



# Building the Cyber Workforce Pipeline: Preparing for Tomorrow and the Day After Tomorrow

*GenCyber and the Centers of Academic Excellence in Cybersecurity*

# Emphasis on Workforce

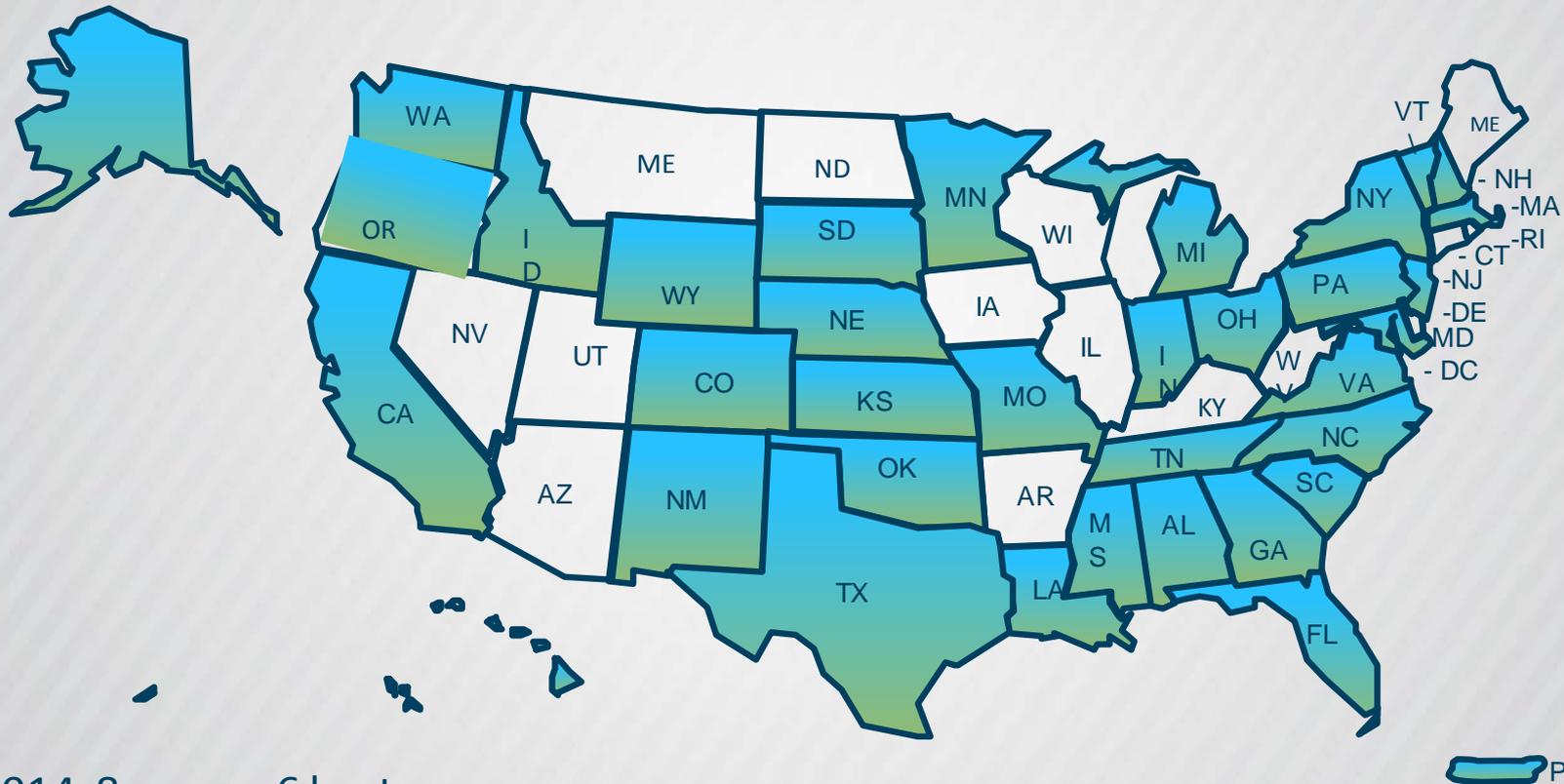
- Burning Glass study on Cybersecurity Workforce
  - 84% of job postings require at least a BA or BS
  - Only 17% accept less than 2 years experience
  - 10% require a security clearance
  - Volume of listings increased 91% from 2010 to 2014
- CAE-CD placing emphasis on educating students as preparation for careers
- Mapping to DHS/NICE Cybersecurity Workforce Framework

# GenCyber



- Summer Camps for K-12 students and teachers
- 1-2 weeks, residential/non-residential
- Computer background not required
- Provided at no cost to the participants
- Awareness
- Increase interest in cybersecurity
- Improve teaching methods

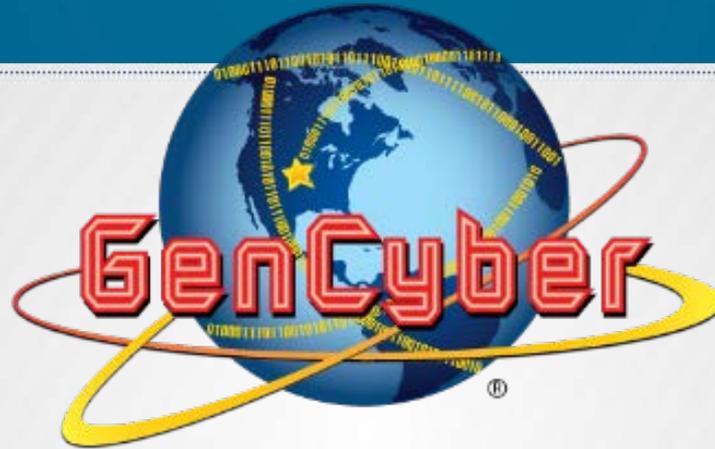
# 2016 GenCyber Camps



2014: 8 camps, 6 hosts

2016: 133 Camps, 68 hosts,

In three years, 6000+ Students/Teachers



[www.gen-cyber.info](http://www.gen-cyber.info)

# Centers of Academic Excellence (CAE) Purpose

## CAE IN CYBER DEFENSE (CAE-CD)



- Meet National workforce needs
- Reduce vulnerability in our national information infrastructure
- Promote higher education and research in IA/CD
- Produce a growing number of professionals with cybersecurity expertise for the Nation

## CAE IN CYBER OPERATIONS (CAE-CO)



Creating the workforce NSA and DoD need

- Deeply technical, interdisciplinary, BS/MS level
- Grow workforce pipeline for NSA and DoD
- Enhance the national security posture of our Nation
- CAE-CO offers a 12 week summer internship

# Creating Tomorrow's Workforce

## CAE IN CYBER DEFENSE (CAE-CD)

Began in 1999 with seven schools; as of 2016:  
CAE-2Y: 38 Designated  
CAE-CDE: 144 Designated  
CAE-R: 66 Designated  
**Target:** 10% Growth each year – continuous CAE input on standards

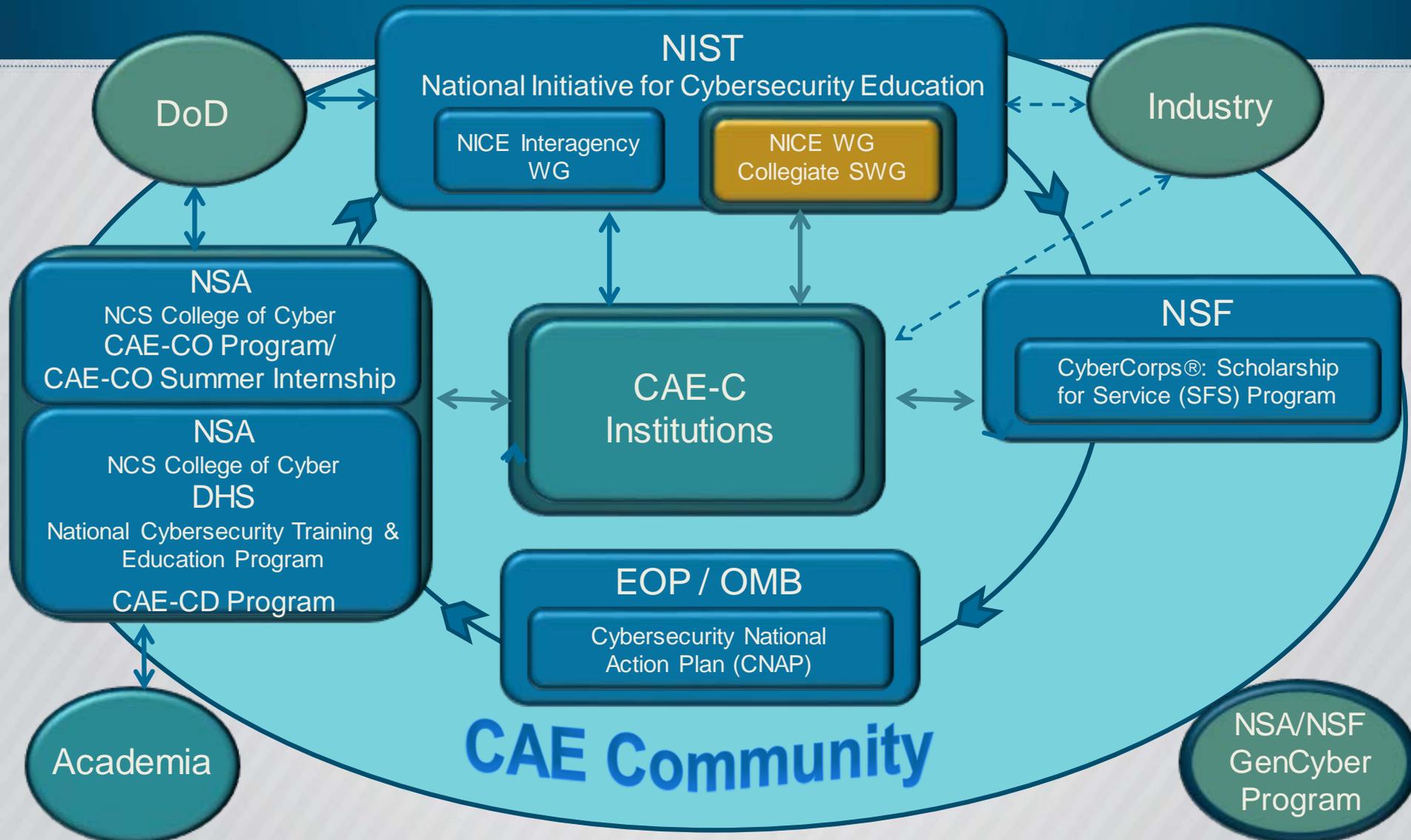
## CAE IN CYBER OPERATIONS (CAE-CO)

Began in 2012 with four schools designated  
As of 2016, 16 schools designated  
**Target:** 25 schools designated – standards continually elevated

**209 Total**  
**All CAE-CO also CAE-CD**  
Re-designation every five years  
Increased information sharing between CAEs



# CAE-C Program Partnerships



# CAE Impact

*“300% enrollment increase”*

*“Stopped State Funding Cuts”*

*“Increased opportunities for NSF grants”*

*“Influencing regional collegiate programs and outreach activities”*

*“Increased contact from government and industry seeking partnerships”*

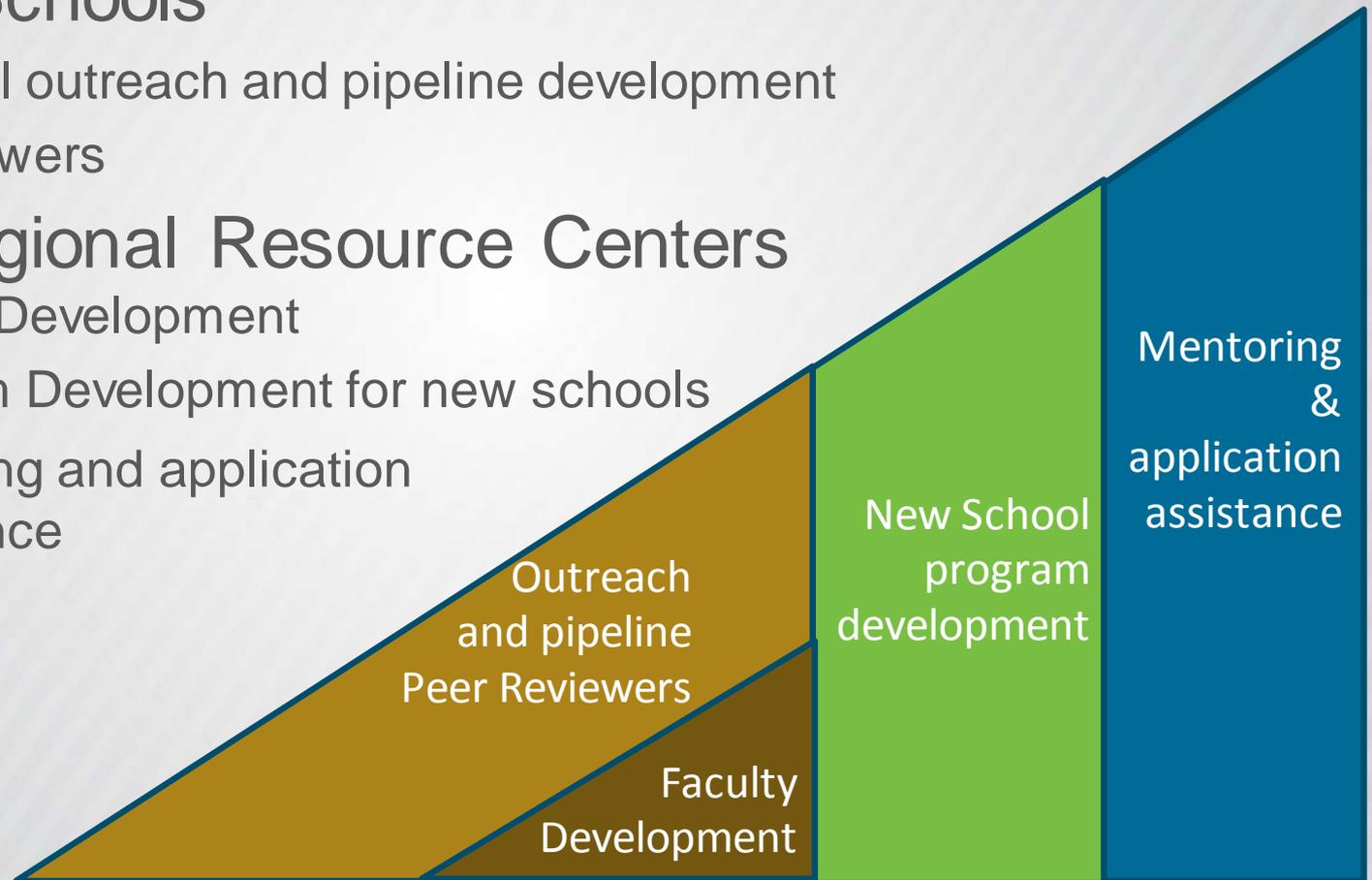
*“Collegiate level Red Team vs. Blue Team exercises between CAE-CO schools”*

*“Administration support to increase faculty and programs for Cyber Operations curriculum”*

*“Chosen by State government to consult on Cyber Security Councils ”*

# CAE-CD Program Expansion

- CAE-CD Schools
  - High school outreach and pipeline development
  - Peer Reviewers
- CAE Regional Resource Centers
  - Faculty Development
  - Program Development for new schools
  - Mentoring and application assistance



# Additional Information

## CAE in Cyber Operations Program Office

- <https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/>
  - [AskCAECyberOps@NSA.gov](mailto:AskCAECyberOps@NSA.gov) 410-854-6535

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  - [askCAEIAE@NSA.gov](mailto:askCAEIAE@NSA.gov) 410-854-6206