SOUTH CAROLINA'S **COMPETITIVE**

EDGE

IT AND ELECTRONICS MANUFACTURING

DEVELOPING SOUTH CAROLINA'S
DIGITAL WORKFORCE

ECONOMIC DEVELOPMENT *and* GROWTH *through* EDUCATION

SOUTH CAROLINA'S **COMPETITIVE**

EDGE

IT AND ELECTRONICS MANUFACTURING

YOUTH APPRENTICESHIP
Paves Way to Future in Cybersecurity

McLeod Information Systems, LLC, developed its cybersecurity apprenticeship program with two clear goals in mind: to grow a stronger information technology (IT) work base in Charleston, South Carolina, and to provide a vibrant new career path for local youth.

Debbie McLeod, president and co-founder of McLeod Information Systems, LLC

As a service-disabled, veteran owned and operated IT security business, McLeod Information Systems (MIS) looked for ways to give back to the local community soon after its founding in North Charleston in 2016. MIS saw an opportunity to accomplish this goal with the 2019 announcement that Trident Technical College (TTC) would establish a new associate degree in cybersecurity.

MIS agreed to partner with TTC and Apprenticeship Carolina™ to develop a registered cybersecurity youth apprenticeship, becoming the first cybersecurity company in North Charleston to have apprentices enrolled at the college. EDGE spoke with Debbie McLeod, president and co-founder of MIS, about apprenticeship and the potential of this dynamic partnership.

EDGE: *Could you give some background on McLeod Information Systems (MIS)?*

Debbie McLeod: MIS is a small cybersecurity business that supports the IT security needs of federal organizations and commercial industries. We currently have 11 employees and two cybersecurity support technician apprentices, and we hope to have more in the future.

EDGE: *What inspired you to consider creating a youth apprenticeship program?*

DM: We saw the number of unfilled cybersecurity positions, not just locally but worldwide, and we wanted to make a difference. There are 3 million openings worldwide and not nearly enough graduates to fill them. We knew that fresh, innovative approaches had to be taken to meet those workforce needs.

At the same time, we looked at IT courses offered in local high schools. We saw that schools were not adequately equipping students to step out into the IT market, let alone the cybersecurity career field. So the initial plan grew around the idea that
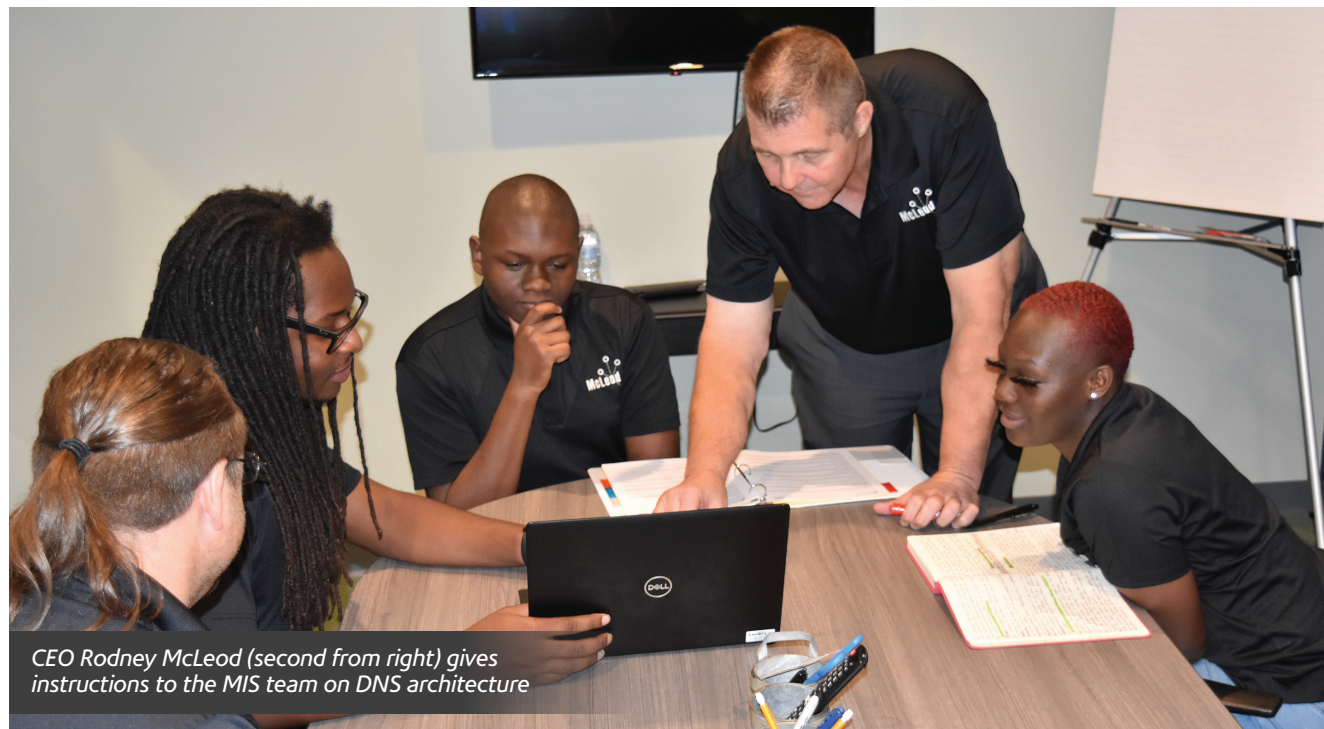
CEO Rodney McLeod (second from right) gives instructions to the MIS team on DNS architecture

CEO Rodney McLeod (right) mentors apprentice

(Left to right) Apprentices Arthur Gibson and Patrice Fountain with CEO Rodney McLeod and President and Co-Founder Debbie McLeod

we could start an intern program to help high school students.

After speaking with Charleston County School District (CCSD) and Apprenticeship Carolina, we realized we could do both. We could grow a stronger IT work base and provide a vibrant new career path for local youth.

We proceeded to hire students as interns from CCSD, then gave them the opportunity to switch over if they decided they wanted to go into the apprenticeship program. Two of the four did just that. We knew we had found a way to start making a difference.

EDGE: *How helpful have Apprenticeship Carolina and the technical college been during the establishment of your youth apprenticeship program?*

DM: Apprenticeship Carolina and Trident Tech have been extremely helpful in setting up the program. They did most of the legwork and have always been supportive, courteous and quick to reply to all our questions. They made setting up an apprenticeship look easy, although I am sure it was a lot of work on their part.

EDGE: *What are some of the top positive outcomes of having an apprenticeship program?*

DM: It is a very rewarding program on so many levels. For one, it allows us as a company to prepare and grow our future industry leaders. Everyone in the company

sees the value of the program. For the company employees that work directly with the apprentices, it is the brighter part of the workday when they get to instruct these impressionable minds.

> "Youth apprenticeship is a very rewarding program on every level. We hope to keep it as part of our company's vision for years to come."
>
> — DEBBIE MCLEOD, PRESIDENT AND CO-FOUNDER OF MCLEOD INFORMATION SYSTEMS, LLC

As for the apprentices, they say it allows them to learn and progress in a career field they are generally not exposed to.

EDGE: *Is there anything specific that you would like to highlight about your apprenticeship program?*

DM: We knew we wanted to extend the apprenticeship offer to students who came from high school(s) that

were less privileged in the offering of IT courses. Our apprentices came in with very little exposure to IT classes of any sort, so this gives them an opportunity that they may never have had otherwise.

EDGE: *What do you like most about the youth apprenticeship program?*

DM: The best part of the apprenticeship program is working with the youth. We like the fact that it gives our young adults an opportunity to build work experience while being educated. It puts them ahead of others in this career field by having actual hands-on knowledge, and it helps them get their feet in the door. It also allows us, as a company, to participate in building a stronger work base within the community.

EDGE: *If you had the opportunity to recommend an apprenticeship program to another company, what would you say?*

DM: Do it! I would definitely recommend apprenticeships to other com-

panies. It doesn't take a lot of effort on your part to get the program started, and it allows you to mentor youth in becoming future industry leaders. It gives the apprentices a different avenue to pursue a career outside of a typical 4-year degree program. An apprenticeship program gives valuable education and work experience in half the time and is far less expensive.

EDGE: *Is there anything else that you'd like to add?*

DM: Youth apprenticeship is a very rewarding program on every level. We hope to keep it as part of our company's vision for years to come. Although this journey started out as a way for us to broaden the horizons of youth that have not had as much exposure to IT as others, it became a better opportunity than imagined. It became rewarding to us at McLeod Information Systems, not just to the apprentices. By helping to meet a need that we saw in the community, we became blessed beyond measure. ■

McLeod Information Systems, LLC is a comprehensive cybersecurity services company founded in 2016. Headquartered in North Charleston, South Carolina, its staff has over 25 years of experience servicing and supporting federal organizations including the Defense Information Systems Agency, Departments of Defense and Veterans Affairs and commercial industries that include real estate (agents and brokers), CPA firms and law offices.

McLeod
INFORMATION
SYSTEMS

PIEDMONT TECHNICAL COLLEGE
Grad Prepares IT Interns for the Workforce

Richie Stone (left) trains IT interns from his alma mater

PIEDMONT
Technical College

As a network services technician and group leader at West Carolina Rural Telephone Cooperative, Inc. (WCTEL) in Abbeville, South Carolina, Richie Stone oversees activities of the company's network operations center (NOC). This role includes helping interns from Piedmont Technical College (PTC) gain valuable information technology (IT) work experience.

A 1993 PTC graduate himself, Richie Stone sees the value in providing hands-on experience to the students in his charge. "Our Tier 1 network operations center relies on IT interns from PTC," Stone said. "They do front-line tech support" which includes monitoring the NOC and resolving any internet or TV channel issues for WCTEL. He explained that the interns come in with a baseline of skills from PTC, and then they take those skills and build upon them.

Stone is aware of his critical role as a mentor and still remembers individual instructors who made a difference for him at PTC. When he struggled with trigonometry, for example, Stone ultimately succeeded because of

"I love being able to give these students the opportunity to come in here and learn."

— RICHIE STONE, WCTEL

extra coaching from a caring faculty member. "During my last semester, I did so well that I became a tutor," said Stone. "It's all because of my teacher [at PTC]."

His positive experience at the college made such an impression on Stone's family that each one of his four children has decided to follow in his footsteps and attend PTC.

At WCTEL, Stone continues to use the skills he learned as a tutor to work with interns. "I love being able to give these students the opportunity to come in here and learn. And they share their experience with us as well."

When describing the qualities that WCTEL seeks in interns, Stone said the best candidates have a natural interest in technologies and a desire to learn. In a continuously changing industry, interns must also be flexible and willing to adapt.

The opportunity to work with cutting-edge technology is one of the things that Stone loves most about his job, and he is willing to bet that the PTC interns do as well. "There's nothing like coming to work with a smile on your face and looking forward to the day," Stone said. "Working at WCTEL is great. One of the biggest things I like is the family atmosphere that we have. As a service-oriented culture, it's the real deal."

Stone added that the quality of interns coming from the college has been consistently high, and WCTEL has hired several upon graduation. "[The interns] pick up on it pretty quick. I am proud of them."

Learn more: **www.ptc.edu** ■
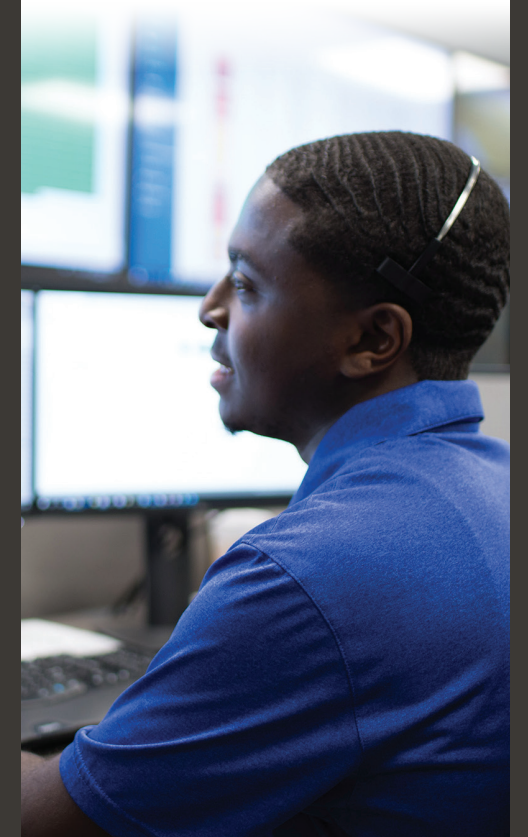
West Carolina Rural Telephone Cooperative, Inc. (WCTEL) was formed in 1952 to provide basic telephone service to three rural counties in South Carolina. WCTEL began providing local access to the internet in May 1995 and was one of the first rural telephone companies to provide high speed DSL internet access in 2000. In 2019, WCTEL was named the #1 Fastest Fiber Provider in South Carolina, Small Provider Category, by the BroadbandNow Awards, as well as one of the Top 10 Fastest Internet Providers Nationwide and Top 5 Fastest Fiber Providers Nationwide.

When Quality Electronics Manufacturing Services, Inc. (QEMS) decided to relocate operations to York County, a driving factor was the potential for partnering with South Carolina's renowned training programs, readySC™ and Apprenticeship Carolina™.

(Left to right) Quality Manager Pj Marshall, Executive Vice President Hannah Pham, Nancy Nguyen and CEO Phuong Nguyen

QEMS: READY FOR SUCCESS
IN SOUTH CAROLINA

Previously located in Charlotte, North Carolina, QEMS announced in 2018 that it would create 110 new jobs and invest $7.6 million in South Carolina. The manufacturer of printed circuit boards acquired the new location with an eye toward sustainable growth in the company's products and in its workforce.

EDGE recently spoke with QEMS executives Phuong Nguyen, chief executive officer, and Hannah Pham, executive vice president, as well as quality manager Pj Marshall about the importance of South Carolina's training

and recruitment programs to the company's plans for future growth.

EDGE: *Let's start with some background on QEMS, Inc. What does the company produce, and how long has it been in business?*

Phuong Nguyen: QEMS was established in 2002, and our main product is printed circuit board assembly services. Our team is very committed to customer service excellence and producing high-quality products.

> "We see big opportunities ahead. With readySC's support for training, we feel confident that we can partner and grow our business in SC for many years."
>
> — PHUONG NGUYEN, CHIEF EXECUTIVE OFFICER FOR QEMS

EDGE: *How did you come to the decision to move operations from North Carolina to South Carolina (SC)?*

Nguyen: A big reason for the decision to move was support from readySC for our future business growth. We researched and studied readySC and believed it was a win-win situation. So far, we have had a lot of leadership training provided by readySC, and we look forward to the future opportunities for great training coming up.

Pj Marshall: When we were making the decision to relocate here, our executives met with representatives from readySC. We had our training program pretty well laid out, but they helped us see the possibilities of what they offered. It really laid the foundation for

what I think is going to be a great partnership.

EDGE: *How important is quality to your production?*

Hannah Pham: Quality is very important. With our quality policy, we talk about the about 3 big things: quality, delivery and cost. And of those three, we talk most about exceeding the expectations of our customers. Nobody is successful without good quality products.

Marshall: We operate in a very, very competitive environment where quality is everything, but from a customer's perspective it's a given. They expect it. So you have got to deliver it.

EDGE: *What kind of skills does your workforce need?*

Nguyen: We require a very specialized skilled workforce to produce high-quality products for the electronics industry and for our customers.

Pham: We do need some special skillsets. Engineering technician training needs are related to project development and leadership. On the electronics side, a lot of training needs are related to soldering and IPC requirements. (*IPC is the **Association Connecting Electronics Industries**, which aims to standardize the assembly and production requirements of electronic equipment and assemblies.*)

Marshall: We have an uncommon need here. By that I mean there's not a ready-made workforce for us to take advantage of. Readily trained employees are not waiting in the marketplace for us. Even at an engineering college they're not really ready for our workforce. So there are things that they need in
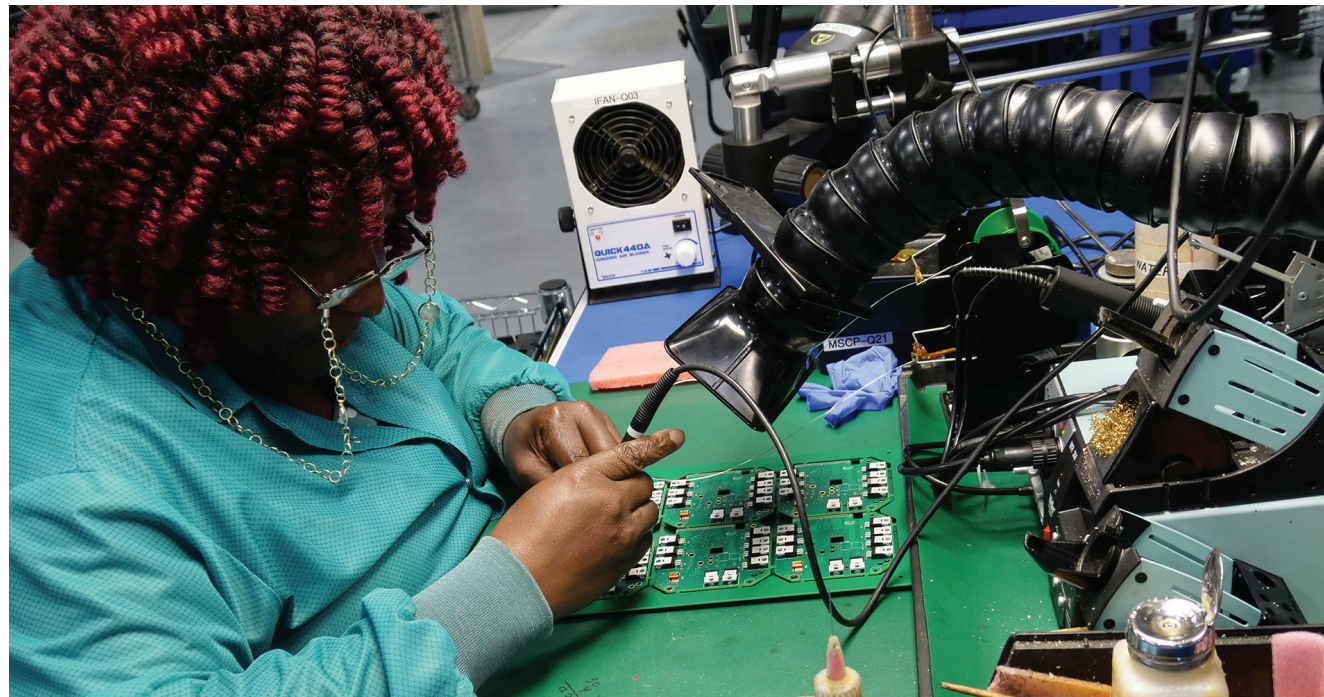
Established in 2002, QEMS is a minority-owned manufacturer featuring complete assembly capabilities for both thru-hole and surface mount technology, including design services, automatic optical inspection, X-ray inspection, testing, potting, conformal coating and more. As a contract manufacturer, the company provides high-tech, turnkey manufacturing solutions for a variety of clients.

addition to what they get in school. We want to work with the education system and readySC to put the program together to make them ready for our manufacturing environment. If that could be coupled with what we have in mind for an apprenticeship program, it would be a home run.

EDGE: *How important is having a well-trained workforce to your success as a company?*

Nguyen: We constantly invest in the resources and technologies we need to meet the requirements for our customers and industry standards.

Pham: A well-trained, knowledgeable person gives you confidence in what you're producing. Confidence in the best quality is what we rely on.

Marshall: The need for a skilled, detail-oriented workforce is imperative. If you don't have employees that are knowledgeable about their craft and knowledgeable about what they do, they can't perform up to the level that's going to deliver that quality consistently.

EDGE: *How does readySC help with your workforce needs?*

Pham: readySC brings several training options to the company, as well as ways to find the candidates we need to make sure QEMS is operating successfully.

Marshall: We're committed to getting the technology, resources and training necessary to get the kind of quality output that our customers deserve. That's what we pride ourselves in. Doing that keeps us competitive in the

marketplace, and South Carolina is a great environment to launch this kind of enterprise.

EDGE: *How do you see readySC, Apprenticeship Carolina and York Technical College helping with your training efforts in the future?*

Marshall: What makes it exciting is the partnership that we have with readySC and the educational system here, where we can literally create the kind of apprenticeship programs we need for our business. And we're really excited about doing that.

Pham: There is a lot more that we can definitely explore with readySC, York Tech and so on. We are glad to see all the different options for finding and training candidates to support our business. It's been great.

EDGE: *Any final thoughts?*

Marshall: Just like readySC, we're flexible. We have to be. As a contract manufacturer in the electronics business, we do as much or as little as our customers want or need. And that's the same thing readySC does. It caters to its clientele based on what we need.

Pham: They provide great input into our programs. It's good to work with experienced people, and we have a great relationship with all of them at readySC.

Nguyen: Our vision is to become a national leader for technologies in the assembly business and in engineering design in the near future. We see big opportunities ahead. With readySC's support for training, we feel confident that we can partner and grow our business in SC for many years. ■

MIDLANDS TECHNICAL COLLEGE
Builds Bridges to IT Careers

Midlands Technical College is committed to preparing students for rewarding careers in information (IT) technology. Through innovative training programs and financial support, students with little IT experience may be able to change their lives in a matter of months.

"My Midlands Tech experience has been a life-changer," says Ashlee Hayes, a recent graduate of Midlands Technical College (MTC). Hayes is referring to Midlands TechHire, a program designed to build a pipeline of information technology (IT) talent in the Midlands that has taken Hayes' career in an exciting and fulfilling new direction.

"I was working in a call center before, doing all types of customer service positions, and honestly, it was just a paycheck," Hayes explains. "I wasn't happy about going to work. I did it because I had to."

Hayes was ready for a career change when she looked into the offerings at MTC and discovered Midlands TechHire.

Through Midlands TechHire, Hayes received scholarships, training and job opportunities in the high-growth IT field. "They paid a hundred percent for me to get my computer classes. They covered the books, and it came with a 12-week paid internship," Hayes says. "By the time I finished my internship, I had three job offers."

Hayes is currently working full time as an entry-level software developer and has a profitable future ahead of her.

"I can easily make at least $15,000 to $20,000 more [than I was before]," Hayes says. "That's huge, something a lot of people in their lifetime never get to make."

Hayes adds, "MTC is here to help you change your life. They have scholarships, they have financial aid counselors to help you. They also have skilled professors. Anyone who I ever took classes from at Midlands Tech is either working in their field now or worked in their field for years. So they know what they're talking about."

A single mom, Hayes credits her son Cameron with giving her the inspiration to step outside of the status quo and follow her dreams. "I want to be somebody that he's going to be proud to see," says Hayes. "How can I talk about chasing dreams and the importance of education and getting skills if I'm not doing anything to set that example?" ■

Midlands Technical College (MTC) is building a pipeline of Information Technology (IT) talent for local industry through its Midlands TechHire program. Assisted by 24 grant partners, MTC offers scholarships, training and job opportunities for the high-growth IT field. Tuition, books, supplies and certification exams are covered at 100% if students are awarded a scholarship.

Rigorous, high-quality IT training is available through Midlands TechHire to young adults ages 17-29, as well as to a limited number of unemployed and underemployed workers in the Midlands area.

Midlands TechHire is fully funded by the U.S. Department of Labor, Employment and Training Administration. The award amount received over a 4-year period is $4,000,000 and is effective from July 1, 2016, to June 30, 2020. Participants must be high school graduates and residents of Richland, Lexington or Fairfield counties.

Visit **MIDLANDSTECH.EDU/learn** for information on Academic and Training opportunities in Computer and Information Technology.

> "They paid a hundred percent for me to get my computer classes. They covered the books, and it came with a 12-week paid internship."
>
> — ASHLEE HAYES, MIDLANDS TECHNICAL COLLEGE GRADUATE

readySC Makes the
RIGHT TRAINING CONNECTIONS

When the Wizard told Dorothy and friends to "pay no attention to the man behind the curtain," they couldn't help but look because that's where the magic happens. In the case of the training centers operated by readySC™ for the Volvo and Mercedes projects, pulling back the curtain reveals a complex information system explicitly designed for the high-tech needs of these advanced manufacturing projects.

As Brad Neese, readySC's executive director, says, "readySC is hardwired into the training needs of companies. We work very intently to be able to create a learning environment that reflects a company's manufacturing environment." This may take several forms from equipment and training space to the literal wires and networking infrastructure required to provide the training. Whatever the case, readySC works to put the right team in place to ensure the company's training needs are met successfully. For the Volvo and Mercedes projects, readySC formed an innovative partnership with the SC Technical College System's Information Technology Services Division (ITS)

to provide the critical networking infrastructure to train over 3,000 people for the two projects.

EDGE talks with the ITS team about the information technology processes that go on "behind the curtain" for these projects, including Khush Tata, vice president for information technology and CIO, John Hall, associate vice president for IT, Networking and Infrastructure and Ryan Williams, senior information resource consultant.

EDGE: *How did your partnership with readySC develop?*

John Hall: These engagements are typically done by the local technical college, but given the location of Volvo's initial training, readySC asked ITS to support the endeavor instead. Once the permanent Volvo training center was completed, we were asked to put in that infrastructure as well.

Khush Tata: This is the first time we have extended our services to support an independent space, so we started with a completely blank canvas. We knew from the start that we were providing the framework on top of which everything else sits--all the work processes that drive these projects as well as the training itself.

EDGE: *What were some of the challenges you faced setting up the infrastructure for Trident Technical College's Workforce Training Center (WTC) and Volvo's permanent training center?*

John: The WTC building was chosen to be a temporary space until Volvo's permanent training center was completed. We set up the first floor of the WTC building for Volvo, including security cameras, access control, the data network, WiFi, the wired network, telephony and all associated hardware. That setup was replicated for Mercedes on the second floor.

Ryan Williams: From a networking standpoint, the setup of Volvo's permanent training center was straightforward. The biggest challenge came with the WTC building. With two projects operating independently, we needed to segregate each company into their own little networks within a main network — essentially, separate yet connected.

Khush: While readySC is focused on meeting the training needs of the customer, we're in the background managing third-party vendors and making sure all the right components interoperate seamlessly when needed. If training needs change, we have to be ready. The project might suddenly need more access due to a ramp-up in training, or they may need to quickly access part of the infrastructure previously not available. Flexibility is crucial.

We are always focused on security and privacy. There are proprietary components of the training, along with a great deal of data and trainee information. We are sensitive to the security needs of such an operation, and that is always reflected in the type of networks and systems we create, the access granted and the overall management control provided.

EDGE: *What's the upkeep now, to keep each training facility going?*

Ryan Williams and the ITS team provide IT support for the Volvo and Mercedes readySC projects

Ryan: Upkeep, as it relates to Volvo's permanent training center, is pretty consistent these days, but industry needs are constantly changing. We are poised and ready to adapt. The WTC building is still a moving target. That building is very project-focused, and as such, changes are continually being made to meet project requirements. We work hand-in-hand with readySC to make sure it meets the training needs.

Khush: Manageability is vital to any project. We're very sensitive about how to most reliably and efficiently manage these remote platforms. Current technologies allow us the flexibility to do this at different locations and keep them secure.

Ryan: They can call us now and say, "we need to make these changes by tomorrow," and it can be done in 30 minutes or less. We've set it up so it's very well managed remotely.

EDGE: *Will you continue to partner with readySC to support future training efforts?*

Khush: Yes. These projects have given us a better sense of how ITS can meet readySC's future needs. Our solutions need to be client-focused and sustainable. We work to set up a general-purpose infrastructure that is based on industry best practices, so that we are as flexible and nimble as possible for future needs. ∎

ATC CYBERSECURITY PROGRAM PREPS HIGH SCHOOL STUDENTS

Rebecca Snider, high school senior, studies cybersecurity at ATC

Aiken Technical College

Rebecca Snider hasn't finished high school yet and she already knows that her career path will be in cybersecurity. "I knew that I would do something with computers since I was really young," she said. "Cybersecurity was something that I've heard about all over the place and I had a natural interest in it."

As a high school senior, she's getting an early start on the path toward her goals thanks to a partnership between **Aiken Technical College (ATC)** and the Aiken County Career & Technology Center (ACCTC).

Snider is among a dozen high school students currently enrolled in the College's Cybersecurity Networking Certificate program. High school seniors began taking courses in the fall 2017 semester and will complete the program in summer 2019.

The students take courses such as operating systems, CISCO router configuration, network vulnerability assessment, and computer forensics.

Earning a college level credential shortly after graduation prepares the students to enter the workforce with a valu-

able skill set, said Kenneth Lott, ACCTC Director. "We live in a digital, globalized society. Cybersecurity and protecting data is important in every industry," he said. "This is a great opportunity for students to earn a college credential that can lead to so many career pathways."

The certificate prepares students for entry-level positions in information technology. Students are encouraged to view the certificate as the first step of lifelong learning. All of the credits earned in the program transfer into ATC's Associate of Applied Science Computer Technology degree, which can be earned in as little as three semesters upon completion of the Cybersecurity Networking Certificate.

Being in the program has reaffirmed Snider's interest in the field and she looks forward to each class. "My favorite part overall is just being able to be here around people who enjoy what I enjoy," she said.

Lott said preparation is the key to success for students. "The earlier they begin planning for the future, the easier it will be."

Learn more: **www.atc.edu**

OCTECH CONNECTS STUDENTS TO IT JOBS
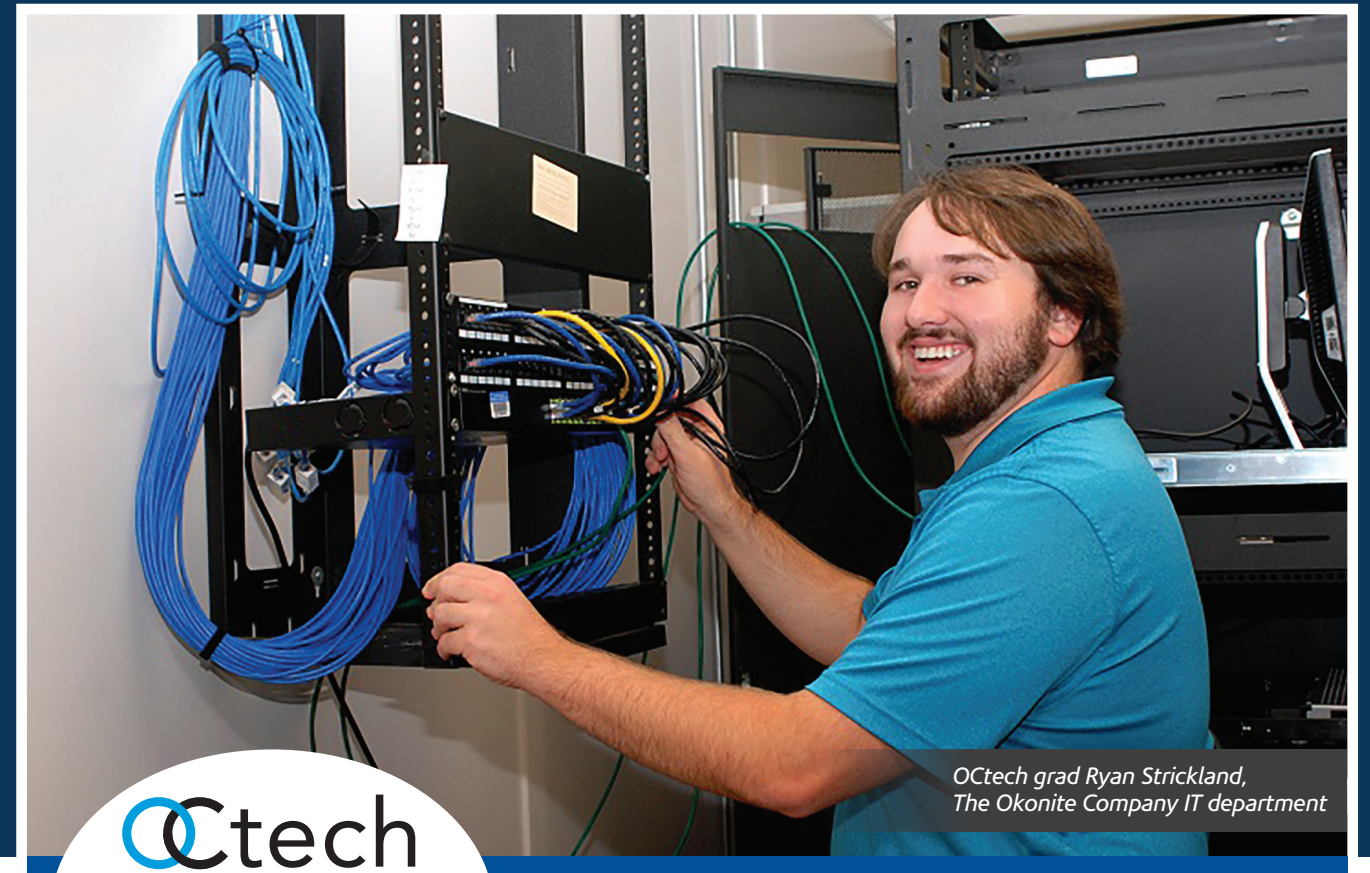
OCtech grad Ryan Strickland, The Okonite Company IT department

OCtech
Orangeburg-Calhoun Technical College

Students who pursue a Computer Technology degree at **Orangeburg-Calhoun Technical College (OCtech)** learn programming, information technology, mobile applications and network security while gaining the tools necessary for planning, designing and implementing computer programs in many different languages and microcomputer systems. The degree has two options – Programming and Network Security and Information Assurance. A number of certificates are also available.

Programming majors concentrate on the concepts, principles and techniques of software production with procedural and object-oriented programming languages and database fundamentals. Career opportunities include computer programmer, database analyst and webmaster.

Network Security and Information Assurance majors focus on the study of local and wide-area networking, network management, system administration, network security, data integrity and internet/intranet management. Career opportunities include system administrator, systems analyst, quality assurance analyst, webmaster and network administrator.

According to OCtech graduate, Ryan Strickland, IT department at The Okonite Company, "Students who graduate from a four-year college may or may not have a job straight out of school, but OCtech really works to get you into a position in your field."

Learn more: **www.octech.edu**

ASSOCIATE DEGREE

- Computer Technology
  - Programming
  - Network Security and Information Assurance

CERTIFICATES

- Computer Network Specialist
- Database and Programming (ORACLE)
- Internetworking (CISCO)
- Network Engineering

BLUECROSS BLUESHIELD OF SOUTH CAROLINA:
Trailblazers in IT Apprenticeship

For over 20 years, BlueCross® BlueShield® of South Carolina (BlueCross) has cultivated top-tier information technology talent through its own company-designed training program. Designated the Information Systems Entry Level Training Program (ELTP), it was created to continually maintain a robust talent pipeline for mainframe programming and other information technology roles. In 2009, BlueCross worked with Apprenticeship Carolina™ to transform ELTP into the largest federally recognized information technology (IT) apprenticeship program in the country.
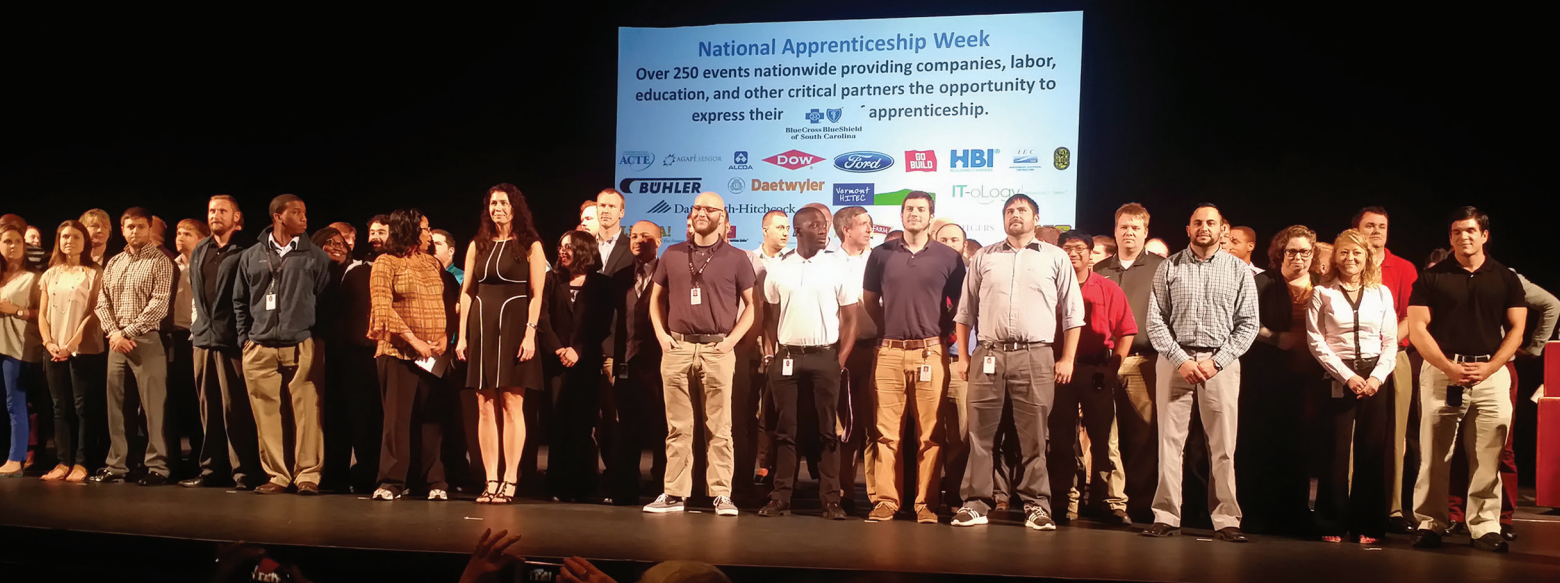
BlueCross BlueShield apprenticeship celebration, 2016

Today, ELTP offers four defined tracks that develop entry-level programmers and technicians for long-term IT careers at BlueCross. James E. Taylor, Ph.D., entry-level program manager and senior training analyst with BlueCross Information Systems Training, talks with EDGE about the continued importance of ELTP and apprenticeship to hiring, training and retaining the company's highly-skilled workforce.

EDGE: *How did the Entry Level Training Program (ELTP) get its start?*

JT: The initial ELTP was in 1997. At that time, universities had stopped teaching Cobol to the level that we required. We weren't getting enough new people with the skills we needed, so we decided to teach them ourselves.

The formalized apprenticeship agreement, begun in 2009, was for 42- and 48-month apprenticeship programs in IT. At that time, when people thought of apprenticeships, they thought of fields like contracting and plumbing. We were one of the only companies looking at apprenticeships for the IT or technical fields.

Over the years, ELTP has become an integral part of our hiring process. For several positions, we hire people into the entry-level program versus hiring them off the street or based solely on their resume as a full-time employee.

EDGE: *How did Apprenticeship Carolina assist you with starting your apprenticeship program?*

JT: Apprenticeship Carolina helped us set up the initial registered apprenticeship program and determine the number of training hours and floor hours we needed. In addition, they helped us understand US Department of Labor guidelines so that our apprenticeship program would be legitimately registered by the government.

Since then, any time there's been a major change in our program, we go back to

Apprenticeship Carolina and say, "Here's what we've done. Does that make a difference in how our paperwork needs to look with the Department of Labor? Does this still work with our original agreement?"

EDGE: *How is your ELTP program structured?*

JT: There are four defined tracks, starting with the ELTP Host Mainframe/COBOL track, which is 16 weeks. The Non-Host/Java and JavaScript track is 17 weeks and focuses on foundational application development. Students learn Java basics as well as more complex development where they're creating programs and doing integrated projects. The Infrastructure and System Support tracks run in tandem and are 20 and 21 weeks, respectively. Their focus is on customer service, troubleshooting, security and developing an understanding of our organization from a technology perspective.

Once trainees finish ELTP training, they work in many different areas of the company to complete their on-the-job training as full-time employees.

At the end of the track, apprentices earn a certificate from the U.S. Department of Labor in Computer Programming or Network Infrastructure.

EDGE: *How many people have been trained by ELTP?*

JT: Since 1997, 536 people have gone through the ELTP program. As of 2020, over half of those are still with us and some have retired with us, so we have a very high retention rate after 22 years and 30 iterations of ELTP.

EDGE: *How important is mentorship to the apprenticeship program?*

JT: We have a journeyman's trade model, where participants progress from student to apprentice to journeyman to master as they go through their careers. They're all expected to teach those below and learn from those above them. In essence, the master teaches the journeyman, the journeyman teaches the apprentice, and the apprentice

2019 ELTP graduating class, also known as ELTP 30

teaches the student. The first week the class is together, we introduce this development model as part of our belief system as an organization. We emphasize it by having a meet-and-greet with managers, directors and mentors to show its importance to our culture.

We build mentorship and networking into the program from the beginning, and it grows organically from that point. The instructors who act as the leading influencers for the tracks help guide students along the way. They're the primary points of contact for those students, and those relationships help solidify the cultural impact we are trying to achieve.

Once trainees get out on the floor and start doing their assigned jobs, we have an official mentorship component where mentors work with them. This strategy provides trainees with a firm foundation for both immediate and long-term success in BlueCross Information Systems.

EDGE: *How do you determine where employees will be assigned once they complete the apprenticeship program?*

JT: Though trainees come in as a group, they get dispersed across the organization because IT touches every employee and almost every system. In this way, employees connect with others across all areas of the network.

There's a lasting camaraderie among the people who go through the program together, however, and we like

that. ELTP peers from years past still identify themselves by saying, "I'm ELTP 14" or "I'm ELTP 20." This year is the 30th ELTP, so down the road, this group will refer to themselves as "ELTP 30."

EDGE: *Is ELTP a good starting place for employees who want opportunities for continuous development throughout their careers?*

JT: Absolutely. Research says that today's college graduates move from job to job until they find what they like. We give them that opportunity within BlueCross. Initially, of course, we want them to stay in the job we hired them for, but we also let them know that they own their career and can try something new. For example, a programmer who is interested in a system analyst-type position can explore that as an option. People have moved from ELTP into director and management positions throughout the organization, so there's great opportunity for growth along the way.

EDGE: *What are some of the positive aspects of having an apprenticeship program at BlueCross for the employer? How about for the employee?*

JT: As the employer, we get to instill our values in talent throughout the training. The required course "Connecting You to Blue" helps participants understand our culture, our structure and our beliefs as an organization.

> "The idea of creating an apprenticeship from ground zero can be daunting, so it's good to know that Apprenticeship Carolina can help with the details from start to finish."
>
> — JAMES E. TAYLOR, PH.D., ENTRY-LEVEL PROGRAM MANAGER AND SENIOR TRAINING ANALYST WITH BLUECROSS INFORMATION SYSTEMS TRAINING

Additionally, leaders within the organization speak about their jobs, what BlueCross means to them personally, and how apprentices can be successful. They also address how we want to progress as an organization and what we're striving for from a technical perspective.

For the employees, they get to see a strong organization with the opportunity for longevity and career options. They see this as a place where they can stay and grow for a long time.

EDGE: *How do you recruit people into ELTP?*

JT: Our targeted recruitment efforts start with university career fairs, which generate a lot of positive word-of-mouth. ELTP students also tell their friends back at college about it, and those students send their resumes to our recruiter too. We end up with hundreds of applicants for an ELTP class of approximately 20.

Because of that, we can select the best of the best when it comes to who we want. And we want people who have an interest and passion for what they'll be doing — not just because they have a degree or interview well.

Those selected for the program understand that we use ELTP to fill the positions of people who are retiring or moving into mid-level jobs. ELTP is the pipeline that keeps the flow of talent going, and over the years, it's worked very well.

EDGE: *How has the SC Apprenticeship Initiative (SCAI) grant helped your organization?*

JT: The SCAI grant and other SC Technical College System grants have helped us watch our bottom line. By covering specific training components, the SCAI grant helps ensure that our employees are highly qualified for their positions.

About BlueCross BlueShield of South Carolina

Headquartered in Columbia, South Carolina, and operating for more than 70 years, BlueCross BlueShield of South Carolina is an independent licensee of the BlueCross and BlueShield Association. The only South Carolina-based and operated health insurance carrier, BlueCross comprises more than 20 companies involved in health insurance services, the U.S. Department of Defense health program and Medicare contracts, other insurance and employee benefits services and a philanthropic foundation that funds programs to improve health care and access to health care for South Carolinians.

Mentorship is introduced to apprentices during the first week of class

EDGE: *What do you personally like most about the apprenticeship program?*

JT: My career, which includes 20 years in the military, has been focused on developing people. The ELTP program allows me to work with new employees as well as management and senior leaders of the organization. Honestly, I have taken this opportunity to a level that I didn't realize I could.

EDGE: *If another South Carolina company was considering starting an apprenticeship, what words of advice would you give them?*

JT: Talk to Apprenticeship Carolina. Learn about apprenticeships, their requirements and some of the other industry-focused programs in your area. The idea of creating an apprenticeship from ground zero can be daunting, so it's good to know that Apprenticeship Carolina can help with the details from start to finish.

I would also suggest that companies start small like we did with Cobol training back in 1997. As you see the value of apprenticeship grow over time, you can expand the model to other areas of your organization. Because the apprenticeship program should mirror what you need and are trying to achieve, the people in it should match who you want for your organizational culture. It's a very personal thing for each organization.

EDGE: *Is starting an apprenticeship program like this worth the investment?*

JT: Apprenticeship is definitely worth the investment! I point to the 536 people trained over the past 22 years. Of those, over half are still with us. That is an average tenure of 11 years, even with the inclusion of the 26 who started in May and have only been here a few months. So yes, I'd say the returns are more than worth the investment! ■

How to Build a Better
CYBER-WORKFORCE

Horry-Georgetown Technical College is taking strides toward turning South Carolina's Grand Strand into a technology and cybersecurity hub.

(Left to right) HGTC Associate Professor Stan Greenawalt, HGTC President Dr. Marilyn Fore, United States Navy Executive Officer Jeffrey Williams, and Mission Assurance Division Deputy Joseph Henline

"We are not only significantly improving the quality of life for our community but also securing the safety of our fellow citizens across the country."

— DR. MARILYN M. FORE, PRESIDENT OF HGTC

In January 2019, Horry-Georgetown Technical College (HGTC) announced an educational partnership with the Naval Information Warfare Center Atlantic (NIWC) and a new cybersecurity grant program through the Office of Naval Research (ONR). The $750,000 grant will be used to equip a new Security Operations Center (SOC) Cyber Range and Forensics Lab at HGTC, and the partnership will enable the college to boost its cybersecurity certificate program to a two-year associate degree.

The benefits of the grant and advanced cybersecurity degree program are threefold. NIWC, formerly known as the Space and Naval Warfare (SPAWAR) Systems Center, will have a pipeline to fill its critical cybersecurity jobs. HGTC will be equipped with state-of-the-art training technology and resources to meet cybersecurity training needs throughout South Carolina. And companies can send their employees to training courses specific to their needs during the summer. By strengthening the link between industry and higher education, this program is a win for HGTC, the Navy, and Horry and Georgetown counties.

Before the announcement, HGTC representatives worked with NIWC to determine how to strengthen and align students' technical skills so entry-level hires could begin NIWC with a strong foundation in cybersecurity. "The ONR grant, in parallel with our educational partnership, will help SPAWAR build the cybersecurity workforce we will need in the future along with the needs of our nation," said Joe Henline, NIWC Atlantic's deputy for mission assurance.

College officials also acknowledge the partnership's potential for far-reaching impact. "From healthcare to government contractors to utility companies and beyond, an effectively trained cybersecurity workforce is essential for success in today's world," said Dr. Marilyn Fore, president of HGTC. "We are not only significantly improving the quality of life for our community but also securing the safety of our fellow citizens across the country."

The new SOC lab at HGTC will target current and future naval workforce needs in cybersecurity and computer forensics. Programs will focus on three areas: 1) cybersecurity operations, ethical hacking and healthcare networking infrastructure, 2) application development and 3) computer forensics.

Students who take courses in the lab will learn how to tackle complex cyber-attacks using a hands-on approach. They will also learn to evaluate established risk tolerance, work effectively in teams and manage risk consistently throughout an organization.

Lou Ann Timmons, HGTC Academic Chair for Information Technology, Digital Arts and Administrative Office Technology, sees firsthand the excitement and opportunity students experience in the program. "Our students not only complete their networking and programming degrees of emphasis, but after graduation, they plan to come back and complete the cybersecurity program. Knowing that all three programs filter into each other is one of the most exciting parts for us," said Timmons. "What our students are learning in networking and programming makes them hungry for more. They want to earn the cybersecurity degree because they have a vision of where it could lead."

HGTC graduate James "Bo" Soles, a current employee of NIWC Atlantic, can attest to the positive impact the cybersecurity training at HGTC has had on his life. Soles completed the HGTC Networking program in 2005 and added the cybersecurity certificate in the spring of 2018. This certification helped him join the Cybersecurity Incident Response team at NIWC. Soles has been working in his area of expertise for over a year and finds the experience professionally demanding but rewarding.

"HGTC did everything absolutely possible to prepare and equip me for my career," Soles revealed. "After working on the IT side for 20-plus years, I knew I needed to complete the cybersecurity certificate program and obtain the foundational knowledge so that I could successfully secure an advanced position in the field. The cybersecurity component gave me the opportunity to build upon my skills as a systems administrator to target the attacks of the future."

HGTC's visionary efforts have already resulted in success at the statewide level with the 2019 Palmetto Cyber Defense Competition. The HGTC Cyber Team – a collaborative effort for all networking, programming and cybersecurity students – won the first place Challenge Cup among two-year colleges and took second place overall among two- and four-year colleges.

For HGTC cybersecurity professor Stan Greenawalt, this success is just the beginning. "Our long-term goal is to offer this training to high schools in South Carolina in a virtual environment," Greenawalt said. "This will give them access to curriculum that will strengthen their STEM skills and allow them to experience the hands-on building blocks necessary to perform the complexities in a network environment in this ever-expanding area of cybersecurity and forensics."

HGTC's president also sees this opportunity as a mission. According to Fore, "This grant and partnership help HGTC not only fulfill our mission of embracing technological innovation in education and promoting economic growth, but it also allows us to play a critical part in keeping our nation secure. For that, I am extremely proud and honored."

Learn more: **www.hgtc.edu** ■

Naval Information Warfare Center Atlantic (NIWC Atlantic), formerly Space and Naval Warfare (SPAWAR) Systems Center Atlantic, provides the Navy with research, development, delivery and support of integrated C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance), cyber and space systems and capabilities across all warfighting domains.

TRIDENT TECH EARNS NATIONAL CYBERSECURITY DESIGNATION

TRIDENT TECHNICAL COLLEGE

Trident Technical College has been designated a national Center of Academic Excellence in Cyber Defense Education (CAE-CD) through academic year 2024. The college is the first two-year college in South Carolina to receive the designation.

The CAE-CD program is sponsored by the National Security Agency and the Department of Homeland Security. The program's goal is to reduce vulnerability in the nation's information infrastructure by promoting cyber defense research and education, and producing professionals with cyber defense expertise. The college applied for the designation and underwent a thorough evaluation by cyber defense professionals and subject matter experts to demonstrate that it meets the highest standards in cybersecurity education.
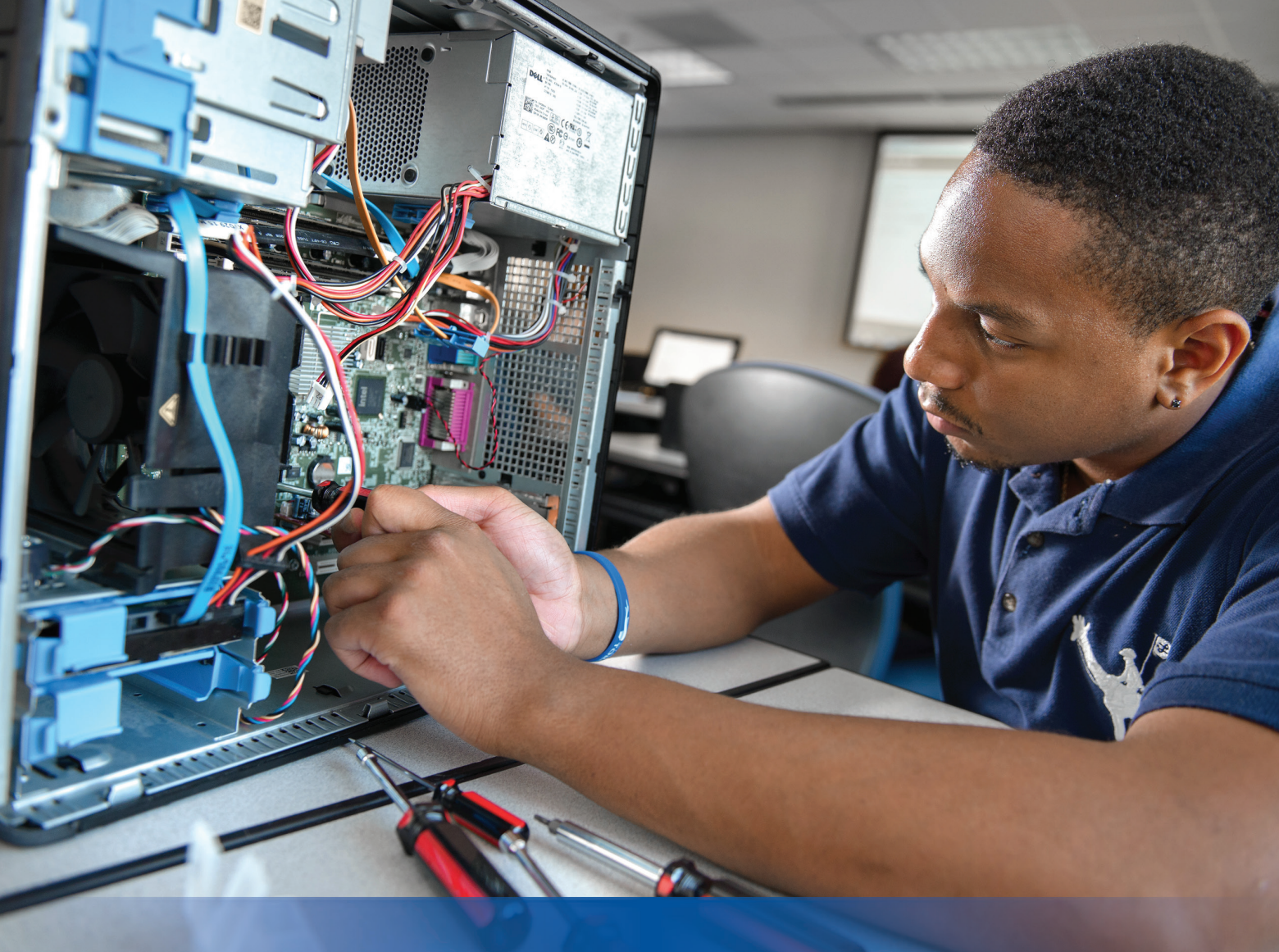
The college offers an associate degree and a certificate in cybersecurity through its Network Systems Management department.

Learn more: *www.tridenttech.edu* ∎

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