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Conference Welcome

Randy Pestana

Assistant Director of Research and
Strategic Initiatives, Jack D. Gordon

Institute for Public Policy
Florida International University
Conference Emcee



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Welcoming Remarks

Brian Fonseca

Director, Jack D. Gordon Institute for
Public Policy
Florida International University



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Opening Keynote

Manny Medina
CEO & Founder
Cyxtera

Robert Grillo
Vice President & Chief Information
Officer
Florida International University
Moderator



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Strategies for Developing the Cyber Workforce

Mary Alice McCarthy
Director , Center on Education and
Skills with the Education Policy
Program
New America



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The Future of Work and Workers

New directions for the cyber workforce

Mary Alice McCarthy

Director, Center on Education & Skills at New America

November 6, 2018

About New America

- **Nonpartisan think tank** based in Washington, D.C.
- Our team, the **Center on Education & Skills**, focuses on strengthening linkages between learning and work, and between schools and local economies.
 - *We research, analyze, and communicate* education and workforce policy trends.
 - *We engage with policymakers* to work out policy solutions.
 - *And we elevate the work of “doers”*, supporting dissemination of good practice and innovation in work and learning.

The cyber workforce shortage:

- Cyber talent is scarce (you've probably heard).
- Cyber work is very high-value: average breach costs \$3.86 million.
- Intense wage competition (~\$85k average salary).
- Educator shortage: Roughly half of NSA/DHS Centers of Academic Excellence report cyber faculty vacancies.

300,000

U.S. cyber job openings

CyberSeek, November 2018

2,980,000

Cyber job openings globally

(ISC)² Cybersecurity Workforce Study, 2018

How we get cyber jobs now:

Option 1: Get a 4-year computer science degree, fill in the gaps in a junior role.

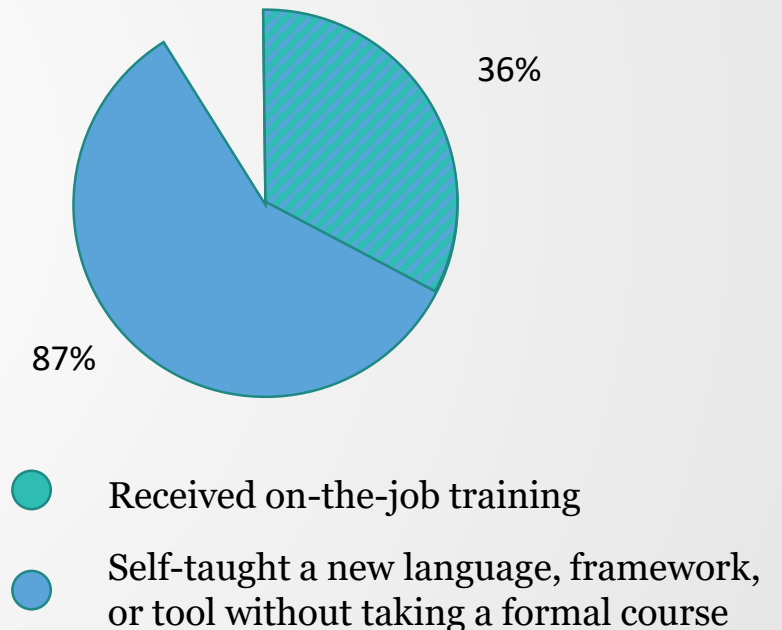
Option 2: Join the military.

Option 3: Get a non-CS degree, retrain through certs or coursework, and start from the bottom.

A world of possibilities:

- High wages make it easier to attract learners to new pathways.
- Culture of adaptation, collaboration, and applied learning.
- Popularity of industry standards and frameworks: practitioners are used to talking about competencies.
- Room for optimism in the sector's diversity concerns.
- Best of all: a universal sense of urgency!

Applied learning among professional software developers



Source: Stack Overflow Developer Survey 2018

What is apprenticeship?

1. Paid on-the-job training
2. Classroom instruction
3. Assessment against standards
4. A portable, industry-recognized credential

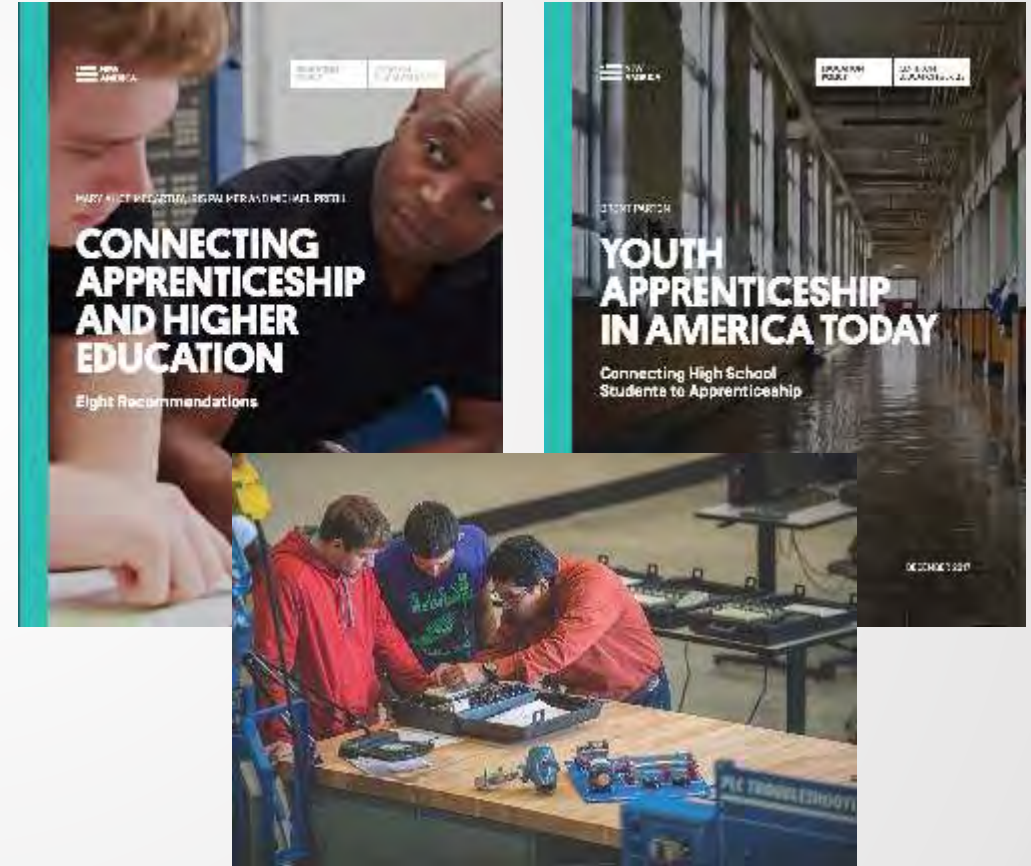
Apprenticeship is: Affordable, relevant, experiential, mentored.

Apprenticeship is not: Limited to colonial America, construction trades, and reality TV.



Why apprenticeship?

- Can be built around academic degrees (degree apprenticeships) or industry credentials.
- Engagement possibilities with secondary system (youth apprenticeship).
- Hands-on learning for apprentices; “try before you buy” for employers.
- Creates opportunities to build more diverse teams from the ground up.



Cyber apprenticeship today:

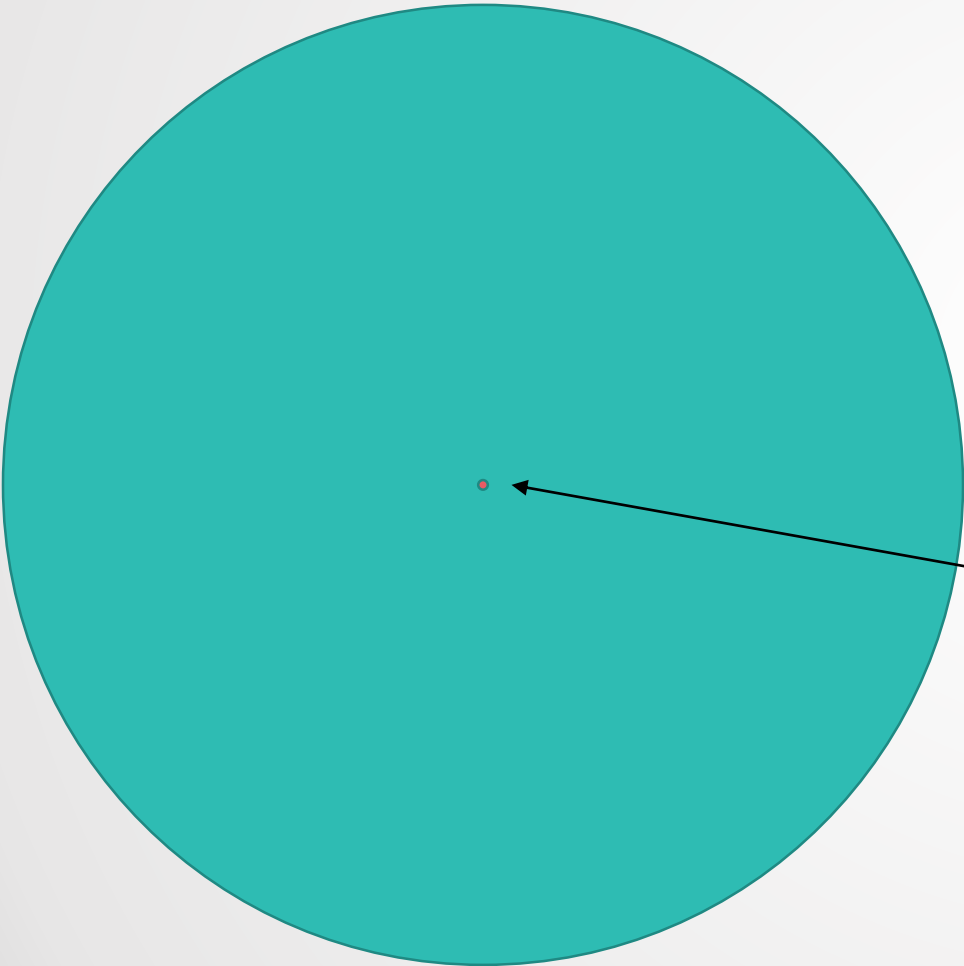


A growing suite of options:

- Degree apprenticeships
- Youth and pre-apprenticeships
- Strategic intermediaries
- Community college engagement

Source: New America's Cybersecurity Apprenticeship Tracker.

The problem: Scaling up



**New information technology
jobs in the next 10 years:
557,100**

**Information technology
apprentices in 2016:
982**

Sources: BLS growth projections; USDOL apprenticeship statistics.

Sounds great—so why don't we have more?

- Apprenticeship *is* great—but it's not easy...
- Requires coordination among diverse stakeholders who are not always accustomed to working together.
- Employers are at the driver's seat—without employer participation, no apprenticeship.



Photo: CareerWise Colorado

How do we expand cyber apprenticeship?

- Develop the policy infrastructure.
 - *Integrate apprenticeships into colleges so it's easier to find and connects to degree pathways.*
 - *“Degree Apprenticeships” and “Student Apprentices”*
- Network the field.
 - *Connect initiatives and practitioners in different parts of the country and develop a shared vision and goals.*
- Engage public sector stakeholders.
 - *Encourage local, state, and federal government agencies to use apprenticeship to support their talent pipeline.*

Potential payoff:

- Apprenticeship for cyber practitioners addresses a universal problem: that college is expensive and time-consuming.
- Apprentices can still earn degrees and credentials, along with the experience to put them to work.
- Apprenticeship makes employers part of the educational design process and experience.

Thank you!




Mary Alice McCarthy

Director, Center on Education & Skills

Get in touch with the Center on Education & Skills:
Follow us on Twitter @NewAmericaEd
or email apprenticeship@newamerica.org



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Conference Overview: Program Co-Chairs

Noel Kyle

Program Manager

U.S. Department of Homeland Security

A. Selcuk Uluagac

Assistant Professor

Florida International University

Randi Parker

Senior Director for Public Advocacy

CompTIA



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Industry

Randi Parker

CompTIA

Renee Guttman
Royal Caribbean Cruises

Zac Furness

MITRE

Lisa Depew
McAfee

Scott Behm
Symantec Consumer

Academic

Selcuk Uluagac
Florida International University

Mohammad Azhar
*Borough of Manhattan Community
College, CUNY*

Nathan Fisk
University of South Florida

Theresa Semmens
University of Miami

Government

Noel Kyle
Department of Homeland Security

Lynn Hathaway
National Security Agency

Clarence Williams
NICE at NIST

Kevin Sanchez-Cherry
Department of Transportation

Eileen Sanchez
California Governor's Office

Innovations in Cybersecurity Education, Training, and Workforce Development

Growing the
Cybersecurity
Workforce

Interdisciplinary and
Cross Domain
Education and
Training

Expanding the
Workforce through
Diversity and Inclusion

Talent Management
and
Workforce
Development





#NICECyberCon18



Breakout Sessions

Track # 1: Growing the Cybersecurity Workforce
Regency Ballroom

Track # 2 : Expanding the Workforce through Diversity and Inclusion
Orchid CD

Track # 3: Interdisciplinary and Cross Domain Education and
Training
South Hall

Track # 4: Talent Management and
Workforce Development
Orchid AB



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Luncheon Welcome

Marian Merrit

Lead for Industry Engagement, National
Initiative for Cybersecurity Education

NICE



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Luncheon Welcome

Diane Miller

Director, Global Cyber Education and
Workforce Development
Northrop Grumman



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NICE Working Group
Meeting
Welcome

Danielle Santos
Program Manager, National Initiative
for Cybersecurity Education
NICE



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NICE Working Group Meeting

Kathi Hiyane Brown
President
Whatcom Community College

Jason Hite
Founder and Chief People Strategist
Daoine Centric, LLC



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NATIONAL INITIATIVE FOR **CYBERSECURITY** EDUCATION



NICE WORKING GROUP

Kathi Hiyane-Brown and Jason Hite

nist.gov/nice/nicewg

NICE Working Group | Subgroups

APPRENTICESHIPS

COLLEGIATE

COMPETITIONS

K12

TRAINING &
CERTIFICATIONS

WORKFORCE
MANAGEMENT

APPRENTICESHIPS

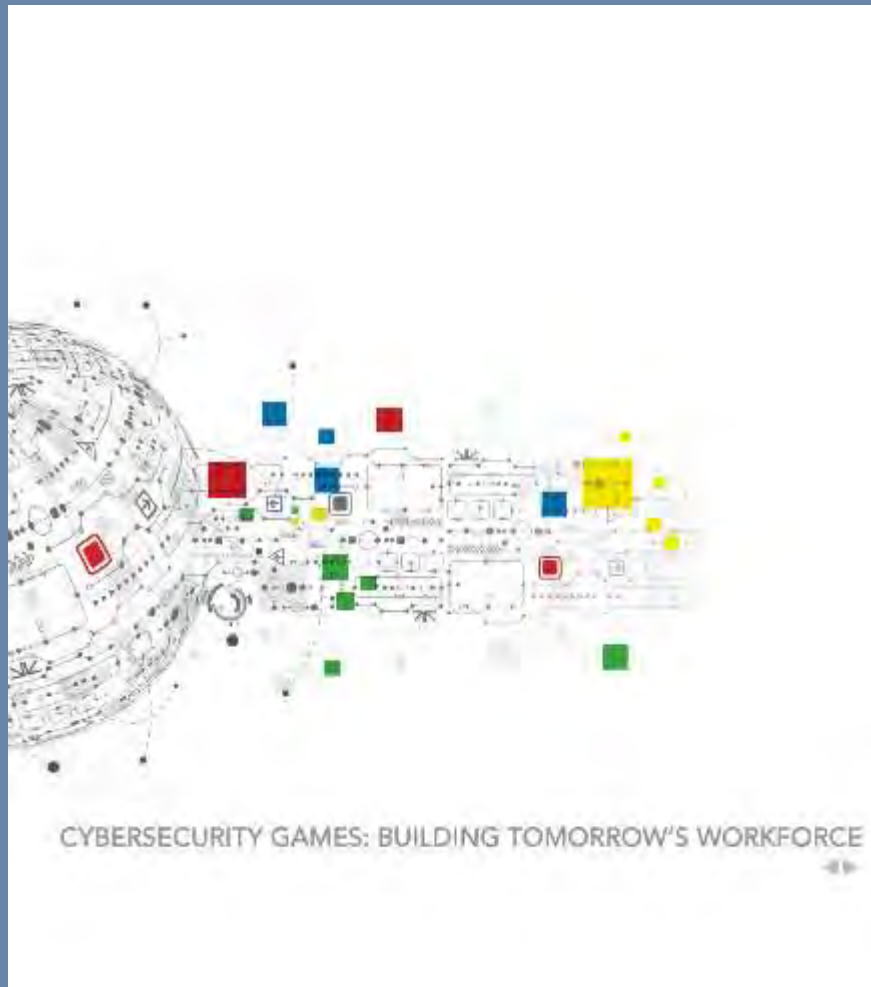
This subgroup is appropriate for anyone who is interested in learning more about how apprenticeships work in white-collar occupations; to understand the role of Federal, State and Local government in assisting and approving an apprenticeship; where there are existing programs; what the steps are to build a cybersecurity apprenticeship program; curriculum resources and education partners; the role of an intermediary, and much more.

COLLEGIATE

This group's focus is on topics pertaining to the burgeoning Information Security discipline, including guiding curricular standards, aligning academic pathways to the National Cybersecurity Workforce Framework work roles, and stimulating the development of approaches and techniques that can more rapidly increase the supply of qualified cybersecurity workers.

COMPETITIONS

The focus of this group is to promote a wide spectrum of competitions that advances knowledge, skills and abilities to nurture and expand a diverse national talent pool. This subgroup will help to empower a public and private competition ecosystem by providing guidelines, standards, and best practices for players, teams, schools, sponsors and organizers.



K12

The group's focus is to develop strategies and recommendations for filling the national cybersecurity pipeline through a K-12 Cybersecurity Education Implementation Plan



National K-12 Cybersecurity Education Implementation Plan

TRAINING AND CERTIFICATIONS SUBGROUP

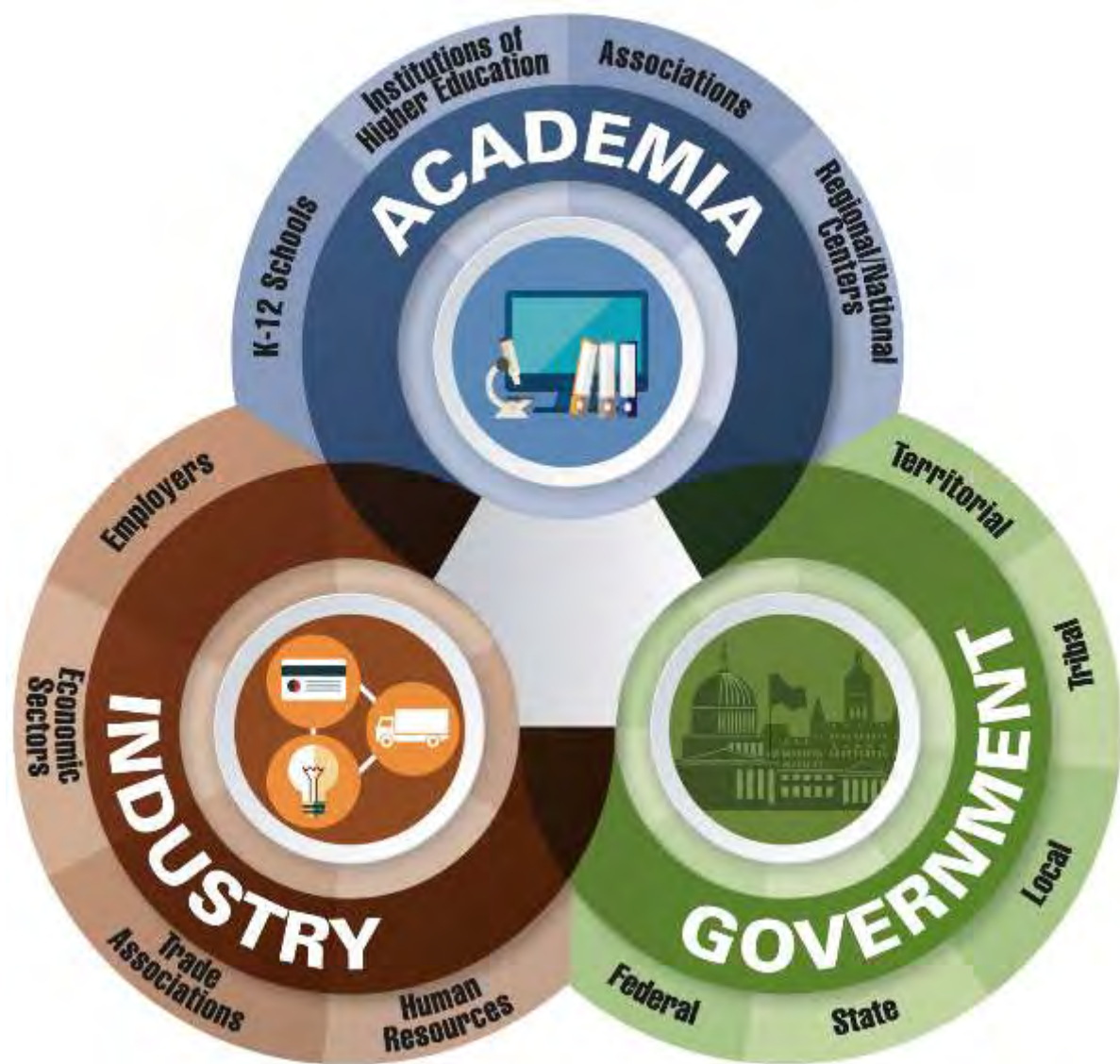


The group's focus is on topics pertaining to the development and management of performance-based evaluation and training programs, capable of adapting to meet the nation's evolving cybersecurity needs. This subcommittee will also explore mapping professional certifications to the NICE Framework.

WORKFORCE MANAGEMENT SUBGROUP

This group has a goal to facilitate, develop and promote cybersecurity workforce management guidance and measurement approaches that create a culture where the workforce is managed and engaged to effectively address the cybersecurity risks of their organization.





nist.gov/nice/nicewg

Visit the NICE Working Group Subgroups

MAIN STAGE

APPRENTICESHIPS

COLLEGIATE

COMPETITIONS

K12

TRAINING &
CERTIFICATIONS

WORKFORCE
MANAGEMENT

ENTRY / EXIT



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Workforce Development
Orchid AB

Evening Reception

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