B B  $\left[ \right]$ h **Progress Report** July 2014 - March 2015

SUS BOARD OF GOVERNORS MARCH 18, 2015 Florida Center for Cybersecurity at the University of South Florida

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## **LEGISLATIVE LANGUAGE**

The center's mission was articulated by the 2014 Legislature in HB 5101:

1004.444, Florida Statutes: Florida Center for Cybersecurity

- (1) The Florida Center for Cybersecurity is established within the University of South Florida.
- (2) The goals of the center are to:
  - (a) Position Florida as the national leader in cybersecurity and its related workforce through education, research and community engagement.
  - (b) Assist in the creation of jobs in the state's cybersecurity industry and enhance the existing cybersecurity workforce.
  - (c) Act as a cooperative facilitator of state business and higher education communities to share cybersecurity knowledge, resources and training.
  - (d) Seek out partnerships with major military installations to assist, when possible, in homeland security defense initiatives.
  - (e) Attract cybersecurity companies to the state with an emphasis on defense, finance, health care, transportation, and utility sectors.

Source: HB 5101: 1004.444, Florida Statutes

## **EXECUTIVE SUMMARY**

The Florida Center for Cybersecurity (FC<sup>2</sup>), hosted at the University of South Florida, works with all 12 State University System institutions to promote cybersecurity education and workforce development, research, and public and private outreach across the state.

In the nine months following FC<sup>2</sup>'s creation, the center has:

- Hosted six community events and conferences with more than 1,500 attendees from more than 20 states and five countries. Approximately 25 percent of the event attendees were students or faculty from across the state who, as a result of this outreach, were exposed to some of the brightest cybersecurity minds in the nation and were able to learn cybersecurity best practices from top-ranked professionals. Students were able to bring this knowledge back to the classroom and further their important work in this field. Faculty were able to gain insights into many areas of the cybersecurity profession and current trends.
- Generated more than \$530,000 in grants, sponsorships and matching research dollars. Many of these grants and research projects will be worked on by SUS students, who will take away from the projects best practices in cybersecurity.
- Awarded \$500,000 for 12 seed grants for cybersecurity research to faculty from 10 different SUS institutions. In addition to working on many of these projects, SUS students will also benefit from the cybersecurity

discoveries generated through this research.

- Worked with USF staff to help the university earn the designation as a National Center for Academic Excellence in Information Assurance/Cybersecurity by the National Security Agency (NSA) and Department of Homeland Security (DHS). Students who graduate from the university will now be able to include this designation on their resumes and enhance their job prospects. FC<sup>2</sup> staff is working with all other SUS institutions to encourage them to apply for this same designation, which also allows for federal funding opportunities in the form of "scholarships for service," a program that covers full tuition for students in return for service to the federal government.
- Partnered with Raymond James Financial to create a new internship program for USF students. These student
  interns will be exposed to real-world assignments at Raymond James in IT security, cyber threat analysis, and
  technology risk management.
- Worked with a Sweden-based cybersecurity firm to encourage them to open an office in Florida, allowing for even more cybersecurity jobs to open in our state.
- Worked with industry partners to lay the foundation for the FC<sup>2</sup> Cyber Academy to train returning veterans and others for jobs in the cybersecurity field. Staff expects the first pilot course in Fall 2015. It is estimated that more than 3.5 million cybersecurity jobs will need to be filled in the next few years.
- Partnered with the Department of Homeland Security, the Federal Bureau of Investigation, the Secret Service, and the Florida Department of Law Enforcement to create a local task force for outreach in the central Florida area and an avenue to expose SUS students to open internships and full-time positions within these organizations.

## MISSION

The mission of the Florida Center for Cybersecurity is to:

- Position Florida as the national leader in cybersecurity and its related workforce through education, community
  engagement and innovative, interdisciplinary research.
  - Students in the State University System benefit from networking during outreach events, learning from cybersecurity education, and participating in cutting-edge cybersecurity research.
- Create thousands of new high-paying jobs in the state's cybersecurity industry.
  - Students in the State University System will benefit from many additional cybersecurity positions in Florida.
- Serve as a facilitator for cybersecurity education providing degrees, certificates, and training while contributing to Board of Governors priorities and encouraging students in non-IT majors to obtain industryrecognized cybersecurity specializations to enhance employability and wages upon earning their degrees.
  - Students in the State University System will benefit from exposure to cybersecurity fields and additional degree programs.

- Enhance Florida's cybersecurity workforce, including reintegrating military veterans by utilizing their specialized skills and training.
  - Veteran students in the State University System will benefit from a new program designed specifically to train them for cybersecurity careers.
- Act as a cybersecurity clearinghouse for statewide business and higher education communities sharing knowledge, resources, and training opportunities to help mitigate cybersecurity threats, and optimizing investment to eliminate unnecessary duplication.
  - Students in the State University System will benefit from well-aligned cybersecurity education throughout the state, focused on best practices and cutting-edge research.
- Attract new financial, healthcare, transportation, utility and defense companies to Florida.
  - Students in the State University System will benefit from added cybersecurity job opportunities in Florida.

## **NINE-MONTH PROGRESS**

Since being created by the Florida legislature in 2014, the Florida Center for Cybersecurity (FC<sup>2</sup>) has made great strides in addressing its mission by focusing on three primary operational pillars: **Education, Research, and Outreach**. As a statewide resource, the center works with staff and faculty from all 12 institutions of the State University System of Florida, as well as representatives from the industry, government and defense communities in the state.

## **EDUCATION REPORT**

In keeping with its mission articulated in Florida statute HB 5101: 1004.444, the Florida Center for Cybersecurity has made quantifiable strides in addressing the workforce gap that currently exists in the cybersecurity domain, and students in Florida will be able to reap the benefits. FC<sup>2</sup> staff have collaborated with all 12 Florida universities via the SUS Advisory Council on Cybersecurity. This collaboration has allowed the Center to map current offerings across the state, identify opportunities for programmatic improvement, and align resources accordingly to address underserved stakeholder segments and market needs while concurrently working to eliminate redundancy and duplication of effort across the SUS.

Students in the SUS benefit not only from the streamlined cybersecurity education, they will also benefit from impressive job security. To illustrate this demand consider:

- The federal government alone reports a staggering 15 to 1 ratio of open positions to qualified candidates.
- There are as many as 300,000 unfilled cybersecurity jobs in the U.S., according to Fortune Magazine.
- It is estimated that in the next few years there will be a need for 3.5 million cybersecurity professionals.

The Center's efforts are laying the groundwork to establish enduring talent pipelines across the state that will help create local jobs and provide for economic development.

## **DEGREE PROGRAMS**

The Florida Center for Cybersecurity early identified the need for a graduate program tailored to the needs of professionals already working in the cybersecurity field as well as highly qualified potential career changers such as military members and veterans. To meet the demands of these students, address the cybersecurity workforce gap, and provide readily accessible pathways for graduate level education on a state-wide scale, the Florida Center for Cybersecurity partnered with the USF to develop a first-of-its-kind, fully online master's and certificate program with three concentrations aligned to the needs of industry and government.

This program:

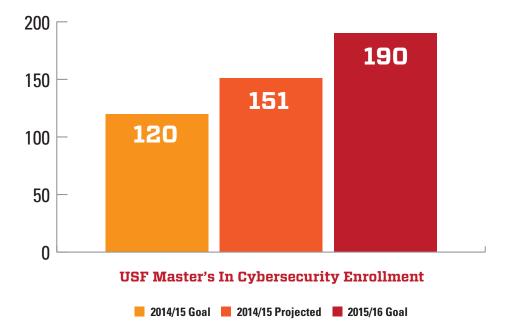
 Is designated as a National Center for Academic Excellence in Information Assurance/Cybersecurity by the National Security Agency (NSA) and Department of Homeland Security (DHS). USF's program was only the second in the nation to be classified for the first time under a new, more rigorous set of NSA/DHS standards.

Students who graduate from the university will now be able to include this designation on their resumes and enhance their job prospects. FC<sup>2</sup> staff is working with all other SUS institutions to encourage them to apply for this same designation, which also allows for federal funding opportunities in the form of "scholarships for service," a program that covers full tuition for students in return for service to the federal government.

 Enrolled an inaugural class of 38 Master's students and eight Graduate certificate students starting in the Fall of 2014, nearly 200% of target enrollment.



- Added an additional 58 master's students and 12 graduate certificate students in the Spring of 2015, 205% of target enrollment.
- Includes seven active military members and 22 veterans.
- Currently processing paperwork for 35 summer 2015 applicants.



Working through the SUS Advisory Council on Cybersecurity, the Center facilitated a pilot to share talented faculty among state institutions in order to reduce cost of program delivery and to improve outcomes.

The Center has already teamed with Florida-based private company (ISC)<sup>2</sup>, the largest not-for-profit body of security professionals worldwide. This partnership allows the Center to offer review seminars and administer the certification exams for the following industry-standard certifications:

- CISSP®
- CSSLP®
- SSCP<sup>®</sup>
- CAP®
- HCISPP®

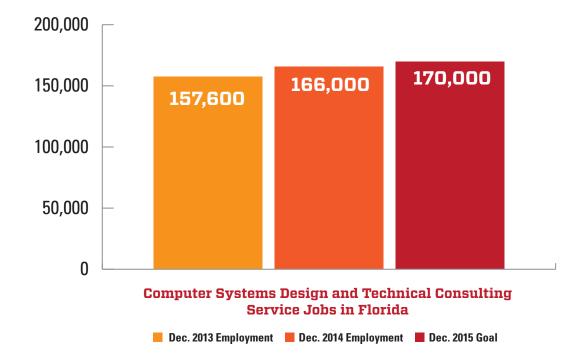
FC<sup>2</sup> has hired two full-time cybersecurity faculty *Geograp* members and will be hiring nine more to offer leading *Ma* cybersecurity experts as a resource for students across the state university system.

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Geographic distribution of students in USF's Master's in Cybersecurity Program

The Center is continuing to formalize additional relationships with organizations such as the Art of Exploitation (AoE), ISACA, EC-Council, and other leaders in cybersecurity training and certification.

The Florida trends for related jobs are positive:



## INTERNSHIPS

Center staff is working with Florida businesses to place students in cybersecurity internships. As part of this effort, FC<sup>2</sup> partnered with Raymond James Financial to create a new internship program for USF students. These student interns will be exposed to real-world assignments at Raymond James in IT security, cyber threat analysis, and technology risk management.

#### **VETERANS REINTEGRATION**

FC<sup>2</sup> staff are working to meet the needs of student veterans. This mutual need is outlined by current workforce statistics:

- Each year more than 175,000 Americans leave military service
- The unemployment rate for veterans is substantially higher than the national average (9% vs. 6%).
- Florida is home to more than 1.5 million veterans and ranks third in the Nation for the number of Education Program beneficiaries.
- Cybersecurity is a focus area for many veteran reintegration efforts because cybersecurity professionals are in very high demand (near 0% unemployment), and starting salaries are much higher than the national average.
- When veterans also possess a security clearance, they bring even more value to potential employers.

The Center is working with industry partners to lay the foundation for the FC<sup>2</sup> Cyber Academy to train returning veterans and others for jobs in the cybersecurity field. Staff expects the first pilot course in Fall 2015. It is estimated that more than 3.5 million cybersecurity jobs will need to be filled in the next few years.

The program, "New Skills for a New Fight," will:

- Develop cyber professionals by providing the vital skills needed to operate in a highly complex security
  operations center or within certain specialty areas.
- Contain a customized curriculum package that leverages tools provided by partner organizations who are leaders in cybersecurity training and certification.
- Require students to complete scenario-based, hands-on tests that are mapped directly to the learning objectives within each class offering.
- Result in students obtaining the certifications necessary to comply with requirements for entry-level positons in the industry and role of their choice.
- Recruit an initial cohort in Fall 2015 with 15-25 students

By leveraging the Center's partnerships with Florida's state universities and military installations, the program will provide a replicable model for increasing the pipeline of cyber talent on a state-wide level and beyond. Veteran students across the state will benefit from academic cybersecurity programs designed specifically for their skillsets and backgrounds.

## **OUTREACH REPORT**

Community outreach is a central pillar of FC<sup>2</sup>'s cybersecurity initiative. A high value is placed on offering consumer and corporate education programs, facilitating and hosting cybersecurity events and speaking engagements, and providing the business and local community with a clearer understanding of cybersecurity threats and defenses.

This outreach is performed under three main umbrellas:

- Partnerships
- Events
- Public and Community Relations

### PARTNERSHIPS

- 1) Tampa Bay Cyber Crimes Collaborative (Working Title): The Florida Center for Cybersecurity has partnered with the Department of Homeland Security, the Federal Bureau of Investigation, the Secret Service, and the Florida Department of Law Enforcement to create a collaborative to streamline cybersecurity outreach efforts in the Tampa Bay community. The group has already hosted one major event (with 450 attendees) and plans to continue to collaborate on community trainings, events and presentations. This partnership is an avenue to expose SUS students to open internships and full-time positions within these organizations.
- 2) Partnership with Florida Institute of Government: Recognizing that county and local governments are often the target of cyber-attacks while also being some of the most under-resourced organizations when it comes to security, the Florida Center for Cybersecurity partnered with the Florida Institute of Government to conduct a survey of county and local IT enterprises. Via this research, the center intends to identify the current readiness level of these organizations in order to identify and/or advocate for federal funding to develop training programs and other resources such as exercise support to assist in securing sensitive citizen data.
- New Cybersecurity Jobs in Florida: Worked with a TrueSec, a Sweden-based cybersecurity firm, to open an office in Florida, creating even more cybersecurity jobs in our state.
- 4) Cybersecurity Preparedness Exercise for the State University System (SUS): Partnered with the U.S. Department of Homeland Security to schedule a state-wide cybersecurity preparedness exercise for representatives from each SUS institution. The exercise, which will be held at USF on March 10, will help familiarize each university's cybersecurity stakeholders with the roles, responsibilities, policies, plans and procedures related to cyber incidents and encourage collaboration on best practices for cybersecurity across Florida's higher education community.

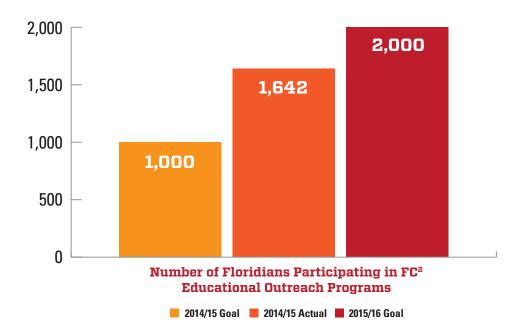
## **EVENTS**

Since the Florida Center for Cybersecurity began its outreach, the Center has hosted six major events with a total of more than 1,600 attendees from 20 states and five countries. SUS students and faculty were invited to, and encouraged to attend, each of these events:

- A SunTrust Lecture Series event featuring keynote speaker Peter Singer, co-author of the acclaimed book "Cybersecurity and Cyberwar: What Everyone Needs to Know®": 350 cybersecurity professionals, students, faculty, and business leaders attended this conference which also included a panel discussion with CEOs from four of Florida's leading companies and organizations.
- 2) A one-day conference featuring four speakers, including Jane Lute, former Deputy Secretary of the Department of Homeland Security: More than 200 cybersecurity professionals, students, and faculty, as well as members from the defense community attended this conference.
- 3) A one-day FC<sup>2</sup> conference featuring keynote addresses by Vice Admiral Mike McConnell, former director of the National Security Agency, and Don Proctor, Senior Vice President of Cisco Systems, Inc.: More than 400 cybersecurity professionals, students, and business leaders attended this one-day

conference with two keynote addresses, one panel discussion, and five breakout sessions about best practices in cybersecurity. FC<sup>2</sup> staff coordinated an opportunity for more than 20 USF cybersecurity students to meet with both Vice Admiral McConnell and Don Proctor to learn best practices and ask questions directly of two leading cybersecurity minds in the nation.

- 4) Hosted the National Institute of Standards in Technology (NIST) for their Sixth Cybersecurity Framework Conference: More than 400 cybersecurity professionals from across the nation and the world attended this two-day working session hosted by FC<sup>2</sup> at USF in Tampa.
- 5) A ribbon-cutting event for the FC<sup>2</sup> offices: More than 150 attendees, including many elected officials and their representatives, attended the ribbon-cutting event for FC<sup>2</sup>. Attendees saw a hacking demo, received information about protecting themselves online, and participated in tours of the Center.
- 6) The National Summit on Cybersecurity Regional Open House: The Florida Center for Cybersecurity cohosted, along with the U.S Department of Homeland Security, the Federal Bureau of Investigation, the Secret Service, and the Florida Department of Law Enforcement, an exclusive open house at USF, in conjunction with President Obama's Summit on Cybersecurity and Consumer Protection at Stanford University on February 13, 2015. More than 450 cybersecurity professionals, faculty, and students attended the event.





Vice Admiral Mike McConnell delivering a keynote



Cybersecurity professionals at the Feb. 13 open house



Members of the Sarasota Military Academy Cyberpatriots meet with FBI representatives at a co-hosted event



A panel discussion at an FC<sup>2</sup> conference

## **PUBLIC AND COMMUNITY RELATIONS**

FC<sup>2</sup> staff have presented at more than 30 community and business meetings, provided more than 20 press interviews about cybersecurity best practices, and distributed Center materials to thousands of Floridians. Each of these interactions provides an opportunity for Center staff to interact with the business and defense communities to learn about cybersecurity internship and employment opportunities for SUS students. FC<sup>2</sup> staff also created an awareness document with cybersecurity tips and best practices and distributed it to representatives from each SUS university. This document includes content aimed at educating existing students, incoming students, faculty, and staff.

In addition to this outreach, FC<sup>2</sup> staff have worked with the WhiteHatters Computer Security Student Club on USF's campus to assist with hacking demonstrations and the logistics for student cybersecurity competitions. Center staff have also introduced these students to many representatives from Florida's business and defense communities to further their professional networks.

## **RESEARCH REPORT**

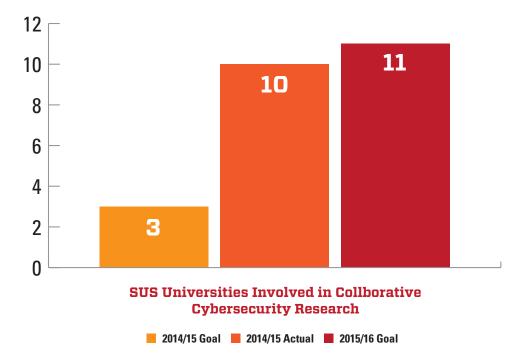
The Florida Center for Cybersecurity launched and funded a Cybersecurity Seed Grant Program in the Fall of 2014, allocating \$500,000 to fund research activities across the state and incentivize collaboration amongst SUS institutions. In total:

- Competitive proposals were received from 20 research teams representing 10 of the 12 SUS institutions.
- The Center awarded 12 seed grants for cybersecurity research to faculty from 10 different SUS universities. In addition to working on many of these projects, SUS students and faculty will also benefit from the cybersecurity discoveries generated through this research.

## FC<sup>2</sup> Collaborative Seed Grant Program Awards

PROPOSAL TITLE	INSTITUTIONS	PI/CO-PI'S
Cyber Resilience for Injection Attacks	USF/FIU	Dr. Jay Ligatti/Dr. Geoffrey Smith
Vulnerability and Survivability of Cyberspace: Basic Science to Applications	UCF/FIU	Dr. Mainak Chatterjee/Dr. Ming Zhao
Aging-Aware Hardware- Trojan Detection at Runtime	USF/UCF	Dr. Selcuk Kose/Dr. Ronald DeMara
New Technologies for Network Defense Analysis based on Malware Behavior	UF/UNF	Dr. Shigang Chen/Dr. Patrick Kreidl
Smart Grid Security Protection through Cross-Layer Approaches	UCF/USF	Dr. Yier Jin/Dr. Yao Liu/Dr. Cliff Zou
Identity Assurance using Biometrics for Cybersecurity	USF/UCF	Dr. Rangachar Kasturi/Dr. Mubarak Shah
Cyber Mission Assurance for Secure Mobile Healthcare System	UF/UCF	Dr. Michael Fang/Dr. Peter Yuan
Wearable Device Security	UWF/FL. POLY	Dr. Vimal Kumar/Dr. Anas Salah Eddin
Secure Web Access to RFID and NFC Data in Healthcare Inventory Control and Patient Tracking Applications	UNF/FAMU	Dr. Zornitza Prodanoff/Dr. Edward Jones
Securing Storage for Insider Threat Mitigation	UF/FIU	Dr. Kevin Butler/Dr. Raju Rangswami
Exploring Security Attacks in Cache Enabled Tactical Hybrid Networks	UNF/UWF	Dr. Swapnoneel Roy/Dr. Ezhil Kalaimannan
A Sociotechnical Approach to Lawful Interception and Computational Assessment of Information Behavior to Protect against Insider Threat	FSU/FAMU	Dr. Mary Ho Shuyan/Dr. Chi Hongmei

In its first nine months of existence, FC<sup>2</sup> has also generated more than \$530,000 in grants, sponsorships and matching research dollars. Many of these grants and research projects will include SUS students, who will develop best practices in cybersecurity through their participation in the projects.



## **BOARD OF ADVISORS UPDATE**

FC<sup>2</sup> is working with former Vice Admiral Mike McConnell to create a Board of Advisors for the Florida Center for Cybersecurity. Mr. McConnell has agreed to be the Chairman.

Mike McConnell is a Senior Executive Advisor and former Vice Chairman of Booz Allen Hamilton, which he joined after retiring from the Navy in 1996 as a Vice Admiral. Upon being asked by President George W. Bush in 2007 to become the second Director of National Intelligence (DNI), he left Booz Allen and served as the DNI for two years under Presidents Bush and Obama. As the DNI he managed the expansive national Intelligence Community – an organization of over 100,000 people, and an annual global enterprise budget of over \$50 Billion – and had extensive interactions with the White House, the President's Cabinet, Congress, international leaders, and the U.S. business community. He served as a member of the National Security Council and managed the U.S. Intelligence



Community's global engagement in support of U.S. & allied national security objectives. Mr. McConnell also served from 1992 to 1996 as the Director of the National Security Agency (NSA) under Presidents George H.W. Bush and William J. Clinton.

Working with the Chairman of the Board of Advisors, FC<sup>2</sup> and the Chairman will invite leaders of national and global prominence to serve on the board.





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