AD-A280 050

### UNITED STATES ARMY COMMUNICATIONS-ELECTRONICS COMMAND

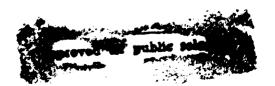
FORT MONMOUTH, NEW JERSEY



### ADVANCE PLANNING BRIEFING FOR INDUSTRY

" WINNING THE INFORMATION WAR"

**OCEAN PLACE HILTON RESORT AND SPA** 



MAY 11-12, 1994

94 6

118

### Best Available Copy

### **NOTICE**

This publication contains the briefings presented during this Advance Planning Briefing for Industry (APBI). Following the APBI, you may obtain a Proceedings Book for a minimum fee, by contacting the Defense Technical Information Center (DTIC). The telephone number is (703) 274-7633.

We hope that the above publication proves beneficial to your long-range planning efforts. If you have any additional questions and/or suggestions, please contact the Program Analysis and Evaluation Directorate, AMSEL-PE-OD, ATTN: Mari Aufseeser, (908) 532-5054.

MEMORANDUM FOR AMSEL-PE-OD

SUBJECT: Clearance of Manuscript for Public Release

Title: Various Manuscripts for APBI

1. The manuscripts for the Advanced Planning Briefing for Industry have been cleared by this office with the following determination:

 $\frac{X}{A}$  No further clearance is necessary unless substantial changes/additional information is incorporated during future revision.

- \_\_\_\_b. Clearance of the paper for this occasion does not constitute approval for other publications/presentations. Requests for future dissemination must be submitted through the Public Affairs Office for clearance.
- \_\_\_\_c. Clearance of the abstract only. Clearance of the abstract does not constitute clearance of the completed paper which must be submitted through channels to the Public Affairs Office.
- \_\_\_d. In accordance with DOD Regulation 5230.25, Distribution Statement "D" is imposed limiting disclosure to Department of Defense and DOD contractors only. Other requests must be submitted through channels to the Public Affairs Office.
- The POC for this office is Marjorie Eichholz,  $\times 21258$ . 2.
- 3. CECOM Bottom Line: THE SOLDIER.

2 Encls

1. SEL Form 1012

2. Manuscript

C<sup>n</sup>Chief, Public Affairs

### REPLY TO ATTENTION OF

### **DEPARTMENT OF THE ARMY**

HEADQUARTERS, US ARMY COMMUNICATIONS-ELECTRONICS COMMAND
AND FORT MONMOUTH
FORT MONMOUTH, NEW JERSEY 07703-5000



Office of the Commanding General

Ladies and Gentlemen:

On behalf of the Communications-Electronics Command (CECOM) and the C4I community, I am pleased to present these proceedings of the CECOM 1994 Advance Planning Briefing for Industry (APBI). The objective of this publication is to encourage an exchange of information which will assist the Department of the Army in fulfilling its long range acquisition requirements while providing Industry with fair and equitable acquisition and investment opportunities.

Since we are significantly impacted by the constraints on defense resources, it is imperative that Government and Industry continue to work together as a team in order to provide efficient and cost effective quality support to the soldier in the field.

I welcome your participation in our APBI program.

Accesio	n For			
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DTIC		IJ	- 1	
Unannounced			1	
Justification				
Ву				
Distribution /				
Availability Codes				
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Sincerely,

Otto J. Guenther

Major General, U.S. Army

Commanding

### DISCLAIMER

The use of trade names in this report does not constitute official endorsement of any products. This report may not be cited for purpose of advertisement.

The information provided is accurate as of the time of publication, and may be subject to change.

### THE OVERALL CLASSIFICATION OF THIS PUBLICATION IS UNCLASSIFIED

### ADVANCE PLANNING BRIEFING FOR INDUSTRY

### MAY 11-12, 1994 OCEAN PLACE HILTON RESORT AND SPA LONG BRANCH, NEW JERSEY

### MEETING CHAIRMAN MG OTTO J. GUENTHER COMMANDING GENERAL, CECOM

### **AGENDA**

TUESDAY, MAY 10, 1994

1800-2000 PRE-REGISTRATION - HILTON

WEDNESDAY, MAY 11, 1994

0630 REGISTRATION

0815 ADMINISTRATIVE REMARKS
Mr. Edward C. Thomas
Director, Program Analysis and Evaluation, CECOM

0825 KEYNOTE ADDRESS
MG Otto J. Guenther
Commanding General, CECOM

0900 SESSION I: ACQUISITION INITIATIVES

SESSION OVERVIEW AND INTRODUCTION MODERATOR
Mr. Edward G. Elgart
Director, C3I Acquisition Center, CECOM

CECOM ACQUISITION REFORM
Mr. Edward G. Elgart
Director, C3I Acquisition Center, CECOM

O920 CONTINUOUS ACQUISITION AND LIFE CYCLE SUPPORT Mr. Richard L. Uldrich CALS Principal, CECOM CALS Support Office

O940 COMMERCIAL PRACTICE INITIATIVES

Mr. J. Michael Ryskamp
Chief, Product Integrity and Value Management Branch
Product Integrity and Production Engineering
Directorate, CECOM

1000 QUESTION AND ANSWER PERIOD

1010 BREAK

1030 SESSION II: "SEE AND HEAR" Warfighting capabilities cannot be eroded by night or weather. Warfighters must "see" and "hear" the same battlefield based upon common information appropriate for his/her platform or echelon of command. SESSION OVERVIEW AND INTRODUCTION MODERATOR COL Thomas L. Vollrath Program Executive Officer, Intelligence and Electronic Warfare INTERCEPT AND TACTICAL INTELLIGENCE DATA FUSION 1040 TECHNOLOGY Mr. Ronald J. Dlugosz Chief, Advanced Concepts Division Intelligence and Electronic Warfare Directorate, CECOM "A NEW WAY OF DOING BUSINESS" - GOVERNMENT AND 1100 INDUSTRY TEAM Mr. Larry L. Fillian Associate Director, Operations Night Vision and Electronic Sensors Directorate, CECOM 1120 JOINT STARS GROUND STATION MODULE COL James L. Mitchell Project Manager, Joint Surveillance Target Attack Radar System 1145 QUESTION AND ANSWER PERIOD 1200 LUNCH FIREFINDER P31 PROGRAM 1330 Ms. Maureen A. Molz Project Leader, FIREFINDER P3I Program Product Manager, FIREFINDER IEW COMMON SENSOR SYSTEMS 1345 Mr. William S. Hayden Deputy Project Manager, Signals Warfare 1400 ELECTRONICS FOR THE INFORMATION AGE Dr. Clarence G. Thornton Directorate Executive, Electronics and Power Sources, US Army Research Laboratory 1430 **OUESTION AND ANSWER PERIOD** 1440 BREAK

1500 SESSION III: "DISRUPT AND DENY"

The warfighter must have uninterrupted access to the electromagnetic spectrum to eavesdrop and take its use away from the enemy through jamming and precision strikes.

SESSION OVERVIEW AND INTRODUCTION MODERATOR Mr. Robert F. Giordano Director, Research, Development and Engineering Center, CECOM

- THE ARMY ADVANCED CONCEPTS AND TECHNOLOGIES PROGRAM (ACT II)
  Dr. Kenneth A. Gabriel
  Chief, Army Research Office Washington
- 1530 ELECTRONIC WARFARE TECHNOLOGY AND IEW TECHNOLOGY
  ASSESSMENT CENTER
  Mr. Ronald J. Dlugosz
  Chief, Advanced Concepts Division
  Intelligence and Electronic Warfare Directorate, CECOM
- 1550 ARMY SECURE TACTICAL INITIATIVE (ASTI) TRUSTED
  NETWORK BASE (TNB)
  Mr. Joseph J. Pucilowski, Jr.
  Director, Space and Terrestrial Communications, CECOM
- SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL
  TECHNOLOGY
  Mr. Gary P. Martin
  Product Leader, Single Channel Inti-Jam Manportable
  Terminal
  Project Manager, MILSTAR (Army)
- 1630 QUESTION AND ANSWER PERIOD
- 1730 RECEPTION

### THURSDAY, MAY 12, 1994

0755 ADMINISTRATIVE REMARKS
Mr. Edward C. Thomas
Director, Program Analysis and Evaluation, CECOM

0800 SESSION IV: "OUT-THINK" THE ENEMY

The warfighter must maintain the upper hand and react quicker than the enemy through more timely intelligence. The warfighter must operate within the enemy's decision cycle.

SESSION OVERVIEW AND INTRODUCTION
MODERATOR
Mr. Bennett R. Hart
Deputy Program Executive Officer, Command and Control
Systems

ARMY GLOBAL COMMAND AND CON'ROL SYSTEM
LTC David J. Kirks
Product Manager, Strategic Army Command and Control
Software
Project Manager, Army Worldwide Military Command
and Control Systems Information System

MANEUVER CONTROL SYSTEM VERSION 12
Mr. Peter Johnson
Product Manager, Maneuver Control System/Common
Hardware System
Project Managel, Operations Tactical Data Systems

O840 C3 TECHNOLOGY ENGINEERING AND INTEGRATION
Mr. Robert J. Carnevale
Manager, ATCCS SE&I Program
Program Executive Office, Command and Control Systems

0855 QUESTION AND ANSWER PERIOD

0905 BREAK

0925 SESSION V: "COMMUNICATE"

Systems must be linked through intelligent gateways which are transparent to the warfighter in order to fully exploit information management technologies.

SESSION OVERVIEW AND INTRODUCTION
MODERATOR
BG David R. Gust
Program Executive Officer, Communications Systems

0935	DIGITAL BATTLEFIELD COMMUNICATIONS
	Mr. Joseph J. Pucilowski. Jr. Director, Space and Terrestrial Communications, CECOM
0955	THE FUTURE DATA RADIO Mr. Harold H. Bahr Deputy Project Manager, Army Data Distribution System
1010	SUPER HIGH FREQUENCY (SHF) TRI-BAND ADVANCED RANGE EXTENSION TERMINAL LTC Michael R. Mazzucchi Product Manager, Tactical Satellite Terminals Project Manager, Satellite Communications
1025	QUESTION AND ANSWER PERIOD
1040	STRATEGIC/BASE COMMUNICATIONS MODERATOR Mr. Thomas J. Michelli Deputy Program Manager, Army Information Systems and Deputy, US Army Information Systems Management Activity
1050	WHITE SANDS MISSILE RANGE TEST SUPPORT NETWORK LTC Scipio deKanter Product Manager, Western Hemisphere Transmission Systems Project Manager, Defense Communications and Army Switched Systems
1105	OUTSIDE CABLE REHABILITATION II (OSCAR II) COL Dennis M. Moen Project Manager, Defense Communications and Army Switched Systems
1115	SMALL COMPUTER PROGRAMS: ARMY PERSONAL COMPUTER - 1 (PC-1) ARMY FORTABLE COMPUTER - 1 (PORTABLE-1) SMALL MULTIUSER COMPUTER - II (SMC-II) COL Dennis M. Moen Project Manager, Defense Communications and Army Switched Systems
1140	QUESTION AND ANSWER PERIOD
1150	LUNCH

SESSION VI: SUSTAINING THE BATTLEFIELD 1315 SESSION OVERVIEW AND INTRODUCTION MODERATOR Mr. Colin F. MacDonnell, Jr. Director, C3I Logistics and Readiness Center, CECOM 1325 **SPARES** Mr. William C. Riehl Director, Materiel Management, CECOM 1340 BATTERY SELECTION AND POWER MANAGEMENT IN MAJOR SYSTEMS TO REDUCE O&S COSTS Mr. Richard Rizzo AMC Battery Focal Point Systems Management Directorate, CECOM 1355 OPPORTUNITIES IN FOREIGN MILITARY SALES Mr. Eugene P. Bennett Director, Security Assistance Management, CECOM 1415 QUESTION AND ANSWER PERIOD 1430 EXECUTIVE PANEL MG Otto J. Guenther Commanding General US Army Communications-Electronics Command BG David R. Gust Program Executive Officer Communications Systems Mr. Robert F. Giordano Director, Research, Development and Engineering Center, CECOM Mr. Colin F. MacDonnell, Jr. Director, C3I Logistics and Readiness Center, CECOM Mr. Edward G. Elgart Director, C3I Acquisition Center, CECOM Mr. Bennett R. Hart Deputy Program Executive Officer Command and Control Systems COL Thomas L. Vollrath Program Executive Officer Intelligence and Electronic Warfare Mr. Thomas J. Michelli Deputy Program Manager, Army Information Systems and Deputy, US Army Information Systems Management Activity

1600 ADJOURN

CLOSING REMARKS
MG Otto J. Guenther

Commanding General, CECOM

1545

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### KEYNOTE ADDRESS

MG OTTO J. GUENTHER
COMMANDING GENERAL, CECOM

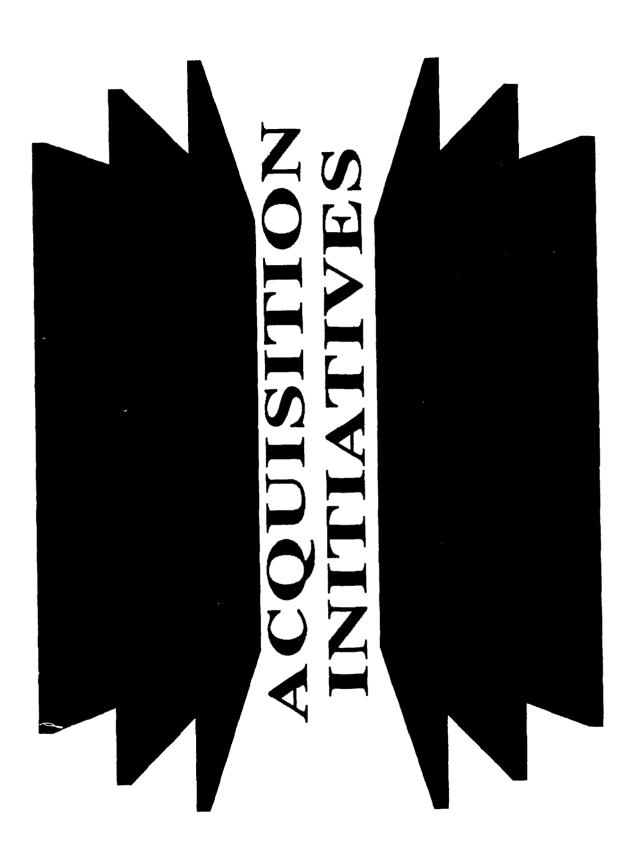
### **NOTES**

### SESSION I

### **ACQUISITION INITIATIVES**

### **MODERATOR**

MR. EDWARD G. ELGART
DIRECTOR
C31 ACQUISITION CENTER
CECOM



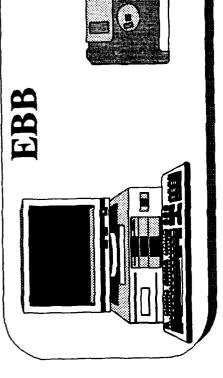
# CECOM ACQUISITION REFORM



### DIRECTOR, C31 ACQUISITION CENTER EDWARD G. ELGART UNCLASSIFIED

# ACQUISITION STREAMLINING

### AGENDA



BEST VALUE



FULL LIFE CYCLE

CDRL/SPEC REDUCTION CLAUSE SCRUB REDUCE SPECS

REDUCE CDRL TEMPLATING ATD's

ADVANCED TECHNOLOGY
DEMONSTRATIONS
REDUCE COST & TIME
OF DOING BUSINESS

## ACQUISITION STREAMLINING AGENDA(CONT)

NDI/COTS ACQUISITIONS

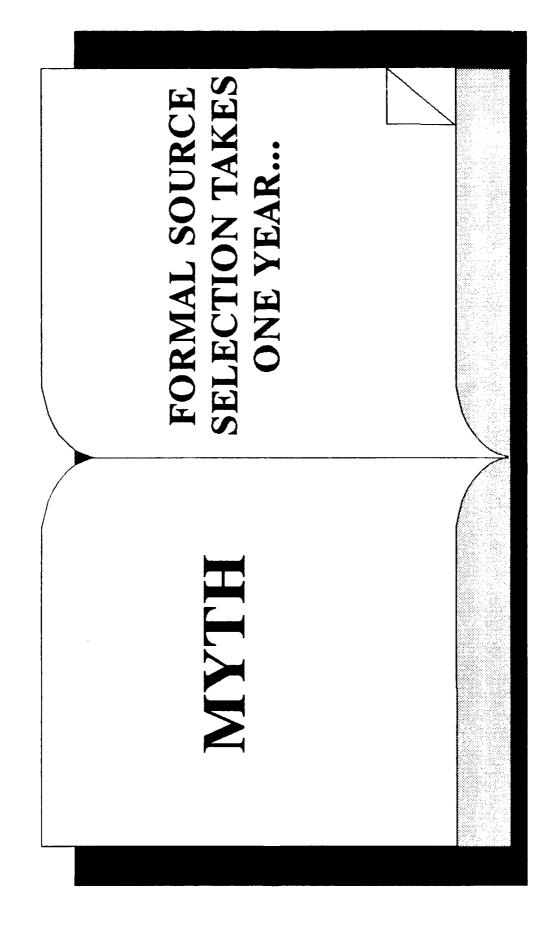


PACER ACQUISITIONS



OMNIBUS CONTRACTING

## PACER ACQUISITIONS



### PACER ACOUISITIONS REALITY 96 DAYS AWARDED TESAR **AWARDED IN 72 DAYS** 12 REALITY TRI-BAND

# BEST VALUE ACQUISITIONS



# BEST VALUE ACQUISITIONS

### REALITY

CECOM USES BV FOR ALL
COMPETITIVE NEGOTIATED
ACQUISITIONS

REALITY

33% CECOM BV AWARDS TO OTHER THAN LOWEST OFFER ALL BEST VALUE PROTESTS **DENIED AT GAO** 

## CDRLS/SPECS REDUCTION



CHANGE THE CULTURE



CHALLENGE THE "NORM"



**TEAMWORK AND RESPECT** 





TEMPLATE REVIEW

FEWER SPECS AND STANDARDS **LESS GOVERNMENT OVERSIGHT** NON-STANDARD CLAUSES ONLY DATA WE NEED **FEWER REPORTS** 

### ADVANCED TECHNOLOGY **DEMONSTRATIONS** (ATD's)

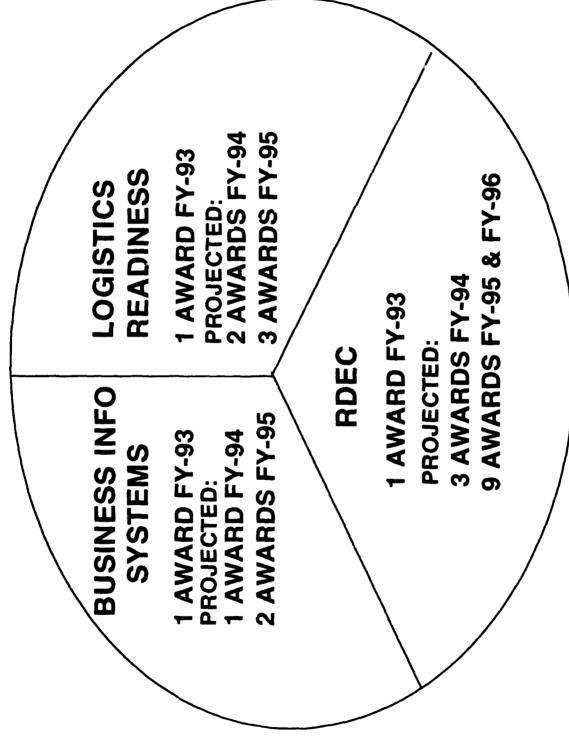
12 MAN ARO = 21PROPOSALS 1 CECOM MMM ZXW BAA ZXXXX VALUE BEST

REDUCING TIME AND COST

Y WY

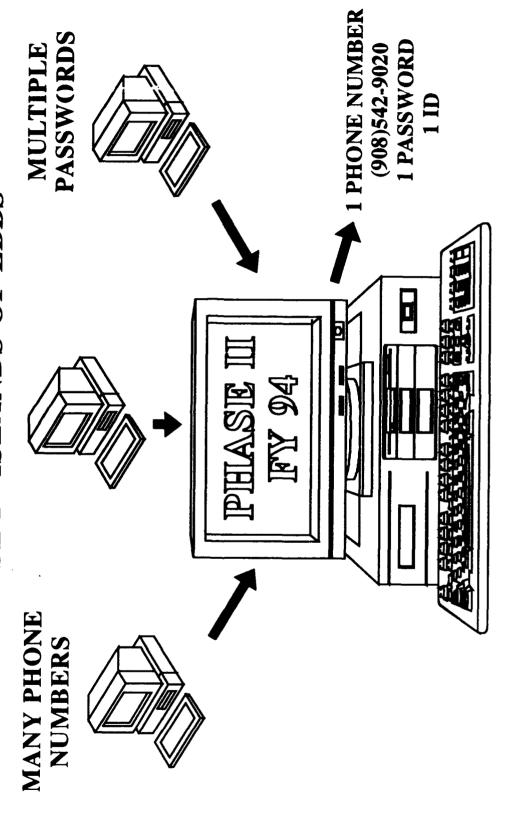
CBD

## OMNIBUS CONTRACTING

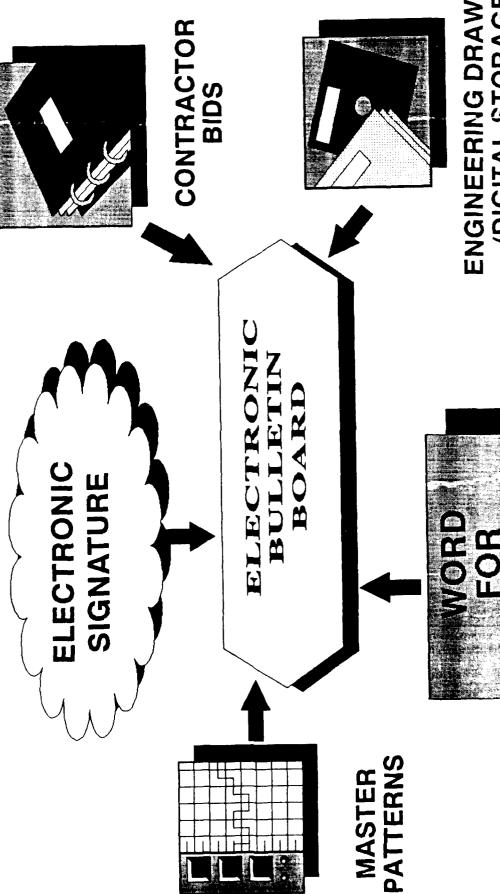


## ELECTRONIC BULLETIN BOARD CONTRACTING WILL UTILIZE THE

## PHASE I - ISLANDS OF EBBS



## PROCUREMENT PROCESS ALL ELECTRONIC

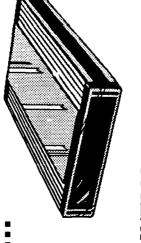


ENGINEERING DRAWINGS
(DIGITAL STORAGE &
RETRIEVAL OF
ENGINEERING DRAWING
SYSTEM)

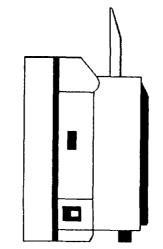
SMOONIM

# NDI/COTS ACQUISITIONS

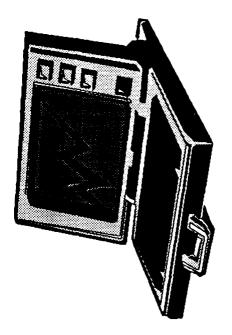
COMMERCIAL MARKETS INCREASINGLY ARE DEVELOPMENTS AND DoD CAN NO LONGER DRIVING STATE-OF-THE-ART TECHNOLOGY AFFORD TO SEPARATELY FUND MANY TECHNOLOGY EFFORTS



DEFENSE PERFORMANCE REVIEW MRS. PRESTON (DUSD-AR)









WHAT WILL

## TOMORROW

### BRING...

### **ACQUISITION PROCESS** RE-ENGINEERING THE

(PACER ACQS) .90-100 DAYS BEST VALUE CYCLE TIME REDUCTION 2 60-70 DAYS REDUCE IFB

INDUSTRY SUPPORT

## POINTS OF CONTACTS

OMBUDSMAN MR. JOHN J. GOODBODY (908) 532-1467

COMPETITION ADVOCATE MR. ROBERT CRAWFORD (908) 532-5056

> SMALL & DISADVANTAGE BUS UTILIZATION OFC(SADBU) MR. RICK KOLARSICK (908) 532-4511

TECHNICAL INDUSTRIAL LIAISON OFC MS. NANETTE MULLENAX (908) 532-2671

MR. JOSEPH BRADY (908) 532-5500

**ELECTRONIC BULLETIN** 

BOARD

MR. ROGER BERGER

(908) 532-1912

## SMALL BUSINESS GOALS FY94

	GOALS	ACHIEVED (A/O 31 MAR 94)
SMALL BUSINESS	10.9%	12.1%
SMALL DISADVANTAGE (8A)	3.0%	3.1%
WOMEN OWNED	<b>%6</b> ·	.52%
SMALL BUS R&D	8.6%	7.4%
EDUCATIONAL HBCU/MI	19.0%	16.0%

#### NOTES

#### CECOM CALS Support Office RICHARD ULDRICH CALS Principal

Unclassified

SUBJECT: APBI Briefing - CECCM CALS Initiatives

OBJECTIVE: CALS is dedicated to making the transition from a paper environment to digital information. CALS will dramatically reduce product development lead times, improve quality, and reduce acquisition and engineering costs by re-engineering acquisition and logistics business processes.

#### FACTS:

- ◆ Goals of CALS are to bu\_ information once, and use many times; make best use of CALS/commercial standards; establish integrated product database; and utilize automation as a resource multiplier.
- ◆ Technical Manuals, Drawings, Electronic Procurements, Computerized Manufacturing, Electronic Engineering Change Proposals, Infrastructure and Engineering Data are directed by the CALS standards.
- ♦ Contract Opportunities: Legacy conversion of Master Patterns and Technical Manuals.

BRIEFER: Richard Uldrich, CECOM CALS Principal, AMSEL-LC-ED-CALS, (908) 532-3744.

Action Officer: Richard Uldrich CECOM CALS Principal (908) 532-3744

## WHAT IS CALS

- Continuous Acquisition and Life-Cycle Support
- Integration of digital technical information for weapon systems
- Acquisition
- Design
- Manufacture
- Life-cycle support
- Transition from paper to digital information

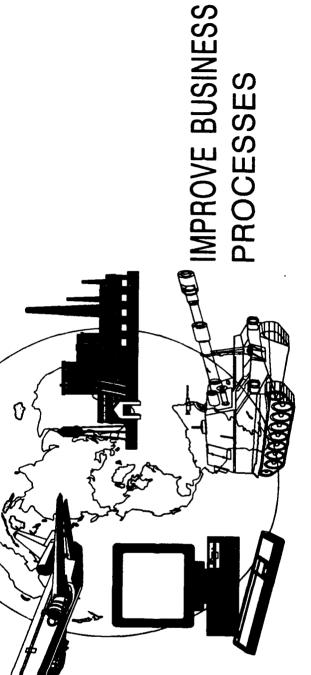
#### GOALS

BUY INFORMATION

ONCE USE MANY TIMES

MAKE BEST USE OF CALS/COMMERCIAL STANDARDS

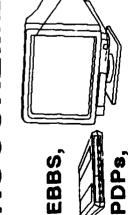
ESTABLISH INTEGRATED PRODUCT DATABASE



UTILIZE AUTOMATION AS RESOURCE MULTIPLIER

# CECOM CALS ENVIRONMENT

#### **PROCUREMENT** ELECTRONIC



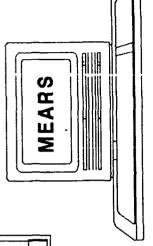
SOLICITATIONS, etc.

#### DRAWINGS

ELECTRONIC

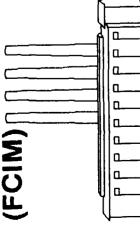
**ECPs** 

(DSREDS)



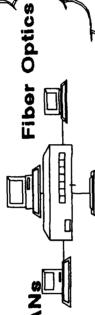
MULTI-USER ECP **AUTOMATED** SYSTEM REVIEW

#### MANUFACTURING COMPUTERIZED



CALS TESTBED

#### INFRASTRUCTURE



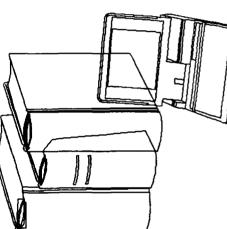
MANs

otc.

"SMT"

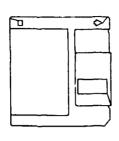
LSA DATA, MANUALS,

etc.

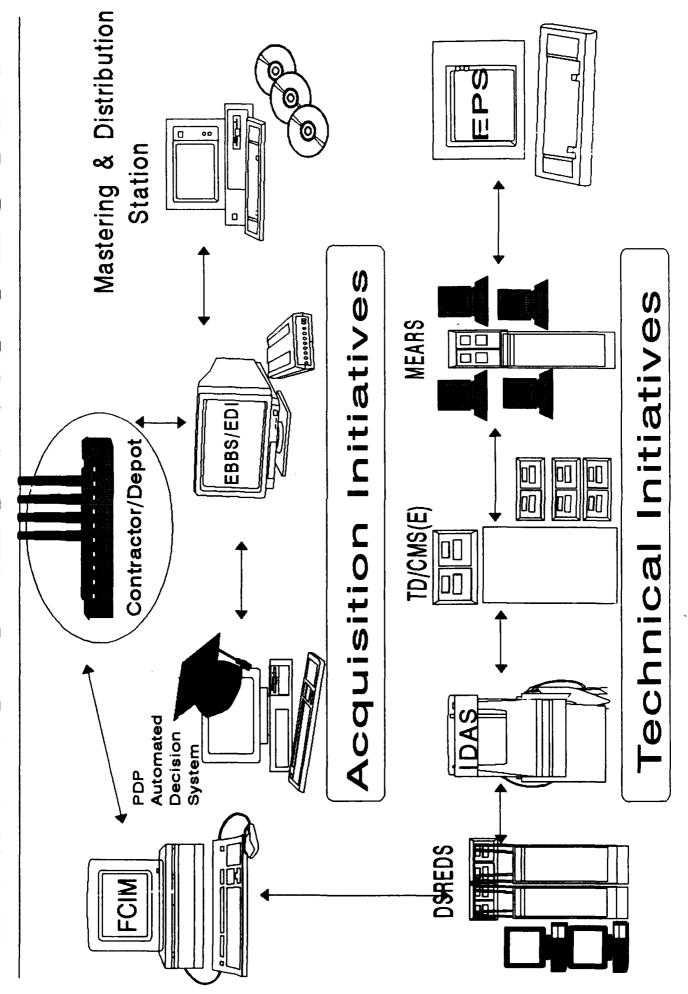


#### ENGINEERING DATA

DESIGN DATA, SPECS, MPs, REPORTS, etc.



# LINKING CALS PROCESSES



## CALS STANDARDS

Dod Standard	NATIONAL/INTERNATIONAL STANDARD	APPLICATION
MIL-STD-1840B		Data Interchange, File Management
MIL-STD-1388-1A/2A/2B		LSA/LSAR
MIL-STD-28000	IGES	CAD, Vector Graphics
MIL-M-28001	SGML	Automated Publishing
MIL-R-28002	CCITT 4 RASTER	Raster Scanned Images
MIL-D-28003	CGM	Vector Graphics
PDES		Product Data Exchange
MIL-HDBK-59B		CALS Implementation Guide
MIL-STD-974		Contractor Integrated Technical
		Information Services

## WHERE WE ARE GOING

#### Logistics

NEAR TERM

TODAY



MERM TERM FULL CALS COMPLIANT SYSTEM

LANGUAGE

CONTRACT

SGML

TMs

DIGITAL CONTRACT REQM'TS BASIC 138

LSA

CALS CONTRACT LANGUAGE

1388-2B VALIDATED SOFTWARE FULL CALS CONTRACT LANGUAGE

### WHERE WE ARE GOING Engineering Data



TERM NEAR



**DRAWINGS** 

RASTER

RASTER/VECTOR

DIGITAL/MYLAR

DIGITAL

VECTOR

**MP's** 

MYLAR

FULL **TOBYHANNA** 

ON-LINE

INTERACTIVE **CECOM/TOAD** 

RQM'TS TO DELIVERY **30 DAY** BUILD

FCIM

(TOAD)

35

## CONTRACT OPPORTUNITY

|Title: | Master Pattern Legacy Conversion

Objective: | Convert Mylar Master Patterns to Digital Format

Proposed Contract

Type

Indefinite Delivery/Indefinite Qty Contract with Maximum Ceiling

Key Milestones:

(next contract FY-95) IFB opened - Apr 94 IFB closed - May 94

50K-100K per year

Estimated Value:

POC: John Myer

(908) 532-5392

# CONTRACT OPPORTUNITY (con't)

Title:

Technical Manual Legacy Conversion

Objective:

Convert Technical Manuals to Digital Format

Up to 1.4M pages

Proposed

Contract Type: | Not Identified

Key Milestones:

Identify Initial Funding FY-95

Estimated Value:

Up to \$500K

(908) 532-3016 POC: Fred Loeser

## POINT OF CONTACT

### RICHARD ULDRICH (908) 532-3744

#### CALS SYMPOSIUM ACRONYM LIST

APBI Advance Planning Briefing For Industry
APIC Acquisition Process Improvement Campaign

ARL Army Research Laboratory

ASCII American Standard Code For Information Interchange

BPI Bits Per Inch

CAD Computer-aided Design

CALS Continuous Acquisition & Life-Cycle Support

CCITT Consultative Committee on International Telephony and

Telegraphy

CCSO CECOM CALS Support Office

CD-ROM Compact Disk-Read Only Memory
CEO Corporate Executive Officer

CG Commanding General

CGM Computer Graphic Metafile

CICS Customer Information Control System

CITIS Contractor Integrated Technical Information Service

DCI Directorate for Corporate Information

DDN Defense Data Network

DISN Defense Information Systems Network
DLA Defense Logistics Information System

DSREDS Digital Storage and Retrieval Engineering Data System

DTD Document Type Description

BBBS Electronic Bulletin Board System

RC Electronic Commerce

ECP Engineering Change Proposal
EDI Electronic Data Interchange
EPS Electronic Publishing System

FCIM Flexible Computer Integrated Manufacturing

FDDI Fiber-Optic Distributed Data Interface
FOSI Format Output Specification Instance

GDT Graphic Data Terminal
GUI Graphical User Interface

HW Hardware
HD Hard Drive

IC Integrated Circuit

IDAS Image Display & Access System

IDIQ Indefinite Delivery/Indefinite Quantity
IDNX Integrated Digital Network Exchange
IETM Interactive Electronic Technical Manual

IFB Invitation for Bid

IGES Initial Graphics Exchange Standard
ISA Industry Standard Architecture
IWSDB Integrated Weapon System Data Base

JCALS Joint Computer-Aided Acquisition & Logistics

Support

JEDMICS Joint Engineering Data Management Information &

Control System

JLSC Joint Logistics Systems Center

LAN Local Area Network

LSA Logistics Support Analysis

LSAR Logistics Support Analysis Record

MANs Metropolitan Area Network

MEARS Multi-User Engineering Change Proposal Automated

Review System

MB/S Megabits Per Second

MHz Megahertz

MIPA Multi-Functional Information Processing Activity

MOA Memorandum of Agreement

MPs Master Patterns

MS Microsoft

MVS/XA Multiple Virtual Storage/Extended Architecture NAWCADI Naval Air Warfare Center Aircraft Division -

Indianapolis

NSC Network Systems Corporation

NSN National Stock Number

OCR Optical Character Recognition

OS Operating System
PC Personal Computer
PCB Printed Circuit Board
PDPs Procurement Data Package
PEO Program Executive Officer
PMR Provisioning Master Record

QA Quality Assurance
RAM Random Access Memory
RFP Request for Proposal
R&D Research & Development

Software

SBA Small Business Administration SCSI Small Computer System Interface

SGML Standard Generalized Mark-Up Language

SNA System Network Architecture

SYSOP Systems Operator

TCP/IP Transport Control Protocol/Internet Protocol
TD/CMS Technical Data/Configuration Management System
TD/CMS(E) Technical Data/Configuration Management System -

Enhanced

TMS Technical Manuals
TOAD Tobyhanna Army Depot

T1 Data Traffic Carrier Access

VGA Video Graphics Adapter

VHSIC Very High Speed Integrated Circuit
VHDL VHSIC Hardware Description Language

WAN Wide Area Network

#### NOTES

#### Commercial Practice Initiatives

Product Integrity & Production Engineering J. Michael Ryskamp Directorate



### UNCLASSIFIED

#### POINT PAPER

SUBJECT: Advanced Planning Briefing for Industry (APBI) Presentation

PURPOSE: To provide information regarding the Product Integrity and Production Engineering Directorate (PIPE) Commercial Practice Initiatives presentation for the 11-12 May 1994 APBI.

#### FACTS:

- o PIPE coordinated establishement of both the Improved "Military" parts Availability and Selection Working Group (IMPAS-WG) and the ISO 9000 Implementation Process Action Team (ISO 9000 PAT).
- o The APBI presentation covers implementation of commercial initiatives in CECOM procurements and is in two parts. The first discusses use of non-military electronic microcircuits and devices while the second covers implementation of the International Organization for Standardization 9000 series quality standards (ISO 9000).

BRIEFER: J. Michael Ryskamp, GM-1910-14, AMSEL-LC-ED-CFO, 23263.

#### RELEASED BY:

ACTION OFFICER:

GERALD O. STOOPS

J. MICHAEL RYSKAMP

GM-855-15

GM-14

Director, Product Integrity and

Chairman, IMPAS Working Group

Production Engineering

23263

25193

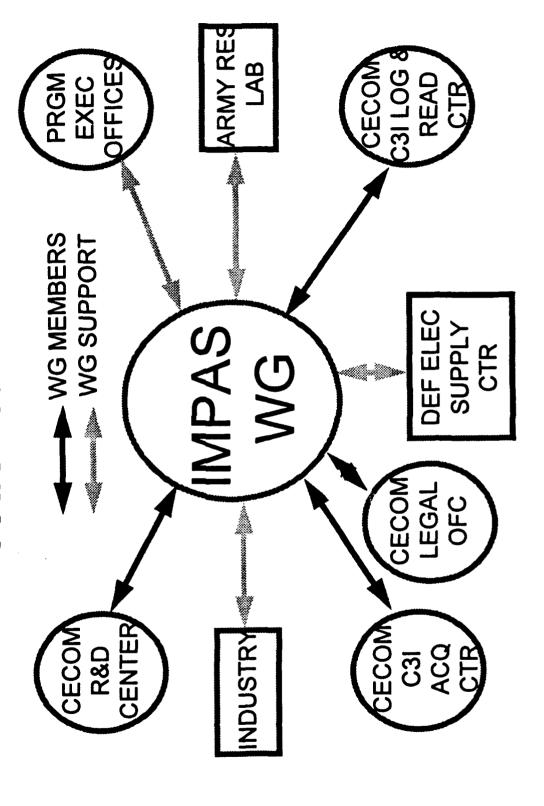
## Commercial Practice Initiatives

Use of Non-Military Electronic Microcircuits/Devices

Institute (ANSI) Q-90 Quality Standards Organization for Standardization (ISO) 9000/American National Standards Implementation of International

- Improved "Military" Parts Availability and Selection (IMPAS) Working Group
- CECOM Working Group
- Implementing a Program Enhancing Availability of Parts/Components
- Using Non-Military Microcircuits and Components
- military requirements while not being "Non-Military" - Materiel meeting procured to military specs

### **PARTICIPANTS**



### BACKGROUND

- The military microcircuit market share is shrinking.
- The existing military market offers little incentive to parts manufacturers.
- Non-availability of military parts results in system supportability issues.

To adapt we must change our business processes

#### STATUS

- Benchmarking
- Modifying Parts Control Process
- Parts Selection
- Obsolescence Statement of Work
- Evaluating Impact on Other CECOM **Processes**
- "Getting the word out"

### **OBJECTIVES**

Use non-military microcircuits and components

- Avoid obsolescence issues
- Enhance part & component availability
- Lower costs
- Meet schedule

#### **PROCESS**

## PHASE I (INTERIM)

- Eliminates preeminence of Qualified Products List (QPL) & adopts Qualified Manufacturer's List (DML)
- Best commercial practices approach Qualify processes NOT product
- Parts selected IAW MIL-STD-454, requirement 64

#### **PROCESS**

#### PHASE II

- semiconductors using guidelines of MIL-HDBK-179 (ER) Contractor selects non-military microcircuits/
- Contractor establishes part selection criteria/supplier evaluation guidelines/qualified supplier list for each device
- Part/supplier selection documented in internal Parts Control Program Plan (PCPP)
- Non-Military devices are allowed but use of available QPL/QML devices is stressed

#### **PROCESS**

#### PHASE III

- Expands upon PHASE II
- Plan to be developed by contractor for ALL components
- concepts or generally accepted commercial Parts selection based upon MIL-HDBK-179 replacement
- Contractor defines device/supplier selection criteria
- Evolutionary development following PHASE II

#### **PROCESS**

### PHASE III (Cont'd)

#### **ALTERNATIVE**

- Use form/fit/function based upon end-item requirements
- Device selection driven by higher-level requirements
- Device selection is contractor responsibility
- Part level technical documentation not required
- parameters documented & used for reprocurement Higher level performance requirements &

#### MILESTONES

- Interim policy implementation...4QFY94
- Final policy implementation.....1QFY95

the International Organization for Action Team (PAT) to implement **CECOM established the Process** Standardization's 9000 series quality standards.

## THE STANDARDS

- US Equivalents to ISO 9000 Standards are ANSI/ASQC Q-90 thru Q-94
- Q-90 Guide for Selection & Use
- Quality Assurance Models
- Q-91 In Design/Development
- Q-92 In Production
- Q-93 In Final Test
- Q-94 Guide for Quality Management

**POST-AWARD** PROCESS Live by it! CECOM Have it or get it! **PRE-AWARD** Certification SUBMIT: MIL-Q OR Q-91/2 CHOOSE

#### The Future

- Use Q-92 as MIL-I-45208A alternative
- CECOM Sees No Benefit in Standard "Tailoring Down" for MIL-I Purposes
- Q-92 May be "Descoped" Contractually During Contractor Transition (MIL-I to Q-92)
- Use Q-93 for NDI/COTS When Final Test is Needed
- Implement in CECOM contracts beginning in **4QFY94**

## Commercial Practice Initiatives

E-MAIL: ryskamp%doim6@monmouth.emh3. 908-532-3263 Fax 908-532-1413 Fort Monmouth, NJ 07703-50023 Commander, U.S. Army CECOM POC: J. Michael Ryskamp AMSEL-LC-ED-CFO army.mil

#### NOTES

63

#### SESSION II

"SEE AND HEAR"

#### **MODERATOR**

COL THOMAS L. VOLLRATH PROGRAM EXECUTIVE OFFICER INTELLIGENCE AND ELECTRONIC WARFARE



#### Session II "See & Hear"

Moderator: COL Thomas Vollrath PEO Intelligence & Electronic Warfare



#### "See & Hear"

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Intercept & Tactical Intelligence Data Fusion Technology Proposed Sensors Advance Technology **Demonstrations** 

**JSTARS Ground Station Module** 

Firefinder P3I Program

**IEW Common Sensor Systems** 

Electronics for the Information Age

#### Speaker/Organization Mr. Ron Dlugosz

**NV&EO** Directorate **IEW Directorate** Mr. Larry Fillian

COL James Mitchell PM JSTARS

**NV&EO Directorate** Ms Maureen Molz

Mr. William Hayden PM Signal Warfare

Army Research Laboratory Dr. Clarence Thornton

#### NOTES

#### TACTICAL INTELLIGENCE DATA FUSION TECHNOLOGY INTERCEPT AND

RESEARCH, DEVELOPMENT AND ENGINEERING CENTER COMMUNICATIONS-ELECTRONICS COMMAND INTELLIGENCE AND ELECTRONIC WARFARE MR. RONALD DLUGOSZ DIRECTORATE

UNCLASSIFIED

#### POINT PAPER

SUBJECT: Intelligence and Electronic Warfare Technology Initiatives

OBJECTIVE: To provide information on the CECOM Intelligence and Electronic Warfare Directorate's (IEWD's) interest and contract opportunities in the areas of Intercept Technology, Tactical Intelligence Data Fusion Technology, and Electronic Warfare Technology. We also want to acquaint industry with the IEW Technical Assessment Center at Fort Huachuca, AZ.

FACTS: IEWD is developing the technologies necessary for U.S. Army systems to locate and exploit hostile command, control, communications (C<sup>3</sup>) and electronic systems; and, to process, analyze and report battlefield intelligence.

This briefing describes the technology programs that support these three areas. It also provides general timelines for industry involvement and current funding ranges.

BRIEFER: Intercept and Tactical Intelligence Data Fusion Technology - Mr. Ronald J. Dlugosz, Chief, Advanced Concepts Division, AMSEL-RD-IEW-TA-M, (908) 554-5426; DSN 996-5426

Electronic Warfare Technology and IEW Technical Assessment Center - Mr. Kurt Kovach, Chief, Simulation and Modeling Branch, Advanced Concepts Division, AMSEL-RD-IEW-TAS-M, (908) 544-5294, DSN 996-5294.

ACTION OFFICER: Linda S. Monroe GS-9/PA Industrial Liaison (703) 349-7370; DSN 229-7370

# INTERCEPT TECHNOLOGY

#### INTERCEPT TECHNOLOGY DESCRIPTION

Detect, demodulate and geo-locate communications (C3); and radar hostile command, control and systems

#### INTERCEPT TECHNOLOGY STATUS

- Utilizing narrow bandwidth communication communication link
- Exploiting modern modulations
- adaptable for wideband and narrowband Intercepting architectures and hardware modulations

#### INTERCEPT TECHNOLOGY OBJECTIVES

- Develop interference rejection and suppression techniques
- Develop small, efficient and broadband receiving antennas
- Improve super-resolution direction finding algorithms
- Improve direction finding accuracies
- Develop exploitation techniques against modern signals
- Increase on-board sensor processing

#### INTERCEPT TECHNOLOGY REQUIREMENTS

- Increase range of ground based intercept systems
- Handle current and projected target signals
- Automate the signal intercept process
- Reduce size and power requirements of intercept equipment
- Increase emitter geo-location accuracy

#### INTERCEPT TECHNOLOGY **PAYOFFS**

- Maximum use of commercial specification (COM-SPEC) testbeds and prototypes
- Cost effective proof-of-concept demonstrations
- Transition technology to Army intercept systems, such as family of IEW Common Sensors
- rapid integration into the R&D community. Common hardware/software modules for

#### INTERCEPT TECHNOLOGY PAYOFFS (Continued)

- Maximum use of common modules
- Automated collection
- Maximum processing on-board the sensor
- Capability for real time reporting of targets

#### INTERCEPT TECHNOLOGY MILESTONES - FY95 AND BEYOND

- Interference reduction utilizing super-resolution techniques
- Wideband modulation exploitation
- Multiple cooperative receivers producing coordinated pulse descriptor word
- Automated signals intercept, recognition and collection
- communications and non-communications Accurate geo-location of advanced signals

#### INTERCEPT TECHNOLOGY CONTRACT OPPORTUNITY

- Title: Advanced Intercept Techniques
- Objectives:
- Improve direction finding accuracies
- Exploitation of modern signals
- Automate the signal intercept process
- Type: Multiple Competitive CPFF contracts from BAA and SBIR solicitations
- (BAA closes Jan 95 for FY95 award) Schedule: Award dates - FY95-96
- Estimated Value: Approximately \$1M for FY95-96
- POC/Telephone No.: Jim Yolda (703) 349-6911

#### INTERCEPT TECHNOLOGY CONTRACT OPPORTUNITY

- Title: Next Generation ESM Processor
- additional parameters for each pulse measured by ELINT/ESM processor. It will utilize all of the Objectives: Develop digital processor using intrapulse, chirp/chip rate, etc.) and provide state-of-the-art ELINT/ESM receivers (e.g., CASE/CAE tools for next generation of real time TACELINT reports.
- Type: Competitive CPFF
- Key Milestones: Award date FY97
- Estimated Value: Approximately \$1M for prototype phase FY97-98
- POC/Telephone No.: Dr. Frank Elmer (908) 544-5956

# TACTICAL INTELLIGENCE DATA FUSION

## TACTICAL INTEL DATA FUSION DESCRIPTION

sources to generate battlefield intelligence Association, correlation, and combination of data and information from multiple

## TACTICAL INTEL DATA FUSION STATUS

- General Fusion
- Upgrade ASAS Warlord prototype with Testbed Fusion Technology
- Terrain analysis server/parallel processing
- Developing correlation algorithm module and ASAS Warlord Interface Prototype for Common Ground Station ATD
- Initial release of testbed products
- Defining fusion processing flows
- Developing Overlay Reasoning Module

## TACTICAL INTEL DATA FUSION STATUS (Continued)

- Sensor Placement
- Developed user friendly soldier machine interface
- Optimized supporting propagation models/ parallel processing
- Ported software to database shell, JPL-MAP's, IPC and MMI
- Sensor placement annealing algorithm
- Host software on Sun SPARC
- Demonstrating software at IEW Techology Assessment Center

## TACTICAL INTEL DATA FUSION OBJECTIVES

- Transition data fusion research products into testbed efforts and tactical intelligence data fusion systems
- demonstrations and user driven prototypes Provide maturing products to technology
- Automate the intelligence generation process
- Efficient intelligence data base management systems

# TACTICAL INTEL DATA FUSION REQUIREMENTS

- Sensor allocation/Sensor management
- IEW Synchronization/Collection Management
- Multiple hypothesis management
- Computational geometry
- Hybrid data base management techniques
- IPB overlay generation

## TACTICAL INTEL DATA FUSION REQUIREMENTS (Continued)

- CI/HUMINT Prototype
- Technologies to support Common Ground Station and All Source Analysis System
- Terrain and feature reasoning
- Explore other innovative intelligence data fusion technologies

## TACTICAL INTEL DATA FUSION **PAYOFFS**

- Provide more timely and accurate tactical intelligence
- Lower soldier skills required
- Increase productivity via automation
- timely decisions on the battlefield Provide the Commander with information required to make

# TACTICAL INTEL DATA FUSION MILESTONES - FY95 AND BEYOND

- Spatial/map reasoning algorithms
- IEW synchronization matrix approaches
- Port terrain reasoning tools to N-Cube
- Integrate with ASAS, IEWCS and ETW software
- Add ECM capability to Sensor Placement Tools
- Transition correlation and ASAS Warlord interface prototypes to Common Ground Station ATD

# MILESTONES - FY95 AND BEYOND (Cont'd) TACTICAL INTEL DATA FUSION

- Upgrade ASAS Warlord Prototype with Testbed Fusion Technologies
- Tactical multi-media and virtual reality MMI techniques
- Multi-media IPB intelligence products
- Complete AMBISS AI module
- Fusion data base software enhancements

## TACTICAL INTEL DATA FUSION CONTRACT OPPORTUNITIES

- Title: Tactical Intelligence Data Fusion Techniques
- Objectives:
- Automate the intelligence generation process
- Object, Situation, Threat and Process Refinement
- Situational awareness
- Efficient intelligence database management techniques
- Type: Multiple Competitive CPFF contracts from BAA and SBIR solicitations
- (BAA closes Jan 95 for FY95 award) Schedule: Award dates - FY95-96
- Estimated Value: Approximately \$2M for FY95-96
- POC/Telephone No.: Dave Grubb, 703-349-7566

# FUNDING PROFILE

YEAR TITLE

APPROX AMOUNT (\$ IN MILLIONS)

FY95-97 INTERCEPT TECHNOLOGY

Ø

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FY95-97 TACTICAL INTEL DATA FUSION

N TOTAL

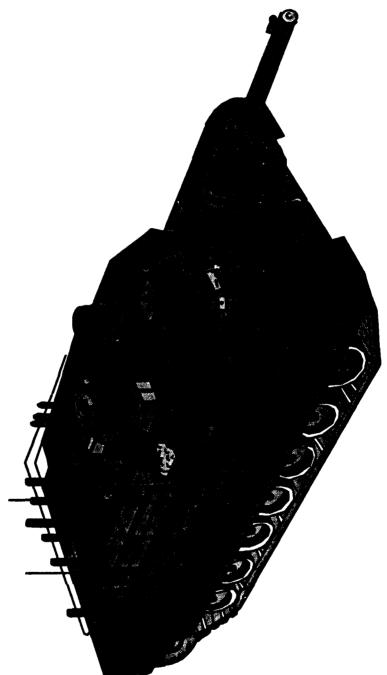
#### NOTES



# US ARMY CECOM

Night Vision and Electronic Sensors Directorate Research, Development & Engineering Center

"A new way of doing business" government and industry team



Associate Director, Operations Mr. Larry L. Fillian

Unclassified



AMSEL-RD-NV

POINT PAPER

SUBJECT: "A New Way of Doing Business" - Government and Industry Team

OBJECTIVE: Provide Industry with Information on Business Opportunities within the US Army CECOM RDEC Night Vision and Electronic Sensors Directorate.

FACTS: This paper presents an overview of the Government and Industry Team on the M1 Tank 2nd Generation Thermal Sight Concept Evaluation Program. The M-1 Thermal (M-1T) program consisted on 4 sub-programs to upgrade the sensor systems on the Army's Main Battle Tank. They consisted of:

- 1. an upgrade to the thermal infrared sensor to a 2nd generation FLIR,
- 2. improvements to the laser rangefinder,
- 3. improvement to the target symbology,
- 4. CCD television.

This briefing discusses the government and industry team assembled to work on the program and its development of an improved FLIR/Laser/TV system for use by the US Army.

The briefing presents the key elements needed for a successful government/industry team.

It presents 5 programs that will utilize the government and industry team concept.to develop surrogate hardware for established Advanced Technology Demonstrations (ATD).

BRIEFER:

Mr. Larry L. Fillian

Associate Director, Operation

Night Vision and Electronic Sensors Directorate

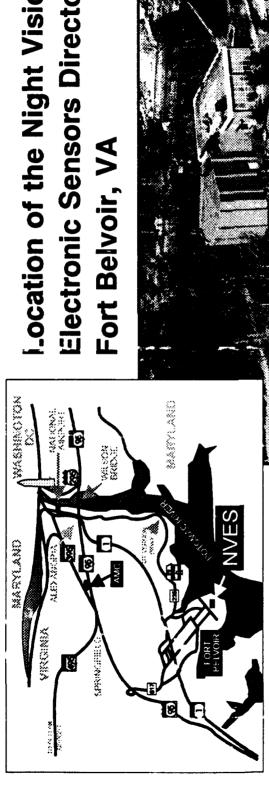
ATTN: AMSEL-RD-NV-D COMM: 703-704-1168

ACTION OFFICER
Thomas T. Steck

Resource Management Division

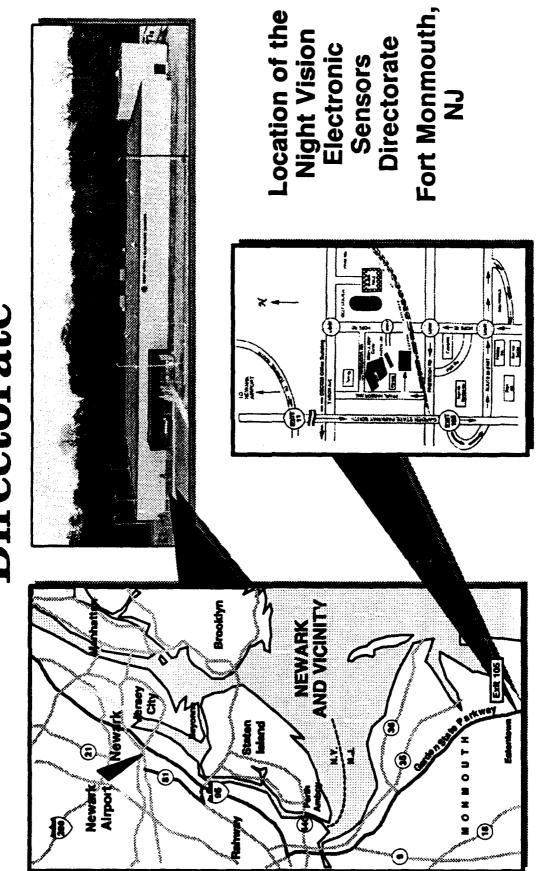
COMM: 703-704-1188

#### Night Vision and Electronic Sensors Directorate

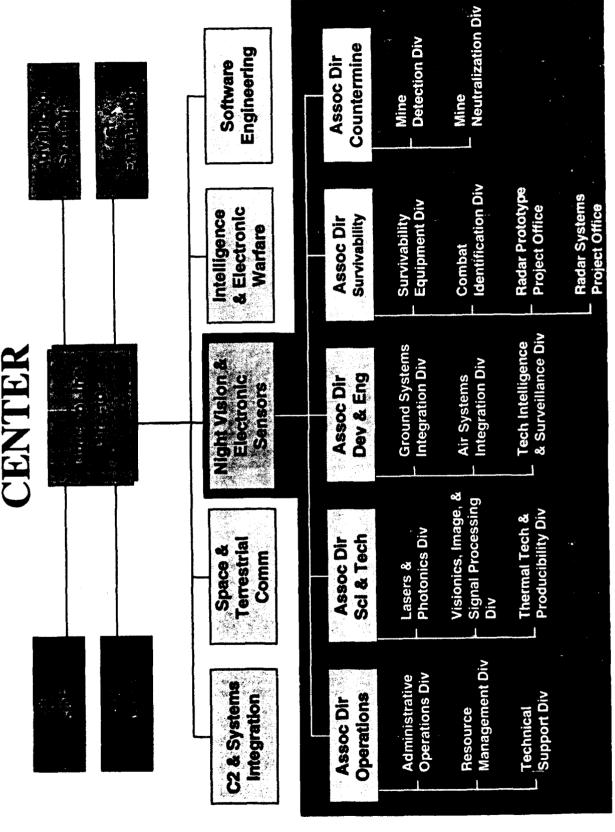


6.ocation of the Night Vision and **Electronic Sensors Directorate** 

#### Night Vision and Electronic Sensors Directorate



#### RESEARCH, DEVELOPMENT & ENGINEERING CECOM



# Night Vision and Electronic Sensors Directorate

#### Functional Areas

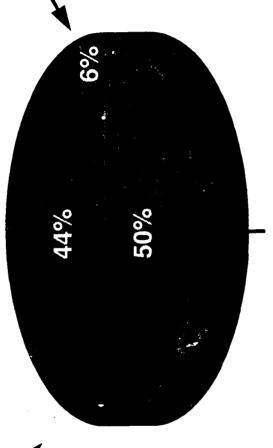
- Aided target recognition
- Anti-fratricide (Combat ID)
- Countermeasures (EO,IR,RF)
- Remote mine detection/neutralization
  - Battlefield deception
- E O measurement and signature intelligence
- Lasers
- Low cost/low observables
- Optics/image intensification
- Performance modeling/analysis
  - Physical security
- Radiac
- Radar
- Sensor fusion
- Survivability equipment
  - Thermal imaging

## Science and Technology

#### Core Technologies

- Image displays
- High EFF laser sources
- ADV modeling
- Synthetic environments
- Simulation
- Sensor evaluation
- ADV focal plane arrays
- Sensor fusion
- MMW radar
- Processors/sensor fusion
- Advanced optics
- Countermine
- Low cost/low observables

### Investment Strategy



Manufacturing science

• IPPD

**Producibility** 

**Techniques** 

#### **Demonstrators**

- Aviation
- Advanced helicopter pilotage
- Obstacle avoidance system (OASYS)
  - Radar deception & jamming
    - Aulti sensor aided target
- ADV image intensification

- ADV land combat
  - AIMS
- 2nd gen tank sight
   Integrated sight modules
- Remote sentry
- Hunter sensor suite
  - Target acquisition sensor suite
- Enhanced survivability sensor suite
- Combat ID

- · Air defense
- Electronic integrated sensor suite
  - Masked target kill
- Artillery
- Bistatic radar
- Engineering and mine warfare Close-in manportable
  - Off route smart time
    - Countermine TLD

"A New Way of Doing Business" Government and Industry Team

## Government and Industry Teaming Arrangements What Programs Fit

- In house surrogates to demonstrate early technology integration
- Core of experts focused on one goal/objective
- Low to moderate risk exit criteria established by government/industry
- Provides technology learning experience to enhance government engineers smart buyer approach
  - Provides industry with insight to overall concept
- Reduces risk of development cycle through lessons learned

"A New Way of Doing Business" Government and Industry Team

### A Successful Government/Industry Team M-1 Tank Thermal Sight Program

### **Objectives**

Gunner's Primary Sight to provide significantly improved Integrate advanced electro-optical technology into M-1 target acquisition:

- Second generation FLIR
- CCD television
- Eyesafe laser rangefinder

Install the system into an M-1 Abrams Tank and deliver it to Ft. Knox for USAARMC concept evaluation program

"A New Way of Doing Business" Government and Industry Team





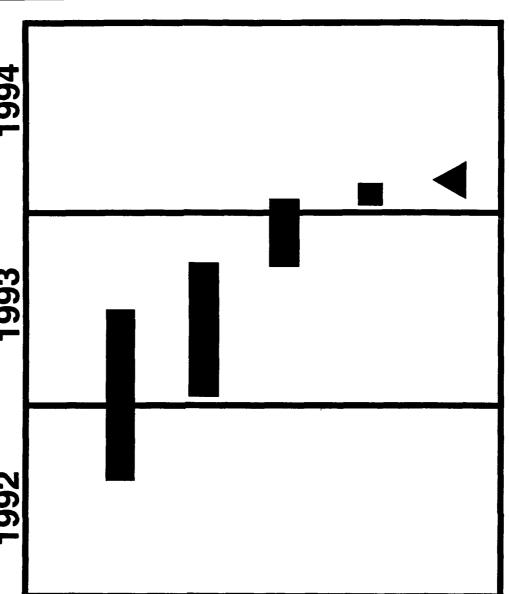
FLIR

E-O/Display

Integrate and test

M-1 integration and test

Delivery to Ft. Knox



## Night Vision and Electronic Sensors Directorate "A New Way of Doing Business" Government and Industry Team

## M-1 Thermal Program Approach

**Government and Contractor Team** 

Night vision and electronic sensors directorate QuesTech, Inc.

Fibertech, Inc.

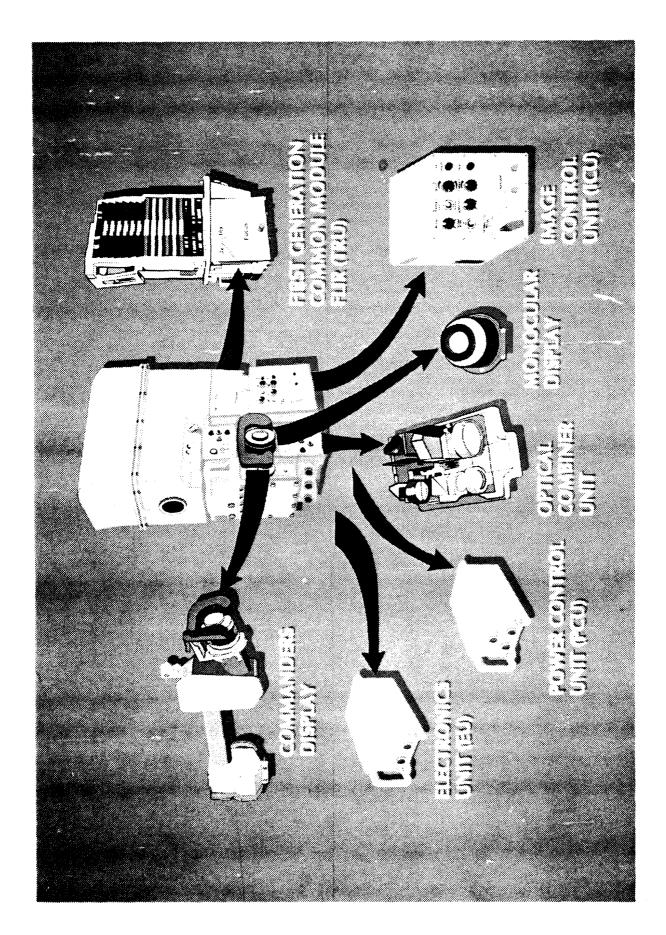
Texas Instruments, Inc.

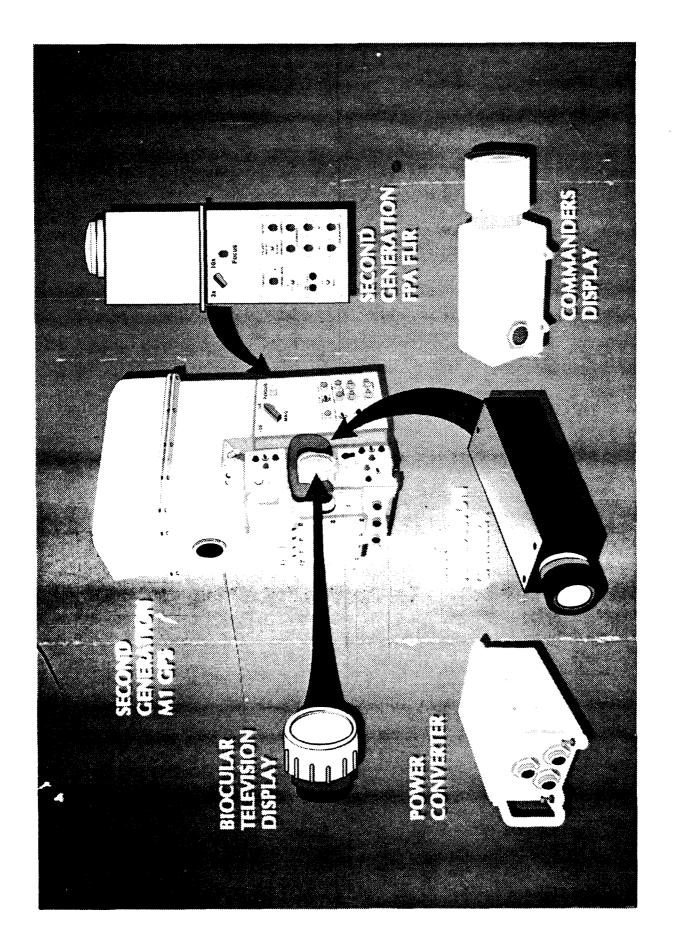
IMO Industries/VARO Inc

IST Inc.

Diversified Optical Products Inc.

- To design, fabricate, and integrate the M1T into the **USAARMC** provided M-1 Abrams Main Battle Tank
- Conduct road and firing tests
- Provide sytem and technology support to USAARMC for Concept Evaluation Program (CEP)





"A New Way of Doing Business" Government and Industry Team

# M-1 Thermal Program - Sensor Characteristics

	M-1 GPS	M-1 Thermal
FLIR	Common Module	M-1 Thermal
Head/Optics	M-1 GPS 1st Gen	2nd Gen
Detector	120x1 HgCdTe	240x4 HgCdTe
Electronics	Analog	Digital
Video	Non standard	RS-170
Field of view	2.5 x 5.0 deg	2.0 x 2.6 deg
	8.0 x 16.0 deg	6.0 x 7.8 deg
Magnification	10 & 3 power	12 & 4 power
Day Sight	Telescope	CCD TV
Rangefinder	Nd:YAG (1.06µm)	Eyesafe (1.54mm)
Displays		
Gunner		Biocular CRT
•	and DV Eveniece	

**Biocular CRT** 

**Elbow from GPS** 

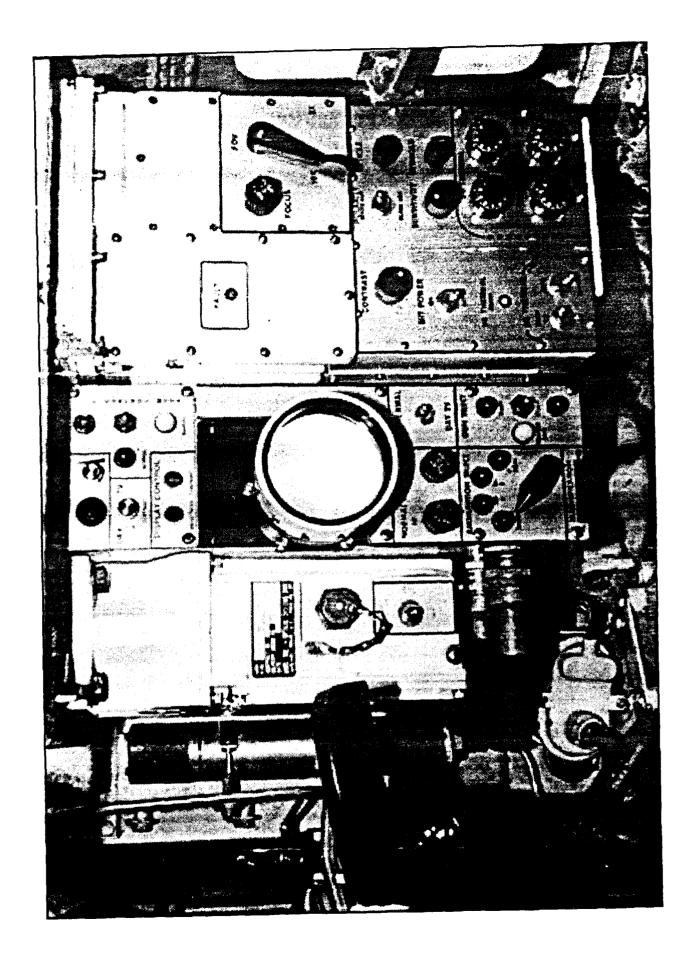
Commander

Reticle

Projected

Digital







"A New Way of Doing Business" Government and Industry Team

# M-1 Thermal Program - Cost Chart

Cost (\$K) External

QuestTech for technical support and Ti for 2nd Gen FLIR components subcontracts \$755 \$250

Cost (\$K) Internal

NVESD (labor, M&S, travel) \$300

\$1305

"A New Way of Doing Business" Government and Industry Team

### Government and Industry Teaming Potential Programs for

- M-1Thermal II Surrogate
- Hunter Sensor Surrogate
- Remote Sentry Sensor Surrogate
- Countermine Detection Sensor Surrogate
- Masked Target Kill Sensors Surrogate

"A New Way of Doing Business" Government and Industry Team

# M-1Thermal II Surrogate

Potential Components

**Multi-Function Laser** 2nd Gen FLIR

Day TV

mm Wave Radar MTI/STI





### Night Vision and Electronic Sensors CECOM RDEC



"A New Way of Doing Business" Government and Industry Team

Directorate

### Contract Opportunity

Title: M-1 Thermal II Surrogate

lessons in support of the Target Acquisition ATD. Demonstrate early integration of Gen II FLIR and Advanced Processors with ATRs coupled with multi-function Warfighting Demonstrations (AWD)/ Advanced Warfighting Experiments (AWE). Objective: Build in-house surrogates to gain technical experience and learn Lasers and/or mm wave Radar. Provide surrogate hardware for Advanced

Proposed contract type: TBD

Contract award: 1QFY95 Key milestones:

Contract length: 18-24 months

Estimated value: \$3M-\$5M

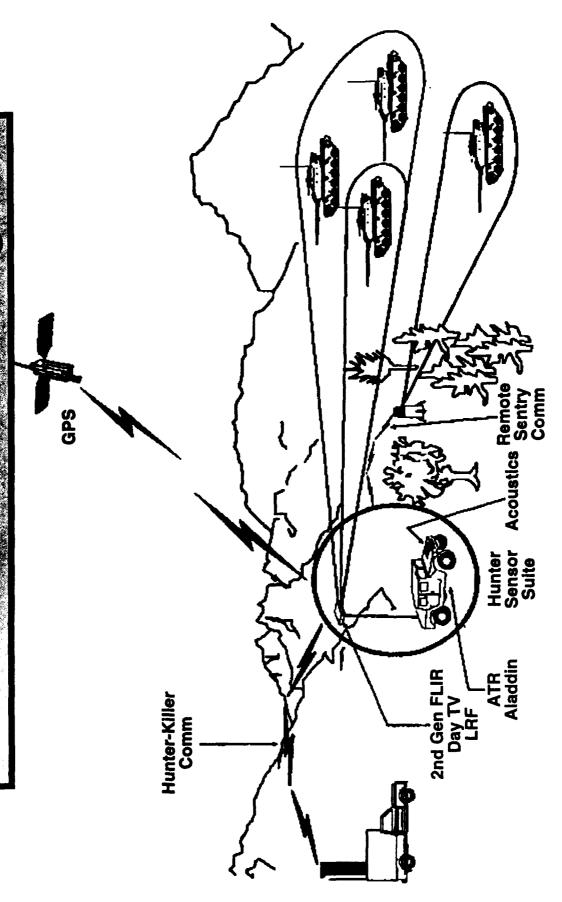
Mr. Thomas R. Bowman, Jr. POC telephone:

703-704-1243

All contract actions are dependent upon receipt of FY95 funds.

"A New Way of Doing Business" Government and Industry Team

### Hunter Senso





### Night Vision and Electronic Sensors CECOM RDEC

### Directorate



"A New Way of Doing Business" Government and Industry Team

### Contract Opportunity

Title: Hunter Sensor Surrogate

Experiments (AWE). Integrate HSS technology into two Hunter Sensor Platforms for use in the Objective: Build in-house surrogates to gain technical experience and learn lessons in support sensors, Advanced Processors with ATRs, and image/targeting data transmission. Provide surrogate hardware for Advanced Warfighting Demonstrations (AWD)/ Advanced Warfighting of the Hunter Sensor Suite (HSS) ATD. Demonstrate early integration of Gen II Flir, acoustic RFPI Early Version Demo and the EFOG-M ACTD Program

Proposed contract type: TBD

Key milestones: Contract award: 3QFY95

Contract length: 12-15 months

Estimated value: \$3M-\$5M

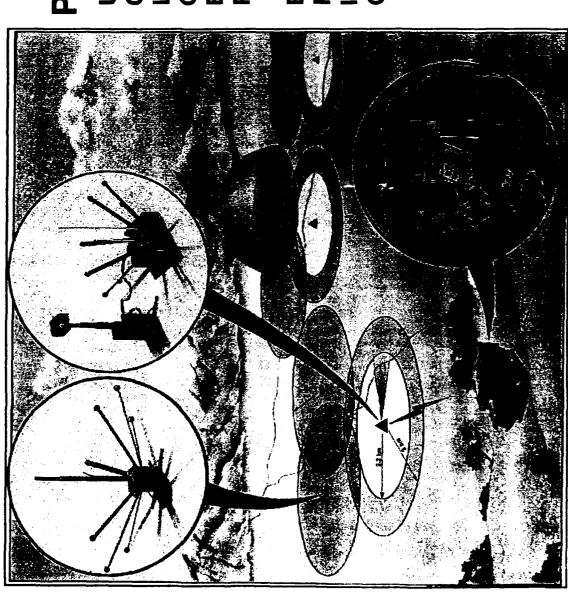
POC telephone: Mr. Thomas E. Smith

703-704-1219

All contract actions are dependent upon receipt of FY95 funds.

"A New Way of Doing Business" Government and Industry Team

## Service Survice Remote Sentia



### **Potential Components**

Uncooled FLIR CCD Camera Laser Rangefinder GPS Electronic Compass Programmable Processor Controller

Electronic Pan & Tilt Tripod RF Comm Image Compression Capability Cueing Sensors



### CECOM RDEC

### Night Vision and Electronic Sensors Directorate



"A New Way of Doing Business" Government and Industry Team

**Contract Opportunity** 

Title: Remote Sentry Sensor Surrogate

Objective: Build in-house surrogates using FLIRs, CCD Cameras, GPS, Laser Range Finders, Electronic Compasses, Data Compression, and RF Commo to Provide surrogate hardware for Advanced Warfighting demonstrations (AWD)/ gain technical experience and learn lessons to aid the Remote Sentry ATD Advanced Warfighting Experiments (AWE)

Proposed contract type: TBD

Key milestones: Contract award: 1QFY95

Contract length: 12-18 months

Estimated value: \$1M-\$2M

Mr. Joe Brooks

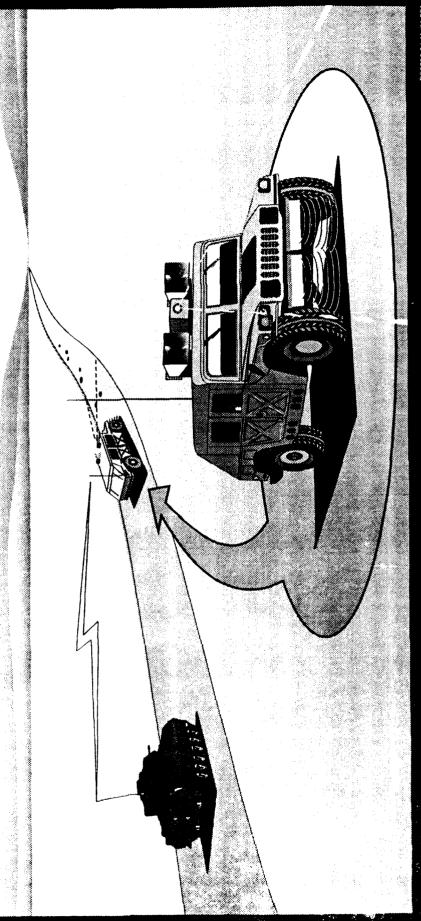
POC telephone:

703-704-1251

All contract actions are dependent upon receipt of FY95 funds.

"A New Way of Doing Business" Government and Industry Team

# Countermine Detection Sensor Surrogate



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### CECOM RDEC

### Night Vision and Electronic Sensors Directorate



"A New Way of Doing Business" Government and Industry Team

### Contract Opportunity

Title: Countermine Detection Sensor Surrogate

mounted Mine Detector ATD. The data acquired with these sensors will also be used to develop mine detection algorithms and multi-sensor fusion techniques. sensors to gain technical expertise and knowledge to compliment the Vehicle Objective: Build in-house surrogates using state of the art mine detection

Proposed contract type: TBD

Contract award: 1QFY96 Key milestones:

Contract length: 24 months

Estimated value: \$3M-\$4M

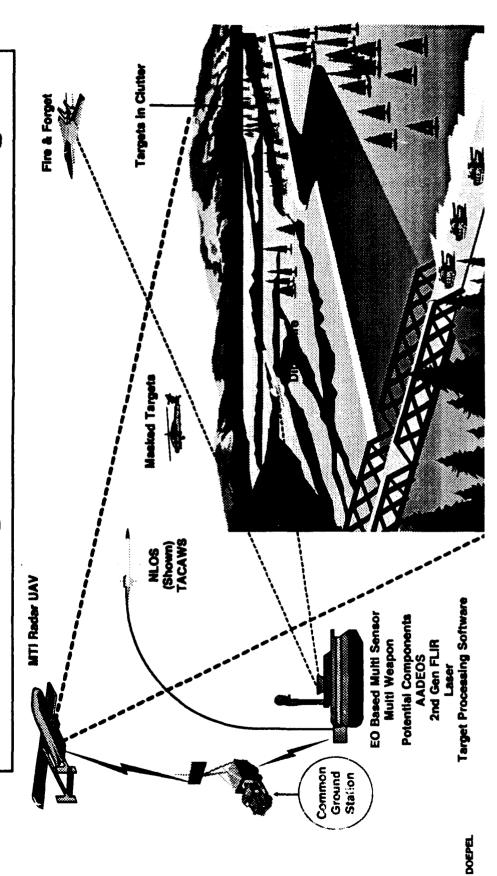
POC telephone: Dr. Thomas Broach

703-704-1035

All contract actions are dependent upon receipt of FY96 funds.

"A New Way of Doing Business" Government and Industry Team

# Masked Target Kill Sensor Surrogate



### CECOM RDEC

### Night Vision and Electronic Sensors Directorate



APBI "CECOM Sensor Advanced Technology Demonstrations

### CONTRACT OPPORTUNITY

itle: Masked Target Kill Sensor Surrogate

Objective: Conduct risk reduction experiments and mini demonstrations that allow functional proof of principle of the MTK concept, through the use of surrogates, brassboards, and hot mockups.

Proposed contract type: 1'BD

Contract Awards: FY97 Key Milestones:

Contract Length: 24 months

Eestimated value: \$2 M - \$3 M

Mr. Franklin Doepel

POC/telephone:

703-704-1216

All contract actions are dependent upon receipt of FY97 funds.

### NOTES



### Project Manager - Joint STARS COL James L. Mitchell PEO-IEW

## UNCLASSIFIED

#### POINT PAPER

SUBJECT: Joint STARS Ground Station Module/Common Ground Station

OBJECTIVE: To provide production models of the Joint STARS Common Ground Station.

#### FACTS:

Type of Contracts: Competitive

**Fixed Price** 

• Schedule: FY96

• Efforts will involve tasks relating to Production models of Common Ground Station. Followup Pre-Planned Product Improvement initiatives to be determined.

BRIEFER: COL James L. Mitchell, Army Project Manager, Joint STARS, SFAE-IEW-JS, 908-544-5165.

ACTION OFFICER Perry J. Gnos PM Joint STARS 908-544-4971

#### **Description**

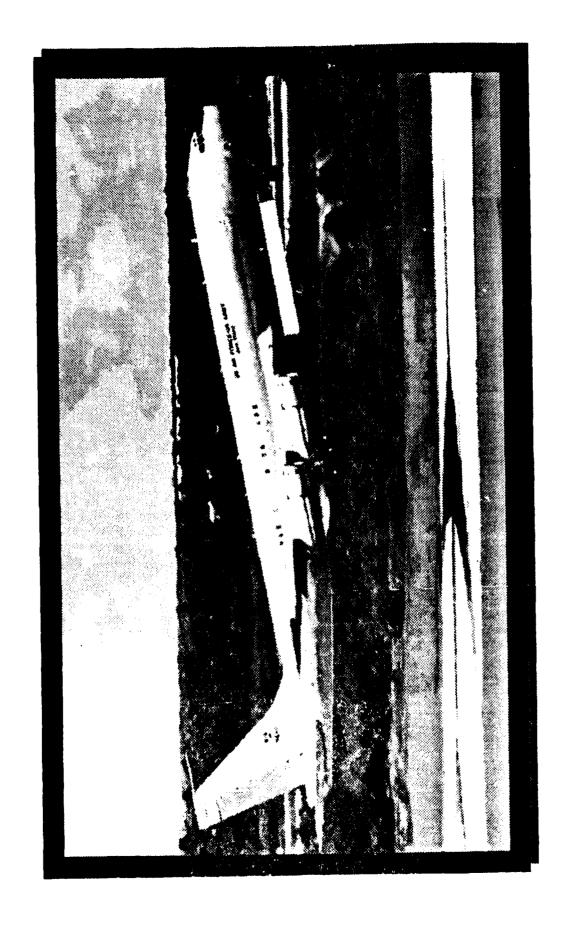
**Ground Station (CGS)** is an element of The Joint Army/Air Force Surveillance Target Attack Radar System. Using intelligence and targ∉ting data in near real-time to Army Command and Control Vehicle and High Mobility Multi-The Ground Station Module (GSM) / Common Command, Control, Communications and Intelligence common subsystems in different carriers (5 ton truck, purpose Wheeled Vehicle), the system disseminates Nodes via wire or raclio.

Stations will support situation development, targeting and Ground Station Modules and Common Ground battle management functions at all fielded echelons.

### Joint STARS Ground Station Module



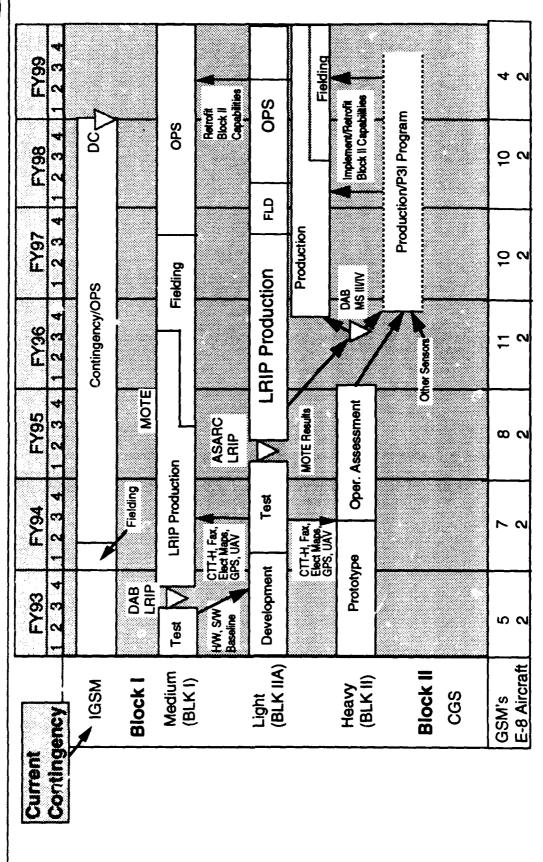
## Joint STARS E-8 Aircraft





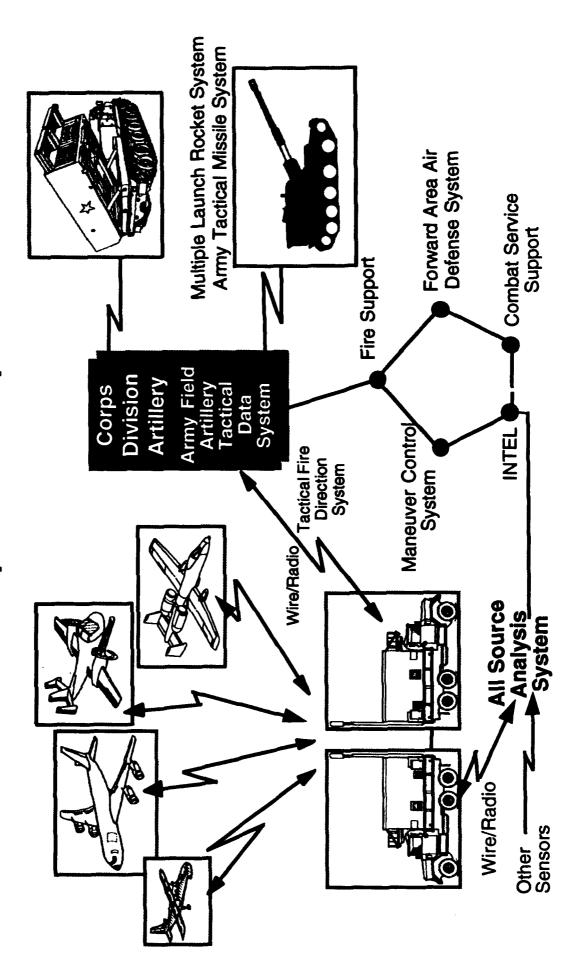
### Joint STARS Ground Station Module **Current Acquisition Strategy**



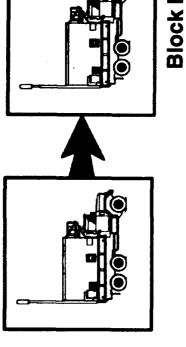


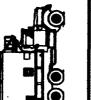
#### Ground Station Module /Common Ground Station Common Ground Station Capabilities Exploitation of National Joint STARS 133 Tactical Ground Station Module

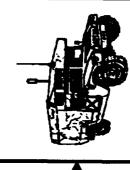
Status: Operational Capabilities



Status: Existing / Evolving Technologies



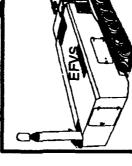




Block



#### **Light GSM**



Multi-Sensor Processing Downsize Electronic Suite

Medium GSM

Simultaneous

Sequential Multi-Sensor

Interim GSM

Ballistic Hardening

Remote Display

**JSTARS** 

Mohawk

Common IEW modules

Electromagnetic Pulse Chem / Bio protection

**JSTARS** 

**Ground Station** 

Common

Nuclear hardened

**JSTARS** A V

#### **Block 1**

#### Heavy GSM

- Same Prime Mission Equipment as light
- enclosure (blast/therm)

**Commanders Tactical** 

Terminal (CTT

Aerial Vehicle (UAV)

Unmanned

Block II (CGS)

Next generation Warfare (IEW Intelligence Electronic

A multi- configurable theater and national **GSM** with tactical, application

#### **Objectives**

- Receive, process, analyze, and disseminate JSTARS radar data
- Receive, process, analyze, and disseminate additional sensor data
- Configured to support joint forces at tactical & operational echelons

#### Payoffs

- Commander has near real-time battlefield information
- Situation development
- Targeting and battle management functions
- Project and Sustain the Force
- Protect the Forces
- Win the Battlefield Information War
- Conduct Precision Strikes
- Dominate Maneuver

#### Milestones

#### FY-95:

- Electronic bulletin board up and operational
- Release Ground Station Module drawings and software to industry
- Release draft Request for Proposal to industry via electronic bulletin board

#### Milestones

#### FY-96:

- Conduct Milestone III / IV Defense Acquisition Board
- Award competitive contract for:

Heavy Common Ground Station (CGS) 28 each Light Common Ground Station (CGS) 45 each and option for

# Ground Station Module / Common Ground Station Joint STARS

# **Funding Profile**

SM SM	1-5	1-5	1-5	1-10	1-40	2-65
PROC \$M	60-70	70-80	80-90	80-90	300-200	590-830
RDTE \$M	25-35	5-15	5-15	5-15	25-180	65-260
	FY 95	FY 96	FY 97	FY 98	ETC.	Total

# **CGS Potential Acquisition** Streamlining Initiatives

- The Joint STARS CGS has been nominated as an Army Lead Program for Acquisition Streamlining Reform.
- Initial PM Joint STARS proposed Streamlining initiatives dated 23 Mar 94 are attatched.
- Latest CGS Point Paper provided to HQDA on 15 April 94 is attatched (supersedes 23 Mar 94 package)
- Streamlining Reform and Final Streamlining Initiatives are TBD. Final designation as an Army lead program for Acquisition

# Ground Station Module / Common Ground Station Joint STARS

# Contract Opportunity

Title:

Joint STARS Common Ground Station (CGS)

Objective:

Procure 73 (Light & Heavy) production models of CGS. Follow up Pre-Planned Product Improvement initiatives to be determined

Proposed Contract Type:

Competitive Fixed Price

Key Milestones:

Contract Award 2Q FY96

**Estimated Value:** 

\$400 - 500 M

POC Telephone:

Arnold Rappaport

(908)537.5386

# **PM Joint STARS Answers to CGS Inquiries**

NOTE: The following questions have been received from Industry. The Government has provided answers to the best of its ability at the present time. Prospective bidders are cautioned that changes are possible due to changes in budgets, user requirements, priorities and other changes.

1. What studies/initiatives are recently completed or currently underway in the Government to control the proliferation of similar ground station systems?

Answer:

The Defense Acquisition Executive, The Army Acquisition Executive and the Program Executive Officer for IEW have determined that PM Joint STARS has the responsibility for the development and production of the Common Ground Station (CGS). The CGS will not be the only sheltered system containing computerized hardware.

2. How will information be transmitted to and from the CGS? In what form and with what precision or level of resolution?

Answer:

Information will be transmitted to and from the CGS among the designated sensors and subscribed systems with which the CGS has been tasked to operate. The form and precision will be within the capabilities of these systems. Joint STARS ground station design presently includes a Surveillance and Control Data Link (SCDL), UHF SATCOM and the Commander's Tactical Terminal (CTT). CGS will evolve from that configuration. CECOM Advanced Technology Demonstration (ATD) program is exploring alternate SATCOM and wireless LAN/PACKET Radio approaches to support high data rates. If feasible these ATD initiatives will be included.

3. How will the CGS be linked horizontally and vertically on the battlefield?

Answer:

The CGS will be linked via ATCCS. MSE and SINCGARS. ATD initiatives (as discussed in paragraph 2 above) as appropriate, may be included.

4. How does the CGS function within the Army's concept of operations of a digitized battlefield?

Answer:

The CGS is a major system on which the concept of operations of a digitized battlefield is based.

5. Will the VME standard hardware architecture be required in the CGS or is the hardware architecture open for selection by the contractor?

Answer: VME hardware is desired. COTS packages may be implemented.

6. Will the VMS standard software be required in the CGS or is the software architecture open for selection by the contractor?

Answer: There are currently no plans to require VMS.

7. Is the government willing to allow other than Ada software in the CGS procurement? Ada 9X? Will source selection criteria penalize contractors not using Ada?

Answer:

A mix of Ada and NDI/COTS software will be used to provide a cost

effective software solution to CGS requirements.

8. What is the TRADOC Vision beyond the Common Ground Station?

Answer:

The purpose of this procurement is to address the CGS.

9. What impact will joint operations have on the CGS requirement? Conversely, what impact will CGS have on joint operations?

Answer:

CGS is meant to serve as a key Army ground component in the battlefield of the future. It will offer advantages and usefulness to

other services also.

10. Will the planned CGS hardware architecture be required to adequately support the future growth requirements, to handle future process requirements (speed and memory) in support of future sensors and/or secondary dissemination systems?

Answer:

CGS must be planned to accomplish the present suite of capabilities and must be flexible enough to allow the integration of

future technology.

11. Does the TRADOC community perceive a problem in fielding Joint STARS Ground Stations and E-8 workstations that are not functionally equivalent, particularly in view of Army operator using both types of workstations?

Answer:

No, TRADOC addressed this issue last year and did not find a

problem in this area.

12. Does the Army plan to have an ATD or battle lab demonstration for modules of the Common Ground Station?

Answer:

Yes

13. What is the relationship and linkage of participation in the CGS ATD to the acceptability of competitors for the CGS production contract?

Answer:

Participation in the CGS ATD is not a prerequisite for being

accepted for the CGS production contract.

14. What is the likelihood of an Army CGS system vis-à-vis a tri-service wide area network?

Answer:

CGS is being developed to answer a known Army need.

15. Will the CGS acquisition be built to print of LGSM, or based on a functional specification; i.e. a whole new development?

Answer: See questions #18 and 23, below.

16. Will P31 of the LGSMs be for specific CGS functional requirements as directed by TRADOC?

Answer: Yes

17. Has TRADOC refined the P3I list to fit the budget?

The CGS procurement will concentrate on the CGS' ability to receive, process and disseminate JSTARS, CTT, UAV and Secondary Imagery Dissemination (SID) via CTT 3 channel. These capabilities are within the budget.

18. Because Motorola designed and Built the JSTARS Ground Station Module (GSM) Block I, would they have a commanding competitive advantage over any other contractor? How will the Government make it fair for any other contractor to compete?

Answer:

The Government believes that a fair competition is feasible. All contractors will be given access to Government owned GSM documentation in "as is" condition. Contractors will have the option of "mixing-and-matching" current GSM designs with their own innovations and NDI/COTS solutions to the CGS functional requirements.

# 19. What are the differences between a JSTARS GSM and CGS?

Answer:

Functionally, the CGS will include current GSM capabilities as well as additional capabilities. These additional capabilities will initially include Secondary Imagery Dissemination (SID) and will eventually include other interfaces and capabilities as defined by the user community.

# 20. Since the Army is moving toward the Digitized Battlefield:

a) Is there a published operational concept for the digitized battlefield? Is it available to contractors?

Answer:

The concept of the digitized battlefield is an ongoing effort within DoD and is beyond the scope of this CGS procurement.

b) Has the operational role of the CGS in the digitized battlefield been described in writing yet? Is such a description available to contractors? Does the CGS include or directly support targeting?

Answer:

The CGS is an element of the digitized battlefield. However, a discussion of the digitized battlefield is beyond the scope of this procurement. The CGS will support targeting directly through its TACFIRE/AFATDS interface.

c) What specific communications, processing and mobility capabilities should the CGS have to be part of the digitized battlefield.

Answer:

CGS communications and processing must support interfaces with the Joint STARS E-8 aircraft, the UAV Ground Control Station (GCS), SATCOM, TROJAN, the Commanders Tactical Terminal (CTT), ASAS, TACFIRE/AFATDS, Secondary Imagery Dissemination (SIDs) and voice communications, as well as associated graphical user interface (GUI) and data base management functions. P3I will include additional sensor and C3I interfaces. The initial CGS variant will be housed in a SICPs shelter nounted on a Heavy HMMWV. P3I includes a Heavy CGS variant housed in a C2V shelter mounted on a Bradley chassis.

d) Which of these capabilities are likely to be required in the initial CGS and which can be expected as part of an evolutionary P3I approach?

Answer: See preceding answer.

- 21. If operations while mobile are a requirement, are they:
  - a) With full or degraded capabilities?

Answer: Full capabilities are not required on-the-move. Primary requirement

will be receipt of Joint STARS data via SATCOM on-the-move.

b) With full or limited communications (conformal antennas)?

Answer: See preceding answer.

c) With assistance to the crew to prevent motion sickness and allow system interoperability in a noisy and bouncy environment?

Answer:

"On-the-move" is an existing GSM capability. Each prospective contractor will be responsible for insuring that the CGS is operable in its intended environment, including noise and vibration associated with vehicle operation.

22. Which sensor inputs besides JSTARS does the Army want in the initial CGS?

a) Are these direct inputs or relayed and processed data from sensor ground stations?

Answer: See 20.c, above.

b) How much automated fusion of information from these sensors is wanted?

Answer:

"Fusion" is not required. However, the CGS must provide a manmachine interface (MMI) and appropriate tools to allow the operator to process and correlate the CGS sensor inputs and to provide CGS output products in a timely manner.

c) How much assistance to operators is wanted; for example are automated, integrated map displays desired? required? Are automatically generated messages desired? required? Is artificial intelligence software that can recognize developing situations desired? required?

Answer:

See previous answer. Digitized map displays, with integrated sensor information where appropriate, is required. Operator aids to automatically or semi-automatically generate messages are required. "Artificial intelligence" is not required. However, any tools to assist the operator in performing his mission are desirable. Tools for tracking targets, predicting target time-of-arrival at selected points, etc. are required.

23. Will the CGS be a development program or will NDI/COTS be emphasized? What will the CGS program be in terms of time span and number of units? What is the latest program schedule? When is an RFP, proposal and award planned? Is there a change in program funding (if so, up or down and how much)?

Answer:

The CGS will consist of a production component based upon a performance specification, as well as a P3I effort. NDI/COTS will be emphasized. Quantities, schedules and budgets will be addressed to the extent that information is known during the APBI briefing.

24. Is there a relationship between the C2V Program and the CGS Program? Will one grow into the other? Will they be planned to operate together?

Answer:

The Heavy CGS plans on using the C2V shelter. Both the C2V and Heavy CGS will be mounted on the Bradley chassis.

# 25. Is a demonstration likely to be required as part of a proposal?

Answer:

No final decision has been made regarding a demonstration. If a decision is made to require a demonstration, industry will be

notified of this decision as soon as possible.

# 26. Will there be another briefing to industry this year?

Answer:

The 11-12 May 1994 APBI is currently the only briefing planned for the remainder of FY-94. However, draft specifications and draft RFPs will be released for industry comments as they become available and a pre-solicitation conference is currently planned in conjunction with the formal RFP release. The most current schedule

information will be briefed at the APBI.

# UNCLASSIFIED

# POINT PAPER

**SUBJECT:** Joint Surveillance and Target Attack Radar System (JSTARS) Common Ground Station (CGS)

**PURPOSE:** State the acquisition streamlining and reform objectives of the JSTARS CGS.

# FACTS:

- o **Description:** The CGS is an evolution of the current JSTARS Ground Station Module (GSM). It is an integral part of the Digitized Battlefield, linking and correlating diverse, multi-service sensors with Army systems and command, control, communications and interoperability nodes. The CGS uses an open architecture design to add more interfaces and keep pace with evolving commercial technologies.
- o Acquisition Strategy: The JSTARS GSM/CGS is an evolutionary development program. In Nov 1993 the USD(A) approved an accelerated acquisition strategy for the Common Ground Station which included a combined Milestone III/IV in FY96. A competitive contract will be awarded in FY96 for full scale production of the CGS. Included in this contract will be a series of P3I efforts which will be funded by both RDT&E and P. surement appropriations. The production portion of the contract will be fixed price. P3I portions of the contract may be fixed price or cost type efforts. Funding ranges between \$85-120M annually from FY94-99 for all appropriations.

# Acquisition Process Improvement Objectives:

- oo **Open Architecture**: An open architecture employing commercial specifications, standards, practices and technologies will be used to implement the CGS.
- oo Coordinated Hardware and Software

  Development and Production: Software will be matured and refined in parallel with hardware production to attain fielding of modern hardware with functional, operationally suitable software.
- oo Reliability, Maintainability and Availability: System availability will be a primary system objective. It will be addressed from a process

improvement perspective wherein hardware, software and operations will be continuously improved.

- oo **Software Requirements**: A mix of Ada and NDI/COTS software will be used to provide a cost effective software solution to CGS requirements. Software documentation requirements will be tailored to those necessary for life cycle support and reprocurement.
- oo **Best Value**: Source selection for the CGS will use the best value concept.
- oo Performance-Based Requests for Proposals (RFPs): RFPs will be based on performance requirements. An example statement of work (SOW) and or specification will be used to allow contractors to tailor the work effort to their unique capabilities. Draft specifications and RFPs will be released for industry comment prior to formal RFP release.
- oo **Proposal Complexity**: Page count of proposals will be limited. Evaluation will focus on key discriminators among proposals and encourage concise proposal descriptions.
- oo **Price Analysis**: Price analysis shall be used in lieu of cost analysis wherever practical. Adequate price competition shall be used to establish price reasonableness.
- oo Integrated Product Development Teams
  (IPDTs): Government and contractor team members will be part of the IPDT. An appropriate partnering approach will be developed. IPDTs will also be used to involve the user in development of man-machine interfaces and in evaluating development test results.
- oo **Unified Testing**: Testing will not be duplicated. Requirements will be demonstrated through integration of DT, OT, simulation and analysis and contractor or Government tests. Participation in operational demonstrations and/or maneuvers may be used in lieu of formal operational tests when deemed appropriate.
- Production and Logistics Support:
  Production shall emphasize process control over test and inspection. The PM shall make an up front evaluation of life cycle contractor support including a lifetime contractor commitment to post-delivery system availability. Trade-offs among reliability, maintainability and availability requirements, spares quantities, production test requirements, contractor process controls, drawing requirements, warranty

provisions, value engineering and configuration management will be pursued and approved by the PM to provide a cost effective production and logistics support program.

# O Government Oversight Objectives:

- oo Delegation of Milestone Decision Authority: The PEO IEW will be the Milestone Decision Authority (MDA) for the JSTARS/CTT product lines.
- oo Delegation of Source Selection Authority: Delegate approval authority for multi-year procurement and SSA to the HCA.
- oo OSD and DA Oversight: The PM will provide program status to DA and OSD via the DAES. Additional requests for status, briefings or metrics data shall be at the written direction of the AAE, USD(A) or higher authority. OSD Review of RFPs and Contracts shall not be required. The PEO/PM will negotiate with the AAE/Military Deputy and Conventional Systems Committee chairs to establish the minimum documentation to support the decision. The PEO will publish an ADM after the milestone review.
- oo **Streamlined Support Documentation**: Program support documentation will be streamlined to convey essential information in a concise manner.
- oo **Joint Program Implications**: Flow down of requirements through the joint program office will not be used to impact the intent of streamlining initiatives.
- oo **Related Programs**: The PM and PEO will have the same authority and responsibility for streamlining the related Ground Station Module and Commander's Tactical Terminal Programs as are granted for the CGS. PM JSTARS will have sole development authority for this class of equipment.

# o Regulatory Relief Reguested:

- oo **Delegation of MDA**. DOD 5000.2, Part 2, B.2.b.(1)(a) requires that the Under Secretary of Defense for Acquisition act as the Milestone Decision Authority (MDA) for ACAT 1D programs. A waiver is requested to delegate this authority to PEO IEW. Further, waivers to DOD 5000.2, Part 13, Section A, 3.a. requirement for the DAB to meet at each milestone and DOD 5000.2 Part 13, Section C, 3.a CAIG requirements are also sought.
- oo Multi-year and SSA Delegation. Waiver of DFAR 217.103-1(b)(iv), (v), and (vi) and Army FAR

Supplement 17.103 and Appendix AA-200(a) are requested to delegate multi-year contracting authority and Source Selection Authority (SSA) authority to HCA.

- oo RFP and Contract Review. DOD 5000.2, Part 2, C.2.f. requires RFP and contract reviews by the MDA prior to release or execution. Similar requirements are contained in USD Memorandum dated April 11, 1991. Request waiver of both of these requirements. Final review and approval of RFPs, contracts and long lead approval authority will be a joint PEO IEW & HCA responsibility. Draft specifications and RFPs will be provided to OSD for comment concurrent with release of these draft documents for comments from industry.
- oo MIL Standards. NDI, COTS and commercial specifications, standards and practices will be used. Regulations, MILSPECS, and directives including those called out in DOD 5000.2, Part 6, Section A, 3.c.(1) will be applied on an exception basis as determined by PEO IEW.
- Availability. DOD 5000.2, Part 6, Section C requires the MDA to use reliability and maintainability considerations at milestone decision points. Reliability and maintainability objectives for hardware and software will be established to support the overall availability objectives. A waiver to DOD 5000.2, Part 6, Section C is therefore requested.
- oo **Software Requirements**: Public Law 101-511 mandates Ada where cost effective and unless exempted by an official designated by the Secretary of Defense. DOD Instruction 5000.2, DOD Directive 3405.1 and HQDA Letter 25-92-1 all require the use of Ada. DOD policy letter SAIS-ADO dated 16 July 90 specifies a maximum of 15% non-Ada lines of code or 10K lines of machine code. These policies are overly restrictive in an NDI/COTS environment. The Project Manager (PM) is therefore granted waiver authority to determine the overall system limits on non-Ada software.
- oo **Design to Cost**. Waiver from requirements of DOD 5000.2, Part 6, Section K, Design to Cost, is requested. Cost control will rely on process improvements, for example the use of NDI items, use of commercial specifications, etc.
- oo **Production Readiness Reviews**. Since Production contracts are intended to be based on Performance Specifications and rely heavily on NDI, the conduct of Production Readiness Reviews is not appropriate. Waiver of DOD 5000.2, Part 6, Section O is

therefore requested. The MDA shall be responsible for insuring adequate preparation for Production.

- oo **Parts Control**. Commercial parts and processes will be used to the maximum practical extent. Waiver from DOD 5000.2, Part 6, Section R is therefore requested.
- oo **Test and Evaluation**. Software will be matured and refined in parallel with hardware production. Thus, all formal software testing will not be completed prior to a production decision. Relief is therefore requested from DOD 5000.2, Part 8, 3.d. and Part 8, 4.a.(3). Further, it is the program intent to use results from demonstrations and exercises to supplement formal testing and analyses. Relief is therefore requested from DOD 5000.2 Part 8, 5.a.(1) to delegate TEMP approval to DUSA(OR) to implement this unified test approach.
- oo **C/SCSC System Reviews**. Cost reporting will be consistent with existing commercial business practices and it is requested that Cost Schedule Control System (CSCS) requirements be waived at the discretion of the PEO. The need to validate specific contractor C/SCSC systems will be determined by the MDA. Relief from DOD 5000.2, Part 11, Section B, 3.d, e and f is therefore requested.
- oo Streamlined Program Documentation. Only essential documentation will be provided and all documentation will be provided in as concise form as possible. Waiver of DOD 5000.2 Part 11, Section C, 2.b.(2), Section D, 2.c, and Section E, 2.c. are therefore requested. Furthermore, format and content of all documentation required by DOD 5000 series will be tailored to include only essential information in as concise a format to support the intent and use of the particular document.
- oo **Army Regulations**. The MDA will have the authority to waive any acquisition procedures required by Army regulations and not required by statute or Federal Acquisition Regulations.
- oo **Contract Documentation**: The PEO shall have the final authority to include or exclude specific contract data items (CDRLs), including drawings, technical manuals, plans, procedures, etc. Contractor format documentation shall be used to the maximum extent practical. Maximum use will be made of electronic access to contractor documentation to reduce delivery of hard copy documentation.



# DEPARTMENT OF THE ARMY OFFICE OF THE ABSISTANT BEORETARY RESEARCH DEVELOPMENT AND ACQUISITION 108 ARMY PENTAGON WASHINGTON DC 26318-0103

March 23, 1994



MEMORANDUM FOR PROGRAM MANAGER, ADVANCED FIELD ARTILLERY
SYSTEM/FUTURE ARMORED RESUPPLY VEHICLE
PROGRAM MANAGER, JOINT SURVEILLANCE TARGET
ATTACK RADAR SYSTEM/COMMANDER'S
TACTICAL TERMINAL
PROGRAM MANAGER, PAC-3 MISSILE

SUBJECT: Army Load Programs for Acquisition Streamlining/Reform

The attached package was presented to the Under Secretary of the Army on March 23, 1994. The original requirement was March 21, 1994, but was changed by the Under Secretary. The schedule for a final package, ready to be sent to the Deputy Secretary of Defense, was originally due on March 28, 1994. We have asked for an extension to April 11, 1994. Chances of approval are excellent, but if for some reason it is not, I will call you direct.

Please review the point paper pertaining to your program. Add comments that you feel should be included. Under the paragraph titled, Statutory/Regulatory Relief, you must identify the specific regulation, to include chapter and paragraph for which you request a waiver. Consider suggesting alternative methods/times of providing information that you would consider reasonable if you were in the management over-sight position. Do not include requests for waivers that only Congress may grant, since proposed legislation addressing many of your concerns is pending before Congress and will be acted upon NLT July 1994

Once you have accomplished the above tasks, please re-type the Point Paper and FAX to the number listed in the first paragraph of LTG Forster's letter to the PEOs by COB April 4, 1994.

Carefully consider what you ask for, it may very well be granted. If you have any questions, please call me at (703)-695-6153/54.

ANNY L. ABBOTT

Colonel, GS

Director, Acquisition Policy Reform Working Group

Attachment

# INDEX

- TAB A LETTER TO PROGRAM EXECUTIVES
- TAB B PROPOSED DRAFT LETTER TO DEPUTY SECRETARY OF DEFENSE
- TAB C POINT PAPER, JOINT SURVEILLANCE AND TARGET ATTACK RADAR SYSTEM (JSTARS) COMMON GROUND STATION (CGS)
- TAB D POINT PAPER, ADVANCED FIELD ARTILLERY SYSTEM/
  FUTURE ARMORED RESUPPLY VEHICLE (AFAS/FARV)
- **TAB E** POINT PAPER, PATRIOT ADVANCED CAPABILITY-3 MISSILE



# DEPARTMENT OF THE ARMY OFFICE OF THE ASSISTANT SECRETARY RESEARCH DEVELOPMENT AND ACQUISITION 1G3 ARMY PENTAGON WASHINGTON DC 20310-0103



March 16, 1994

MEMORANDUM FOR PROGRAM EXECUTIVE OFFICER, CRUISE

MISSILES AND UNMANNED AERIAL VEHICLES
PROGRAM EXECUTIVE OFFICER, FIELD
ARTILLERY SYSTEMS
PROGRAM EXECUTIVE OFFICER, INTELLIGENCE
AND ELECTRONIC WARFARE
PROGRAM EXECUTIVE OFFICER, MISSILE
DEFENSE

SUBJECT: Army Lead Programs for Acquisition Streamlining Reform

The Under Secretary of the Army has requested four programs be selected for possible "Army Lead Program" to aggressively apply acquisition streamlining initiatives. He has requested a point paper, due March 21, 1994, outlining what we will do, OSD support desired and what benefits we will achieve. Point papers should be submitted by Program Managers by COB March 17, 1994, to MG Prather, fax 703/617-7376.

Programs selected are: Advanced Field Artillery System/Future Armored Resupply Vehicle (AFAS/FARV), PAC-3 Missile, Joint Surveillance Target Attack Radar System/Ground Station Module/Commander's Tactical Terminal, and Joint Tactical Unmanned Aerial Vehicle (Maneuver Variant).

"Army Lead Programs" are intended to reap the benefits of innovative approaches to acquisition in the near term. Examples of high payoff approaches include:

- a. use of commercial business and manufacturing practices vs. government dictated practices;
- b. reduced regulatory requirements and government oversight;
- c. significant use of modeling and simulation throughout the process;
- d. use of integrated product development teams in government and industry;

- e. performance based RFP vs. "how to" RFP to eliminate low-value requirements;
- f. use of commercial specifications and standards vs. military unique;
  - g. use of dual-use technology;
  - h. use of non-developmental items (NDI);
  - use of government/industry teaming/partnering;
  - j. use of best value in source selection; and
- k. use of risk management vs. risk avoidance management approach.

Participating programs should:

- a. identify regulatory waivers required, and what benefits will accrue to their programs if granted;
- identify the innovative approaches/practices they will use, the benefits they will realize from their use, and how these benefits will be used to improve acquisition efficiency (including the financing of budget shortfalls); and
- c. summarize acquisition strategy, schedule, and funding.

Your inputs will be used by a joint SARDA/AMC staff cell to prepare and staff a proposal by March 28, 1994, for the Under Secretary of the Army.

WILLIAM H. FORSTER

Lieutenant General, GS Military Deputy to the

Assistant Secretary of the Army (Research, Development

and Acquisition)

# MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE

SUBJECT: Army Lead Programs for Acquisition Streamlining and Reform

- 1. Our Army is working hard to improve its capability to fight and win our Nation's wars. We are introducing new doctrine, evolving our combat training centers, modernizing our equipment, and changing the way we do business. Dramatic reductions in our investment accounts over the past several years, a shake-out in the Nation's defense industrial base, and increased requirements for a force projection Army pose significant challenges for the future.
- 2. A force projection Army must rapidly infuse into the warfighting force those technologies that give it a lethal edge and sustainment capability over potential adversaries. Maintaining this warfighting advantage requires an agile defense acquisition system that gets more for every dollar invested. Acquisition streamlining and reform, across a broad front, provides the means to leverage scarce resources.
- 3. We are gaining momentum in our streamlining and reformation efforts. Our focus on Battle Labs, Louisians Maneuvers, Battlefield Digitization, and Acquisition Improvement Road Shows, regulatory reduction, and commercial products and practices are changing our process for the better. We need your help to do more.
- 4. I will use three Army acquisition programs and one Army-led joint program to spearhead the achievement of acquisition streamlining and reform in a totally integrated fashion. Piecemeal improvements, on the margin, won't give us the acquisition agility we need. Every rule and practice will be opened up to see what value it really offers to the process. Useless overhead, both in-house and in the industrial base, will be eliminated. Then we want to use every dollar saved to reinvest in core warfighting programs.
- 5. I would like to propose also streamlined oversight procedures. Rather than the current rigid reviews with extensive documentation and pre-briefings, I would prefer to use event driven Initial Progress Reviews (IPRs) with minimum documentation necessary to support decisions. The "events" and the documentation requirements would be negotiated by the Army Acquisition Executive(AAE)/Military Deputy to the Assistant Secretary of the Army (RDA) with Chairs of the Conventional Systems (CSC) or Strategic Systems (SSC) Committees. Programs would go to the DAB only if the Chairs were unable to reach agreement with the AAE on how to proceed. My intent is not to reduce eversight by you or the Defense Acquisition Executive but to make oversight less onerous.
- 6. The objectives for these lead programs are described in the attached information papers. We will use them to achieve integrated process improvements, help educate the work force, and establish the outer limits of acquisition streamlining and reform. Your help is needed to stabilize funding for these programs and enable us to reinvest the savings from improvements.

7. With your agreement, we will work with your staff to make these programs real showcases of acquisition streamlining and reform benefits and models for future programs.

Under Secretary of the Army

**Attachments** 

# UNCLASSIFIED

### POINT PAPER

**EUBJECT:** Joint Surveillance and Target Attack Radar System (JSTARS) Common Ground Station (CGS)

PURPOSE: State the acquisition streamlining and reform objectives of the JSTARS CGS.

# FACTS:

- o Description. The CGS is an upgrade to current ground stations. It is an integral part of the Digitized Battlefield, linking and correlating diverse, multi-service sensors with Army systems and command, control, communications and intercollability nodes. The CGS uses an open architecture design to add more interfaces and incorporate evolving commercial technologies.
- o Acquisition Strategy. An evolutionary development approach is being used. Started in FY89, the Block I Engineering and Manufacturing Development was sole source to Motorola. It will be completed in FY95 with the operational test. Low rate initial production will follow if exit criteria are met. Block II will be competed. A combined OSD DAB Milestone III/IV review is scheduled for FY 96 on Block II. Funding ranges between \$85-110M annually from FY94-99.
  - o Acquisition Process Improvement Objectives:
- op Performance-Based Requests for Proposals (RFPs). RFFs will be based on performance requirements. NDI, CCTS and commercial specifications, standards and practices will be used.
- oo Software Requirements. Ada will be the language of choice. The Project Manager (PM) may waive Ada use when it makes good business sense to use COTS/GOTS. Software documentation requirements will be tailored to those necessary for life cycle support.
- co Contract Decumentation. The PM may exclude specific contract data items that do not add value, such as plans, reports, procedures, and drawings. Cost reporting will be consistent with existing commercial business practices.
- on Unified Testing. Testing will not be duplicated. The PEC will be the TEMP approval authority. The PM may streamline testing to demonstrate requirements through integration of DT, OT, simulation and analysis and contractor or Government tests.

- on Logistics Support. The PM may tailor the Integrated Logistics Support effort to a highly focused LSA/LSAR, maximum use of NDI manuals and consideration of Contractor Logistics Support.
- co Best Value. Scurce selection for the Block II will use the best value concept.
- oc Open Architecture. An open architecture will be used to employ commercial specifications, standards, practices and technologies.
- oo Integrated Product Development Teams (IPDTs). IPDTs will be used to involve the user in development of man-machine interfaces and in evaluating development test results.
- co Coordinated Hardware and Software Development and Production. Software will be matured and refined in parallel with hardware production to attain fielding of modern hardware with functional, reliable software.

# o Government Oversight Objectives:

- on Delegation of Milestone Decision Authority. The PEO will have the authority to waive any acquisition procedures required by DOD series 5000 regulations and all Army regulations not also required by Statute, Federal Acquisition Regulations, or the Defense Acquisition Regulation Supplement.
- on OSD and DA Oversight. The PM will provide program status to DA and OSD on an exception basis. Additional requests for status, briefings or metrics only at the written direction of the AAB or USD(A).
- co Delegation of Mission Need Statement (MNS) Approval Authority. Authority to approve future MNS updates will be delegated to the CG, USAICS.
- oo Streamlined Support Documentation. Program Support Documentation will be atreamlined to convey essential information in a concise manner. Document formats will be waived unless required for statutory or pragmatic, e.g., budgetary forms, reasons for that documentation used only within DOD.
- co Joint Program Implications. Flow down of requirements through the joint program office will not be used to circumvent the intent of streamlining initiatives.
- on Related Programs. The PM and PBO will have the same authority and responsibility for streamlining the related Ground Station Module and Commanders Tactical Programs as are granted for the CSS. Pm, JSTARS will have sole development authority for

this class of equipment.

- o Statutory/Regulatory Relief. Waivers associated with the following statutory/regulatory requirements are granted for the CGS program:
- on The requirement for DOTAE to certify readiness for operational use to Congress prior to a decision to proceed beyond LEIP.
- on Provisions of the Small Business Act that require determinations of non-responsibility to be referred to the SBA for Certificates of Competency, and that small business subcontracting plans be negotiated prior to contract award.
- on The decision to use an undefinitized contract action, as well as the length of time and amount of expenditure allowed prior to definitization will be determined by the PM.
- oo The requirement for compliance with cost accounting standards.

# UNCLASSIFIED

### POINT DAPER

SUBJECT: Advanced Field Artillery System/Future Armored Resupply Vehicle (AFAS/FARV)

PURPOSE: State the acquisition streamlining and reform objectives of the AFAS/FARV.

### PACTS:

- o Description. The AFAS will be a 155mm self-propelled howitzer with significantly increased capabilities in the areas of lethality, mobility and survivability. The FARV will be a self-propelled armored resupply vehicle with significantly increased capabilities in the areas of resupply, mobility and survivability.
- o Acquisition Strategy. The AFAS and FARV will be fielded as a single "system of systems." One solicitation will be issued and a single contract awarded for the AFAS/FARV DZM/VAL effort. The contractor will be responsible for total systems integration.
- o Acquisition Process Improvement Objectives. The AFAS/FARV DEM/VAL RFP includes the following streamlining innovations:
- oo Performance Requirements. Using a performance-based RFP rather than a "how-to" approach.
- co Example Statement of Work (SOW). The use of a Government-prepared example SOW allowing the contractor to prepare the detailed contract SOW tailored to meet unique program objectives.
- op Integrated Master Plan. Allowing the contractor to propose event driven Integrated Master Plan rather than individual "stovepipe" functional management plans.
- oo Commercial Specifications. Allowing the contractor maximum possible use of commercial specifications rather than unique military specs.
- co Commercial Business Practices. Allowing the contractor maximum use of commercial business and manufacturing practices rather than Government-dictated practices.
- co Integrated Technical Information. Utilizing a Contractor Integrated Technical Information System (CITIS) and electronic bulletin board to allow two-way, near real-time

exchange of contractor and Government information promoting a paperless environment and an industry-Government team that is virtually co-located.

- co Contract Data Requirements. Allowing the contractor to establish contract data requirements and format and propose cost-effective alternatives to meet Government data requirements.
- oo Integrated Product Development Teams (IPDTs). Conducting effective concurrent engineering through the use of IPDTs between Government and industry and allowing Government/industry partnering.
- co Simulation. Exploiting use of rapid and virtual prototyping, simulation and modeling in engineering design.
- oo Integrated Testing. Minimizing duplicative testing through optimized use of combined test resources.
- oo Operational Testing. Streamlining operational testing through distributed interactive simulation technologies.
- configuration Control. Contractor-maintained configuration control through the end of Engineering and Manufacturing Development to reduce costly Government oversight and control.
- co Government Furnished Equipment (GFE). Minimizing the use of GFE in order to promote a "system-level" contract approach and avoid costs for contractor control of GFE.
- on Best Value. Contracts awarded through best value source selection techniques.
- co Long-term Contractual Relationship. Using a long-term relationship with the contractor to achieve program stability and commitment to product quality from development through production and fielding.
  - o Government Oversight Objectives:
- co The AFAS/FARV streamlined acquisition strategy incorporates reduced milestone reporting requirements and seamless contracting to shorten development time on the overall program.
  - o Statutory/Regulatory Relief.
- oo Specific statutory/regulatory waivers will be identified in the proposals submitted by perspective offerors when received in August 1994.

oo The judicious waiver of statutes/regulations will permit the AFAS/FARV DEM/VAL contract to be executed in a more efficient manner consistent with best value principles.



# DEPARTMENT OF THE ARMY OFFICE OF THE PROJECT MANAGER FOR TRAINING DEVICES 1800 RESEARCH PARKING OTLANDO, PLONDO 2005-8824

MAPLY TO ASTRUCTION OF:

AMCPM-CSTS

3 2 HAR 1994

MEMORANDUM FOR COMMANDER, SIMULATION TRAINING AND INSTRUMENTATION COMMAND, 12350 RESEARCH PARKMAY, ORLANDO, FL 32826-3276

SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

- 1. References:
  - a. DODI 5000.2
  - b. AR 70-1
  - c. Mcmorandum, AAE, 28 Jan 94, SAB.
- 2. As the Milestone Decision Authority (MDA) for the Fire Support Combined Arms Tactical Trainer (FSCATT), and with regard to its status as a DOD Acquisition Pilot Program (DAPP), request you approve the following waivers for the FSCATT program.
- a. Milestone Decision Documentation. DODI 5000.2 outlines the documentation requirements for a milestone decision review. These include many stand-alone documents such as:
  - (1) Test & Evaluation Master Plan (TEMP)
  - (2) Program Cost Estimate
  - (3) Independent Cost Estimate
  - (4) Cost & Operational Effectiveness Analysis (COEA)
  - (5) Acquisition Program Baseline
  - (6) Manpower Estimate Report
  - (7) Integrated Program Summary (IPS)
  - (8) Integrated Program Assessment (IPA)

popl 5000.2 goes on to state that "the purposes of the stand-alone supporting documentation are to comply with applicable statutorily imposed requirements, such as the TEMP and ICE, and to meet the information needs of the milestone decision authority, supporting staff, and review forums." Furthermore,

AMCPM-CSTS
SUBJECT: Request for Exemption to Milestone Decision Documents
and Functional Requirements

AR 70-1, paragraph 3-4c., states that "the documentation will be tailored to the specifics of the program at the discretion of the MDA." However, the lead paragraph under 3-4 of AR 70-1 states "while the extent of the review will vary according to the needs of the particular program, the IPS and IPA, prepared by the PM and the MDA's functional support staff, respectively, will be prepared and used for each milestone review on all programs." This paragraph goes on to say that "the IPA itself will not be deleted from the review process." Request for exemption to those documentation requirements not required by statute and those that AR 70-1 allows the MDA to exempt. As FSCATT is an ACAT IV program, the laws concerning the TEMP and the ICE do not apply. As such, the only documentation that AR 70-1 does not allow the MDA to exempt are the IPS and the IPA. The IPS was tailored to meet the requirements of the program and is enclosed for your consideration. At your direction, your functional support staff will develop the accompanying IPA. Request exemption from all others listed above.

- b. Milestone Requirements. DODI 5000.2, part 3, outlines the purposes and functions for each milestone. DODI 5000.2, part 2, states that "the number of phases and decision points must be tailored to meet the specific needs of individual programs." In concert with the intent of DODI 5000.2, request the MDA grant authority to proceed into Engineering and Manufacturing Development (EMD) through and including production. This equates to a milestone II/III decision.
- c. Critical System Characteristics. DODI 5000.2, part 4, section C, requires "the MDA will approve the final list of critical system characteristics as part of the Milestone II decision." Request waiver from this requirement. The FSCATT RFP is completely functionally based and requires the offerors to perform cost/schedule/performance trade-offs as part of their development efforts.
- d. Reliability and Maintainability Considerations. DODI 5000.2, part 6, section C, requires the MDA to use reliability and maintainability considerations at milestone decision points. The FSCATT RFP requires a certain availability for which the trainer must be ready for training. Specific reliability and maintainability objectives are not mandated in the FSCATT RFP. Request the MDA exempt FSCATT from these considerations.
- 2. As stated in AR 70-1, paragraph 1-5.a., "the MDA may exempt the program from the functional requirement." Request exemption from the following functional requirements for the FSCATT program.

AMCPH-CSTS

SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

- a. DODI 5000.2, part 6, section D, requires every program to have a Computer Resources Life-Cycle Management Plan (CRLCM). Request the MDA exempt FSCATT from this requirement.
- b. DODI 5000.2, part 6, section H, requires "a human factors engineering program will be established for each system acquisition." On FSCATT, the human factors engineering program is encompassed in the integrated systems engineering program. Request the MDA allow FSCATT to proceed along this path.
- c. DODI 5000.2, part 6, section K, states "design to cost objectives may also be established for acquisition category II, III, and IV programs as determined by the milestone decision authority." We do not wish to have the MDA establish any design to cost objectives for the FSCATT acquisition.
- d. DODI 5000.2, part 6, section 0, requires "the producibility of the emerging product design, risk reduction efforts undertaken, and plans for proofing new or critical manufacturing processes will be specifically assessed" at milestone II. Furthermore, it states that milestone III "will be supported by a production readiness review." Producibility engineering is viewed as an integral part of the overall systems engineering approach required to be addressed and implemented by the FSCATT RFP. Request that FSCATT be allowed to proceed based upon this approach and be exempted from the requirement to establish a formal producibility program.
- e. DODI 5000.2, part 6, section P, mandates "for software developments, a quality assurance effort as defined in DOD-STD-2168 will be established." FSCATT doesn't impose any Government mandated programs upon the contractor. Request FSCATT be allowed to proceed with evaluating the contractor's proposed quality processes for adequacy instead of mandating Government programs.
- f. DODI 5000.2, part 6, section R, states "an effective parts control program shall be established in each acquisition program." As stated above, FSCATT does not impose any Government program. Our goal is to allow offerors to propose the processes that they feel are most effective for their entity and then the FSCATT team will evaluate them for adequacy. Request the MDA authorise FSCATT to proceed this way.
- g. DODI 5000.2, part 7, section A, requires an Integrated Logistics Support Plan (ILSP). Since under FSCATT logistic engineering is considered to be encompassed within the systems engineering approach, and since the FSCATT RFP requires a detailed supportability analysis, request the MDA exempt FSCATT

AMCPM-CSTS SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

from the requirement to generate an ILSP.

- h. DODI 5000.2, part 7, section B, requires the establishment of a formal MANPRINT and human factors engineering program. Again, all aspects of the project engineering disciplines are addressed under the FSCATT systems engineering approach. Request FSCATT be exempt from this functional requirement.
- i. DODI 5000.2, part 9, section A, dictates that a "configuration management program shall be established." FSCATT requires the contractor to maintain configuration control for the life of the contract using his preapproved process, we do not mandate Government programs in the FSCATT RFP. Request the MDA grant an exemption to this requirement.
- j. DODI 5000.2, part 9, section B, requires "a data requirements review board be convened before issuing a solicitation for any acquisition having a potential cost of \$5 million or more." Request the MDA exempt FSCATT from this requirement.
- k. DODI 5000.2, part 11, section A, establishes the requirement for program baselines at each milestone decision review. Request the MDA exempt FSCATT from this requirement.
- 1. DODI 5000.2, part 11, section B, outlines the need to have cost reporting on all programs. In keeping with the stated procedures that "cost and schedule performance data provided to the Government will be summarized directly from the same systems used for internal contractor management," the FSCATT RFP will require each offeror to explain how his proposed cost and schedule performance reporting system maets the requirements of the Government. STRICOM will verify whether the offerors' reporting systems fulfill our need. No specific exemption is requested/required for this approach.
- 3. Under your authority as the MDA and as Commander of STRICOM, request exemption from locally imposed procedures which are extensions of STRICOM's attempt to implement DODI 5000.2 and AR 70-1, as well as those other local procedures deemed so by the Director of Acquisition.
- 4. Request exemption from the specifically separated division of duties delineated in AR 73-1 wherein numerous agencies perform independent test, analysis, and reporting prior to each milestone decision review. FSCATT will solicit and take full advantage of the established expertise within the test community, but the STRICOM test and evaluation directorate will conduct and report

ANCPN-CSTS

SUBJECT: Request for Exemption to Milestone Decision Documents and Functional Requirements

the results of any FSCATT testing.

- 5. Request exemption from the requirement to type classify as outlined in AR 70-40. STRICON will continuously support FSCATT throughout its lifecycle satisfying all of the benefits gained from the type classification process. Accompanying this request is the request for exemption from the requirement to gain outside agency safety release. AR 385-16 calls for TECOM to provide such an assessment. With STRICOM actively participating in the FSCATT development process, safety will be a key ingredient in every decision consideration. A final safety release will be evaluated and issued within the charter of the STRICOM integrated engineering process.
- 6. As STRICOM participates in the FSCATT development and fielding, and with STRICOM as the life-cycle manager, the need for the issuance of a separate material release becomes less important. Request exemption from the requirements of AR 700-142 for the issuance of a stand-alone material release.

Encl

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COL, IN

Project Manager Training Devices

As the Milestone Decision Authority for the Fire Support Combined Arms Tactical Trainer, I approve the above requests for exemptions and waivers.

JOHN F. MICHITSCH Brigadier General, U.S. Army Commanding

# NOTES

# Firefinder P31 Program



Maureen A. Molz Project Leader Product Manager Firefinder

# UNCLASSIFIED

SFAE-IEW-FF

25 April 1994

# POINT PAPER

SUBJECT: FIREFINDER P31 Program

OBJECTIVE: A four (4) year EDM effort to develop an Advanced FIREFINDER fabrication of two (2) prototypes and support test and evaluation. The EDM effort will be followed by a production contract.

# FACTS:

Type of Contract: Competitive RDT&E Contract
Type to be determined

Schedule: Contract Award FY98

Production Contract Award FY01

Effort: Four (4) year RDT&E effort

BRIEFER: Maureen Molz, Project Leader, FIREFINDER Pai Program

ACTION OFFICER: Maureen Molz Project Manager P<sup>3</sup>I Program (908)544-5366

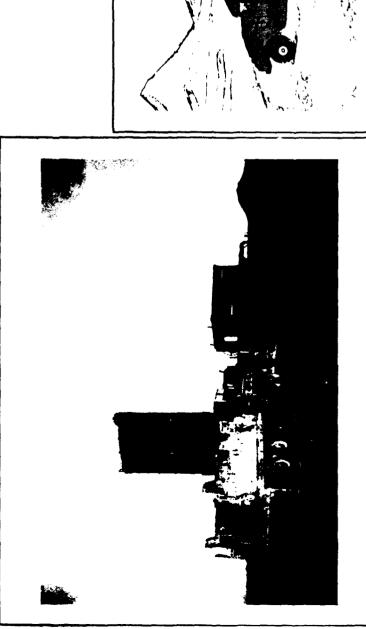
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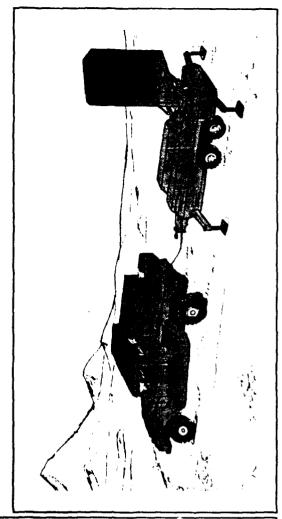
# Firefinder P31 Program DESCRIPTION

to Provide Increased Target Throughput, Upgrade the Antenna Transmitter Group Increased Range Coverage and Missile Detection Capability in a Highly Mobile, Transportable and Survivable System.

# Firefinder P31 Program DESCRIPTION

 Currently Indirect Fire Threats Have Longer Ranges Shooter Capabilities Cannot be Utilized to Their Full Than the AN/TPQ-37 Specification and Advanced Capabilities. The P3 Program is Designed to Potential due to Limited Sensor/Targeting Provide These Capabilities.





### Firefinder P31 Program STATUS

- a. Existing Operational Capabilities:- AN/TPQ-36(V)8- AN/TPQ-37 Block I
- b. Potential System/Component Concepts:
  - Integrated Circuits (MMIC)/Active/ - Solid State/Monolithic Microwave Semi-Active/Distributed Tubes
- Track While Scan
- Bistatic
- Continuous Wave
- Must use AN/TPQ-36(V)8 Signal Processor Architecture

### Firefinder P3I Program **OBJECTIVES**

**Technical** 

- Increase Range (2x)

- Increase Throughput (50/min) - Simultaneous Friendly Fire Information

- Improved Survivability

Reduced Crew Size (12 to 6)

- Improved Transportability and Mobility

- Missile Detection Capability

# Firefinder P31 Program

## **OBJECTIVES**

- Program
- Operational Requirements Document by **2QFY95**
- Engineering, Manufacturing and Development (EMD) Award 1QFY98 (Qty 2) Production Award 1QFY01(Qty 20)

# Firefinder P31 Program REQUIREMENTS

#### Features:

- Coverage and Waveform Flexibility
  - Target Classification Capability
    - Simultaneous Missile Detection
- Self Survey for Quick Deployment

Applicable Technologies for R&D

- Smaller, Lighter Prime Power Sources
  - Solid State/MMIC/Active/Semi-Active Arrays
    - Bistatic
- Continuous Wave (CW)

# Firefinder P31 Program PAYOFFS

- Performance
- Increased Range
- Greater Throughput
- Mission Flexibility
- Increased Time-on-Station
- Improved Deployability
- Cost
- Reduced Personnel Cost (50%)
- Reduced Operations and Sustainment Cost

### Firefinder P31 Program **MILESTONES**

**FY95** 

Operational Requirements Document Approval

FY96 • Solicitation Release

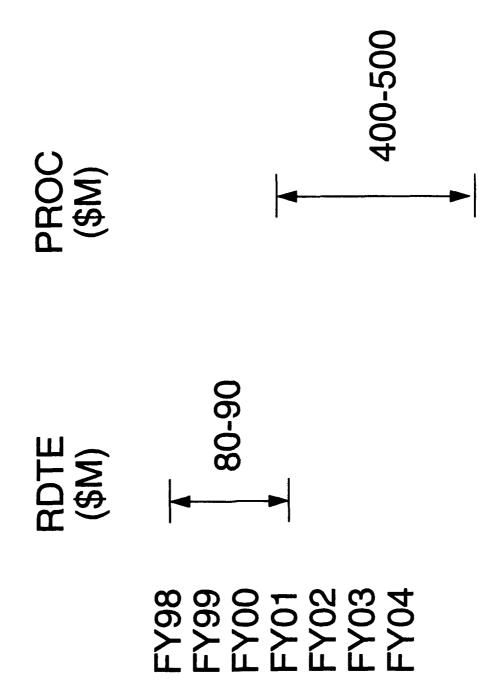
FY97
• Milestone Decision Review II

**FY98** 

Contract Award - Engineering and Manufacturing Development

FY01
• Production Contract Award

# Firefinder P31 Program FUNDING PROFILE



## CONTRACT OPPORTUNITY Firefinder P31 Program

Title:

Firefinder P3 Program

Objective:

Improved Antenna Transmitter Group

> Proposed Contract Type:

To be Determined

Key Milestones:

RFP - 3QFY96 CA - 1QFY98

Estimated Value:

EMD 80-90M Production 400-500M

> Point of Contact: Telephone:

Maureen Molz 908-544-5366

## NOTES

## **IEW COMMON SENSOR** SYSTEMS

Mr. William S. Hayden

Deputy Project Manager Signals Warfare



UNCLASSIFIED

SFRE-IEW-SG 26 Apr 1994

#### POINT PAPER

SUBJECT: Procurement of IEWCS Systems

OBJECTIVE: To provide for integration of production units of Ground Based Common Sensor-Light, Ground Based Common Sensor-Heavy, Advanced QUICKFIX, and the United States Marine Corps Marine Electronic Warfare Support System. Subsystems will be provided by separate contractors for integration into the appropriate systems.

#### FACTS:

Type of Contract: Competitive

Fixed Price

Schedule: Contract Award FY96

Effort: Contract award will be for integration of systems for

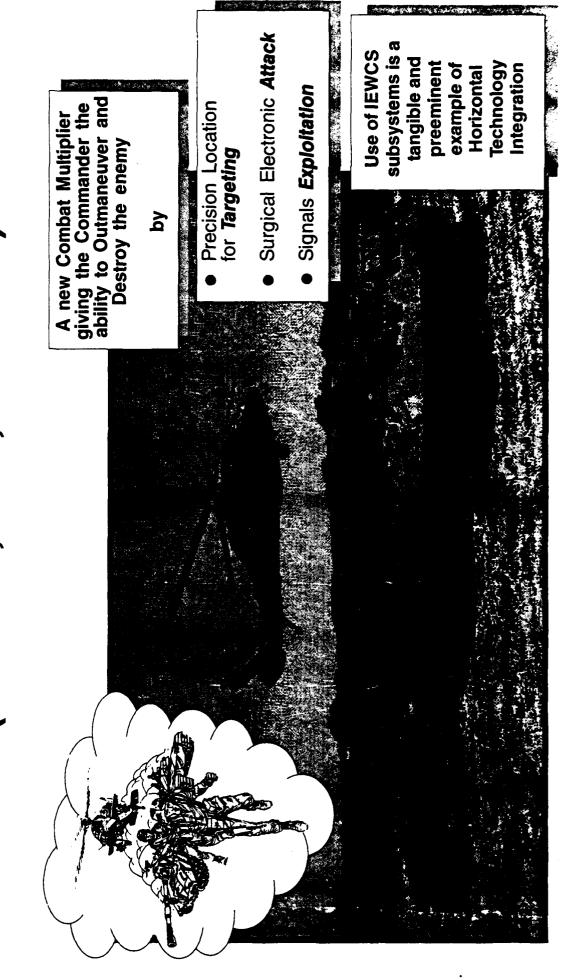
FY 1996 with options for 4 additional years.

BRIEFER: William S. Hayden, Deputy Project Manager Signals

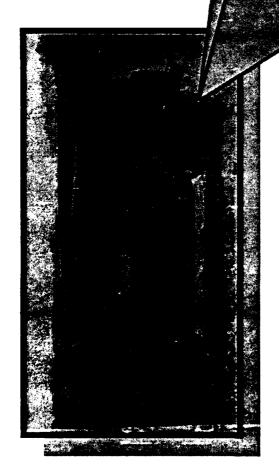
Warfare.

ACTION OFFICER: Tom Hurt Business Manager PM Signals Warfare (703) 349-5212

## IEW COMMON SENSOR (GBCS-L, AQF, GBCS-H)

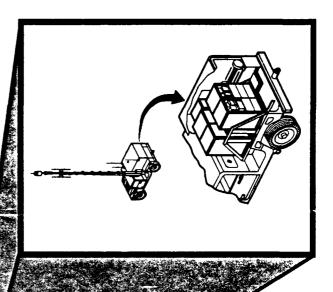


# **Ground Based Common Sensor - Light** IEW COMMON SENSOR

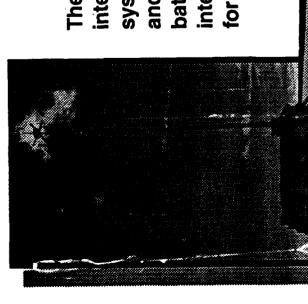


The Ground Based Common Sensor-Light (GBCS-L) is an integrated system using IEW Common Sensor subsystems. The system intercepts and jams both single channel and LPI signals and when netted with AQF provides targeting information to the battlefield commanders. The common ELINT subsystem intercepts non-communications emitters and provides geolocation for target development.

- TACJAM-A ESM/ECM Subsystems
- CHALS-X Communications Precision Location Subsystem
  - CMES ELINT/Non-Comm Precision Location Subsystem
- SINCGARS Combat Net Radio
- Mission Equipment Data Link
- Most Interface Unit
  - GPS (PLGR)
- Light Workstation
- Uncer the Hood Power
  - Self-erecting Mast
- HHMV (M1097) w/Electronics Enclosure

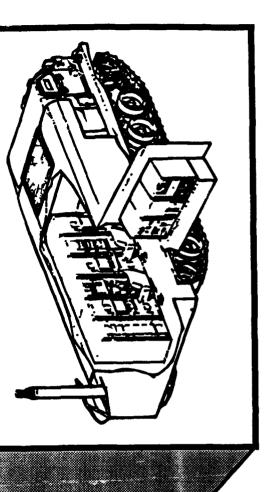


## Heaw Ground Based Common Sensor -IEW COMMON SENSOR

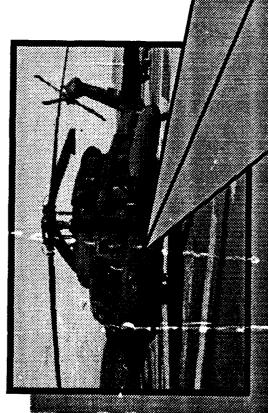


The Ground Based Common Sensor-Heavy (GBCS-H) is an integrated system using IEW Common Sensor subsystems. The system intercepts and jams both single channel and LPI signals and when netted with AQF provides targeting information to the The common ELINT subsystem intercepts non-communications emitters and provides geolocation battlefield commanders. for target development.

- TACJAM-A ESM/ECM Subsystems
- CHALS-X Comm Prec Loc Subsystem
- CMES ELINT/Non-Comm Prec 1.oc Subsystem
  - SINCGARS Combat Net Radio
    - RF Distribution Subsystem
    - Mission Equipment Data Link
      - Common Workstation Host Interface Unit
        - ANUYH-15 DTSR
- GPS (MAGR and INS)
- Electronic Fighting Vehicle System (EFVS) Joint W/C2V and JSTARS GSM
  - 60kw Primary Power Unit
- Environmental Control Unit
- Biological/Chemical Protection



## IEW COMMON SENSOR Advanced QUICKFIX



Sensor subsystems. The heliborne system performs Electronic Support Advanced QUICKFIX (AQF) is an integrated system using IEW Common and Electronic Attack, gains intelligence, and locates enemy tactical emitters. The AQF is operated in single or multiple aircraft missions in an Army divisional area and interoperates with Ground Based Common Sensor Heavy (GBCS-H), GBCS-Light (GBCS-L), other AQFs, and other systems system provides the capabilities to detect, locate, collect, analyze, exploit and attack both single channel and LPI communications. Also, each system provides Electronics Intelligence (ELINT) Intercept and location capability using IEWCS in a network to obtain accurate emitter locations. igainst non-communications emitters.

- TACJAM-A ESM/ECM Subsystems
- CHALS-X Co nm Prec Loc Subsystem
- CMES ELIN (/Non-Comm Prec Loc Subsystem
- SINCGARS Combat Net Radio
- RF Distribution Subsysem
- Mission Equipment Data Link
- Host Interface Unit
- Common Workstation
- ANUTH-15 DT3R
- GPS (MAGR and INS)

BLACKHAWK Helicopter EH-60A

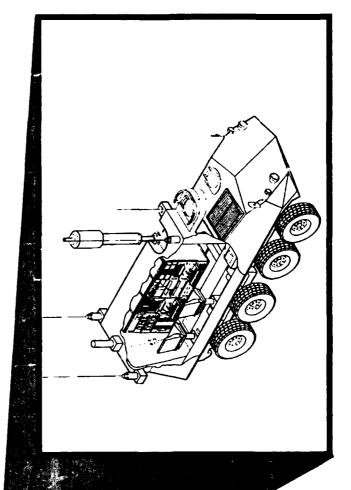
- Aircraft Survivubility Equipment (ASE)
- Environmental Control Unit

### **Mobile Electronic Warfare Support** IEW COMMON SENSOR System (MEWSS)



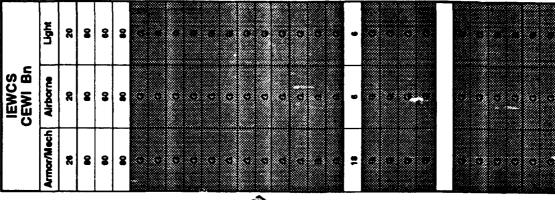
The Mobile Electronic Support System (MEWSS) is an integrated system using IEW Common Sensor subsystems. The system provides ground collection, emitter location, targeting and Electronic Attack (EA) for use in gaining intelligence, locating and jamming enemy tactical communications emitters. The MEWSS is operated in single or multiple platforms in a USMC MAGTF area typically at or beyond the FLOT and interoperates with all other IEWCS platforms. Also the MEWSS provides Electronics Intelligence (ELINT) against non-communications emitters.

- TACJAM-A ESM/ECM Subsystems
- CHALS-X Comm Prec Loc Subsystem
- CMES ELINT/Non-Comm Prec Loc Subsystem
- **SINCGARS Combat Net Radio**
- Mission Equipment Data Link
  - GPS (MAGR/PL3R)
- Under the Hood Power
- Self-erecting Mast
- Light Armoured Vehicle (LAV)
- HF Command-radio subsystem



# IEW COMMON SENSOR Systems Status

		Current CEWI Bn				_
	<b>Armor/Mech</b>	Airborne	Light		Armor/Mech	' L
	ñ	=	12		8	
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(intercept)	8	15	12		8	
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#### **IEW COMMON SENSOR Objectives Systems**

- re-design Vice to counter new threats modules/CCAs hardware Software
- Expansion of ECM for identified "need" areas
- Rapid sensor re-programming capabilities
- Complementary platform payload integration
- Continued refinement and implementation of rapid

#### **IEW COMMON SENSOR** Requirements **Systems**

Production of GBCS-L, GBCS-H, AQF

Integration of GFE Subsystems

Total System Integrity

System Level Acceptance Tests

#### **IEW COMMON SENSOR** Systems Payoffs

#### Features

#### Benefits

Common Subsystem on all platforms

Employs US Army's IEW open system architecture

Self-calibration

Built-in simulator/test

Field-proven NDI

Reduced manpower and ILS requirements

Accommodates growth & interoperability

Simplifies unit interchange

**Embedded training** 

Reduced maintenance costs

Proven performance & reliability

Reduced life cycle costs

# **IEW COMMON SENSOR**

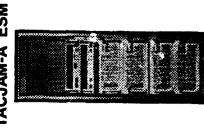
## Systems Major GFE Items

#### Subsystems

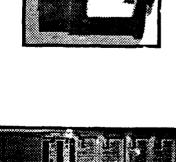
Carriers

**EH-60A** 

TACJAM-A ESM



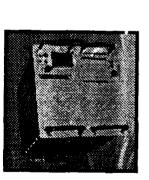
**CMES** 

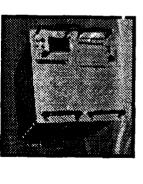


CHALS-X

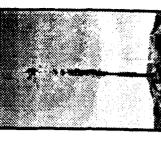
TACJAM-A ECM



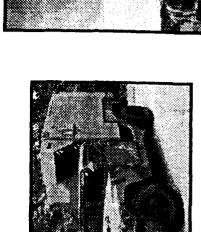




Track Carrier w/enclosure



**HMMW** 



#### IEW COMMON SENSOR Milestones **Systems**

- FY 95 & Beyond
- 4 QTR FY94 Issue Draft RFP
- 2 QTR FY95 IEWCS Development Test
- 3 QTR FY95 IEWCS Operational Test
- 4 QTR FY95 Field GBCS-L & AQF R&D Systems
- 1 QTR FY96 Award GBCS-H, GBCS-L, AQF, **MEWSS Production Contract**
- 4 QTR FY97 Field Initial Systems

# IEW COMMON SENSOR

## Systems Funding Profile

PROC (\$M)

FY 96

\$75 - 100

FY 97

\$80 - 100

\$80 - 100

**FY** 98

\$80 - 100

FY 99

\$80 - 100

FY2000

202

#### IEW COMMON SENSOR **Contract Opportunity Systems**

Title: IEWCS Systems

Production of systems Objective:

Proposed Contract Type:

Key Milestones:

**Contract award FY96** 

\$110.0M to \$140.0M **Estimated Value:**  Tom Hurt (703) 349-5212 POC Telephone:

## NOTES





# ELECTRONICS FOR THE INFORMATION AGE

PRESENTED BY:

DR. C.G. THORNTON

ELECTRONICS and POWER SOURCES DIRECTORATE US ARMY RESEARCH LABORATORY FORT MONMOUTH, NEW JERSEY DIRECTORATE EXECUTIVE

UNCLASSIFIED

#### **ELECTRONICS FOR THE INFORMATION AGE**

#### DR. C. G. THORNTON Directorate Executive Electronics and Power Sources Directorate Fort Monmouth, New Jersey

The Army Research Laboratory (ARL) through its Electronics and Power Sources Directorate, located at Fort Monmouth, New Jersey, is acknowledged as a topflight government research and develop ment (R&D) laboratory, chartered to provide the Army with the best electronic devices and components that science and technolo gy can produce. The EPSD program strategically blends incremental and next-generation electronic component development, utilizing our own capabilities and all available sources, to provide the Army the utmost in key operational capabilities.

Our mission is critical because major technology breakthroughs and advances provide extraordinary opportunities for creating smaller components, devices, and subsystems that will provide superior performance at a lower cost for new and improved mili tary systems.

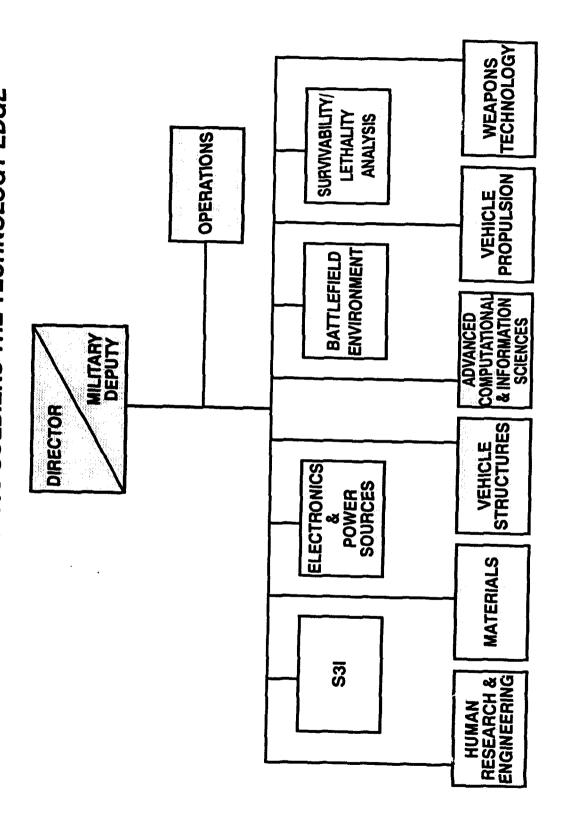
For example, an important research and development thrust that has recently been elevated in importance is Digitization of the Battlefield. Because of its position at the cutting edge of electronics technology, EPSD is able to redirect significant portions of its activities to digitization, helping to insure the success of the concept, and enabling the Army to maintain the technological edge, even in these times of downsizing and reduced funding.

The Directorate is committed to an "open laboratory" policy whereby personnel from industry and academia are encouraged to engage in on-site cooperative efforts utilizing EPSD's unique and sophisticated facilities and high level of scientific expertise to address specific technological barrier problems. Our goal is to exploit the latest scientific advances to meet military needs while fostering development within the commercial economy to in sure both the economic and military success of the United States.

EPSD's initiatives and leadership role in technology transfer are well recognized. Using the Cooperative Research and Development Agreements (CRDAs) with industry, EPSD utilizes its technology, facilities, and expertise in technology commercialization and the development of new products. EPSD also pursues an active role in dual-use and defense conversion. The Directorate is actively in volved in an innovative well-focused process for transferring technology from the laboratory to the private sector.

EPSD supports small business through a \$4.9 million Small Busi ness Innovation Research (SBIR) Program where technology transfer is integrated into the SBIR Program.

## PROVIDING AMERICA'S SOLDIERS THE TECHNOLOGY EDGE ARMY RESEARCH LABORATORY





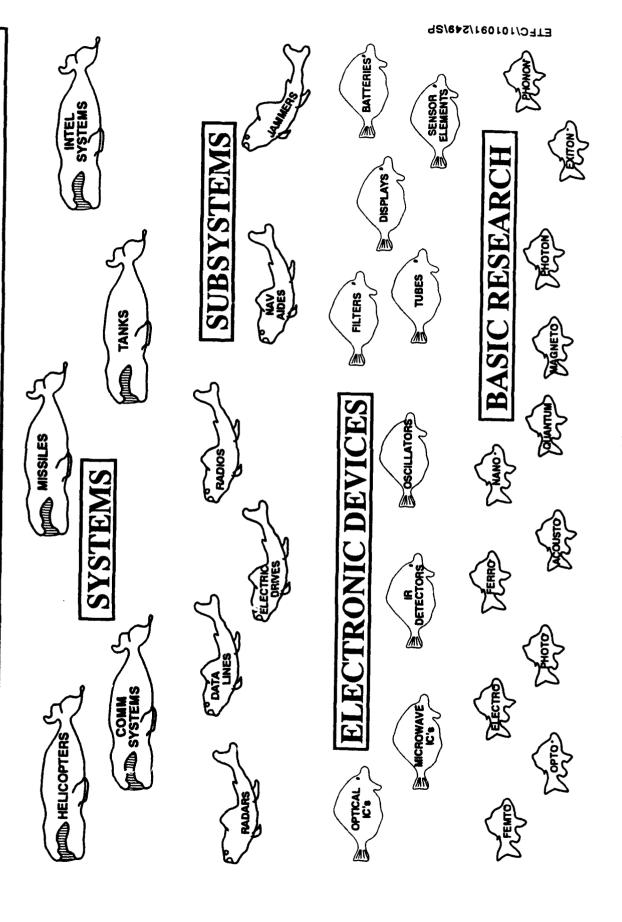
# ELECTRONICS AND POWER SOURCES DIRECTORATE



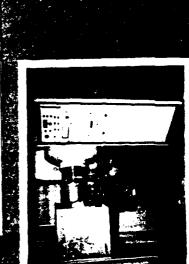
## **BUSINESS SUB-AREAS**

- NANO/OPTOELECTRONIC/PHOTONIC DEVICES
- MICROWAVE/MILLIMETERWAVE/MIMIC DEVICES
- OPTICAL DEVICES AND FOCAL PLANE ARRAYS
- ADVANCED SENSORS AND ACTUATORS
- DESIGN, SIMULATION, MODELING, CONCURRENT ENGINEERING, AND PROTOTYPING
- RELIABILITY AND MANUFACTURING SCIENCE
- ACOUSTO/FERROELECTRONICS
- VIRTUAL ENVIRONMENT
- POWER SOURCES/PULSE POWER

# ELECTRONIC TECHNOLOGY FOOD CHAIN



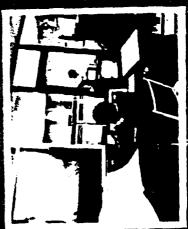


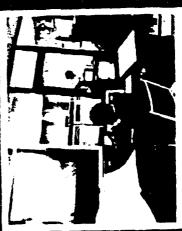


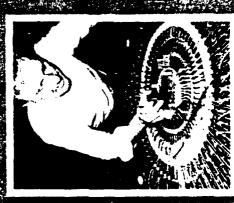










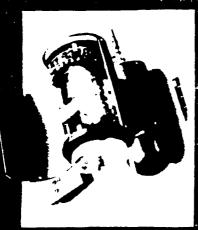




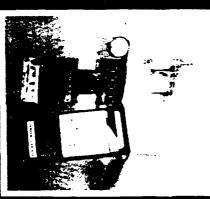


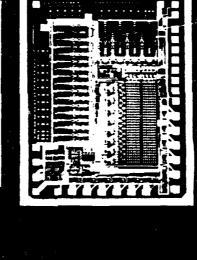


# EPSD DEVICES/COMPONENTS





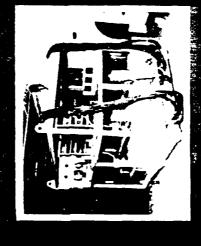


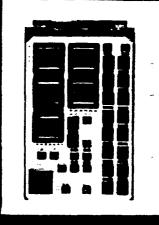












# -AND COMBAT APPLICATIONS

**BATTLEFIELD INFORMATION SYSTEM 2015** 

**GROUND SYSTEM FUNCTIONS** 

COMMUNICATIONS



MISSION SIMULATION POWER SYSTEMS FIRE CONTROL FLIGHT SYSTEM FUNCTIONS COMMUNICATIONS RADAR FLIR IFF POSITION NAVIGATION COMAND CONTRO ELECTRONIC WARFARE OBSTACLE DETECTION VISIONICS DISPLAYS

COMMAND

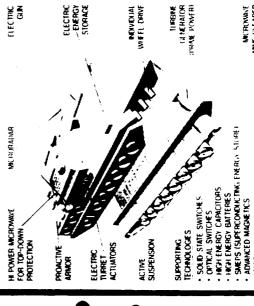
POWER SYSTEMS

FIRE CONTROL

TARGETING . RADAR FLIR IFF

ENGINE

#### **ELECTRIC TANK**



HELMET DISPLAY

SOLDIER COMPUTER (20W)

PROPELLANT

F XPLOSIVE

HANSMITTER

SIGNAL PROCESSING HOUSING

IR St NSOR

RECEIVER MMW © NSOR

ONF CIRMAL ANTENNA

POWER SOURCE

IMAGE PROCESSING

NIGHT VISION (20W)

FUZF AND GUIDANCE ELECTRONICS

**FUTURE MISSILE** 

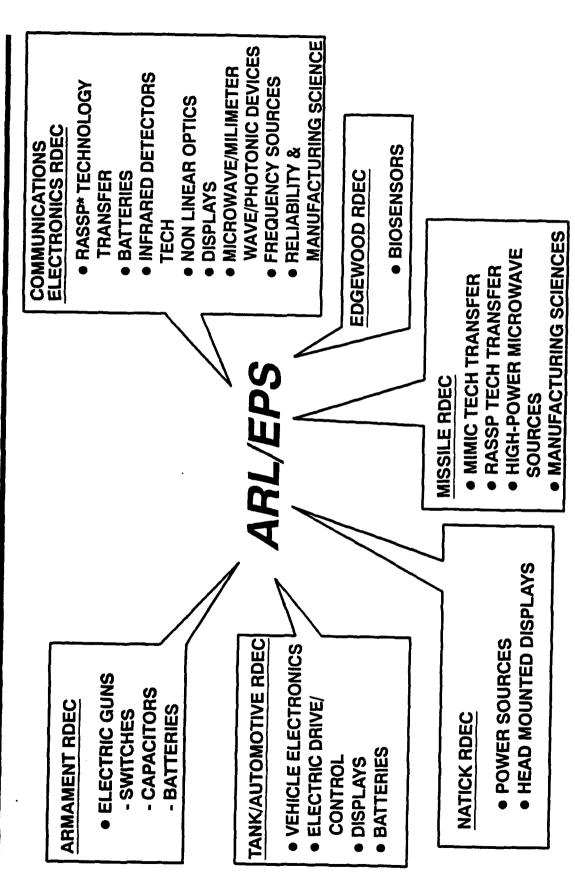
SOLDIER SYSTEM

MICRONAVE VINE CLEARER

THE FUTURE SOLDIER SYSTEM. EXOSKELETON (4500W)

215

# MOU'S WITH SYSTEM DEVELOPMENT CENTERS



\* RASSP - RAPID PROTOTYPING OF APPLICATION SPECIFIC SIGNAL PROCESSORS



# ELECTRONICS AND POWER SOURCES DIRECTORATE TECHNOLOGY PROGRAM ANNEXES (TPAs) WITH CECOM





TPA NUMBER	TPA NAME	DELIVERABLE	DOLLARS (M)
EP-CE-01-94	NONLINEAR OPTICAL DEVICES	SPATIAL LIGHT MODULATOR AND OBJECT CORRELATOR	1.40
EP-CE-02-94	IR DETECTOR RESEARCH AND TECHNOLOGY	GROW THIN FILM FERROELECTRIC MATERIAL FOR II-VI DETECTOR	2.70
EP-CE-03-94	VIBRATION RESISTANCE SAW FREQUENCY SOURCES	SURFACE ACOUSTIC WAVE OSCILLATOR FOR ADVANCED THREAT RADAR JAMMER	0.25
EP-CE-04-94	LOW POWER OSCILLATOR FOR SCAMP	DEVELOP ASIC FOR MICROCOMPUTER CONTROL CRYSTAL OSCILLATOR FOR SCAMP	0.30
EP-CE-05-94	ADVANCED EW CHANNELIZER MODULE FOR LIGHT WEIGHT COMINT/ELINT	COMPACT RECEIVER FOR GUARDRAIL II	0.05
EP-CE-06-94	HI SENS RECEIVER METH FOR DETECT/IR/LOC OF LPI SIG	LOW PROBABILITY OF INTERCENT SIGNAL PROCESSING TECHNIQUES FOR WIDEBAND RECEIVER	0.16 D

### TPAS WITH CECOM



#### Confinned



TPA NUMBER	TPA NAME	DELIVERABLE	DOLLARS (M
EP-CE-07-94	LNA FOR GROUND BASED DSCS	FABRICATE PROTOTYPE LOW NOISE AMPLIFIER FOR SATCOM	0.25
EP-CE-09-94	HIGH ENERGY BATTERIES	PROTOTYPE BATTERIES	1.90
EP-CE-10-94	HPM SOURCES AND COMPONENTS	IMPROVED, HIGH-PRF SOURCE	0.30
EP-CE-11-94	RELIABILITY ASSESSMENT THROUGH PHYSICS OF FAILURE	SOFTWARE & SELECTION CRITERIA SPREADSHEET	0.15
PROPOSED	PHOTONICS FOR RECEIVER TECHNOLOGY	CIRCUIT DESIGN	0.35
PROPOSED	MICROWAVE SUPERSONDUCTING DEVICES	MILLIMETER-WAVE RECEIVER DESIGN	0.40
PROPOSED	INTEGRATED PHOTONIC DEVICES	PROTOTYPE LASERS AND DETECTORS	0.70
PROPOSED	IR DETECTOR RESEARCH	UNCOOLED DETECTOR DESIGNS	2.70
PROPOSED	COST-EFFECTIVE ELECTRONICS VIA PLASTIC-ENCAPSULATED MICROCIRCUITS	USER HANDBOOK	.20

#### US ARMY RESEARCH LABORATORY

### TPAS WITH CECOM

#### Confinned



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TPA NUMBER TPA NAME	TPA NAME	DELIVERABLE	DOLLARS (M)
PROPOSED	BACKPACK FUEL CELLS	HYDROGEN GENERATOR	0.70
PROPOSED	LOW COST ELECTRONIC SCANNING	15 GHz PHASE SHIFTERS	0.20
PROPOSED	RASSP TECHNOLOGY TRANSFER	SELECTED PROTOTYPE	0.07

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# TECHNOLOGY TRANSITIONS FY93-FY94

#### PRODUCT

### TRANSITION TO

- SOLENOID FIELD SOURCE FOR LINEAR BEAM MICROWAVE DEVICE
- MONOLITHIC RECEIVER AND TRANSMITTER FOR SEARCH AND DESTROY ARMOR (SADARM)
- SYSTEM LANGUAGE REQUIREMENTS FOR MIMIC HARDWARE DESCRIPTION LANGUAGE
- SINGLE-CHANNEL GROUND/AIR RADIO SYSTEM (SINCGARS) AND GERMAN SEM 93 RADIO INTERFACE FOR INTEROPERABILITY
- OPERATIONAL AUTOMATED MILLIMETER WAVE LIFE-TEST AND RELIABILITY ASSESSMENT
- PRC-70 RADIO 883 CLASS B EQUIV. MICROCIRCUIT
- K-BAND JAMMER MODULE FOR PATRIOT UPGRADE
- MILLIMETER WAVE FREQUENCY MODULATED/CONTINUOUS WAVE MISSILE SENSOR FOR ADVANCED KINETIC ENERGY MISSILE/REACTIVE ARMOR
- FAST TURN-ON KLYSTRON ELECTRON GUN
- SUPERCONDUCTING ANTENNA FOR RADAR WARNING RECEIVER
- SMART BUYER'S GUIDE FOR AFFORDABLE ELECTRONICS
- FINAL DRAFT MANUSCRIPT OF VHDL MODELING HANDBOOK

- MARTIN-MARIETTA
- ALLIANT, AEROJET, HUGHES, M/A COM, TRW, ARDEC
- INTERMETRICS, RAYTHEON, PERII SYSTEMS INC., EESOF, ARPA, NRL
- MITRE, GERMAN MoD, PM SINCGARS, CECOM
- TRW, HUGHES, RAYTHEON, TECOM
- SARNOFF, CECOM, TOBYHANNA DEPOT
- RAYTHEON, WSMR, PM PATRIOT
- HONEYWELL, MICOM, ARDEC
- LOS ALAMOS NATIONAL LAB, LAWRENCE LIVERMORE NATIONAL LAB
- ARPA, PM ASE, MICOM, NVESD
- DESC, CECOM, ADC, NSWC
- MARTIN-MARIETTA, LOCKHEED SANDERS, IBM, SYNOPSIS, VIEW LOGIC, RAYTHEON, HONEYWELL, TI, MOTOROLA

# TECHNOLOGY TRANSITIONS FY93-FY94 (Continued)

#### PRODUCT

- MICROWAVE MONOLITHIC INTEGRATED CIRCUTS/PHASE SHIFTERS FOR ELECTRONICALLY STEERED JAMMER
- NON-DEVELOPMENTAL CHARACTERIZATION
- PROTOTYPE FIBER-OPTIC-FED SUBARRAY FOR ACTIVE PHASED ARRAY RADARS
- LIGHT WEIGHT FREQUENCY STABLE 9 GHz BEACON AMPLIFIER
- 140 GHz InP GUNN OSCILLATOR FOR IMAGING RADAR
- ELECTRONIC INTELLIGENCE SPREAD-SPECTRUM RCVR MODULE WITH SIGNAL ANALYSIS
- COMMON APERTURE MILLIMETER WAVE/INFRARED DUAL MODE SENSOR
- LOW MASS FOCUS STRUCTURE FOR ULTRAVIOLET/X-RAY SPACE TELESCOPE
- 44 GHz POWER HIGH-ELECTRON-MOBILITY TRANSISTOR POWER AMP MODULES FOR MANPACK SATELLITE COMMUNICATIONS
- ULTRA-LOW NOISE MINI AMPLIFIER FOR MANPACK DIRECT SATELLITE COMMUNICATIONS SYSTEM

#### TRANSITION TO

- LOCKHEED/SANDERS, NVESD
- MOTOROLA, INTEL, DESC, DLA
- GTE, DREXEL, NVESD
- . MOTOROLA, NVESD, PM SOF
- · VARIAN, MICOM, WTD/ARL
- LNR, NVESD
- CHANG INDUSTRIES, MICOM, ARDEC
- JPL, NASA, GODDARD
- CECOM, SATCOM, PM SCOTT/SCAMP
- CECOM SPACE/TERRESTIAL DIR.

# TECHNOLOGY TRANSITIONS FY93-FY94 (Continued)

#### **PRODUCT**

- 19 INCH PLASMA DISPLAY
- 320x240 FULL COLOR, GRAPHICS & VIDEO PLASMA DISPLAYS
- TMDE TETHERED DISPLAY
- ► HIGH BRIGHTNESS 16 GRAY SCALE 640 x 480 MONOCHROME ELECTROLUMINESCENT DISPLAY
- COMPRESSION/DECOMPRESSION WORKSTATIONS
- IR FILTERS FOR SOLDIER I.D. SIGNALLING DEVICE
- GENERAL PURPOSE DIGITAL SIGNAL PROCESS OR MULTICHIP MODULE (Prototyped in an LTCC PIN GRID ARRAY MCM)
- OPTICALLY CONTROLLED PHASED ARRAY MODULE
   FOR NEXT GENERATION COMM. TECHNOLOGY SATELLITE
- DIGITAL CONTROL SYSTEM FOR A TEMPERATURE, COMPENSATED FERROELECTRIC PHASE SHIFTING SCANNING ANTENNA
- BASED HAND-HELD BIOLOGICAL DETECTOR

### TRANSITION TO

- PM ALL SOURCE ANALYSIS SYSTEM (PMASAS)
- PHOTONICS, IMAGING TARDEC
- TABE.
- PLANAR SYSTEMS, PM-CHS, TMDE
- ITERATED SYSTEMS, FAR EAST SCIENCE ADVISORS OFC
- READ PLASTICS
- DUPONT ELECTRONICS, HILL AFB
- LEWIS RESEARCH CTR, DUPONT ELCTS, NASA
- **EW/RSTA**
- ERDEC



### ARL/ELECTRONICS AND POWER SOURCES STRATEGY



- DEFINE A PATH INTO THE FUTURE AND GUIDE THE WORK OF MANY TOWARD THAT OBJECTIVE.
- SERVE AS A STEWARD OF GLOBAL ACADEMIC AND INDUSTRIAL RESOURCES TO MEET SOLDIER NEEDS.
- COMMERCIALIZE DUAL USE TECHNOLOGY TO ACHIEVE PRODUCTION VOLUME THAT WILL MAKE AVAILABLE AFFORDABLE COMPONENTS FOR BOTH MILITARY AND INDUSTRIAL APPLICATIONS
- SERVE AS A NATIONAL CENTER FOR ELECTRONIC COMPONENTS RESEARCH WITH ON-SITE UNIVERSITY AND INDUSTRY PARTICIPATION.

### WE DON'T MAKE THE SYSTEMS... **WE MAKE THEM BETTER**

# SPONSORED CONSORTIA/COOPERATIVES

#### SUBJECT

### • LOGISTICS R&D - COST REDUCTION

- METEOROLOGICAL DATA SYSTEM
- SYSTEM DESIGN METHODOLOGY
- THIN-FILM ELECTROLUMINESCENT COLOR DISPLAY
- ULTRAPURE QUARTZ CRYSTAL
- PRECISION OSCILLATOR
- QUARTZ STUDIES
- MULTIPLE LAUNCH ROCKET SYSTEM MILLIMETER WAVE TRANSCEIVER
- DUAL MODE SEEKER
- SEARCH AND DESTROY ARMOR MILLIMETER WAVE TRANSCEIVER
- MILLIMETER WAVE IMAGING RADARS
- SATCOM-SINGLE CHANNEL OBJECTIVE TACTICAL TERMINAL TRANSMITTER
- NOISE SOURCE FOR 94 GHZ
- TANK DEFENSE RADAR
- PARTS EMULATION
- HIGH PERFORMANCE DIGITAL TO ANALOG CONVERTER
- VEHICLE SELF-PROTECTION
- MIMIC HARDWARE DESCRIPTION LANGUAGE

#### MEMBERS

- AT&T, TRW, RTI, INTERMETRICS, IBM, HONEYWELL, GOULD
- TRW, SAWTEK, TRACOR, BENDIX, VIZ
- RTI, TELEDYNE BROWN, UVA, GTE, CSC, JERSEY CITY STATE COLLEGE
- PLANAR, SARNOFF, SUPERTEX, NORDEN, ELDEC
- OK STATE U, LAWRENCE LIVERMORE LABORATORY, SAWYER RESEARCH
- GE NEUTRON DEVICES, PIEZO TECH., INC.
- PRINCETON U, RENSSELAER, MCI, RAYTHEON
- TRW, HUGHES, (MARTIN MARIETTA, DIEHL, THOMPSON CSF, THORN)
- CHANG INDUSTRIES, NORTHROP, MICOM RDEC
- HONEYWELL, VARIAN, HUGHES, AEROJET, ALPHA, BALL AEROSPACE, TRW, FLAM & RUSSEL!
- WTD, MICOM RDEC
- STEINBRECHER, M-A/COM, HUGHES, FLAM & RUSSELL, GE E-LAB
- NOISE COM, M-A/COM
- TACOM, TRW, TI, BALL, MILLITECH, MICOM, WTD, HUGHES, GEORGIA TECH, PREDICTION SYSTEMS, CHANG INDUSTRIES
- ITD, SYNOPSYS, QUICKTURN, SIGNETICS, GD
- R · RADC
- WTD, MICOM RDEC, ARMAMENTS RDEC
- ESSOF, INTERMETRICS, PERII



#### WE HAVE AN OPEN LABORATORY



- CENTER FOR RESEARCH & DEVELOPMENT COOPERATION/COORDINATION
- **ON-SITE GOVERNMENT LAB/UNIVERSITY/INDUSTRY TEAMS**
- JOINT COOPERATIVE PROGRAMS WITH CONTRACTORS
- IMPORTER OF FOREIGN TECHNOLOGY
  - TECHNOLOGY EXCHANGE
- ENGINEER/SCIENTIST EXCHANGE
- LABORATORY/INDUSTRY/GOVERNMENT CONSORTIA
- TECHNOLOGY REINVESTMENT PROGRAMS PARTNERSHIP

# SUCCESS IN THESE AREAS REQUIRES STATE-OF-THE-ART CAPABILITIES/FACILITIES

## EXAMPLES OF UNIQUE EQUIPMENTS & CAPABILITIES AT ARL/FORT MONMOUTH

- **MERCURY CADMIUM TELLURIUM MOLECULAR BEAM EPITAXY**
- BARE CHIP INFRARED DETECTOR ARRAY MEASUREMENT FACILITY
- BAR BONDER FOR LASER DIODE ARRAYS
- FLAT PANEL DISPLAY DEPOSITION EQUIPMENT
- DISPLAY EVALUATION LABORATORY
- GLOW DISCHARGE MASS SPECTROMETER
- THERMAL DESORPTION MASS SPECTROMETER
- **ULTRA HIGH VACUUM E-BEAM METAL DEPOSITION EQUIPMENT**
- LATEST GENERATION (100 kV) ELECTRON BEAM PATTERN GENERATOR
- HIGH PRESSURE (0 50 KILOBAR) AND UNIAXIAL STRESS (20 KILOBAR) MAGNETIC FIELD (9 TESLA) SPECTROSCOPY
- MILLIMETER-WAVE QUASI-OPTICAL TEST FACILITIES
- AUTOMATED LARGE SCALE MICROWAVE & MILLIMETER LIFE TEST EQUIPMENT
- COMPUTER AIDED DIAGNOSTIC ELECTRON BEAM TESTING (CADET)
- AUTOMATED MULTI FUNCTION MICROWAVE/MILLIMETER NETWORK ANALYSIS
- 30 MVA INSTALLED POWER FACILITY WITH 10 MW THERMAL MANAGEMENT SYSTEM
- OPTICALLY ISOLATED PULSE POWER DATA ACQUISITION SYSTEM
- TWO 3.3 MVA SOLID STATE CIRCUIT BREAKERS FOR NON-DESTRUCTIVE TESTING



## SIGNIFICANT PATENT POSITIONS



• MAGNETICS

POWER SOURCES

FERRITE DEVICES

DISPLAYS

CRYSTAL OSCILLATORS

MILLIMETER WAVE PHOTONICS

OPTICAL SWITCHES

SURFACE ACOUSTIC WAVE DEVICES

• NANOELECTRONICS

INFRARED DETECTOR

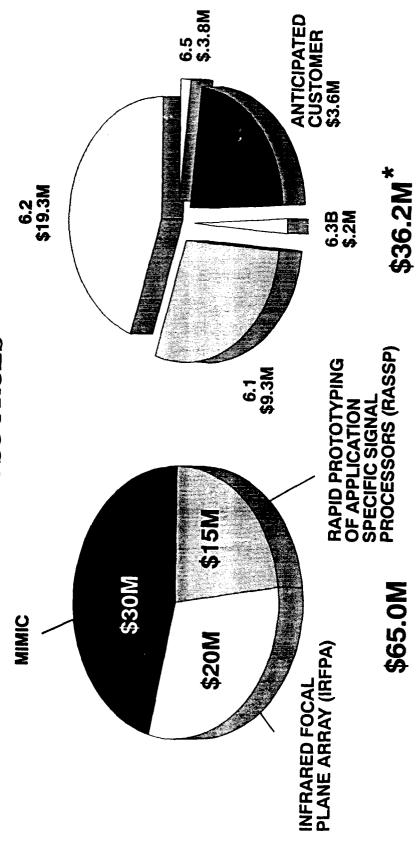


### ELECTRONIC and POWER SOURCES FY94 PROGRAM US ARMY RESEARCH LABORATORY



ARMY WATERIEL COMMAND

### **ALL SOURCES**



GRAND TOTAL \$101.2M

\* Does Not Include COE/6.2 Power Plus-up

# MAJOR TRI-SERVICE/ARPA-MANAGED PROGRAMS

	TOTAL PROGRAM	ARMY FY94	FY95
<ul> <li>MICROWAVE/MILLIMETER-WAVE MONOLITHIC INTEGRATED CIRCUITS (MIMIC)</li> </ul>	\$600 M	\$30 W	\$20 M
<ul> <li>RAPID PROTOTYPING OF APPLICATION-SPECIFIC INTEGRATED CIRCUITS (RASSP)</li> </ul>	\$147M	\$13M	\$15 M
<ul> <li>APPLICATION-SPECIFIC ELECTRONIC MODULES (ASEM)</li> </ul>	\$58 M	\$8 W	
<ul> <li>HEAD-MOUNTED DISPLAYS (HMD)</li> </ul>	\$12M	\$2M	
<ul> <li>HIGH-DEFINITION DISPLAYS PROGRAM</li> </ul>	\$300M	\$100M*	
<ul> <li>HIGH-DENSITY MICROWAVE PACKAGING (HDMP)</li> </ul>	G \$35M	\$3W	\$3 M
<ul> <li>MICROWAVE ANALOG FRONT-END TECHNLOGY (MAFET)</li> </ul>	\$380 M		\$20 M

\* INCLUDES MANUFACTURING

## TECHNOLOGY INVESTMENTS

BUSINESS AREA	FY 94 - 99 MAJOR INVESTMENTS
NANO/OPTO/PHOTONIC DEVICES	◆ NANOSCALE ELECTRO/OPTOELECTRONIC TERAFLOP PROCESSING ELEMENTS FOR RADAR, MILLIMETER WAVE IMAGING, AND MULTICOLOR INFRARED IMAGING ARRAYS
OPTICAL DEVICES AND FOCAL PLANE ARRAYS	<ul> <li>LOW COST (CAMCORDER PRICES), LARGE-AREA COOLED AND UNCOOLED IR DETECTOR ARRAYS</li> <li>MULTI-WAVELENGTH LASER SOURCES</li> <li>SENSOR AND EYE LASER PROTECTION FOR GIGAHERTZ-TERAHERTZ</li> </ul>
MICROWAVE/ MILLIMETER/ MIMIC DEVICES	SOLID STATE AND TUBE TECHNOLOGY FOR TERAHERTZ SIGNAL INFORMATION TRANSMISSION, RECEPTION, AND SIGNAL PROCESSING FOR COMMUNICATIONS, SURVEILLANCE AND ELECTRONIC WARFARE
ADVANCED SENSOR/ ACTUATOR DEVICES	<ul> <li>MICROELECTROMECHANICAL BATTLEFIELD SENSORS         MOLECULAR BIOSENSORS, ACOUSTIC AMPLIFIERS &amp;         MICROPHONES, RADIATION IMAGING DETECTORS, AND IMAGE         GENERATORS</li> <li>HIGH-POWER PHOTOCONDUCTIVE SWITCHES</li> </ul>

## TECHNOLOGY INVESTMENTS

BUSINESS AREA	FY 94 - 99 MAJOR INVESTMENTS
DESIGN, SIMULATION, MODELING, CONCUR- RENT ENGINEERING & PROTOTYPING	<ul> <li>VIRTUAL CORPORATION (VIRTUAL PROTOTYPING, FORMAL VERIFICATION AND FLEXIBLE MANUFACTURING) TO REDUCE TRANSITION FROM IDEA TO ON-THE-SHELF COMPONENTS FROM TWO YEARS TO THREE MONTHS</li> </ul>
	<ul> <li>RAPID EXPLOITATION OF NEW TECHNOLOGY FOR LOGISTICS, PERFORMANCE AND COST UPGRADES</li> <li>LOW-POWER ELECTRONIC (3-VOLT, ULTRAMINIATURE, ULTRADENSE) 3-D PACKAGING (GIGAFLOPS IN A CAN)</li> </ul>
RELIABILITY AND MANUFACTURING SCIENCE	<ul> <li>DOCUMENTATION, TESTING AND VERIFICATION OF SUITABILITY OF "BEST COMMERCIAL PRACTICE" PARTS AT 1/10 OF CURRENT COST FOR MILITARY USE</li> </ul>
ACOUSTO/FERRO- ELECTRONICS	<ul> <li>ULTRASTABLE, LOW-NOISE, VIBRATION-IMMUNE FREQUENCY SOURCES (SELF-CORRECTING CLOCKS)</li> <li>ACOUSTIC WAVE DEVICES FOR SIGNAL PROCESSING SYSTEMS</li> </ul>
DISPLAY DEVICES	<ul> <li>COMPONENTS FOR VIRTUAL ENVIRONMENT, TELEPRESENCE, TELEROBOTICS, THREE-DIMENSIONAL VISION AND SOUND, AND TOUCH.</li> </ul>

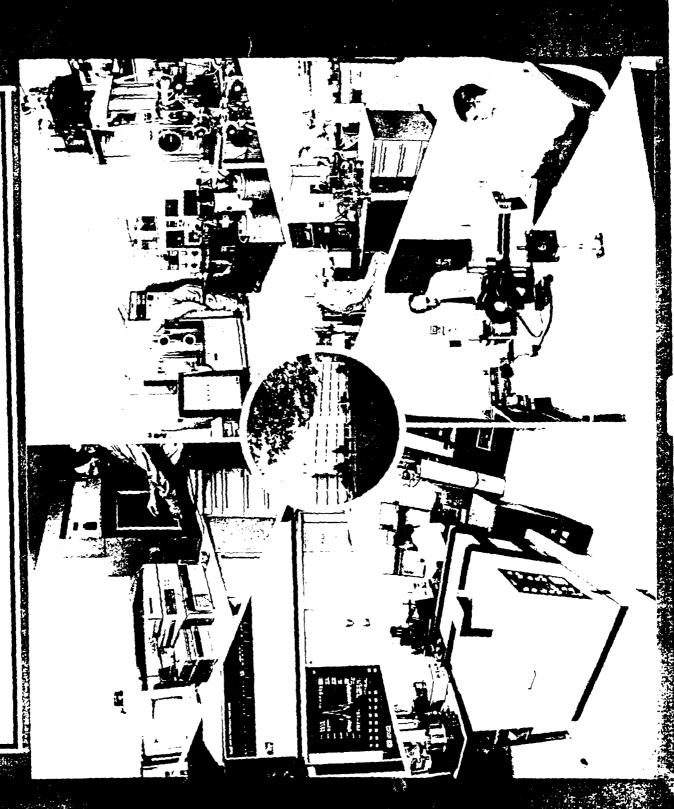
## TECHNOLOGY INVESTMENTS

BUSINESS AREA	FY 94 - 99 MAJOR INVESTMENTS
POWER SOURCES (INCL. PULSE POWER)	<ul> <li>ELECTROCHEMICAL TECHNOLOGY FOR INEXPENSIVE, HIGH-ENERGY BATTERIES TO REDUCE LOGISTICS BURDEN AND COSTS</li> </ul>
	HIGH-POWER, LIGHTWEIGHT FUEL CELLS FOR ADVANCED SOLDIER SYSTEMS
	<ul> <li>HIGH-POWER PULSER COMPONENTS AND PULSER MODULES</li> <li>POWER CONDITIONING FOR ELECTRIC VEHICLES</li> </ul>

# TRI-SERVICE COLLOCATION CENTER DISPLAYS



FRI-SERVICE COLLOCATION CENT FREQUENCY CONTROL & DEVICES



### MIMIC

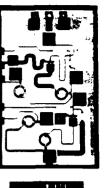
GOAL:

DEVELOP U.S. CAPABILITY TO PRODUCE
AFFORDABLE PRICE INCROMENT
WAVE MONOLITHIC INTEGRAL
(E.G. RADAR ON A SHIRL FOR EXAMANT MUNITIONS). S. ECT.
RADAR AND COMMUNICATIONS



MIMIC CHIPS





#### MIMIC PHASEL TEAMS:

TRW, HONEYWELL, GD, HITTITE

MINIC PHASE HELIAMS

TRW, WESTINGHOUSE, ALLIANT, GD

an Congress places

RAVIDARIOURIA SANDERS GD AIRTHON

#### 

#### SYSTIEM'S IMPACT:

1

- MLRS/TGW (1, 2) SADARM (1, 2) PATRIOT (1)
- AAAM (1,2) LONGBOW (1)
  - XROD (1, SWF STACOM (1)

CLASSIFIED

GPS (1)

\* ARMY APPLICATION

FY87 FY88 FY89 FY90 FY91 FY92 FY93

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\$10 M

#### RASSP

VIRTUAL CORPORATION

FLEXIBLE MANUFACTURING

ENTERPRISE INTEGRATING NETWORK

SYSTEM ENGINEERS

RAPID PROTOTYPING OF APPLICATION SPECIFIC SIGNAL PROCESSORS

**EMBEDDED DIGITAL SIGNAL PROCESSORS ARE** DESIGNED, MANUFACTURED, UPGRADED, AND REINVENT THE PROCESS BY WHICH SUPPORTED

### PROGRAM FEATURES:

- ENTERPRISE SYSTEM CONCURRENT SIMULATION
- VIRTUAL PROTOTYPING
   CONTINUOUS UPGRADE
   BUILT-IN DIAGNOSTICS/PROGNOSTICS
   MODEL YEARS

# PRIMARY DEVELOPMENT CONTRACTORS:

BENCHMARK TEAM:

• MIT LINCOLN LAB

HARDWARE/SOI-TWARE ENGINEERS

SYSTEM REQUIREMENTS AND DOCUMENTATION

I

 LOCKHEED SANDERS SUBCONTRACTORS

Motorola Hughes LMSC Rockwell International **Quickturn Systems** 

Omniview

Aspect Development Inc.

Ascent Logic Corp.

MARTIN MARIETTA

SUBCONTRACTORS

Berkeley Design Technology S. Carolina Res. Auth. Synopsis

Carnegie Mellon Univ.

COMDISCO Systems CAD Framework Init.

doneywell ntergraph

View logic Systems Inc. Vista Technology Inc. Univ of Oregon TRW

Management Sciences Inc.

**Mentor Graphics** 

Logic Modeling Corp.

JRS Research Labs

TECHNOLOGY BASE CONTRACTORS:

CAD Framework Init.

Univ. of Cal., Davis

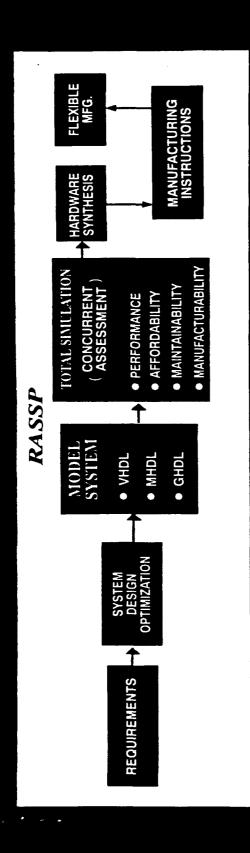
Univ. of Minnesota Univ. of Cincinnati

Univ. of Virginia

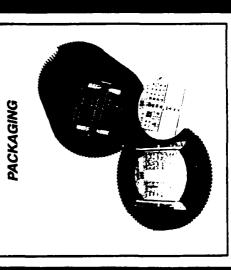
- Carnegie Mellon Univ.
- Research Triangle Inst.
  - Univ. of Cal., Berkeley

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## TOTAL LIFE-CYCLE DESIGN

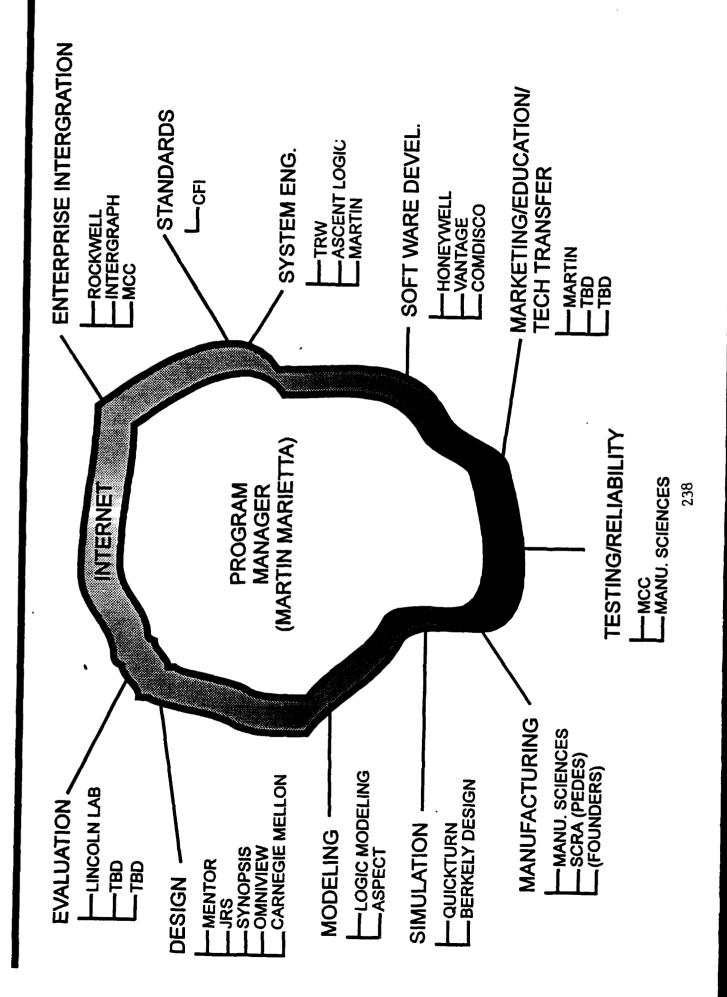




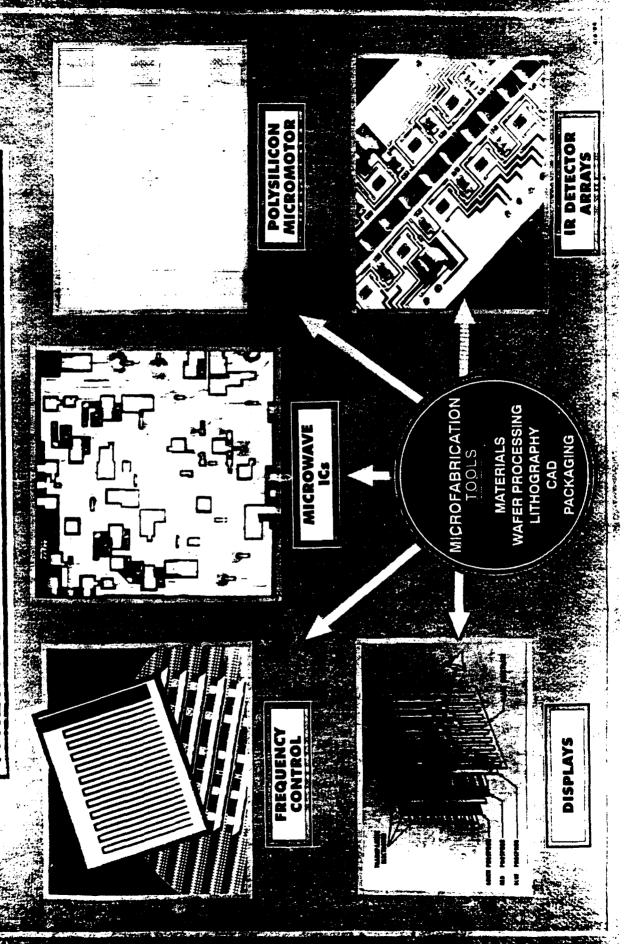




### LEVERAGING



## MICROFABRICATION TECHNOLOGY CREATES **NEW WORLD OF DEVICES AND COMPONENT**



## **APPLICATIONS** COMMER

THE STATE OF THE PARTY OF THE P

MAGNETIC RESONANCE IMAGING



INFORMATION TERMINALS



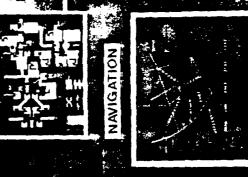
HIGH DEFINITION TELEVISION



AUTOMOTIVE

HIGH ENERGY BATTERIES

COLLISION



DIRECT BROADCAS





#### TRANSITION OF DUAL-USE TECHNOLOGY



- FLAT PANEL DISPLAYS PORTABLE COMPUTING, CELLULAR COMMUNICATIONS
- LARGE SCREEN DISPLAYS WORKSTATIONS, MEDICAL IMAGING
- HEAD MOUNTED DISPLAYS VIRTUAL REALITY, MEDICAL APPLICATIONS
- STEREOSCOPIC DISPLAYS VIRTUAL REALITY, THREE-DIMENSIONAL COMPUTER **AIDED DESIGN**
- MICROWAVE/MILLIMETER WAVE DEVICES (MIMIC) OBSTACLE AVOIDANCE RADAR FOR AUTOS, LOW-COST RECEIVERS FOR DIRECT BROADCAST SATELLITE, GLOBAL TELECOMMUNICATIONS SYSTEMS (IRIDIUM), WIRELESS LOCAL AREA NETWORKS, AUTOMATED LANDING SYSTEMS FOR ADVERSE WEATHER
- MICROWAVE TUBES FEDERAL AVIATION AGENCY RADARS, PLEASURE BOAT RADARS, MICROWAVE OVENS
- INTEGRATED MICROSYSTEMS PERSONAL COMMUNICATIONS, ENVIRONMENTAL TECHNOLOGY
- NANOSCALE ELECTRONIC/OPTOELECTRONIC DEVICES ALL WEATHER VISION, IMAGE RECOGNITION, PERSONAL GLOBAL COMMUNICATIONS, OPTICAL INTERCONNECTS
- ELECTRONIC MATERIALS LOW COST PHASED ARRAY ANTENNAS FOR CIVILIAN APPLICATIONS, OPTICAL DATA STORAGE, COLOR DISPLAYS, MEDICAL IMAGING

## TRANSITION OF DUAL-USE TECHNOLOGY

- ACOUSTO/FERROELECTRONIC DEVICES FREQUENCY SOURCES FOR PERSONAL COMMUNICATIONS DEVICES, ENVIRONMENTAL SENSORS, REMOTE TAGGING, BANDPASS FILTERS FOR TV, OSCILLATORS FOR PC
- PULSE POWER MAGNETIC LEVITATION APPLICATIONS, ROBOTICS, ROCK FRACTURING
- MICROCOMPUTER COMPENSATED CRYSTAL OSCILLATOR FOR COMMUNICATIONS **APPLICATIONS**
- BATTERIES RECORDERS, CAMCORDERS, CELLULAR PHONE, PERSONAL DIGITAL ASSISTANTS
- ADVANCED CATHODE MATERIALS (COBALT OXIDE, VANADIUM PENTOXIDE) BUTTON CELLS, CAMERAS, CALCULATORS, HEARING AIDS
- HIGH ENERGY MAGNETIC MATERIALS RADARS COMPUTERIZED TOMOGRAPHY (MRI)
- SAW DEVICE TECHNOLOGY BIOSENSORS, WIRELESS COMMUNICATIONS
- MAGNETIC SEPARATORS MINING & ENVIRONMENTAL RECLAMATION
- FERRITE DEVICES TV SIGNAL TRANSMISSION DISTRIBUTION SYSTEMS (CABLE-FREE), RADAR PHASE SHIFTERS
- HIGH ENERGY DENSITY CAPACITORS-IMPLANTABLE DEFIBRILLATORS

# COMMERCIALIZATION INITIATIVES/DIALOGUE AS A RESULT OF MARKETING EFFORTS

#### **PARTICIPANTS**

INTERCON RESEARCH ASSOCIATES CATERPILLAR TRACTOR CORP.

**ELECTRONIC CONCEPTS CORP.** 

**MARTIN MARIETTA** 

VARIAN

MEDICAL COLLEGE OF WISCONSIN

VOLTICS CORPORATION

CARDIAC PACEMAKERS INC.

ABTECH

**BUREAU OF MINES** 

AMC CORPORATION

ABBOTT LABORATORIES

PRINCETON MICROWAVE TECHNOLOGY

TECHTROL CYCLONETICS

## TECHNOLOGY COMMERCIALIZATION INITIATIVES

RECHARGEABLE LITHIUM BATTERIES

MAGNETIC ACTUATORS

HIGH ENERGY DENSITY CAPACITORS

MAGNETIC TECHNOLOGY FOR MICROWAVE TUBES

MAGNETIC TECHNOLOGY FOR MICROWAVE TUBES

MAGNETIC TECHNOLOGY FOR MRI SYSTEMS

CAPACITORS

CAPACITORS FOR CARDIAC DEFIBRILLATORS (IMPLANTABLE)

BIOSENSORS

MAGNETIC TECHNOLOGY FOR ORE SEPARATION

MAGNETIC TECHNOLOGY FOR ORE SEPARATION MAGNETIC TECHNOLOGY FOR BIOTECHNOLOGY APPLICATIONS

MICROWAVE/MILLIMETERWAVE WAVE FERRITE DEVICES

DIELECTRIC-RESONATOR OSCILLATORS



# ELECTRONICS AND POWER SOURCES DIRECTORATE SBIR FUNDING



ARMY WATERIEL COMMAND

Ŧ FY-94 FY-93 14 FY-92 5 FY-91 **9** FY-90 10 SBIR CONTRACTS MONITORED BY EPSD FY-89 EPSD PHASE I CONTRACTS
EPSD PHASE II CONTRACTS FY-88 20 FY-87 8 FY-86 S ന N 4 0

SBIK FUNDS (MILLIONS OF DOLLARS)

# COOPERATIVE R&D AGREEMENTS (CRDAS) IN EFFECT

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - TRONTECH	New & improved high frequency oscillators & amplifiers
EPSD - MARTIN MARIETTA CORPORATION	Magnetic biasing system for microwave tubes
EPSD - CECOM, BELLCORE	Epitaxial lift-off procedures for fiber optic applications
EPSD - NORDEN	Development of portable flat panel display workstation
EPSD - R.F. MONOLITHICS, INC.	Piezoelectric materials for frequency control & signal processing systems
EPSD - ADVANCED LITHOGRAPHY GROUP	Ion projection lithography for semiconductor fabrication
EPSD - ALPHA INDUSTRIES	Semiconductor diodes & detectors based on planar doped barrier (PDB) structures
EPSD - ELECTRONIC CONCEPTS, INC.	High energy density capacitor technology
EPSD - SHIPLEY CORPORATION	Development of advanced E-beam resists for fine geometry electronic devices
EPSD - POWER CONVERSION, INC.	Development of a battery fuel gauge
EPSD - R&R, INC.	Magnet designs for MRI systems
EPSD - ADVANCED MATERIAL CORR	Magnetic material separation technology
EPSD - HAMPTON UNIV. POLYTECHNIC UNIV.	Photoconductive impulse sources and transmitters
EPSD - DREXEL UNIVERSITY	Microwave & Photonic Devices & Circuits

# COOPERATIVE R&D AGREEMENTS (CRDAS) IN EFFECT (CONTINUATION)

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - FORSYTH ELECTRO-OPTICS	Thin film electroluminescent ultraviolet emitter
EPSD - PRINCETON SCIENTIFIC INSTRUMENTS	Magnetic focusing assembly for XUV imaging
EPSD - CECOM-CERAMOPTEC, INC.	Fiber optic technology
EPSD - UVOCS	UV/ozone cleaning process for electronic circuits & devices
EPSD - CECOM- RUTGERS UNIVERSITY	Ultra-high speed and mm wave electronic devices including surface/interface studies
EPSD - RUTGERS UNIVERSITY	Ferroelectrics and high temperature superconducting thin films for MM wave & signal processing devices
EPSD - RUTGERS UNIVERSITY	Hermetic coatings for optical waveguides
EPSD - RUTGERS UNIVERSITY	Smart ceramic materials (piezoceramic) for advanced sensing & actuating functions
EPSD - CECOM-PRINCETON UNIVERSITY	Photonic and optoelectronic devices for optical networks
EPSD - STEVENS INSTITUTE OF TECHNOLOGY	High frequency external modulators for optoelectronic and microwave device applications
EPSD - NJ. INSTITUTE OF TECHNOLOGY	Ultra-high speed MM wave/microwave electronic/photonic device development
EPSD - TECHTROL CYCLONETICS, INC.	Low noise dielectric resonator oscillators as high performance microwave sources
EPSD - NATIONAL INFORMATION DISPLAY LABORATORY	Development of phosphor display technology and display evaluation procedures

# COOPERATIVE R&D AGREEMENTS (CRDAS) IN EFFECT (COOPERATIVE R&D AGREEMENTS (CRDAS) IN EFFECT

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - KEAN COLLEGE	Advance the development of nanoelectronic devices such as electron waveguides and coulomb blockade devices
EPSD - COLORADO SCHOOL OF MINES	R&D on high power systems, including power storage and switching elements, distribution components, etc.
EPSD - Q-TECH CORPORATION	Microcomputer compensated crystal oscillator
EPSD - ASSOCIATION OF ACADEMIC HEALTH CENTERS	Bio-Electronic solutions to medical problems
EPSD - MMTC CORP.	Microwave devices and circuits
EPSD - SAWTEK	Low vibration sensitivity resonators and oscillators
EPSD - MICROELECTRONICS CENTER OF NORTH CAROLINA	Flasma assisted dry soldering procedures and equipment
EPSD - HARRIS CORPORATION	Sequential electrochemical reduction analysis technique for measuring solderability of electronic components
EPSD - MOTOROLA, INC.	Sequential electrochemical reduction analysis technique for measuring solderability of electronic components
EPSD - RAYNET CORPORATION	Surface oxide evaluation system
EPSD - UNIVERSITY OF MARYLAND	Computerized design models for solder behavior as a function of microstructure
EPSD - UNIVERSITY OF MARYLAND	Mossbauer spectroscopy as a process control tool for composite solders
EPSD - WASHINGTON UNIVERSITY	Development of composite solders

# COOPERATIVE R&D AGREEMENTS (CRDAS) IN EFFECT (CONTINUATION)

PARTICIPANTS	AREA OF TECHNOLOGY TRANSFER
EPSD - DELCO ELECTRONICS	Sequential electrochemical reduction analysis procedures and equipment in a production environment
EPSD - TEXAS INSTRUMENTS	Sequential electrochemical reduction analysis procedures and equipment in a production environment
EPSD - JOHNS HOPKINS UNIVERSITY	Monitoring and control of printed circuit board plating thickness
EPSD - VHG LABS, INC.	Directly coupled Zeeman Atomic Absorption Spectroscopic Analysis Technique for semiconductor materials
EPSD - LAMBDA NOVATRONICS	Fluxless soldering/joining techniques
EPSD - MARTIN MARIETTA TECHNOLOGIES, INC.	Fluxless soldering/joining techniques
EPSD - HERCULES DEFENSE ELECTRONICS	Fluxless soldering/joining techniques



## PATENT LICENSING INITIATIVES



ARMY WATERIEL COMMAND

#### PATENT

MOTOROLA	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
Ф-ТЕСН	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
FREQ.ELECTRONICS	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
BALL EFRATOM	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
VECTRON	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
PIEZO CRYSTAL	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
PIEZO TECHNOLOGY	DUAL MODE QUARTZ RESONATOR	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
ALPHA INDUSTRIES	PLANAR DOPED BARRIER DIODE	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
HEWLETT PACKARD	PLANAR DOPED BARRIER DIODE	PARTIALLY EXCLUSIVE (SIGNED & IN EFFECT)
UNDER NEGOTIATIONS	HIGH ENERGY DENSITY CAPACITOR TECHNOLOGY	EXCLUSIVE/PARTIALLY EXCLUSIVE
MARTIN MARIETTA	MICROWAVE TUBE TECHNOLOGY	NON-EXCLUSIVE (SIGNED AND IN EFFECT)
TECHTROL CYCLONETICS	DIELECTRIC RESONATOR OSCILLATOR TECHNOLOGY	NON-EXCLUSIVE (SIGNED AND IN EFFECT)
PRINCETON MICROWAVE TECHNOLGY	MICROWAVE/MM WAVE DROP-IN CIRCULATOR	NON-EXCLUSIVE(SIGNED) (Being commercialized under the SBIR program)
PRINCETON MICROWAVE TECHNOLGY	MICROWAVE/MM WAVE DROP-IN SWITCH	NON-EXCLUSIVE(SIGNED)
PRINCETON MICROWAVE TECHNOLGY	DIELECTRIC RESONATOR OSCILLATOR TECHNOLOGY	NON-EXCLUSIVE(SIGNED)
PRINCETON MICROWAVE TECHNOLGY	MICROSTRIP RESONANCE ISOLATOR	NON-EXCLUSIVE(SIGNED)



## PATENT LICENSING INITIATIVES (CONTINUED)



ARMY & MATERIEL COMMAND

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#### PATENT

#### TYPE OF LICENSE

ELECTRONICS CONCEPTS	HIGH ENERGY DENSITY CAPACITOR TECHNOLOGY	EXCLUSIVE (BEING SIGNED) (BORN OUT OF A CRDA)
AMC CORP	MAGNETIC SEPARATOR TECHNOLOGY	TO BE DETERMINED
UNDER NEGOTIATIONS	MAGNETIC TECHNOLOGY FOR MRI	EXCLUSIVE/PARTIALLY EXCLUSIVE
POWER CONVERSION	BATTERY FUEL GUAGE	EXCLUSIVE (BEING SIGNED) (BORN OUT OF A CRDA)

EPSD HAS ALREADY RECEIVED \$66K IN PATENT LICENSING FEES





# WE ARE A PART OF YOUR FUTURE AND YOU ARE A PART OF OUR FUTURE

### NOTES

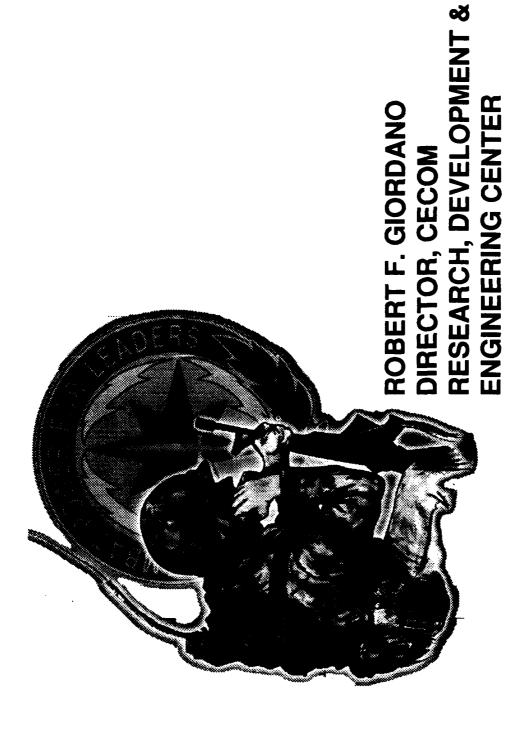
#### SESSION III

#### "DISRUPT AND DENY"

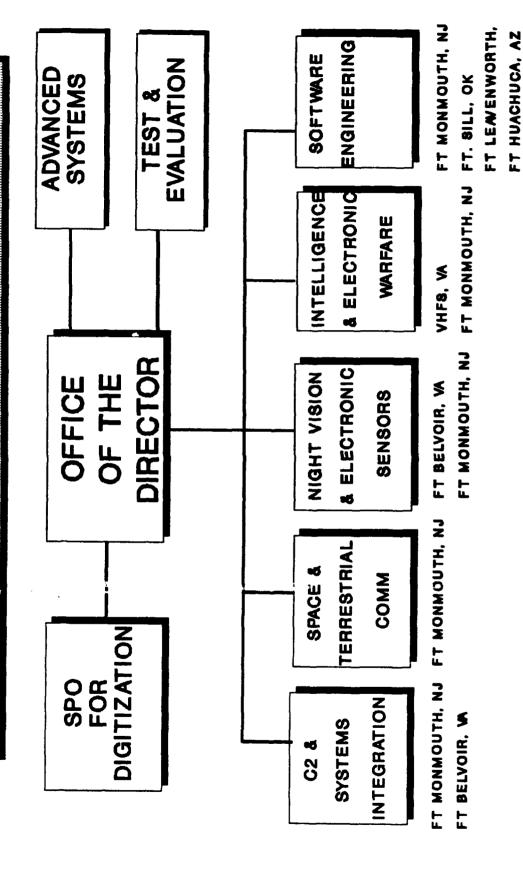
#### **MODERATOR**

MR. ROBERT F. GIORDANO
DIRECTOR
RESEARCH, DEVELOPMENT, AND
ENGINEERING CENTER
CECOM

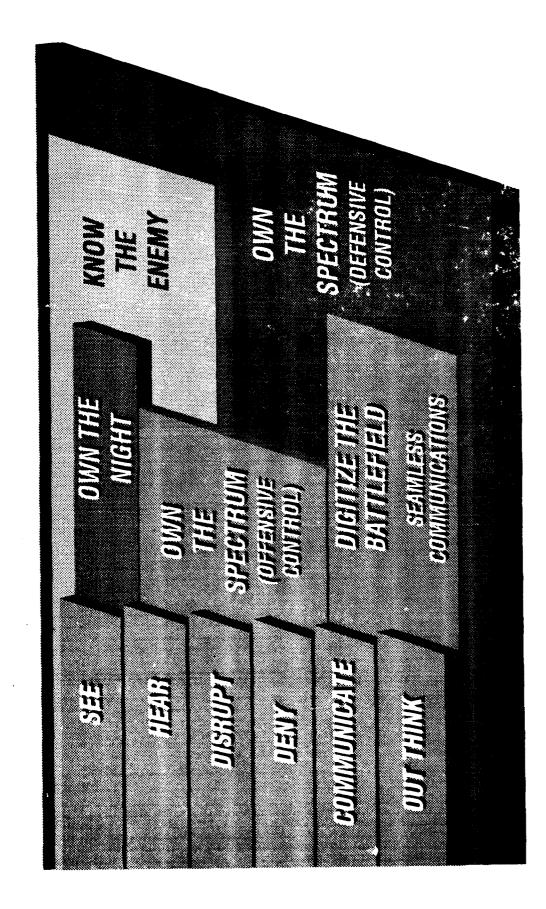
## KEY TO WINNING THE INFORMATION WAR OWNING THE SPECTRUM



### RESEARCH, DEVELOPMENT AND ENGINEERING. CENTER

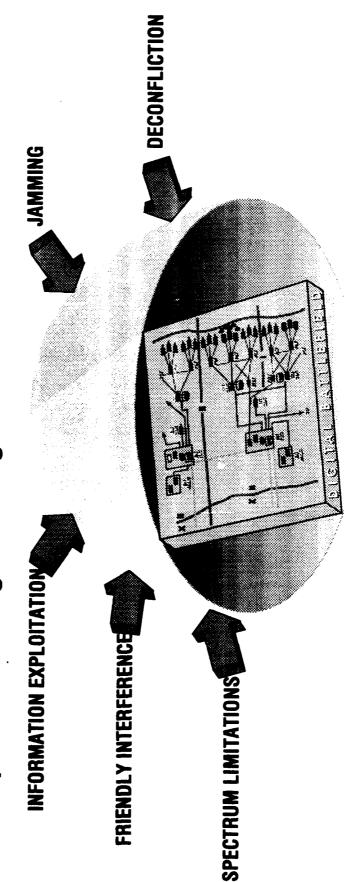


## INFORMATION WAR-FUNCTIONS



### **ELECTROMAGNETIC SPECTRUM OWNING THE**

- DEFENSIVE CONTROL Protect and Manage the Use of the Spectrum
  - Ready Access to the Spectrum When We Want
- Jam Resistant Communications
- Information Security
- Spectrum Planning and Management

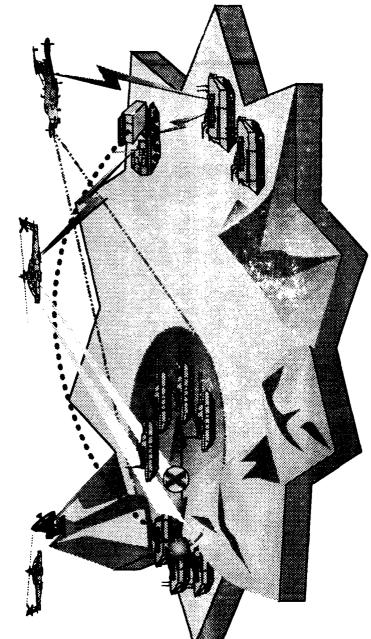


REAL TIME MANAGEMENT AND CONTROL OF THE ELECTROMAGNETIC SPECTRUM

### **ELECTROMAGNETIC SPECTRUM OWNING THE**

# OFFENSIVE CONTROL - Exploit The Enemy's Use Of The Spectrum

- Exploit Enemy Emissions to Determine Location and Order of Battle
- Utilize Electronic
   Attack to Deny
   Timely Command
   and Control
- Identify and Locate Command Posts as Priority Targets for Physical Destruction



DECAPITATE THE ENEMY'S COMMAND STRUCTURE FROM ITS BODY OF COMBAT FORCES

## OWN THE SPECTRUM

- USE the full potential of the spectrum to achieve decisive victory
- PROTECT friendly use of the spectrum
- **EXPLOIT** enemy use of the spectrum
- DENY enemy use of selected parts of the spectrum
- MANAGE the spectrum to ensure our victory on the battlefield

## PROTECT OUR USE

- OUR INFOSEC IS SECOND TO NONE
- SIMPLIFY OUR TRANSEC APPROACHES
- ADVANCE MODERN
   MODULATION TECHNIQUES
- INVESTIGATE PROPAGATION PHENOMENA



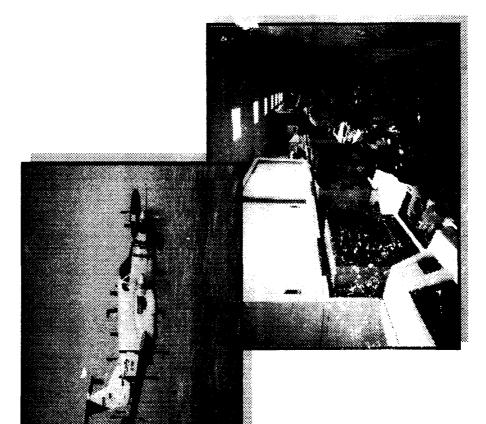
## PROTECT OUR USE

- FUTURE THRUST-MULTIMODE
- AUTOMATIC ADAPTIVE FEATURES
- EASE ALLIED AND JOINT INTEROPERABILITY
- PROVIDE SOFTWARE CONTROL
- EASILY REPROGRAMMABLE IN THE FIELD



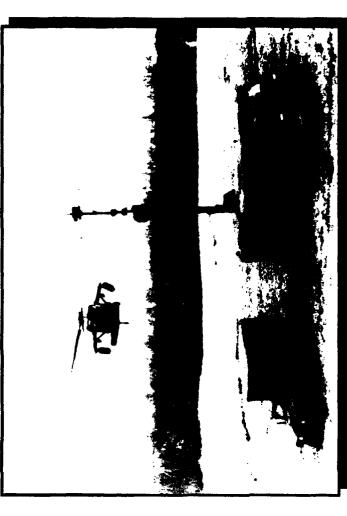
## **EXPLOIT ENEMY USE**

- EXPLOIT BOTH COMINT AND ELINT
- MPROVE ACCURACIES
  OF ENEMY LOCATION
- DEVELOP THREAT ASSESSMENT
- PROVIDE TARGETING FOR PHYSICAL DESTRUCTION



## DENY ENEMY USE

- DEVELOP ENHANCED ELECTRONIC ATTACK
- SURGICAL JAMMING
- USE ELECTRONICS TO DECEIVE THE ENEMY
- COORDINATE TARGETS WITH FIRE SUPPORT



## MANAGE THE SPECTRUM

- FACILITATE NETWORK
   PLANNING
- ASSIGN FREQUENCIES WITHOUT CONFLICT
- SIMPLIFY CONTROL OF MULTIPLE SYSTEMS
- COORDINATE COMMUNICATIONS AND JAMMING



### DISRUPT AND DENY SESSION SPEAKERS

#### MODERATOR

Mr. Robert F. Giordano

Director, Research, Development & Engineering Center, CECOM

# ADVANCED CONCEPTS AND TECHNOLOGY (ACT II) PROGRAM

Dr. Kenneth Gabriel

**Army Research Office** 

### ELECTRONIC WARFARE TECHNOLOGY & IEW TECHNOLOGY **ASSESSMENT CENTER**

Mr. Ronald J. Dlugosz

Intelligence and Electronic Warfare Directorate, CECOM

# ARMY SECURE TACTICAL INITIATIVE (ASTI) TRUSTED

NETWORK BASE (TNB) Mr. Joseph Pucilowski, Jr.

Director, Space & Terrestrial Communications, CECOM

# SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL

Mr. Gary P. Martin

PM MILSTAR

### NOTES

# THE ARMY ADVANCED CONCEPTS AND TECHNOLOGIES II PROGRAM (ACT II)

Dr. Kenneth A. Gabriel Chief, Army Research Office - Washington

11 May 1994

UNCLASSIFIED

AMSEL-RD-AS-TD

#### **POINT PAPER**

SUBJECT: Advanced Concepts and Technology (ACT) II

EXECUTIVE SUMMARY: The ACT II program provides a timely, low overhead mechanism for industry participation in the Army's Louisiana Maneuvers (LAM) and TRADOC Battle Labs. The program responds to high priority needs identified by the LAM Task Force and TRADOC Battle Labs, by fostering early cooperation between warfighters and the private sector R&D community. Advanced concepts and technologies funded by ACT II will be demonstrated using various modes including Advanced Warfighting Demonstrations and Experiments and Distributed Interactive Simulation.

The ACT II program is managed by an Army General Officer/Senior Executive Service level committee called the ACT II Committee. This committee reviews and approves the ACT II program, and allocates funding for ACT II projects. The committee chair appoints an Executive Secretary to manage the administrative aspects of the program, and to coordinate support by the Army Materiel Command, TRADOC, the Corps of Engineers, the Deputy Chief of Staff for Personnel, and the Army Medical Research and Development Command. The ACT II Technology Evaluation Board (TEB) is chaired by the Director, US Army Research Office (ARO).

Funding of the program in fiscal year 1994 is approximately \$10 M supporting 31 ACT II projects. \$40 M are requested for the program in the FY95 budget. The ACT II Broad Agency Announcement for FY 95 will be announced on or about 15 May.

BRIEFER: Dr. Kenneth A. Gabriel, Chief, Army Research Office - Washington, ARO-W, Suite 8N31, 50001 Eisenhower Avenue, Alexandria, VA 22333-0001, 703-274-9240, FAX 703-274-8261.

CECOM ACTION OFFICER
Randolph Jackson
Electronic Engineer
Advanced Systems Directorate
908-532-0364

### BACKGROUND

- ACT I ESTABLISHED IN 1974 BY THE ARMY DCS(RDA)
- ACT II LAUNCHED BY OASA(RDA) TO SUPPORT BATTLE LABS **AND THE LOUISIANA MANEUVER (LAM) TASK FORCE**
- FY94 FUNDING IS \$10M
- FY95 BUDGET REQUEST IS \$40M
- · FOCUS ON TECHNOLOGY DEMONSTRATION, NOT DEVELOPED
- 12 MONTHS PERIOD OF PERFORMANCE, UP TO \$1.5M

# PROGRAM OBJECTIVES

- ADVANCED CONCEPTS AND TECHNOLOGY AT THE BATTLE FUND INDUSTRY/ACADEMIA TO DEMONSTRATE PROMISING LABS AND LAM EXERCISES
- TECHNOLOGY NOT CURRENTLY AVAILABLE TO THE ARMY · ENCOURAGE APPLICATION OF NEW TECHNOLOGY OR
- BECAUSE OF RISK, UNCONVENTIONAL APPROACH, OR LACK OF SEEK PROJECTS WHICH WOULD NOT OTHERWISE BE SUPPORTED FUNDED ARMY EFFORT IN THE TECHNOLOGY AREA
- TRANSITION SUCCESSFUL TECHNOLOGY TO END ITEMS OR A REGULAR FUNDED ARMY RESEARCH AND DEVELOPMENT PROGRAM
- HAVE A VERY IMPORTANT IMPACT ON THE ARMY IF SUCCESSFUL SEEK HIGHLY LEVERAGED EFFORTS WHICH APPEAR LIKELY TO

## BATTLE LABS & LAM

- · SIX ARMY BATTLE LABS:
- 1. BATTLE COMMAND
- 2. COMBAT SERVICE SUPPORT
- 3. DISMOUNTED BATTLESPACE
- 4. DEPTH AND SIMULTANEOUS ATTACK
- 5. EARLY ENTRY LETHALITY AND SURVIVABILITY
- 6. MOUNTED WARFIGHTING BATTLE SPACE
- LOUISIANA MANEUVER TASK FORCE

# **ACT II EVALUATION PLAYERS AND ROLES**

- TECHNICAL EVALUATORS
- Pooled into the Technical Evaluation Board (TEB)
  - Evaluate technical excellence
- WARFIGHTING EVALUATORS
- Assigned to the Battle Technology Teams
  - Evaluate military merit
- BTT CO-CHAIRS
- Battle Labs
- RDEC
- TECHNICAL EVALUATION BOARD
- Develops recommended overall 1-N list across Battle Labs and LAMs

### ACT II TECHNICAL EVALUATION BOARD and Supporting Staff

Chairman Dr. Gerald Iafrate

Advisory Panel

F. Gerald lairate
ARO Washington
ARO Procurement
Vice-Chairman
COL Hubbard

D&SA BTT

Battle Lab Chair RDEC Chair

Warfighting Evaluators

Mounted BTT

Battle Lab Chair RDEC Chair

Battle Lab Chair

RDEC Chair

EELS BTT

Warfighting Evaluators

Warfighting Evaluators

LAM BTT

Force Chair RDEC Chair

Warfighting Evaluators

**Battle Cmd BTT** 

Battle Lab Chair RDEC Chair

Warfighting Evaluators

Dismounted BTT

Battle Lab Chair RDEC Chair Warfighting Evaluators

CSS RTT

Battle Lab Chair RDEC Chair Warfighting Evaluators

TECHNOLOGY EVALUATION PANEL

= SUPPORT STAFF

# **NEW FY95 ACT II PROCESS**

- 2-PAGE PREPROPOSAL
- **USER EVALUATION AND PRIORITIZATION**
- FULL PROPOSALS BY INVITATION ONLY
- LIMIT NUMBER OF FULL PROPOSALS TO 2-3 X AVAILABLE \$
- TECHNICAL EVALUATION AT RDECS/Labs
- ELIMINATE PROPOSALS NOT TECHNICALLY VIABLE
- USER EVALUATION WITH TECHNICAL SUPPORT AT ARO
- · SEB AT ARO
- · GOSC
- **EXECUTION**
- · ISSUE: MUST CONSIDER GFE/GFD EARLY ON

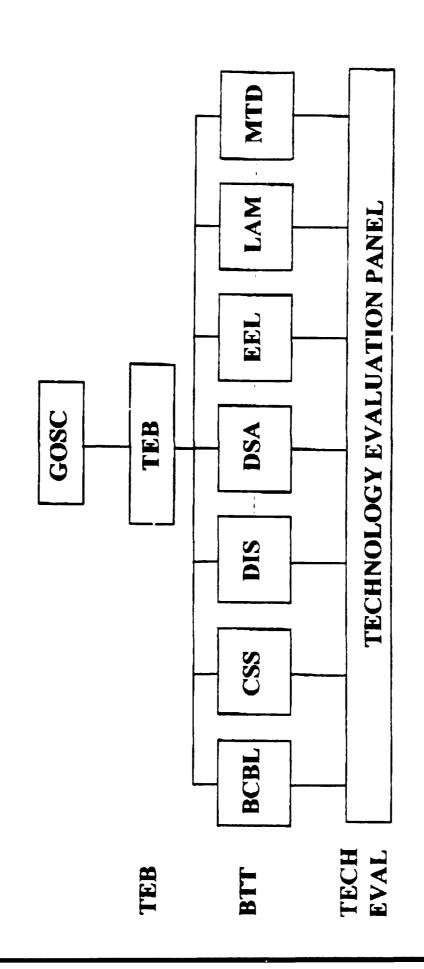
#### ACT II MILESTONES FY95 CYCLE (ESTIMATED)

EVENT	J		M	Z	<b>.</b>	7	4	S	O	Z	<b>C</b>
PHEPARATION OF DRAFT BAA	0		-								
BAA STAFFING AND PUBLICATION			<u> </u>		1						
ISSUE FINAL BAA	1			1		1					
BAA OPEN (PRE- PROPOSAL PREPARATION)											- W
RECEIVE AND LOG PREPROPOSALS									· · · · · · · · · · · · · · · · · · ·		
EVALUATE PREPROPOSALS			:		<b>▼</b> ○		:	† 	1		
ISSUE INVITATIONS FOR FULL PROPOSALS	i				8						
PROP PREPARATION					<del>'</del> O-				<del>                                     </del>		
RECEIVE/EVALUATE FULL PROPOSALS						-0-		<b>4</b>			
TEB EVALUATION AND PEROPRISATION OF FULL PROPOSALS	1			<del>.</del>	,						
ACT II GOSC REVIEW/APPROVAL OF IT & RECOMMENDATIONS		!	-		:		:	-	!		ĺ
HANDOFF OF WINN!MG PROPOSALS TO PROCUREMENT OFFICES									4		

# **ACT II TECHNOLOGY AREAS**

- 1. MATERIALS
- PRODUCTION MANUFACTURING, DESIGN AUTOMATION
- 3. COMPUTERS, HIGH SPEED COMPUTATION
- . COMPUTER SOFTWARE
- SIMULATION, DISPLAYS, VIRTUAL REALITY
  - 3. HUMAN-SYSTEMS INTERFACE
- . ARTIFICIAL INTELLIGENCE
- **B. ROBOTICS AND DYNAMICS**
- 9. ELECTRONICS, PHOTONICS
- TELECOMMUNICATIONS, INFORMATION PROCESSING, NETWORKING
  - 11. SENSORS
- 2. LASER OPTICS AND DEVICES
- 13. NAVIGATION, GUIDANCE, VEHICLE CONTROL
- 14. PRCPULSION, VEHICULAR SYSTEMS
- 15. DIRECTED ENERGY, KINETIC ENERGY
- **MUNITIONS, ENERGETIC MATERIALS, PROPULSION**
- SURVIVABILITY, HARDENING
- CHEMICAL/BIOLOGICAL SYSTEMS, BIOTECHNOLOGY
- POWER GENERATION, STORAGE, CONDITIONING
- ENGINEERING STRUCTURES, MECHANICS, CONSTRUCTION
  - 21. LIFE, MEDICAL, BEHAVIORAL SCIENCE
- 22. ENVIRONMENTAL EFFECTS, GEO-SCIENCES
  - 3. ROTOCRAFT
- 24. AIR DROP

# **Technical Evaluation Hierarchy**



### NOTES

### IEW TECHNOLOGY ASSESSMENT CENTER ELECTRONIC WARFARE TECHNOLOGY AND

RESEARCH, DEVELOPMENT AND ENGINEERING CENTER COMMUNICATIONS-ELECTRONICS COMMAND INTELLIGENCE AND ELECTRONIC WARFARE MR. RONALD DLUGOSZ DIRECTORATE

## UNCLASSIFIED

AMSEL-RD-IEW-OPP-I

30 March 1994

#### POINT PAPER

SUBJECT: Intelligence and Electronic Warfare Technology Initiatives

OBJECTIVE: To provide information on the CECOM Intelligence and Electronic Warfare Directorate's (IEWD's) interest and contract opportunities in the areas of Intercept Technology, Tactical Intelligence Data Fusion Technology, and Electronic Warfare Technology. We also want to acquaint industry with the IEW Technical Assessment Center at Fort Huachuca, AZ.

FACTS: IEWD is developing the technologies necessary for U.S. Army systems to locate and exploit hostile command, control, communications (C<sup>3</sup>) and electronic systems; and, to process, analyze and report battlefield intelligence.

This briefing describes the technology programs that support these three areas. It also provides general timelines for industry involvement and current funding ranges.

BRIEFER: Intercept and Tactical Intelligence Data Fusion Technology - Mr. Ronald J. Dlugosz, Chief, Advanced Concepts Division, AMSEL-RD-IEW-TA-M, (908) 554-5426; DSN 996-5426

Electronic Warfare Technology and IEW Technical Assessment Center - Mr. Kurt Kovach, Chief, Simulation and Modeling Branch, Advanced Concepts Division, AMSEL-RD-IEW-TAS-M, (908) 544-5294, DSN 996-5294.

ACTION OFFICER: Linda S. Monroe GS-9/PA Industrial Liaison (703) 349-7370; DSN 229-7370

# ELECTRONIC WARFARE TECHNOLOGY

### EW TECHNOLOGY DESCRIPTION

Deny hostile units use of their command, control and communications (C3); and radar systems

### EW TECHNOLOGY STATUS

- Conducting research and exploratory development in new signals electronic warfare and critical components
- Developing demonstration programs for new stand-in and stand-off communications jamming concepts
- Developing for non-communications countermeasures for non-platform protection applications
- systems, such as, Ground Based Common Sensor Heavy Transitioning to gaining tactical electronic warfare (GBCS-H) and Advanced QUICKFIX

### EW TECHNOLOGY OBJECTIVES

- Jam modern signals
- Deceive electronic systems
- Avoid electromagnetic fratricide
- Automate the jamming process
- Develop more efficient, smaller Jammer components

## EW TECHNOLOGY REQUIREMENTS

- Multiband coverage
- Effective operation in dense signal environment
- Efficient power requirements
- Technologies must be suitable for mobile tactical implementation
- Less dependence on operators

### EW TECHNOLOGY **PAYOFFS**

- Small tactical antenna systems for ESM and jamming applications
- Fratricide avoidance
- Ability to surgically jam
- Ability to jam from remote and mobile platforms
- Deceive hostile systems

# EW TECHNOLOGY

# MILESTONES - FY95 AND BEYOND

- tactical and multiband antennas technology efforts for efficient Initiate additional antenna
- Continue stand-in jammer demonstration
- Explore other innovative electronic warfare technologies
- Initiate Electronic Countermeasures (ECM) against modern mobile communications 293

# EW TECHNOLOGY

MILESTONES - FY95 AND BEYOND (Cont'd)

- Explore additional expert controller technologies for jammers
- Explore other innovative electronic warfare technologies
- Initiate electronic intelligence and support measures against highly agile and low probability of intercept emitters

### CONTRACT OPPORTUNITIES EW TECHNOLOGY

Title: Electronic Warfare Techniques

Objectives:

Communication jammer components, including small HF antennas

Automated techniques for jammer control techniques

- Electronic warfare against new signals

Application of breakthrough technologies to communications EW

Type: Multiple Competitive - CPFF contracts from BAA and SBIR solicitations

(BAA closes Jan 95 for FY95 award) Schedule - Award dates - FY95-96

Estimated Value: Approximately \$5M for FY94-95

POC/Telephone No.: Jim Yolda (703) 349-6911

# FUNDING PROFILE

YEAR TIT

TITLE

APPROX AMOUNT (\$ IN MILLIONS)

EW TECHNOLOGY FY95-97

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TOTAL

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# ASSESSMENT CENTER IEW TECHNOLOGY

- Provide integrated user/developer/acquirer examination of promising technologies for IEW applications
- demonstration technology to support formulation Replicate through analysis, simulation or of the IEW architecture
- Evaluate potential benefits/impacts to the overall IEW mission

# ASSESSMENT CENTER IEW TECHNOLOGY

- Located at Fort Huachuca, Arizona
- Members: PEO IEW, USAIC&FH, PEO CCS, CECOM, INSCOM, ARL and TEC
- Operations managed by CECOM, RDEC (IEWD)
- Industry encouraged to nominate projects for assessment

# IEW TECHNOLOGY ASSESSMENT CENTER NOMINATION PROCEDURES

- Telephone No. 602-533-2060; Fax No. 602-538-7854 Contact the IEW TAC to discuss your project.
- If project is determined to be of interest, send synoposis/white paper to IEW TAC
- Describe why technology is applicable
- What will the technology do for Army IEW
- Mail Address: Manager

IEW Technology Assessment Center Fort Huachuca, AZ 85613-6000 ATTN: AMSEL-RD-IEW-TAC

More details on page 63 in 19 February 1993, CBD announcement

### NOTES



# ARMY SECURE TACTICAL INITIATIVE (ASTI) TRUSTED NETWORK BASE (TNB)

JOSEPH J. PUCILOWSKI, Jr.

DIRECTOR, SPACE AND TERRESTRIAL COMMUNICATIONS RESEARCH, DEVELOPMENT & ENGINEERING CENTER

# UNCLASSIFIED

#### POINT PAPER

SUBJECT: Army Secure Tactical Initiative (ASTI) Trusted Network Base (TNB)

EXECUTIVE SUMMARY: The Army Secure Tactical Initiative (ASTI) program consists of three thrust areas: Tactical End-to-End Encryption Device (TEED), Trusted Network Base (TNB) and Secure Gateway (SEGAT). Focused on Mobile Subscriber Equipment (MSE) Packet Network (MPN) users, TNB develops the ancillary hardware and software in support of the TEED.

The TEED is a device envisioned as an applique that resides between the workstation and the communications media and allows for multilevel security (MLS) and end-to-end encryption. TNB is envisioned as a development of a set of technologies that can ensure network-based security through the network components. SEGAT is envisioned as the development of a BLACK gateway between the tactical packet network and the Defense Data Network (DDN), and allied communications.

The objective of the program is to provide systems support for TEED's in large networks. The benefit to the Army is that it provides a mechanism by which all computers can use a single network for communications, irrespective of the security classification of the computer.

Several opportunities are expected over the next few years. The proof of concept development effort which is programmed for FY-95. Integration with TEED is scheduled for FY96, FY97 and Integration with ISYSCON is scheduled for FY97.

Briefer: Joseph J. Pucilowski, Jr., Director, Space & Terrestrial Communications Directorate, AMSEL-RD-ST-D, (908) 544-4449.

ACTION OFFICER
Bill Kamenel, Program Manager
ASTI/TNB
(908) 544-4163

### ASTI PROGRAM OVERVIEW

CONSISTS OF THREE THRUST AREAS:

A. TACTICAL END-TO-END ENCRYPTION DEVICE (TEED)

TRUSTED NETWORK BASE (TNB) **m** 

C. SECURE GATEWAY (SEGAT)

# ASTI-TEED DESCRIPTION

WEEN THE WORKSTATION IICATIONS MEDIA TILEVEL SECURITY IN ARMY DEVELOPS A TACTICAL INTERNET SECURITY DEVICE THAT PROVIDES SECURITY SERVICES IN SUPPORT URREN AND DOD NETWORKS. CURREI ENVISIONED AS AN APPLIQUE RESIDES BETWEEN THE WORK WORKS. CI OF MUL

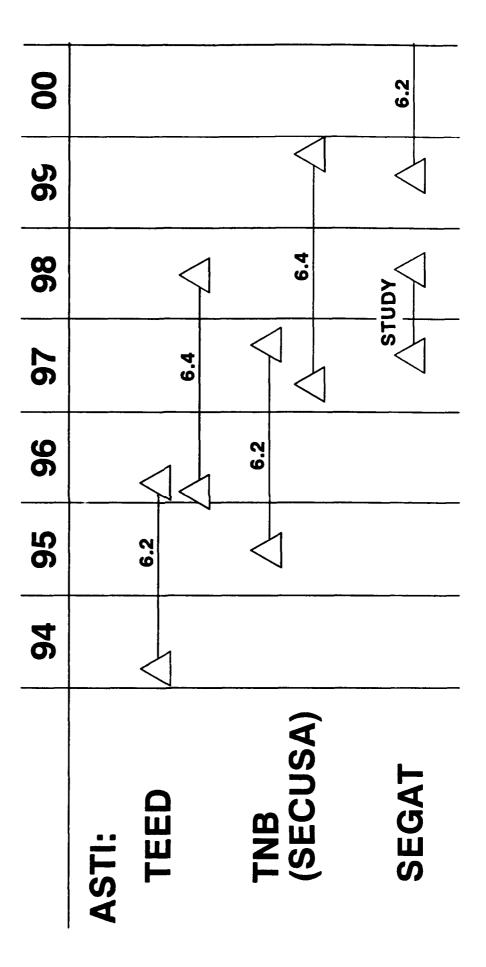
### ASTI-TNB DESCRIPTION

TACTICAL COMPUTER NETWORKS. FOCUSED ON MOBILE SUBSCRIBER EQUIPMENT (MSE) DEVELOPMENT EFFORT IN SUPPORT OF ENSURING THE SECURITY OF ARMY DEVELOPS THE ANCILLARY HARDWARE PACKET NETWORK (MPN) USERS. TNB 山 工 AND SOFTWARE IN SUPPORT OF 1

### ASTI-SEGAT DESCRIPTION

AND DDN AND ALLIES AND NETWORKS BETWEEN THE MSE PACKET NETWORK TRANSLATOR SO THAT DIFFERENT **ARMY SECURITY SCHEMES MIGHT** OF DIFFERING SECURITY LEVELS. ALSO DEVELOPS AN ALGORITHM TALK TO EACH OTHER DIRECTLY **DEVELOPS A "BLACK" GATEWAY** 

### ASTI PROGRAM SCHEDULE



# **ASTI-TNB**

- PROVIDES SECURITY SERVICES FOR LARGE NETWORKS PROTECTED BY TEED
- ENABLES TEED USE IN A SYSTEM CONFIGURATION
- CENTER HOSTING VARIOUS MODULES **CONSISTS OF A SECURITY SUPPORT**

# **ASTI-TNB**

NETWORK MANAGEMENT AND SUPPORT FOR PROTECTED THE SECURITY SUPPORT CENTER PERFORMS SECURE HOSTS THROUGH THE FOLLOWING MODULES:

KEY MANAGEMENT (PHYSICAL KEY DISTRIBUTION, FIRE FLY RE-KEY), ACCESS CONTROL LISTS (ACLs), ACL DISSEMINATION.

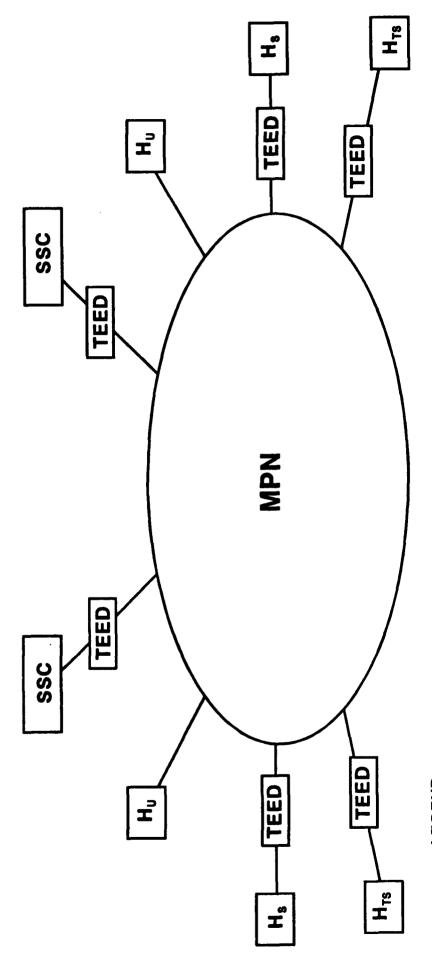
COMPROMISE RECOVERY.

**AUDIT LOG AND ANALYSIS.** 

REMOTE COMMANDS.

INFORMATION WARFARE ALERT.

# **ASTI-TNB**



#### LEGEND:

SSC = SECURITY SUPPORT CENTER TEED = TACTICAL END-TO-END MPN = MSE PACKET NETWORK

H<sub>u</sub> = HOST @ UNCLASSIFIED H<sub>s</sub> = HOST @ SECRET H<sub>Ts</sub> = HOST @ TOP SECRET

### ASTI-TNB OBJECTIVES

# PROVIDE SYSTEMS SUPPORT FOR TEED'S USE IN LARGE NETWORKS

### ASTI-TNB PAYOFF

- EVENTUAL ELIMINATION OF REDUNDANT NETWORKS AND OPERATORS TO ALLOW A MULTIPLE SECURITY LEVEL TRANSPORT NETWORK IN THE TACTICAL BATTLEFIELD
- INCORPORATED INTO ARMY'S INTEGRATED SYSTEM CONTROL (ISYSCON) FACILITY

### ASTI-TNB MILESTONES

FY-95 PROOF OF CONCEPT AWARD:

FY96, FY-97 INTEGRATION WITH TEED:

INTEGRATION WITH ISYSCON: FY-97

# ASTI-TNB FUNDING PROFILE (\$M) EST. RDTE

FY-950.3 - 0.8FY-960.5 - 1.0FY-970.5 - 1.0TOTAL1.3 - 2.8

# CONTRACT OPPORTUNITY

TITLE: ASTI-TNB

OBJECTIVE: DEVELOPMENT OF SECURITY ANCILLARIES TO TEED

CONTRACT TYPE: CPFF

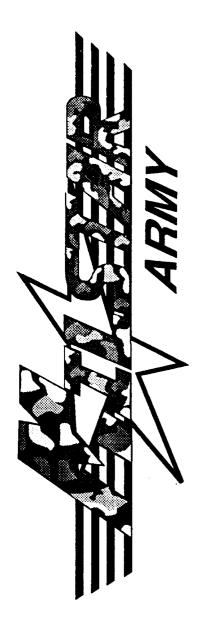
**KEY MILESTONES: RFP OUT: 1QFY95** 

**CONTRACT AWARD: 3QFY95** 

EST. VALUE: \$1.3M - 2.8M

POC: MR. BARRY SALIS, (908)544-3597

### NOTES



# **MANPORTABLE TERMINAL TECHNOLOGY** SINGLE CHANNEL ANTI-JAM

GARY P. MARTIN 11 MAY 94

UNCLASSIFIED

#### Future MILSATCOM Single Channel Terminals Emerging Technologies By Gary P. Martin

The current Army MILSATCOM architecture consists of a wide variety of user terminals at all echelons, providing both multichannel and single channel communications support to the war fighter. The single channel mission is to provide worldwide tactical communications for contingency deployment, intelligence broadcast, and range extension of Combat Net Radio (CNR). In order to meet these communications needs, the single channel systems must provide:

- Low Probability of interception, detection, and exploitation.
- Anti-Jam capabilities to mitigate the threat
- Long range voice and data capability similar to Combat Net Radio
- Light, low power, and manpackable terminals.

The single channel capability is currently provided by systems operating at ultra high frequencies (UHF). While the technologies associated with operation at these frequencies enable the development of very small, lightweight terminals, they are very susceptible to jamming, interception and detection. The Army is currently developing a new satellite communications radio, the Single Channel Anti-jam Manportable (SCAMP) terminal, which is designed to meet jamming and low probability of interception and detection requirements. The SCAMP is designed for operation on extremely high frequency (EHF) satellite systems, such as Milstar, which implement the core set of requirements defined in the EHF Low Data Rate Satellite Data Link Standard (MIL-STD-1582C).

The SCAMP program is actually composed of two terminals; an interim 30 pound (Block I) terminal and an objective 12-15 pound (Block II) terminal. Common capabilities between Block I and Block II include low data rate communications at 75 - 2400 bps for data and 2400 bps for voice. The terminal provides Communications Security and Transmission Security via embedded security modules. An embedded GPS receiver provides accurate position and time for assured rapid setup and satellite acquisition (less than 10 minutes in extreme conditions). The terminal is capable of operations in extreme weather as well as biologically and chemically contaminated environments. Communications interfaces support common hardware and software devices, MSE and SINCGARS (data only), and the AN/UGC-144 tactical computer. The terminal supports battery (BA-5590 or BA-590) as well as 110 / 220 VAC operations. Block II specific capabilities include:

Weight 12 Pounds vs 30 Pounds for Block I w/batteries Power 24 hrs on Single load of Batteries vs 12 hours

ACUS Interface Voice and Data
Paging While on the Move

Comm-on-the-Move Objective Capability for Block II

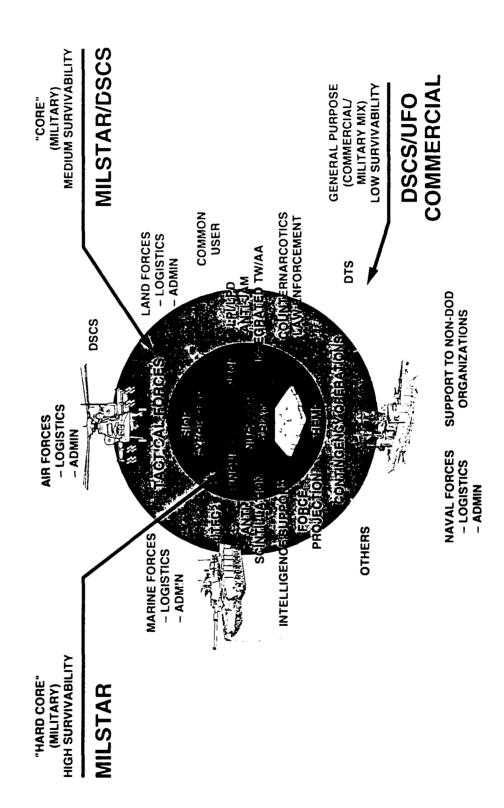
Both terminal designs require the use of a number of advanced technologies. However, the Block II terminal represents the greater challenge for future research and development activities. The challenges associated with reducing overall weight by greater than 50 % from Block I, while enhancing terminal performance, will require advancements in a number of technologies. PM Milstar (Army) has developed a plan for achieving the objective Block II terminal. The plan focuses on a number of key technologies essential for achievement of the Block II capabilities. These technologies include:

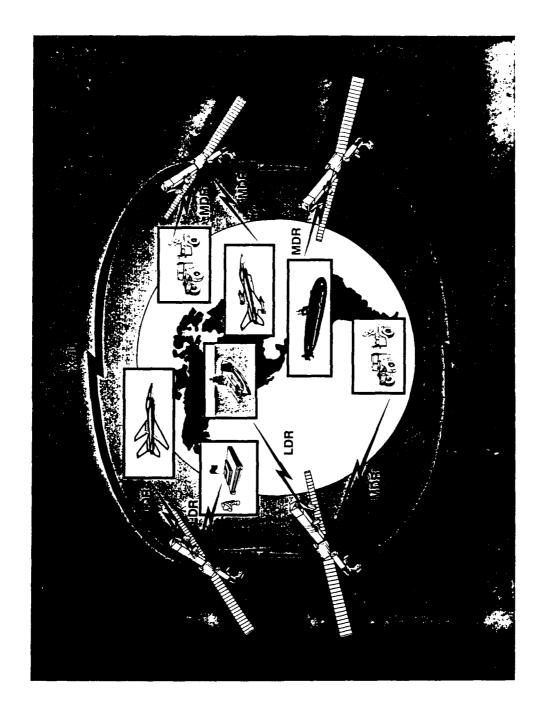
- a. Composite materials for reducing the overall weight of the terminal. A number of composite materials are currently being utilized in the Block I SCAMP program. However, a reduction of more than 50% in weight cannot be achieved solely through the use of these materials.
- b. Higher efficiency solid state devices for EHF power transmitters. Although significant effort has been expended on solid state EHF devices over the last five to ten years, the high power and efficiency to low size and weight ratio required to meet the Block II objectives is at best a few years away. Tradeoffs between the antenna aperture and transmitter power are necessary to ensure that communications capabilities are not degraded in the smaller Block II terminal.
- c. <u>High power density batteries</u>. Although several chemistries offer very high potentials for achieving the required performance, many of these are plague with safety, disposal or high per unit costs. The objective is to provide safe chemistries which not only meet the objective power requirements and low per unit costs but which also provide maximum utilization by other military equipment such as the SINCGARS radio.
- d. <u>High frequency Direct Digital Synthesizers</u>. High frequency DDSs reduce the number of upconversion chains required to obtain the 44 GHz uplink frequency, thus providing size, weight and power reductions.
- e. <u>High efficiency DC-DC power converters</u>. In addition to increasing the efficiency of the power converters, the number of converters required may be decreased by limiting the number of different voltage levels employed by the terminal electronics.

- f. Increased use of low voltage electronics (3.3 volts versus 5.0 volts). Low voltage devices provide an immediate saving of nearly 40% in power consumption. While many electronic components are currently available in 3.3 V packages, modules such as the COMSEC and TRANSEC chips were not designed with these devices. These modules would be ideal candidates for redesign using the lower voltage devices.
- g. <u>Low power oscillators</u>. Reducing power consumption of the oscillators is key in helping to meet the reduced power consumption requirements because these devices are frequently on while the terminal is in operation.

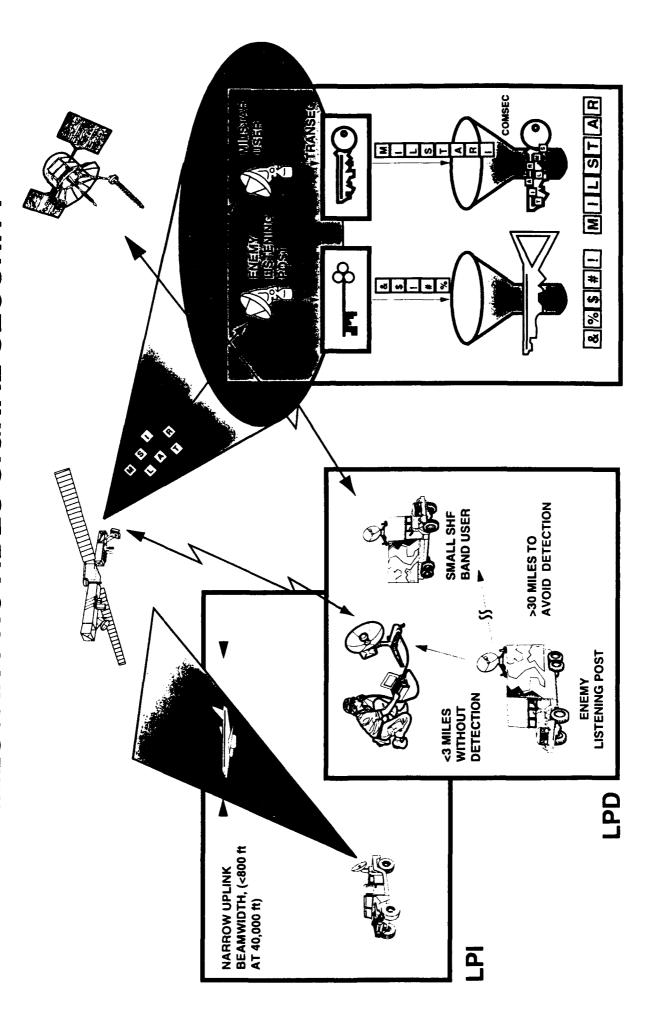
The Block II program is currently scheduled to enter engineering manufacturing and development (EMD) phase in 2001. While some of these technologies are within reach, a number of them will require investments by industry and the government to ensure that required performance is achieved. Unless focused, efforts exerted in the development of these technologies may not yield sufficient performance to meet the overall objective Block II capabilities. The Army anticipates a Block II engineering feasibility program beginning in FY 99 to develop the technologies required to integrate a 12 pound SCAMP terminal. PM Milstar will continue to work with industry to update the engineering feasibility plan. By doing so it is hoped that the efforts of the engineering feasibility program will be optimized to ensure a successful block II program.

# HIERARCHY OF MILSATCOM MISSIONS





# **MILSTAR PROVIDES SIGNAL SECURITY**



### OPERATIONAL REQUIREMENTS (VALIDATED ORD)

- USER OWNED AND OPERATED (GENERAL PURPOSE USER)
- SETUP TIME NO MORE THAN 10 MINUTES (5 MINUTES DESIRED)
- MANPORTABLE; CAPABLE OF BEING VEHICULAR MOUNTED
- TRANSMIT / RECEIVE LDR DATA AND VOICE (75-2400 BPS)
- POWERED FROM INTERNAL ARMY STANDARD BATTERY
- ALSO CAPABLE OF OPERATION FROM 20-30 VDC, 110 / 220 **VAC 50-60 HZ SOURCES**
- OPERATION FROM REMOTE USER-PROVIDED I / O DEVICE
- **EMBEDDED COMSEC / TRANSEC / AND GPS**
- OPERATE IN NBC, HOT, BASIC COLD ENVIRONMENTS
- INTERFACE TO ACUS

### SCAMP (BLOCK II) REQUIREMENTS

	BLOCKI	OBJECTIVE BLOCK II
WEIGHT	30 Lbs	12- <sup>-5</sup> Lbs
COMMUNICATION	LDR DATA 75-2400 bps LDR VOICE 2400 bps (STU-III VOICE QUALITY)	LDR DATA 75-2400 bps HIGH QUALITY VOICE INTERFACE TO ACUS (MSE SYSTEM)
BATTERY DURATION	12 HOURS (WORST CASE)	24 HOURS (WORST CASE), OBJECTIVE 96 HRS
EMBEDDED GPS	YES	YES
OPERATOR SET-UP TIME	10 MINUTES	OBJECTIVE 5 MINUTES
ENVIRONMENTALS	FULL MIL-QUALIFIED MIL-STD-810E	FULL MIL-QUALIFIED MIL-STD-810E
MTBOMF	600 HRS	1250 HRS
COMM ON THE MOVE	ON	OBJECTIVE VEHICULAR MOUNTED
PAGING	ON	YES
201	FY98	TBD
APROX TOTAL PRODUCTION UNITS	456	2549

## **SCAMP EVOLUTION**

### LINCOLN LABORATORY'S DEVELOPMENT 1984 TO 1988

#### SCAMP

- 2 PACKAGES
- 65 POUNDS
- MESSAGE TRAFFIC AT 75 bps
- LOW HOP RATE SPOT BEAM LINK
- BATTERY POWERED

### LINCOLN LABORATORY'S DEVELOPMENT 1988 TO PRESENT

#### **ADVANCED SCAMP**

- SINGLE PACKAGE
- APPROXIMATELY 34 Lbs
- VOICE AND DATA AT 75-2400 bps
- HIGH HOP RATE SPOT BEAM LINK
- BATTERY / AC / DC POWERED



SCAMP (BLOCK I)

• 30 Lbs WITH CASE

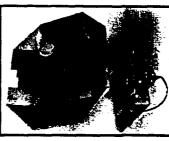
#### SCAMP (BLOCK II)

• 12-15 Lbs

• EMBEDDED TRANSEC / COMSEC / GPS VOICE AND DATA AT 75-2400 bps

 BIOLOGICAL / CHEMICAL / HEMP SURVIVABILITY ACUS / CNR DATA INTERFACE MILITARIZED / RUGGEDIZED

- PAGING ON-THE-MOVE
- MANPORTABLE
- EXTREMELY RELIABLE



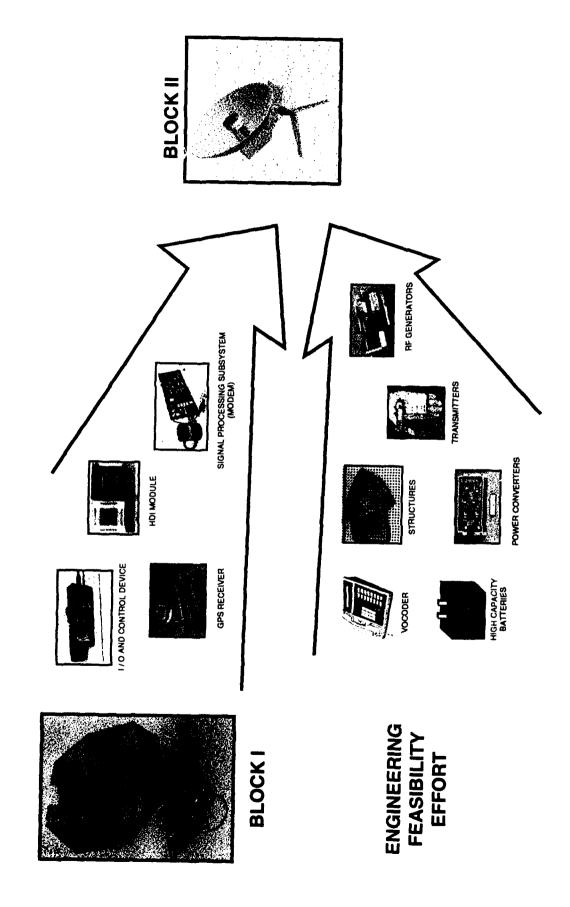




## SCAMP BASELINE ACQUISITION PLAN

- EVOLUTIONARY DEVELOPMENT TO ACHIEVE OBJECTIVE (BLOCK II)
- BLOCK I (INTERIM CAPABILITY)
- • STEPPING STONE TO BLOCK II
- DEVELOP FUNDAMENTAL TECHNOLOGY / CAPABILITY APPLICABLE TO BLOCK II
  - PROVIDES MANPORTABLE EHF COMMUNICATIONS IN SUPPORT OF FIRST TWO SATELLITES
- BLOCK II ENGINEERING FEASIBILITY EFFORT
- • DEVELOP THOSE TECHNOLOGIES NOT OBTAINABLE VIA BLOCK I
- POSITION ARMY TO COMMIT TO BLOCK II EMD BY 1996

### PICTORIAL OF SCAMP ACQ PLAN



# SCAMP (BLOCK II) FEASIBILITY ENGINEERING EFFORTS

BLOCK II TERMINAL BY LOWERING TERMINAL WEIGHT, IMPROVING POWER EFFICIENCY, ACHIEVING THE ADDITIONAL USER REQUIRE-COST EFFECTIVE TECHNOLOGIES APPLICABLE TO THE DEVELOP-MENTS FOR THE BLOCK II TERMINAL, AND ULTIMATELY YIELDING IS A THREE-YEAR EFFORT WHICH INVOLVES THE DEVELOPMENT OF TECHNOLOGIES THAT WILL PROVE THE FEASIBILITY OF THE MENT OF APPROXIMATELY 2500 SCAMP BLOCK II TERMINALS. THE SCAMP BLOCK II TECHNOLOGY INSERTION PROGRAM

## SCAMP BLOCK II TECHNOLOGY

### **CURRENT TECHNOLOGY**

#### ANTENNA

2 FT PARABOLIC

#### DIGITAL SYSTEM / MODEM



2.4 LBS 7.3 WATTS

#### REDUCE DISK SIZE

- SAVES WEIGHT
- REDUCES LOADING ON DRIVE MOTORS
- REQUIRES GREATER XMIT POWER

### **OBJECTIVES / GOALS**

#### GOAL: < 1.5 POUNDS

- 18 INCH DIAMETER
- **LOWER WEIGHT PETAL**
- BACK FED LEAKY WAVE
- SPATIAL COMBINING
- FLAPS
- COLLAPSIBLE UMBRELLA

#### GOAL: .5 POUNDS

REDUCE POWER

CONSUMPTION

**REDUCE SIZE** 

- < 4 WATTS
- MCM TECHNOLOGY
- USE 3.3 V PARTS

REDUCE PRODUCTION

• SINGLE CHIP MODEMS

3709

### SCAMP BLOCK II TECHNOLOGY (CONTINUED)

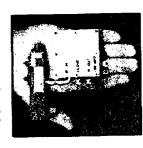
### **CURRENT TECHNOLOGY**

#### **TRANSMITTER**



- 1.3 WATTS
- 8 % EFFICIENT
- 3.7 OZ

#### RECEIVER



- 2.3 dB NF
- 1.7 W DC
- 5.6 OZ

### **OBJECTIVES / GOALS**

FOR SMALLER DISH) (TO COMPENSATE **INCREASE POWER** 

GOAL:

20 % EFFICIENCY **2.5 WATTS** 

> INCREASE EFFICIENCY (REDUCE POWER **CONSUMPTION**)

IMPROVE NOISE FIGURE

REVIEW G / T REQUIREMENT

GOAL: 1 dB NF

3/10/94

### SCAMP BLOCK II TECHNOLOGY (CONTINUED)

### **CURRENT TECHNOLOGY**

#### SYNTHESIZER

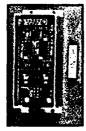
REDUCE WEIGHT

REDUCE POWER

CONSUMPTION

- 3.4 LBS
  - √ 10 W

#### **POWER CONVERTERS**



REDUCE HIGH POWER

REDUCE NUMBER OF

CONVERTERS

- 70 80% EFFICIENCY
- MULTIPLE VOLTAGES

• USE OF HIGH VOLTAGE

INEF<sup>€</sup>ICIENCY

**LOSS DUE TO** 

- REDUCE BATTERY

#### **OBJECTIVES / GOALS**

- **DDS TECHNOLOGY**
- **LOW POWER OSCILATORS** MCXO
- GOAL: .5 LBS / 3 WATTS
- REDUCE # OF DIFFERENT VOLTAGES
- **MAXIMIZE USE OF 3.3 V** DEVICES
- IMPROVE EFFICIENCY > 90 %

### **PRIME MISSION BATTERY**



24 V DC, 165W-Hr

- INCREASE ENERGY CAPACITY

- > 250 W-Hr PER BATTERY
- NO MORE EXPENSIVE **THAN BA-5590**

# SCAMP BLOCK II TECHNOLOGY (CONTINUED)

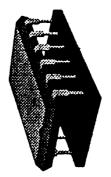
### **CURRENT TECHNOLOGY**

STRUCTURES



• 12.2 LBS

#### EMBEDDED COMSEC



- RAILMAN MODULE
- **60 mW WHEN ACTIVE**
- **THRU-HOLE DEVICE**

#### **OBJECTIVES / GOALS**

- REDUCE WEIGHT
- LIGHTWEIGHT MATERIALS

REPACKAGING CONCEPTS

- REDUCE SIZEPOWER REDUCTION NOT WORTH EXPENSE
- REPACKAGE AS SURFACE MOUNT VERSION OF STICKPIN

# SCAMP BLOCK II TECHNOLOGY (CONTINUED)

### CURRENT TECHNOLOGY EMBEDDED TRANSEC



- CDH MODULE
- 300 400 mW WHEN ACTIVE • THRU-HOLE DEVICE
- REDUCE POWER CONSUMPTIONREDUCE SIZE

- **OBJECTIVES / GOALS**
- RE-DESIGN AS LOW VOLTAGE (SAVE 40 % IF USE 3.3 V)
- RE-PACKAGE AS SURFACE MOUNT

#### CONTROL DEVICE



- REDUCE SIZE
- ENSURE RUGGEDNESS

GOAL: < 1 LB INCLUDING COMSEC

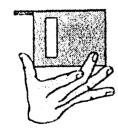
CURRENT DEVICE 2.5 LBS

# SCAMP BLOCK II TECHNOLOGY (CONTINUED)

### **CURRENT TECHNOLOGY**

**OBJECTIVES / GOALS** 

#### PAGER



- PROVIDE PAGING CAPABILITY
- TECHNOLOGY IS ESSENTIALLY AVAILABLE TODAY.
- CECOM SPACE AND
  TERRESTRIAL COMM
  INVESTIGATING ALTERNATIVES

#### **VOICE QUALITY**



INCREASE VOICE QUALITY

2.4 Kbps AT 4.8 Kbps

QUALITY

**NSA CONSORTIUM** 

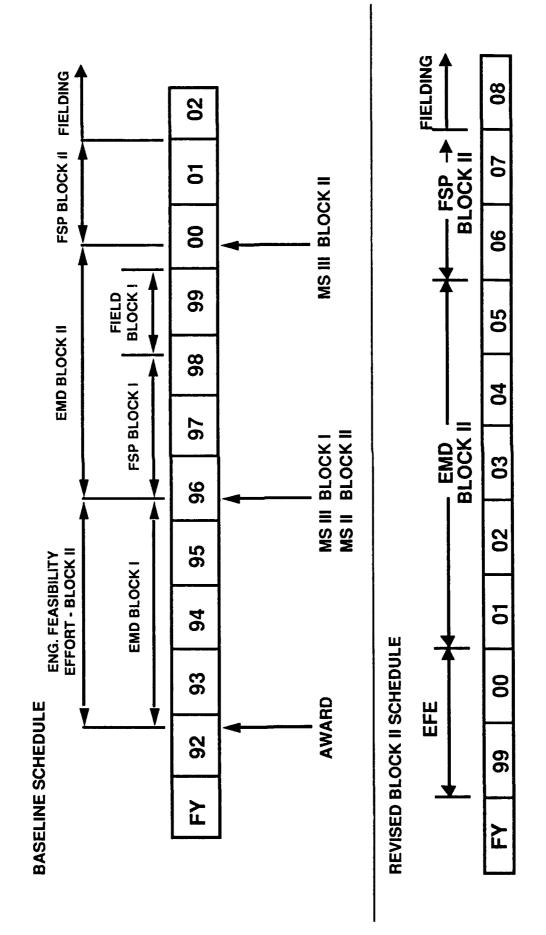
- VOICE INTERFACETO ACUS
- HIGHER VOICE QUALITY

**CURRENTLY LPC-10e** 

## **BLOCK II STATUS**

- PBD 102 EFFECTS ON SCHEDULE
- DELAYS BLOCK II ENGINEERING FEASIBILITY TO 1996
- CURRENT PLAN
- FUNDING FOR BLOCK II EMD SCHEDULED TO BE **AVAILABLE FY01**
- NEW SCHEDULE
- SEE NEXT SLIDE

#### SCHEDULES



## NOTES

#### SESSION IV

#### "OUT-THINK" THE ENEMY

#### **MODERATOR**

MR. BENNETT R. HART
DEPUTY PROGRAM EXECUTIVE
OFFICER
COMMAND AND CONTROL
SYSTEMS

#### OVERVIEW AND INTRODUCTION **"OUT-THINK" THE ENEMY SESSION IV**

DEPUTY PROGRAM EXECUTIVE OFFICER COMMAND AND CONTROL SYSTEMS MR. BENNETT HART **MODERATOR:** 

UNCLASSIFIED

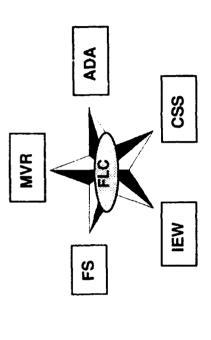
# PROGRAM EXECUTIVE OFFICE

COL DANIEL LIONTGOMERY HUBLAN RESOURCES **WR HAROLD BRITTON** AS CATHLEEN HEY PM CCIS SFAE-OCHRO COMMAND AND CONTROL SYSTEMS **DSN** 345-2854 DSN 788-3441 CETEC-TL-G SFAE-CC-AD ATORS INTEGORE COLJOHN HOLMES AS OF: JAN 94 SFAE CC SPC DSN 738-1885 MR GEORGE KEDROWSKY SFAE-CC-REG COL JAMES STEVERSON LTC STEPHEN MONKS READINESS & EVAL PM CSSCS PM CN/CMS SFAECCHAR SFAECCCSS DSN 656-5312 DSN 356-8114 EXECUTIVE OFFICE PEO - MG WILLAM CAMPBELL SFAE-CC-XO, 532-3938 APEO - DR DAVID USECHAK XO-MAJ STEPHEN WINTER SFAE-CC., 544-2055 DPEO - MR BENNETT HART SFAE-CC. 544-3840 SFAE-CC, 544-4937 SFAE-CC, 544-2168 SYSTEMS ENGINEERING MR MICHAEL ALBARELLI SPAE-CC-SEC SMATT MR ROBERT NORTHRUP ESD - LTC JACK MCGILL COL WALTER OLSON SFAE-CC-CHS PM IMETS SFAECCMET **DSN 258-1225** 844679 PROGRAM MANAGEMENT COLSTEVEN BOUTELLE COL RICHARD JOHNSON ME RANDY MATURA SFAE-CC-PMO **DSN FOR 544 IS 995, DSN FOR 532 IS 992** PM ASAS COMM (908)544-4030 **DSN 356-8112** SFAECCHIT SFAE-CC-FS PENTAGON LNO MAJMICHAEL SMITH \$800 PE 544,30823 PEO CORE FAX: DSN 995-4030 DSN 225-8446 SAROCE HR RICHARD KOVAL COL CARL LAMBETH **OPERATIONS** PIN OPTADS PM AWIS MR JAMES BRAY SFAE-CC-OPS SFAE-CC-MVR SFAE-CC-AW **DSN 666-5687** 140201 632-4912

# **ABCS SUPPORT TO THE WARFIGHTER**

Integrated Computer Systems for Commanders and Their Staff

Graphics Based Maps, OPLANS, Resources Status, Courses of Action



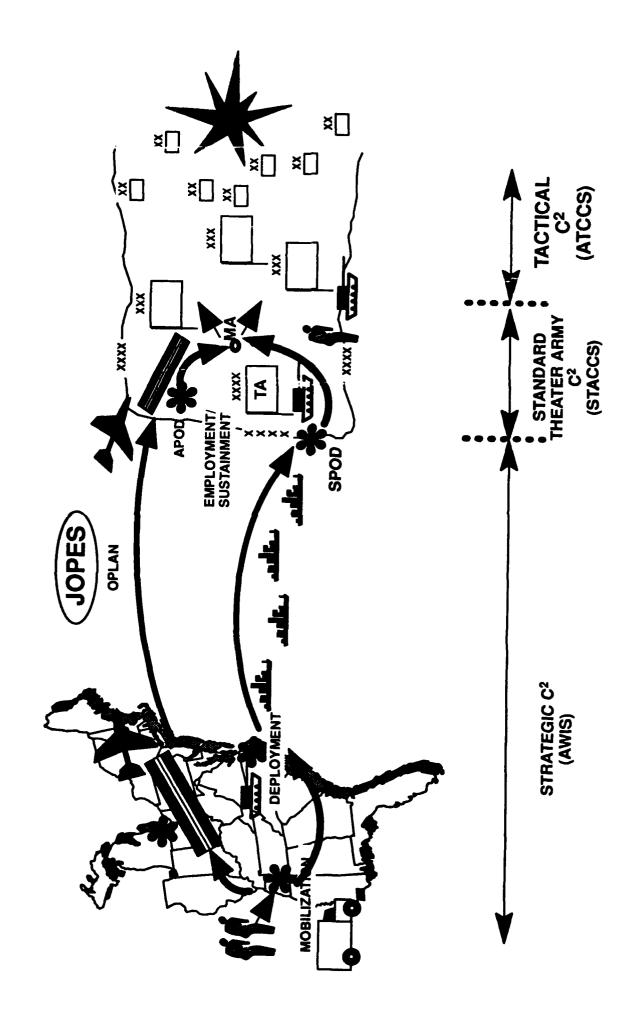
## PROVIDING INFORMATION THAT IS:

- Timely
- Accurate
- Available at All Echelons
- Rapidly Disseminated

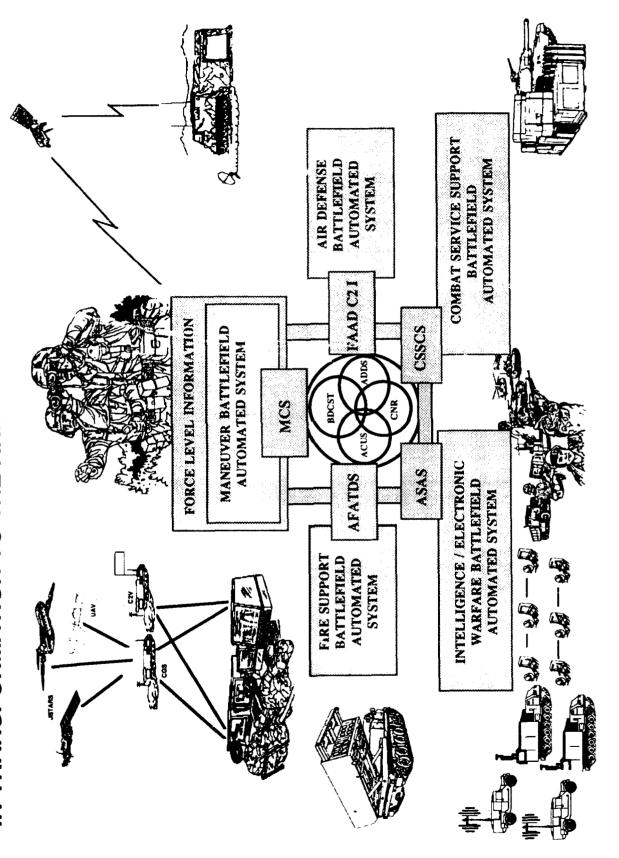
## GIVING THE WARFIGHTER

- A "Common Picture of the Battlefield"
- Ability to Get Inside the Enemy's Decision Cycle
- Ability to Better Synchronize All Elements of the Force
- ·Real Time, Digitized Command and Control Capabilities

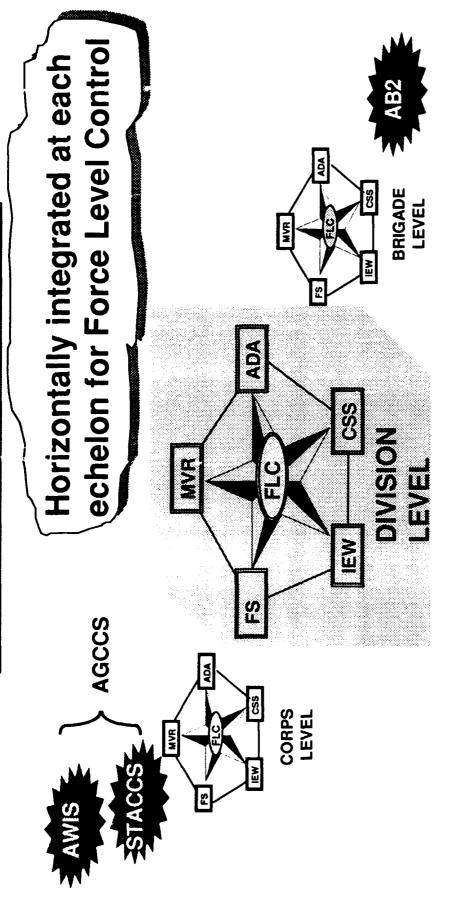
## ARMY COMMAND & CONTROL SYSTEM



## IN TRANSFORMATION TO THE ARMY BATTLE COMMAND SYSTEM ARMY TACTICAL COMMAND AND CONTROL SYSTEM



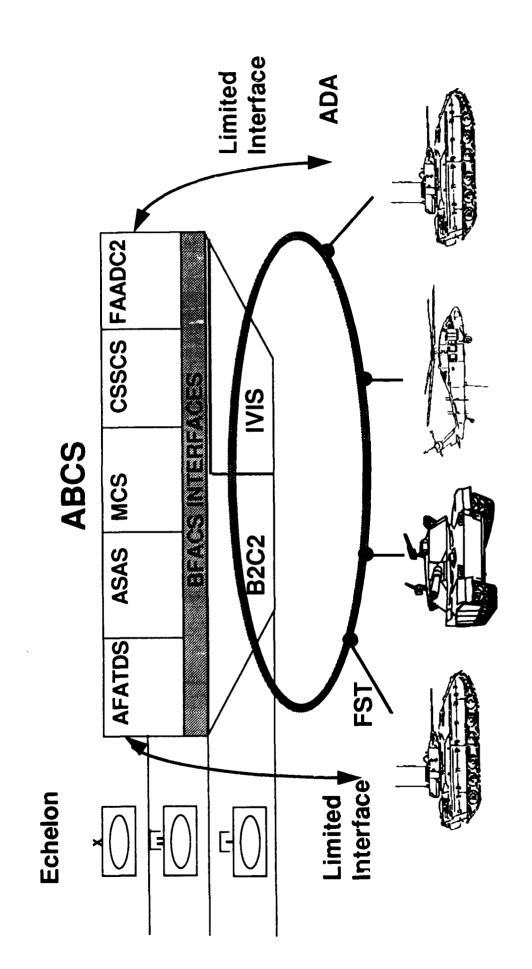
## THE DIGITIZED BATTLEFIELD

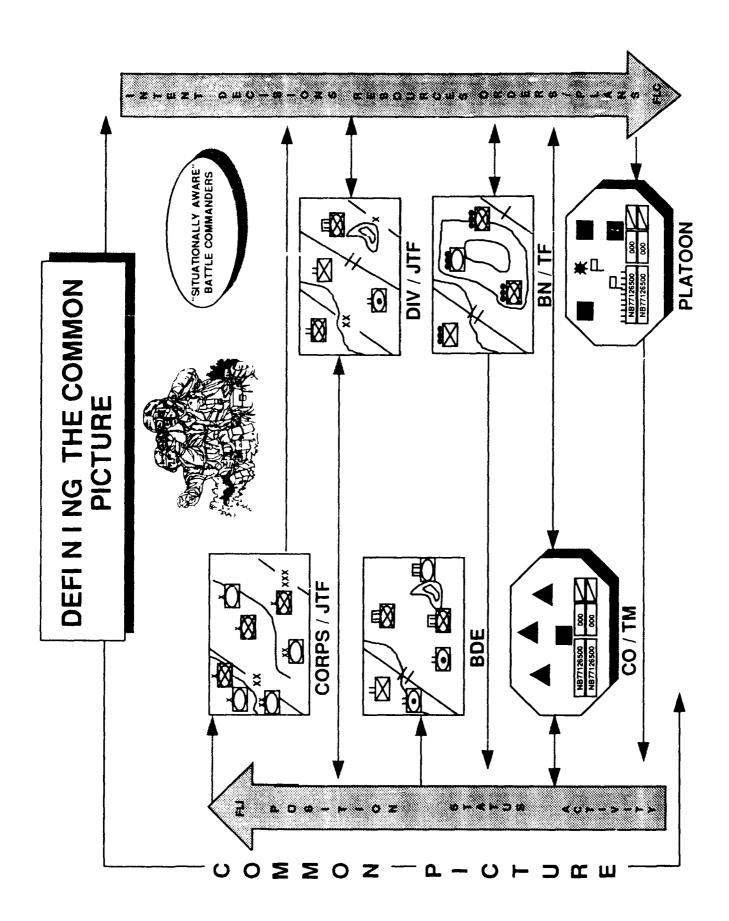


"An interoperable integration of C2 systems that provides Commanders the means to synchronize the forces"

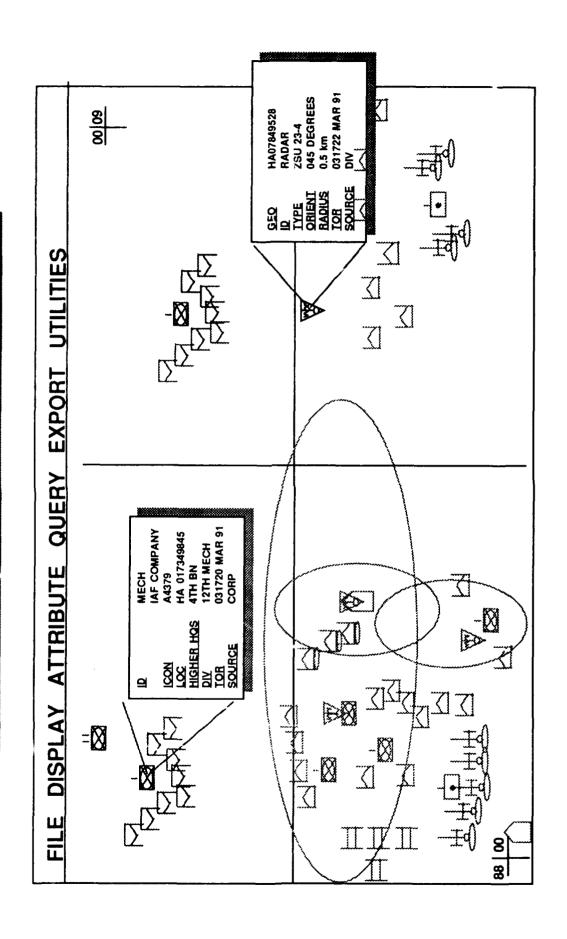
## DIGITIZING THE BATTLEFIELD

AB2 - Army Brigade & Below





# GRAPHIC SITUATION DISPLAY OVERLAY



# HARDWARE REQUIREMENTS

APPLIQUE	(262)	1162	1432	1207	1143	1062	319	6325
EMBEDDED / COMMON HARDWARE	(308)	1275	1005	701	640	589	1306	5516
ш —	(009)	(2437)	(2437)	(1908)	(1783)	(1651)	(1625)	(11,841)
TYPE UNIT	AR BDE 96	AR DIV 97 Includes BDE 96	AR DIV 98	AASLT DIV	ABN DIV	INF DIV	CORPS 99	TOTAL

# **SESSION IN BRIEFINGS**

COMMAND AND CONTROL OVERVIEW

MR. BENNETT HART

BATTLEFIELD DIGITIZATION PROTOCOL SUITE

DR. MYRON HOLINKO

ARMY GLOBAL COMMAND & CONTROL SYSTEM

LTC DAVID KIRKS

MANEUVER CONTROL SYSTEM

MR. PETER JOHNSON

C3 TECHNOLOGY ENGINEERING & INTEGRATION

MR. ROBERT CARNEVALE

## NOTES



PROJECT MANAGEMENT OFFICE, AWIS LTC DAVID J. KIRKS PRODUCT MANAGER, SACCS

### UNCLASSIFIED

#### POINT PAPER

SUBJECT: Army Global Command and Control System (AGCCS)

OBJECTIVE: The AGCCS procurement will acquire support to engineer, develop, integrate, and maintain software in support of a consolidated AGCCS project. The projects to be consolidated, the Army WWMCCS Information System (AWIS), Standard Theater Army Command and Control System (STACCS), and Combat Service Support Control System (CSSCS), will be combined to enhance interoperability, ensure software and technology reuse, and to minimize duplication between systems. The consolidated development effort will reduce product delivery time, eliminate development and duplication of functional software products supporting Army command and control systems, and maintain the required functionality for mission success. AGCCS will provide a source of technical support and services in support of the Army component of the GCCS in fielding a seamless C2 structure for the echelons-above-corps Army. This acquisition will include development of the AGCCS core platform; reuse of functional capability software modules currently existing in the AWIS, STACCS and CSSCS environments; integration of these modules; maintenance of the existing systems; and development and maintenance of new functional capabilities.

FACTS: To accomplish the objective, some of the technologies required are the following:

- -Ada software development and code reuse
- -Rapid prototyping and development tools
- -Software quality metrics
- -Compatibility with CASS, CHS-I/II products, and GCCS
- -Relational database management
- -Commercial and tactical communications interfacing

Some of the required benefits will be:

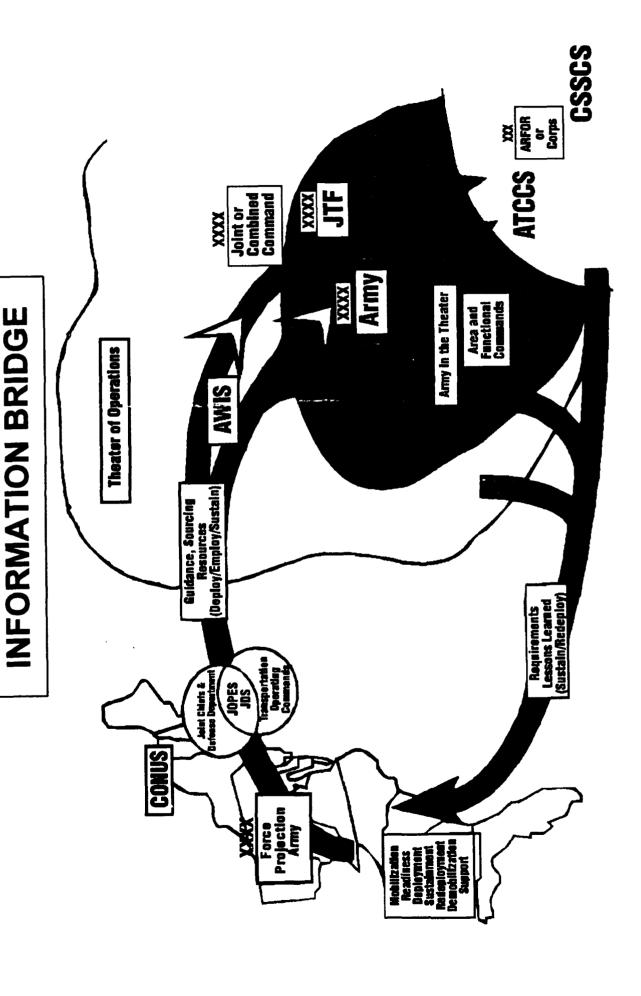
- -Improved interoperability
- -Operational flexibility
- -Common picture of C2 information at all echelons
- -Transition to common hardware
- -Reduced life cycle costs

BRIEFER: LTC David J. Kirks

Product Manager, SACCS

PMO, AWIS

(703) - 968 - 1266



#### STRATEGY

CONSOLIDATION OF THE AWIS, STACCS AND SOFTWARE AND TECHNOLOGY REUSE, AND MINIMIZE DUPLICATION BETWEEN SYSTEMS **ENHANCE INTEROPERABILITY, ENSURE EAC CSSCS ACQUISITION IN ORDER TO** TO PROVIDE SYNCHRONIZATION AND

## **SYSTEM OVERVIEW**

#### **AWIS**

- STRATEGIC LEVEL C2 SYSTEM SUPPORTING MOBILIZATION, DEPLOYMENT, EMPLOYMENT AND SUSTAINMENT OF THE FORCE
- SUPPORTS NCA, UNIFIED & SPECIFIED COMMANDS, ARMY COMPONENTS, TRANSPORTATION OPERATING AGENCIES AND HQDA
  - MODERNIZE ARMY COMMAND/SUPPORTED SITES WITH C2 SOFTWARE, HARDWARE AND COMMUNICATIONS
- INTERFACE WITH JOINT STRATEGIC AND ARMY THEATER LEVEL SYSTEM

#### STACCS

- AT THEATER COMMANDS AND THEIR MAJOR SUBORDINATE COMMANDS
- HAS MULTIPLE COMMON REPLICATED DATABASES WITH COMMON SITMAPS, COMMUNICATIONS, MAN-MACHINE INTERFACES, BRIEFING SYSTEM AND COTS
- UTILIZES COMMERCIAL AND MILITARY COMMUNICATIONS
- INTERCONNECTS TO STRATEGIC (AWIS) AND TACTICAL (MCS) LEVELS

#### EAC CSSCS

- ASSIST THE COMMANDERS AND THEIR STAFFS IN PLANNING AND EXECUTION OF LOGISTICS
- PROVIDE TIMELY SITUATIONAL AWARENESS AND FORCE PROJECTION TO DETERMINE CAPABILITY TO SUPPORT CURRENT OPERATIONS AND SUSTAINED FUTURE OPERATIONS
- EXCHANGE INFORMATION WITH OTHER AUTOMATED SYSTEMS (ATCCS/STAMIS/JOINT) AND ECB **CSSCS SYSTEMS**

#### **OBJECTIVES**

- INTEGRATED ACQUISITION OF AWIS/EAC CSSCS/STACCS
- PREVENT OVERLAP OR DUPLICATION
- CAPITALIZE ON THE BENEFITS IN HARDWARE EFFICIENCIES AND SOFTWARE REUSE -- INTRODUCE COMMON ABCS SUPPORT SOFTWARE
- DEVELOP COMMON DATA WITH STANDARD NAMES AND **DEFINITIONS**
- INTEGRATION/VERTICAL FLOW OF TACTICAL / THEATER / CAPITALIZE ON OPPORTUNITIES FOR FUNCTIONAL STRATEGIC C2 APPLICATIONS
- PROVIDE SOFTWARE MAINTENANCE AND MODIFICATIONS OF **EXISTING BASELINES**
- **MAXIMIZE RETURN ON INVESTMENT**
- PROVIDE INTEROPERABILITY AND "BEST OF BREED" **PRODUCTS**

## NEEDED TECHNOLOGIES

- ADA SOFTWARE DEVELOPMENT AND CODE REUSE
- RAPID PROTOTYPING AND DEVELOPMENT TOOLS
- CLIENT SERVER
- OPEN SYSTEMS AND LAYERED ARCHITECTURE
- SOFTWARE QUALITY METRICS
- RELATIONAL DATABASE MANAGEMENT
- COMPATIBLE WITH CASS, CHS I & II PRODUCTS, AND
- MULTI-LEVEL SECURITY
- COMMERCIAL & TACTICAL COMMUNICATIONS INTERFACE CAPABILITIES

#### BENEFITS

- IMPROVED INTEROPERABILITY
- **OPERATIONAL FLEXIBILITY**
- **COMMON PICTURE OF C2 INFORMATION AT ALL ECHELONS**
- TRANSITION TO COMMON ARCHITECTURE
- REDUCE LIFE CYCLE COSTS

#### **MILESTONES**

FEB 94	MAY 94	JUL 94	NOV 94	DEC 94
RELEASED DRAFT RFP	RELEASE RFP	PROPOSALS DUE	REQUEST BAFOS	CONTRACT AWARD

## CONTRACT OPPORTUNITY

ARMY GLOBAL COMMAND & CONTROL SYSTEM

OBJECTIVE: SOFTWARE INTEGRATION AND DEVELOPMENT

DEFINE, DESIGN, DEVELOP, DOCUMENT, DEPLOY, SCOPE:

MAINTAIN AND TRAIN FULLY OPERATIONAL C2 SYSTEM TO **MEET ARMY REQUIREMENTS** 

CPAF 5 YEARS -- FOR SOFTWARE INTEGRATION AND

DEVELOPMENT

FFP -- FOR MAINTENANCE OF EXISTING SOFTWARE

CONTRACTING AGENCY: USAISSAA

STATUS: DRAFT RFP RELEASED FEB 94, RFP DUE OUT MAY 94

(VIA ELECTRONIC BULLETIN BOARD)

SCHEDULE: EXPECTED AWARD FY95

APPROX. VALUE: \$135M - \$175M

OC: LTC DAVID J. KIRKS, (703) 968-1266

## NOTES

# MANEUVER CONTROL SYSTEM VERSION 12

MR. PETER JOHNSON PRODUCT MANAGER MCS/CHS PM OPERATIONS TACTICAL DATA SYSTEMS/PEO CCS

UNCLASSIFIED

#### POINT PAPER

SUBJECT: Maneuver Control System (MCS)

OBJECTIVE: The MCS is a tactical computer network that will provide automated command and control for commanders and staffs. It will operate from corps through platoon/section.

FACTS: The MCS will provide: graphical visualization of the digitized battlefield, operations plans and orders, location and resource status of friendly and enemy units, enemy intent, and application tools for staff elements. The MCS architecture is based upon an open system four-layer model, with a flexible and modular structure. The MCS technical concept employs software reuse, common hardware and software, commercial products, and prototyping. Three software versions will be developed, each providing additional functional capabilities in software for the common operating environment, applications, and communications.

BRIEFER: Mr. Peter Johnson

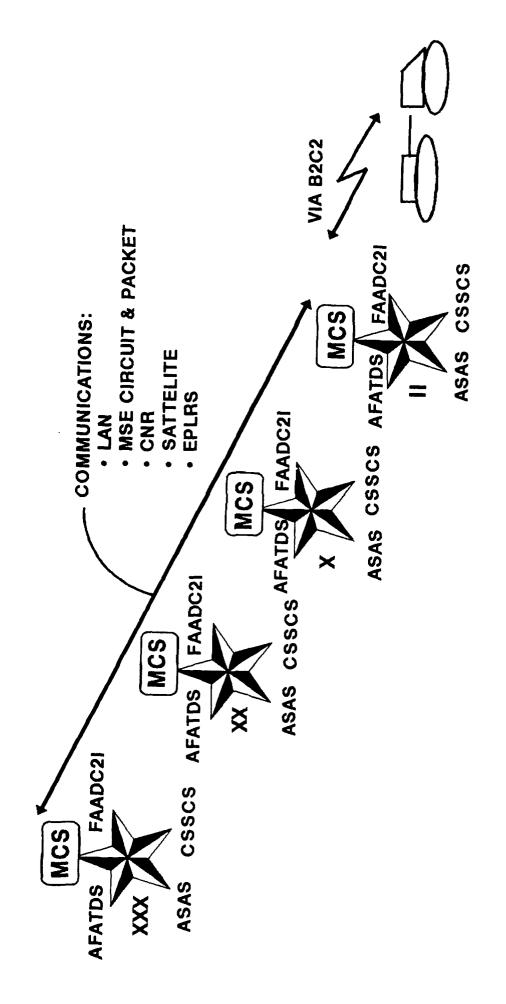
Product Manager, MCS/CHS

PMO, OPTADS

## MANEUVER CONTROL SYSTEM DESCRIPTION

- TACTICAL COMPUTER NETWORK
- AUTOMATE COMMAND AND CONTROL FOR **COMMANDERS AND STAFFS**
- GRAPHICAL VISUALIZATION OF THE DIGITIZED BATTLEFIELD
- OPERATIONS PLANS AND ORDERS
- LOCATION OF FRIENDLY AND ENEMY UNITS
- RESOURCE STATUS OF FRIENDLY AND ENEMY UNITS
- ENEMY INTENT
- APPLICATION TOOLS FOR STAFF ELEMENTS
- CORPS THROUGH PLATOON/SECTION
- ACQUISITION CATEGORY 1D PROGRAM

## SYSTEM MANEUVER CONTROL OPERATIONAL CON



# MANEUVER CONTROL SYSTEM TECHNICAL CONCEPT

### ■ ARCHITECTURE

- 4 LAYER MODEL
- OPEN SYSTEM
- CLIENT SERVER
- DCE/DME BASED
- DISTRIBUTED RELATIONAL DATABASE
- FLEXIBLE AND MODULAR STRUCTURE

#### PROCESS

- SOFTWARE REUSE
- COMMON HARDWARE
- COMMON SOFTWARE
- COMMERCIAL PRODUCTS
- PROTOTYPING
- SPIRAL DEVELOPMENT

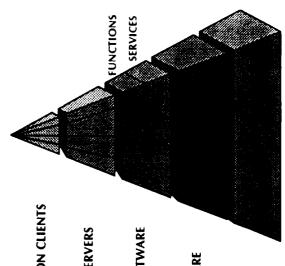
LAYER 4a -> APPLICATION CLIENTS



LAYER 3 -> ATCCS SUPPORT SOFTWARE

LAYER 2-> SYSTEM SUPPORT SOFTWARE

LAYER 1 -> COMMON HARDWARE



### **BLOCK IV RFP)** MANEUVER CONTROL SYSTEM SOFTWARE FUNCTIONALITY REQUIREMENTS V12.1

#### 12.1 COE

Common Hardware-2 Platform
Common ABCS Support Software
Distributed Computing Environment
Distributed Management Environment
Integrated Office Package (IOP)
MS-DOS/Windows/MAC Emulation
Embedded Training (w/Help)
System Management and Administration

System Management and Administration Security-System High-US Secret Continuity of Operations Messaging Capability Staff Journal with Message Log Linkage Predefined Queries Transfer DOS/WIN/MAC, IOP, Form Generator Files

User Defined Forms Generator

**E-Mail** 

**Briefing Support** 

### V12.1 Communications

IEEE 802.3 ThinLAN

Operations Plans and Orders

**Ferrain Evaluation** 

V12.1 Applications

FDDI LAN

MSE Packet Network-LAN

Battlefield Geometry and Overlay

Management

MSE Packet Network-X.25

MSE Circuit Switched Network

SINCGARS

STU-III over Commercial Phone Networks

Satellite Network

FPI RS

Display Intelligence Preparation of the

**Battlefield Products** 

Secondary Imagery Information

Friendly Task Organization Factical Movement Control Intelligence Summary Information

Non Secured Commercial Switched Networks

Direct Wire Connection

Receive Information from GPS

Unit Readiness Status and Reporting

General Supply Status Reporting

Intelligence Appraisal Information

EACH VERSION OF SOFTWARE IS INCLUSIVE OF ALL FUNCTIONALITY IN THE PREVIOUS VERSION(S)

### **BLOCK IV RFP)** MANEUVER CONTROL SYSTEM SOFTWARE FUNCTIONALITY REQUIREMENTS V12.2 (FROM

#### V12.2 COE Updates

Embedded Training (w/Help) updates

User-Defined Queries

Standing Request for Information Mgmt

Multi-Media Input Functions

Multiple Display Devices

**Multiple Printers and Plotters** 

Telestrator/LightPen Capability

Internet Routing Services

Remote Log-In

#### V12.2 Applications

Course of Action Analysis

NBC Information

**AUTODIN** and Defense Messaging

Defense Data Network

V12.2 Communications

Appendix I, Message Table 90.1-2

QIP Gateway

System

Battle Command Decision Support

Civil Military Coordination (CIMIC) and Ops (CMO)

Strategic Mobility and Movement

Tactical Engineer Information

Display Enemy Order of Battle

Display Weather Information

Maintenance Status and Reporting

General Supply Requirements Forcasting

Air Tasking Order Information

Air Coordination Order Information

EACH VERSION OF SOFTWARE IS INCLUSIVE OF ALL FUNCTIONALITY IN THE PREVIOUS VERSION(S)

### **BLOCK IV RFP)** MANEUVER CONTROL SYSTEM SOFTWARE FUNCTIONALITY REQUIREMENTS V12.3 (FROM BIOCK

#### V12.3 COE Updates

Embedded Training (w/Help) updates SOF an

Security-82 MLS-US Secret & Nato

Natural Language Queries

Scanner Input

Voice Interaction

Foreign Language Translation

#### V12.3 Applications

SOF and PSYOP Planning and Operations

Command and Control Warfare (C2W)

Exchange with Simulation Systems (CBS)

Appendix I, Message Table 90.1-3

V12.3 Communications

Military Police Information

Signal Operations Support
Mobility, Counter Mobility and Survivability Functions

Theater Engineer Information

Counter-Intelligence Planning and Operations

Personnel Status Information

Medical Situation Information

Target Analysis and Engagement Information

Fire Support Targeting Information

Air Defense Warning and Alert Information

EACH VERSION OF SOFTWARE IS INCLUSIVE OF ALL FUNCTIONALITY IN THE PREVIOUS VERSION(S)

# MANEUVER CONTROL SYSTEM CONTRACT OPPORTUNITY

MCS BLOCK IV:

SOLICITATION # DAAB07-94-R-E205 RFP AVAILABLE ON ELECTRONIC **BULLETIN BOARD** 

**OBJECTIVE:** 

C2 SOFTWARE DEVELOPMENT & INTEGRATION SYSTEM ENGINEERING & INTEGRATION

CONTRACT TYPE:

COST PLUS INCENTIVE FEE, 5 YEARS INCREMENTALLY FUNDED TIME & MATERIALS PROVISIONS

KEY MILESTONES (tentative): RFP RELEASE - AUGUST 1994 **APRIL 1995** AWARD -

VALUE (estimated):

W 06\$ - 09\$

POC = CPT JOHN LeGRANDE, CONTRACTING **OFFICER**, 908-532-4435

### NOTES

## **ENGINEERING & INTEGRATION** C3 TECHNOLOGY

MR. ROBERT CARNEVALE

MANAGER, ATCCS SE&I PROGRAM
PROGRAM EXECUTIVE OFFICE
COMMAND & CONTROL SYSTEMS
(PEO-CCS)

### UNCLASSIFIED

#### POINT PAPER

SUBJECT: C3 TECHNOLOGY, ENGINEERING & INTEGRATION

OBJECTIVE: Provide integrated and effective development of command, control and communications systems across all phases of the system acquisition life cycle. Utilizing a single integrator concept, combine the technology, engineering and system integration requirements for the Program Executive Office for Command and Control Systems (PEO-CCS) and the Communications Electronic Command, Research, Development, and Engineering Center (CECOM-RDEC).

FACTS: In order to fulfill these requirements the C3 Technology, Engineering and System Integrator will need to provide support in the following areas:

- Research, Development for Command, Control and Communications, and platform/system technology and integration
- Command, Control and Mission planning technologies
- Navigation technologies/air traffic control technologies
- Test support
- Tech Base systems engineering & technical assistance
- Program Management
- Experimentation/Demonstration
- Logistics
- Army Global Command and Control System (AGCCS) System Engineering
- Army Tactical Command & Control Systems (ATCCS) /Army Battle Command System (ABCS) System Engineering
- Army Brigade and Below (AB2) System Engineering
- Field Office/Remote Site Support
- Configuration Management
- Application of Military Command, Control and Communications technologies
- Transitioning of Command, Control and Communications technologies into fielded systems
- Support to C3 Program Managers
- Modeling & Simulation
- Support Advanced Technology Demonstrations (ATD's)
- Liaison with TRADOC and Battle Labs
- Laboratory Support

BRIEFER: Mr. Robert Carnevale
Program Executive Office
Command and Control Systems
(908) 532-0161

### DESCRIPTION

AND ACQUISITION OF COMMAND, CONTROL AND COMMUNICATIONS WHO WILL BE RESPONSIBLE FOR THE EFFECTIVE DEVELOPMENT THE C3 TE&I CONTRACT WILL PROVIDE A SINGLE INTEGRATOR, SYSTEMS ACROSS ALL PHASES OF THE LIFE CYCLE, FROM RESEARCH & DEVELOPMENT THROUGH SYSTEM FIELDING

DEVELOPMENT ENGINEERING CENTER (RDEC) HAVE ENTERED THE PEO-CCS AND THE CECOM, DIRECTOR RESEARCH & INTO A COOPERATIVE AGREEMENT WHICH WILL:

- APPROACH TO DEVELOPING AND ACQUIRING SYSTEMS (1) FOSTER AND FURTHER THE TEAM FORT MONMOUTH **FOR SOLDIERS IN THE FIELD**
- (2) ENSURE A SINGLE INTEGRATOR CONCEPT AND UNITY THROUGHOUT ALL PHASES OF THE ACQUISITION LIFE OF VISION ACROSS BOTH ORGANIZATIONS AND

HIGH TECHNOLOGY AND SYSTEM INTEGRATION CONTRACTS IMPLEMENTATION OF THIS AGREEMENT WILL COMBINE THE SUPPORTING BOTH ORGANIZATIONS.

## PARTICIPATING ORGANIZATIONS

#### PRIMARY USERS

- PEO-COMMAND & CONTROL SYSTEMS
- COMMAND/CONTROL & SYSTEMS INTEGRATION **DIRECTORATE (C2SID)**
- SPACE & TERRESTRIAL COMMUNICATIONS DIRECTORATE (\$&T)

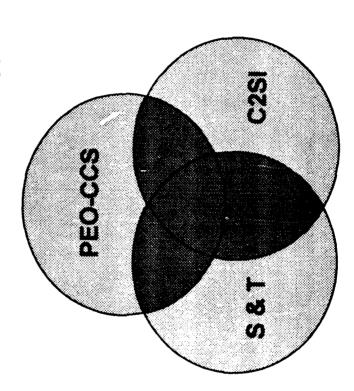
### SECONDARY USERS

- COMBINED ARMS CENTER (CAC) PEO-COMMUNICATIONS
- PEO PM'S

SIGNAL CENTER

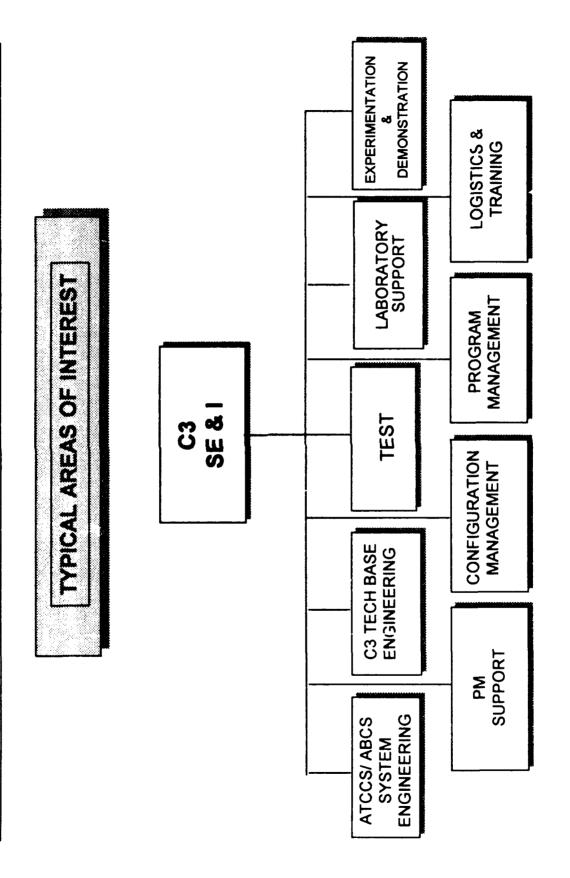
### MERGING REQUIREMENTS

• PEO-CCS ATCCS SYSTEM ENGINEERING & INTEGRATION CONTRACT

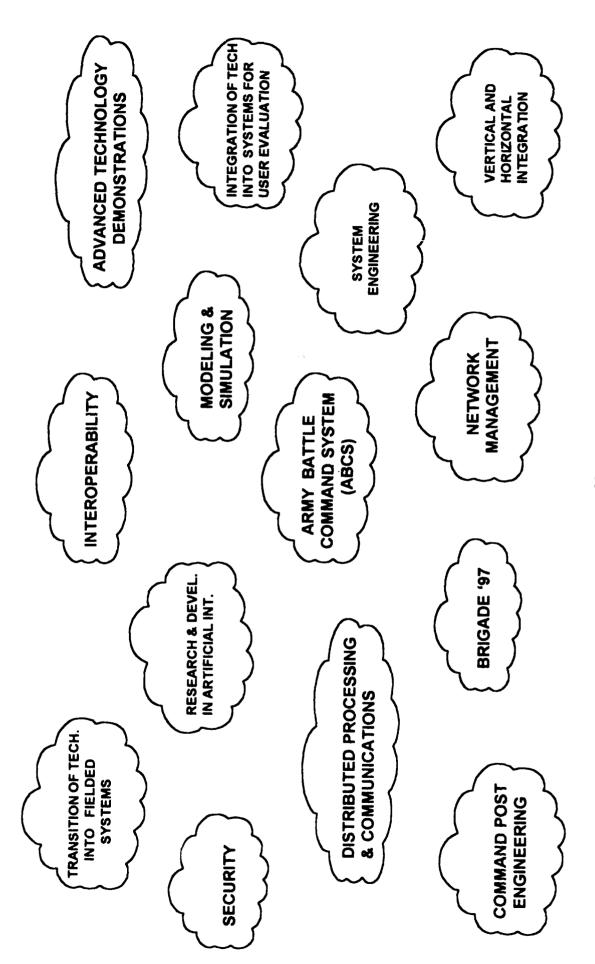


• SPACE & TERRESTRIAL COMMUNICATIONS DIRECTORATE (S&T) (HIGH TECH CONTRACT)

• COMMAND/CONTROL & SYSTEMS INTEGRATION DIRECTORATE (C2SID) (HIGH TECH CONTRACT)



## SAMPLE REQUIREMENTS



### ORGANIZATIONAL CONFLICT OF INTEREST CLAUSE (OCI)

- OCI CLAUSE TO BE INCLUDED IN RFP/CONTRACT
- ATCCS BFA's, CHS, AGCCS, AB2, PRIMES/SUBS **INELIGIBLE TO BID**
- WINNING OFFEROR PROHIBITED FROM PARTICIPATING IN ATCCS BFA's, CHS, AGCCS, AB2 PROGRAMS
- HARDWARE/SOFTWARE EXCLUSION

## CONTRACT OPPORTUNITY

C3 TECHNOLOGY ENGINEERING & INTEGRATION TITLE:

SINGLE INTEGRATOR CONCEPT OBJECTIVE:

SUPPORTS TEAM FORT MONMOUTH

REQUIREMENTS FOR BOTH PEO's & RDEC

**5 YEAR TIME & MATERIALS** CONTRACT TYPE:

**PROPOSED** 

4TH QTR FY94 2ND QTR FY 95 AWARD DATE -RFP RELEASE -KEY MILESTONES:

ESTIMATED VALUE: \$200 - 225 MILLION

MR. ROBERT CARNEVALE / (908) 532-0161 TELEPHONE: POC NAME/

MR. JOE JOHNSON / (908) 544-4797

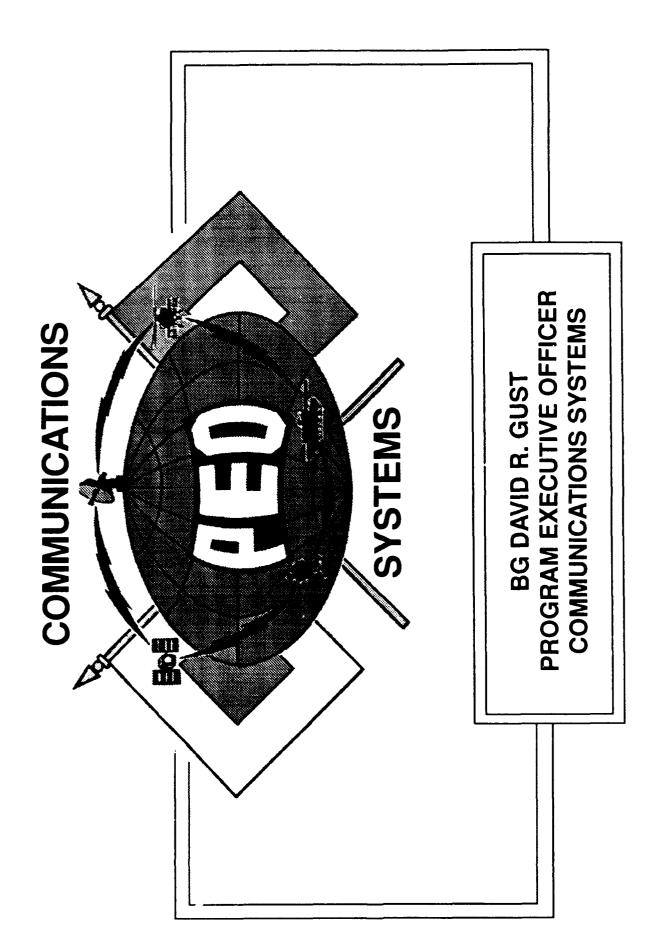
## NOTES

#### SESSION V

"COMMUNICATE"

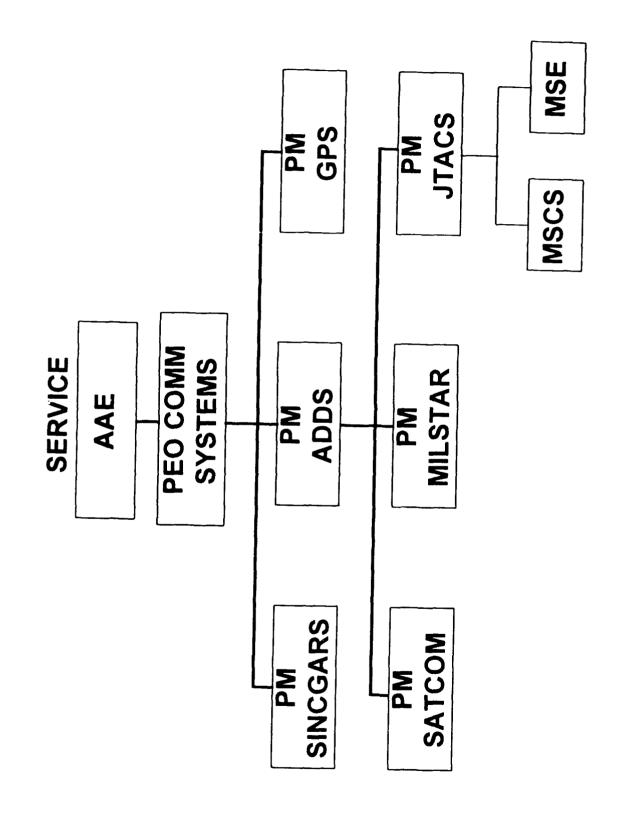
#### **MODERATOR**

BG DAVID R. GUST
PROGRAM EXECUTIVE OFFICER
COMMUNICATIONS SYSTEMS

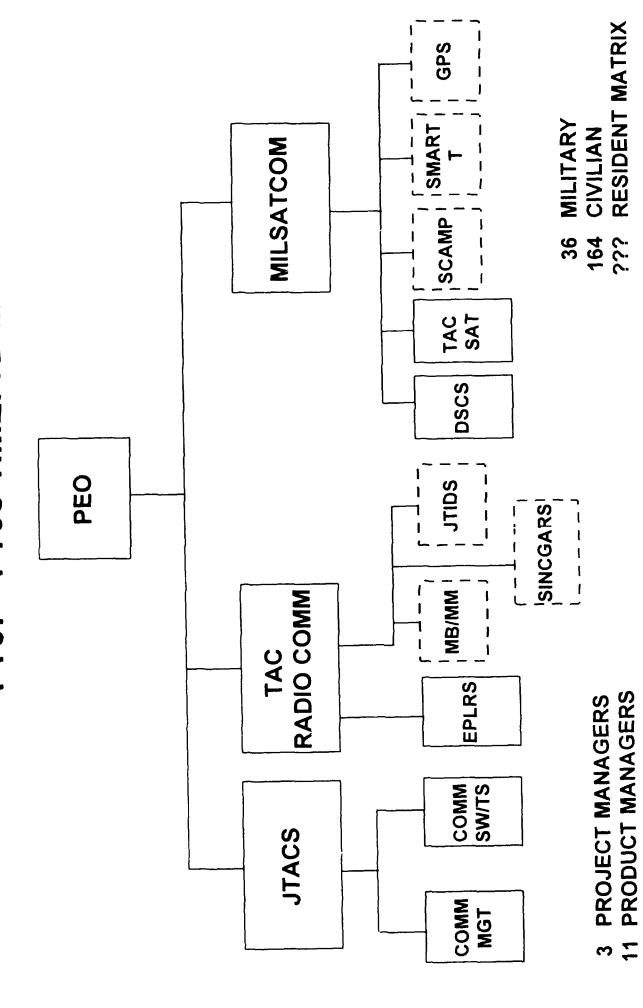


#### UNCLASSIFIED

### PEO COMMUNICATIONS SYSTEMS STRUCTURE



### PEO COMMUNICATIONS SYSTEMS FY97 - FY98 TIMEFRAME



## PEO COMMUNICATIONS SYSTEMS **FOCUS**

- IMPLEMENTING THE SOPHISTICATED TECHNOLOGIES AND MODERNIZATION PLAN. TO THIS END, THE PEO COMM COUNTERING TOMORROW'S THREATS REQUIRES INFORMATION NEEDED TO SUPPORT THE ARMY OBTAINING THE OBJECTIVES OF THE ARMY'S FOCUS IS ON IDENTIFYING, SUPPLYING, AND WARFIGHTER.
- INTERCONNECTING PIPELINES FOR COMMUNICATIONS ON PEO COMM SYSTEMS HARDWARE ARE THE THE BATTLEFIELD
- · TACTICAL RADIO COMMUNICATIONS
- AREA COMMON USER EQUIPMENT
- SATELLITE BASED COMMUNICATIONS

## PEO COMMUNICATIONS SYSTEMS SUPPORTS THE **ARMY'S MODERNIZATION OBJECTIVES**

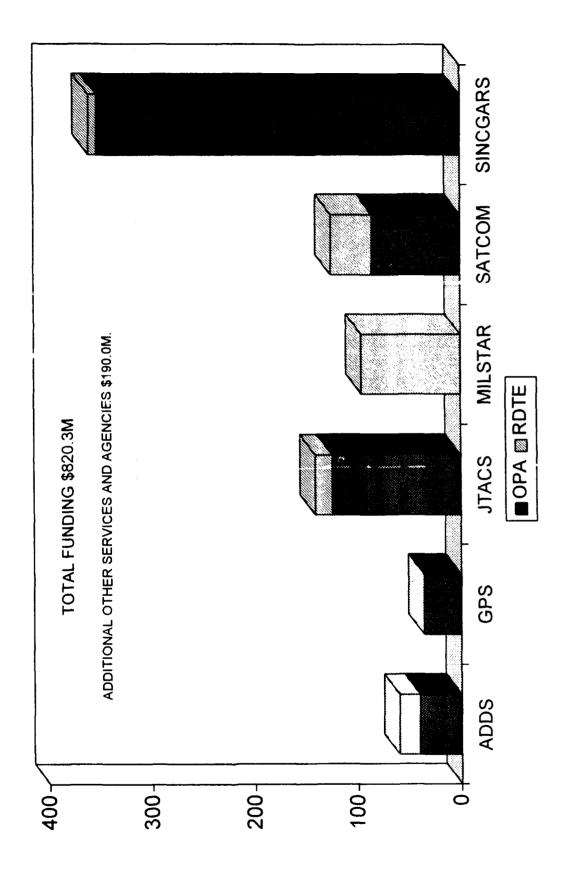
PEO COMM PROGRAMS

CSA's VISION

**ARMY MODERNIZATION OBJECTIVES** 

MSE EPLRS JTIDS EAC COMM	EPLRS JTIDS	EAC COMM MSE EPLRS JTIDS	MSE EAC COMM EPLRS JTIDS	MSE EAC COMM EPLRS JTIDS
ISYSCON SINCGARS SATCOM GPS	ISYSCON GPS	SINCGARS SATCOM GPS	SINCGARS SATCOM GPS	SINCGARS SATCOM GPS
OWN THE SPECTRUM DIGITIZE THE BATTLEFIELD	OWN THE SPECTRUM KNOW THE ENEMY	DIGITIZE THE BATTLEFIELD	OWN THE SPECTRUM DIGITIZE THE BATTLEFIELD	DIGITIZE THE BATTLEFIELD KNOW THE ENEMY
1. WIN THE INFORMATION WAR	2. PROTECT THE FORCE	3. PROJECT AND SUSTAIN THE FORCE	4. CONDUCT PRECISION STRIKES THROUGHOUT THE BATTLEFIELD	5. DOMINATE MANEUVER BATTLE

## PEO COMMUNICATIONS SYSTEMS FY94 PM FUNDING (\$M)



## PERFECT INTEROPERABILITY...

## WHEN OTHER SERVICES BUY

## OUR EXACT SAME HARDWARE

#### ACRONYMS

AAE ARMY ACQUISITION EXECUTIVE

ACUS AREA COMMON USER SYSTEM

ATM ASYNCHRONOUS TRANSFER MODE

COMM MGT COMMUNICATIONS MANAGEMENT

COMSEC COMMUNICATIONS SECURITY

DDS DEFENSE DATA SERVICE

DISA DEFENSE INFORMATION SYSTEMS AGENCY

DSCS DEFENSE STRATEGIC COMMUNICATION SYSTEM

EAC COMM ECHELONS ABOVE CORPS COMMUNICATIONS

EHF EXTREME HIGH FREQUENCY

EMD ENGINEERING & MANUFACTURING DEVELOPMENT

EPLRS ENHANCED POSITION LOCATION REPORTING SYSTEM

FDR FUTURE DATA RADIO

FSP FULL SCALE PRODUCTION

HF HIGH FREQUENCY

IOC INITIAL OCCUPANCY CAPABILITY

ISYSCON INTEGRATED SYSTEM CONTROL

JIEO JOINT INTEROPERABILITY ENGINEERING ORGANIZATION

JTIDS JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM

MILSATCOM MILITARY SATELLITE COMMUNICATIONS

MB/MM MULTIBAND/MULTIMODE

MSCS MULTI-SERVICE COMMUNICATIONS SYSTEMS

MSE MOBILE SUBSCRIBER EQUIPMENT

MTBOMF MEAN-TIME BETWEEN OPERATIONAL MISSION FAILURE

NBC NUCLEAR, BIOLOGICAL, CHEMICAL

NDI NON-DEVELOPMENTAL ITEM

MSA NATIONAL SECURITY AGENCY

OPA OTHER PROCUREMENT ARMY

ORD OPERATIONAL READINESS DIRECTIVE

PEO COMM PROGRAM EXECUTIVE OFFICER, COMMUNICATIONS SYSTEMS

PM ADDS PROJECT MANAGER, ARMY DATA DISTRIBUTION SYSTEM

PM GPS PROJECT MANAGER, GLOBAL POSITIONING SYSTEM

PM JTACS PROJECT MANAGER, JOINT TACTICAL AREA

COMMUNICATIONS SYSTEMS

PM MILSTAR PROJECT MANAGER, MILSTAR (ARMY)

PM SATCOM PROJECT MANAGER, SATELLITE COMMUNICATIONS

PM SINCGARS PROJECT MANAGER, SINGLE CHANNEL GROUND & AIRBORNE

RADIO SYSTEMS

R&D RESEARCH & DEVELOPMENT

RDTE RESEARCH, DEVELOPMENT & TEST EQUIPMENT

RF RADIO FREQUENCY

SCAMP SINGLE CHANNEL ANTI-JAM MANPORTABLE TERMINAL

SHF SUPER HIGH FREQUENCY

SSCN SECURE SURVIVABLE COMMUNICATION NETWORK

SMART-T SECURE MOBILE ANTI-JAM RELIABLE TACTICAL-TERMINAL.

SSCN SECURE SURVIVABLE COMMUNICATION NETWORK

STAR-T SUPER HIGH FREQUENCY TRI-BAND ADVANCED

RANGE EXTENSION TERMINAL

TAC RADIO COMM TACTICAL RADIO COMMUNICATIONS

TACSAT TACTICAL SATELLITE

TBD TO BE DETERMINED

TRANSEC TRANSMISSION SECURITY

UHF

ULTRA HIGH FREQUENCY

VHF

VERY HIGH FREQUENCY

### NOTES



# DIGITAL BATTLEFIELD COMMUNICATIONS

JOSEPH J. PUCILOWSKI, Jr.

DIRECTOR, SPACE AND TERRESTRIAL RESEARCH, DEVELOPMENT AND ENGINEERING CENTER COMMUNICATIONS

## UNCLASSIFIED

#### POINT PAPER

SUBJECT: Digital Battlefield Communications

EXECUTIVE SUMMARY: The Digital Battlefield Communications Program is a five year effort to develop and demonstrate prototype communication equipment and software to distribute multimedia information seamlessly to Brigade and below units on the move. This effort is a proposed new Army ATD.

The objectives are to demonstrate a secure, robust, seamless, digital multimedia information transport capability for the Army tactical user that is compliant with, and exploits, engineering commercial standards and the global grid architecture. (from our Quad chart).

The program is designed to satisfy the "information pull" required by the warfighter of the next decade by eliminating the current constraints of limited bandwidth, mobility, and interoperability. The end product will be warfighter access, whenever and wherever needed, to large volumes of imagery, intelligence and logistics data necessary to support split based operations worldwide.

Two major opportunities expected over the next few years include the development of a prototype Radio Access Point (RAP), required to extend wideband information access to forward mobile fighting elements, and an effort to exploit the anticipated commercial offering of satellite Personal Communications Services (PCS) by supplementing the commercial satellite constellation with surrogate satellites in tactical manned or unmanned aircraft. RFP for the RAP is expected in FY 97, for a demonstration in FY 99. RFP for the Surrogate Satellite PCS effort is expected in FY 96, for a demonstration in FY 98.

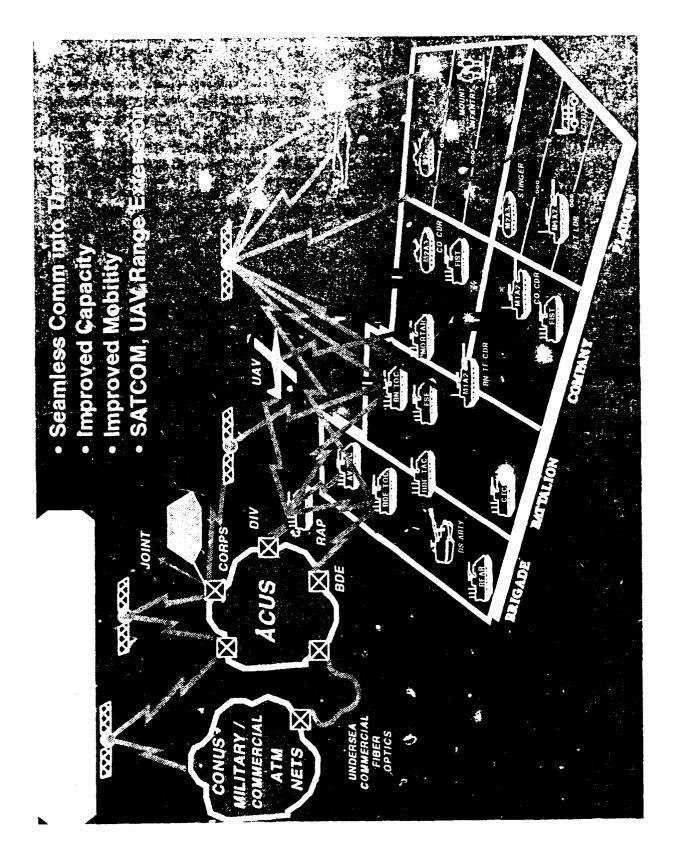
BRIEFER: Joseph J. Pucilowski, Jr., Director, Space & Terrestrial Communications Directorate, AMSEL-RD-ST-D, (908) 544-4449.

ACTION OFFICER
Paul Sass
Project Manager for Digital
Battlefield Communications
(908) 544-2419

BEST AVAILABLE COPY

## DIGITAL BATTLEFIELD COMMUNICATIONS DESCRIPTION

AND DEMONSTRATE PROTOTYPE COMMUNICATION PROGRAM IS A FIVE YEAR EFFORT TO DEVELOP THE DIGITAL BATTLEFIELD COMMUNICATIONS THE PROJECT IS BEING NOMINATED TO BE AN EQUIPMENT AND SOFTWARE TO DISTRIBUTE ADVANCED TECHNOLOGY DEMONSTRATION. **MULTIMEDIA INFORMATION SEAMLESSLY TO** BRIGADE AND BELOW UNITS ON THE MOVE.



## DIGITAL BATTLEFIELD COMMUNICATIONS STATUS

# A EXISTING OPERATIONAL CAPABILITIES

- OBTRUSIVE ON-THE-MOVE UHF SATELLITE ANTENNA, NO CAPABILITY FOR SHF
- MSE WITH TPN (16Kbps), EPLRS (1.2Kbps), SINCGARS (< 4.8 Kbps)
- STOVE PIPE RADIO NETWORKS
- MODELLING CAPABILITY INADEQUATE FOR COMM **SYSTEMS ENGINEERING**

## DIGITAL BATTLEFIELD COMMUNICATIONS STATUS (CONT)

# B EXISTING CONCEPTS/TECHNOLOGIES FOR R&D

- CONFORMAL ANTENNA ARRAY MICROSTRIP SLOTS, **PHOTONICS**
- HIGH CAPACITY DATA RADIO
- **UAV RADIO RELAY**
- NETWORK MODELLING AND ENGINEERING TOOLS
- · MULTIFUNCTIONAL RADIO
- · ATM, MULTIMEDIA SWITCHING
- PERSONAL COMMUNICATIONS SERVICES (PCS)

## DIGITAL BATTLEFIELD COMMUNICATIONS **OBJECTIVES**

- SEAMLESS ROUTING
- HIGH VOLUME COMMUNICATIONS ON THE MOVE
- COMPATIBILITY OF LEGACY SYSTEMS WITH EMERGING COMMERCIAL TECHNOLOGY
- HIGH CAPACITY MULTIMEDIA SERVICES
- MULTILEVEL SECURITY

## DIGITAL BATTLEFIELD COMMUNICATIONS REQUIREMENTS

- 45 MBS TO 155 MBS TRUNK RADIO (ON-THE-MOVE)
- UHF CONFORMAL, LOW PROFILE SATELLITE ANTENNA
- SHF LOW PROFILE SATELLITE ANTENNA
- RANGE EXTENSION
- WIDEBAND TRUNK RADIO
- SINCGARS
- EPLRS
- WIDEBAND PACKET RADIO

## DIGITAL BATTLEFIELD COMMUNICATIONS REQUIREMENTS (CONT'D)

- MULTIFUNCTIONAL RADIO
- SINCGARS
- ITER
- MSR1
- WIDEBAND PACKET RADIO
- TACSAT
- **NETWORK MANAGEMENT TOOLS**
- HIGH LEVEL PLANNING
- DETAIL NETWORK PLANNING/ENGINEERING
  - MONITORING
- RECONFIGURATION

## DIGITAL BATTLEFIELD COMMUNICATIONS **PAYOFFS**

- SEAMLESS DIGITAL COMMUNICATIONS
- COMMAND AND CONTROL ON THE MOVE
- COMMUNICATIONS RANGE EXTENSION
- IMPROVED SPEED OF SERVICE
- COMMUNICATIONS RELIABILITY/SURVIVABILITY
- **MULTIMEDIA OPERATIONS**
- SITUATION AWARENESS

### DIGITAL BATTLEFIELD COMMUNICATIONS SHORT-TERM MILESTONES FY 95

- SYSTEM ARCHITECTURE AND REQUIREMENTS DEFINITION
- SIMULATIONS OF TACTICAL DATA NETWORKS TO DETERMINE "HOT SPOTS"
- MODEL TRUNK RADIO
- **DEMONSTRATE WIDEBAND COMMUNICATIONS** NETWORK

### DIGITAL BATTLEFIELD COMMUNICATIONS **LONG-TERM MILESTONES** FY 96-99

- COMPLETE SYSTEM COMPONENTS AS DEFINED BY ARCHITECTURE ANALYSIS
- CONFORMAL/LOW PROFILE SATCOM ANTENNAS
- WIDEBAND DATA RADIO
- RADIO ACCESS POINT
- NETWORK MANAGEMENT TOOLS
- MULTIBAND RADIO
- RADIO RELAY
- MODELLING AND SIMULATION
- MILITARY EXPLOITATION OF COMMERCIAL PCS

## DIGITAL BATTLEFIELD COMMUNICATIONS FUNDING PROFILE (\$M)

RDTE

FY-95 7 - 1

· 6

**FY-96** 

11 - 13

2 - 2

FY-98

FY-97

FY-99

TOTAL 40 - 52

# CONTRACT OPPORTUNITY

TITLE: RADIO ACCESS POINT (RAP)

**OBJECTIVE: BUILD PROTOTYPE OF RAP AND DEMONSTRATE ITS CAPABILITY**  PROPOSED CONTRACT TYPE: COMPETITIVE; COST PLUS AWARD FEE

**CONTRACT AWARD IN FY98 DEMONSTRATION IN FY99 KEY MILESTONES: RFP IN MID FY97** 

EST. VALUE: \$ 3-5M

POC: MR. PAUL SASS, (908)544-2419

# CONTRACT OPPORTUNITY

TITLE: SURROGATE SATELLITE PCS

TO DEVELOP A PROTOTYPE PCS SYSTEM UTILIZING A SURROGATE SATELLITE **OBJECTIVE:** 

PROPOSED CONTRACT TYPE: COMPETITIVE;

**PLATFORM** 

**COST PLUS AWARD FEE** 

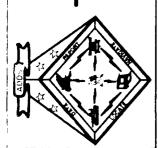
RFP IN FY96 **KEY MILESTONES:**  **CONTRACT AWARD IN FY97** 

**DEMONSTRATION IN FY98** 

EST. VALUE: \$2-4M

POC: MR. PAUL SASS, (908)544-2419

### NOTES



# THE FUTURE DATA RADIO (FDR)

### ARMY DATA DISTRIBUTION SYSTEM (ADDS) **DEPUTY PROJECT MANAGER** HAROLD H. BAHR

### UNCLASSIFIED

#### POINT PAPER

SUBJECT: The Future Data Radio (FDR)

OBJECTIVE: The FDR is a mobile radio transceiver which shall satisfy the greatly expanded data needs of a battalion and brigade task force to perform airland operations. It provides an ennanced capability for rapid reconfiguration to adapt to the deployment requirements of the user.

STATUS: The FDR is currently in the Pre-Concept Exploration and Definition Phase of the Defense Materiel Acquisition Process. A Mission Needs State ant (MNS) is currently going through the final stages of staffing by the user proponent, the Army Signal Center, Fort Gordon, Georgia. The basis of the MNS is a new technical approach which has the potential to be a more cost effective solution to the existing communication "legacy systems" that are currently - or about to be - deployed.

#### FACTS:

- Contract Opportunity: Manufacture 3,000 to 5,000 radios to equip the Active Army.
- Type of Contract: Competitive Fixed Price.
- Milestones: Contingent upon evolving results associated with "digitizing the battlefield".
- Work will involve tasks related to:
  - Antennas.
  - Radio Frequency (RF) Front Ends.
  - Open Architecture.
  - Simultaneous Operations.
  - Computer Processing.
  - Adaptive Networking.
  - Multi-Level Security.
  - Power Conservation.
  - Micro Processor Programmability.
  - Packaging.

BRIEFER: Mr. Harold H. Bahr, Deputy Project Manager, Army Data Distribution System (ADDS), SFAE-CM-ADD, (908) 532-4251.

ACTION OFFICER: Harold H. Bahr OPM ADDS (908) 532-4251

# THE FUTURE DATA RADIO (FDR) DESCRIPTION

PANDED DATA NEEDS OF A BATTALION AND THE FDR IS A MOBILE RADIO TRANSCEIVER WHICH SHALL SATISFY THE GREATLY EX-BRIGADE TASK FORCE TO PERFORM AIR-FIGURATION TO ADAPT TO THE DEPLOY-LAND OPERATIONS. IT PROVIDES AN EN-HANCED CAPABILITY FOR RAPID RECON-MENT REQUIREMENTS OF THE USER.

# THE FUTURE DATA RADIO (FDR)

## THE FDR SHALL MAXIMIZE:

- JOINT AND COMBINED INTEROPERABILITY.
- ABILITY TO COMMUNICATE TO SYNCHRONIZE COMBAT.
- CAPABILITY TO NAVIGATE AND DETERMINE POSITION LOCATION.
- ABILITY TO TRANSPORT DIGITAL DATA IN AN ELECTRONIC WARFARE ENVIRONMENT.
- · ABILITY TO PERFORM OVER-THE-AIR REKEYING.

## THE FUTURE DATA RADIO (FDR) **ATTRIBUTES**

- MULTI-FUNCTIONAL
- DATA
- VOICE
- MULTI-MODE
- HF/VHF/UHF/SHF/EHF
- MULTIPLE BANDWIDTHS/WAVEFORMS
- SECURE/NON-SECURE
- OVER-THE-AIR REKEYING
- INTEROPERABLE WITH
- SINCGARS
- MSE
- EPLRS
- JTIDS
- GPS
- MILSTAR
- OTHER SATELLITE BASED SYSTEMS

# THE FUTURE DATA RADIO (FDR) ATTRIBUTES (CON'T)

- SIMULTANEOUS RECEPTIONS
- SEAMLESS INFORMATION EXCHANGE
  - HORIZONTAL
    - VERTICAL
- · JAM RESISTANT
- EMBEDDED COMSEC
- · HIGH-RELIABILITY
- LOW POWER CONSUMPTION
- · LOW-COST
- LIGHT-WEIGHT

### THE FUTURE DATA RADIO (FDR) REQUIREMENTS

#### DEAL

- SIMULTANEOUS WAVEFORM OPERATION
- SOFTWARE RECONFIGURABLE WAVEFORMS
- BACKWARD COMPATIBLE
- MULTI-LEVEL SECURITY
- SECURE/NON-SECURE VOICE & DATA
- OVER-THE-AIR-REKEYING
- RANGE UP TO 12,000 KILOMETERS
- 12 LBS WEIGHT W/O BATTERY
- 24 HOUR CONTINUOUS OPERATION

# THE FUTURE DATA RADIO (FDR) REQUIREMENTS (CONTINUED)

## WAVEFORMS (PRIORITY ORDER)

- SINCGARS
- MSE
- EPLRS
- JTIDS
- GPS
- MILSTAR
- OTHER SATELLITE BASED SYSTEMS

# THE FUTURE DATA RADIO (FDR)

## NEEDED TECHNOLOGIES FOR R&D

- ANTENNAS
- RADIO FREQUENCY (RF) FRONT ENDS
- **OPEN ARCHITECTURE**
- SIMULTANEOUS OPERATIONS
- SIGNAL PROCESSING
- **ADAPTIVE NETWORKING**
- MULTI-LEVEL SECURITY
- POWER CONSERVATION
- PROGRAMMABILITY
   PACKAGING

# THE FUTURE DATA RADIO (FDR) CONTRACT OPPORTUNITY

RADIOS TO EQUIP ACTIVE ARMY OBJECTIVE: MANUFACTURE 3000 TO 5000

CONTRACT TYPE: COMPETITIVE

**EVOLVING RESULTS** CONTINGENT UPON KEY MILESTONES:

ASSOCIATED WITH

DIGITIZING THE BATTLEFIELD

ESTIMATED COST: TBD

POC: MR. HAROLD H. BAHR, (908) 532-4251

### NOTES

### SUPER HIGH FREQUENCY (SHF) TRI-BAND ADVANCED RANGE EXTENSION TERMINAL (STAR-T)

PRODUCT MANAGER, TACTICAL SATELLITE PROJECT MANAGER, SATELLITE LTC MICHAEL R. MAZZUCCHI COMMUNICATIONS **TERMINALS** 



UNCLASSIFIED



#### POINT PAPER

SUBJECT: Super High Frequency (SHF) Tri-band Advanced Range Extension Terminal (STAR-T)

OBJECTIVE: The STAR-T program will provide tri-band, multichannel tactical satellite terminals to extend the range of common user communication systems. Mounted on a High Mobility Multi-purpose Wheeled Vehicle, it will be capable of operating over both commercial and military SHF satellites. With antenna and power unit mounted on the vehicle, the terminal is fully self-contained and easily transported by C-130 and larger aircraft. Additionally, selected terminals will have an integrated switching capability interfacing with commercial and military switching systems. The terminal has strong joint service applicability and will replace the majority of existing tactical SHF multichannel terminals.

#### FACTS:

- Contract Opportunity: Produce and field between 150 and 350 nondevelopmental item (NDI) multichannel tactical satellite terminals
- Type of Contract: Competitive Firm Fixed Price
- Schedule: Acquisition schedule in development, First Unit Equipped scheduled for 1999.
- Program will result in:
  - 1. Increased satellite communication capacity
  - 2. Greater flexibility (Multiband, Switching, Commonality)
  - 3. Reduced manpower and required strategic lift
  - 4. Little research and development
  - 5. Much reduced acquisition time and cost

BRIEFER: LTC Michael R. Mazzucchi, Product Manager, Tactical Satellite Terminals, SFAE-CM-SC-TT, (908) 532-6105

ACTION OFFICER: Mr. Ed Velez PM TACSAT (908) 532-0994



#### STAR-T

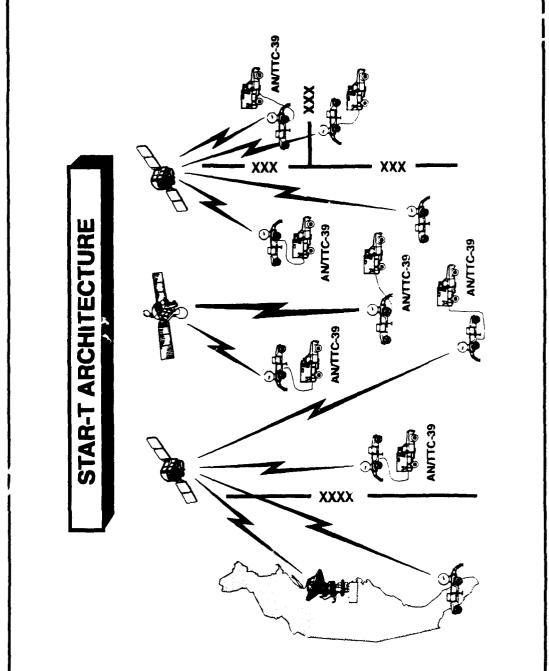


HAS STRONG JOINT SERVICE APPLICABILITY AND **MULTICHANNEL TACTICAL SATELLITE TERMINAL** OVER COMMERCIAL AND MILITARY SATELLITES. **MOUNTED ON A HIGH MOBILITY MULTIPURPOSE** WHEELED VEHICLE CAPABLE OF OPERATING INTERFACING WITH COMMERCIAL AND JOINT **MILITARY SWITCHING SYSTEMS. THE STAR-T** SELECTED TERMINALS WILL ALSO HAVE AN WILL REPLACE CURRENT TACTICAL SHF INTEGRATED SWITCHING CAPABILITY THE STAR-T IS A SELF CONTAINED, MULTICHANNEL TERMINALS.

### STAR-T

### **ARCHITECTURE**









#### STAR-T



#### **KU BAND** TRI-BAND CAPABILITY TRI-BAND CAPABILITY **CBAND KU BAND**



### HIGH MOBILITY STAR-T

& SELF CONTAINED



### **CURRENT SYSTEMS**

### THE EVOLUTION OF TACTICAL MULTICHANNEL SHF SYSTEMS

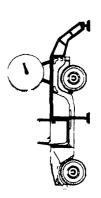


HUB-SPOKE CONFIGURATION



 LIMITED DEPLOYABILITY 1960'S TECHNOLOGY LIMITED MOBILITY

AN/TSC-85B



TRI-BAND TERMINAL

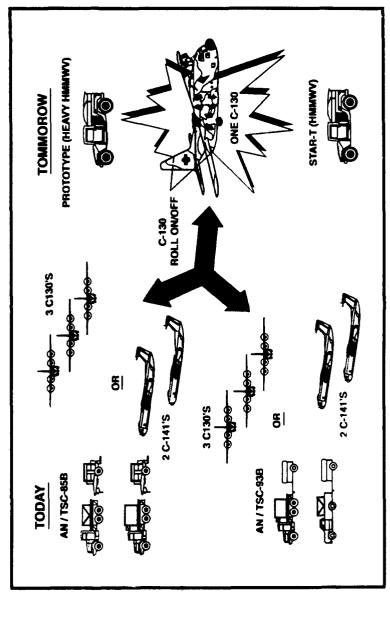
448



## HIGH MOBILITY



## **DEPLOYABILITY COMPARISON**









#### STAR-T STATUS



## MISSION NEEDS STATEMENT APPROVED BY **DEPARTMENT OF ARMY**

**OPERATIONAL REQUIREMENTS DOCUMENT** APPROVED BY TRAINING AND DOCTRINE COMMAND



#### STAR-T OBJECTIVES



- **ACQUIRE UP TO 150 TERMINALS TO MEET ARMY** REQUIREMENTS.
- PREPARE TO ACQUIRE UP TO AN ADDITIONAL 200 TERMINALS TO MEET OTHER SERVICE REQUIREMENTS.
- PURSUE NON-DEVELOPMENTAL ITEM (NDI) **ACQUISITION STRATEGY.**



## STAR-T TOP LEVEL REQUIREMENTS



- OPERATE IN C,X, AND KU FREQUENCY BANDS.
- MOUNTED & SELF-CONTAINED ON SINGLE HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (POWER & ANTENNA).
- MOUNTED ON REMOVEABLE PALLET.



## STAR-T TOP LEVEL REQUIREMENTS (CONTINUED)



- **USER SYSTEM & COMMERCIALLY COMPATIBLE EMBEDDED AND INTEGRATED ARMY COMMON** SWITCH.
- **TOTAL AGGREGATE DATA RATE OVER 8 MEGA** BITS/SECOND.
- QUICK SET-UP/TEAR-DOWN AND ABILITY TO CHANGE BETWEEN FREQUENCY BANDS.



#### STAR-T MILESTONES



### FY-95 & BEYOND

- REQUIREMENTS VALIDATION & PROGRAM INITIATION EXPECTED IN TERM.
- FIRST UNIT EQUIPPED IS SCHEDULED FOR **FISCAL YEAR 1999**



#### STAR-T PAYOFFS



- INCREASED SATELLITE COMMUNICATION WARFIGHTER COMMAND & CONTROL. CAPACITY AVAILABLE TO SUPPORT
- GREATER FLEXIBILITY (MULTIBAND, SWITCHING, COMMONALITY).
- REDUCED MANPOWER NECESSARY.
- REDUCED STRATEGIC AIRLIFT NECESSARY.
- LITTLE RESEARCH AND DEVELOPMENT REQUIRED
- MUCH REDUCED ACQUISITION TIME AND COST.



# CONTRACT OPPORTUNITY



ADVANCED RANGE EXTENSION TERMINAL TITLE: SUPER HIGH FREQUENCY TRI-BAND

**OBJECTIVE: ACQUIRE BETWEEN 150 AND 350** NON-DEVELOPMENTAL ITEM **MULTICHANNEL TACTICAL** SATELLITE TERMINALS

CONTRACT TYPE: COMPETITIVE, FIRM FIXED PRICE **PROPOSED** 

DEVELOPED, FIRST UNIT EQUIPPED KEY MILESTONES: ACQUISITION SCHEDULE NOT SCHEDULED FOR FY 1999

**ESTIMATED VALUE: TBD** 

POC NAME/TELEPHONE: LTC MICHAEL MAZZUCCHI

(908) 532-0994

# NOTES

### STRATEGIC / BASE COMMUNICATIONS





# STRATEGIC/BASE COMMUNICATIONS

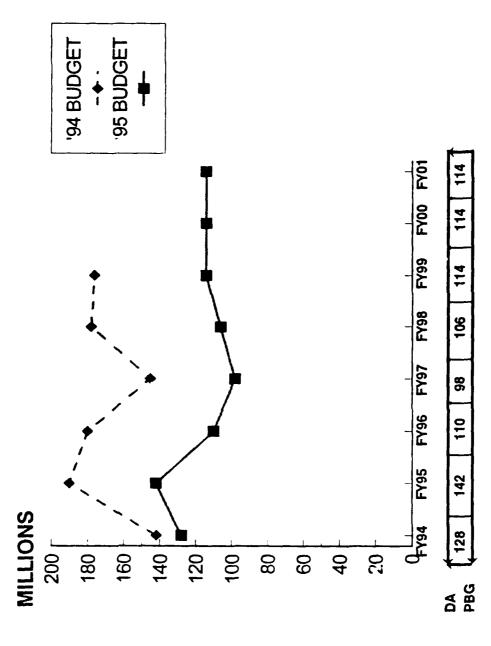
# THOMAS J. MICHELLI

# DEPUTY, INFORMATION SYSTEMS MANAGEMENT ACTIVITY

12 MAY 1994

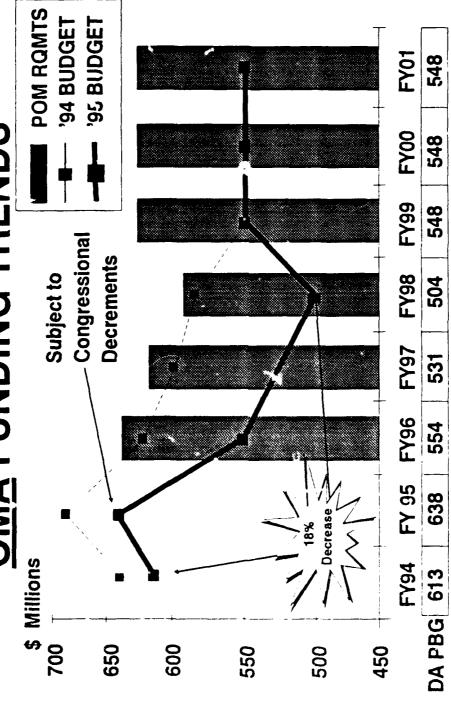


# **OPA FUNDING TRENDS**





# OMA FUNDING TRENDS





### TOPICS



WHITE SANDS MISSILE RANGE TEST SUPPORT NETWORK (WSMR-TSN)

BRIEFER: LTC DEKANTER

PRODUCT MANAGER, WESTERN HEMISPHERE TRANSMISSIONS SYSTEMS

OUTSIDE CABLE REHABILITATION II (OSCAR II)

BRIEFER: COL DENNIS M. MOEN

PROGRAM MANAGER, DEFENSE COMMUNICATIONS AND ARMY SWITCHED SYSTEMS

ARMY PERSONAL COMPUTER-I (PC-I) ARMY PORTABLE COMPUTER-I (PORTABLE-I) SMALL MULTIUSER COMPUTER-II (SMC-II)

BRIEFER: COL DENNIS M. MOEN

PROJECT MANAGER, DEFENSE COMMUNICATIONS AND ARMY SWITCHED SYSTEMS

# NOTES

# WHITE SANDS MISSILE RANGE **TEST SUPPORT NETWORK**

LTC SCIPIO DEKANTER

PRODUCT MANAGER, WESTERN HEMISPHERE TRANSMISSION SYSTEMS/

DEFENSE COMMUNICATIONS AND ARMY TRANSMISSION SYSTEMS PROJECT MANAGER,

# UNCLASSIFIED

### CONTRACT OPPORTUNITIES FACT SHEET

### PROGRAM MANAGER, ARMY INFORMATION SYSTEMS/ INFORMATION SYSTEMS MANAGEMENT ACTIVITY

### PROGRAM: WHITE SANDS MISSILE RANGE - TEST SUPPORT NETWORK (WSMR-TSN)

This program will greatly increase the coverage of the White Sands communications network and facilitate the ability of the range to supply connectivity to its users. The current system is a collection of equipment dating from the 1950's to the present which does not provide the range coverage necessary to meet the current and projected WSMR test mission. It is manpower intensive and logistically unsupportable in key areas. The TSN will fully automate operation and maintenance of the communications system while reducing manpower requirements and increasing reliability, flexibility, maintainability, and range coverage using commercial off the shelf/non-developmental items.

### POINT OF CONTACT:

Mr. Dennis Bradley, Procuring Contracting Officer, USACECOM, ATTN: AMSEL-ACCC-C-CS, Ft Monmouth, NJ 07703-5000, (908) 532-2510.

### DESCRIPTION OF SYSTEM:

A high capacity SONET fiber optic backbone transmission system will connect 391 sites around the range. Circuit switching and reconfiguration will be accomplished with automated, remotely controlled digital cross connect equipment and all network equipment will be remotely controlled and maintained by an automated network management system (NMS) which can be operated by one computer terminal located in Building 123 in the main post area of the range. Additional terminals will be installed in Building 123 to augment the operability and maintainability of the NMS. Digital end to end connectivity will be provided through DS-0 to DS-1 interface devices called digital end devices (DEDs). These devices will interface to customer test and communications equipment and voice intercoms throughout the range.

### STATUS:

The draft Acquisition Requirements Package (ARP) was released to CECOM on 14 March 94 and a draft Request for Proposals (RFP) was released in early April 94. The final RFP is scheduled for release in August 94 with contract award scheduled for June 95.

### TYPE OF CONTRACT:

This will be a firm-fixed-price contract awarded utilizing full and open competition. The effort will be accomplished in three phases, each representing a useable segment of the overall project. The basic award will represent phase 1. Phases 2 and 3 will be options. Additional options will be provided for operations, maintenance, and repair and return of line replaceable units.

### MILESTONES:

Draft RFP released to Industry
RFP released to Industry
Proposals Due
Contract Award

April 94 August 94 45-60 Days June 95

# WSMR-TSN PROGRAM DESCRIPTION

- A HIGH CAPACITY SONET FIBER OPTIC BACKBONE TRANSMISSION SYSTEM
- ACCOMPLISHED WITH AUTOMATED, REMOTELY CONTROLLED DIGITAL CIRCUIT SWITCHING AND RECONFIGURATION WILL BE CROSS CONNECT EQUIPMENT
- MAINTAINED BY AN AUTOMATED NETWORK MANAGEMENT SYSTEM ALL NETWORK EQUIPMENT WILL BE REMOTELY CONTROLLED AND WHICH CAN BE OPERATED FROM A SINGLE COMPUTER TERMINAL

# WSMR-TSN PROGRAM DESCRIPTION

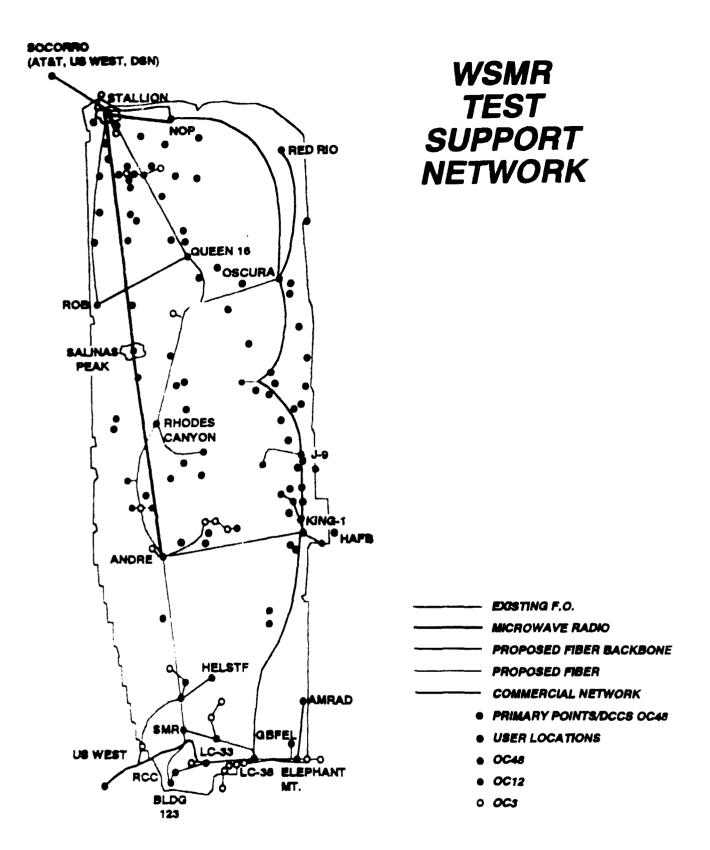
(Cont 1)

DIGITAL END TO END CONNECTIVITY WILL BE PROVIDED THROUGH DS-0 TO DS-1 INTERFACE DEVICES CALLED DIGITAL END DEVICES (DED'S)

ALL COMMERCIAL OFF THE SHELF/NON-DEVELOPMENTAL ITEMS

INTEGRATED LOGISTICS SUPPORT PACKAGE: O&M OPTIONS FOR EACH PHASE IN 1 YEAR INCREMENTS

THREE PHASED APPROACH



# CURRENT INFORMATION SYSTEM MISSION **WSMR-TSN**

- TRANSMIT INFORMATION (VOICE, TEST DATA, TELEMETRY AND VIDEO) TO AND FROM TEST SITES/LAUNCH COMPLEXES
- PROCESSING CENTERS, INTERNAL AND EXTERNAL COMMAND AND CONTROL, DATA REDUCTION AND **LOCATIONS/LAUNCH COMPLEXES TO VARIOUS** TRANSMIT INFORMATION FROM FIELD TO WSMR

# **CURRENT INFORMATION SYSTEM MISSION WSMR-TSN**

(Cont 1)

- TRANSPORT INFORMATION SECURELY IN REAL TIME TO COOPERATING MISSION ELEMENTS:
- MISSION CONTROL
- MISSION OPERATIONS
- RANGE SAFETY
- INSTRUMENTED MEASUREMENT SYSTEMS
- TARGET CONTROL SYSTEMS
- DATA ANALYSIS / REDUCTION CENTERS

## **WSMR-TSN**

## **OBJECTIVES**

- CONTROLLED AND FULLY SUPPORTED COMMUNICATIONS NETWORK IMPLEMENT AN INTEGRATED, ALL DIGITAL, AUTOMATICALLY
- PROVIDE RANGE SIGNAL SECURITY NETWORK-WIDE
- DEVELOP RELIABLE AND EFFICIENT DATA INFORMATION TRANSPORT NETWORK WITH GREATER RANGE COVERAGE
- IMPROVE RANGE TEST RECONFIGURATION TURN-AROUND TIME
- PROVIDE CUSTOMERS WITH HIGH QUALITY, HIGH DATA CAPACITY, LOW COST, FASTER AND FLEXIBLE DATA ACQUISITION TRANSPORT SERVICES

# **WSMR-TSN**

# REQUIREMENTS

- 10-11 DECEMBER 1990 MEETING BETWEEN PM TS, ISEC, ISEC-CONUS, **AND WSMR-DOIM**
- OPERATIONAL REQUIREMENTS DOCUMENT, DATED OCTOBER 1992
- RANGE BACKBONE TRANSMISSION NETWORK
- AUTOMATED TECHNICAL CONTROL FACILITIES
- MODERNIZED RANGE INTERCOM NETWORK
- AUTOMATED NETWORK CONTROL CENTER

## **WSMR-TSN**

### **PAYOFFS**

### • TECHNICAL

- ACCOMMODATE PRESENT AND FUTURE TEST DATA REQUIREMENTS
- REMOTELY CONTROLLED NETWORK
- DIGITAL INTEGRATED NETWORK
- **ACCOMMODATE TECHNOLOGY INSERTION**

## OPERATIONAL

- RELIABLE AND EFFICIENT NETWORK
- REAL TIME DATA TRANSMISSION AND RECOVERY
- LOW COST AND SELF-HEALING CAPABILITIES
  - · SECURITY, PROTECTION AND SAFETY
- MINIMIZE MANPOWER REQUIREMENT

## MAINTAINABILITY

- MINIMIZE EQUIPMENT DOWNTIME
- TOTAL LIFECYLE LOGISTICS SUPPORT

# CONTRACT OPPORTUNITY

- TITLE: WHITE SANDS MISSILE RANGE-TEST SUPPORT NETWORK
- INFRASTRUCTURE AT WSMR TO FACILITATE RANGE OPERATIONS AND **OBJECTIVE: TO UPGRADE THE INFORMATION SYSTEMS** REDUCE OPERATING COSTS AND MANPOWER
- PROPOSED CONTRACT TYPE
- FFP BASIC CONTRACT FOR INITIAL PHASE
- FP OPTIONS FOR TWO SUBSEQUENT PHASES
- FP OPTIONS FOR OPERATION AND MAINTENANCE
- BEST VALUE AWARD
- KEY MILESTONES
- DRAFT RFP RELEASED TO INDUSTRY
- RFP RELEASED TO INDUSTRY
- PROPOSALS DUE
- · CONTRACT AWARD

- **APRIL 1994**
- AUGUST 1994 45-60 DAYS
- **JUNE 1995**
- ESTIMATED VALUE: \$50-\$150 MILLION
- POC: PCO, MR. DENNIS BRADLEY, CECOM, C31 ACQUISITION CENTER, FORT MONMOUTH, NJ (908) 532-2510

# NOTES

479

### REHABILITATION II OUTSIDE CABLE (OSCAR II)

DEFENSE COMMUNICATIONS ARMY SWITCHED SYSTEMS COL DENNIS M. MOEN PROJECT MANAGER AND

# UNCLASSIFIED

### POINT PAPER

SUBJECT: Outside Caple Rehabilitation (OSCAR) II

OBJECTIVE: Provide users with a flexible, easy to use contract vehicle to upgrade and rehabilitate inside/outside cable plants and networks in support of the Power Projection, Command, Control, Communication & Computer Synchronization (P2C4I) program.

### FACTS:

- \* The contract will have provisions to repair and replace existing cable plants
- \* The contract will have the capability of initiating new work (i.e. OPA funding) in order to allow the engineering, installation and testing of new equipment/cable which will allow the installed network to tie into existing and proposed data communication networks.
  - \* Actions to be taken in FY94 include:
    - Issue Draft Request for Proposal (RFP)
    - Issue final RFP
  - \* Actions to be taken in FY 95 include:
    - Evaluation of Proposals
    - Contract Award

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SW

## OSCAR II

COMMAND, CONTROL, COMMUNICATIONS, AND COMPUTERS INFRASTRUCTURE AND UPGRADING OF OUTSIDE AND INSIDE CABLE PLANT IN SUPPORT PROVIDE AN FFP ID/IQ CONTRACT FOR THE REPAIR, REPLACEMENT OF THE POWER PROJECTION, (P2C4I) INITIATIVE

### OSCAR II OBJECTIVES

- COMPREHENSIVE CABLE PACKAGE
- SINGLE SYSTEM INTEGRATOR
- FIRM FIXED PRICED CLINS INDEFINITE DELIVERY / INDEFINITE QUANTITY
- BASE YEAR / 4 OPTION YEARS
- CONUS BASED
- MULTI-SERVICE ACCESS

### OSCAR II REQUIREMENTS

- STATE-OF-THE-ART COMMERCIAL OFF-THE-SHELF (COTS) TECHNOLOGY
- COPPER CABLE
- (SINGLE MODE/ MULTI MODE) FIBER OPTIC CABLE

# OSCAR II REQUIREMENTS

- ASSOCIATED END EQUIPMENT
- MULTIPLEXERS
- SUBSCRIBER CARRIER AND CHANNEL BANK SYSTEMS
- ELECTRONIC NETWORK INTERFACING EQUIPMENT
- CONTRACTOR E, F, I & T

# CONTRACT OPPORTUNITY

TITLE: OUTSIDE CABLE REHABILITATION II (OSCAR II)

PROVIDE A COMPREHENSIVE CONTRACT OBJECTIVE:

VEHICLE FOR THE REPLACEMENT

& UPGRADE OF CONUS BASED INFRASTRUCTURE, TO INCLUDE CABLE

PLANT AND NETWORKING EQUIPMENT

**PROPOSED** 

CONTRACT TYPE: FIRM FIXED PRICE - INDEFINITE

DELIVERY /INDEFINITE QUANTITY

KEY MILESTONES: REQUEST FOR PROPOSAL 4TH QTR FY94 **AWARD 4TH QTR FY95** 

**ESTIMATED VALUE: EXCESS OF \$150M** 

POC: MR. DARYL LENTZ, ISC OA (717) 878-4271 FT RITCHIE, MD (ASPC-RA-SPR)

# NOTES

### ARMY PERSONAL COMPUTER-1 (PC-1)

COL DENNIS M. MOEN
PROJECT MANAGER
DEFENSE COMMUNICATIONS
AND
ARMY SWITCHED SYSTEMS

# UNCLASSIFIED

### POINT PAPER

SUBJECT: Army Personal Computer Contract - 1 (PC-1)

OBJECTIVE: PC-1 is the acquisition of Commercial-Off-The-Shelf (COTS) general purpose personal computers, peripherals, operating systems and office automation software in support of the Army's mission.

### FACTS:

- \* Information Mission Area (IMA) certified products that will support current and next generation of software under POSIX/DOS OSs as well as to replace the aging fielded PC base within the Army.
  - \* All CPUs, monitors and printers will be Energy Star compliant.
- \* Milestones listed below reflect the planned schedule for PC-1. All schedules are planned to provide IDIQ contract coverage for Army users worldwide within the guidelines of the DoD Personal Computer Policy Implementation Plan, FY 1994-FY 1999.

RFP Release 3RD QTR - FY94 Contract Awards 2ND QTR - FY95

\* This will be a Firm-Fixed-Price, Indefinite Delivery/Indefinite Quantity contract. It will be a Best Value evaluation with two awards. Each winning vendor will supply the full CLIN requirement over two years.

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SWM, (908) 532-7910

### PC-1

PERIPHERALS IN SUPPORT OF THE ARMY'S ACQUISITION OF COMMERCIAL OFF-THE-SHELF (COTS) GENERAL PURPOSE PERSONAL COMPUTERS AND

MISSION

### PC-1 OBJECTIVES

- SOFTWARE UNDER POSIX AND DOS SUPPORT NEXT GENERATION OF **OPERATING SYSTEMS**
- ALL COMMERCIAL OFF-THE-SHELF (COTS) PRODUCTS
- FFP ID/IQ CONTRACT (BEST VALUE AWARD)

### PC-1 OBJECTIVES

- **DUAL AWARD (TWO CONTRACTORS)**
- 2 YEAR HW/SW ORDERING
- 24 MONTH MINIMUM WARRANTY
- FIRM FIXED PRICE (FFP) INDEFINITE DELIVERY/INDEFINITE QUANTITY (ID/IQ) (BEST VALUE AWARD)

### PC-1 REQUIREMENTS

- STATE-OF-THE-ART PLATFORMS-COTS
- HARDWARE
- SOFTWARE
- SINGLE USER OPERATING SYSTEMS
  - -- MULTI-USER OPERATING SYSTEMS
- OPEN SYSTEMS STANDARDS
- COMPLIANCE
- INTERCONNECTION PROFILE (GOSIP) GOVERNMENT OPEN SYSTEMS
  - PORTABLE OPERATING SYSTEM INTERFACE FOR COMPUTER ENVIRONMENT (POSIX)

### REQUIREMENTS PC-1

- SYSTEMS CONFIGURATIONS:
- **BUNDLED PC**
- **USER-CONFIGURED PC**
- PERIPHERALS:
- 15" AND 17" MONITORS
- PRINTERS
  PERSONAL COMPUTER MEMORY CARD INTERNATIONAL ASSOCIATION (PCMCIA II)

# CONTRACT OPPORTUNITY

TITLE: ARMY PERSONAL COMPUTER-1 (PC-1)

OF SOFTWARE UNDER POSIX/DOS OS OBJECTIVE: SUPPORT NEXT GENERATION

CONTRACT TYPE: FFP ID/IQ (BEST VALUE AWARD) COTS HW/SW PROPOSED

KEY MILESTONES: RFP RELEASE 3QTR FY 94

**AWARD 2QTR FY 95** 

ESTIMATED VALUE: \$350M-\$550M

POC: HELEN GARAMONE, ISSAA (703) 325-9762 ALEXANDRIA, VA (ISSA-PAO)

### ARMY PORTABLE COMPUTER-1 (PORTABLE-1)

## UNCLASSIFIED

### POINT PAPER

SUBJECT: Army Portable Computer Contract - 1 (Portable-1)

OBJECTIVE: Portable-1 is the acquisition of Commercial-Off-The-Shelf (COTS) general purpose notebook and handheld computers, software and peripherals in support of the Army's mission.

### FACTS:

- \* Information Mission Area (IMA) certified products that will support the Army's portable requirements worldwide.
  - \* All CPUs and printers will be Energy Star compliant.
- \* Milestones listed below reflect the planned schedule for Portable-1. All schedules are planned to provide IDIQ contract coverage for Army users worldwide within the guidelines of the DoD Personal Computer Policy Implementation Plan, FY 1994-FY 1999.

RFP Release 3RD QTR - FY94 Contract Awards 2ND QTR - FY95

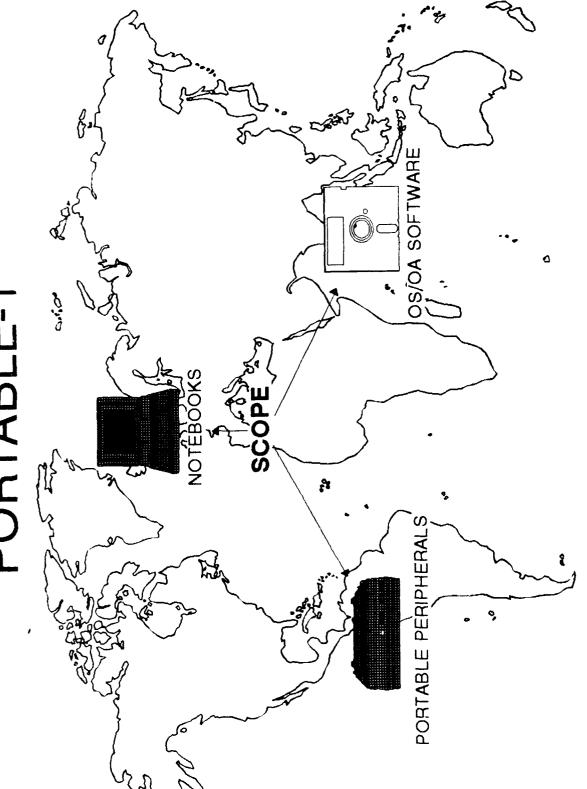
\* This will be a Firm-Fixed-Price, Indefinite Delivery/Indefinite Quantity contract. It will be a Best Value evaluation with two awards. Each winning vendor will supply the full CLIN requirement over two years.

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SWM, (908) 532-7910

## PORTABLE-1

NOTEBOOK AND HANDHELD COMPUTERS ACQUISITION OF COMMERCIAL OFF-THE-AND PERIPHERALS IN SUPPORT OF THE SHELF (COTS) GENERAL PURPOSE **ARMY'S MISSION** 

## PORTABLE-1



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### PORTABLE-1 REQUIREMENTS

- STATE-OF-THE-ART PLATFORMS-COTS
- HARDWARE
- SOFTWARE
- CARRYING CASES

### REQUIREMENTS PORTABLE-1

- SYSTEMS CONFIGURATIONS:
- **NOTEBOOK (MONOCHROME)** 
  - NOTEBOOK (COLOR)
- HANDHELD
- PERSONAL COMPUTER MEMORY CARD INTERNATIONAL ASSOCIATION
  - (PCMCIA II) INTERFACE: MODEM WITH SOFTWARE
- RANDOM ACCESS MEMORY (RAM)
- HARD DRIVE
- FAX WITH SOFTWARE
- **NETWORK INTERFACE CARD**

# CONTRACT OPPORTUNITY

TITLE: ARMY PORTABLE COMPUTER-1 (PORTABLE-1)

**OBJECTIVE: SUPPORT THE ARMY'S REQUIREMENT FOR** PORTABLE COMMUNICATION AND COMPUTING CAPABILITIES

PROPOSED

CONTRACT TYPE: FFP ID/IQ (BEST VALUE AWARD)

COTS HW/SW

KEY MILESTONES: RFP RELEASE 3QTR FY 94

**AWARD 2QTR FY 95** 

ESTIMATED VALUE: \$100M-\$150M

POC: HELEN GARAMONE, ISSAA (703) 325-9762

**ALEXANDRIA, VA (ISSA-PAO)** 

# SMALL MULTIUSER COMPUTER-II (SMC-II)

## UNCLASSIFIED

### POINT PAPER

SUBJECT: Army Small Multiuser Computer-II (SMC-II)

OBJECTIVE: SMC-II is the acquisition of Commercial-Off-The-Shelf (COTS) multiuser computer equipment and software, networking components, and engineering services to support Army, Navy, Air Force, and DoD agencies office automation requirements.

### **FACTS**:

- \* Information Mission Area (IMA) certified products that will support worldwide Army network server/software requirements. This acquisition will follow the SMC-I contract which is scheduled to expire at the end of FY 95.
  - \* All monitors and printers will be Energy Star compliant.
- \* Milestones listed below reflect the planned schedule for SMC-II. All schedules are planned to provide IDIQ contract coverage for Army users worldwide.

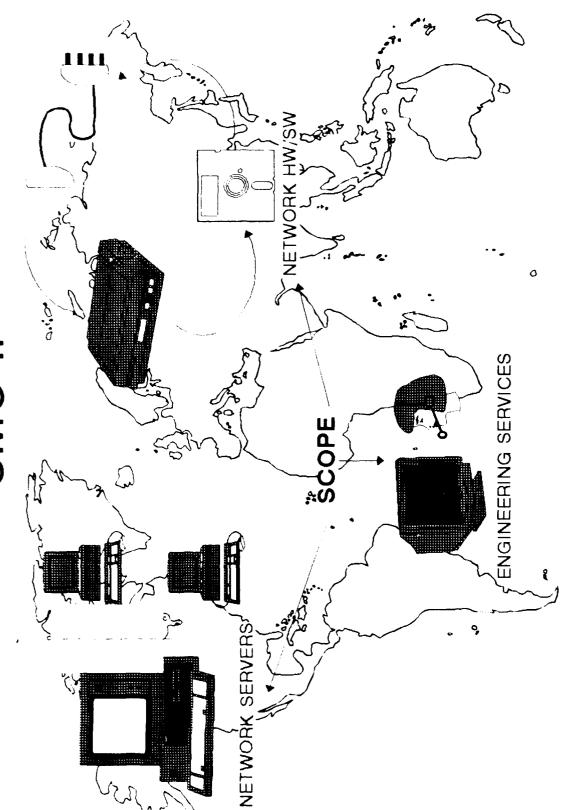
Draft RFP Release 4TH QTR - FY94 RFP Release 1ST QTR - FY95 Contract Award 4TH QTR - FY95

\* This will be a Firm-Fixed-Price, Indefinite Delivery/Indefinite Quantity contract. It will be a Best Value evaluation with one award. The contract is planned to run three years for HW/SW ordering, five years altogether for engineering services and warranty/maintenance.

BRIEFER: COL Dennis M. Moen, Project Manager, Defense Communications and Army Switched Systems, ASQM-SWM, (908) 532-7910

### SMC-II

COMPUTER EQUIPMENT AND SOFTWARE ACQUISITION OF COMMERCIAL OFF-SUPPORT ARMY, NAVY, AIR FORCE, AND ENGINEERING SERVICES TO THE-SHELF (COTS) MULTIUSER **AUTOMATION REQUIREMENTS** NETWORKING COMPONENTS, AND DOD AGENCIES' OFFICE



### SMC-II OBJECTIVES

- SUPPORT ARMY, NAVY, AIR FORCE, AND DOD AGENCIES' OFFICE **AUTOMATION AND NETWORK** REQUIREMENTS
- ALL COMMERCIAL OFF-THE-SHELF (COTS)
- FFP ID/IQ (BEST VALUE AWARD)
  - SINGLE AWARD
- ENGINEERING AND MAINTENANCE 3 YR-HW/SW ORDERING/5 YR-SUPPORT
- 24 MONTH MINIMUM WARRANTY

### SMC-II REQUIREMENTS

- STATE-OF-THE-ART PLATFORMS-COTS
- HARDWARE
- MULTIUSER OPERATING SYSTEMS
- OPEN SYSTEMS STANDARDS COMPLIANCE
- INTERCONNECTION PROFILE (GOSIP) GOVERNMENT OPEN SYSTEMS
  - PORTABLE OPERATING SYSTEM INTERFACE FOR COMPUTER ENVIRONMENT (POSIX)

### SMC-II REQUIREMENTS

- NETWORK SERVERS
- **NETWORKING COMPONENTS**
- ENGINEERING SERVICES
- MAINTENANCE
- TRAINING

# CONTRACT OPPORTUNITY

TITLE: SMALL MULTIUSER COMPUTER -II (SMC-II)

SERVERS/SOLUTIONS FOR OFFICE OBJECTIVE: ARMY/JOINT SERVICE NETWORK **AUTOMATION REQUIREMENTS** 

CONTRACT TYPE: FFP ID/IQ (BEST VALUE AWARD) COTS PROPOSED

KEY MILESTONES: DRAFT RFP RELEASE-4TH QTR FY 94 **RFP RELEASE-1ST QTR FY 95 AWARD-4TH QTR FY 95** 

**ESTIMATED VALUE: \$600M-\$800M** 

POC: HELEN GARAMONE, ISSAA (703) 325-9762 **ALEXANDRIA, VA (ISSA-PAO)** 

## NOTES

### SESSION VI

### SUSTAINING THE BATTLEFIELD

### **MODERATOR**

MR. COLIN F. MACDONNELL, JR.
DIRECTOR
C31 LOGISTICS AND READINESS
CENTER
CECOM

# CECOM SUSTAINING THE BATTLEFIELD



C. F. MacDONNELL, JR., DIRECTOR 12 MAY 1994

# U.S. ARMY COMMUNICATIONS ELECTRONICS COMMAND

# C3I LOGISTICS & READINESS CTR



DSN 992-5757 AMSEL-LC DEP COL A. FOLLMER HEADQUARTERS DIR. C. MacDONNEL ASSOC. DIRS

CECOM CALS SPT BARBARELLO Cals exec

**01 MAR 94** 

SOLG, BROWN **DSN 992-1212** 

AMSEL-LC-MM **DSN 992-4755** MATERIEL MGT R. RIEHL

AMSEL-LC-RE COL N. SOUTHERLAND **DSN 992-5162** 

SYSTEMS MGT AMSEL-LC-SM **DSN 992-2332** K. MORGAN

VINT HILL FARMS, VA MAT MGT CTR

SELECTION L. SCHEUBLE DSN 228-5011

D. DION DSN 879-6131

HUACHUCA, AZ

ASSISTANCE AMSEL-LC-SA SECURITY **DSN 992-2155** BENNET

PRODUCT INTEGRITY & PROD ENGR A MISEL-LO-ED G. STOOPS DSN 992-5193

COMM SEC LOG ACTIVITY SELCLUIA

# SUSTAINING THE BATTLEFIELD

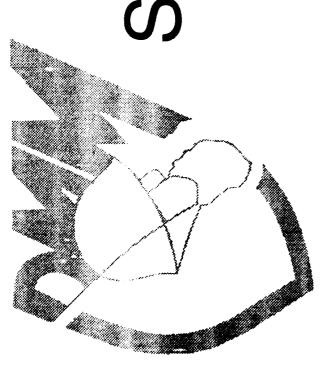


SPARES - Mr. William Riehl, Dir Materiel Management

MANAGEMENT IN MAJOR SYSTEMS BATTERY SELECTION AND POWER TO REDUCE O&S COSTS -AMC Battery Focal Point Mr. Richard Rizzo, SMD

OPPORTUNITIES IN FOREIGN Mr. Eugene Bennett, Dir, SAMD MILITARY SALES -

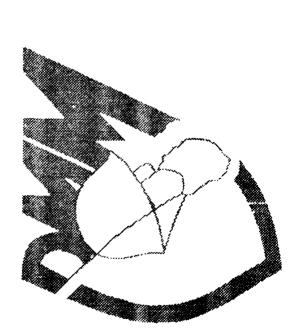
## NOTES



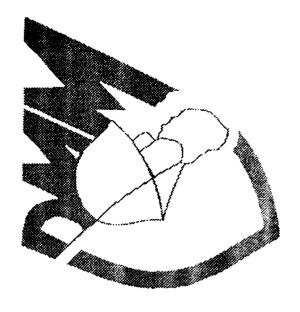
## SPARES

# WILLIAM RIEHL Director, Materiel Management

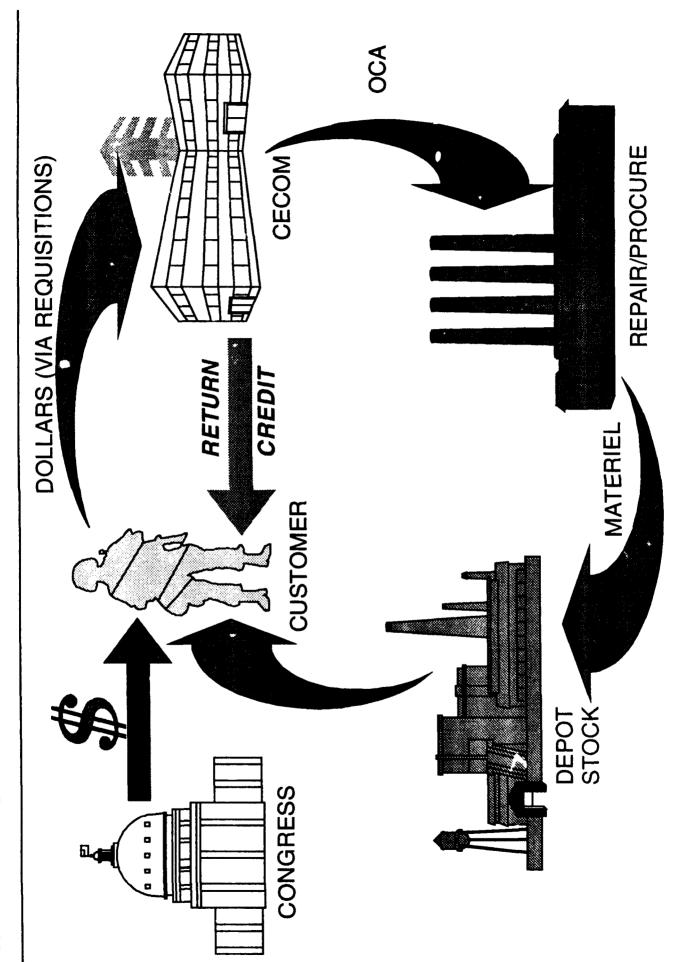
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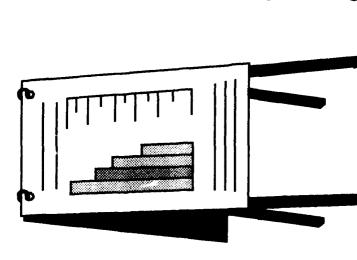
# Requirements



# ARMY STOCK FUND--REVOLVING FUND

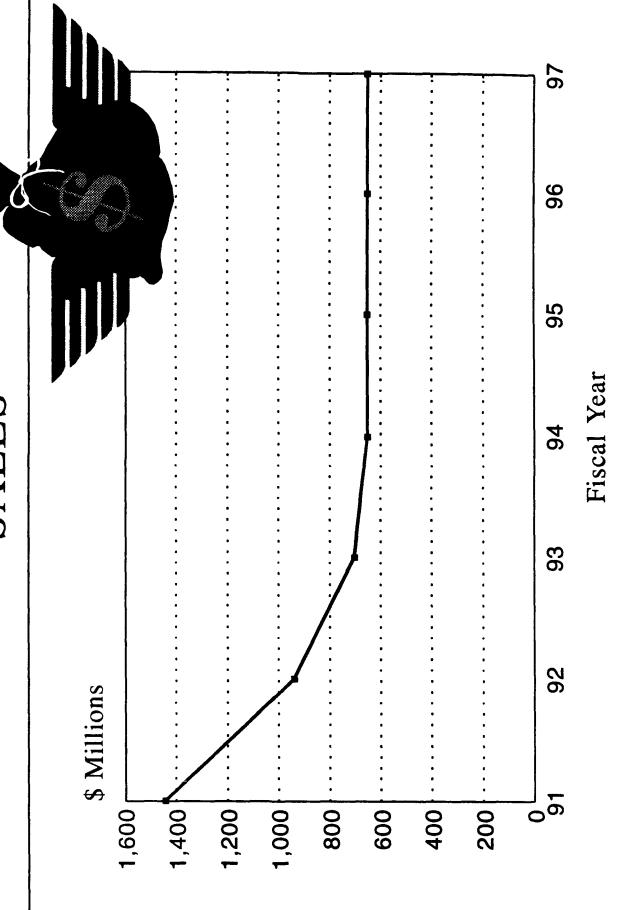


## BUSINESS INDICATORS CURRENT/FUTURE



- Force Structure
- Income (Sales)
- Acquisition Dollars
- # of Procurements/ Repair Contracts
- Inventory Levels

## SPARE/REPAIR PARTS SALES



# FORECASTED REQUIREMENTS PROFILE FY95 SPARES (\$IN MILLIONS)

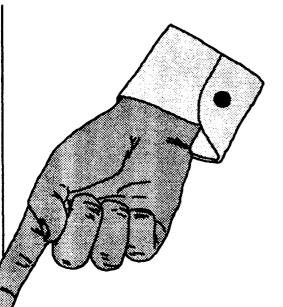
WEAPON SYSTEMS	\$ RANGE
COMMUNICATIONS	\$45 - \$59
(incl switches, MSE, Radios,	
TRI-TAC, etc.)	
RADAR/SENSOR	\$40 - \$58
AVIONICS	\$30 - \$47
BATTERIES	\$25 - \$32
NIGHT VISION	\$21 - \$33
SATELLITE COMM	\$19 - \$23

\$180 -\$252

TOTAL

# REQUIREMENTS



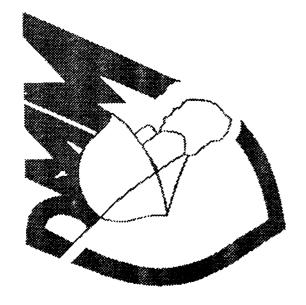


Inventory/Direct Vendor Deliveries concepts) Become more efficient (e.g., Just In Time

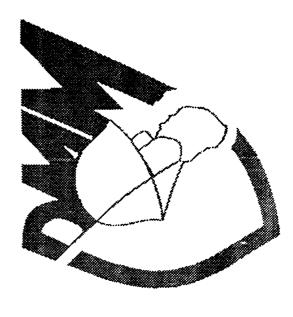
POC: William Riehl, Director, Materiel Management (908)532-4755, Fort Monmouth, New Jersey

# IMPLEMENTING STRATEGIES

- Group spares by weapon system or technical commonality
- Buy 3-5 years on one contract with range quantities
- Electronic Bulletin Board to solicit spares Digitized drawings/master plans buys
- Operations and Support (0&S) costs Push Technology Insertion to reduce



# Consolidations



### CONSOLIDATIONS Description

- Flexible approach to secondary item acquisition
- Best overall value
- Preserve industry engineering expertise
- Continuous process improvement
- Long term business relationships
- Fewer contracting actions
- Reduced Operations and Support (O&S) costs

### CONSOLIDATIONS Objectives

- Reduced risk to government
- Shorter leadtimes
- Lower overall costs
- Simplification
- Standardization

# CONTRACT OPPORTUNITY AN/APR-39A(V)1

- Proposed Contract type:
- Competitive with 5 option years min/max quantities
- Milestones
- • Solicitation: April 94
- Forecast award: Nov 94
- FY96 thru FY 99: \$21K \$1.3M annually FY95 \$21K - \$2.6M Estimated value
- POC: Ted Kordower, (908)532-1984

### Aviators' Night Vision Imaging System CONTRACT OPPORTUNITY (ANVIS) Kits

- Proposed Contract Type:
- Competitive Indefinite Delivery/Indefinite Quantity Best Value
- Milestones •
- • Draft Request for Proposal (RFP): April 94
- • Forecast award: Dec 94
- FY95 thru FY99: \$957K \$8.4M annually Estimated value
- POC: Bruce Kueller, (908)532-1257

# CONTRACT OPPORTUNITY AN/TTC/TYC-39

- Proposed Contract type:
- Competitive, 5 year Indefinite Delivery/ Indefinite Quantity, Best Value
- Milestones
- • Solicitation: Aug 94
- Forecast award: Nov 94
- Estimated value
  FY95 \$0 \$310K
  FY96 \$0 \$326K
  FY97 \$0 \$342K
  FY98 \$0 \$359K
  FY99 \$0 \$377K
- POC: Stephanie J. Allen, (908)532-4304

### CONTRACT OPPORTUNITY AN/VRC-12 Radios

- Proposed Contract type:
- Competitive, multiple year with range quantities
- Milestones
- • Forecast solicitation: FY95
- • Forecast award: FY96
- Estimated value
   FY96 \$4.5M
   FY97 \$1.6M
   FY98 \$1.3M
   FY99 \$1.0M
   FY99 \$1.0M
   FY00 \$3.0M
   FY01 \$ .3M
- POC: Pete Kasper, (908)542-6558

### NOTES





#### TO REDUCE ORS COSTS POWER MANAGEMENT BATTERY SELECTION IN MAJOR SYSTEMS AND

SYSTEMS MANAGEMENT DIRECTORATE **AMC BATTERY FOCAL POINT** MR. RICHARD RIZZO UNCLASSIFIED

## FIELD CONCERNS

BATTERY

NIPROVED



DISPOSAL

UNUSED

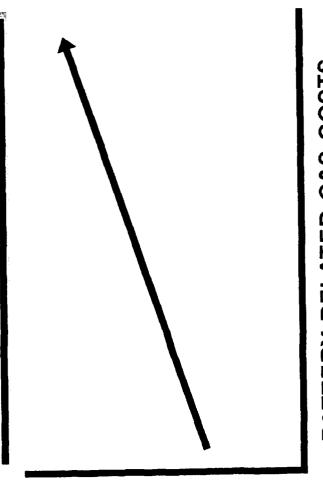


MAINTENANCE

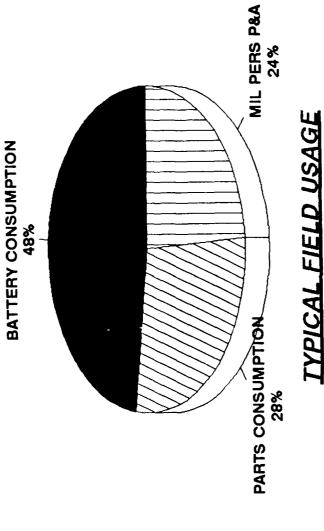
**PROLIFERATION** 

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### 



BATTERY RELATED O&S COSTS



% OF FIELD BUDGET

## OVERALL STRATEGY

CECOM POWER SOURCES MASTER PLAN

AMC
BATTERY FOCAL
POINT

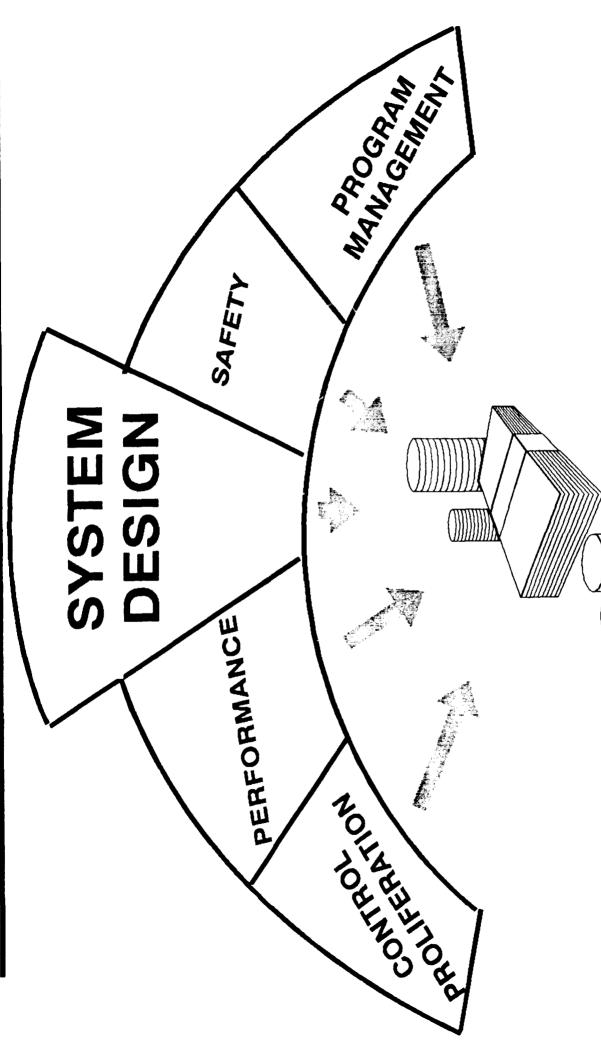
ARMY MODERNIZATION STRATEGY

278

LOWER O&

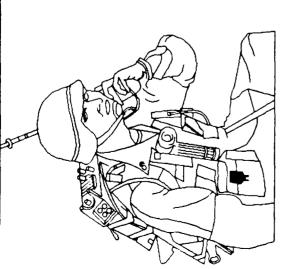
COSTS

# ARMY BATTERY MODERNIZATION STRATEGY

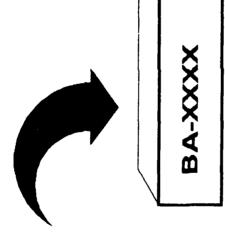


# REDUCING O&S COSTS

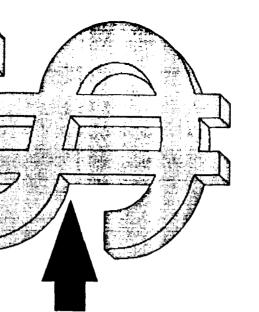
# TERY COST DRIVERS



USER REQUIREMENTS



MILITARY UNIQUE BATTERIES



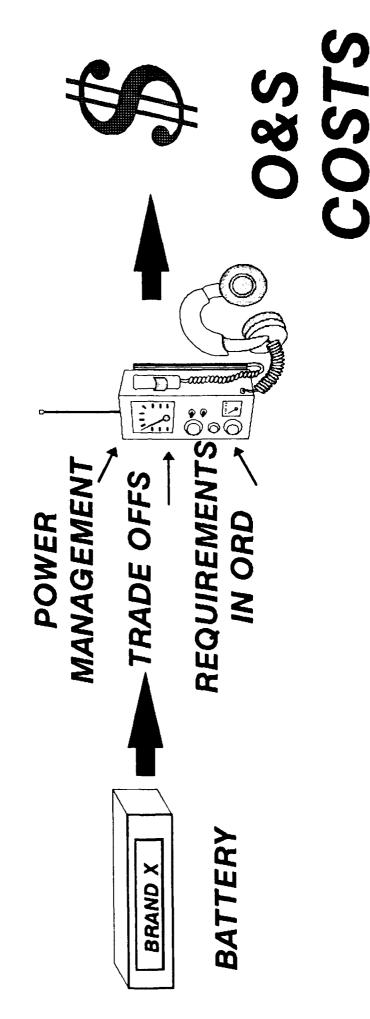
O&S COSTS



**JESIGN SOLUTIONS** 

550

# SYSTEM DESIGN INFLUENCES

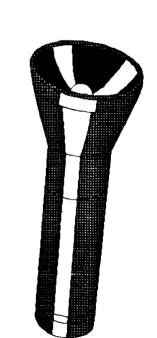


#### THE WANTE OF THE WANTE OF THE PARTY OF THE P WAY OUT OF THE PARTY OF THE PAR SELECTION BATTERY IMPLEMENTING THE SOLUTION SAFETY STATEMENT OF WORK POWER SOURCES SYSTEM DESIGN 552 PERFORMANCE MANAGEMENT **POWER** MOLLARIH TORA

# WHAT IS POWER MANAGEMENT?

- ► ENERGY EFFICIENT HARDWARE DESIGN
- SOFTWARE THAT DETERMINES WHAT HARDWARE IS NOT BEING USED AND POWERS IT UP AND DOWN AT THE **OPTIMUM MOMENT**
- INCORPORATION OF AN INTERNAL STATE OF CHARGE CAPABILITY

## BATTERY SELECTION

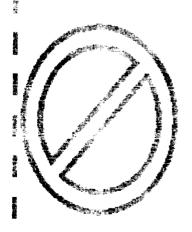


#### CONSUMER BATTERIES (COTS)



CONTRACTOR OF CO

(I.E. BA-5590, BA-5588, BA-5567, BA-5847)





### SINCGARS PRODUCT IMPROVEMENT RESULTS OF POWER MANAGEMENT

BATTERY COSTS: \$1,237,500

BASED ON USAGE BY 82ND AIRBORNE

BEFORE



CONSUMPTION

ANNUAL BATTERY COSTS: \$891,500

SAVINGS = \$346,000/YRAFTER

### SUMMARY

# SYSTEM DESIGN SOLUTIONS HAVE

THE GREATEST IMPACT ON

REDUCING BATTERY O&S COSTS.

### MANAGEMENT OFFICE BATTERY

### AMC BATTERY FOCAL POINT RICHARD RIZZO

DSN 992-8941

COMM (908) 532-8941

FAX: X23418

E-MAIL:AMSEL-LC-SM-S@MONMOUTH-EMH3. ARMY.MIL

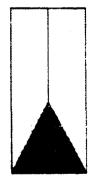
CECOM, SYS MGT DIR

AMSEL-LC-SM-S1

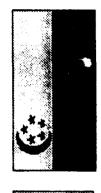
FT. MONMOUTH NJ 07703

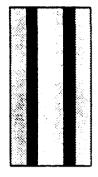
### NOTES



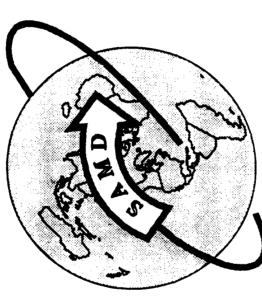








## POPPORTUNITIES IN FOREIGN MILITARY SALES



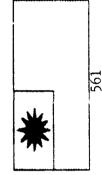
SECURITY ASSISTANCE MANAGEMENT DIRECTORATE

#### UNCLASSIFIED

Fort Monmouth, New Jersey













#### POINT PAPER

SUBJECT: Opportunities in Foreign Military Sales (FMS)

PURPOSE: To provide representatives from communications and electronics companies with an overview of future sales opportunities in the FMS arena. This presentation will be made at Advanced Planning Briefing for Industry (APBI) to be held 11-12 May 94

#### FACTS:

- Foreign military customers of the U.S. Government will receive better terms for their purchases if a number of companies are able to submit bids for their requirements.
- The Security Assistance Management Directorate portion of the APBI will give industry notice of known future FMS requirements enabling a broader range of companies to compete for FMS contracts.
- Benefits include better service and cost control for FMS customers

RELEASED BY:

EUGENE P. BENNETT

Eugene & Bennett

GM-15

DIRECTOR/ Security Assistance

Management

X22155

ACTION OFFICER

FRED OTTEN

GS-12

LOG MGMT SPEC/ Security

Assistance Management

x28662 , Lind ( lth



### FOREIGN MILITARY SALES **BENEFITS**



VINCREASES SALES AND EXPORTS



► HELPS FRIENDLY COUNTRIES BECOME **MORE SELF-SUFFICIENT** 



► SUSTAINS THE U.S. DEFENSE INDUSTRIAL

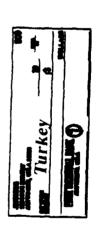
AND INFLUENCE ABROAD





### CHANGING TIMES

Foreign Military Financing Policy



Nonstandard vs Standard Requirements



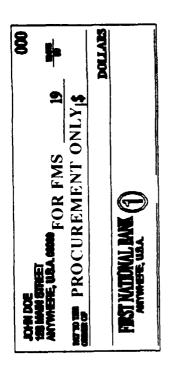


Marketing



## FOREIGN MILITARY FINANCING

- **NEW POLICY EFFECTIVE JUL 94**
- ELIMINATES USE OF CREDIT DOLLARS FOR DIRECT COMMERCIAL SALES
- IMPACTS ISRAEL, EGYPT, TURKEY GREECE, PORTUGAL, TUNISIA, MOROCCO AND JORDAN





### EQUIPMENT SOLD



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▶ Standard

FY-90

FY-93

929

554

▶ Nonstandard

293

847

Total:

1,631 955

\$16M

\$38M

\$151M

**Contracts Awarded** 

▶ Standard

Nonstandard

\$4M

### MARKETING

Team Effort - Industry & Government







Improve the FMS Process





Streamline Procurement Process

- Requirements Contract

Simplified Nonstandard Acquisition

### DEFENSE INDUSTRY MARKETING EFFORTS GUIDELINES FOR SUCCESSFUL

- \*Read DOD booklet, "Comparison of Direct Sales and Foreign Military Sales for Acquisition of Defense Articles & Services
- \*Review CECOM's Contractor Security Assistance Primer
- \*Obtain directory listing of SAOs
- Contact country representative (Security Assistance Organization [SAO]) to visit the foreign country
- Offer total packaged equipment to include initial and follow-on support, i.e., spare parts, associated tool & test equipment, publications, technical support, training and maintenance.
- Provide timely/accurate pricing & realistic production/delivery leadtimes.

\*Contact Security Assistance Directorate ATTN: AMSEL-LC-SA-D-SY Fort Monmouth,NJ 07703-5002 (908) 532-8649

## **AVIONICS SUPPORT PROGRAM**

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**\$VAL** 

AH-64 (APACHE)

20-33

\$23.5M

AH-1S (COBRA)

35

\$14.5M

\$1.1M

CH-47D (CHINOOK)

UH-1H (HUEY)

**\$126K** 

AN/APR-39A(V)3 + SUPPORT

433

\$2.5M

\*MARGINAL SUPPORTABILITY AVIONICS UPGRADE PROGRAM

POC: JOSE GONZALEZ - COMM. (908) 532-8637 (APACHE & COBRA)

POC: VERNELL DANIELS - COMM. (908) 532-8634 (CHINOOK & HUEY)

POC: NANCY CRESSEY - COMM. (908) 532-8626 (AN/APR-39A(V)3)



## **ELECTRONICS EQUIPMENT**



### NOMENCLATURE

### TYPE NO./QTY



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AN/VDR-2/ 200

\$200K

RADIAC SET

IM-93A/UD/ 1,426

\$38K

RADIAC DETECTOR

CHARGER

PP-1578/

**822**大

**TEST SET** 

AN/PRM-34/ 112

**\$153K** 

REMOTE CONTROL GROUP

AN/GRA-39/ 112

**\$153K** 

SIGNAL GENERATOR

SG-1207/

57

\$2M

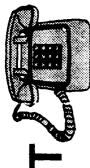
POC: MULUGETA ASHEBIR - COMM. (908) 532-8648 (RADIAC SETS & CHARGER)

POC: JANETTE WOODY - COMM (908) 532-8631 (SIGNAL GENERATOR) POC: WALTER BROWN - COMM. (908) 532-8629 (REMOTE CONTROL GROUP)



## ELECTRONICS EQUIPMENT

(CONT'D)



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Z

**AN/PPN-19/5** TRANSPONDER SET

#### TYPE NO./QTY

**\$** 270K

**\$VAL** 

#### FM RADIOS

COMMERCIAL/982

\$ 1.4M

BATTERY (LITHIUM)

BA-5567/U/ 30,065

**\$ 15K** 

\$ 353K

BATTERY

BA-4386/U/ 26,433

**\$** 62K

BATTERY

BA-1568/U/ 3,962

AN/GSX-1A/ 19

\$ 1.4M

INTERROGATOR PROGRAMMER POC: DAVE SHUMAN - COMM. (908) 532-5577 (AN/PPN-19)

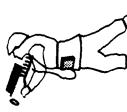
POC: LUTRELL MELVIN - COMM. (908) 532-8630 (FM RADIOS)

POC: LOIS UNIGLICHT - COMM. (908) 532-8645 (BATTERIES)

POC: PAUL WATSON - COMM. (908) 532-8646 (INTERROGATOR PROGRAMMER)



### NIGHT VISION EQUIPMENT



NOMENCLATURE

(COMMERCIAL) GOGGLES

NIGHT VISION SIGHT

TYPE NO./QTY

**\$VAL** 

AN/PVS-7B/220

**≥** + 3

\$ 1.1M

AN/TVS-5/ 440

POC: DAVID SHUMAN - COMM. (908) 532-5577



## PROJECTED AWARD DATES,



#### **FY 94**

AN/PVS-7B

AN/VDR-2

AN/TVS-5

BA-5567

BA-1563

**BA-4386** 

AN/PRM-34

PP-1578

CH-47D

**AH-18** 

**AH-64** 

AN/GSX-1A

UH-1H

AN/APR 39(V)3

AN/GRA-39

#### FY 95

AN/PPN-19

NIGHT VISION GOGGLES SG-1207 FM RADIOS

(COMMERCIAL)

### NOTES

#### ADDITIONAL. ACQUISITION INITIATIVES

CHIEF, SOFTWARE PROTOTYPING AND INTEGRATION LAB SOFTWARE ENGINEERING DIRECTORATE CRAIG CRISS

### UNCLASSIFIED

#### POINT PAPER

SUBJECT: Software Prototyping and Integration Laboratory

PURPOSE: To provide PEOs with an understanding of how this RDEC SED initiative will help satisfy some of their needs.

#### FACTS:

- o The CECOM RDEC has initiated the establishment of a Software Prototyping and Integration Laboratory to help accelerate the process of getting new technology/products in the hands of Field Users.
- o The Software Engineering Directorate will manage this laboratory and pursue projects that are conceived to rapidly satisfy the needs of PMs/Users/Battle Labs.
- o The Software Prototyping and Integration Laboratory will emphasize the capture of existing products, common infrastructure, value-added enhancements to form integrated prototypes for user experimentation and evaluation.
- o An Advisory Board will determine project priorities and sequences.
- o While the SED will provide the CORE staff, project staffing will include (as appropriate) representation from other RDEC Directorates, Battle Labs, Field Users, PM Offices and prime contractors.
- o Software Engineering Interns will be coupled to this laboratory to provide a source of valuable talent and develop application-oriented skills prior to permanent assignments throughout the Fort Monmouth community.

BRIEFER: Mr. Craig Criss, GM-14, AMSEL-RD-SE-SY-CC, X26851

RELEASED BY:

JOHN H. SINTIC GM-15 DIRECTOR, SED 28208 ACTION OFFICER:
CRAIG CRISS
GM-14
CHIEF, CCS BRANCH
26851

A SOFTWARE SUPPORT ENVIRONMENT STRUCTURED TO QUICKLY TRANSITION OPERATIONAL CONCEPTS TO FIELDABLE PRODUCTS

### **OBJECTIVES**

- DEVELOP "GO TO WAR" PROTOTYPES
- INTEGRATE BATTLE LABS AS EXPERIMENTATION AGENT

### REQUIREMENTS

- PROTOTYPING TOOLS
- COMMERCIAL APPLICATIONS FOR EVALUATION

# SOFTWARE PROTOTYPING

#### **PAYOFFS**

- REDUCE ACQUISITION RISK
- RAPID FIELDING OF PRODUCTS
- LEVERAGE COMMERCIAL PRODUCTS

## SOFTWARE PROTOTYPING AND INTEGRATION LAB PRODUCT "FLOW" CONCEPT

**FEEDBACK** MAXIMIZE USE OF NDI/COTS PROMOTE COMMONALITY (e.g., CHS, Ada,...) RAPID DEVELOPMENT & INTEGRATION MANAGEMENT PRECEPTS: **PROTOTYPES** ADD VALUE REFINEMENT **TRANSITION** ENHANCEMENTS UNCTIONALITY **TECHNOLOGY OTHER SERVICES** PRIVATE SECTOR RAW PRODUCTS SOFTWARE FROM VARIETY OF SOURCES: **PORTION** OF ATDs IDEAS EXISTING ARMY

### NOTES

## BATTLEFIELD DIGITIZATION PROTOCOL SUITE

RDEC SOFTWARE ENGINEERING DIRECTORATE DR. MYRON HOLINKO CHIEF, AIN DIVISION

## UNCLASSIFIED

# DIGITIZING THE BATTLEFIELD

- PROVIDES THE WARFIGHTER AND COMMANDER WITH:
- A COMMON PICTURE OF THE BATTLEFIELD
- BATTLEFIELD SYNCHRONIZATION
- SITUATIONAL AWARENESS
- COMBAT IDENTIFICATION
- HORIZONTAL INTEGRATION
- ARMY'S GOAL
- 1996 DIGITAL BRIGADE
- 1997 DIGITAL DIVISION
- 1999 DIGITAL CORPS

## STANDARD PROTOCOL SUITE THE ARMY'S DECISION -

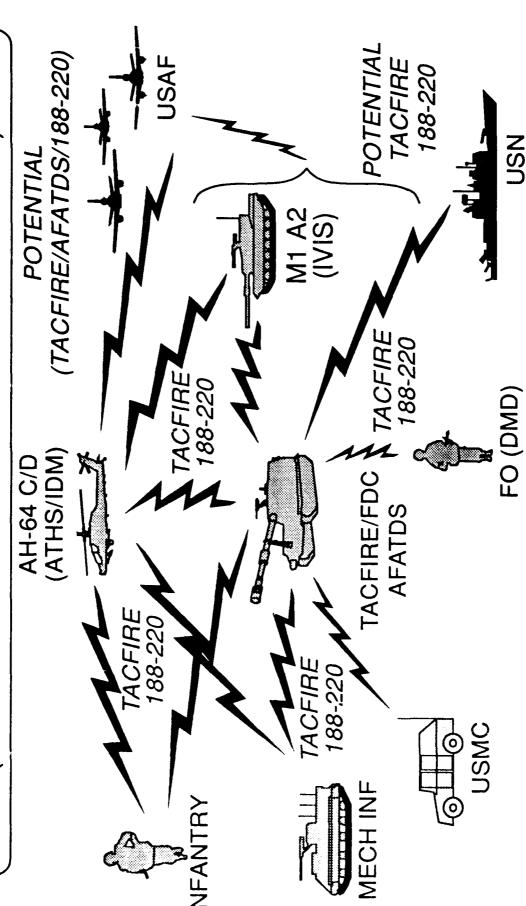
- PRIMARY MEANS OF COMMUNICATIONS IS SINGGARS FOR THE MANEUVER BRIGADE AND BELOW, THE
- AND CECOM TO STANDARDIZE ON CNR PROTOCOLS IN FEBRUARY 1993, GEN FRANKS TASKED SIGCEN AND MESSAGE FORMATS
- IN MAY 1993, SIGCEN AND CECOM RELEASED A JOINT MESSAGE
- BACKWARD COMPATIBILITY: TACFIRE
- MID-TERM: MIL-STD-188-220
- FAR-TERM: "FURTHER IMPROVEMENTS"

# WHY "FURTHER IMPROVEMENTS" FOR THE LONG TERM?

- CONCERNS EXPRESSED ABOUT MIL-STD-188-220
- "NEEDS INTERNETTING/VERTICAL INTEGRATION FEATURES"
- "NEEDS TO TAKE ADVANTAGE OF THE SIP RADIO"
- "NEEDS NET MANAGEMENT"
- NEED FOR HIGHER TRANSFER RATES
- NEED FOR IMAGING TRANSFER

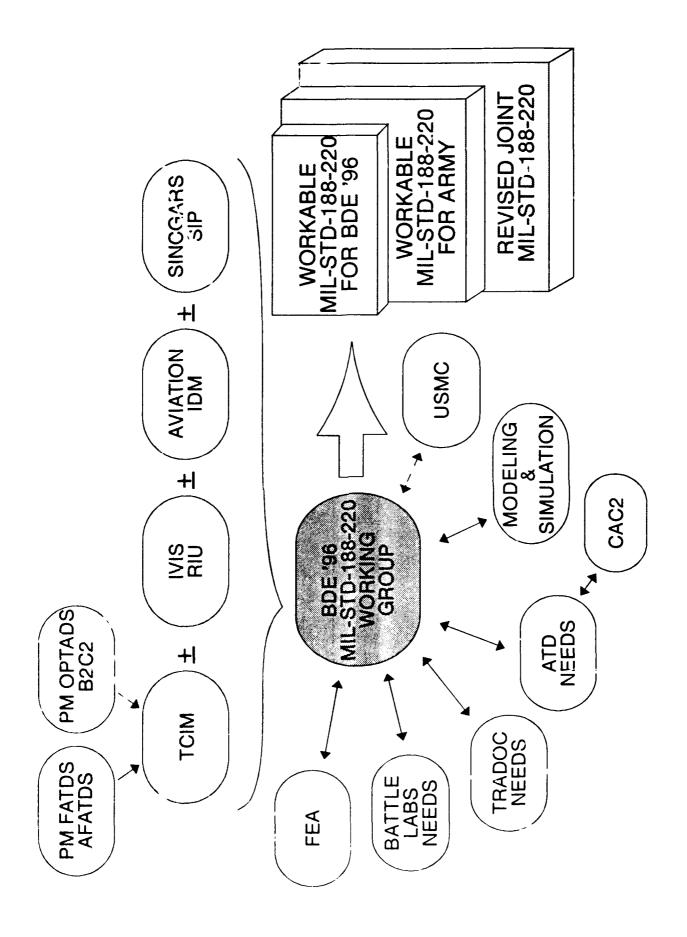
# DIGITIZING THE BATTLEFIELD \* OBJECTIVE PROTOCOLS

TACFIRE BASELINE THAT EVOLVES TO JOINT STANDARD (MIL-STD-188-220 WITH VMF MESSAGE SET)

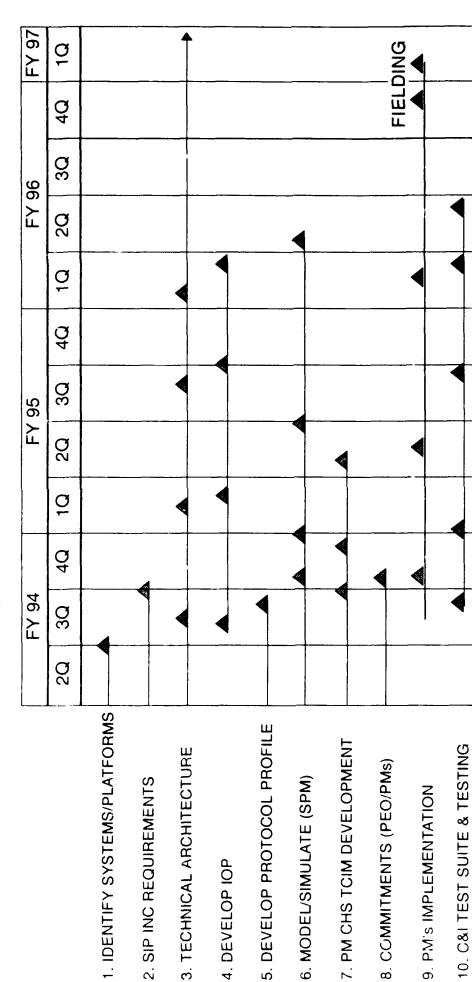


ALL LINKS HAVE 188-220 COMPATIBILITY

# UPDATE/REFINEMENT OF MIL-STD-188-220 FOR ARMY USE

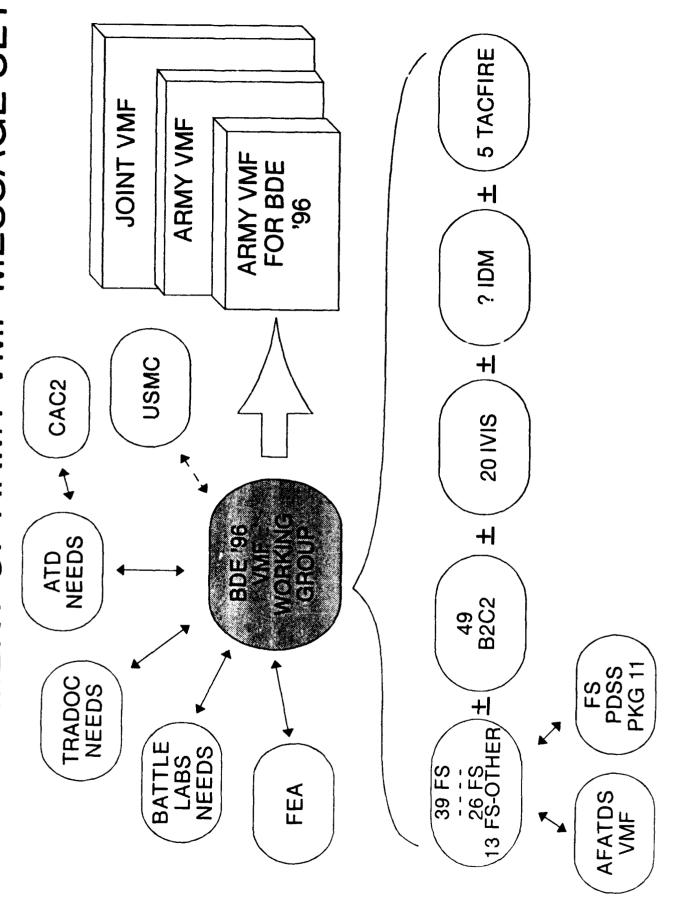


## IMPLEMENTATION PLAN FOR BRIGADE '96 MIL-STD-188-220



11.COORDINATE WITH JIEO/S/A

# DEVELOPMENT OF ARMY VMF MESSAGE SET

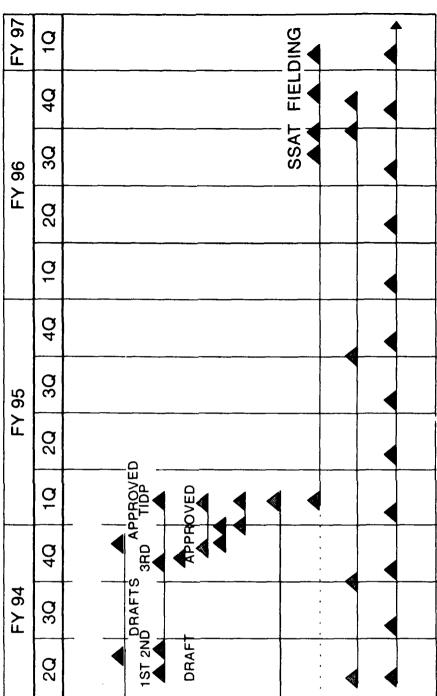


## IMPLEMENTATION PLAN FOR BRIGADE '96 VARIABLE MESSAGE FORMAT (VMF)

INFORMATION EXCHANGE	REQUIREMENT ANALYSIS	AND DEFINITION

2. TIDP DEVELOPMENT COORDINATED DRAFT PEO/PM REVIEW UPDATE TIDP FINAL REVIEW

- 3. COMMITMENTS (PEO/PMs)
- 4. PM's IMPLEMENTATION
- 5. C&I TEST SUITE & TESTING
- 6. COORDINATE WITH JIEO/S/A

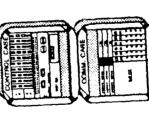


# ARMY INTEROPERABILITY NETWORK (AIN)

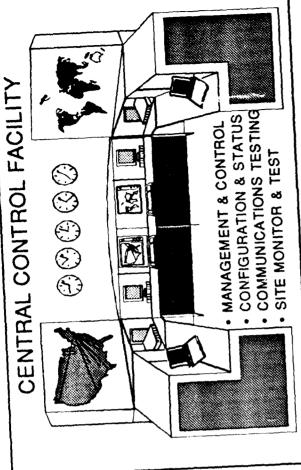
- NATION-WIDE NETWORK OF DISTRIBUTED COMMUNICATIONS, SERVICES, REMOTE FACILITIES, AND TEST CAPABILITIES
- SUPPORTS SOFTWARE AND INTEROPERABILITY RAPID PROTOTYPING, DEVELOPMENT, TESTING, SUSTAINMENT, AND TRAINING
  - REPLICATES BATTLEFIELD CONFIGURATIONS BY "VIRTUAL RELOCATION"
- ALLOWS MULTI-PURPOSE USE OF LABORATORIES, TESTBEDS, AND FIELD SITES
- PROVIDES PROVEN, RELIABLE, COST-EFFECTIVE LIFECYCLE CAPABILITY

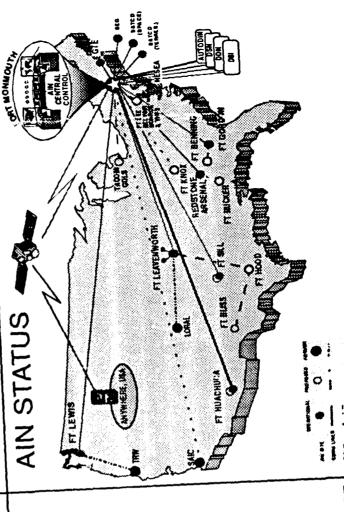
REMOTE SITE SYSTEMS (RSS)

STANDARD TRANSPORTABLE

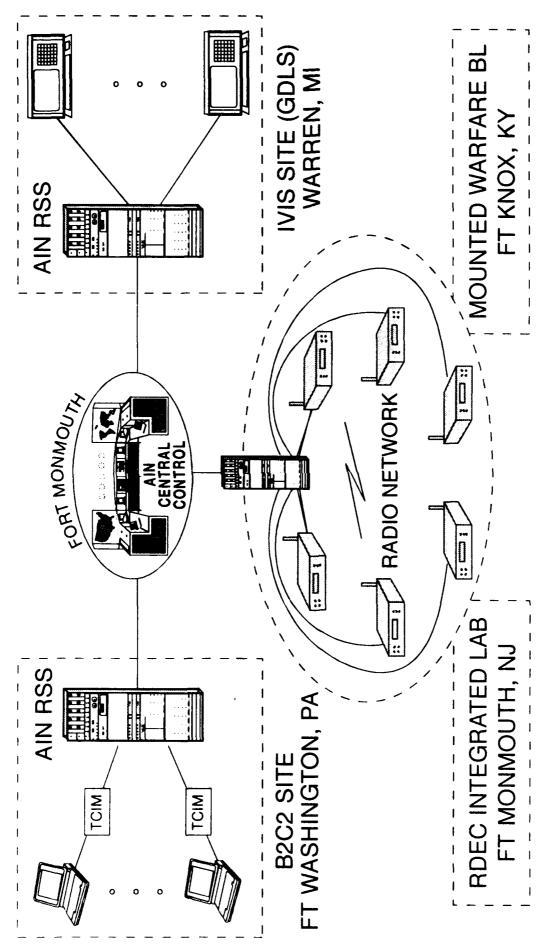


- THANSPARENT
- COTS/NDI, TAILORED
   EXPANDABLE & EVOLVABLE
- . WIDE ARRAY OF INTERFACES
- NATIVE INTERFACES SUPPORTED
  - . REMOTELY CONTROLLED





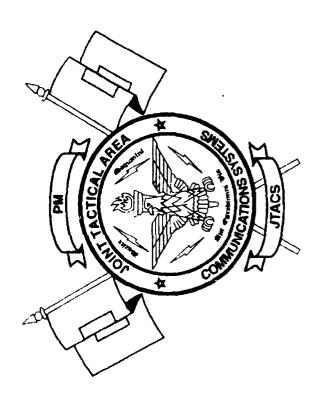
# AIN B2C2/IVIS SUPPORT



- **ACTUAL SINCGARS NET FOR RF CHARACTERISTICS/IMPACTS**
- MULTIPLE TERMINALS POSSIBLE AT ONE OR BOTH SITES
- USER DOES NOT HAVE TO ADAPT INTERFACE TO AIN

### NOTES

#### **ASYNCHRONOUS TRANSFER MODE (ATM) SWITCHING TACTICAL**



### TOMMY CHENG ELECTRONICS ENGINEER PM JTACS

UNCLASSIFIED 603

#### POINT PAPER

SUBJECT: Asynchronous Transfer Mode Switching

#### FACTS:

- o Asynchronous Transfer Mode (ATM) is an emerging technology for the integrated switching of mixed, digital information streams. The digital information streams may represent different traffic types, such as voice, data, and video. These streams may have different characteristics (constant bit rate, real time and non-real time, high speed and low speed).
- o ATM is based on so-called fast packet or cell relay switching. Information streams are segmented into uniform size 53-byte (8-bit octet) cells consisting of a 48-byte information payload and a 5-byte header which contains routing and cell type information. Asynchronous refers to the fact that traffic from different information streams or channels does not have a fixed time slot relationship as it does in conventional time division multiplexers and digital switches.
- o ATM is expected to be adopted by commercial communications common carriers and by fixed elements of the defense information system network. ATM is thus expected to be the basis of the network structure required to implement the DOD Global Grid concept. The objective 21st century tactical architecture is envisioned to include ATM or an ATM-like technology for seamless interface. Future warriors are expected to make extensive use of interactive video and multimedia based technologies. Applications include training, conferencing, mission planning and rehearsal, surveillance and targeting.
- o There are technical hurdles to be overcome before ATM can be used by tactical forces in a mobile warfighting environment, however. ATM is optimized to take advantage of the high bit rates and low error rates provided by fiber optic cable. Fiber optic cable imposes an unacceptable constraint on the mobility of tactical users. Present tactical transmission systems are inadequate to support ATM switching. High bit rate, low error rate tactical transmission systems are the crucial, missing piece of the ATM puzzle. ATM signaling and routing standards are immature and assume a static network connectivity, where users move, but switches do not. Tactical switch networks must be capable of a fluid topology and dynamic connectivity to support maneuver forces.

o ATM is still in a concept exploration, research and development phase. PEO COMM/PM JTACS is monitoring commercial and military ATM activities. Limited contract opportunities exist presently in the RDEC and ATD communities. In the longer term contract opportunities will emerge as technical hurdles are overcome and transition to the next generation of switching networks begins.

BRIEFER: Mr. Tommy Cheng, GM-14, Electronics Engineer, Project Manager, Joint Tactical Area Communications Systems, SFAE-CM-JTC-TMD, (908) 532-5987

ACTION OFFICER: Tommy Cheng PM Joint Tactical Area Communications Systems (908) 532-5987

# TACTICAL ATM SWITCHING

ENVISIONED FOR INTRODUCTION INTO COMMUNICATION ARCHITECTURE OF ATM OR ATM-LIKE TECHNOLOGY IS THE OBJECTIVE TACTICAL THE 21ST CENTURY

# TACTICAL ATM SWITCHING

#### STATUS

- ATM IS STILL IN CONCEPT EXPLORATION AND RESEARCH AND DEVELOPMENT PHASE
- TECHNICAL HURDLES EXIST FOR ATM TRANSMISSION IN A TACTICAL ENVIRONMENT
- PEO COMM / PM JTACS ARE MONITORING COMMERCIAL AND MILITARY ATM ACTIVITIES
- SECURE SURVIVABLE COMMUNICATION NETWORK (SSCN)
- DEFENSE INFORMATION SYSTEMS AGENCY (DISA) / ORGANIZATION (JIEO) GOAL ARCHITECTURE JOINT INTEROPERABILITY ENGINEERING
- AT&T EXPERIMENTAL UNIVERSITY NETWORK (XUNET)

### TACTICAL ATM SWITCHING **OBJECTIVES**

- VIRTUAL REALITY
- INTERACTIVE TRAINING
- MULTICASTING
- AUDIO CONFERENCING
- REMOTE VIDEO CONSULTING
- MULTIMEDIA CONFERENCING
- MULTIPOINT VIDEO CONFERENCING
- REAL-TIME VIDEO SURVEILLANCE
- DATABASE TRANSFERS
- COLLABORATIVE DESKTOP SHARING
- DISTRIBUTED SIMULATION EXERCISES

### TACTICAL ATM SWITCHING REQUIREMENTS

WHERE CAN INDUSTRY HELP?

TACTICAL TRANSMISSION SYSTEMS MISSING PIECE FOR TACTICAL ATM WITH HIGH BIT RATE AND LOW ERROR RATE IS THE CRITICAL

### TACTICAL ATM SWITCHING **PAYOFFS**

COMMUNICATIONS SYSTEM TO BETTER DATA / IMAGERY REQUIREMENTS ON SUPPORT THE INCREASING VOICE / ENHANCED TACTICAL AREA THE BATTLEFIELD

### CONTRACT OPPORTUNITIES TACTICAL ATM SWITCHING

TO BE DETERMINED

POC: TOMMY CHENG

(908) 532-5987

### NOTES

#### EXECUTIVE PANEL

MG OTTO J. GUENTHER CG, CECOM

BG DAVID R. GUST PEO COMM

MR. ROBERT F. GIORDANO DIR, RDEC, CECOM

MR. COLIN F. MACDONNELL, JR. DIR, C31 LRC, CECOM

MR. EDWARD G. ELGART DIR, C31 ACQ CTR, CECOM

MR. BENNETT R. HART PEO CCS

COL THOMAS L. VOLLRATH
PEO IEW

MR. THOMAS J. MICHELLI DPM, AIS/DEP. ISMA

#### SYMPOSIUM PARTICIPANTS

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PEO, Communications Systems SFAE-CM

Fort Monmouth, New Jersey 07703 (908) 544-2153

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US Army Research Laboratory

Electronics and Power Sources Directorate
AMSRL-EP

Fort Monmouth, New Jersey 07703 (908) 544-2541

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HQ, US Army Communications-Electronics Command Space & Terrestrial Communications

AMSEL-RD-ST

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C31 Acquisition Center
AMSEL-AC

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SFAE-CC
Fort Monmouth, New Jersey 07703
(908) 544-2055

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PEO, Intelligence and Electronic Warfare
SFAE-IEW
Vint Hill Farms Station

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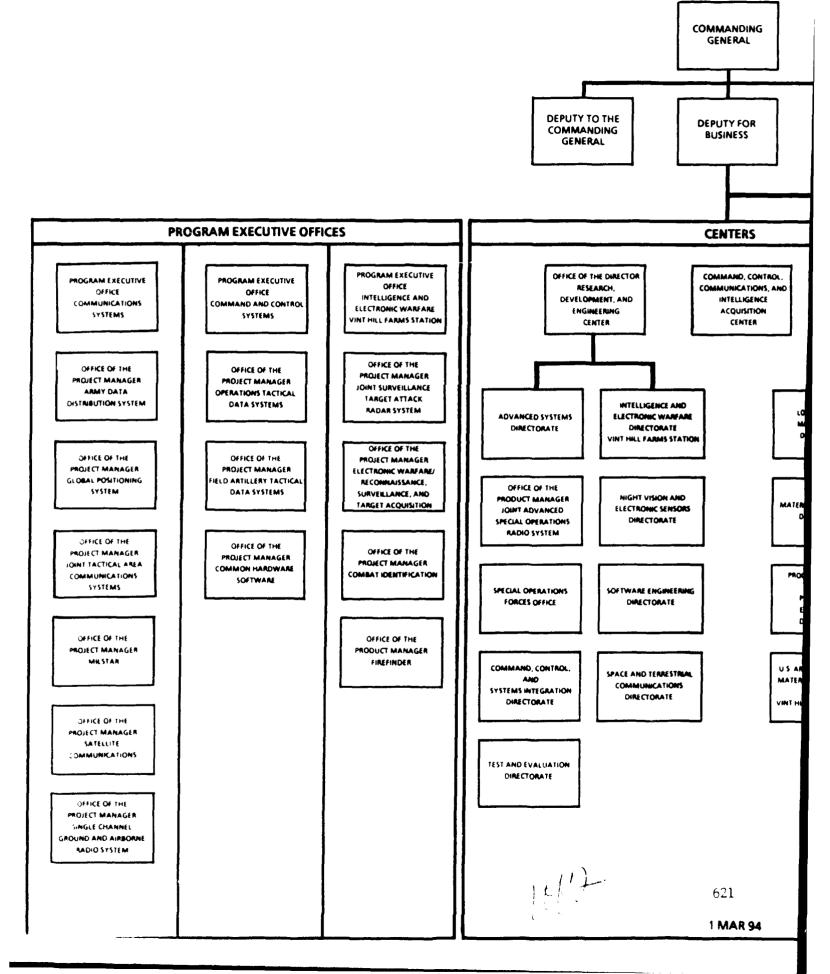
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