2019 - 2020 ANNUAL REPORT

NATIONAL CYBERWATCH CENTER

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ANNUAL REPORT
2019-2020

Cybersecurity Education Solutions for the Nation

NATIONAL CYBERWATCH CENTER

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https://www.nationalcyberwatch.org/programs-resources/library

TABLE OF CONTENTS

EXECUTIVE DIRECTOR'S MESSAGE

Dear Colleagues,

2020 marks the 15th year of the National CyberWatch Center, or CyberWATCH, as we were known back then. The "WATCH" in our name was an acronym - Washington Area Technician and Consortium Headquarters - which reflected the regional flavor of the Center and its focus on technician education and training. Our mission was simple and bold: increase the quantity and quality of the information security workforce in the District of Columbia, Baltimore, and northern Virginia.

As we continued to do our work through the lens of our mission, our national footprint grew, as did our programs and services. In 2012 we re-named CyberWATCH to the National CyberWatch Center, again, reflecting now the national scope of our work.

The year 2020 lends itself to metaphors such as "hindsight," or looking back. With this in mind, there are many accomplishments over the past 15 years:

- Shifting successfully from a regional to national center
- Serving underrepresented populations
- Continuing collaborations and partnerships
- Growing a network of academic institutions, faculty, students, industry, and government partners
- Representing the voice of community colleges in national cybersecurity education and workforce development efforts
- Developing and updating national curricular resources: degree programs, stackable certificates, technical courses, and supporting instructional materials
- Leading role in the creation of the National Security Agency (NSA)/Dept. of Homeland Security (DHS) Centers of Academic Excellence in Cybersecurity Defense (CAE-CD) two-year designation
- Training thousands of educators in both face-to-face and online professional development workshops
- Running world-renowned cybersecurity competitions: Mid-Atlantic Collegiate Cyber Defense Competition (MACCDC), National Cyber League (NCL)
- Developing recognized K12 programs and services
- Creating new programs: Community College Cyber Summit (3CS), *Cybersecurity Skills Journal: Practice and Research*, Digital Press, Innovations in Cybersecurity Education awards and recognition program, and the National Cybersecurity Student Association

The year 2020 also lends itself to metaphors such as "vision," or looking forward. As the Center builds on its 15-year foundation of success, there's tremendous opportunity in the following areas:

- Continue the sustainability work to position the Center for the long-term
- Enhance the unique learning needs to combat ever-changing and damaging attacks on our personal data and critical infrastructure
- Expand opportunities for the Center to scale ideas and attract new sources of funding, and
- Focus on creating value through products and services that get applied broadly across various industries

Of course, these accomplishments are not possible without the support of the dedicated National CyberWatch team, our academic network of higher education institutions, faculty, students, industry, and government partners, as well as the senior leadership team at Prince George's Community College. We are also grateful for the ongoing support of our National Science Foundation Program Officers, and our National Visiting Committee members.

Best Regards,

Casey W. O'Brien
Executive Director & Principal Investigator
National CyberWatch Center

ACCOMPLISHMENTS

■ COMMUNITY COLLEGE CYBER SUMMIT (3CS)

3CS continues to meet the need for a national academic conference that focuses on cybersecurity education and workforce development at the community college level.

The 2019 3CS was held at Bossier Parish Community College in Shreveport, LA, July 29 - August 1. Highlights included:

- John Bel Edwards, Louisiana Governor, kicking off the Summit
- Record number of sponsors
- First Vendor Track (sponsored by IBM)
- Digital Badging pilot
- New Cybersecurity Skills Development Workshops

" I wanted to take the time to thank you for this great opportunity to attend the 3CS Conference. Having the opportunity to network was a key factor that I was looking forward to, and I was able to achieve that. I really enjoyed the presentations I went to. In particular I enjoyed the presentation titled Sticker Heist - A Cybersecurity Student Challenge by Dr. Mike Libassi. This presentation discussed a very hands-on and fun way to learn about cybersecurity. I am glad that 3CS was able to get such interesting speakers."

- Adam Maca, Scholarship for Service (SFS) Student
  Moraine Valley Community College, IL

" As a first-time sponsor of 3CS, I didn't know what to expect from the conference. However, the conference, and particularly the job fair, was great for our university. We had numerous students stop by our booth who were interested in our online baccalaureate program and an online master's program. This event was a great recruiting tool. We were able to network with other higher education institutions and industry representatives. We had three to five community colleges interested in articulation agreements. We also established contact with some new industry partners. We definitely want to be involved in the conference in the future."

- Curtis Penrod, Coordinator of CIS and Assistant Professor
  Northwestern State University, LA

CYBERSECURITY SKILLS JOURNAL: PRACTICE AND RESEARCH: NICE CYBERSECURITY WORKFORCE FRAMEWORK SPECIAL ISSUE

The National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework (NICE Framework) was published as the National Institute of Standards and Technology (NIST) Special Publication 800-181 in August 2017. NICE intends to review and update the Framework during 2020. In partnership with NIST, the *Cybersecurity Skills Journal* is seeking manuscript ideas and drafts that examine the usefulness, benefits, and challenges associated with the adoption, adaptation, or extension of the Framework in cybersecurity practice, to improve learning and advance the state of cybersecurity capability maturity.

Submitted abstracts may address any aspect of the NICE Framework, though emphasis should be placed on empirical support for effective awareness, application, and impact of the NICE Framework in enhancing the cybersecurity capability maturity of the entrant, extant, or future workforce. Prospective authors are encouraged to review the anticipated usage and extensions of the NICE Framework documented on pages 2-4 and 7-10 of the NIST Special Publication 800-181.

**More info: csj.nationalcyberwatch.org**

CALLING ALL PARTICIPANTS

DISSEMINATION

As the field of cybersecurity education has advanced in recent years, there is an emergent need for better knowledge about the field. National CyberWatch has filled this unmet need in the following ways:

- Identify, update, and broadly distribute exemplary materials, curricula, and pedagogical practices
- Support the adoption, adaptation and implementation of these materials at institutions
- Easy distribution of content across National CyberWatch 's various social media platforms
- Full complement of services: social media, branding, publication and graphic design, media releases, copy writing, monthly e-Newsletter design and dissemination, e-blasts
- High-quality publication and graphic design
- Integrated marketing and communications tied to specific National CyberWatch program goals
- Tracking, reporting, and usage of these systems
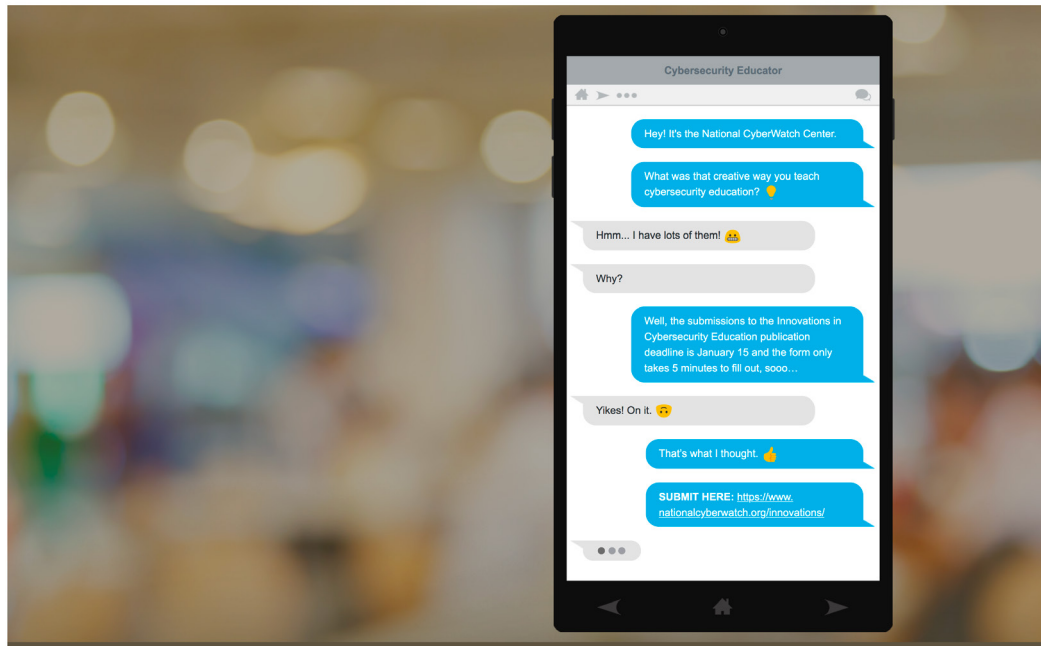
■ INNOVATIONS IN CYBERSECURITY EDUCATION AWARDS & RECOGNITION PROGRAM

A byproduct of the National CyberWatch awards and recognition program, the goals of this program include accelerating the adoption and adaptation of new ideas throughout the academic and workforce development communities, while at the same time, recognizing individuals and organizations for their work.

The 2019 Innovations program showcased a range of creative and pioneering ideas across four categories: evidence-based strategies, instruction, practice, and program development. 2019 Innovation winners by category:

1. **Evidence-based Strategies:** Pathway to Advancement in Cybersecurity Education (PACE) - Behzad Izadi, Cypress College
2. **Instruction:** Thinking Outside the Box - Using Escape Room Games to Interest Teachers and Students in Cybersecurity - Dr. Suzanne Mello-Stark, Rhode Island College
3. **Practice:** Incentive-based Platform for Teaching Cryptocurrency, Bug Bounty, Reconnaissance, and More - Dr. Vitaly Ford, Arcadia University
4. **Program Development:** Three Colleges + Three Degrees = One Successful Cyber Career - April Boulton, Hood College
5. **Honorable Mention:** PCI Credit Card Security - Ruth Parcells, University of Virginia

View the full 2019 Innovations in Cybersecurity Education booklet: https://www.nationalcyberwatch.org/resource/2019-innovations-in-cybersecurity-education

■ MEMBERSHIP

National CyberWatch members continue to play a unique and powerful role in shaping cybersecurity education, workforce development, and emerging issues in research, assessment, and evaluation. National CyberWatch provides varied opportunities for members to engage directly with its staff, programs and events, as well as with established and emerging leaders in information security.
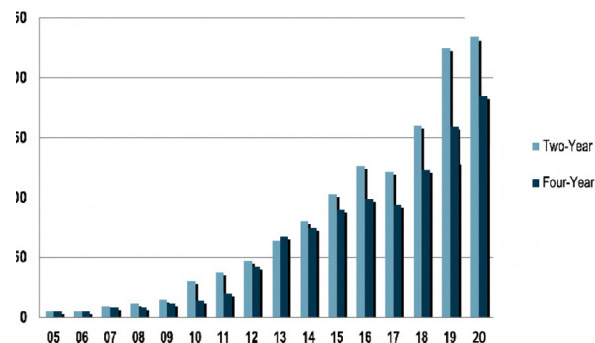
MID-ATLANTIC COLLEGIATE CYBER DEFENSE COMPETITION (MACCDC)

The MACCDC, **now in its 15th year**, consists of both a virtual qualifying round and a face-to-face Regional Final engaging full-time undergraduate and graduate degree-seeking students, representing four-year universities and community colleges from Delaware, the District of Columbia, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, and West Virginia. Since its inception, over 2,500 students have participated in the MACCDC.

2019 Scenario: "SpaceForceX"

In April 2019, eight teams from Space Force X were launched into intergalactic space. Their mission: maintain and defend the eight robotic exploration systems dispatched to the eight moons of the dwarf planets in our solar system by the Space Unification Project, Bureau of Research and Heliosphere (SUP-BRAH). The Space Force teams were expected to maintain the operational efficiencies of numerous data systems used to communicate with and control the Optimus Prime Rovers (OPR), as well as other systems used to support the project.

2019 MACCDC Dates:

- Virtual Regional Qualifiers: February 11-12 and 16, 2019
- Face-to-Face Regional Final: March 28-30, 2019
- National CCDC: April 23-25, 2019 (Orlando, FL)

There were 34 teams with a total of 365 team members competing in the virtual qualifier rounds. **This is the largest number ever to compete in an MACCDC event.**

2019 MACCDC Final Regional Standings:

1. **University of Virginia**
2. Virginia Commonwealth University
3. Liberty University
4. Drexel University
5. University of Maryland, Baltimore County
6. Millersville University
7. Delaware Technical Community College
8. West Virginia University

The University of Virginia successfully defended their National CCDC title in 2019 and are back-to-back national champions. The past three National CCDC champions have come from the Mid-Atlantic Region: 2017: University of Maryland, Baltimore County (UMBC), 2018: University of Virginia; 2019: University of Virginia. There have been two back-to-back national champs in the past: Baker College, MI in 2008 & 2009; University of Washington in 2011 & 2012; the University of Central Florida three-peated in 2014-2016.

■ NATIONAL CURRICULUM

National CyberWatch continues to develop and promote its reference degree and certificate programs, as well as work with academic institutions to implement new programs, or update existing ones.

This past year saw a major overhaul of curricular offerings and updates, to include:

- 1 new Degree:
    - o Digital Forensics
- 4 new Certificates:
    - o Cloud Security
    - o Digital Forensics
    - o Security Operations Center
    - o Wireless Security
- 8 new Technical Courses:
    - o NCC 234: Cybersecurity Risk Management
    - o NCC 235: Cybersecurity Law and Ethics
    - o NCC 236: Cloud Computing Fundamentals
    - o NCC 237: Cloud Security Architecture and Operations
    - o NCC 238: Wireless Networking Fundamentals
    - o NCC 239: Wireless Security Fundamentals
    - o NCC 240: Security Operations Center Fundamentals
    - o NCC 241: Vulnerability Management Fundamentals
- Promotion of cybersecurity resources/curricula that can be embedded in other disciplines/courses (e.g., Principles of Accounting, Criminal Justice, Electronics, Nursing, Critical Infrastructure, Health IT Privacy and Security, Computer Science)
- Mapping to various industry certifications
- Updated Curriculum Guide
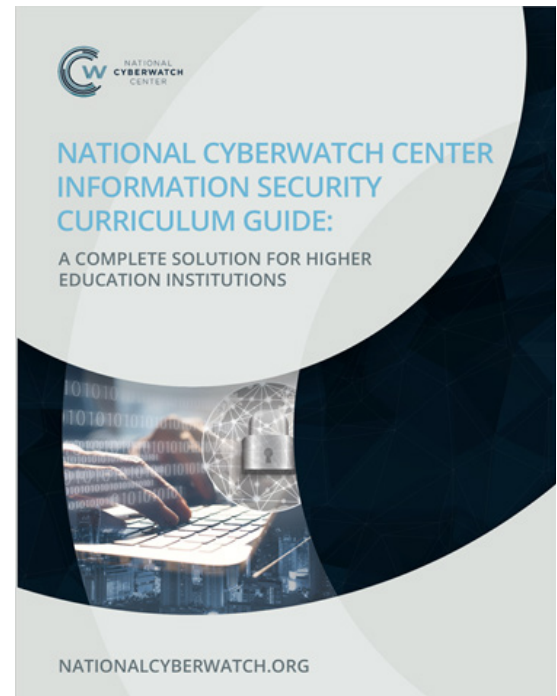
The National CyberWatch curriculum guidelines were a key influence on our degree. Our desire was to create a general cybersecurity degree with a smaller core and room for specialization among the electives. Thanks for providing this helpful resource and all the other great work you do with the National CyberWatch Center.""

- Cara Tang, Ph.D., Faculty & Department Chair, Computer Information Systems
  Portland Community College

◼ VIRTUAL BROWN BAG LUNCH SERIES

The Virtual Brown Bag Lunch Series is aligned with the mission of the Cybersecurity Skill Journal and supports the National CyberWatch Foundation Series Competency-based Mastery Learning Curriculum. Its goals are to highlight inventions and innovations in cybersecurity competency-based mastery learning. Six VBBLs were held in 2019. Each was recorded and uploaded to the National CyberWatch YouTube channel and website for follow on promotion and retrieval.

◼ NATIONAL CYBERSECURITY STUDENT ASSOCIATION

With a focus on growing Student Chapters and forging industry and professional association partnerships, the National Cybersecurity Student Association continues to fulfill on its vision of cultivating a national community that supports students in their cybersecurity endeavors through extracurricular activities, career opportunities, mentoring, and keeping them at the forefront of cybersecurity trends.

■ PARTNERSHIPS

National CyberWatch's collaborative model is based on broad interaction with stakeholders from educational institutions, businesses, government entities, and professional organizations.

National CyberWatch has partnered with the following organizations committed to diversity in both academic and workforce settings:

- Cyber & STEAM Global Innovation Alliance
- Institute for Women in Trades, Technology and Science (IWITTS)
- Women in Cybersecurity (WiCyS)

"National CyberWatch shares our commitment to broadening participation of women in Cybersecurity and to that end has been an important partner to the Institute for Women in Trades, Technology & Science. They have sent out emails on our organization's behalf for our STEM Success for Women Telesummit in 2018, for our 2018 Women in Cybersecurity Webinar that we conducted for NICE, and about our WomenTech Training on multiple occasions. Casey O'Brien has also shared online marketing information and consultants with us as we investigate migrating our website to a new platform. National CyberWatch has been a true partner as we work to move the needle on women in cybersecurity."

- Donna Milgrim
  Executive Director, IWITTS

NATIONAL CYBERWATCH CENTER TEAM

You'd be hard pressed to find a more experienced team working on information security education and workforce development in the world. A special thanks go to Barbara Belón and John Sener, who both retired in 2019. Your contributions and legacy will live on.

Michael Burt

Community College Cyber Summit (3CS) Tactical Team Lead

Lynn Dohm

Director, Marketing & Communications

Gus Hinojosa

Director, National Cybersecurity Student Association

Dr. Margaret Leary

Co-Principal Investigator and Senior Advisor

Fran Melvin

Director, Finance and Center Manager

Casey W. O'Brien

Executive Director & Principal Investigator

Anita Shelton

Administrative Associate

Dr. Bob Spear

Director, Community College Cyber Summit (3CS)

Dr. David Tobey

Co-Principal Investigator and Director, Research & Assessments

Dr. Costis Toregas

Director, Scholarship for Service Four-Year and Senior Advisor

Blake Urbach

External Evaluator

Dr. Vera Zdravkovich

Senior Advisor

NATIONAL VISITING COMMITTEE (NVC)

Successful National Science Foundation applicants for large grants are required to appoint an NVC. These committees are groups of advisors that work with grantees and NSF to help them achieve their goals and objectives. They assess the plans and progress of the project and report to NSF and the grant's leadership. Committee members also provide advice to the project staff and may serve as advocates for effective projects. Furthermore, NSF appoints the committee members, and the NVC chairperson plays a major role in setting the agenda.

Nicholas M. Cefaratti

Cyber Security Engineer, Federal Aviation Administration
Harris Corporation

Dr. Philip Crager

Associate Professor of Cybersecurity
Department of Security Studies and International Affairs
Embry-Riddle Aeronautical University

Dr. Gaby Hawat

NVC Chair
Executive Vice President, Chief Operating Officer, Chief Financial Officer, Professor of Leadership
University of Providence

Dr. Corby Hovis

Lead Program Director
Directorate for Education and Human Resources
National Science Foundation

Dr. Victor Piotrowski

Lead Program Director
CyberCorps®: Scholarship for Service (SFS)
Division of Graduate Education
National Science Foundation

Corrinne Sande

Director & Principal Investigator
National Cybersecurity Training & Education Center (NCYTE)
Whatcom Community College

Elayne Starkey

Former Chief Security Officer
State of Delaware

Georgia Weidman

Founder and CTO
Shevirah Inc.

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