



GEORGIA STATE SENATE

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THE SENATE CYBERSECURITY EDUCATION STUDY COMMITTEE – SUMMARY OF MEETINGS

COMMITTEE MEMBERS

Senator Bruce Thompson – Chair
District 14

Senator Harold V. Jones II
District 22

Senator Fran Millar
District 40

Senator Lindsey Tippins
District 37

Tino Mantella
Technology Association of Georgia

Michael Shaffer
Augusta University

Superintendent Richard Woods
Georgia Department of Education

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COMMITTEE FOCUS, CREATION, AND DUTIES

The Senate Cybersecurity Education Study Committee was created by Senate Resolution 454 to examine different approaches to expanding and promoting a seamless Cybersecurity curriculum that would be heavily weighted in practical application and offered by the state's K-12 schools, technical colleges, and four-year institutions.¹

Senator Bruce Thompson of the 14th served as Committee Chair. The other Senate members included: Senator Harold V. Jones II of the 22nd; Senator Fran Millar of the 40th; and Senator Lindsey Tippins of the 37th. The citizen members were Mr. Tino Mantella from the Technology Association of Georgia; Mr. Michael Shaffer from Augusta University; and Georgia School Superintendent Richard Woods.

The Committee held three meetings: One at Augusta University (AU) on October 11, 2017; One at Chattahoochee Technical College's North Metro Campus on November 9, 2017; and one at Kennesaw State University (KSU) on November 17, 2017.

The Committee heard testimony from the following: Dr. Angela Pringle, Richmond County School Superintendent; Dr. Sandra Carraway, Columbia County School Superintendent; Dr. Zach Kelehear, Dean of AU's College of Education; Mr. Todd Boudreau, Deputy Commander of the U.S. Army Cyber School; Ms. Karen Ribble, Assistant Director of Operations at AU-Cyber Institute; Mr. Darrell Stewart, Instructor at the Technical Career Magnet School (TCM); Mr. Jason Tanner, Vice President for Academic Affairs for Chattahoochee Tech; Mr. Charles Chapman, Cybersecurity Faculty Advisor for Chattahoochee Tech; Mr. Stan Gatewood, State Chief Information Security Officer – Georgia Technology Authority (GTA); Mr. Steven Ferguson, CIO for the Technical College System of Georgia; General Thomas Cole (Ret.), Retired Army Program Executive Officer for Intelligence, Electronic Warfare, and Sensors; Dr. Becky Rutherford, KSU Department of Information Technology; Dr. Herb Mattord, KSU Institute for Cybersecurity Workforce Development; Dr. Mike Whitman, KSU Information Systems Department; Mr. Chris Connelly, Cisco's Cybersecurity lead - Public Sector; and Mr. John Kimberly, Senior Systems Engineer for Centrifly.

COMMITTEE FINDINGS

Background

In May 2017, WannaCry, a ransomware attack unprecedented in scale, held hostage computers in 150 countries, including Britain's National Health Service. A 2013 data breach at Yahoo could result in stolen personal information of all of its 3 billion users worldwide. State-sponsored Cyber intruders are actively going after water, power, and utility grids with growing frequency and sophistication.

Cybersecurity must be a top-of-agenda item for not only world and corporate leaders, but for state leaders as well. But a lack of qualified Cybersecurity experts has resulted in nearly 300,000 unfilled public and private Cybersecurity jobs in the United States.² A recent study also forecasts a shortage of 1.8 million Cybersecurity workers globally by 2022.³ Because hiring and keeping qualified IT staffers, particularly Cybersecurity experts, continues to be a serious problem for states and the private sector, the Committee focused its attention on expanding Cybersecurity education in K-12, The Technical College System of Georgia, and the University System in an effort to develop a more extensive and skilled Cybersecurity workforce.

¹ <http://www.legis.ga.gov/Legislation/en-US/display/20172018/SR/454>

² <http://Cyberseek.org/index.html#about>

³ <https://iamCybersafe.org/wp-content/uploads/2017/06/Europe-GISWS-Report.pdf>

October 11, 2017 Meeting – Cybersecurity Education in K-12

The October 11th meeting at Augusta University focused on efforts and successes by K-12 school systems in expanding Cybersecurity education and curriculums. The Committee listened to a panel discussion on developing an IT and Cyber education teacher workforce, as well as successes and the goals of the K-12 Cybersecurity pathway conducted by Dr. Angela Pringle, Richmond County School Superintendent; Dr. Sandra Carraway, Columbia County School Superintendent; and Dr. Zach Kelehear, Dean of AU's College of Education. Columbia County's Cybersecurity Pathway of three course is the result of a joint effort between the Columbia County School System, the Richmond County School System, Fort Gordon, and Georgia Regents University. It has been approved by the Georgia Department of Education and is being offered at Greenbrier, Grovetown and Lakeside High Schools. The Cybersecurity Pathway courses are:

1. Introduction to Digital Technology;
2. Introduction to Cybersecurity; and
3. Advanced Cybersecurity.⁴

The Pathway provides students with the computer and problem- solving skills necessary for success in field of Cybersecurity. Students gain a background in digital technology that includes protecting networks from outside attacks and how to develop network level security policies.

Dr. Pringle explained that three schools within the Richmond County School System (two traditional high schools and one magnet school) are also heavily involved in Cyber education. But Cyber education starts as early as in elementary schools where kids learn simple coding, familiarity with the keyboard, and networking. When asked by the Committee what are the most important actions the state can do to support local school systems, the panel responded that more flexibility in developing and adopting curriculums is crucial.

The panel emphasized that it is just as important to support current teachers involved in Cyber education as it is in developing a Cyber workforce. Retaining and developing qualified teachers is a struggle for many school systems since many can easily work in the private sector while earning much more money.

The Committee also heard testimony from Ms. Karen Ribble, the Assistant Director of Operations at AU-Cyber Institute, who gave an overview of the *Girls Who Code* which coordinates a free after-school program that seeks to reduce the gender gap in STEM education and professions by actively recruiting girls (grades 6-12) to participate in their immersion programs and clubs. Students successfully completing the workshops receive a certificate as well as gaining invaluable knowledge in STEM-related areas.

The Committee then traveled to tour the Richmond County Technical Career Magnet School's (RCTCM) Cybersecurity Academy and its interactive lab. The Committee learned that Students who participate in the Cybersecurity Academy have the opportunity to earn college credits through the State's Dual Enrollment guidelines through three tracks of study at Augusta Technical College:

1. Associate Degree in Cybersecurity;
2. Cisco Certified Network Associate (CCNA) Security; or
3. A+ and Microsoft Client Certification (Technical Certificate of Credit).

Successful completion of these degrees and certificates can lead to careers in Cybersecurity which earn a Median pay of \$90,000 per year.

⁴ This information was also presented during Mr. Todd Boudreau's, the Deputy Commander of the U.S. Army Cyber School, overview of the K-12 statewide Cybersecurity curriculum.

November 9, 2017 – Cybersecurity Education: Technical Colleges

The November 9th meeting at the Chattahoochee Technical College's North Metro Campus focused on the various Cybersecurity and STEM programs within the Technical College System of Georgia. Mr. Jason Tanner, Vice President for Academic Affairs for Chattahoochee Tech and Mr. Charles Chapman, Cybersecurity Faculty Advisor for Chattahoochee Tech; and Mr. Steven Ferguson, CIO for the Technical College System of Georgia each gave an overview of Chattahoochee Tech, its various Cyber-related programs, and the current state of Cyber threats throughout the world.

The Committee learned that nearly 1,300 students are actively enrolled in Cyber Education programs (diploma, associate, and certificate programs) throughout the TCSG, 995 of which are studying at Augusta Technical College, Chattahoochee Technical College, and Gwinnett Technical College. The remaining students are spread out across six other institutions. Despite TCSG's success in attracting students into its Cyber Education programs, Senator Thompson commented that there is still a need for increased enrollment.

Mr. Stan Gatewood, the Georgia's Chief Information Security Officer, continued the discussion worldwide Cyber threats while presenting an overview of the concept and mission of Cyber Ranges. A cyber range is a virtual or physical (or hybrid) environment that is used for cyberwarfare training and Cyber technology development. It provides tools that help strengthen the stability, security, and performance of Cyber infrastructures and IT systems used by private, government, and military entities. Cyber ranges function much like shooting ranges, facilitating training in weapons, operations or tactics. Thus, Cyberwarriors and IT professionals employed by various agencies train, develop and test Cyber range technologies to ensure consistent operations and readiness.

November 17, 2017 – Cybersecurity Education: Kennesaw State University

The November 17th meeting at KSU focused on the various Cybersecurity and STEM programs and courses offered at the University. Dr. Becky Rutherford, KSU Department of Information Technology; Dr. Herb Mattord, KSU Institute for Cybersecurity Workforce Development; and Dr. Mike Whitman, KSU Information Systems Department all gave presentations and an overview of their respective departments and programs. Dr. Rutherford explained that KSU's Master's in IT (MSIT) was created in 2000 and is now the largest master's program at the University with 262 students currently enrolled.

Dr. Herb Mattord explained that the eMajor program provides a BS in Cybersecurity through a completely online Kennesaw State University degree. eMajor programs are a unique way in developing a Cybersecurity workforce by not only being ideal for traditional students who wish to take advantage of online course delivery, but also for working professionals, military members, transfer students, and others seeking alternative routes to degree completion. The BS in Cybersecurity program leverages current faculty capabilities in KSU's existing Bachelor of Business Administration in Information Security and Assurance (BBA-ISA), the Bachelor of Science in Information Technology, and the Bachelor of Science in Criminal Justice. Compared to the current BBA-ISA degree, the BS in Cybersecurity delivers a more technically-focused, security-related degree designed to specifically address the fast growing cybersecurity sector. Completing the eMajor in Cybersecurity will automatically earn students a minor in Information Technology.