



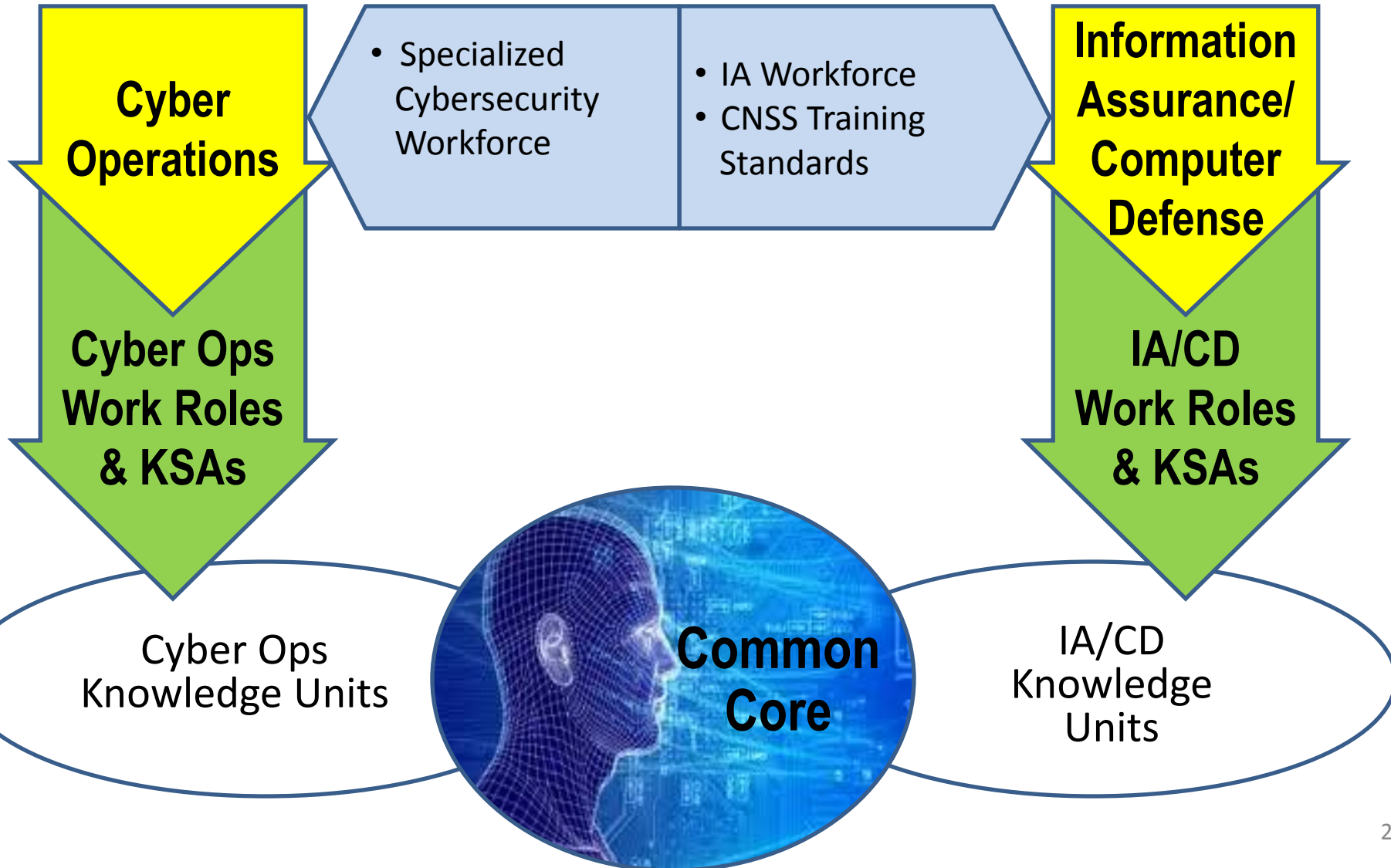
Cyber Operations Centers of Academic Excellence

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Why a Second “Cyber” Center of Academic Excellence?





“Cyber Operations” CAE: Next Steps



- Continue to work closely with the National IA Education & Training Program (NIETP), linking new “Cyber Operations” program to existing CAE-IAE/R program
- Present final program requirements and criteria at the CAE principals meeting in November 2011
- Applications for 2012 designation accepted until 15 January 2012
- Designations announced at CISSE in June 2012



GOAL of a “Cyber Operations” CAE Program



Increase cyber human capital capacity for our Nation by promoting ***deeply technical, inter-disciplinary***, higher education programs that will produce a large number of professionals with expertise in various disciplines related to specialized cyber operations.

While IA can be classified as “cyber,” “cyber” goes beyond traditional IA.

Therefore, the “Cyber Operations” CAEs would be a complementary program,

Likely involving a smaller subset of schools who will offer a cyber operations focus in their academic programs.



Leveraging Existing CAE-IAE Program



The CAE-IAE has:

- Directed the attention of academia to the importance of the field, stimulated the number of students enrolled in Information Assurance (IA), and improved the breadth and depth of IA curricula.
- Improved campus security awareness and posture.
- Created collaborative community of institutions dedicated to IA; enabled specialized communities of practice; increased and sustained opportunities for networking interactions with Government, Academia, and Industry.
- Provided institutions with capacity building grants that have increased and improved the availability of qualified faculty and professionals.
- Through the National Science Foundation, provided students with scholarships for IA study.



Leveraging Existing CAE-IAE Program



The CAE-Cyber Ops will:

- Strengthen the CAE designation as an indicator of excellence.
- Implement a rigorous validation process building on ABET accreditation requirements to provide deep visibility into the content of the institution's academic program.
- Require and benefit from a strong SEAL-School relationship.
- Provide a classified element to expose Cyber Operations students to information that will deepen their understanding of the application of the knowledge they are gaining.
- Prepare students with sufficient CNO technical knowledge to allow employers (e.g., NSA, USCC) to focus on teaching unique, organization specific tradecraft.



Draft/Proposed Academic Requirements for New “Cyber Operations” Program



- Systems Level Programming
- Reverse Engineering
- Networking & Telecommunication Technology and Protocols
- Operating Systems Theory
- Discrete Math
- Overview of Cyber Defense and Exploitation Techniques
- Cyber Operations Planning and National Cyber Resources

Required

- Secure Coding Principles
- Embedded Systems
- Network, System, Device and Data Forensics
- Applied Cryptography
- Foundational Security Principles

Recommended



Draft/Proposed Programmatic Criteria for New “Cyber Operations” Program



- Existing, high quality programs in CS, CE, Network Technologies, EE
 - ABET accreditation or demonstrated equivalence
- Cyber Operations treated as an inter-disciplinary science
- Cyber related academic program is robust, active and up-to-date
 - On-site review of curricula (course content, schedule, updated cycle, professor) focusing on areas not addressed by ABET
- Faculty must be active in current Cyber Operations research
 - Research with peer reviewed results and publications
 - Government and/or industry partnerships on projects
- Academic Program encourages student research in Cyber Operations topics
 - Need for government to provide topics
- Students participate in cyber “service learning” activities (e.g., community outreach K-12, cyber competitions)
- Participation in classified component of Cyber Operations CAE Program



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