



2022 CAE in Cybersecurity Community Symposium

June 8-10, 2022

The Westin Peachtree Plaza

Atlanta, GA

Welcome

Welcome to the 2022 CAE Community Symposium. It's great to be together again live after so much time isolated from each other. Zoom has been invaluable, but nothing is as great as meeting in person.

You all persevered through the challenges of the last two years, and as much as we'd all like to think that's behind us, we're not quite there yet. I'm confident whatever we face in the future, if we work together as we have through this last challenge, we'll all succeed.

So many exciting things are going on across the nation in cybersecurity education and workforce development. In Washington, the federal government is working hard to find resources and collaborate on solutions to the problems facing the nation in cybersecurity and education. You've all participated in several events and initiatives, and we look forward to your continuing support.

You're also all busy in your own communities. As I've had the chance in recent months to travel and meet with several of you, I have been proud and overwhelmed by the great work you are all doing. Your creativity and innovation are taking us into new territory, new ideas, and exciting ways of addressing the challenges, vulnerabilities and risks to our nation. I look forward to continuing our work together as we move into this new post-COVID environment with new tools and new ideas for the future.



Lynne Clark is the Acting Chief of the Center for Education Outreach and Innovation at the National Cryptologic School (A29), NSA. She has 43 years of combined military and civilian service. She received her Air Force commission in 1978, and joined NSA in 1999.

The Center for Education Outreach and Innovation manages the National Cryptologic School's academic activities outside of NSA. This includes the CAE-C program, the GenCyber and STARTALK summer camp programs, cyber competition and Military Academy internship programs, and visiting professors at universities across the nation.

Ms Clark and her team manage CAE-C program office functions such as establishing and maintaining designation criteria, collecting and adjudicating designation applications, bringing new schools into the program, and, on behalf of DoD-CIO, managing the DoD Cyber Scholarship program. Ms Clark facilitates partnerships with federal departments and agencies and represents the National Security Agency at meetings and events. Prior to this assignment, Ms Clark was Deputy Chief of Workforce Resources, Education and Development for NSA's Information Assurance Directorate (IAD). This included responsibility for IAD's hiring and intern programs.

She is the recipient of the Meritorious Civilian Service Award, awarded the Joint Meritorious Unit Award twice for IOSS special projects in support of the Department of Defense, and the National Intelligence Meritorious Unit Citation for support to the Intelligence Community.

Prior to her tenure at the IOSS, Ms Clark served in the U.S. Air Force with worldwide assignments in airspace management, radar operations and operations risk management. She spent eight years serving in NATO during the Cold War and during the Germany reunification. She was involved in development of secure range operations for military RDT&E facilities, advised on risk management issues involved in the START and Open Skies treaties, and managed the Air Force OPSEC Program at the Pentagon. She retired at the rank of Lieutenant Colonel in 1999.

Ms. Clark's academic credentials include a Masters in Clinical Psychology from the Fielding Institute, and a B.A. in Community Development from Baldwin-Wallace College.

Message from the Community

Cybersecurity educators are facing demands from government and industry to produce more graduates to fill the current and future workforce needs. Each year, the Centers of Academic Excellence in Cybersecurity Community (CAE-C) assembles to discuss the workforce problem as well as to discuss issues unique to our community, including faculty shortages, bridging the skills gap, and career pathways. The CAE Community is a critical resource in developing a capable cybersecurity workforce for both industry and government. As we like to say, "When have we ever had 380+ colleges and universities working together to solve a problem like this?"

Thank you for your efforts in developing and nurturing the future cyber workforce. There is still much work to be done but the fruit of your efforts will be felt for generations to come.

On behalf of the CAE in Cybersecurity Community,

Tony Coulson, CSUSB



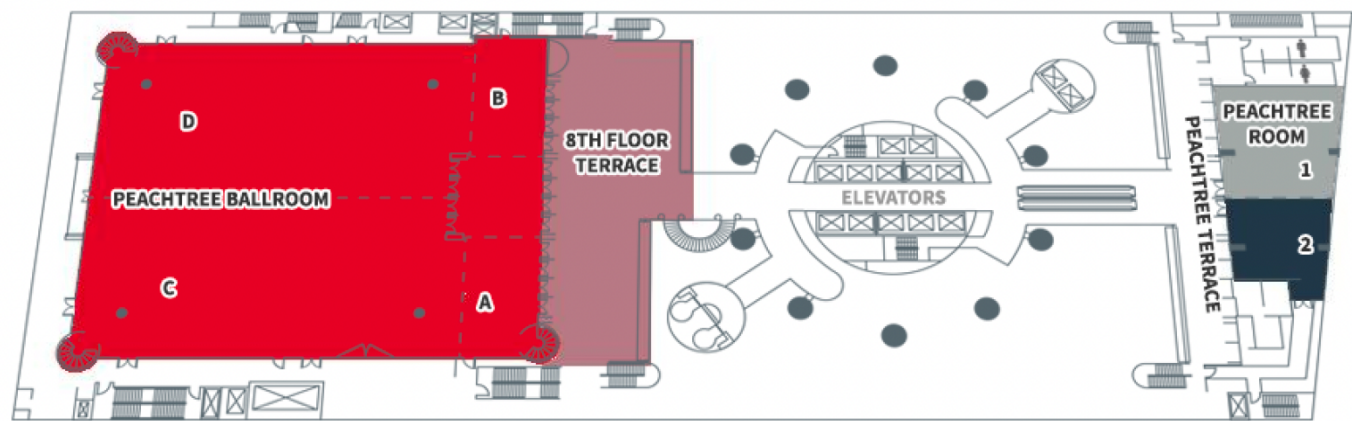
Getting Around

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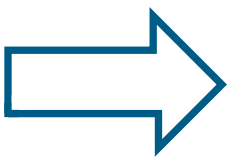


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We want your feedback!
Fill out the symposium survey now!



Conference WiFi: Westin Conference
Password: NICE22

All-Hub Mixer

Mark it on your schedule!

June 8, 2022 | 5 pm - 7 pm
Westin Peachtree Plaza, Atlanta
Chastain Level Sixth Floor

Come meet with other regional PIs!
Refreshments provided.



All-Hub Mixer Agenda

Come Join us for

Pre check-in, Hub map activity hosted by CAE-C Community National Center, and Hub Members Networking Session with refreshments.

Northeast

Stop by and meet your NE reps! Get more info on the Regional Faculty Advisory Board and provide input on who you want to see at the next NE regional townhall meeting. You're invited to learn more about how to get students in NUARI exercises and the NCAE Cyber Games.

Northwest

Find out what's happening in the NW community! From Outreach events to Faculty Development grants, the NW has tons of initiatives to get involved in. Come hear about their work in GenCyber camps, competency working group meetings, and with the State Department of Education. Looking for regular updates? Sign up for the Bits and Bytes newsletter full of CAE Community opportunities.

Midwest

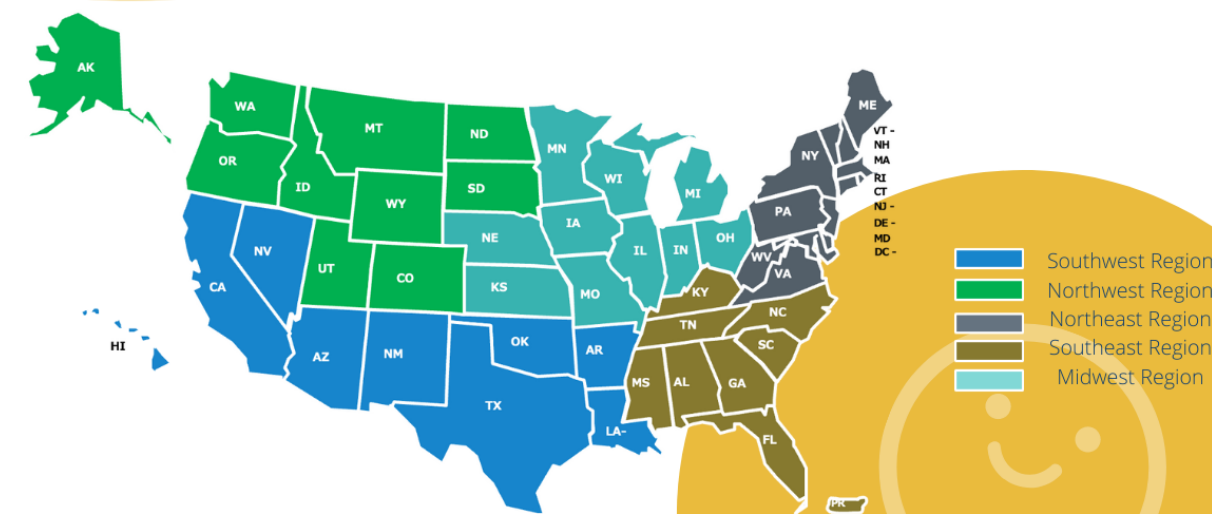
Enjoy a quick meet and greet with other Midwest Hub PIs and share CAE cybersecurity initiatives occurring at your institution. Get to know your leads Dr. John Sands and Stanley Kotska with appearances from Davenport University and Lonnie Decker. They will be discussing efforts up to date including K-12 Cybersecurity Career Pathways and Educational RING Initiatives. You can also get more info on how to sign up for the August Midwest PI In-person meeting at Moraine Valley Community College on August 18 as well as the August 19 CAE Designation Ceremony.

Southwest

Come talk to the SW Hub and get more info on their two day in-person NCAE-C Southwest Regional Hub Event on June 21 & 22 in San Antonio Texas at University of Texas San Antonio and San Antonio College Campuses. They'll be discussing how to get involved with Quarterly Virtual Southwest Region Meetings, NUARI Competitions Program, and CAE-C Competitions. Be sure to ask about their involvement with Whatcom Community College and the NCyTE center to review CAE applications

Southeast

Please join the SE Hub for the 2022 Southeast CAE-C Forum and Designation Ceremony on Sep. 28-29, in Charlotte, NC. The SE event will include updates from the NCAE-C Program Office and Community Center, shareable best practices and resources, and networking and collaboration opportunities with the CAE-C Community, government, and industry partners.



Southwest Region
Northwest Region
Northeast Region
Southeast Region
Midwest Region

Join us after the breakout sessions on Thursday for a resource expo and mixer with our industry sponsors.

June 9 | 5-9pm

Hors d'ouervres and refreshments provided

Chastain level - 6th Floor

Schedule of Events

5:00-9:00pm	Hors d'ouervres and refreshments	Chastain Foyer
5pm-9pm	CARD/CLARK	Chastain Foyer
5:30pm	Presentation by Immersive Labs	Chastain DE
6:00pm	Presentation by Cyberbit	Chastain HIJ
6:30pm	Presentation by Haiku	Chastain FG



Hosted by:



Thursday, June 9, 2022

7:30am Registration (No breakfast provided) (8th floor Ballroom)

8:00am Welcome (8th floor Ballroom)

8:15am CAE-C Community Updates (8th floor Ballroom)

8:45am NCAE-C Partner Updates (8th floor Ballroom)

9:45am Break

10:00am Competitions (8th floor Ballroom)
Jake Mihevc

10:30am CARD and CLARK (8th floor Ballroom)
Sidd Kaza and Blair Taylor

10:55am KU Initiatives (8th floor Ballroom)

11:10am CAE-R Designation Presentation (8th floor Ballroom)

12:00pm Working lunch – box lunch grab and go to:

CAE-CD Track
12:00pm: Fast Pitch Talks
1:10pm: Break
1:20pm: Presentations
2:45pm: Break
3:00pm: Presentations

CAE-CO Track
12:00pm: CO POC Meeting with KUs
2:45pm: Break
3:00pm: CO Designation Criteria (open to all with a Q&A)

CAE-R Track
12:00pm: CAE-R Designation Q&A
1:00pm: Research Grant Presentations
2:45pm: Break
3:00pm: CAE-R POC Meeting

4:45pm Break

5:00pm-9:00pm Sponsor Mixer (6th Floor) - Hors D'oeuvres and poster presentations (please note, posters will be unattended)

Friday, June 10, 2022

8:00am NCAE-PMO and NICE Updates (8th floor Ballroom)
Working Breakfast

8:30am CAE Community service recognitions (8th floor Ballroom)

9:00am Keynote (8th floor Ballroom)

9:45am Keynote Q&A (8th floor Ballroom)

10:00am Morning Break

CAE-CD Track
10:15am: CAE Panel Presentation
11:00am: New CAEs and New POCs Meet-and-Greet with welcome by Lynne Clark (Ballroom)

CAE-R Track
10:15am: TD Panel
11:15am: INSuRE+C Student Project Presentation

12:15pm Dismissal/Closing Remarks (Lunch not provided)
Tony Coulson



CAE-R Schedule

Thursday, June 9, 2022

11:00am	Presentation CAE-R (Re-)Designation (8th Floor Ballroom) Session Chairs: Cynthia Irvine and Susanne Wetzel
12:00pm	Q&A on CAE-R (Re-)Designation Session Chair: Agnes Chan
1:00pm	Research Grantee Presentations (6th floor, Chastain 1 and 2) Session Chair: Eugene Vasserman 1:00pm: Overview of CAE Research Grants Program, <i>Alice Smitley</i> , NSA 1:20pm: Path-Aware Risk Scores for Access Control in Zero-Trust Systems, <i>Philip Brown</i> , University of Colorado, Colorado Springs 1:40pm: Juicing V8: A Primary Account for the Memory Forensics of the V8 JavaScript Engine, <i>Ibrahim Baggili, Samuel Bergami, and Enoch Wang</i> , Connecticut Institute of Technology 2:00pm: Exploration of Heuristic and Probabilistic Tools in Quantum Computing with Applications to Cryptography, <i>Hugo Delgado</i> , Polytechnic University of Puerto Rico 2:20pm: CanarySat: A Virtual CubeSat Model for Cybersecurity Research and Education, <i>David Coe, Aleksandar Milenkovic, Jeffrey Kulick and Letha Etzkorn</i> , The University of Alabama in Huntsville
2:40pm	Break
3:00pm-5:00pm	CAE-R Point of Contact Meeting (6th floor, Chastain 1 and 2) Session Chairs: Agnes Chan and Susanne Wetzel

Friday, June 10, 2022

9:00am-9:45am	Keynote: Cybersecurity Research at the National Security Agency: Current Directions and Future Challenges (8th floor Ballroom) <i>Dr. Mark Segal</i> , Deputy Director NSA Research Directorate
10:15am	Panel of Technical Directors for the INSuRE Program (6th floor, Chastain HIJ) Session Chair: Susanne Wetzel <i>Timothy Davison, Johns Hopkins University Applied Physics Laboratory</i> <i>Roland Varriale, Argonne National Laboratory</i> <i>Edward Ziegler, National Security Agency</i>
11:15am	INSuRE+C Student Presentations (6th floor Chastain HIJ) Session Chair: Shambhu Upadhyaya 11:15am: <i>Audio Deepfake Detection</i> , <i>Chengzhe Sun</i> , SUNY Buffalo, <i>Ehab AlBadawy</i> , University of Albany, <i>Siwei Lyu</i> , SUNY Buffalo, <i>Timothy Davison</i> , JHU Applied Physics Lab, <i>Sarah Robinson</i> , JHU Physics Lab, <i>Nathaniel Kavalier</i> , JHU Applied Physics Lab 11:45am: <i>Towards a Rigorous Approach for Zero Trust in the 5G Core</i> , <i>Norbert Ludant</i> , Northeastern University, <i>Guevara Noubir</i> , Northeastern University, <i>Marinos Vomas</i> , Northeastern University
12:15pm	Closing Remarks
10:15am-4:00pm	Special Topics Workshop: Transformational Research in Usable Security (Event in Parallel, By Invitation Only) (Chastain G) Workshop Organizers: Heather Lipford, University of North Carolina Charlotte and Cori Faklaris, Carnegie Mellon University Participants: Hana Habib, Carnegie Mellon University, Apu Kapadia, University of Indiana, Frank Li, Georgia Tech, David Maimon, Georgia State University, Michelle Mazurek, University of Maryland, College Park, Xinming Ou, University of South Florida

CAE-CD Schedule

Thursday, June 9, 2022

12:00pm

Fast Pitch Talks – 10 minutes each (rooms run concurrently)

Room 1 (Chastain DE)
Session Chair: Anna Carlin

What is Missing in Cybersecurity Curriculum?
Bo Yuan, Rochester Institute of Technology

OpenStack Private Cloud for Cyber Capstone Development and Implementation
Chuck Bane, University of San Diego

Incorporating AI Into Software Reverse Engineering Courses
Xiuwen Liu, Florida State University
Mike Burmester

How to Build Large Student Cyber Clubs
Mike Morris, Western Governor’s University

Lessons Learned from the Development of Dual-Enrollment Programs with High Schools
Yair Levy, Nova Southeastern University

CAE-CD is Not the end goal, it is the first door to a world of opportunities for Cyber Initiatives
Shankar Banik, The Citadel

Room 2 (Chastain FG)
Session Chair: Anne Kohnke

Establishing New K-12 Pathways
Andrew Lutz, Johnson County Community College

Micro Transcripts: Quantifiable and Auditable Workforce Readiness Transcripts (WRT) for Internships
Ram Dantu, University of North Texas
Mark Thompson

Developing Competency Through Competitions
Dan Manson, Cal Poly Pomona
Morgan Zantua

A Final Stop of the CWCT Journey: Training Participant Job Placement with Certifications
Mengjun Xie, University of Tennessee at Chattanooga
Stephen Reiter

The UAH Cyber Force Incubator
Tommy Morris, The University of Alabama in Huntsville

The easiest interview answers - your story
Robert Loy, Grand Canyon University

12:00pm

Room 3 (Chastain HIJ)
Session Chair: Margaret Taylor

Cybersecurity Pathways: Implementing a Systems Based Approach Through Mentoring
Lonnie Decker, Davenport University
Teha Emmons

Stepping-Stone Intrusion Upstream Detection Using Round Trip Time Distribution
Jianhua Yang, Columbus State University

Hierarchical Multi-Blockchain Architectures for Autonomous Management of Medical Data/Devices
Mike Burmester, Florida State University
Xiuwen Liu

Critical Infrastructure – Training
Dipankar Dasgupta, University of Memphis
Jim McGinnis

Education on Cybersecurity Issues with Smart Power Grid
Mohd Hasan Ali, The University of Memphis

Waleed Farag, Indiana University of Pennsylvania
Benefits from a Novel Outreach Project that Supports Cybersecurity Professional Development

1:20pm

Presentations – 20 minutes each (rooms run concurrently)

Room 1 (Chastain DE)
Session Chair: Greg Laidlaw

Making Knowledge Units Work for Your Program
Art Conklin, University of Houston
Seth Hamman

The Lack of Incident Response Curriculum in the CAE Community: Call to Action
Casey O'Brien, University of Illinois Urbana-Champaign
David Umphress

ERAU & A-ISAC CTF: Raising Awareness about Aviation Cybersecurity
Jesse Chiu, Embry-Riddle Aeronautical University - Prescott Campus
Krishna Sampigethaya

Developing a “Hands On” Security Compliance Course
Joseph Jeansonne, Pitt Community College

CAE-CD Schedule

1:20pm

Presentations – 20 minutes each (rooms run concurrently)

Room 2 (Chastain FG)

Session Chair: Loyce Pailen

Ensuring consistency across the curriculum
Brandy Harris, Grand Canyon University

Mapping of the NERC-CIP Standards with the NIST CSF
Guillermo Francia, University of West Florida

Building a Smart Secure Manufacturing Testbed Using Zero Trust Model, Machine Learning and 5G
Holly Yuan, University of Wisconsin-Stout
Brandon Cross

RMF vs CSF: Which is Better for Higher Ed?
Matt Paulson, Weber State University

Room 3 (Chastain HIJ)

Session Chair: Kim Muschalek

Ransomware Incident Preparations with Ethical Considerations and Command System Framework Proposal
Stanley Mierzwa, Kean University

Meeting the Cybersecurity Workforce Challenge: One Goal, Innovative Solutions
Eman El-Sheikh, University of West Florida
Michael Tu, Purdue University Northwest
Andrew Wright, University of Louisville

Mapping Low Cost and Open Source Labs to the NICE Workforce Framework
Chris Simpson, National University

Cyber Sleuthing: An Introduction to Cybersecurity Using Gamification
Curtis Coleman, Oklahoma Christian University

2:45pm

Break

3:00pm

Presentations – 20 minutes each (rooms run concurrently)

Room 1 (Chastain DE)

Session Chair: Jake Mihevc

Long and Winding Road: Navigating to a Cybersecurity Performance Based Education (PBE) Curriculum
Norma Colunga-Hernandez, Texas State Technical College in Harlingen
Amy Hertel

Program of Study Validation: Cybersecurity Concentration at FDU
Ihab Darwish, Fairleigh Dickenson University

K12-University Cybersecurity Education Partnership Best Practices
Deveeshree Nayak, University of Washington

Colorado's Cybersecurity Educational Diversity Initiative (CEDI): Urban/Rural HSIs & the Wild West
Jeffrey London, MSU Denver
Steve Beaty

Room 2 (Chastain FG)

Session Chair: Wei Li

Mininet as a Networking Tool for simulating 4 different Cyber Attacks: Experimental Results
George Meghabghab, Roane State

Computer Forensics Teaching Resources
Jeffrey Duffany, Polytechnic University of Puerto Rico
Alfredo Cruz

"A Slice of Raspberry Pi Dessert for GenCyber Teachers"
Loyce Pailen, University of Maryland Global Campus
Kimberly Mentzell

Room 3 (Chastain HIJ)

Session Chair: Tobi West

Honeypots and Knowledge Discovery in Teaching Network Defense
Ping Wang, Robert Morris University

Stepping-Stone Intrusion Detection using Crossover Packets
Lixin Wang, Columbus State University

The Applications of Internet of Things in the Medical Field
Lixin Wang, Columbus State University

4:45pm

Break

5:00pm-9:00pm

Sponsor Mixer 6th Floor (Hors d'oeuvres and Sponsors' Presentations)

CAE-CD Schedule

Friday, June 10, 2022

8:00am	Working Breakfast (8th floor Ballroom)
8:30am	CAE Community service recognitions (8th floor Ballroom)
9:00am	Keynote (8th floor Ballroom)
9:45am	Keynote Q&A (8th floor Ballroom)
10:00am	Morning Break
10:15am	Panel Presentation (8th floor Ballroom) Session Chair: Gretchen Bliss The “Power of Six”: Creating Cyber Experiences and Building a Diverse Talent Workforce Pathway Sharon Hamilton, Norwich University Linda Riedel, The Citadel Bryson Payne, University of North Georgia
11:00am	New CAEs and New POCs Meet-and-Greet with welcome by Lynne Clark (8th floor Ballroom)

CAE-CO Schedule

Thursday, June 9, 2022

12:00pm-2:45pm	CO CoP Meeting (CO POCs only) (6th floor Chastain C) The Cyber Operations Community of Practice will discuss the new application process, the KUs, and other topics of interest. The NSA PMO will be in attendance. This meeting is limited to CO POCs only. (Contacts: Drew Hamilton and Seth Hamman)
3:00pm-4:45pm	CO Designation Criteria (open to all) (6th floor Chastain C) The Cyber Operations designation is open for applications. During this session, we will review the designation criteria, how to know when you are ready to apply, and where to find helpful resources. There will be ample time for Q&A. Moderated by Drew Hamilton, Seth Hamman, and the NSA PMO.

Access this Week’s Presentation and Fast Pitch Abstracts



Thank you to the CAE Program Committees

As the Community grows, so do the needs. Each year, the demand for collaboration and cooperation increases as we welcome more newly designated colleges and universities. The Symposium couldn't happen without help from our dedicated faculty committees who spend hours reviewing submissions and ensuring that content shared to the Community is relevant and valuable. If you see one of our committee members this week, please take a moment to thank them for their service to the Community.

CAE-CD Program Committee

Tobi West - Coastline Community College, 2022 CAE-CD Planning Committee Co-Chair
Gretchen Bliss - University of Colorado Colorado Springs, 2022 CAE-CD Planning Committee Co-Chair
Anne Kohnke - University of Detroit Mercy, 2022 CAE-CD Planning Committee, Member
Yair Levy - Nova Southeastern University, 2022 CAE-CD Planning Committee Member
Margaret Taylor - College of Southern Nevada, 2022 CAE-CD Planning Committee Member
Paul Wagner - The University of Arizona, 2022 CAE-CD Planning Committee Member

CAE-CO Program Committee

Seth Hamman – Cedarville University, 2022 CAE-CO Program Planning Co-Chair
Drew Hamilton – Texas A&M University, 2022 CAE-CO Program Planning Co-Chair

CAE-R Program Committee

Agnes Chan - Northeastern University, 2022 CAE-R Planning Committee Co-Chair
Susanne Wetzel – Stevens Institute of Technology, 2022 CAE-R Planning Committee Co-Chair
Cynthia Irvine, Naval Postgraduate School, 2022 CAE-R Planning Committee Member
Shambhu Upadhyaya, University of Buffalo, SUNY, 2022 CAE-R Planning Committee Member
Eugene Vasserman, Kansas State University, 2022 CAE-R Planning Committee Member

CAE-C Community Leads

CAE-C Community National Center

Lead: Tony Coulson (tcoulson@caecommunity.org)

CAE-CD Community of Practice

CoP Lead: Yair Levy (levy@nova.edu)

CoP Lead: Anne Kohnke (kohnkean@udmercy.edu)

CAE-CO Community of Practice

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CoP Lead: Drew Hamilton (hamilton@exchange.tamu.edu)

CAE-R Community of Practice

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CoP Lead: Susanne Wetzel (swetzel@stevens.edu)

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Hub Lead: Gurvinder Tejay (gtejay@uccs.edu)

Northeast Hub

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Hub Lead: Sidd Kaza (SKaza@towson.edu)

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Hub Lead: Glenn Dietrich (Glenn.Dietrich@utsa.edu)

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Hub Lead: Anthony Pinto (apinto@uwf.edu)

**To learn more about the CAE in Cybersecurity
Community, visit caecommunity.org**

Thank you for attending the 2022 CAE in Cybersecurity Community Symposium! All materials from the symposium will be available to view on the CAE in Cybersecurity Community website at caecommunity.org. If you have any questions, comments, or concerns, please contact us at info@caecommunity.org