Information Assurance Program at West Point

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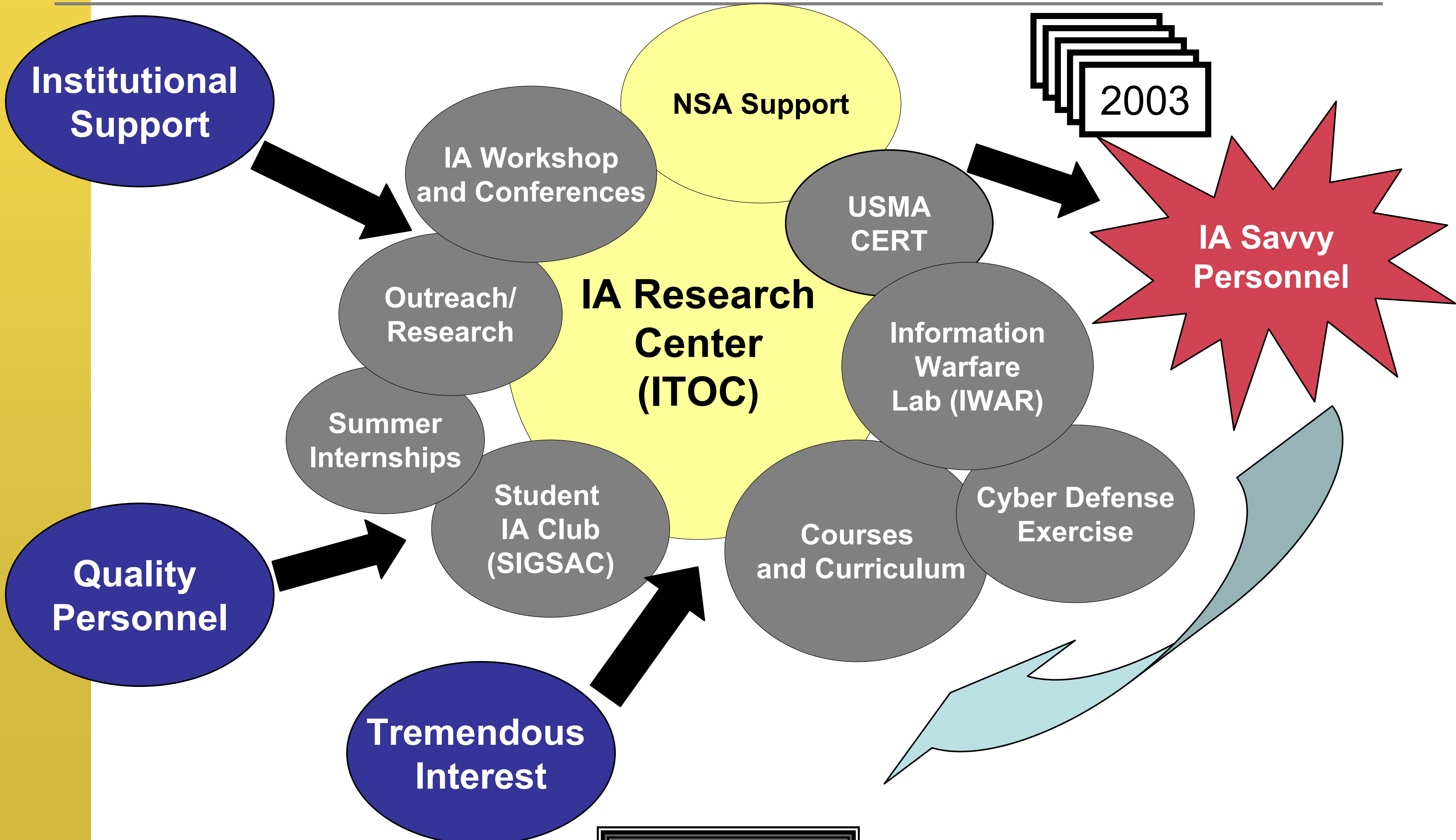
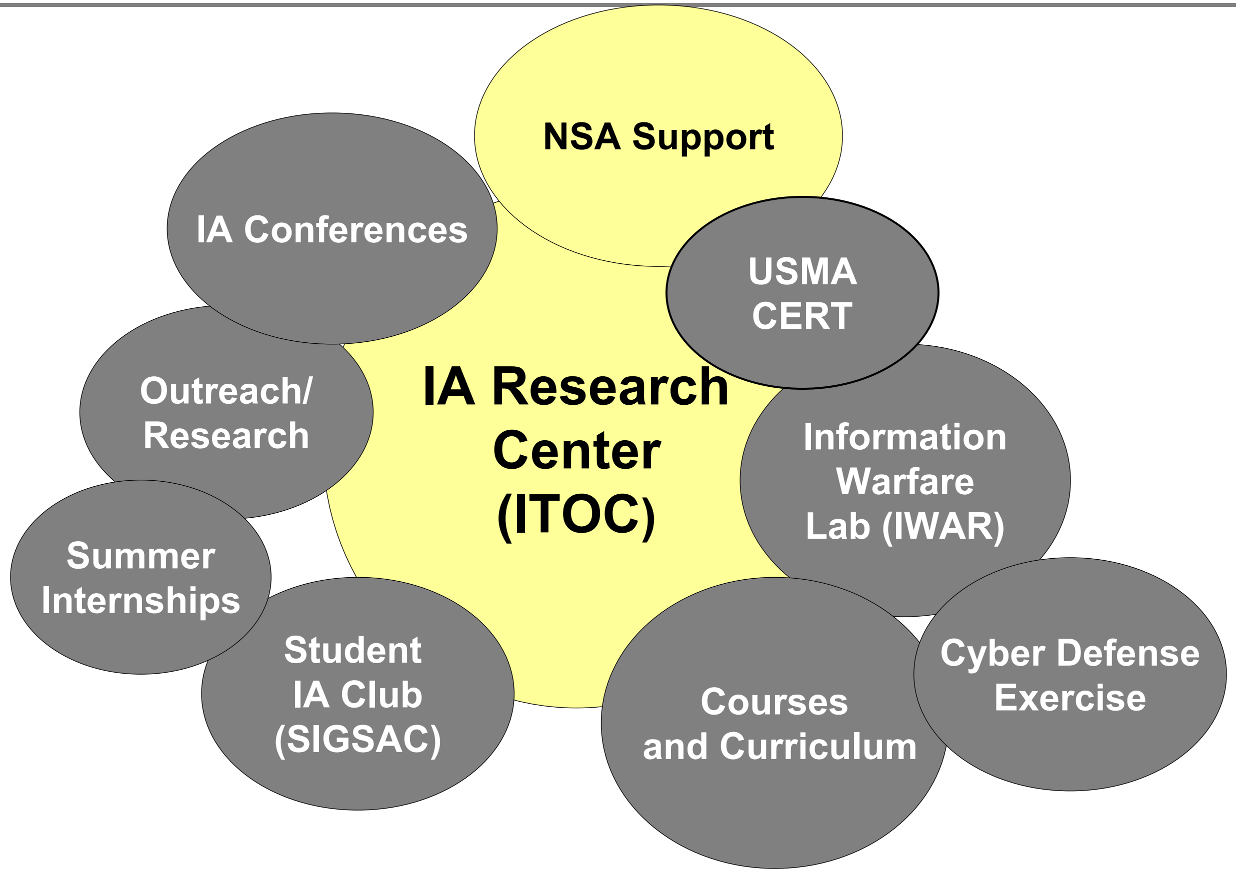
Duty, Honor Country

USMA Information Assurance Program



USMA IA Program



USMA IA Program Mission

- "Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah Blah …"

-LTC Dan Ragsdale

ITOC Director

Information Assurance Courses

- Primary
  - **CS482 *Information Assurance***
  - IT460 *Policy and Strategy of Cyberwar*
  - MA489 *Cryptography*
  - LW489 *Cyberlaw*
- Supporting
  - CS484 *Computer Networks*
  - IT105 *Introduction to Information Technology*
  - IT305 *Introduction to Military Information Technology*
- Other computer science courses
  - Have IA awareness woven into them

Student IA Club

- ACM SIGSAC Chapter
- Formed January 2001
- 450+ Members
  - Interdisciplinary (All Academic Departments Represented)
- Won 2001-2002 ACM Outstanding Activities Award
  - SIGSAC IWAR Lab
  - Speakers
  - Community Service
- www.itoc.usma.edu/sigsac/

Summer Internships [1 of 2]

- NSA - Network Evaluation Intern Program
- US Secret Service, Electronic Crimes Branch – Honeypot research
- Joint C4ISR Battle Center - Enhanced C4ISR Homeland Security Operations (ECHO)
- ITOC - Information Assurance Vulnerability Alert (IAVA) Compliance Prototype
- AMC-DOD - UAV multi-mission payload analysis
- Microsoft – Microsoft Intern

Summer Internships [2 of 2]

- US Army Information Technology Agency - Network Security Services-Pentagon
- Livermore National Laboratory - UAV Simulation
- High Performance Computing Modernization Office - Network Monitoring Initiative
- RCERT Pacific - Intrusion Detection and Analysis
- 1st IO Command(ACERT,RCERT Korea & Europe) - Intrusion Detection and Analysis
- AMC-DOD - Crowd Simulation in Realistic Simulations

Guest Speaker Program

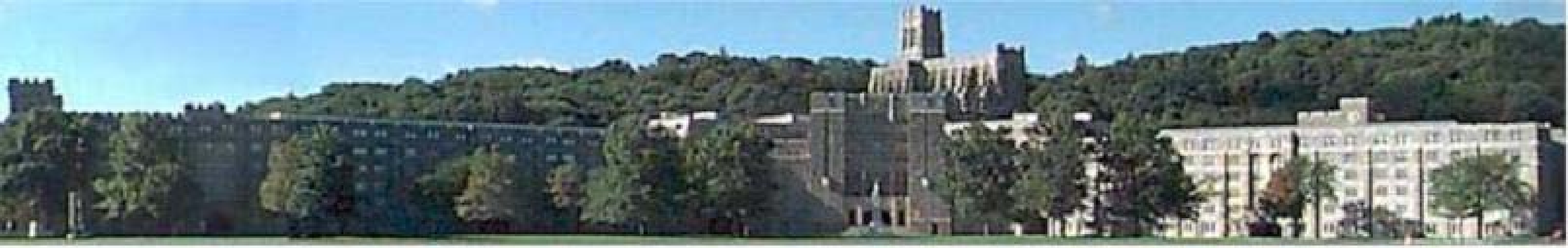
- Government
- Military
- Academia
- Business

ITOC Research Topics

- Information Technology and Operations Center
  - Decision Support
    - Automated Imagery Analysis
    - Automated Terrain Analysis
  - Information Assurance
    - Network Deception (Honeynets / Network Camouflage)
    - Open Source Tool Employment
    - Intrusion Detection and Response
    - Information Assurance Simulation
    - Network and Computer Forensics
    - Wireless Security

ITOC Outreach Projects

- Information Assurance Vulnerability Alert (IAVA) Compliance Prototype – NSA, 1st IO Command
- Network Deception (Honeynets) - 1st IO Command, US Secret Service
- Information Assurance Curriculum and Training Development – NSF, 1st IO Command
- Classroom XXI – Army Training and Doctrine Command
- Military Academy Attack Defense Network (MAADNet) – Office of the Secretary of Defense, NSF
- Network Forensics and Email Recovery– US Secret Service
- Wireless Security
- T4IA – NSF



4th Annual IEEE Information Assurance Workshop June 18-20, 2003 West Point, New York

Sponsored by IEEE and NSA

http://www.itoc.usma.edu/workshop/

Duty, Honor Country

Information Warfare Analysis and Research (IWAR) Lab

- Isolated network
  - Wide variety of target machines
  - Full 18 seat classroom
  - Dedicated lab director
- Used to support courses
  - CS482 *Information Assurance* (primary user)
  - SS490 *Policy and Strategy of Cyberwar* (primary user)
  - CS484 *Networks* (projected)
  - IT105 *Intro to Information Technology* (awareness)
  - IT305 *Intro to Military Information Technology*

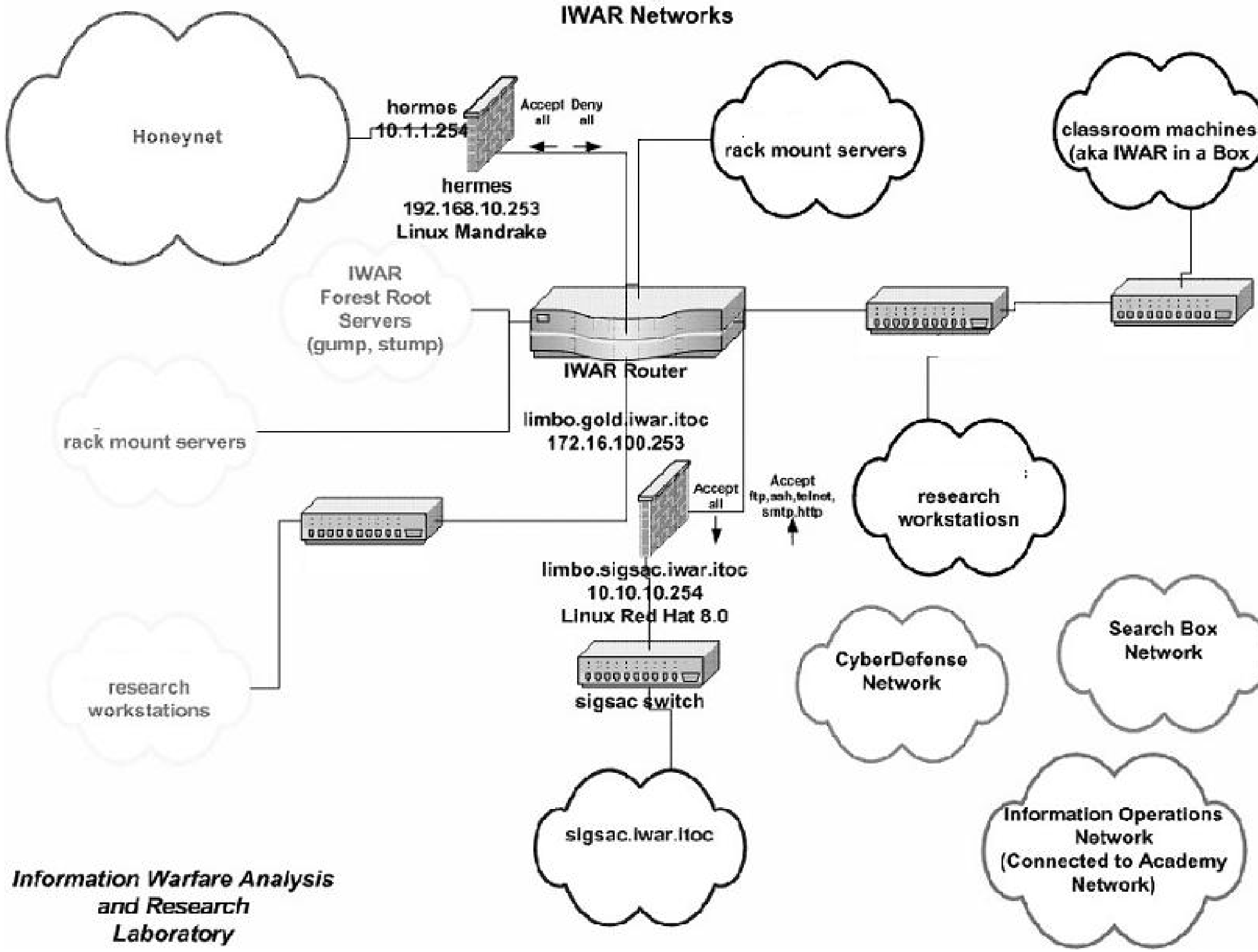
IWAR Laboratory Design Goals

- Realistic
  - Provide a “real world” signature
  - Shared Resources
  - *Soft* and *Hard* targets
- Heterogeneous
  - Operating Systems
  - Network Protocols/Equipment
  - Offensive and Defensive Tools
- Reconfigurable
  - Ghost Images
  - Removable hard drives

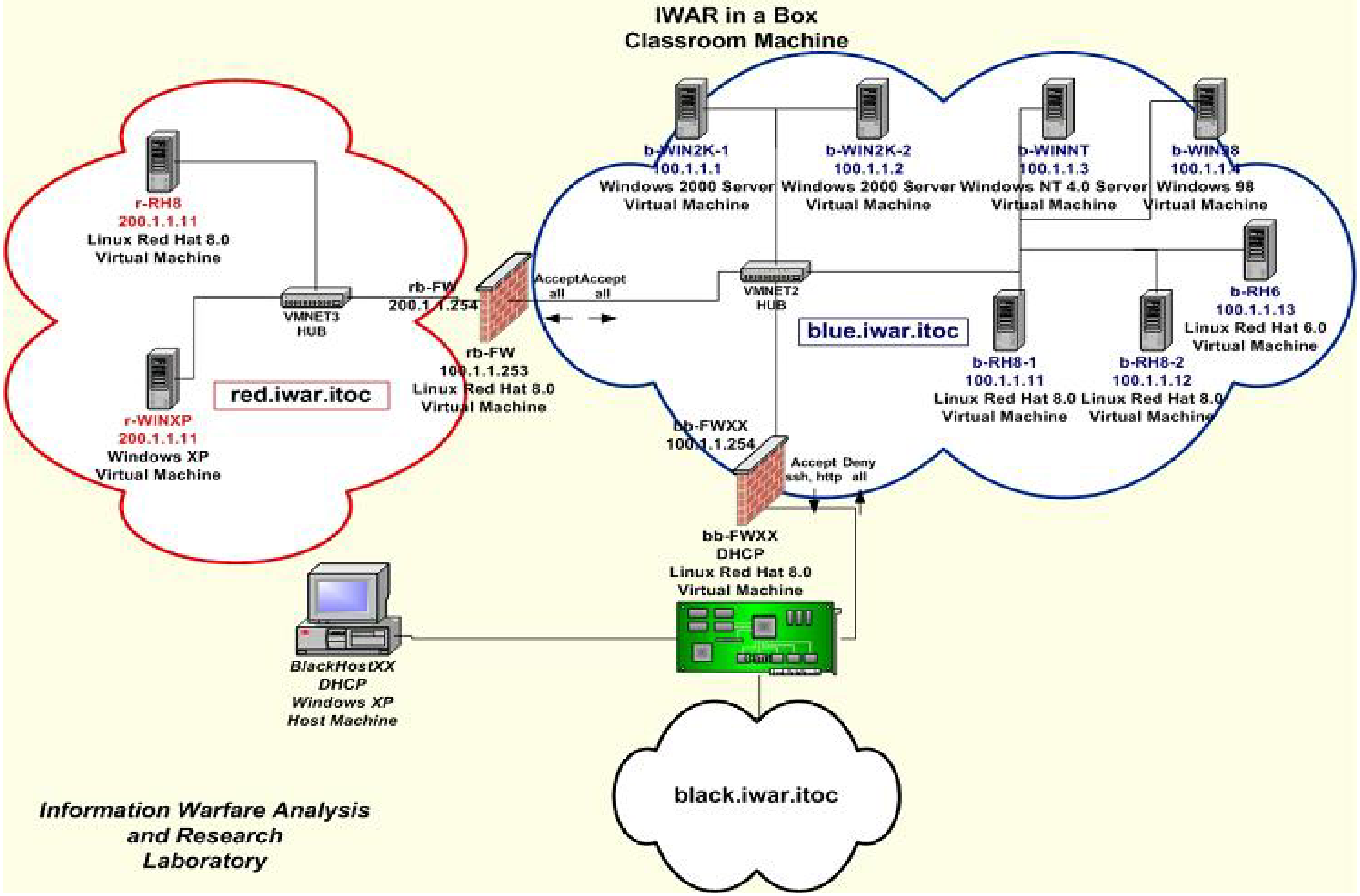
IWAR Tools and Capability

- Firewalls
- Malicious Active Content Exploits
- Vulnerability Scanners
- Viruses and Worms
- Cryptography and Encryption
- Trojan Horses
- Application and Protocol Wrappers
- Buffer Overflow Exploits
- Honey Pots/Honeynets
- Access Control Methods
- Protocol Exploits
- Integrity Maintenance Systems
- Network Sniffers
- Mail and Protocol Spoofers
- Distributed DoS Tools
- Intrusion Detection Systems
- Race Condition Exploits
- Password Cracking Software
- Forensics Analysis Tools
- Port Scanners

IWAR Networks



IWAR-in-a-Box

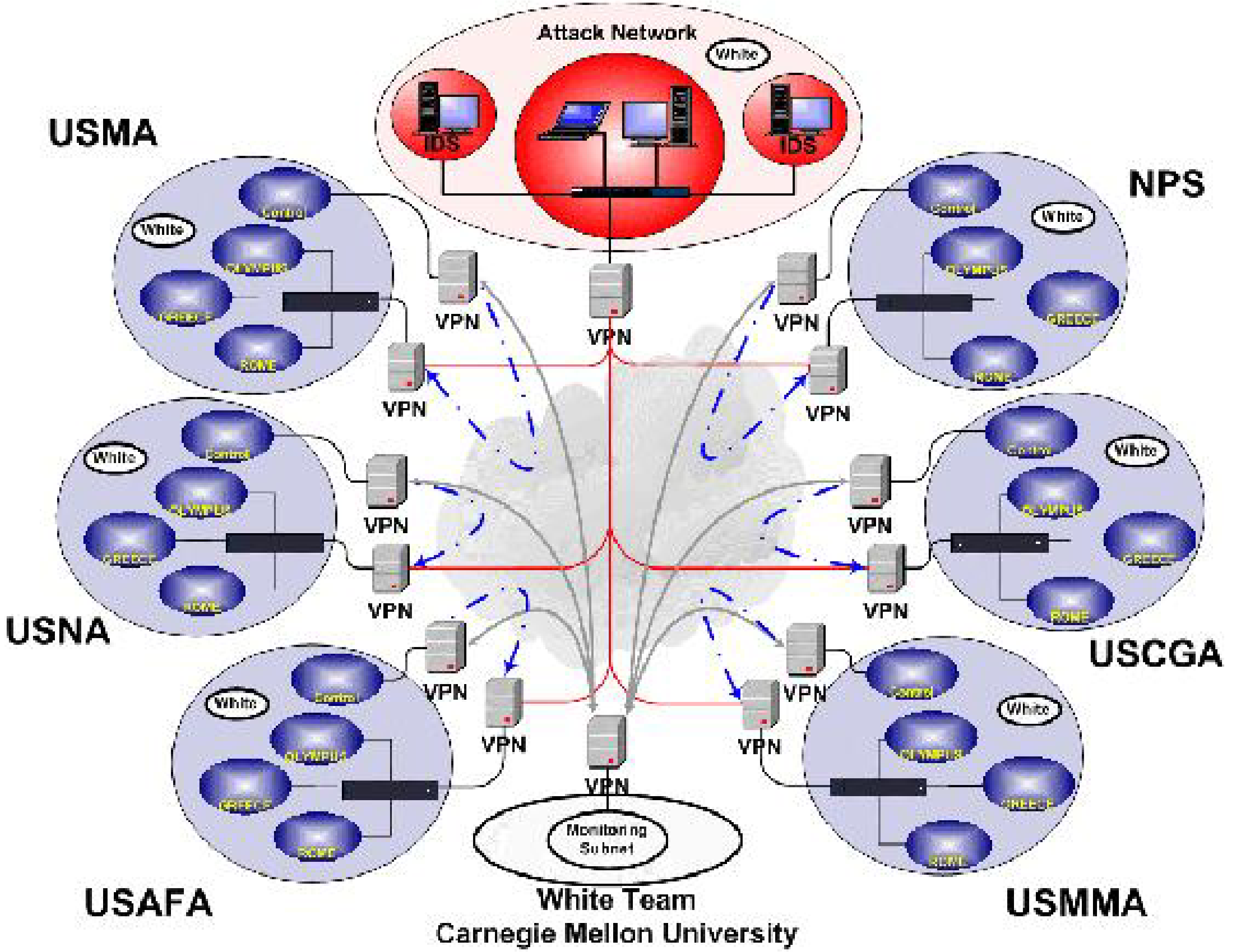


IWAR in a Box
Classroom Machine
r-RH8
200.1.1.11
Linux Red Hat 8.0
Virtual Machine
VMNET3
HUB
rb-FW
200.1.1.254
r-WINXP
200.1.1.11
Windows XP
Virtual Machine
red.iwar.itoc
rb-FW
100.1.1.253
Linux Red Hat 8.0
Virtual Machine
Accept all
Accept all
b-WIN2K-1
100.1.1.1
Windows 2000 Server
Virtual Machine
b-WIN2K-2
100.1.1.2
Windows 2000 Server
Virtual Machine
b-WINNT
100.1.1.3
Windows NT 4.0 Server
Virtual Machine
b-WIN98
100.1.1.4
Windows 98
Virtual Machine
VMNET2
HUB
blue.iwar.itoc
b-RH6
100.1.1.13
Linux Red Hat 6.0
Virtual Machine
b-RH8-1
100.1.1.11
Linux Red Hat 8.0
Virtual Machine
b-RH8-2
100.1.1.12
Linux Red Hat 8.0
Virtual Machine
bb-FWXX
100.1.1.254
Accept ssh, http
Deny all
bb-FWXX
DHCP
Linux Red Hat 8.0
Virtual Machine
BlackHostXX
DHCP
Windows XP
Host Machine
black.iwar.itoc
Information Warfare Analysis
and Research
Laboratory

Cyber Defense Exercise

- Sponsored by the National Security Agency, Director of Information Assurance
- General Concept
  - Defense of a network against an adversarial force
  - Blue Forces
    - US Service Academies and NPS
  - Red Forces
    - National Security Agency
    - 92nd Information Warfare Aggressor Squadron
    - 1st Information Operations Command
  - White Cell
    - Carnegie Mellon

Cyber Defense Network



Cyber Defense Exercise

- Key Educational Aspects
  - Competitive
  - Active learning
  - Project-based
- Developmental Areas
  - Leadership Ability
  - Planning Ability


Cadets take aim at cyber foes

CDX Award Ceremony

NSA

- Full Time NSA Liaison
- IA Conference Sponsorship
- NSA Trip
- NSA Internships
- Intelligence Community Access
- CDX Support
- Sabbaticals

INFORMATION SYSTEMS SECURITY ORGANIZATION

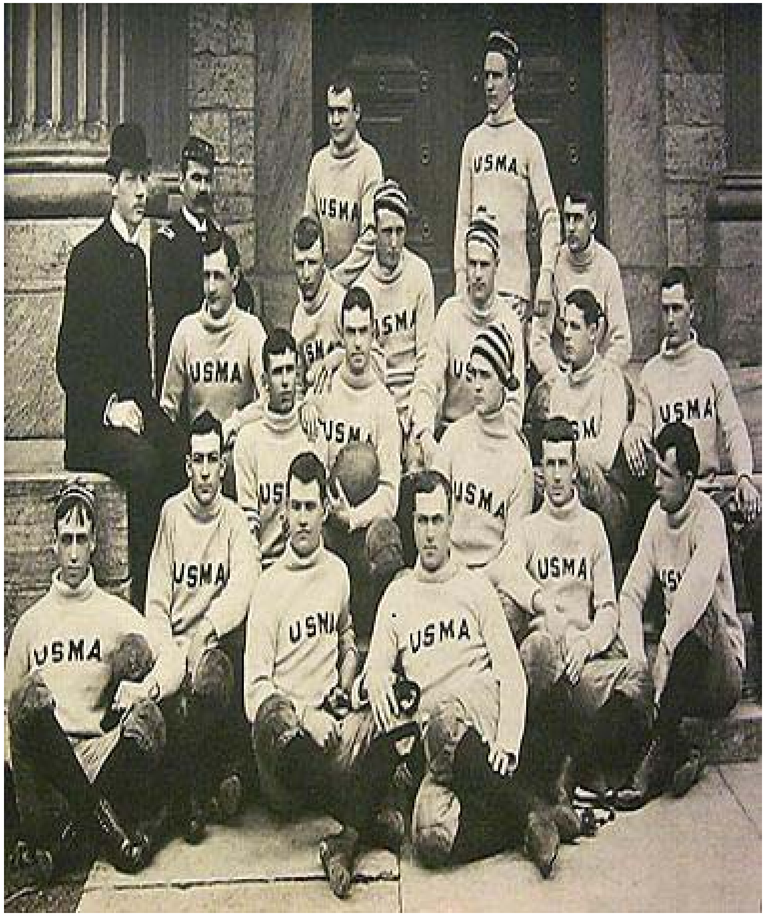
•NSA Information Assurance Center of Excellence Program

•NSA Information Assurance Director's Trophy

Preparation for War

"On the fields of friendly strife are sewn the seeds that upon other fields on other days will bear the fruits of victory…"

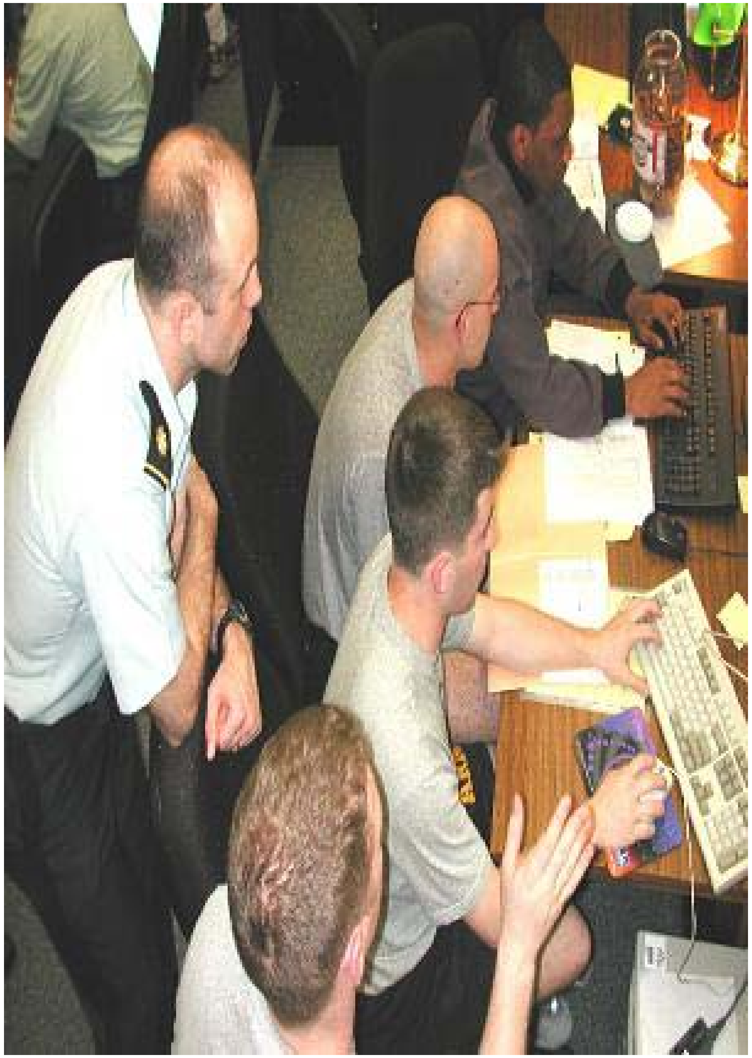
GEN Douglas MacArthur



Preparation for Information War

"On the *networks* of friendly strife are sewn the seeds that upon other *networks* on other days will bear the fruits of victory…"

MAJ Greg Conti



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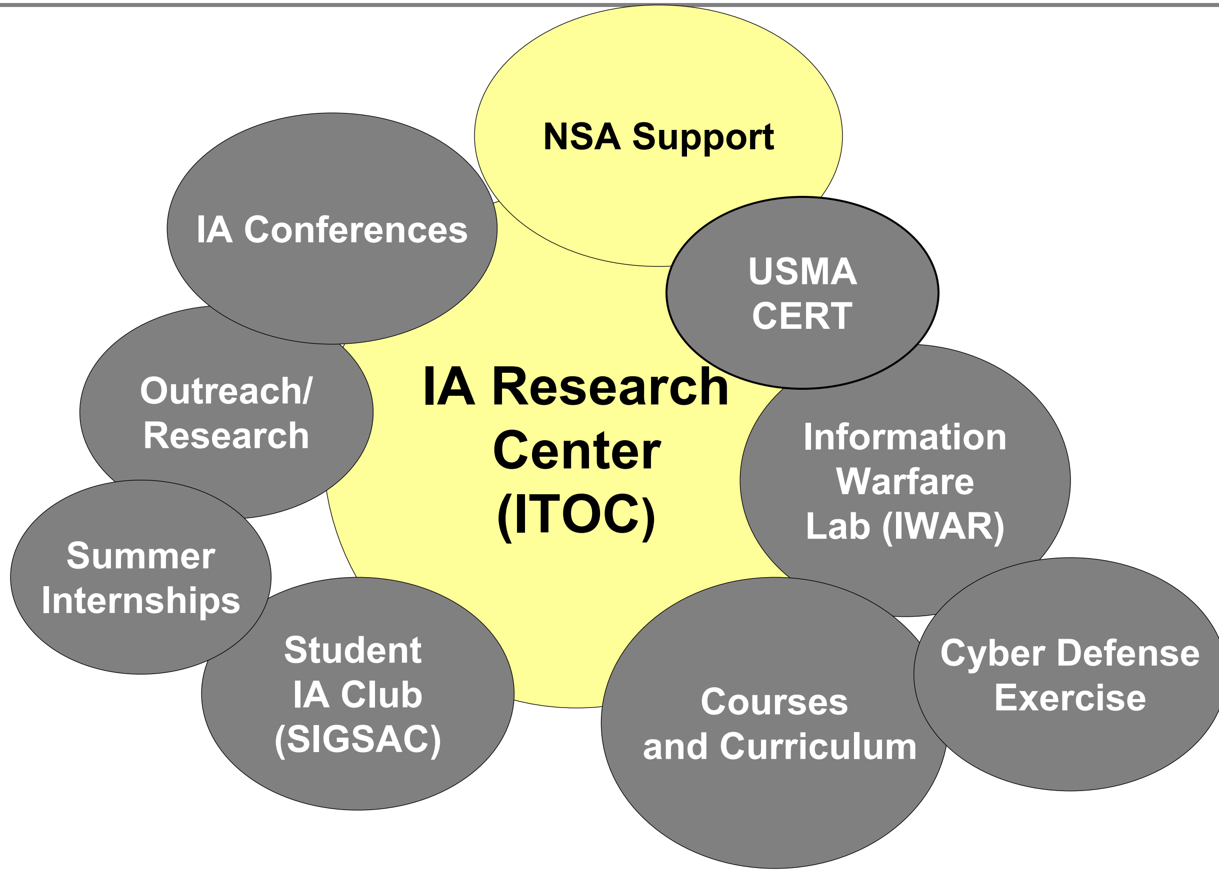

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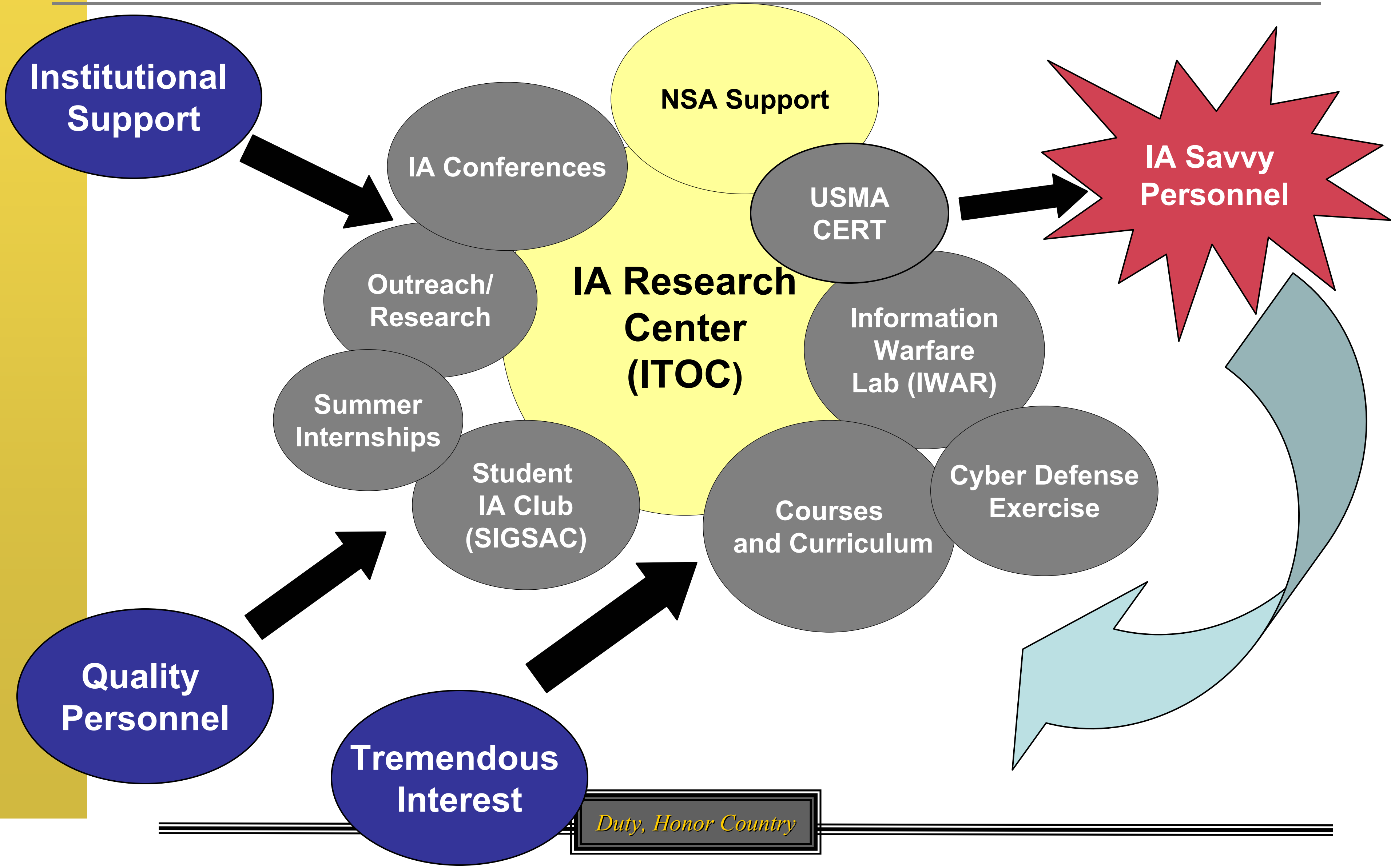

Questions?

- … and a reminder!

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