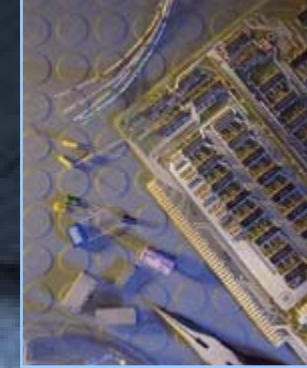
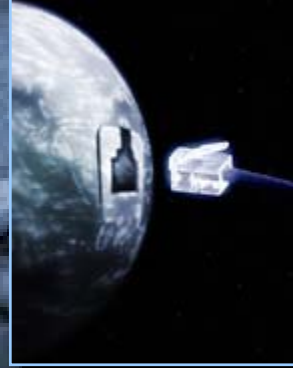




National Information Assurance Education and Training Program



<http://www.nsa.gov/isso/programs/nietp/index.htm>

Sherry Borrer s.borrer@radium.ncsc.mil

AGENDA

INFOSEC Training and Education

- **Documented Need**
- **Partnerships address long time problem**
- **NSA's Response:**
 - **NIETP**
 - **NIST-CNSS-NSA**
- **Linkage/Partnerships**
- **Future Initiatives**

OBJECTIVE

*Let's Take Advantage of Work Already Done, and
Work In Progress.*

CONTINUE THE PARTNERSHIP

INFOSEC Professionals: Today

- **Many full/part-time personnel not trained for the job they hold.**
 - Self Taught. “You Figure it out”
 - One the Job Training. “Learn by mistake”
 - Peer-to-peer exchange. “Security Guides and INFOSEC Lore”
 - Conferences, Vendor, and Govt.....Courses..... “If funds Available”



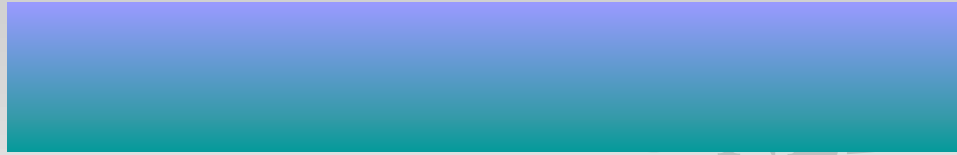
To Demonstrate Existence of a Career Field

- 1. Distinct Body of Knowledge
EDACUMS have documented
- 2. Body of Literature
Nat'l Conference & UC-Davis Project
- 3. Career Progression
Already exists in several agencies
Proposed in NCSC Pub #27
- 4. Sufficient Numbers of Personnel
(Dedicated to that Profession)
OPM study nearly completed

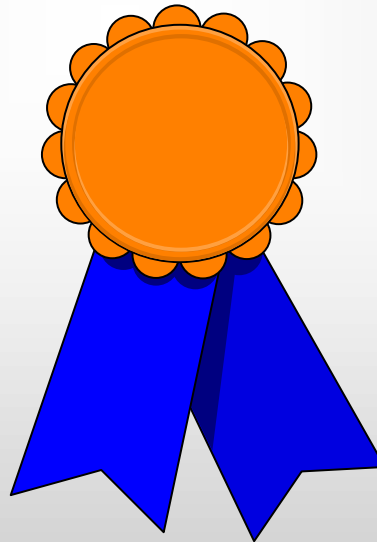
Long Time Problem

INFOSEC/IA Personnel Shortfalls

- Many security tasks not being adequately performed due to lack of personnel, training, and tools
- Critical security responsibilities assigned as additional duties
- Lack of comprehensive, consistent training for ISSOs security engineers, certifiers, accreditors



- NSTISSC 1993 report
 - INFOSEC Education and Training listed in top three priorities





“Education, training, and awareness are countermeasures that effectively reduce exposure to a variety of known risks. In order to achieve this end, it is essential to have a federal work force that is aware of, and educated about, the problems of information systems security (INFOSEC).”

Charles A. Hawkins, Jr.
Acting Chairman, NSTISSC
25 Feb. 1993

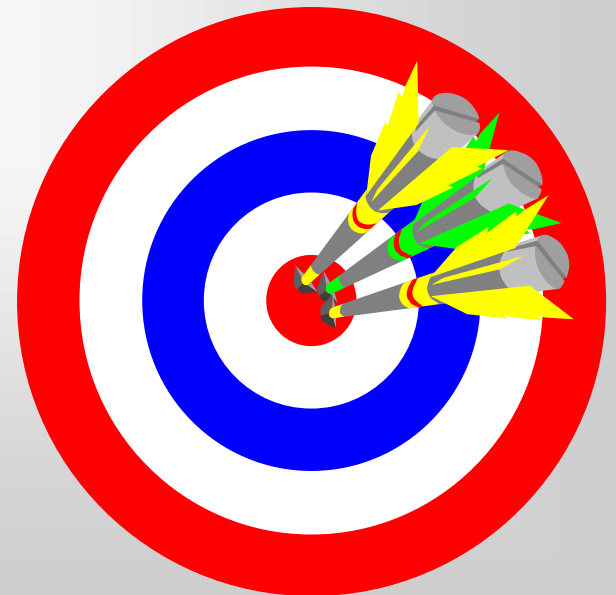
- Redefining Security 1994 report

- “Uniformity in skills and knowledge taught security professionals is needed not only to ensure the quality of work, but also to foster a common understanding and implementation of security policies and procedures.”



- OTA 1994 Report

- To be comprehensive, however, the generally accepted practices must be defined at several levels of detail, and different sets of the standards would apply to different users and applications.”



OTA Report

CONTINUED

“Some experts estimate that over one-half of the total financial and productivity losses in information systems is the result of human errors...”

Information Security and Privacy in Network Environments

Office of Technology Assessment. Sept. 1994

DOCUMENTED NEED

- **President's Commission on Critical Infrastructure Protection**
 - “NIST, NSA, and the U.S. Department of Education work in collaboration with the private sector to develop programs for education and training of information assurance specialists and for the continuing education as technologies change. This effort should also support “training the trainers” to provide an adequate cadre of qualified instructors to teach technicians.”

Critical Foundations: Protecting America's Infrastructures. The report of the President's commission on Critical Infrastructure Protection. Oct., 1997. P71.
(<http://www.pccip.gov/>)

NSA's RESPONSE



Mission

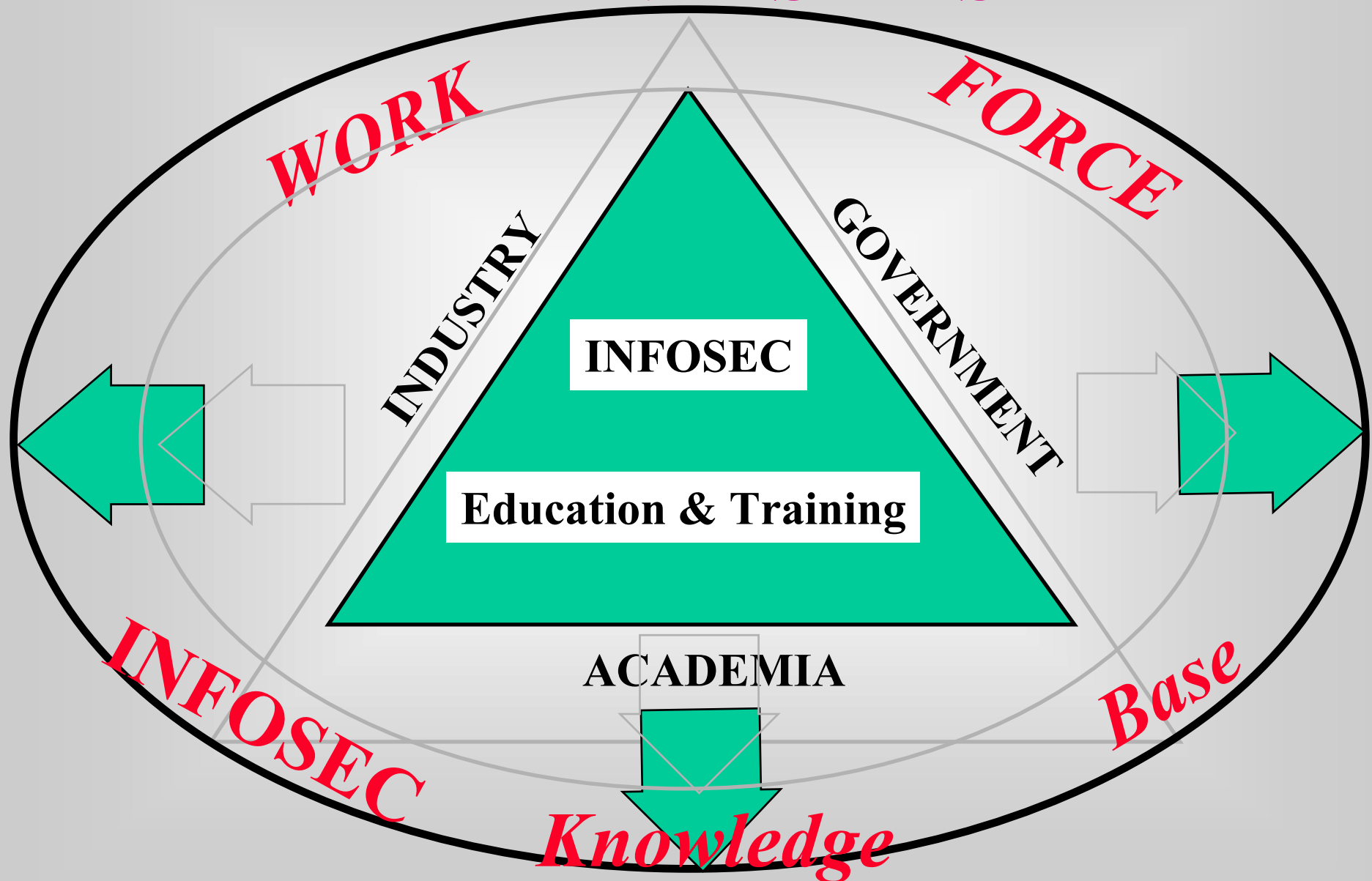
Be a leading advocate for improving information system security (INFOSEC) education and training nationwide.

NIETP Activities Related to PDD63

Highlights at a glance

- **National INFOSEC Education & Training Program (NIETP)** (<http://www.nsa.gov:8080/isso/programs/nietp/index.htm>)
 - **National Training Standards**
 - **National Colloquium for Information Systems Security Education**
 - **Centers of Academic Excellence in Information Assurance Education**
 - **Courseware Evaluation Program for Certification**
 - **Support to Military Services**
 - **Academic Outreach**
 - **Products**
 - **Support to President's Critical Infrastructure Protection Board**

PARTNERSHIPS

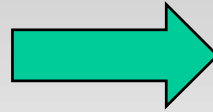


NSA Designated Executive Agent

*Assistant Secretary of Defense
Command, Control, Communications and Intelligence
MEMO Dated July 2, 2001*

“I hereby delegate to the Director, National
Security Agency, the authorities and
responsibilities of the Secretary of Defense
under the following statute:
Public Law 106-398

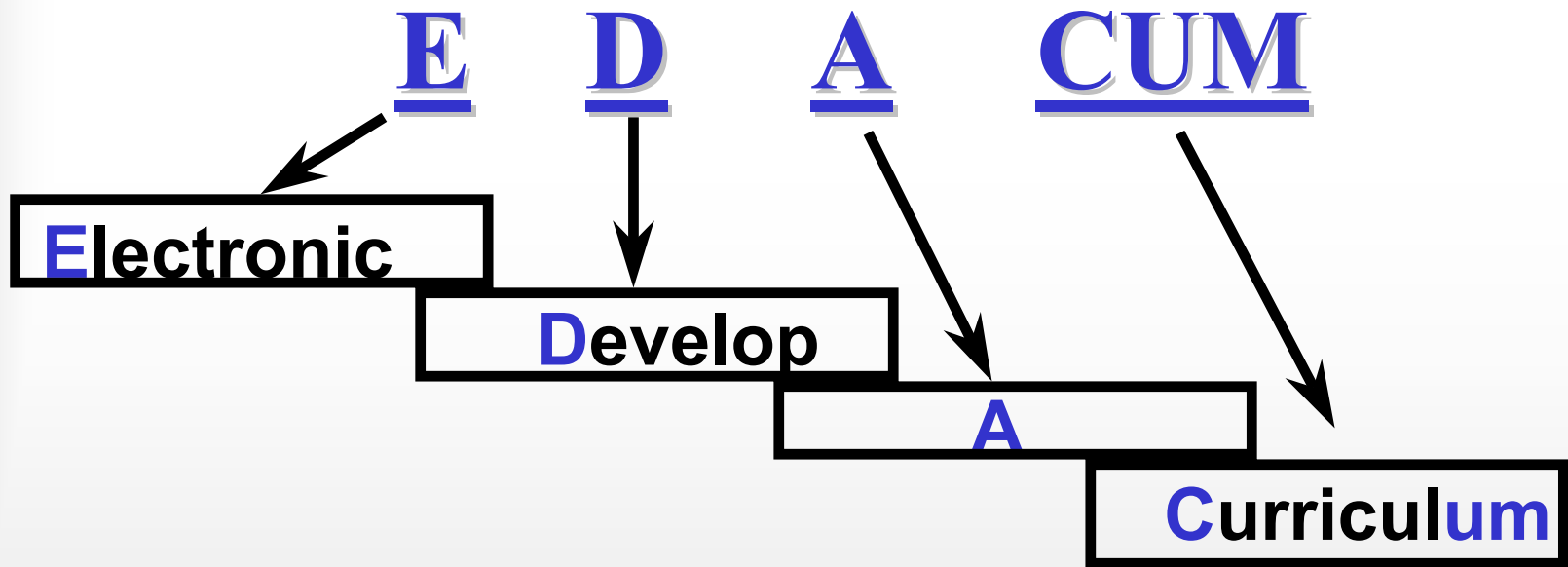
Department of Defense Scholarships for Service Program



NSTISSC redesignated CNSS

Committee on National Security Systems

“The CNSS provides a forum for discussion of policy issues, sets national policy, and promulgates direction, operational procedures, and guidance for the security of national security systems through the CNSS issuance system”.



A method of involvement and consensus building to determine training needs as identified by skilled workers and professionals.



**A joint NSA and ISU venture
for producing CNSS
Training Standards**



EDACUM

**A consortium of over 1000 INFOSEC Professionals
from:**

Government

NSA
NIST
DISA
SERVICES
EDUCATION
COMMERCE
HHS
TREASURY
House of Reps

Industry

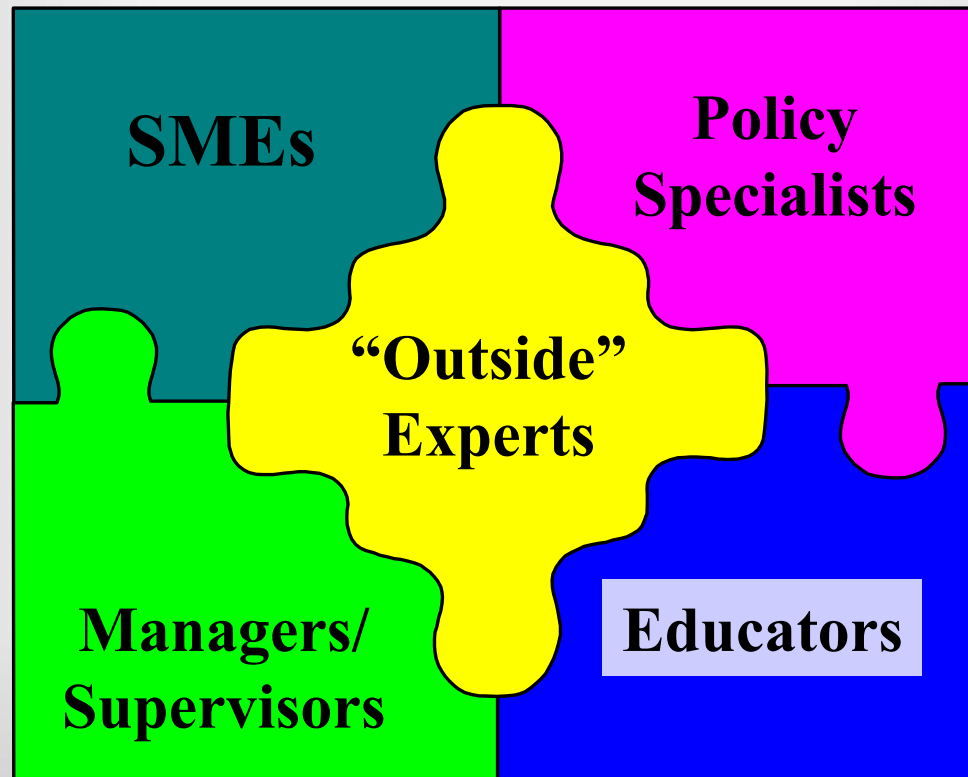
ISI
ISSA
ISC
ARCA
MIS
Rockwell

Academia

Idaho State University
Navy PGS
NCS

EDACUM Principle

Strength Through Diversity



Stakeholders and Partners in Change

K S A S

- **KNOWLEDGE**: Broad comprehension of a subject that cannot necessarily be applied
- **SKILL**: Comprehension of a subject that is/can be specifically applied to a job
- **ATTRIBUTE (ABILITY)**: Personality characteristics which are/can be developed to enhance job performance

KSA...to...BEHAVIORAL OBJECTIVE:

PROGRESSION

- ▶ KSA
 - “Password Protection”
- ▶ PERFORMANCE ITEM
 - “Construct password protection schema”
- ▶ BEHAVIORAL OBJECTIVE
 - CONDITION: “Given password protection algorithm”
 - BEHAVIORAL: “Construct password instruction set for a Windows NT network”
 - STANDARD: “Which provides minimum 6 letter character and 30 day expiration date per new password”

System Administrator

Audit Function (Entry Level)

Work Closely with ISSO to ensure the AIS or network is used securely

- **Policy and Procedures**

- Explain the purpose of a system audit
- State logging policies
- Reproduce documentation required in event of a detected intrusion to the system
- Explain Electronic Records Management policy by monitoring notification
- Describe the need for separation of duties
- Explain Audit
- State audit trails and logging policies
- Reproduce documentation

Example INFOSEC Standard System Administrator:

Competency # 2: Access Control

KSA # 2.a Policies/Administration (*9)

Performance Item # 2.a.1

“Use network access change controls as designed”

Competency # 4: Audit

KSA # 4.c Tools (*7)

Performance Item # 4.c.6

“Identify two intrusion detection systems”

INFOSEC Electronic DACUMs to date

DACUM I: Establishing the basics

- Aug '92: Define A, T, & E levels/
produce awareness materials.

DACUM II: Creation of new AT&E Matrix

- Aug '93: Build Nat'l. AT& E Model

DACUM III: Unified Taxonomy for ISS Professors

- Nov '93: Define and categorize KSAs.

DACUM IV: From Theory to Instruction

- Apr '94: Defined 3 operational level training Reqs.

DACUM V: National Training Standards

- Sept '94: Producing 3 draft NSTISSI 40XX.

DACUM VI: System Certifier Standard

- June '95: Define Trng. Std. for Certifier.

INFOSEC Electronic DACUMs to date

Cont.

DACUM VII: Completing A Picture

- June '98; Integrating DITSCAP

DACUM VIII: Defining Risk Analyst

- March '99: An emerging career

DACUM IX: Updating the Previous Work

- June 2000, Transforming standards from INFOSEC to IA

DACUM X: Putting IA into all of the standards

- March 2002 – Using Govt., Industry and Academia to transform the standards.



National Training Standards

<http://www.nstissc.gov/html/library.html>

Information Systems Security Professionals - No. 4011

Designated Approving Authority - No. 4012

System Administrators (INFOSEC) - No. 4013

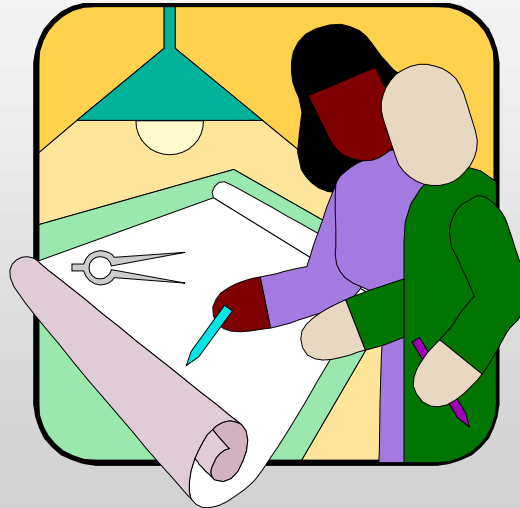
Information Systems Security Officers - No. 4014

System Certifiers - No. 4015

Risk Analyst - No. 4016 *Under Development*



Quality of Training



NSTISSI - 4011
NSTISSI - 4012
NSTISSI - 4013



NSTISSI - 4014
NSTISSI - 4015
NSTISSI - 4016

**Information Assurance
Courseware Evaluation
Project**

Notification

Certification

**Departments
Agencies &
Institutions**

Delivery

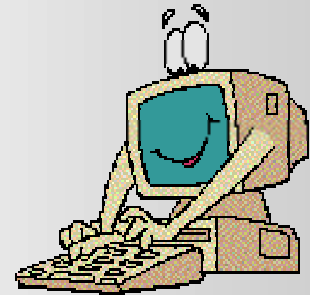
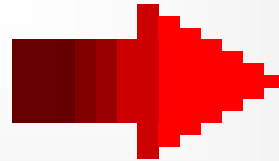
**Certified
Training
Provider**

Electronically Submit to Web

ACADEMIA

Data

GOVERNMENT



COMMERCIAL

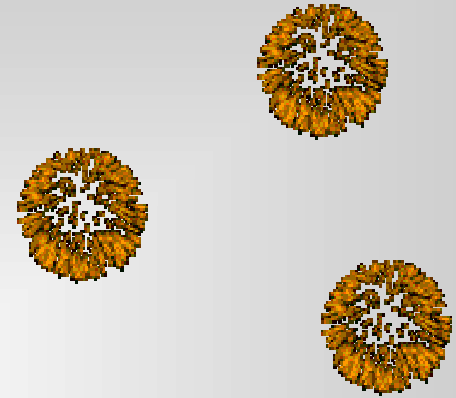
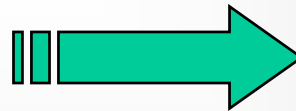
Data

100% MAPPING

National Standards



Curriculum



Certification

Certified Organizations



AIR FORCE INSTITUTE OF TECHNOLOGY - 4011

ARC INFORMATION ASSURANCE INSTITUTE – 4011, 4012, 4015

GEORGE MASON UNIVERSITY – 4011

GEORGE WASHINGTON UNIVERSITY - 4011

FLORIDA STATE UNIVERSITY – 4011

IDAHO STATE UNIVERSITY – 4011, 4013, 4014, 4015

INDIANA UNIVERSITY OF PENNSYLVANIA - 4011

INFORMATION RESOURCES MANAGEMENT COLLEGE – 4011

IOWA STATE UNIVERSITY – 4011

JOHN HOPKINS UNIVERSITY - 4011

NAVAL POST GRADUATE SCHOOL – 4011

NORWICH UNIVERSITY – 4011, 4014

Certified Organizations



NEW MEXICO TECH - 4011

NORTHEASTERN UNIVERSITY - 4011

PURDUE UNIVERSITY - 4011

STATE UNIVERSITY OF NEW YORK AT BUFFALO – 4011

STATE UNIVERSITY OF NEW YORK AT STONY BROOK - 4011

TOWSON UNIVERSITY - 4011

UNIVERSITY OF CALIFORNIA, DAVIS - 4011

UNIVERSITY OF IDAHO – 4011

UNIVERSITY OF MARYLAND UNIVERSITY COLLEGE – 4011

UNIVERSITY OF NEBRASKA AT OMAHA – 4011

UNIVERSITY OF TEXAS AT SAN ANTONIO - 4011

UNIVERSITY OF TULSA – 4011, 4012, 4013, 4014, 4015



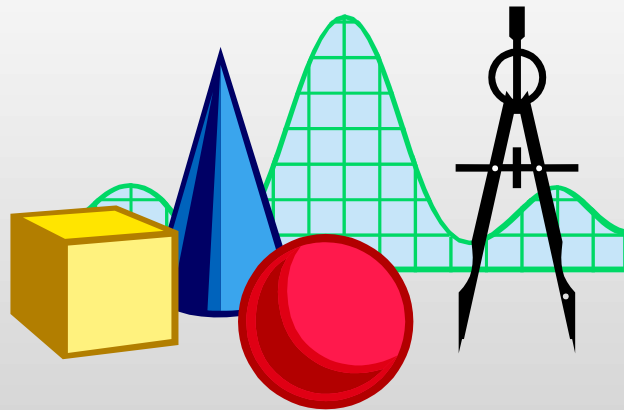
Certified Organizations

SANS INSTITUTE – 4013

UNIVERSITY OF WISCONSIN, MILWAUKEE - 4011

UNIVERSITY OF FINDLAY - 4011

ACADEMIA



Emerging Role of Academia

- The number of colleges teaching INFOSEC is increasing.
- Integrated & stand alone courses.
- Whole degree programs.
- Good geo-locations.

A Force Multiplier



The Not So Good News*

- Today there are only **four** declared, dedicated computer security research centers in degree granting departments at universities in the United States
- Over the past five years, approximately 5,500 PhDs in computer science and engineering were awarded by universities in the US. Only 16 of those were awarded for security-related research at these major centers (only **8 of the 16 were U.S.** Nationals)

Dr. Eugene Spafford
Testimony to House Science Comm.
Feb. 11, 1997



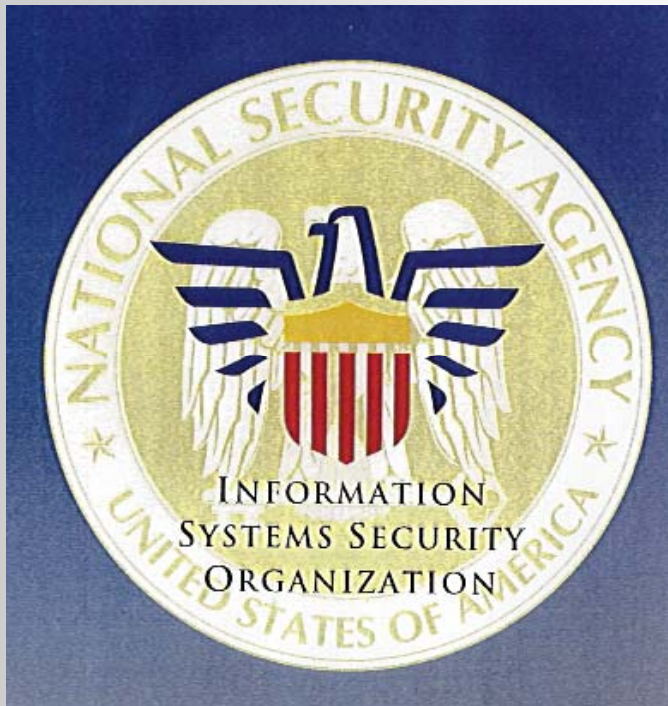
The White House
2000

Defending America's Cyberspace

“In developing the Federal Cyber Service initiative, we can leverage existing Federal education, training and awareness programs. In education, the NSA has a program to designate universities as Centers of Academic Excellence in Information Assurance Education based on established criteria rooted in the **National Security Telecommunications and Information Systems Security Committee (NSTISSC)** training standards.”

Partnerships with Academia

Centers of Academic Excellence in Information Assurance Education



Reducing the vulnerability of our NII by promoting higher education in information assurance, and producing a growing number of professionals with IA expertise in various disciplines.

<http://www.nsa.gov/isso/programs/coeiae/index.htm>



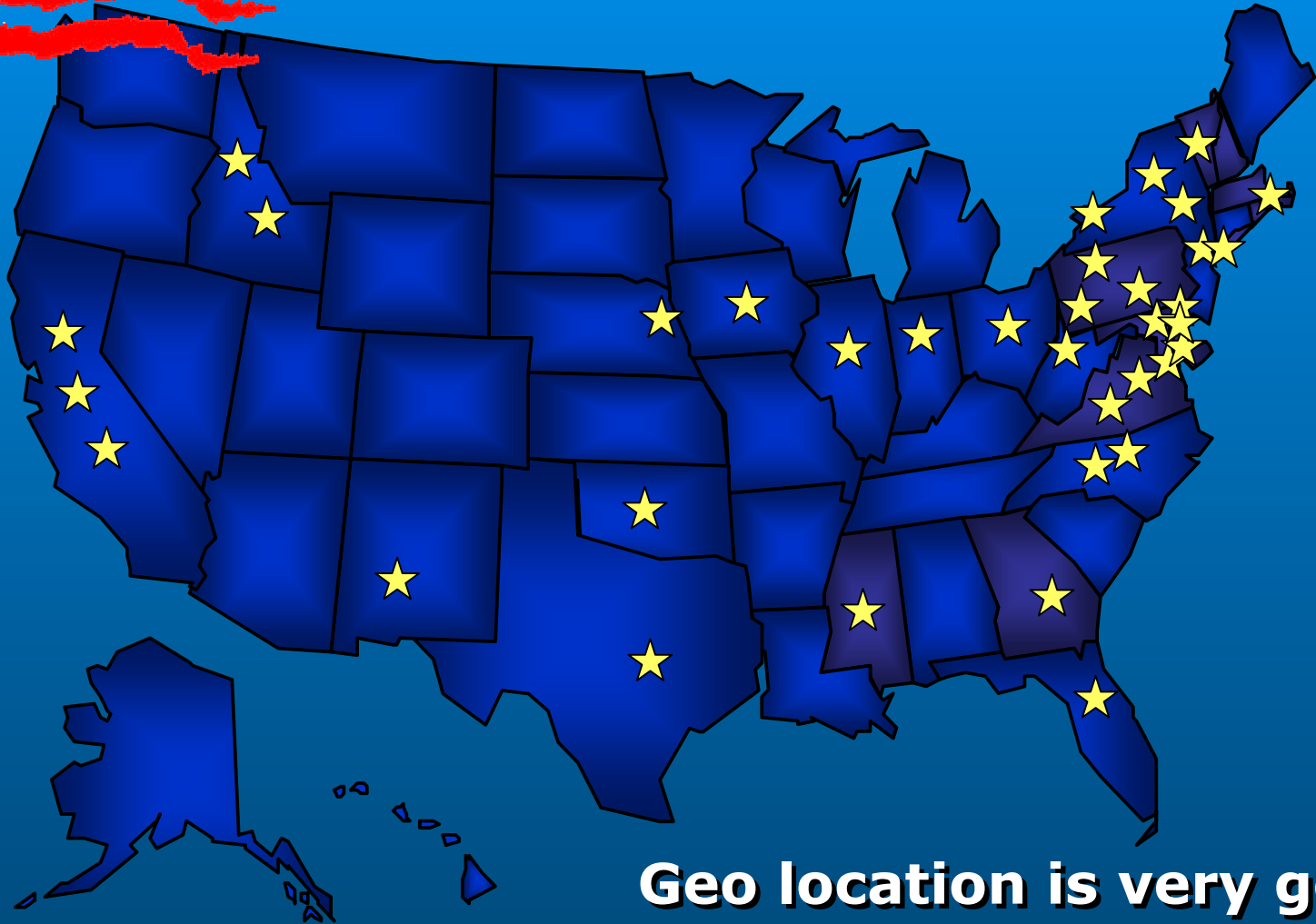
Centers Of Academic Excellence in Information Assurance Education (Graduate and Undergraduate Levels)

Criteria for Measurement

<http://www.nsa.gov:8080/isso/programs/coeiae/measure.htm>

- 1. Use of NSTISSC Training Standards**
- 2. I A treated as multidisciplinary**
- 3. Demonstration of use of IA within the university**
- 4. Encourages research in IA**
- 5. IA curriculum reaches beyond normal geographic borders**
- 6. Faculty active in IA research and practice**
- 7. State of the art IA reference system/materials**
- 8. Declared concentrations in IA**
- 9. Declared center for I A education**
- 10. More than one faculty member**

NSA-Designated Centers of Academic Excellence in Information Assurance Education Partnership for Critical Infrastructure Security



Geo location is very good.

★ Centers of Academic Excellence in IA Education



Centers of Academic Excellence in Information Assurance Education

Academic Years 1999-2002

**James Madison University
George Mason University
Idaho State University
Iowa State University
Purdue University
University of California at Davis
University of Idaho**

Academic Years 2000-2003

**Carnegie Mellon University
Florida State University
Information Resources Management
College, National Defense University
Naval Postgraduate School
Stanford University
University of Illinois at Urbana Champaign
University of Tulsa**

Academic Years 2001-2004

**Drexel University
Georgia Institute of Technology
Mississippi State University
Norwich University
Syracuse University**

**United States Military Academy, West Point
University of Maryland, Baltimore County
University of North Carolina, Charlotte
West Virginia University**



Centers of Academic Excellence in Information Assurance Education

continued

Academic Years 2002-2005

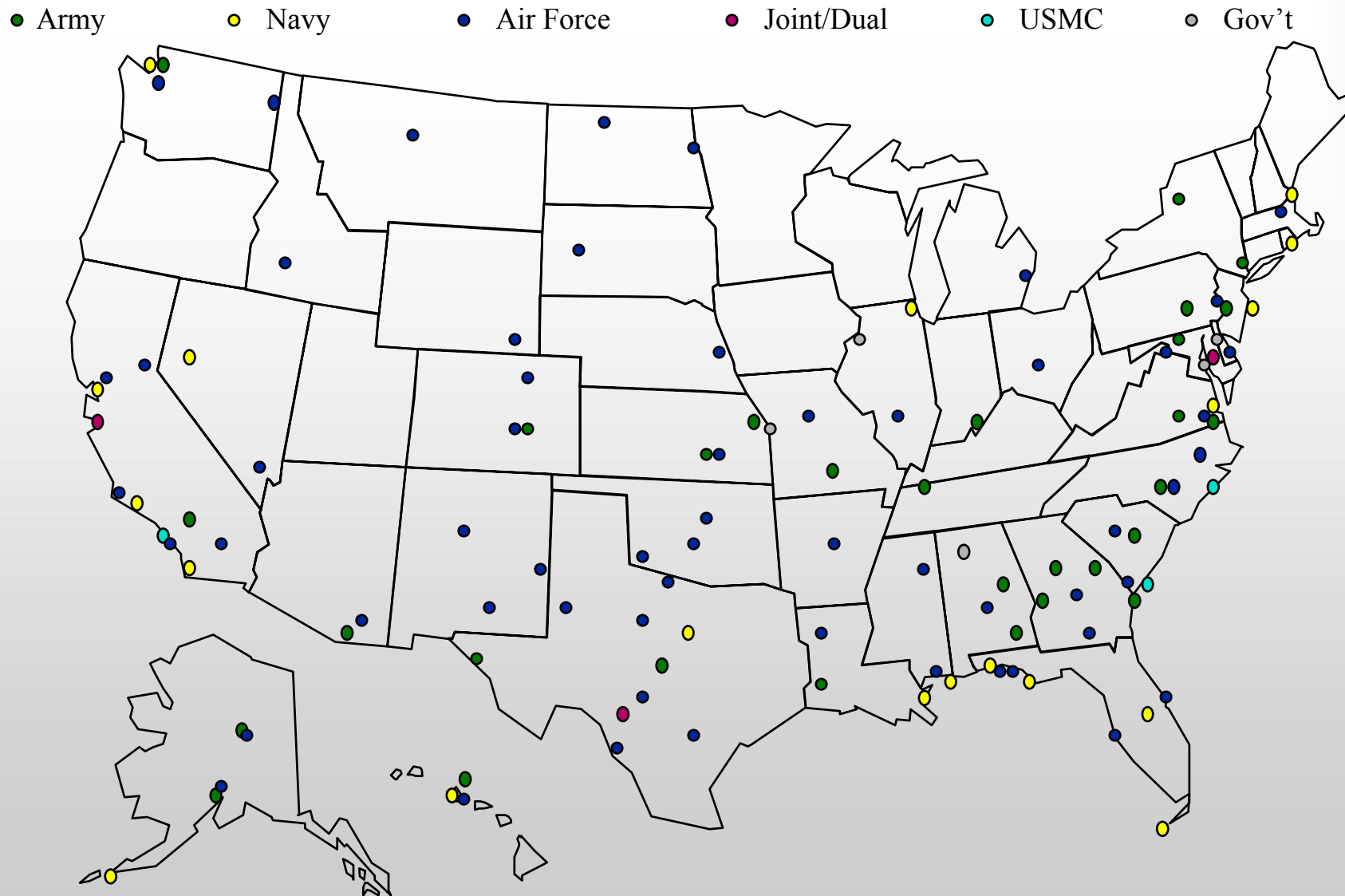
New Designations:

Air Force Institute of Technology
George Washington University
Indiana University of Pennsylvania
New Mexico Tech
North Carolina State University
Northeastern University
Polytechnic University
State University of New York, Buffalo
State University of New York, Stony Brook
Towson University
University of Maryland, University College
University of Nebraska, Omaha
University of Texas, San Antonio

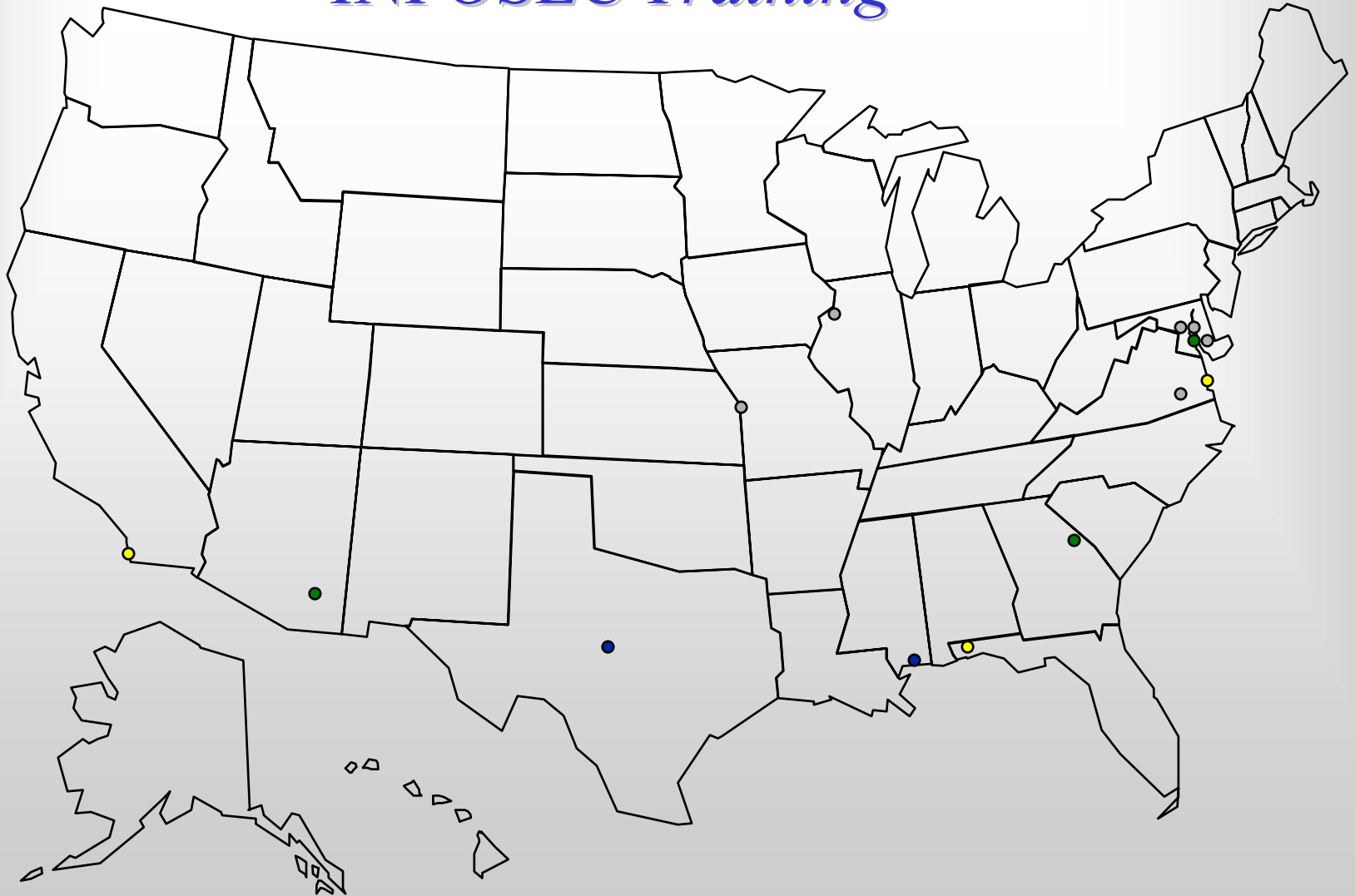
Re-Designations:

James Madison University
George Mason University
Idaho State University
Iowa State University
Purdue University
University of California, Davis
University of Idaho

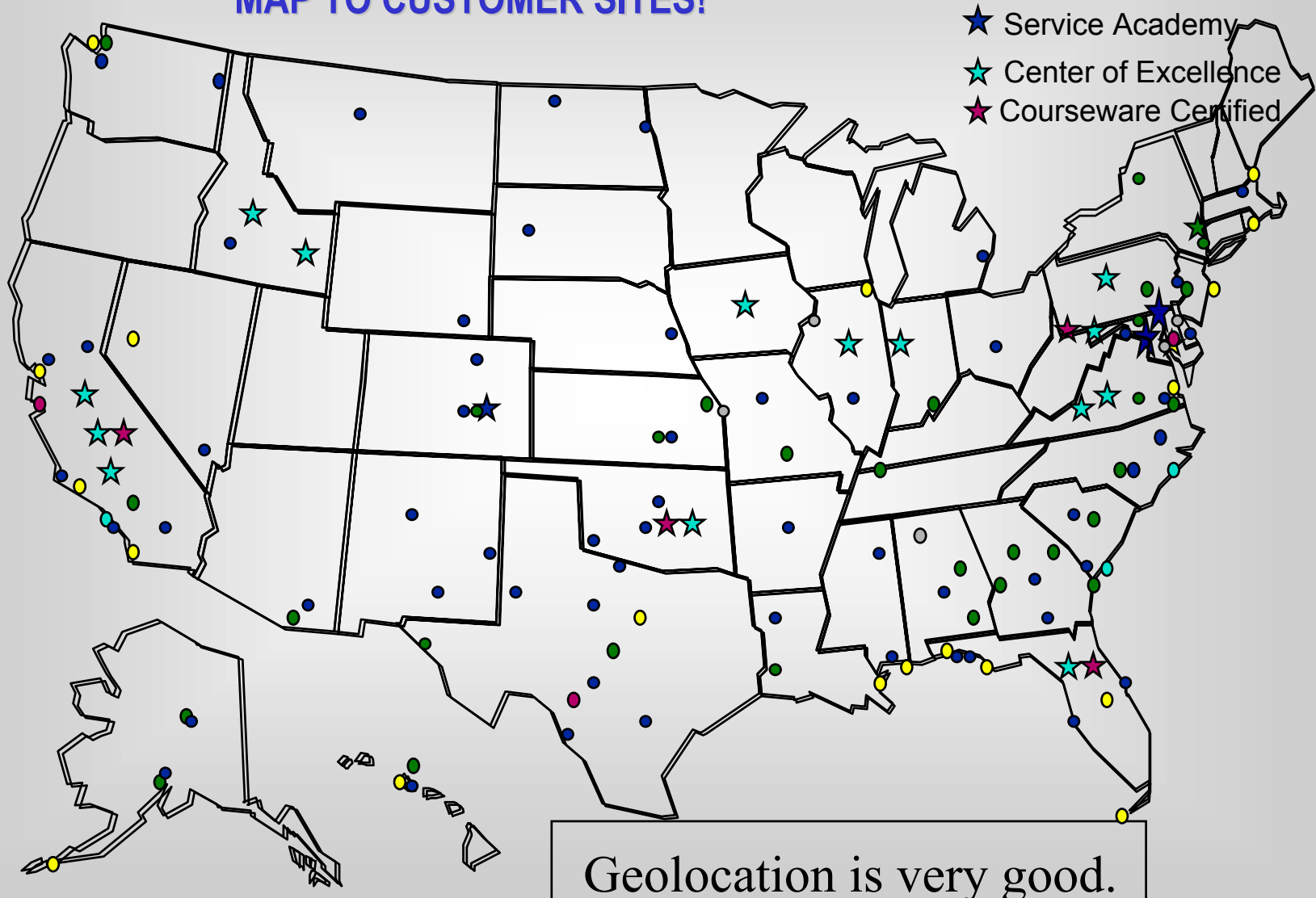
Major DoD Military Installations



Gov't/DoD Bases/Agencies w/ INFOSEC *Training*



**NSA Centers of Academic Excellence in IA Education
Service Academies
Institutions with NSTISSC IA Certified Courseware
MAP TO CUSTOMER SITES!**



University Based Web Sites

George Mason: Center For Secure Information Systems

<http://www.isse.gmu.edu/~csis>

**Purdue University: Center for Education and Research
in Information Assurance and Security**

<http://www.cerias.purdue.edu>

University of California, Davis: Security Lab

<http://seclab.cs.ucdavis.edu/Security.html>

James Madison University

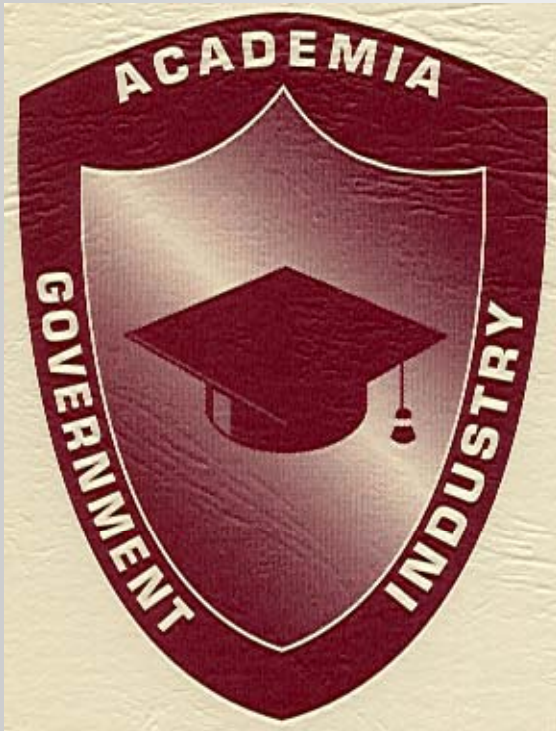
<http://www.infosec.jmu.edu>

[http://cob.jmu.edu/mba/MBAPgms.htm#TheInformation
Security MBA](http://cob.jmu.edu/mba/MBAPgms.htm#TheInformationSecurityMBA)

Colloquium for Information Systems Security Education

<http://www.infosec.jmu.edu/ncisse>

Partnerships with Business, Academia, & Government



National Colloquium for Information Systems Security Education

Purpose: The Colloquium provides a forum for leading figures in government, industry and academia to work in partnership to define current and emerging requirements for information security education and to influence and encourage the development and expansion of information security education, especially at the graduate and undergraduate levels.

<http://www.infosec.jmu.edu/ncisse>

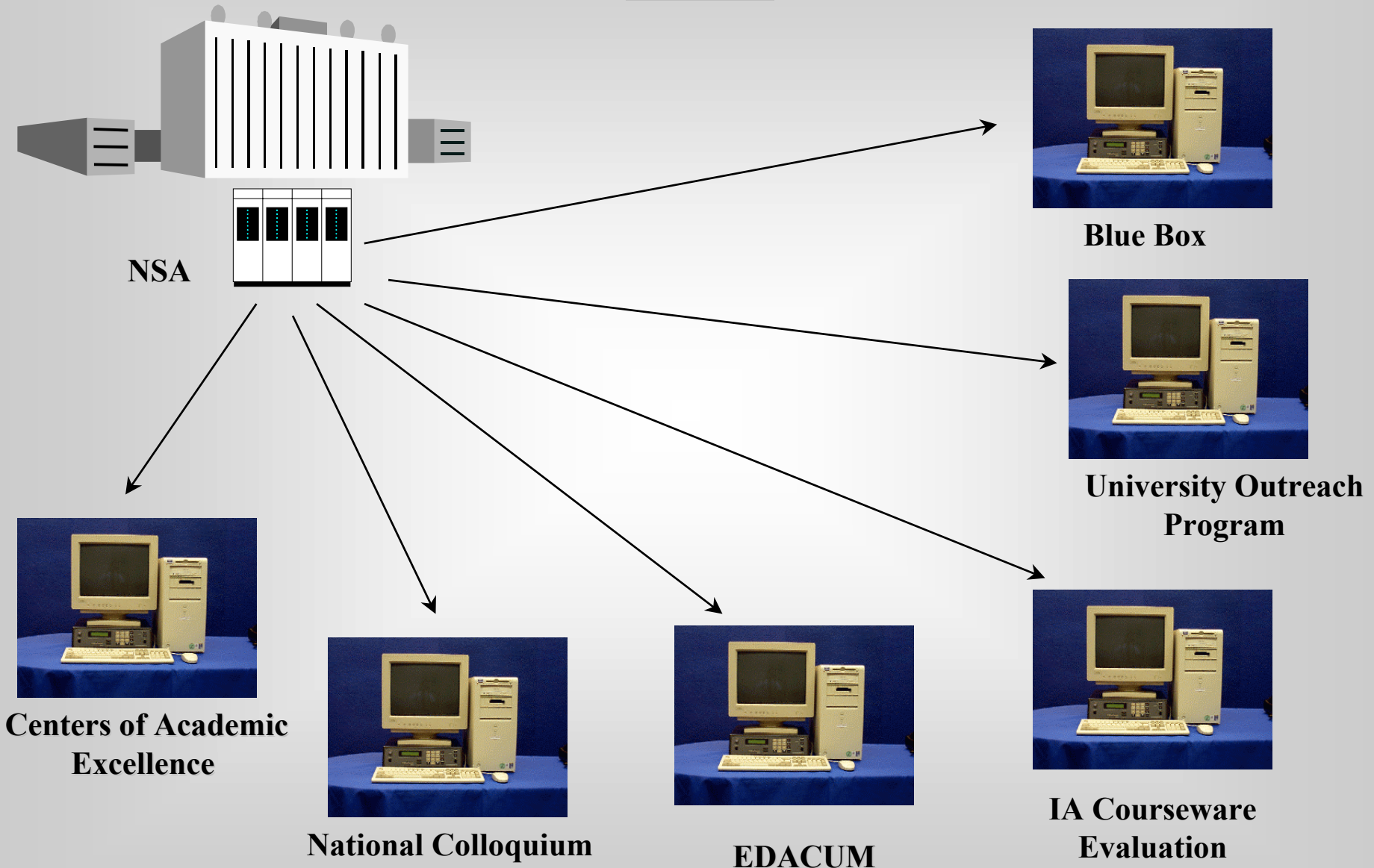


In Summary



National INFOSEC Education & Training Program

(NIETP)



“Educational Solutions for a Safer World”

National

INFOSEC

Education

&

Training

Program

National Security Agency

ATTN: I2

9800 Savage Road

Fort Meade, Maryland 20755-6000

Dr. Vic Maconachy, Program Manager:

w.macona@radium.ncsc.mil

Phone: (410) 854-6206

FAX: (410) 854-7043