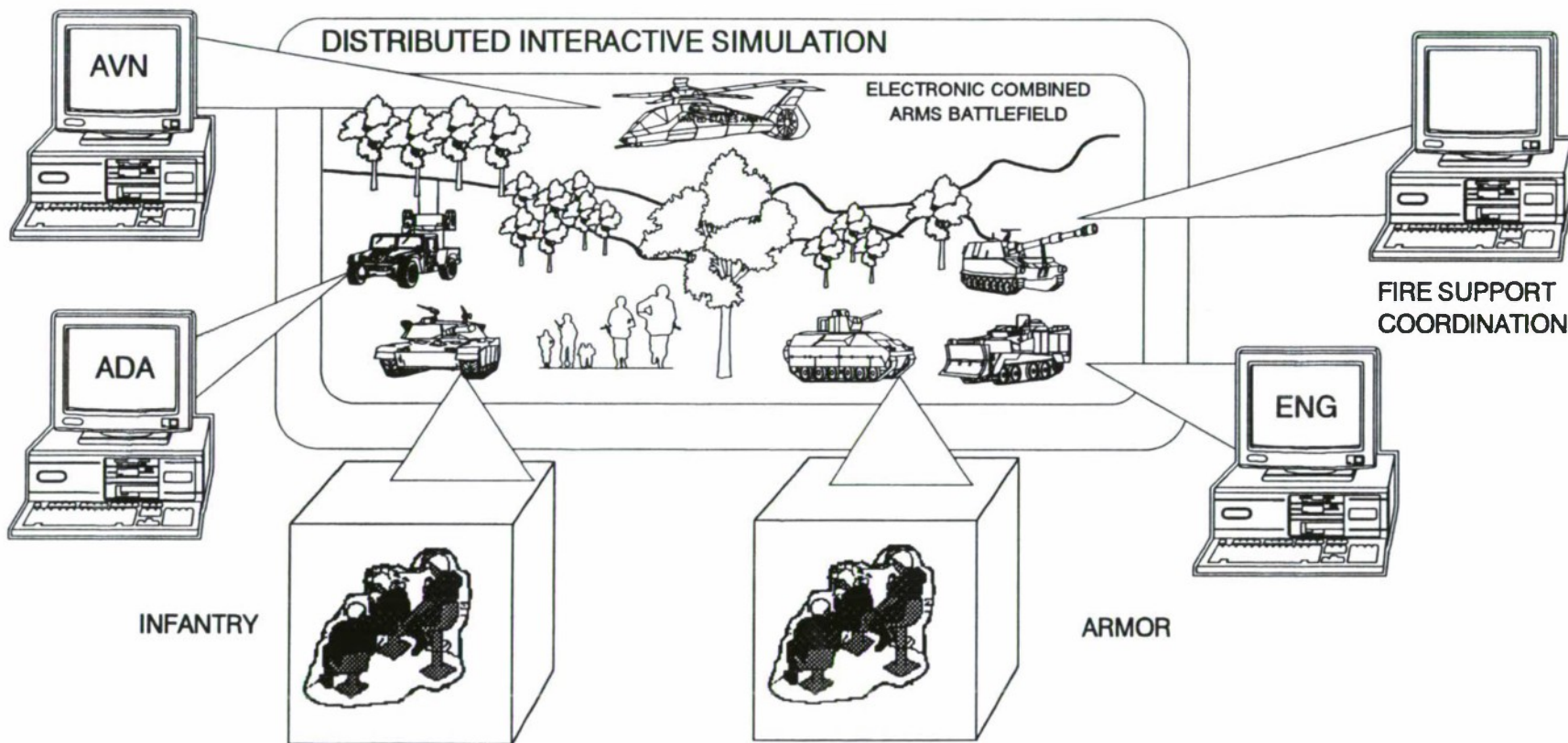
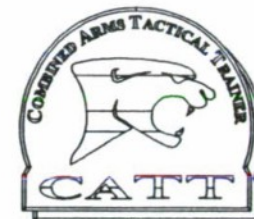
ARMOR



TRAIN TO STANDARD WITH SIMULATORS



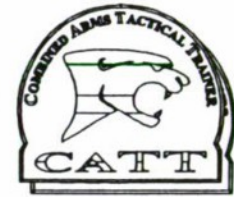
Close Combat Tactical Trainer CCTT


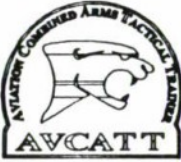


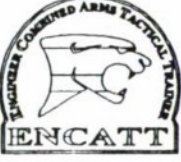


TRAIN TO STANDARD WITH SIMULATORS



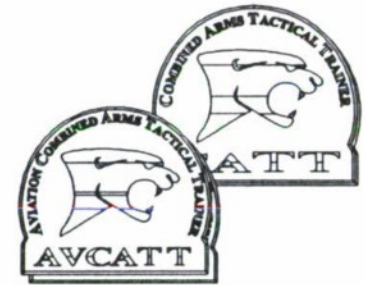
COMBINED ARMS TACTICAL TRAINER PROGRAM STATUS SUMMARY



		MNS	ORD	RFP	CONTRACT
	CLOSE COMBAT	X TDNS 16 July 87	X TDR 30 Apr 91 (Approved)	X Dec 91	X 30 Nov 92
	AVIATION	X TDNS 21 Aug 89	X Feb 96 (TRADOC) Validation		
	AIR DEFENSE	X 10 Feb 93	X May 94 (Validated)		
	FIRE SUPPORT	X 1 May 90	X 15 Mar 93 (Validated)		
	ENGINEER	X 21 Aug 93	X At TRADOC for Validation		



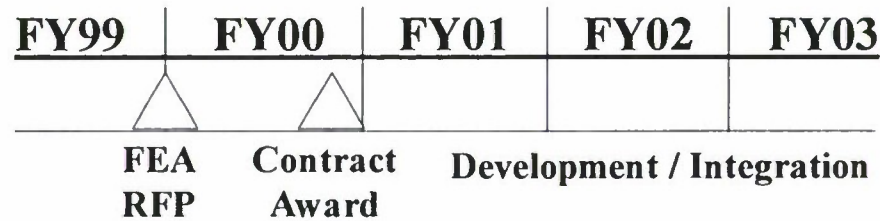
Aviation Combined Arms Tactical Trainer (AVCATT)



PROGRAM DESCRIPTION:

AVCATT is a Distributed Process, Networked Simulation System Which Allows Attack Helicopter and Air Cavalry Units to Conduct Tactical Maneuver Training in a Combined Arms Computer Simulated Combat Environment.

TIMELINE:



FUNDING: RDTE - Medium (\$25M - \$100M)

PROC - High (Over \$100M)

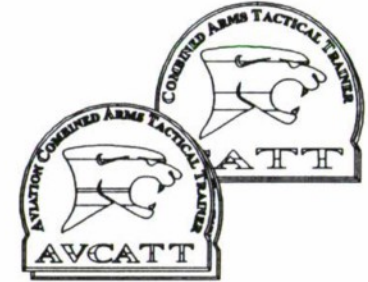
STATUS:

Program is Presently Unfunded

Working to Establish Funding in FY 99 - 04 Through CATT CORE



AVCATT STRATEGY



- 1. DETAILED CONCEPT FORMULATION**
- 2. REDUCE TECHNICAL AND PROGRAMMATIC RISK**
- 3. COOPERATIVE MANAGEMENT AND DEVELOPMENT**
- 4. MIX OF SIMULATORS**
- 5. EMPLOY SMART BUSINESS AND PROCUREMENT PRACTICES**
- 6. UTILIZES CATT CORE CONCEPT**



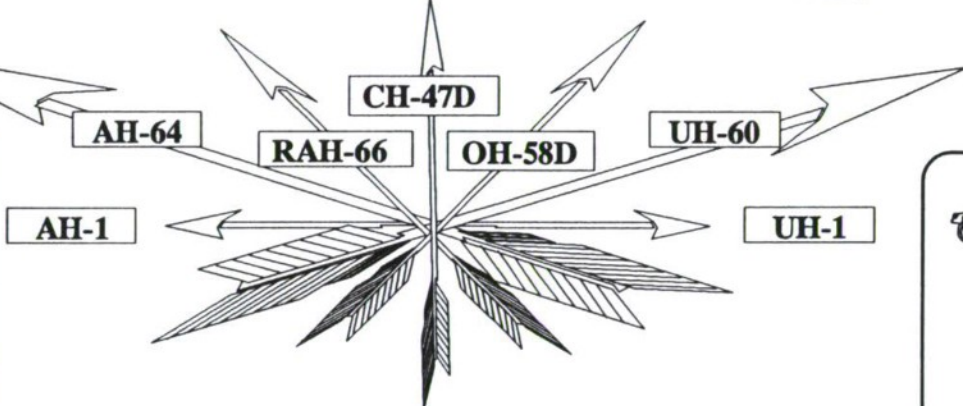
AVCATT Architecture



SAF Friendly

Higher H.Q.

OPFOR



Tactical Operations Center

Manned Simulators

Instructor/Operator Workstations

Mission Planning

Mission Debriefing

Admin/Log Operations Center



Constructive Simulations

Live Systems

Aviation Mission Planning System



CATT CORE

AVCATT Implementation

AVCATT MOA

Signed 3 January 1996



USER REP

- ◆ Define Requirements
 - ▶ Tasks to be Trained
- ◆ Provide SME Support
- ◆ Prepare ORD
 - ▶ TEA
 - ▶ STRAP
 - ▶ SMMP
- ◆ Develop Training Strategy

PEO / PMs

- ◆ Provide Manned Sims
- ◆ Provide I/O Stations
- ◆ Primary Interface to ATCOM
- ◆ Support Development of Acquisition Strategy
- ◆ Provide Program Funding Requirements

STRICOM

- ◆ Systems Integration
- ◆ Determine Total Program Costs
- ◆ Provide AVCATT Environment
 - ▶ CGF
 - ▶ TDB
 - ▶ C4I
 - ▶ AAR
 - ▶ Training Management System
 - ▶ Workstations
- ◆ Interoperability With Other CATT Systems

- ◆ Links System Requirements to Non-System



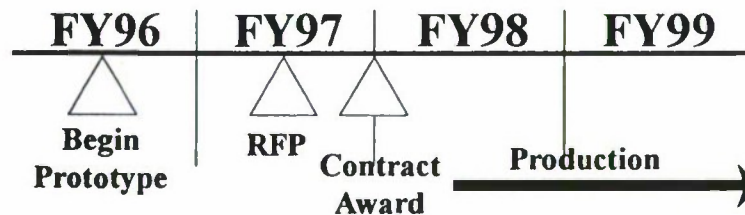
Aviation Reconfigurable Manned Simulator (ARMS)



Program Description:

ARMS is a DIS Interoperable, Transportable Aviation Simulation System Which Allows Army National Guard (ARNG) Aviation Units to Train at the Collective Level. ARMS is Reconfigurable to the Six Aircraft Currently in the ARNG Inventory, and Will Interact With CGF Workstations, After Action Review (AAR) and the Aviation Mission Planning System (AMPS).

Timeline:



Funding:

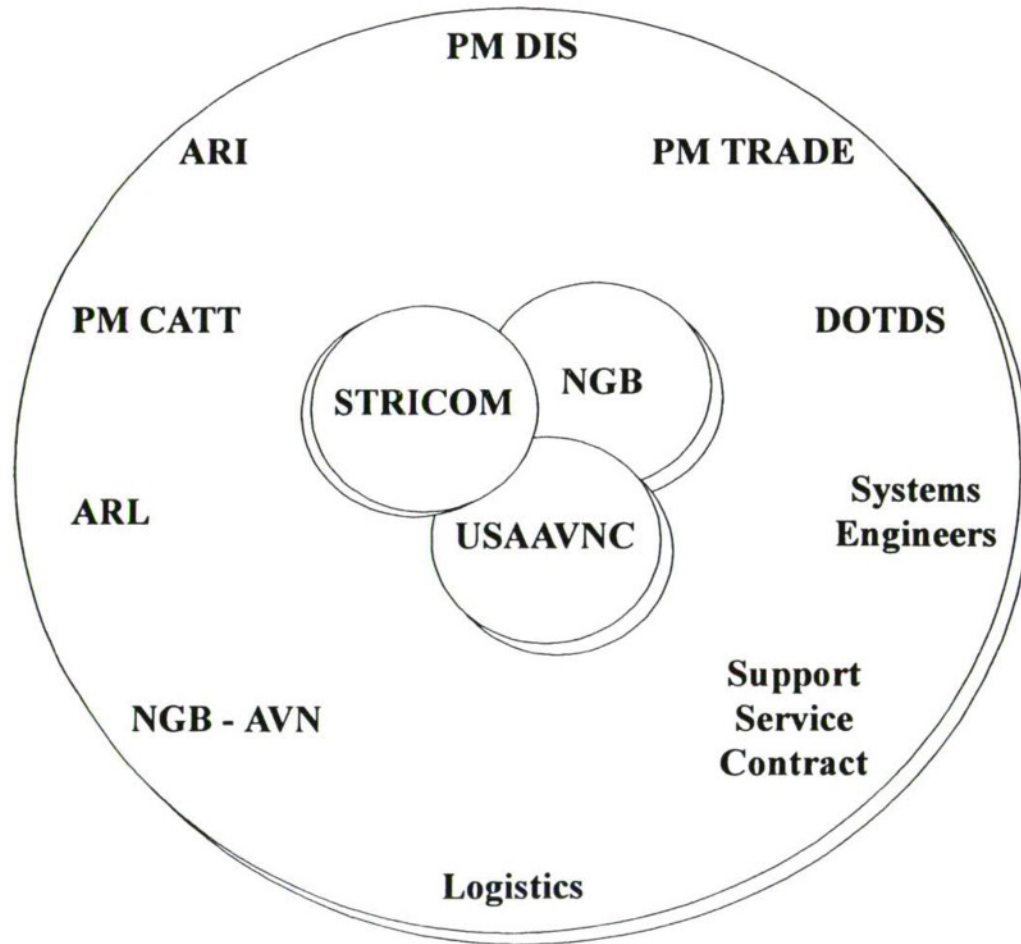
PROC: Medium (\$25M - \$100M)

Status:

Program is Funded
Prototype Evaluation, Preparing RFP

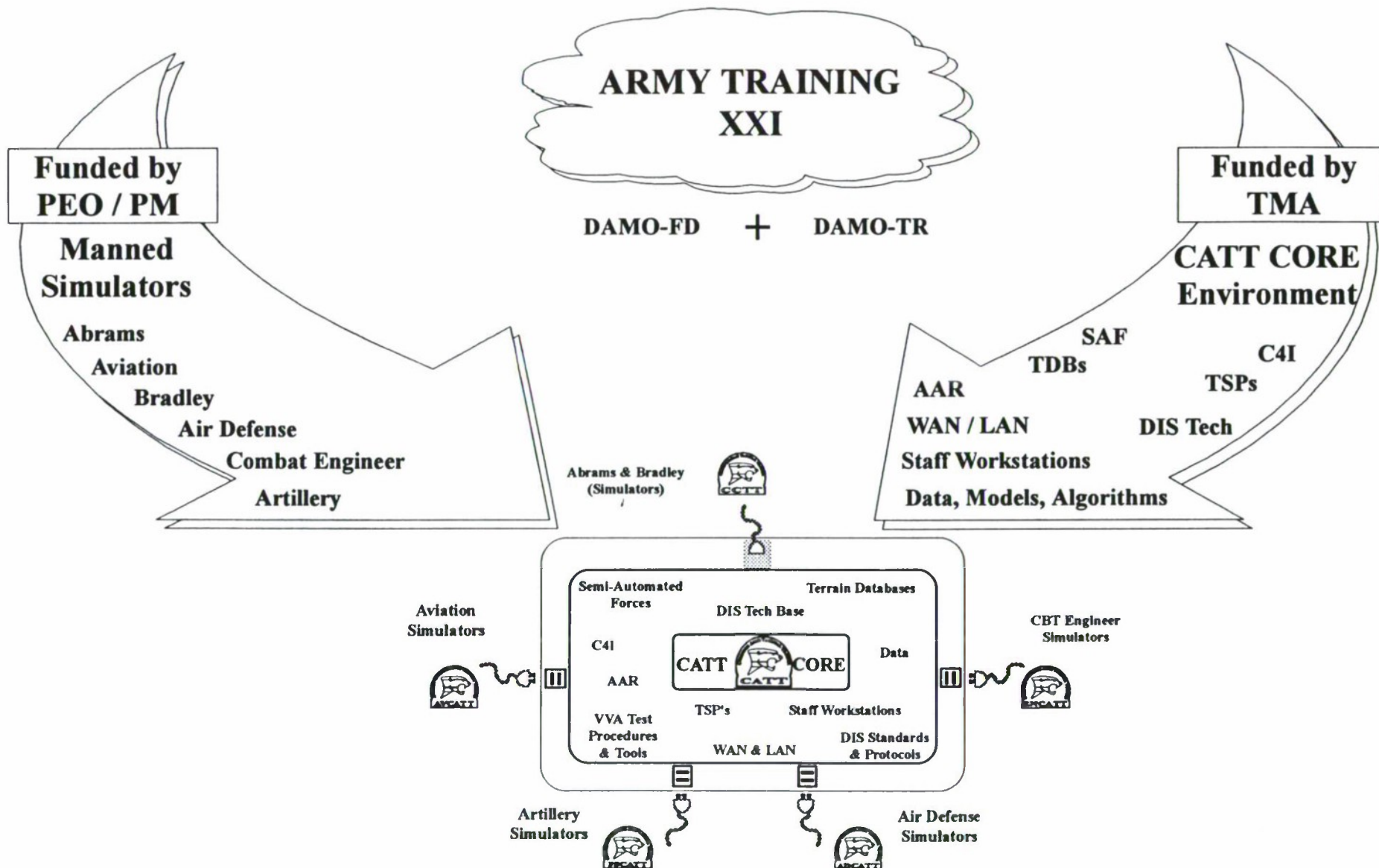


ARMS IPT Concept





CATT CORE Components





Joint Simulation System (JSIMS)



**Joint Department of Defense
Advance Planning
Briefing to Industry
April 30 - May 2, 1996**



***CAPT Drew W. Beasley, USN
(407)384-5501
beasleyd@stricom.army.mil***

JSIMS Mission Statement

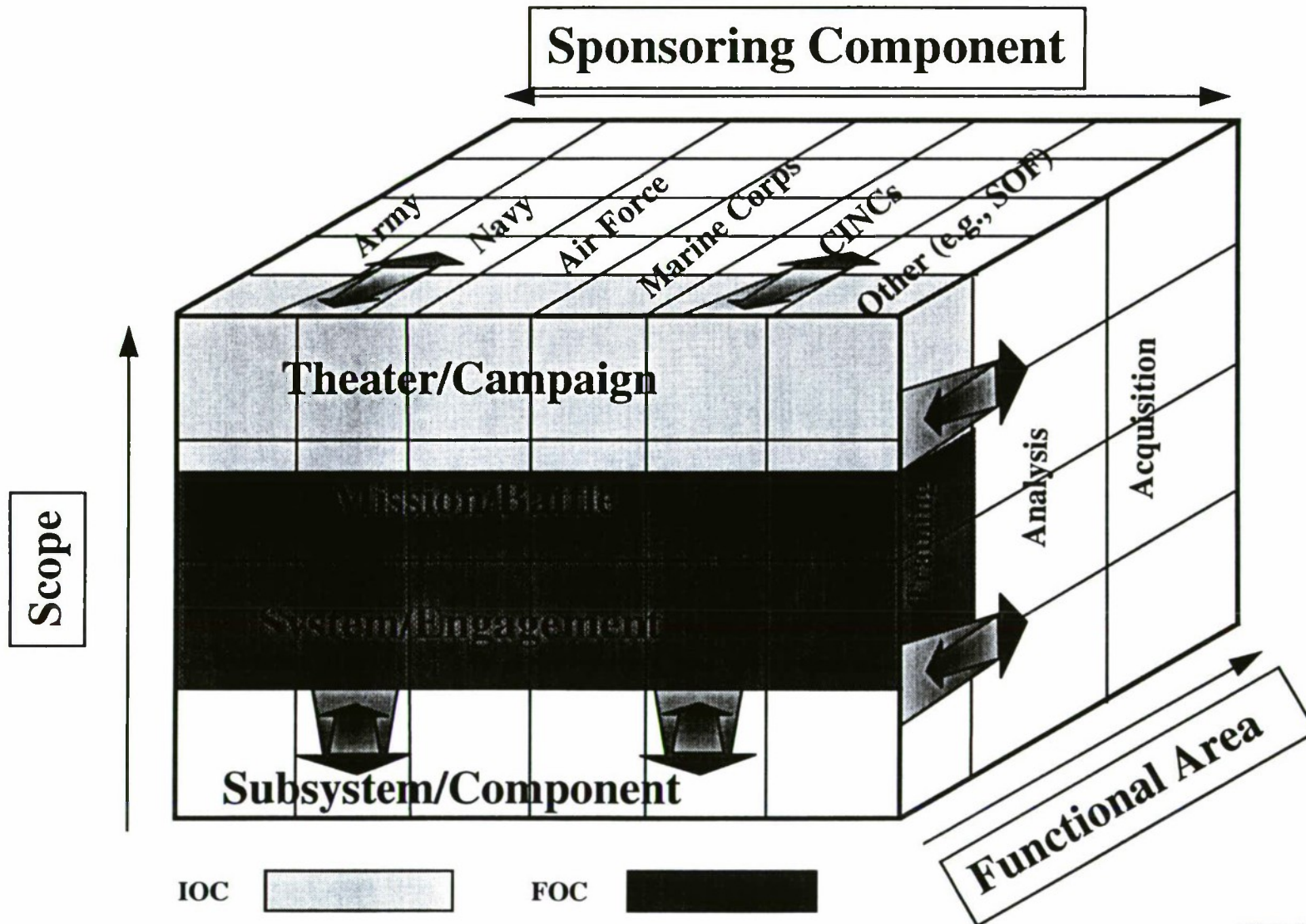
JSIMS is a single, seamlessly integrated simulation environment. It includes a core infrastructure and mission space objects, both maintained in a common repository. These can be composed to create a simulation capability to support joint or service training, rehearsal, or education objectives.

JSIMS Objectives

Incrementally develop a Joint Simulation System that will provide readily available, operationally valid synthetic environments for use by the Services, the CINCs, their components, and other organizations

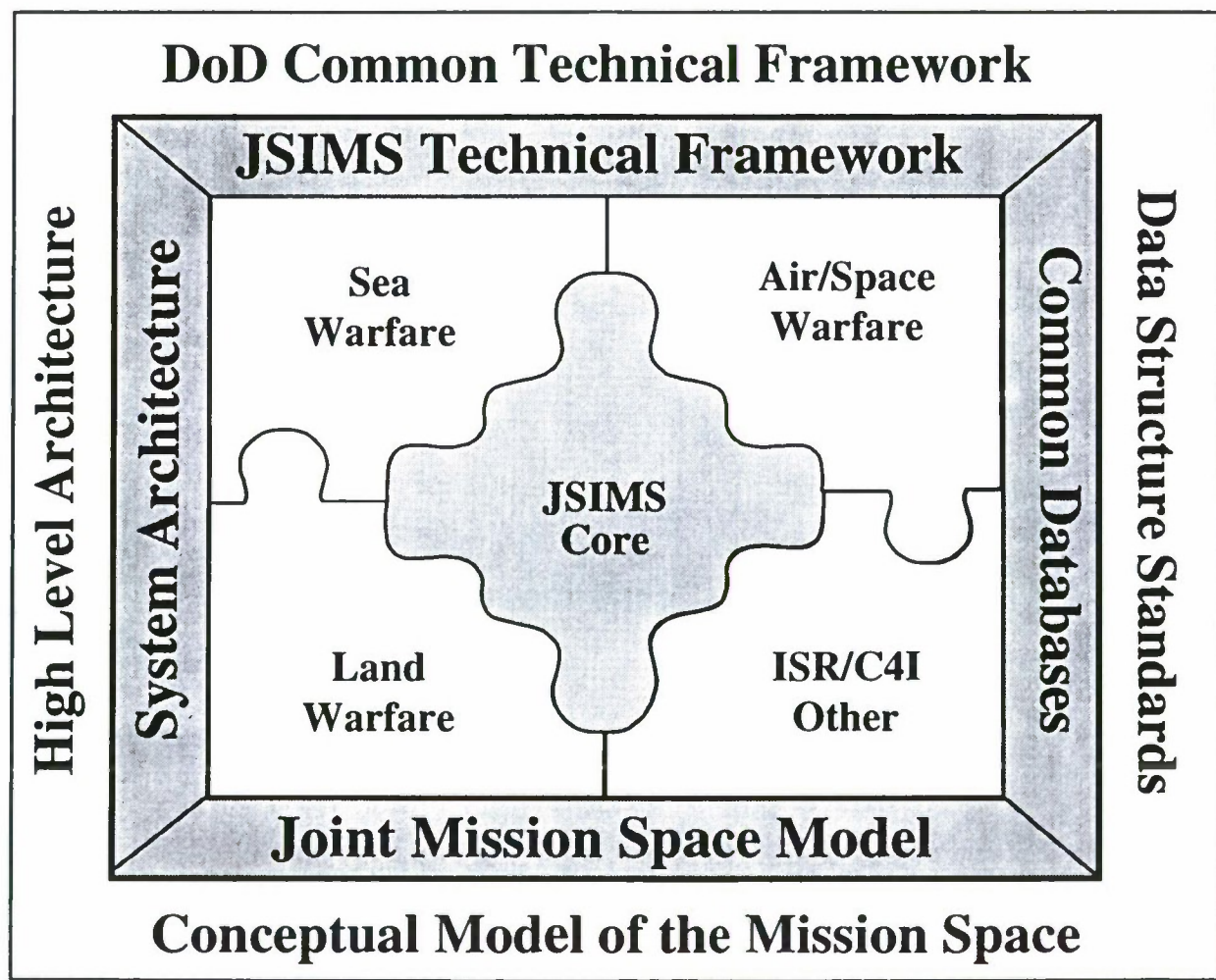
- ◆ Initial Operational Capability (IOC)
 - ◆ Support JTF training and exercises
 - ✓ ◆ Increase joint fidelity of Service training
 - ◆ Significantly reduce exercise support manpower
- ◆ Full Operational Capability (FOC)
 - ◆ Ability to resolve down to the platform level
 - ◆ Support development of doctrine & tactics
 - ◆ Mission rehearsal
 - ◆ Linkages with other models (e.g., analytical)

Scope of JSIMS

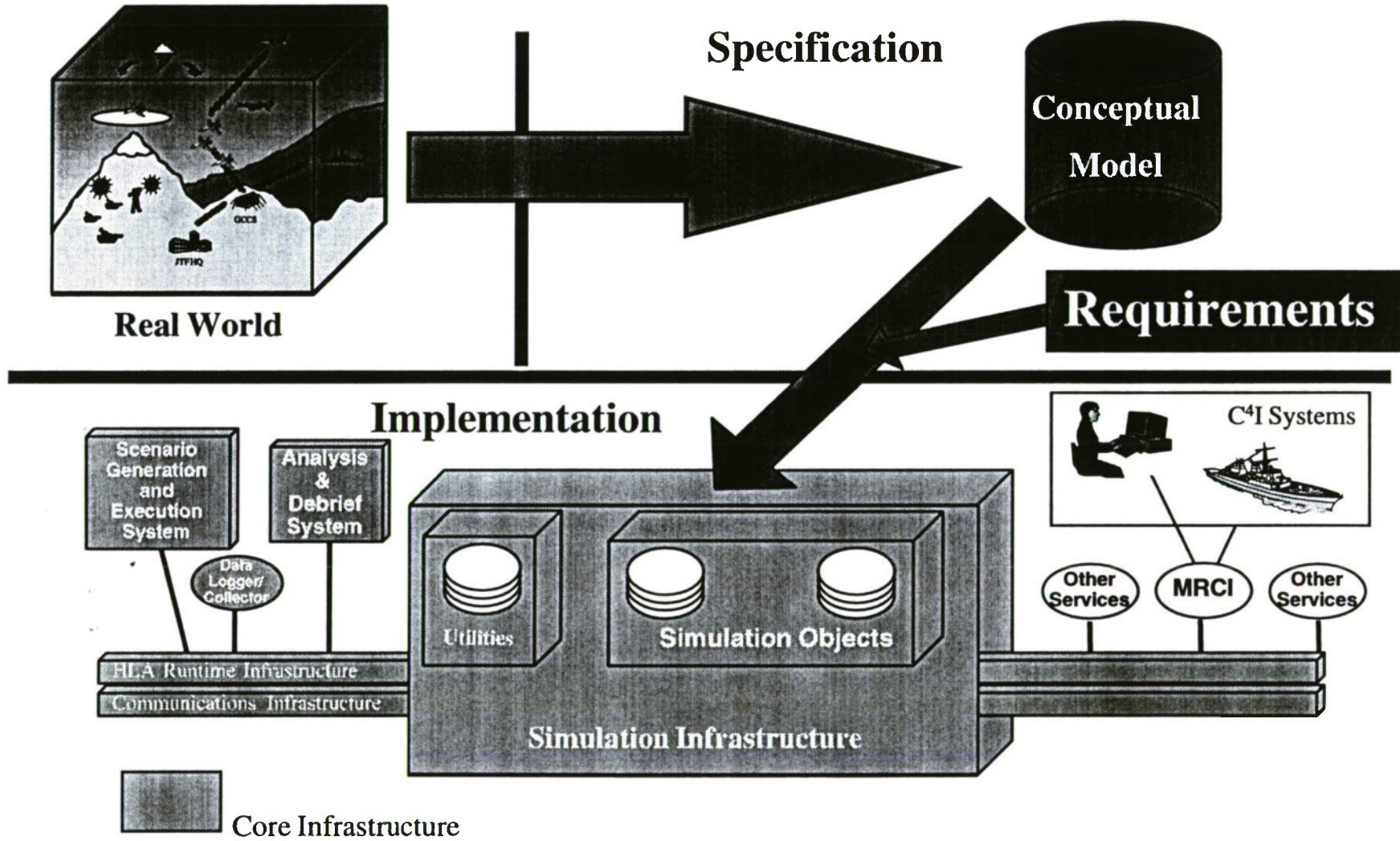


JSIMS Development

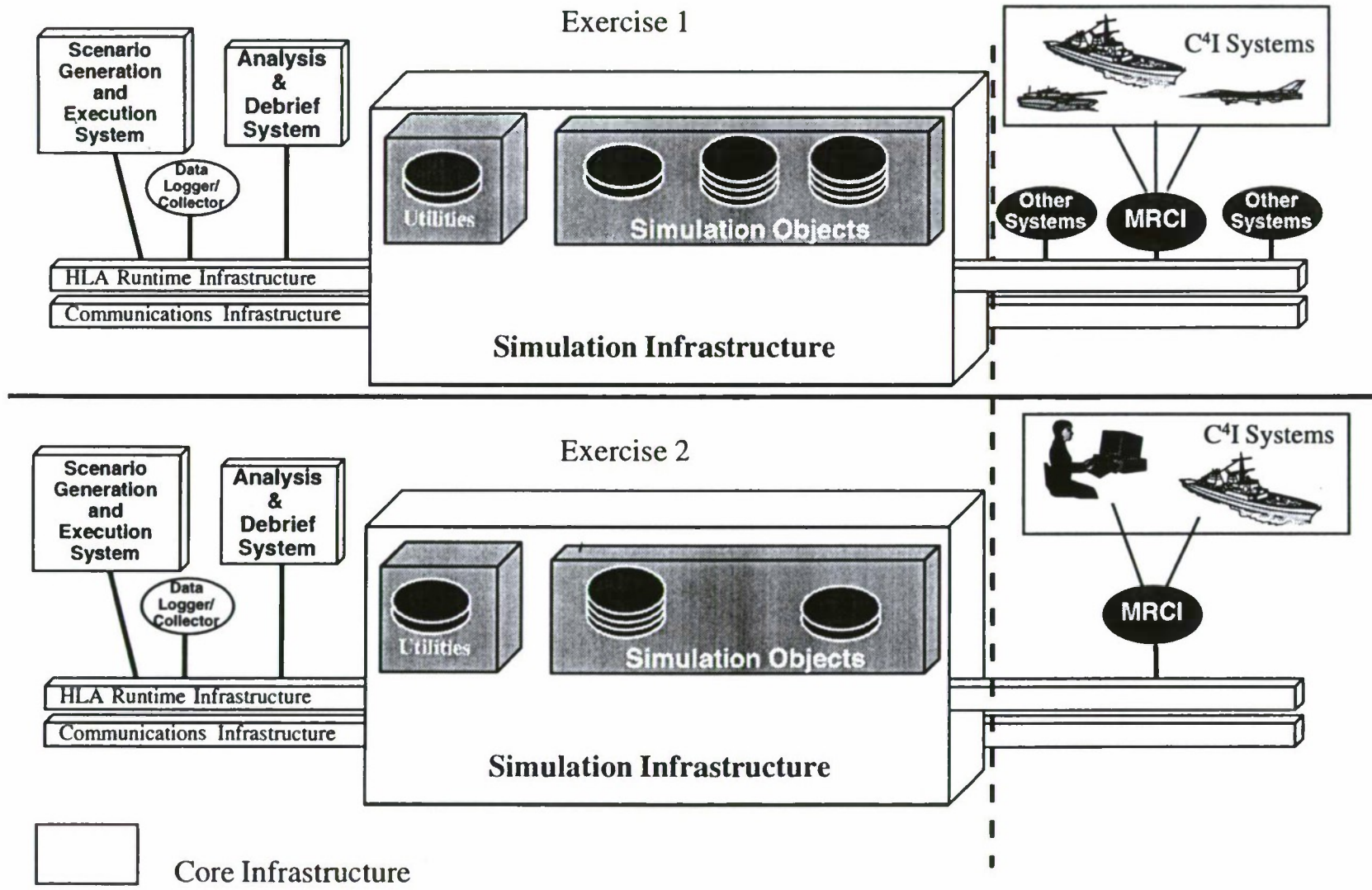
*Looking into
Inter-ops
or JSIMS etc.*



Object Lifecycle



JSIMS as a Composable System



JSIMS Program Events

- ◆ **Milestone 0 Decision July 1995**
- ◆ **Industry Day January 1996**
- ◆ **Joint ORD signed February 1996**
- ◆ **Pre-Proposal Conference April 1996**
- ◆ **RFP Release Date May 1996**
 - ◆ Will include a Technical Requirements Document
- ◆ **Contract Award Date November 1996**

Digital Info and Dialogue

◆ Hanscom Electronic RFP Bulletin Board (HERBB)

- ◆ Open account on-line at 617-377-1487
- ◆ VT-100 terminal emulation
- ◆ 1 Stop, 8 bit, no parity connection settings
- ◆ DDN: Open 129.53.28.211 / Telnet: RFP.hanscom.af.mil

◆ Web Site: www.herbb.hanscom.af.mil

(www.js.ms.mil)

◆ E-mail: jsims@stricom.army.mil

◆ JSIMS World Wide Web Homepage

- ◆ <http://www.stricom.army.mil/JSIMS/jsimshome.html>

◆ STRICOM/Industry/Academia BBS - 407-381-8666

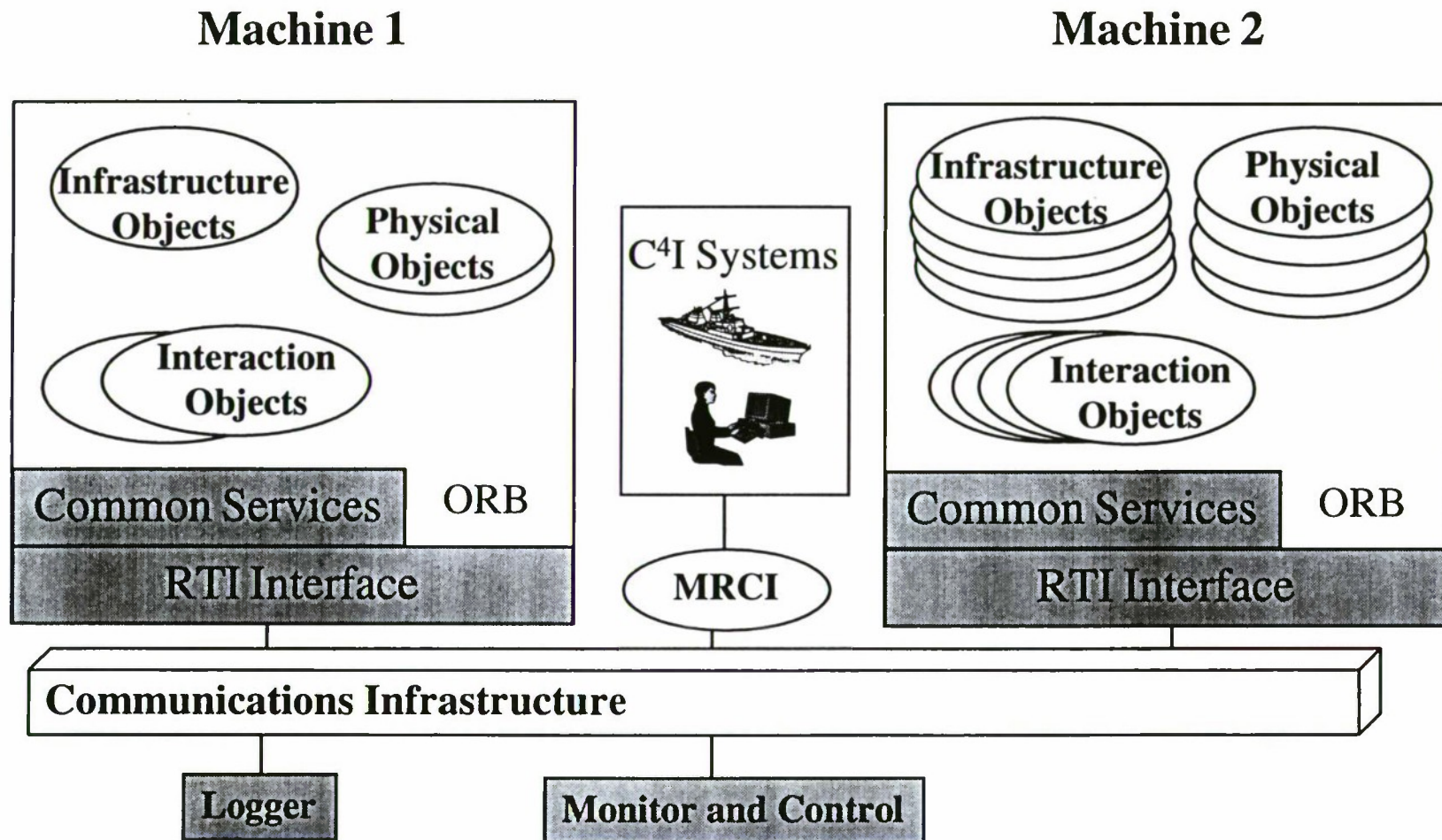
◆ Program Office Phone: 407-384-5500 and Fax 384-5599

BACK - UP

JSIMS Acquisition Schedule

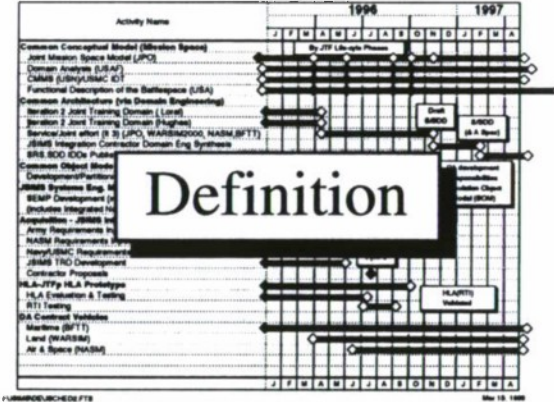
Activity Name	1996												1997
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan
Sources Sought Synopsis		◆ 2/15/96											
Acquisition Strategy Panel		◆ 2/16/96											
Draft RFP Released				◆ 4/19/96									
Pre-Proposal Conference				◆ 4/30/96									
Notice of Contract Action (NOCA)					◆ 5/14/96								
SAMP Approval					◆ 5/18/96								
Source Selection Plan Approval					◆ 5/26/96								
RFP Release					◆ 5/29/96								
Receipt of Technical Proposals						◆ 6/28/96							
SCE's Completed								◆ 8/23/96					
Technical Evaluations Completed								◆ 8/23/96					
Request for Complete Proposals								◆ 8/26/96					
Complete Proposals Submitted								◆ 9/6/96					
SSEB Completed										◆ 10/18/96			
SSAC Briefs SSA										◆ 10/31/96			
Contract Award											◆ 11/27/96		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan

Runtime JSIMS

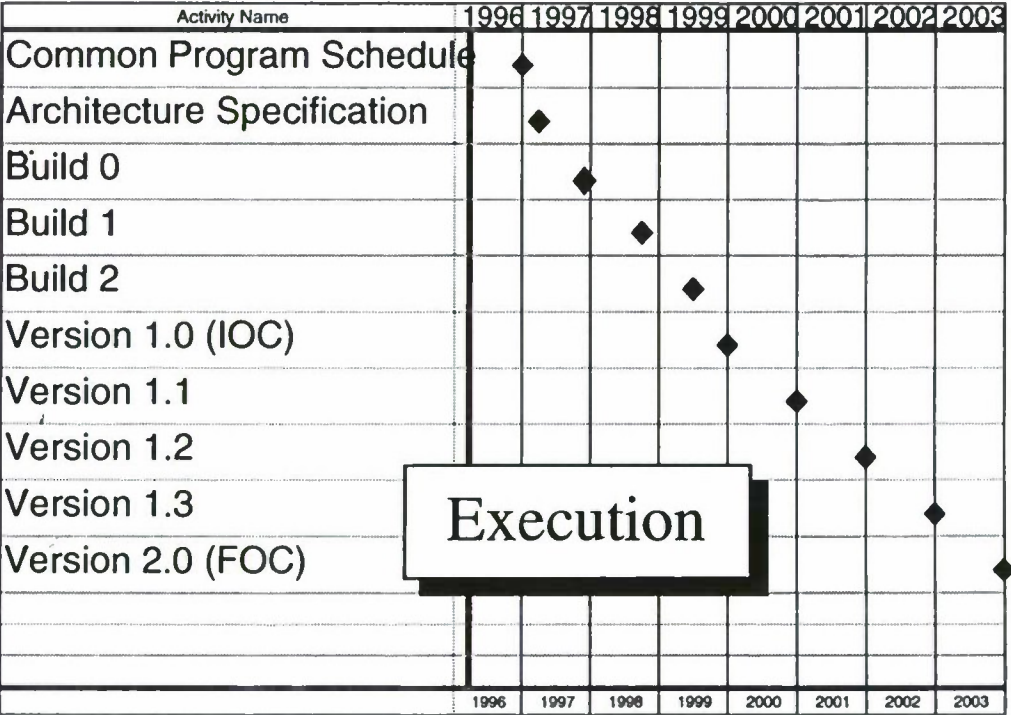


JSIMS Campaign Schedule

JPO
Contract
Award

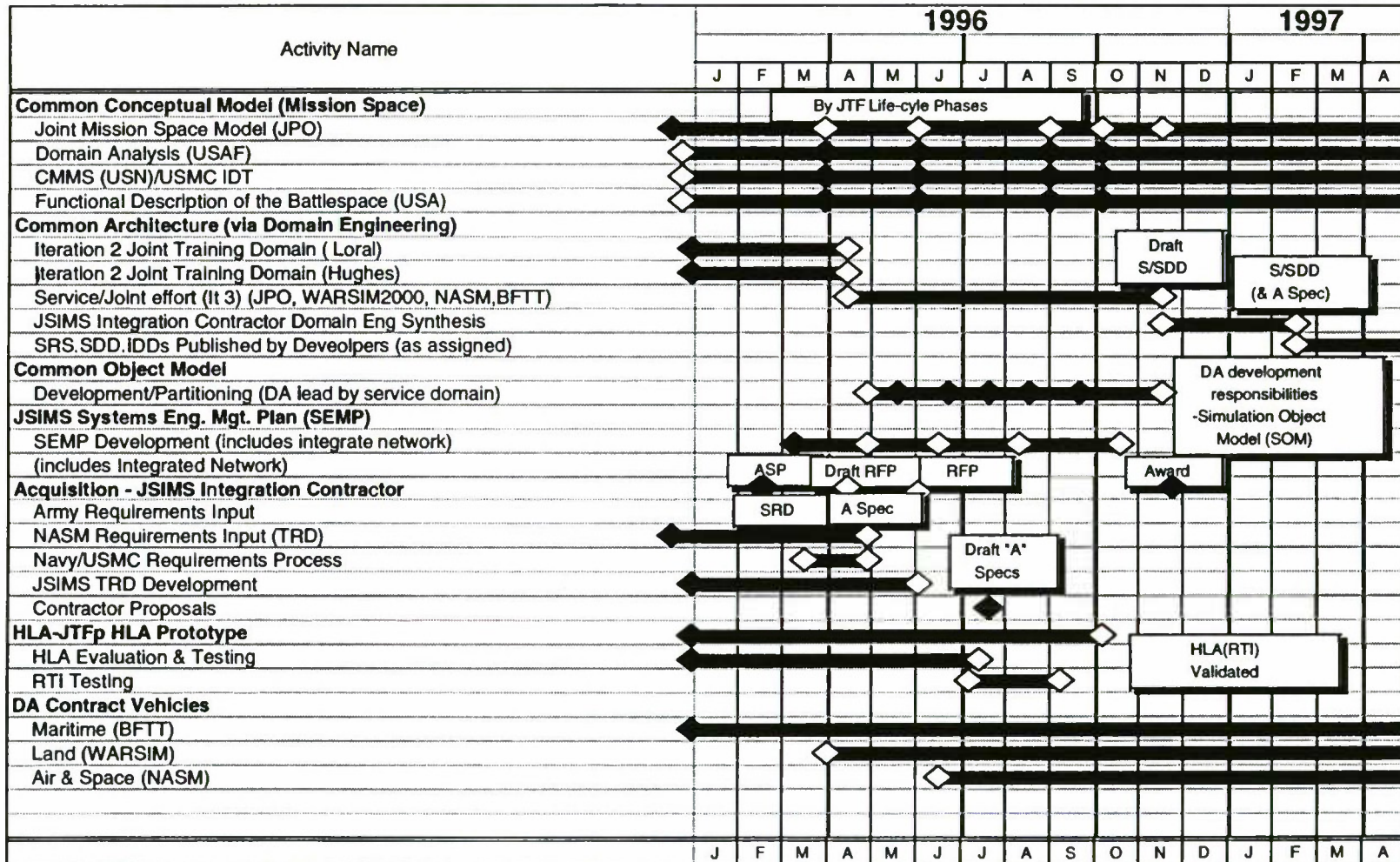


Time



Execution

JSIMS Near Term Schedule





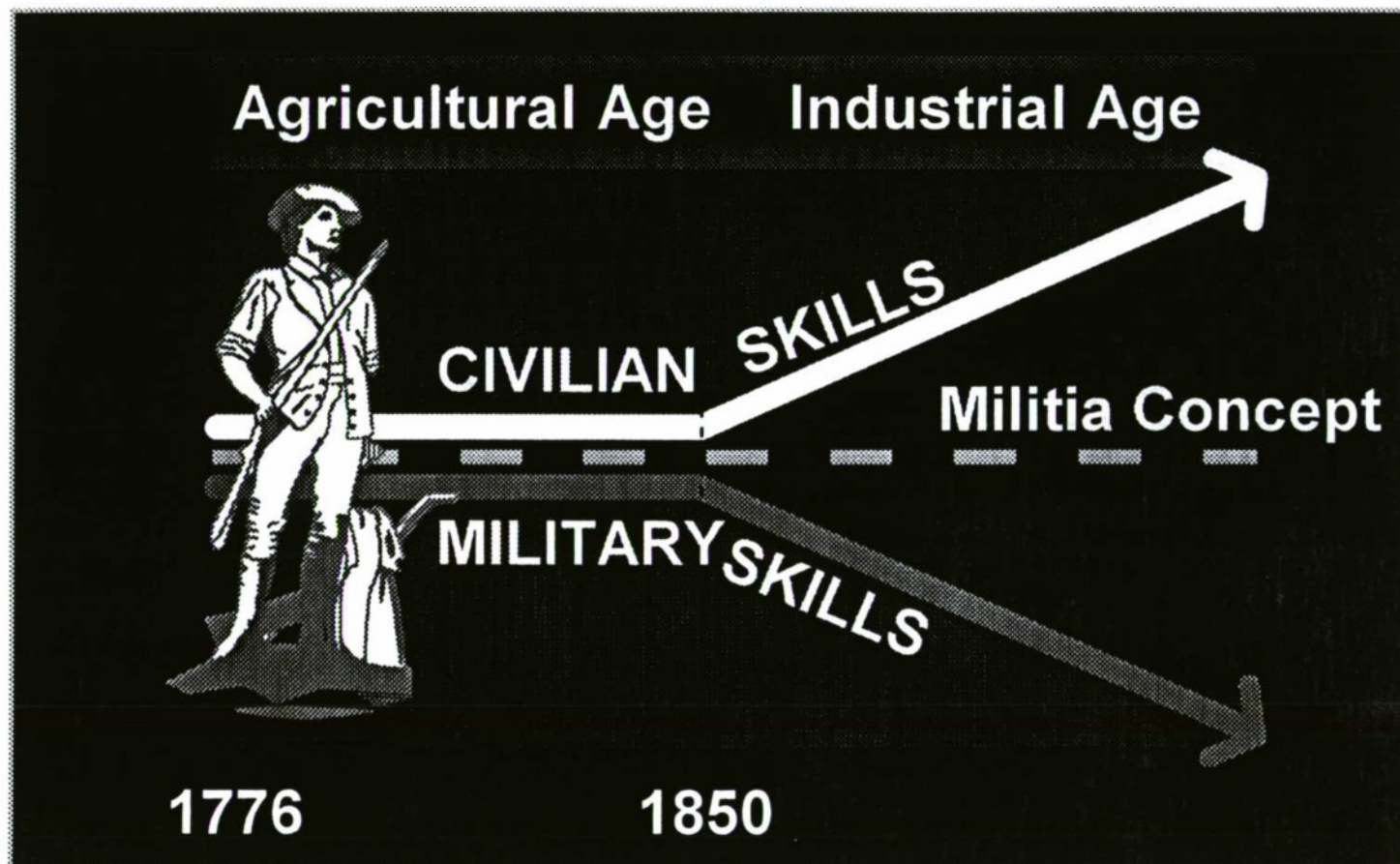
***Colonel
Frank J. Cook III
Chief, Army
National Guard
Training Division***

2 May 1996



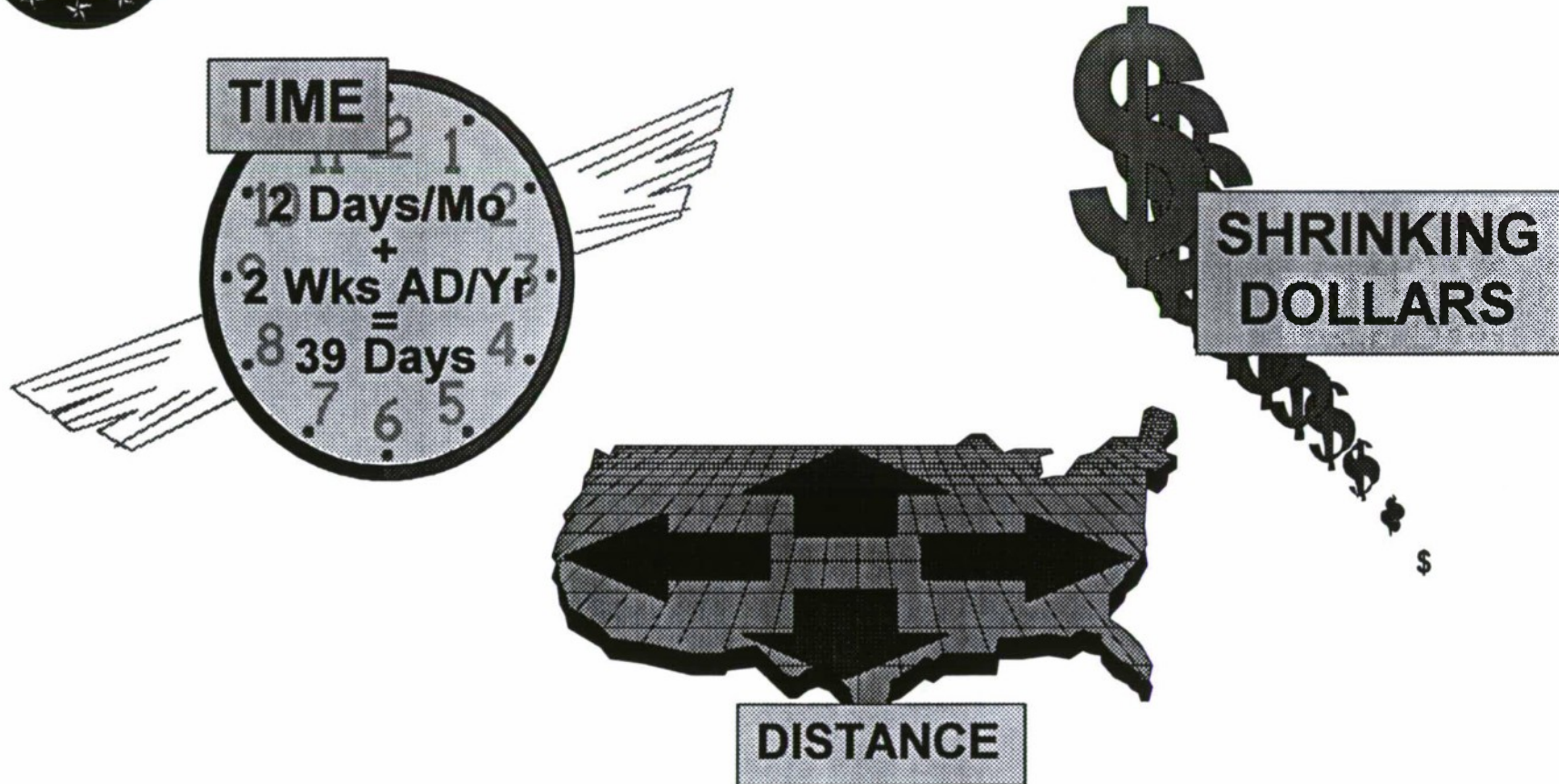


Diverging Skills





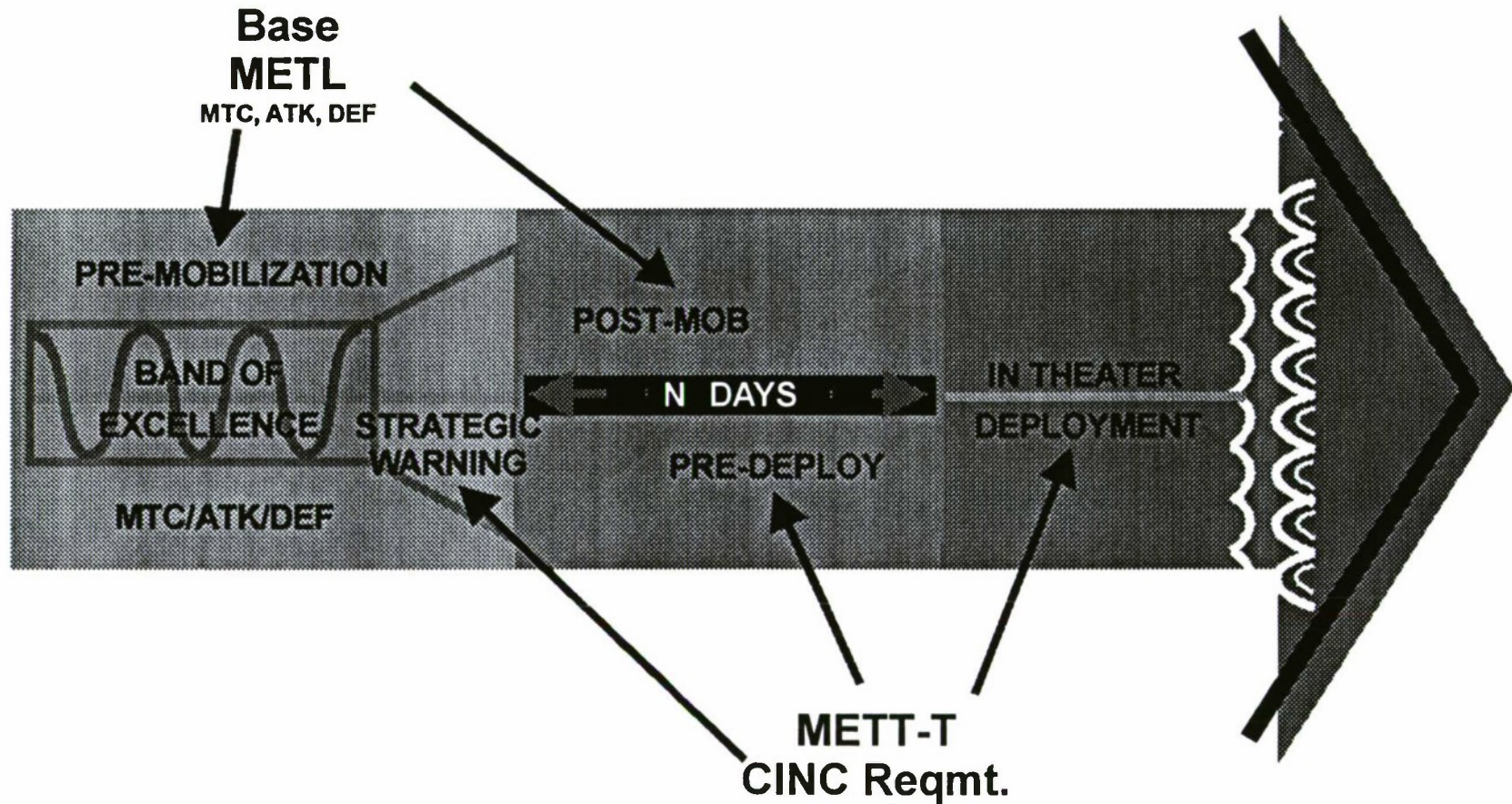
Traditional Training Barriers:



Avg to Local Tng Areas - 40.5 Miles
Avg to Major Tng Areas - 154.2 Miles
Avg to Tanks - 128.5 Miles
Avg to TADSS - 149.2 Miles

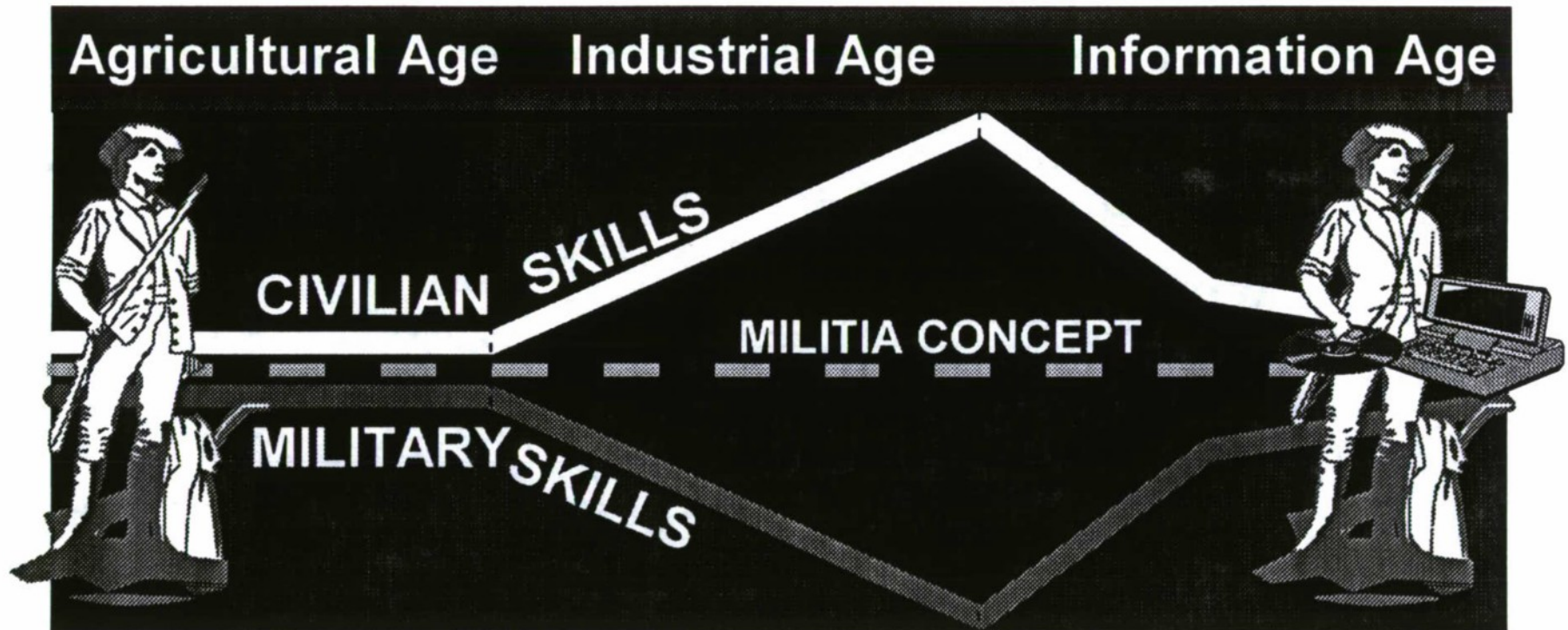


The Training Continuum





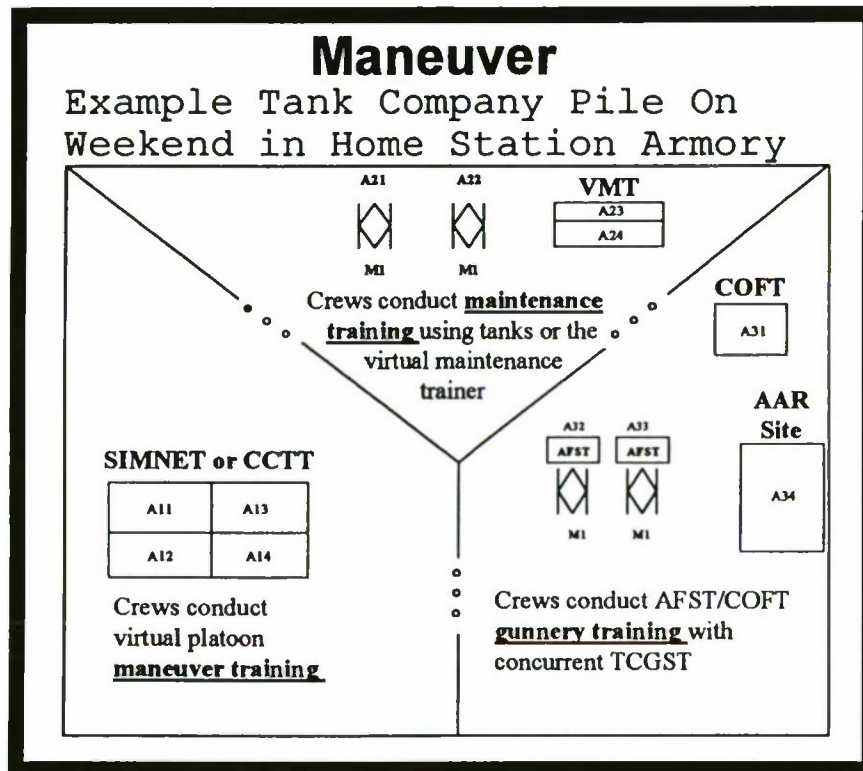
Converging Skills





Compress Training

Pile On Weekend

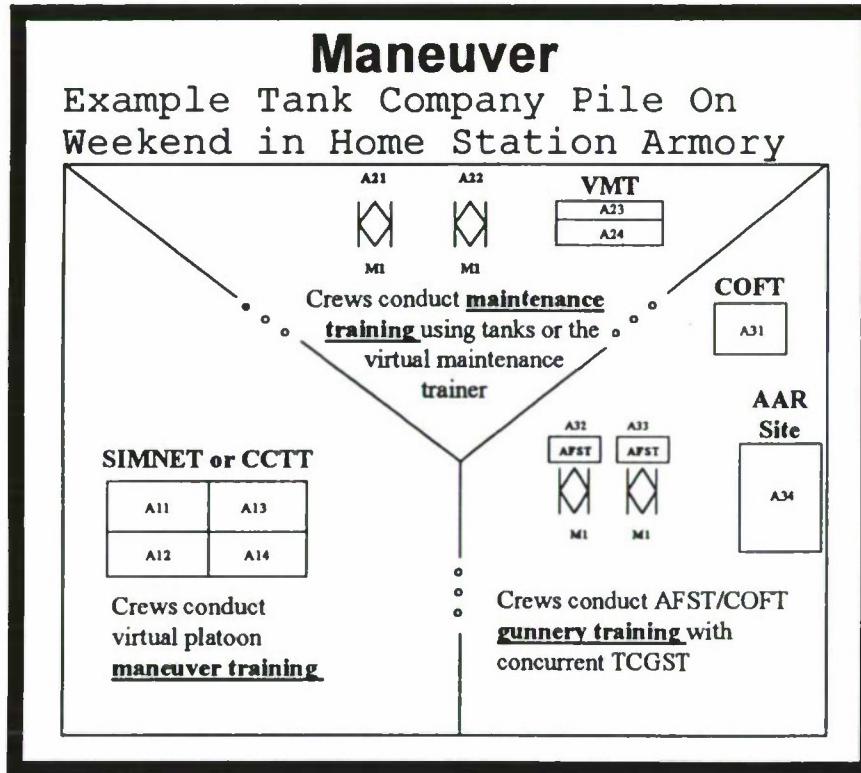


- Pile On is ARNG standard for weekend IDT
- Reduces time for travel and admin
- Device supported training



Compressed Training

Pile On Weekend



What About:

Combat Support

Combat Service Support

Air Defense Artillery

Engineers



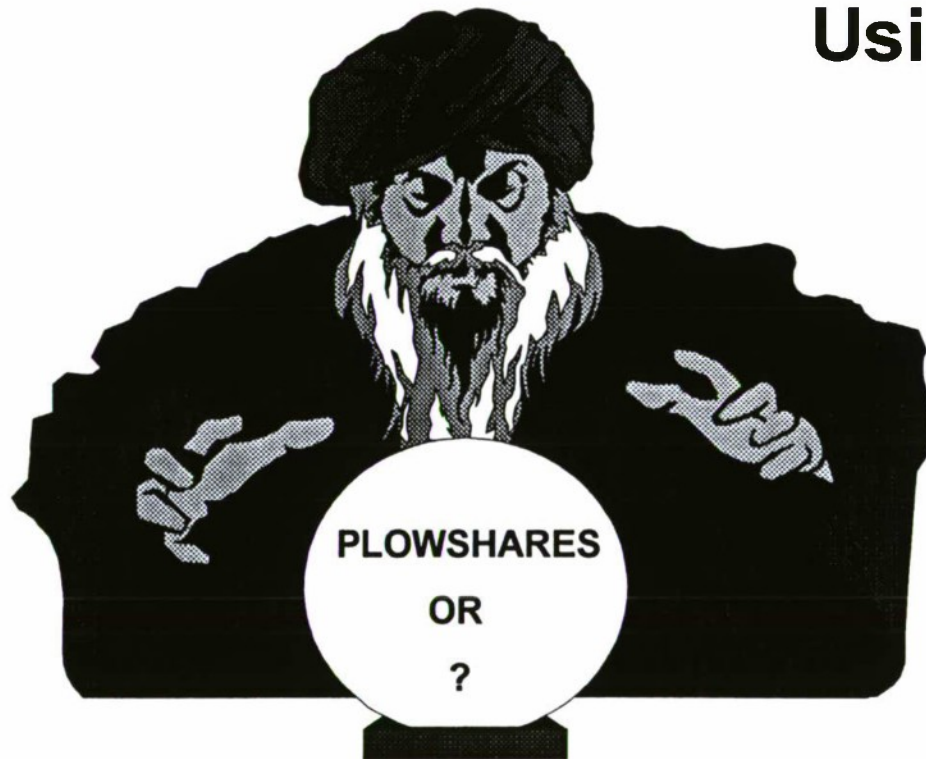
Civil-Military Cooperative:

Civil-Military Joint Training

Using

Common Hardware

DIS Compatible





How Industry Can Help:

Start With MTP Task To Be Trained To Achieve:

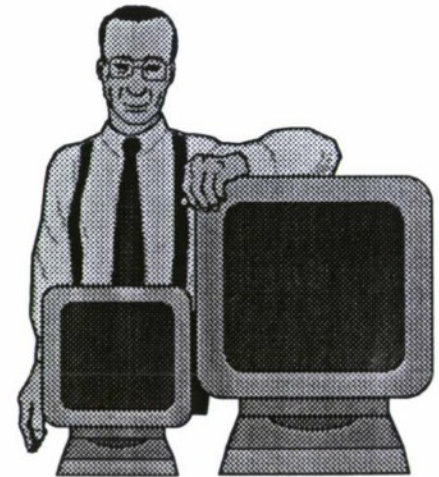
- Compressed learning time
- Embedded training devices

Increased opportunities for:

Collective Training

Staff Training

- Standardized architecture
- Dual civilian and military training





Future Needs:

- **Scaleable**
 - **Available**
 - **Friendly**
 - **Smart**
 - **Interoperable**
 - **Realistic**