

NICE RAMPS Grant

Cin-Day Cyber Corridor Final Report

October 1, 2016 – December 31, 2017

NIST
National Institute of
Standards and Technology
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NICE
NATIONAL INITIATIVE FOR
CYBERSECURITY EDUCATION

SOCHE
Southwestern Ohio Council for Higher Education

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OVERVIEW

The Cincinnati-Dayton Cyber Corridor (Cin-Day Cyber): A Regional Consortia Approach to Cybersecurity Education and Workforce Readiness was formed by the Southwestern Ohio Council for Higher Education (SOCHE) in cooperation with Air Force Institute of Technology, Dayton Development Coalition, University of Cincinnati, University of Dayton, and Wright State University). The initiative expanded to include numerous other higher education, K-12, and industry partners to address cyber education and workforce development, based upon the need across the region.

In October 2016, Cin-Day Cyber was awarded the Regional Alliances and Multistakeholder Partnerships to Stimulate (RAMPS) Cybersecurity Education and Workforce Development grant to support a series of “proof of concept” projects. Cin-Day Cyber piloted and assessed the projects as the primary thrust of the RAMPS funding with the goals of: 1) determining which projects would produce benefits to growing the cyber workforce; and 2: identify effective initiatives for long-term “full scale” implementation across the region.

The project design included three strategic phases:

- I. Robust data collection on regional cybersecurity workforce needs:*
 - a. Cybersecurity workforce market needs and opportunities analysis aligned with NICE Framework and cybersecurity jobs heat map
 - b. Cybersecurity regional educational program inventory and gap analysis
 - c. Cybersecurity regional expertise and research inventory
 - d. Cybersecurity policy analysis
- II. Collaboration among Higher Education Industry, K-12 and Regional Economic Development Agencies to broadly address cybersecurity education and workforce development:*
 - a. Higher Education cybersecurity academic roundtable
 - b. Cybersecurity industry regional roundtable and research to workplace briefings
 - c. Cybersecurity internship fairs and employment outreach
 - d. NICE conference participation
- III. Industry and higher education supported cybersecurity career awareness and skills development for underserved populations in K-12 schools:*
 - a. K-12/CAE/Industry collaboration on career awareness and skills development

b. CyberPatriot mentorship and related extracurricular programs

These initiatives specifically addressed four overall beneficial outcomes. First, higher education identified and addressed the skills needed in industry, as colleges and universities develop academic pathways to increase the pipeline of students pursuing cybersecurity careers. The second benefit of these initiatives is for employers to benefit from an increased supply of skilled cybersecurity workers and an educational system aligned to their needs. Third, state and local economic development organizations, working with area businesses and nonprofit organizations, will benefit by attracting new industries to their region to create more jobs. Lastly, K-12 institutions engage students in active learning practices that build career awareness around the opportunities offered by the cybersecurity professions.



ACCOMPLISHMENTS

Each strategic phase was broken into project classifications to meet the goals and objectives set forth in the RAMPS Grant proposal. Below are the activities Cin-Day Cyber performed with funding from the NICE RAMPS Grant.

- **Activities in Multiple Domains**
 - Conducted regular status meetings to ensure grant initiatives were on schedule and within budget and mission, identify risks, and analyze the successes and challenges of each initiative to determine future vitality and to define a post-grant path for Cin-Day Cyber.
 - Launched website for Cin-Day Cyber <http://cindaycyber.com/> to provide a central location to communicate upcoming cyber events, cyber education, cyber workforce, etc.

- Wrote articles for Department of Homeland Security's National Cyber Security Awareness Month and NICE eNewsletter.
- Launched new SOCHE website which links to Cin-Day Cyber, Degree Finder, and Workforce Development websites.
- **Cyber Workforce Market Needs, Opportunities, and Expertise**
 - Conducted Cyber Demand & Gap Analysis and created Expertise & Research Inventories. The findings were communicated to industry and higher ed communities during roundtable discussions which helped stimulate partnerships between communities to meet market specific cyber workforce needs.
 - Created Degree Finder to quickly discover degrees and certifications offered by Southwest Ohio colleges and universities which highlights future workforce for employers.
 - Collaborated with Ohio Cyber Collaboration Committee (OC3) to help promote cyber awareness and develop a strong cyber security infrastructure across Ohio.
 - Secured funding for Cyber Range that is available for all institutions and industry to use for teaching students and allowing industry a safe environment for testing their network security.
- **Higher Ed Activities**
 - Partnered with Air Force Institute of Technology to host SOCHE STEM-Cyber Research Fair to bring industry together with students as they presented their research findings.
 - Supported University of Cincinnati students in creating lesson plans for teaching functional programming concepts to 2nd graders.
 - Supported University of Dayton presenting at Northern Kentucky University's Cybersecurity Symposium – Transforming your user community from IT security adversaries to Cyber-Mindful Allies – Strategies, Tactics, and Lessons Learned
 - Sponsored 18 students from 6 local institutions (2 - Community Colleges and 4 – Universities) to attend 2017 NICE Conference.
 - Established cross-college collaboration at University of Cincinnati (UC) to help incorporate cyber education across colleges.
 - Formed partnership in which SOCHE/CinDay Cyber became co-PI with Cedarville University for NSA grant for Cybersecurity Core Curricula Development.
 - Sponsored Maj Gen Franz, Joint Chiefs of Staff Operations Chief for USCYBERCOM to speak at the University of Cincinnati's Army ROTC commissioning and to conduct three professional development sessions with the graduating cadets, the Cyber Leader Development Program, and CEAS CE/CS and Poly Sci cybersecurity students.

- Provided 3 scholarships to K-12 students who are pursuing computer science and cyber security degrees to attend local universities and will provide mentoring throughout their academic careers.
- Promoted University of Dayton hosting the 11th Annual DayCon event, a Hacksec Invitational Packetwars Cyber Challenge that included a capture-the-flag competition with Cedarville University, Northern Kentucky University, University of Cincinnati, University of Dayton, and Wright State University.



- **Industry/Higher Ed Roundtable**

- Hosted Cyber Industry/Higher Ed Roundtables to provide professional development, cyber updates at local, state, and federal levels, and encourage collaboration.
- Hosted Dayton Region Military Collaborative (DRMC) Cyber Symposium.
- Hosted Higher Education Cyber Roundtable with local CAEs.
- Held Industry Roundtable on the “Value of Interns.”

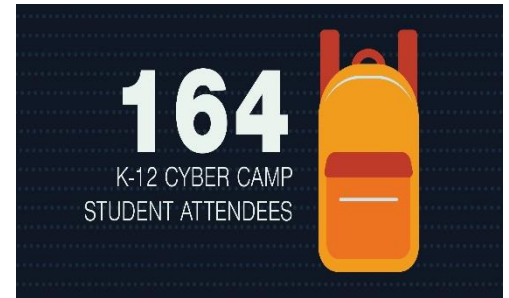
- **Internships**

- Secured 74 cyber-related internships at Air Force Institute of Technology; 24 of the positions are filled by females and 7 are self-identified as minority.
- Educated industry partners on the importance of providing internship opportunities to develop the future workforce.

- **Internship Fairs, Conferences & Employment Outreach**

- Held Cyber Mixer to bring industry together with institutional cyber department heads and career services so industry would have a better understanding of the higher education programming and students in the pipeline.
- Presented at National Cyber Summit about Cin-Day’s RAMPS grant projects to educate the cyber community on strategies that can be successfully implemented in their communities.
- Co-sponsored Technology First’s Ohio Information Security Conference (OISC)
 - Hosted Cyber track:
 - Transforming Your User Community for IT Security Adversaries to Cyber-Mindful Allies: Strategies Tactics and Lessons learned from UD’s Safe Computing Campaign.
 - The Cybersecurity Advisory Board of the Office of the Ohio Attorney General Industry experts/business leaders formed by Mike DeWine.

- Cin-Day Cyber: A Regional Consortia Approach to Cybersecurity Education and Workforce Readiness
- Vendor Management – A Cyber Security Perspective.
- Developing the Next Generation of Cyber Talent: Panel Discussion on Successful Internships.
- Co-sponsored 10th Annual NKU CyberSecurity Symposium & Internship Fair
 - Hosted Internship Fair for cyber and STEM students.
 - Hosted an exhibitor booth to promote Cin-Day and Degree Finder to the southernmost part of region.
 - Conducted “Transforming your user community from IT security adversaries to Cyber-Mindful Allies: Strategies, Tactics, and Lessons Learned” session.
 - Provided marketing support for event.
- Co-sponsored NICE 2017 Conference & Expo and NICE pre-conference meeting
 - Co-sponsored preconference and evening receptions to increase community’s awareness Cin-Day.
 - Hosted “Preparing Regional Partnerships for Take Off” and “Transforming your user community from IT security adversaries to Cyber-Mindful Allies.”
 - Presented at Soapbox session and participated in expert panels.
 - Sponsored exhibitor booth to promote Cin-Day, regional cyber employment opportunities, Degree Finder, and partnerships.
- **K-12 Outreach**
 - Trained high school teachers to become college cybersecurity instructors for first-year college courses that are taught through Ohio's College Credit Plus program.
 - Sponsored Cyber Patriot teams which competed at local, state, and national levels.
 - Held Cyber Patriot Camp for 120 K-12 students.
 - Conducted Raspberry Pi Camp for 44 7th and 8th graders.
 - Provided funding for TestOut Certification Exams:
 - TestOut is a nationwide provider of online certification exams. High School students who pass the exams earn industry credentials; these credentials help students apply for college internships and entry-level IT positions.
 - Sponsored the Dayton Regional STEM School for the National Cybersecurity Career Awareness Week Cybersecurity Challenge, achieving fourth place with 89 participating students.
 - Collaborated with a STEM middle school while they created lessons for teaching cryptography in the 6th grade.



- Partnered with Cyber Warrior Princess as they were awarded the Innovation in Cybersecurity Education Award by the National CyberWatch Center.
- Dayton Regional STEM School partnered for new IT lab and cybersecurity research with Wright State University and Cedarville University.

HIGHLIGHTS

The NICE RAMPS Grant funding allowed Cin-Day Cyber the opportunity to impact many student lives and to establish valuable connections with industry. Below highlights a few of the students that were positively impacted and connections made.

- One of this year's highlights from the NICE RAMPS Grant funding was being able to provide three students that might have studied another field besides cyber/computer science with a scholarship to further their education in cybersecurity and computer science. This is one of the best ways to assist the workforce pipeline that is experiencing a shortage in the cyber realm. Below is a picture taken at the scholarship dinner where the three scholarship recipients received their awards.

From left to right: Bailey Morgan attending University of Cincinnati, Spencer Snider attending University of Cincinnati, Matthew Drake attending University of Dayton, and John France from the University of Cincinnati



- Another highpoint during the NICE Ramps Grant period was one of the Dayton Regional STEM School's CyberPatriot teams taking 1st place in the CyberPatriot Competition at State Level. The team placed 1st at the platinum level of competition. Getting younger generations engaged in the cyber field is crucial to increasing awareness of the cyber

field and possible areas of study at the college/university education level. Below is a photograph of their CyberPatriot team.

From left to right: Mr. Slone (CyberPatriot advisor), Connor Weaver, Ryan Lapchynski, Ryan Erno, Marc Ayala, Quan Nguyen, and Daniel Ayala.



- The Cin-Day region had the honor of hosting the 2017 NICE Conference and Expo and leveraged the opportunity into co-sponsoring preconference and evening receptions; presenting conference sessions; participating on expert panels; hosting an exhibitor booth to promote Cin-Day Cyber, regional cyber employment opportunities, Degree Finder, and partnerships. Cin-Day Cyber funded 18 students to attend the conference, which provided them a better understanding of cybersecurity career opportunities and allowed them to make industry connections.

From left to right: Cassie Barlow and Diane Cahill from SOCHE representing Cin-Day Cyber at NICE 2017.



Dr. Sean Creighton, SOCHE, leading a panel discussion at the NICE 2017.



CONCLUSION & GOING FORWARD

The funding received with the NICE RAMPS Grant accelerated the activities/tasks outlined in this report, as well as created new synergies between individuals and companies in the region

that had not existed previously. The grant drastically enabled a deeper understanding of the cyber industry and workforce needs and helped strengthen the alliance among industry, higher education, and K-12 in the Cin-Day Cyber Region. The initiative inspired numerous students to pursue careers in cyber, established vital connections with industry, enhanced institutional collaboration, and provided critical research in cyber for the Cin-Day Region.

The progress of the Cin-Day Cyber plan during 2017 was abundant and the team was able to accomplish a great deal of cyber related tasks and activities to develop and grow cyber in the Cin-Day Region. Phase 1: data collection on cybersecurity workforce, Phase 2: collaboration to address cybersecurity education and workforce development, and Phase 3: cybersecurity career awareness and skills development for underserved populations were all completed.

The Cin-Day Cyber initiative finished on time and gained valuable knowledge and insight on the cybersecurity environment in the region. It has allowed industry, higher education, K-12, and economic development partners to come together in one room and discuss the regional plan for cyber growth. Further, the initiative provided a regional platform to address cyber areas of potential growth, possible solutions to resource challenges, and key approaches moving forward while simultaneously keeping the players in the cyber arena working together.

Going forward, Cin-Day Cyber will continue to support, develop, and enhance cyber education, workforce development, and other cyber related activities in the region. The Cin-Day team will continue to support many of the items implemented by the RAMPS grant, including: 1) providing internships; 2) involvement in cyber conferences/internship fairs; 3) sharing of curriculum and professional development; 4) creation of the Cin-Day Cyber website to house cyber related information/research/findings; 5) development of curriculum for future workforce, and more. The Cin-Day region is excited to continue the growth of many initiatives given a jump-start by the grant and will continue to enhance the regional ability to develop the workforce in the ever-changing cybersecurity field.

Finally, the Cin-Day Cyber team would like to thank NICE for their support, feedback, and ongoing encouragement. The team looks forward to working with NICE again and wishes them all the best on future endeavors.