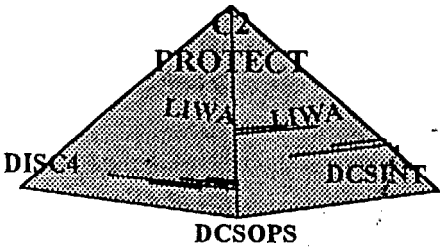
INFORMATION WARFARE




# Protecting Friendly Command and Control Capability

# The Army's C2 Protect Efforts an In Process Review

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C2 Protect - "Keeping The Highway Secure & Open For Force XXI"

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This briefing is a roadmap for the U.S. Army as they move to Command and Control (C2) Protect in support of the Army's Force 21transition. It addresses C2 protect in a digital battlefield environment, the threat and vulnerabilities environment, and Approach to the problem of C2 Protect.

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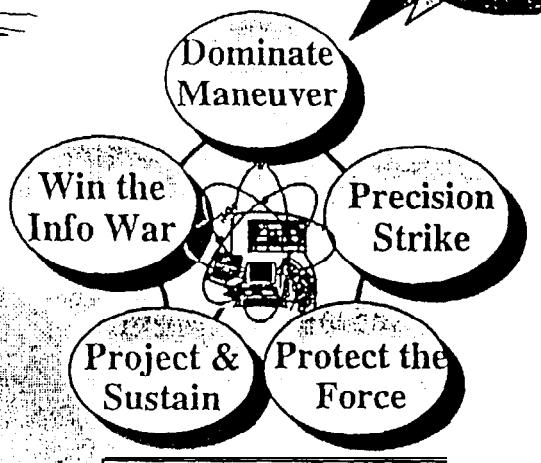
# What is Force XXI?

FORCE XXI

**Force XXI *is*:**

- ✓ Integrating and leveraging Information Technology
- ✓ Redesigning the Tactical Forces
- ✓ Re-engineering of the base




**Information *is*:**
**Power**

"...Operate in an unpredictable and changing environment, throughout the depth (and altitude) of the Battle Space (all the way back to the CONUS and/or forward base);

Simultaneously execute, mount, and recover from operations ranging from war to PKO; orchestrate all the operating systems; and do all of this very, very quickly.

The quantum competitive advantage — will derive from the quantity, quality and usability of the information.

The architecture of Force XXI must derive from a robust, versatile concept of information based Battle Command."

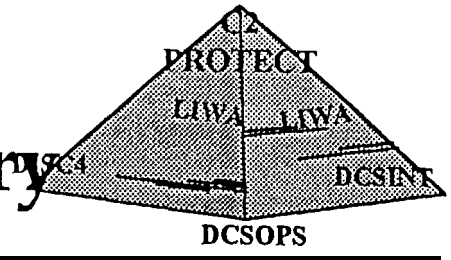
GEN Gordon R. Sullivan
March 1994

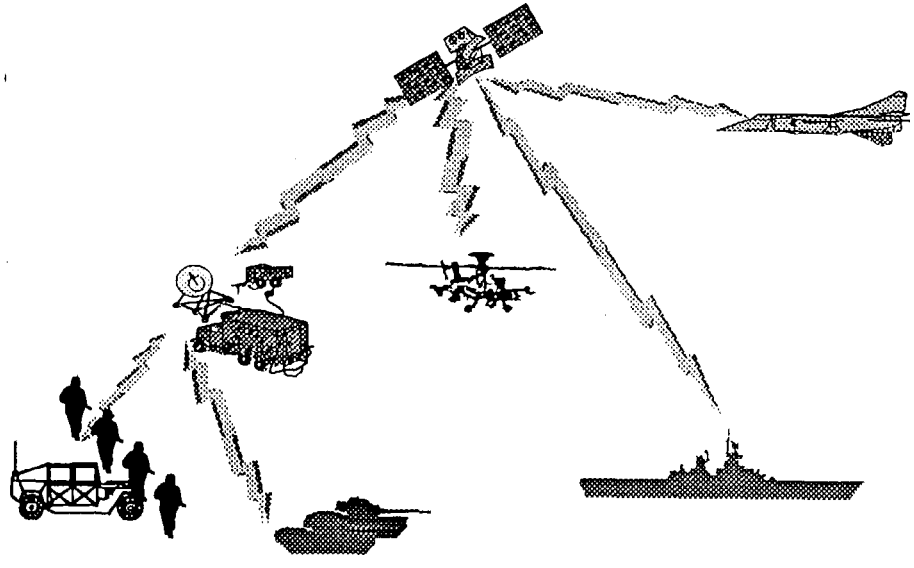
FORCE XXI



As of: 5/24/95

# Force XXI
# The Army of the 21st Century



***Redesign the Force***

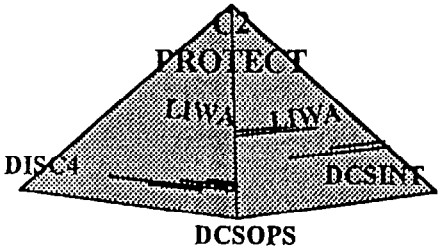
***. . . Front .□ Rear***

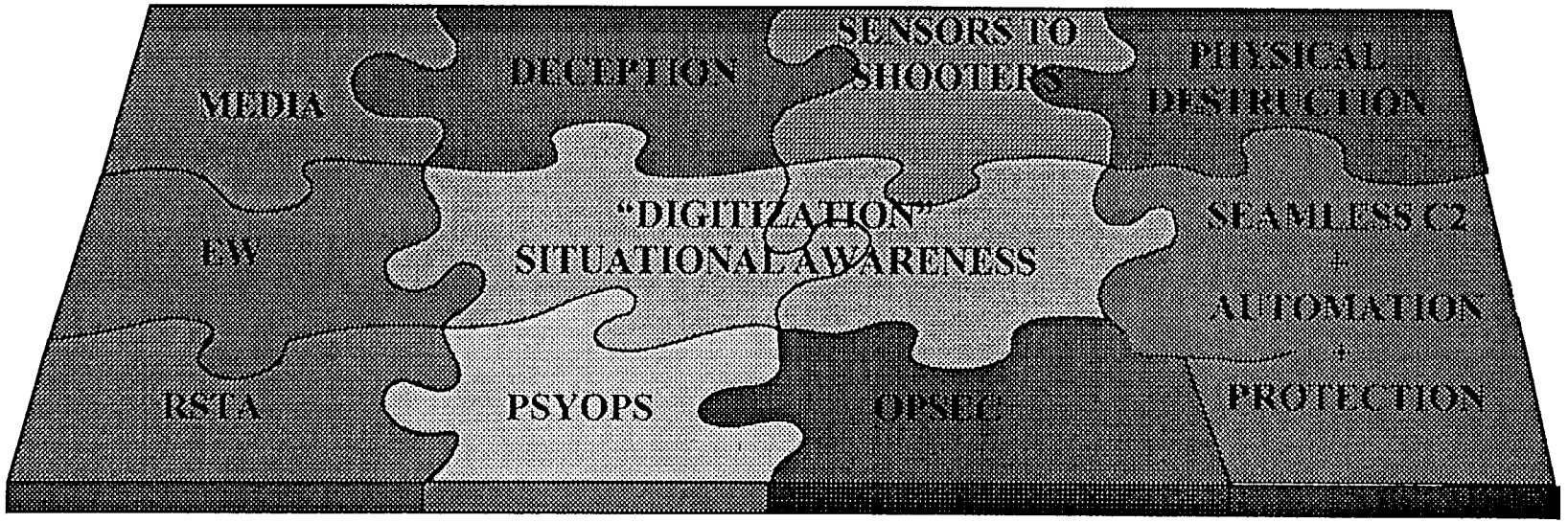
We will Create Learning Organizations

- Organized around information — not hardware
- Inherently versatile at every level
- Simultaneously execute, plan, recover-continuous operations
- Leverage skip echelon and split based operations
- Shared situational awareness, not the same map sheet, the same map

C2 Protect - "Keeping The Highway Secure & Open For Force XXI"

# Information Warfare
# An Army Perspective

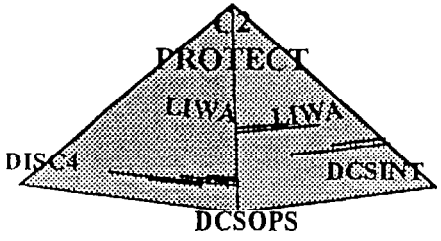



FM 100-6 (Draft)
"INFORMATION OPERATIONS"
Continuous COMBINED ARMS OPERATIONS that enable and protect the commander's decision cycle while influencing an opponent's Accomplished through command and control and intelligence operations, Information Operations are conducted across the full range of military operations.

**C2 Protect - "Keeping The Highway Secure & Open For Force XXI"**

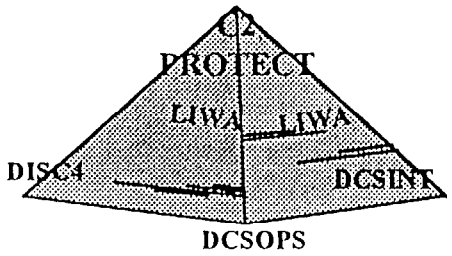
# Information Warfare Is:




Is This New ?

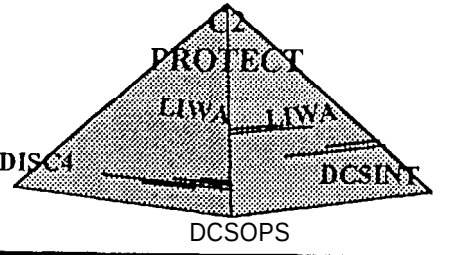
- Old Security Disciplines Refocused
- An Integrated Strategy
- A Changing Paradigm
- An Operational Tool for the Commander
- A Combat Multiplier
- DODs Evolution into the Information Wave

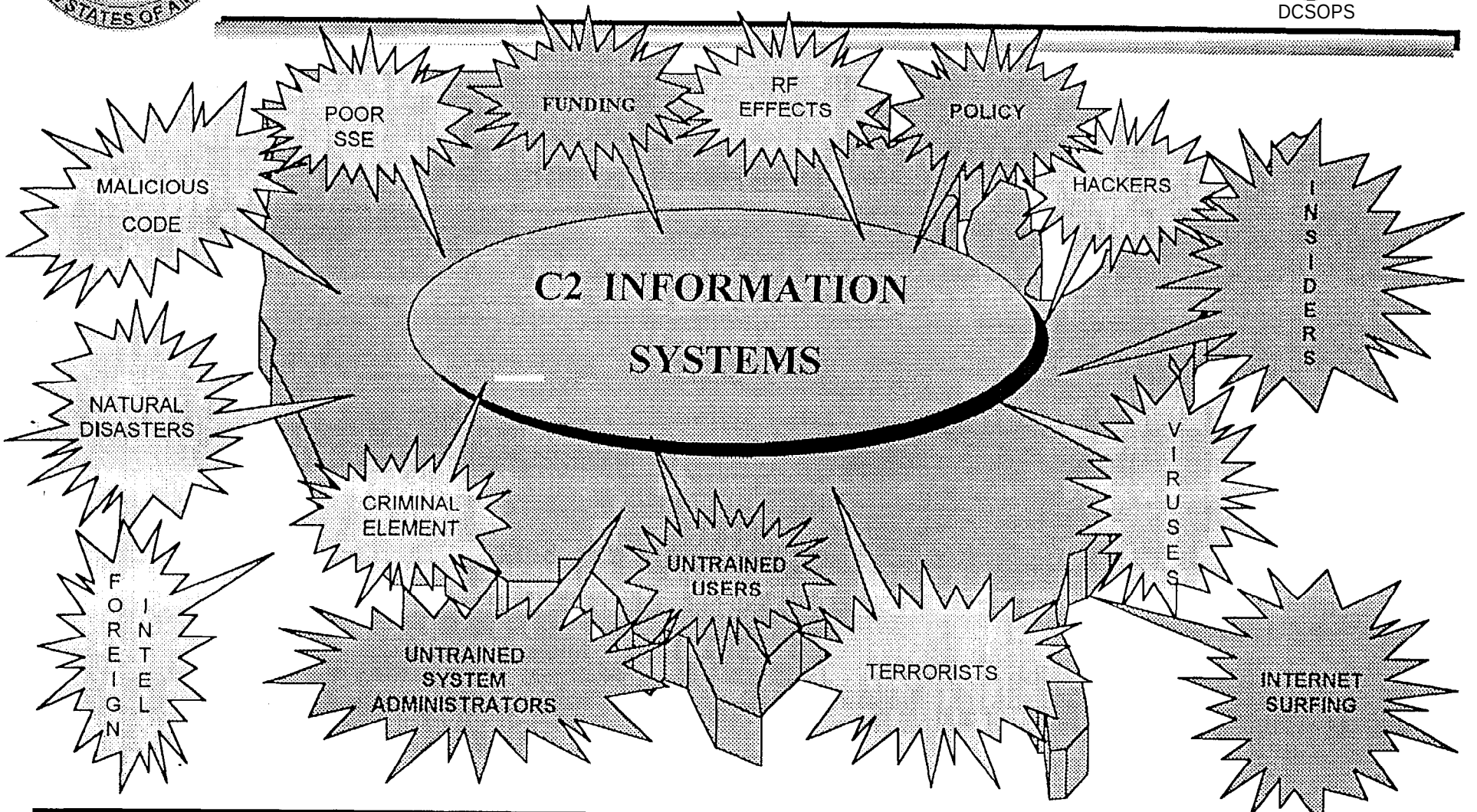

# Tasking




- Address information system security issues for the digital battlefield focus initial efforts on Task Force XXI AWE
- Address policy for planned demonstrations
- Conduct initial security review of documentation supporting Task Force XXI AWE

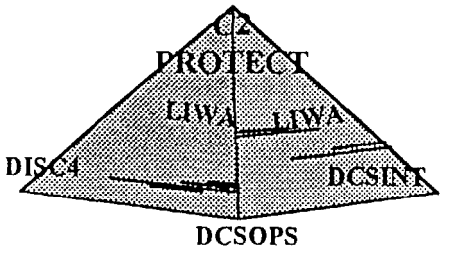
# Threats and Vulnerabilities to C2 Information Systems



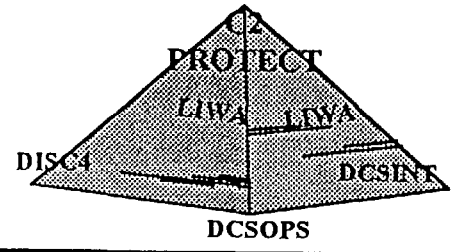

C2 Protect - "Keeping The Highway Secure & Open For Force XXI"

# C2 Protect Development and Approach



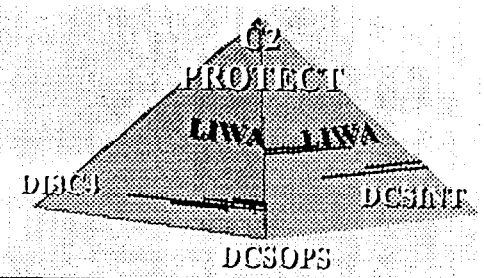

- Information Dominance is the New "High Ground" Current Intelligence is key.
- Protect, Detect, and React
- C2 Protect Program Management Plan: Multiple Activities with Multiple Security Disciplines
- Training, Personnel (Spaces and Faces), Tools
- Near Term Action Items from the C2 Protect & AISS Council of Colonels
- Long Term C2 Protect Resourcing

# Legal, Policy and Regulatory



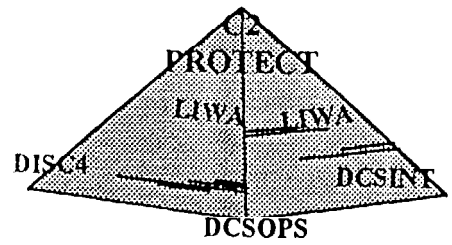

- What is the sensitivity of information being processed?
  - What defined security levels are represented?
- Where is the boundary for classified information as opposed to information we must protect?
- What is the structure for Accreditation?
  - Who is the Accreditor?

# Purpose of Army C2 Protect Initiatives & Efforts



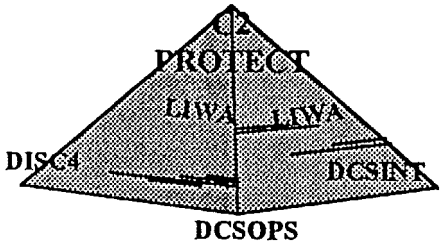

- Protect the Army's Portion of the Defense Information Infrastructure (DII)
- Synchronize Army Activities in C2 Protect
- Identify Vulnerabilities and Constraints
- Define Army Staff and MACOM Roles for C2 Protect
- Floor Plan for C2 Protect Developments
- Plan for C2 Protect Resources

# C2 **Protect** Development Concerns




- Inadequate User and System Administration Training
- Funding and Resources
- Inadequate Protect and Detect Capability
- Army Computer Emergency Response Team (CERT)
- Validated Threat
- Information Sharing Infrastructure
- System Security Engineering Emphasis
- Sustaining Base Systems Focus

# Training and Awareness is Key to C2 Protect

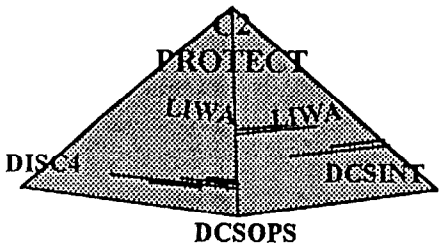



"Our Troops must understand the threat and we must provide the leadership to minimize it".

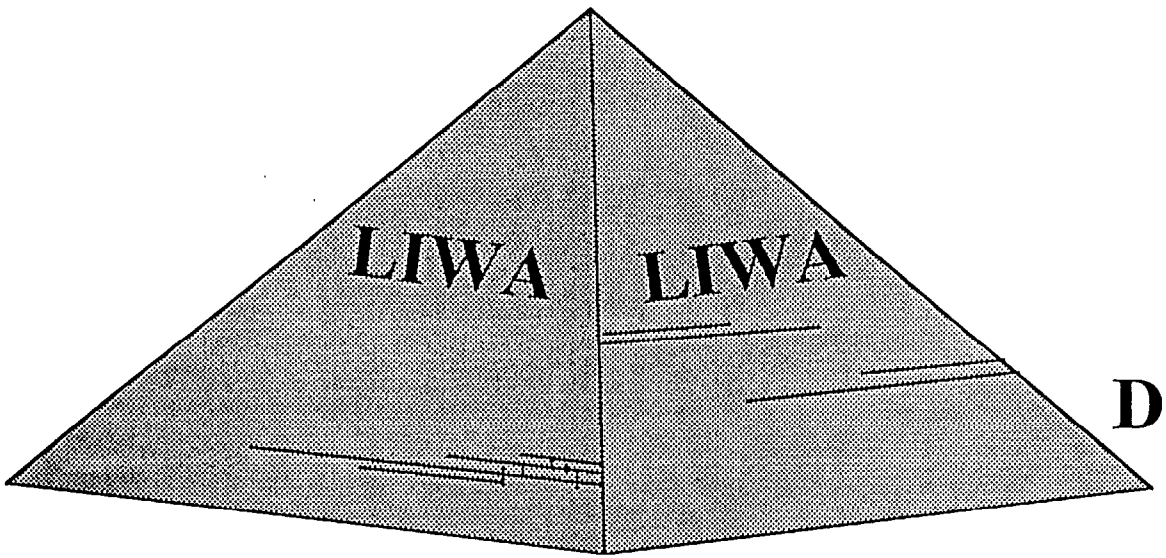
"We must integrate Information Warfare realism into training the force"

LTG Guenther
HQDA, DISC4
29 Mar 95

# C2 Protect Triad




## C2 PROTECT



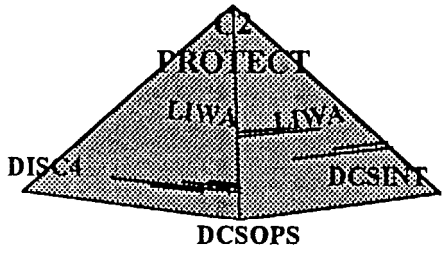

**DISC4** **DCSINT**

## DCSOPS

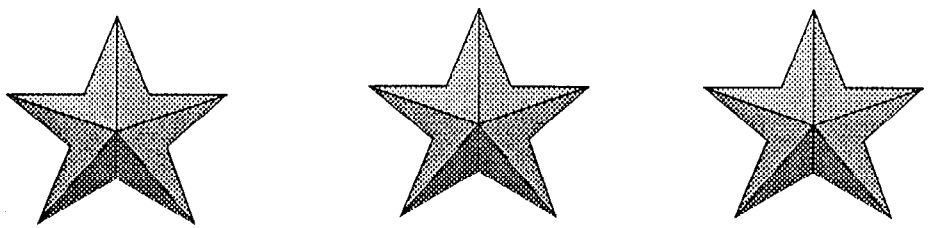
Lead Developers and Signatures on all C2 Protect Volumes

C2 Protect - "Keeping The Highway Secure & Open For Force XXI"

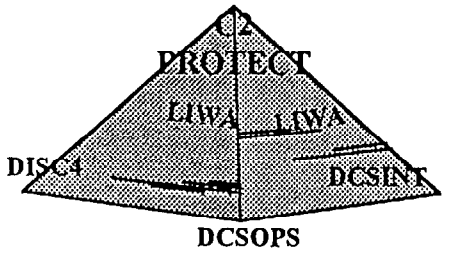
# DISC4 C2 Protect Mission




In coordination with DCSOPS and DCSINT, DISC4 is responsible for implementing procedural and material protective measures, to protect Command, Control, Communications, and Computers (C4 Protect).

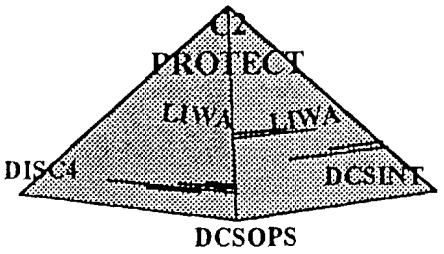


# DCSINT C2 Protect Mission

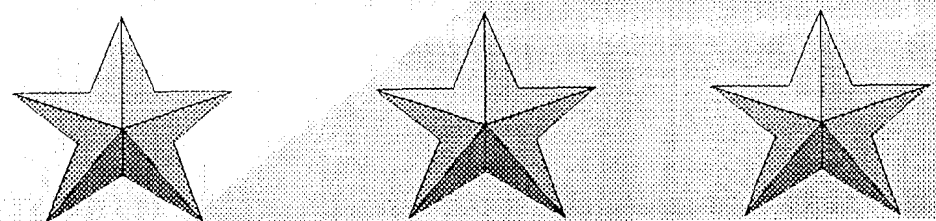



In coordination with DCSOPS and DISC4, DCSINT is the office responsible for threat definition, establishment of policy and integrating counter-intelligence support to protect command control communications and computers (C4 Protect)

# DCSOPS C2 Protect Mission

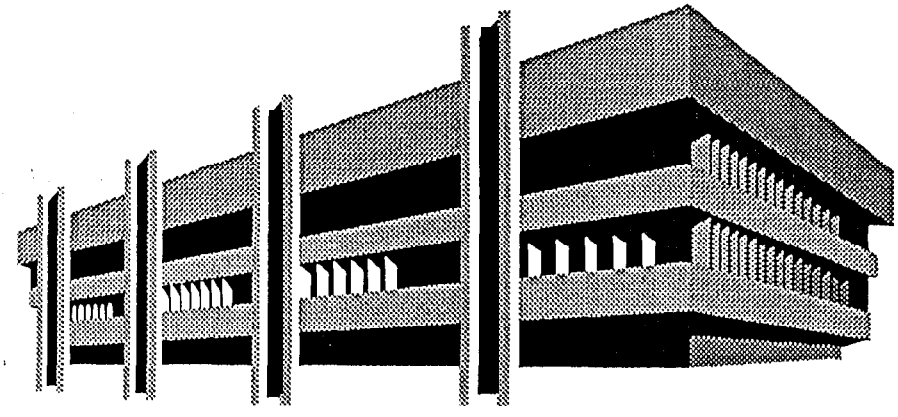



The DCSOPS is the organization which has proponancy for Information Warfare and addresses force modernization issues related to Information Warfare. Operational issues concerning Information Warfare are handled within the Directorate for Operations, Readiness, and Mobilization. DAMO-FDN is responsible for the development and dissemination of Information Warfare Policy for the Army.



# Land Information Warfare Activity

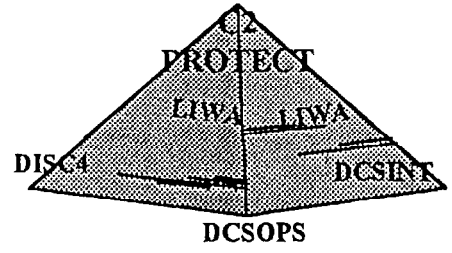
"LI WA"



MISSION:

Provide DA level Information Warfare/Command and Control Warfare support to Land Components and separate Army commands to facilitate planning and execution of Information Operations. Coordinate with National, Joint, and Service IW/C2W centers to exchange and synchronize intelligence and information support across the operational continuum.

# Land Information Warfare Activity



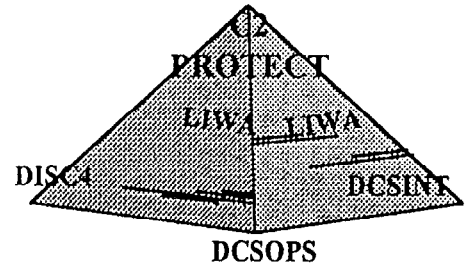

- ☑ Act as Operational Focal Point for IW
  Army Staff **(DCSOPS/DCSINT/DISC4)**
  Joint, Service, and National Agencies
  **MACOMs** and **MSCs**

- ☑ Arrange for and Coordinate Support to **CDRs**

- ☑ Coordinate and Deploy Field Support Teams

- ☑ Integrate Compartmented Programs with Other Activities

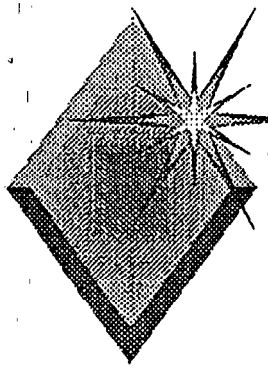
# Technical Issues




## C2 Protect Issues

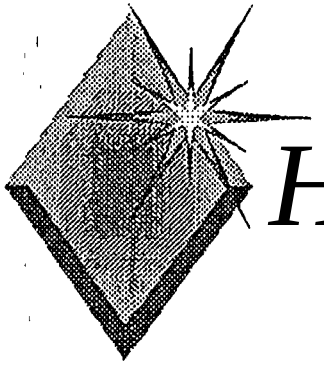
- **Computer Security**
  - Software / Firmware Assurance Requirements
  - Storage Media
  - Output Media
  - Certification
  - Anti-Virus Protection
  - Passwords
- **Security Services**
  - Confidentiality
  - Availability
  - Integrity
  - Identification and Authentication
  - Access Control
  - Non-repudiation
- **Communications Security**
  - Key Distribution
  - Key Management
- **Network Security**
  - Routers (IP Routing Tables)
  - Tactical Name Server
  - IP to Host Domain Names
  - Firewalls, Guards
  - In-line Network Encryptors
  - Limitations
  - Security Management
- **Personnel Security**
- **Security Standards**

C2 Protect - "Keeping The Highway Secure & Open For Force XXI"



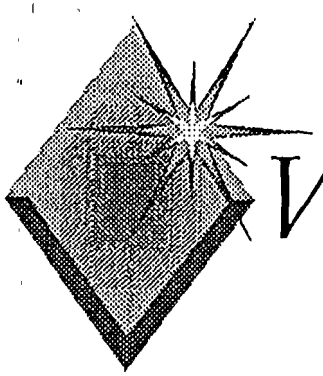
# *Army Information Sys terns are Under Attack*

- Attacks are frequent and highly sophisticated
- Army had 90 reported penetrations in CY 94
- **95%** of detected penetrations go unreported
- This means that Army had **1800** detected
- **94%** of penetrations are undetected
- Total penetrations to Army approx 4500



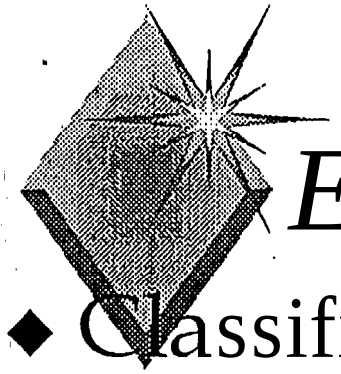
# *How Do Intruders Get In*

- Through commercial service providers
  - 95% of of DOD comms use commercial service ,
  - MILNET is mostly leased commercial service
- Run automated attack
  - Use software utility tools to obtain system info
  - Exploit system info to get user access



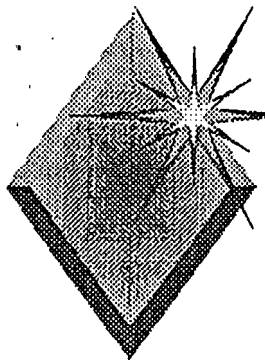
# *What Intruders Can Do*

- Obtain password file
- Obtain system administrator privileges
- Plant undetectable programs
- Change, alter or destroy information
- Shut down system (now or later)
- Log on to next system as valid user
  - Down stream liability issue
  - Makes Army responsible for damage



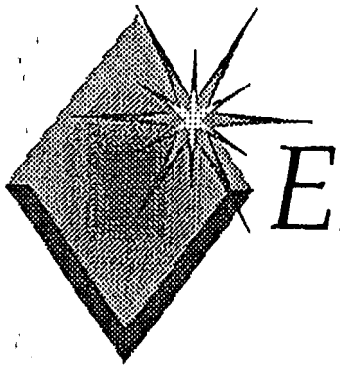
# *Example Internal Hacking*

- Classified info on unclas MILNET
  - OSD budget info
    - DIA reports with names & locations of indivuals
  - Air Force flights with dates, times, code names etc.
- Civ & Mil (AF) passing info to hacker network
- Member of Inaugration team selling access to BCN
- Users from HQ DA extracing pornographic material & games



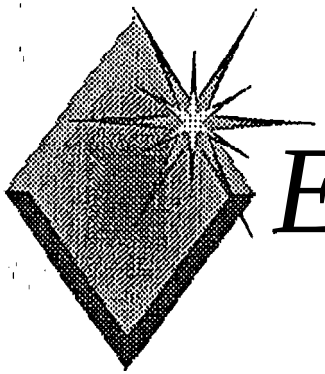
# *Example* of *Penetrations of Army Systems*

- ODISC4 LAN
  - Requested Vulnerability analysis by SAM
  - Used commonly available software tools
  - Penetrated in 5 min
  - Gained superuser (ROOT) access in 15 min
  - Potential impact total enemy control plus
  - trusted launching platform to other syst
  - Penetration was not noticed or reported



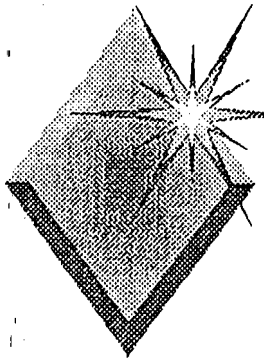
# *Example - JAG LAN*

- Hackers from Denmark
- Stole information
- When hackers were discovered, system was shut down
- Minutes after bringing system up the hackers returned and took control



# *Example of Penetrations*

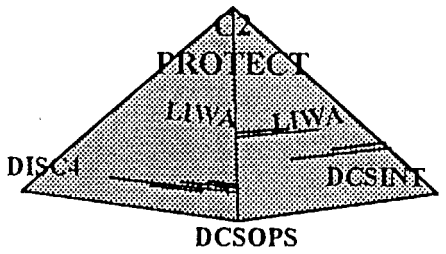
- DSS-W
  - 3 MB of data stolen
    - data involved contract sensitive information
    - ISC-P stopped the attack
    - ISC-P assisted in p&venting subsequent attacks



# *Example - Pentagon Broadband Cable Network (BCN)*

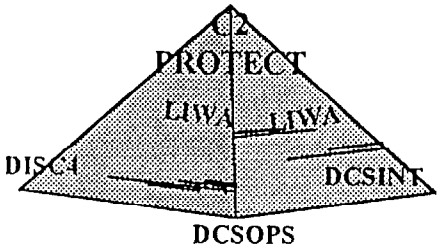
- Unauthorized user from Swedish host logged in
  - Executed several commands
  - Posible loss of password file
- Unauthorized user from Virgina Tech host
  - Repeated attempts using various user IDs
  - Sucessful using system admimistrator's ID
- Unauthorized user from NASA host
  - Logged into two different user accounts

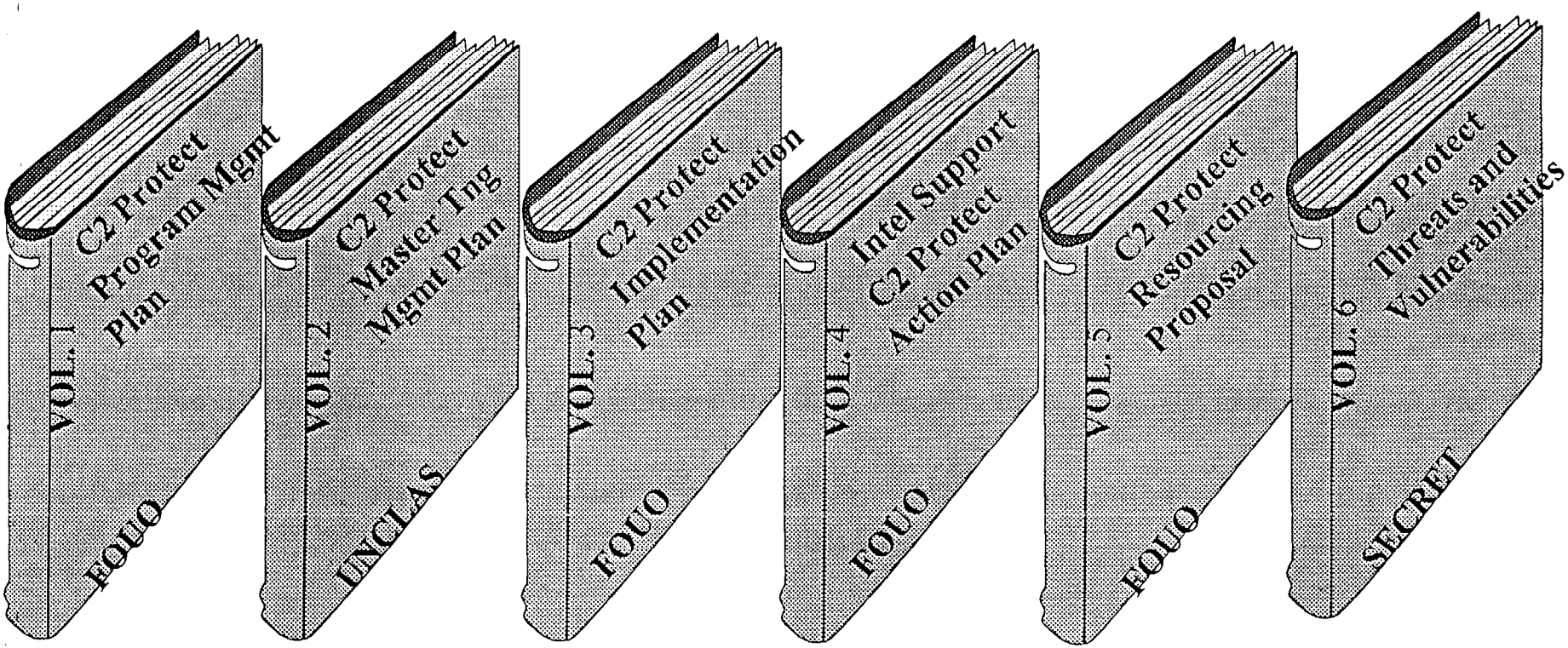
# Infofmation Security




- ☑ **Education/Awareness**
- ☑ **Training**
- ☑ **Public Forums**
  **Army Information Systems Security Council**
- ☑ **Policies and Procedures**
  - * The Army Plan
  - * AR 38049
- ☑ * AR 25/70 series
- ☑ **Land Information Warfare Activity**

# Army C2 Protect Library

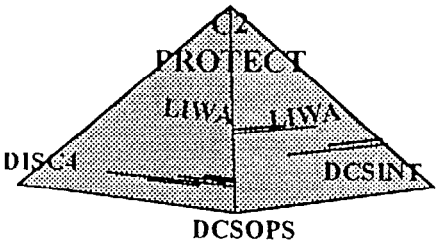



C2 Protect Planning Evolves into AR XXX-XX

C2 Protect - "Keeping The Highway Secure & Open For Force XXI"

# C2 Protect Working Group




## Current Members

DISC4 (Chair Mr. Loranger)
( Chair Mrs. Bailey)
IIAC (Chair MAJ Ptaszynski)

DCSINT (Mr. Henson)
DCSOPS (Mr. McDowell)
NII (Mr. Denison)
USATRADOC(Mr. Giffin)
USASIGCEN(Mr. Riddle/Kidd)
USAICS (LTC Mitchell)
USAISC (Mr. Reardon)
USAMC (Mr. Poh)
LIWA (Mrs. Schalestock)

PEO IEW (Mr Rabb)
USAINSCOM (CPT Wade)
DCSPER (LTC Brown)
DCSLOG (DALO-ZB)
OCAR (
SARDA (Mr York)
DISA (D34 & CISS)
PEOC3 (TBD)
AGC (Mr Rothlein)
USACAC (Mr. Jackson)
NGB (Mr. Marsteller)
NSA (DR MaConachy)
ADO (Mr Balough)
USA CAC (TPIO)
USAFORCMD (Mr Horton)

# ARMY.. ISSP REQUIREMENTS WITHIN FUNDING PEGS

C2 PROTECT
LIWA LIWA
DISC4 DCSINT
DCSOPS

## MODERNIZATION PEG

AIRTERM

BENIGN FILL

AKMS TIER 1 (EKMS)

SECURE TERMINAL EQUIPMENT

KIV-7

KG-40A

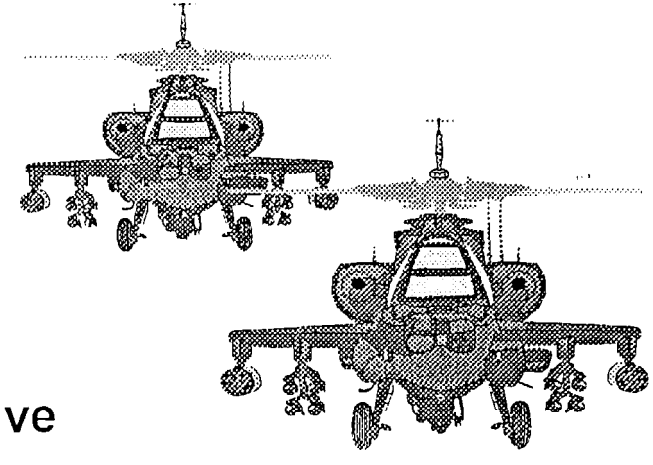
Multi Information System Security Initiative

## INFORMATION MANAGEMENT PEG

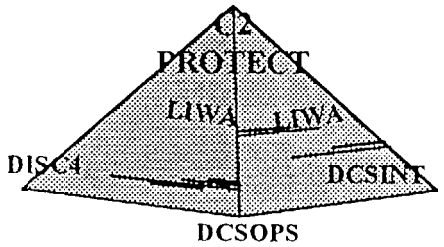
**Defense Message System**

MACOM

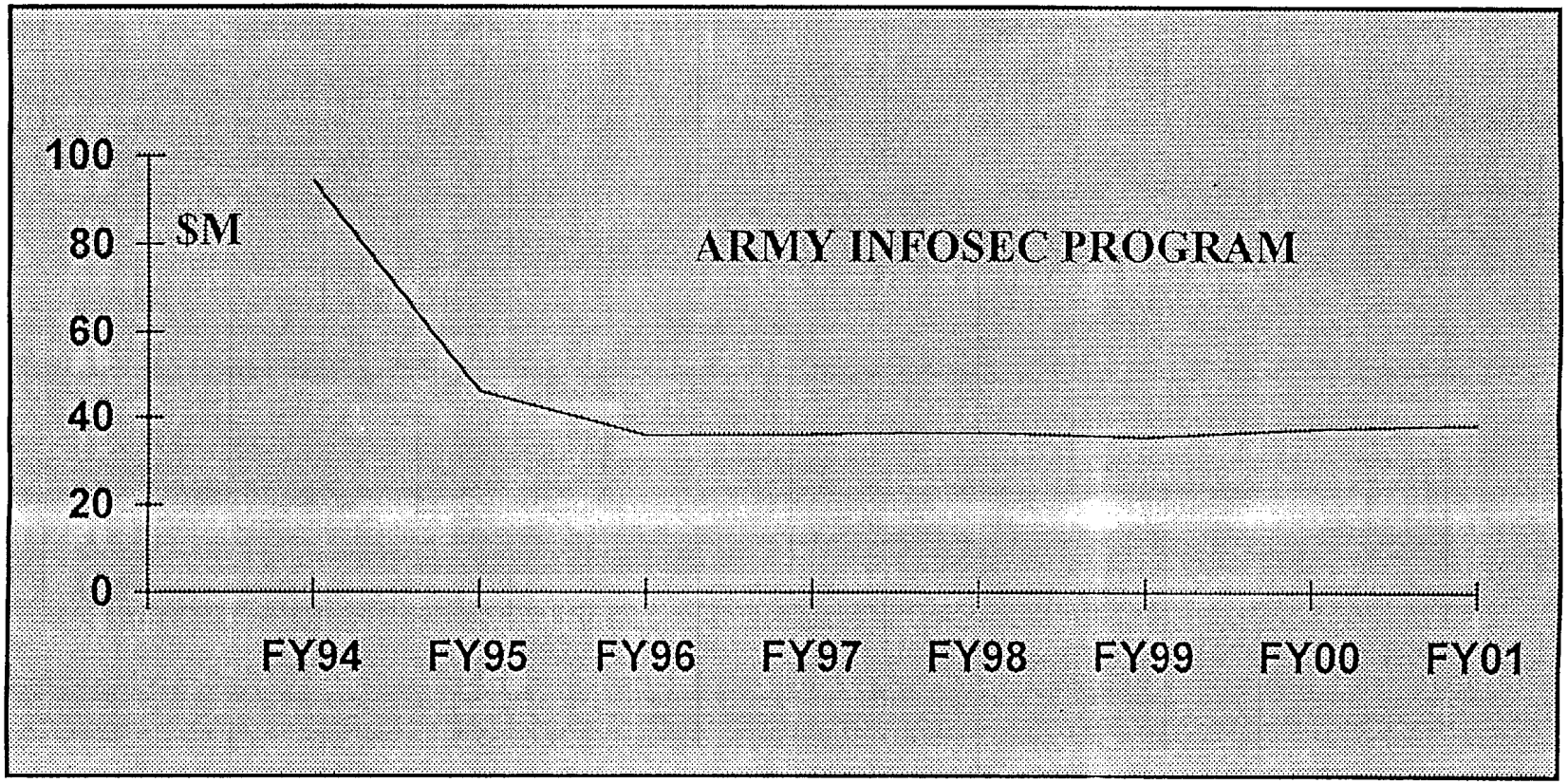
COMPUSEC



# ARMY ISSP FY94-01

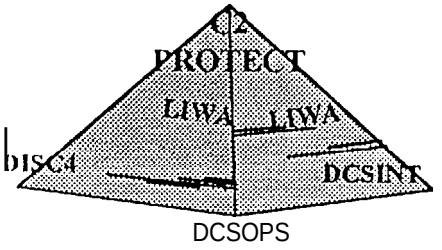



| FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 | FY01 |
|---|---|---|---|---|---|---|---|
| 94.4 (52%) | 45.9 (-22%) | 35.7 | 36.0 | 36.5 | 35.4 | 37.3 | 38.3 |




C2 Protect - "Keeping The Highway Secure & Open For Force XXI"

# Summary




- Funding, Personnel, Resourcing and Intelligence Integration Remain Greatest Challenges
- Focus on Education, Training, and Awareness
- C2 Protect Roles and Responsibilities are Defined
- C2 Protect Master Training Management Plan and Program Management Plan are in Draft and C2 Protect Library identified and on Track