Carnegie Mellon
Software Engineering Institute

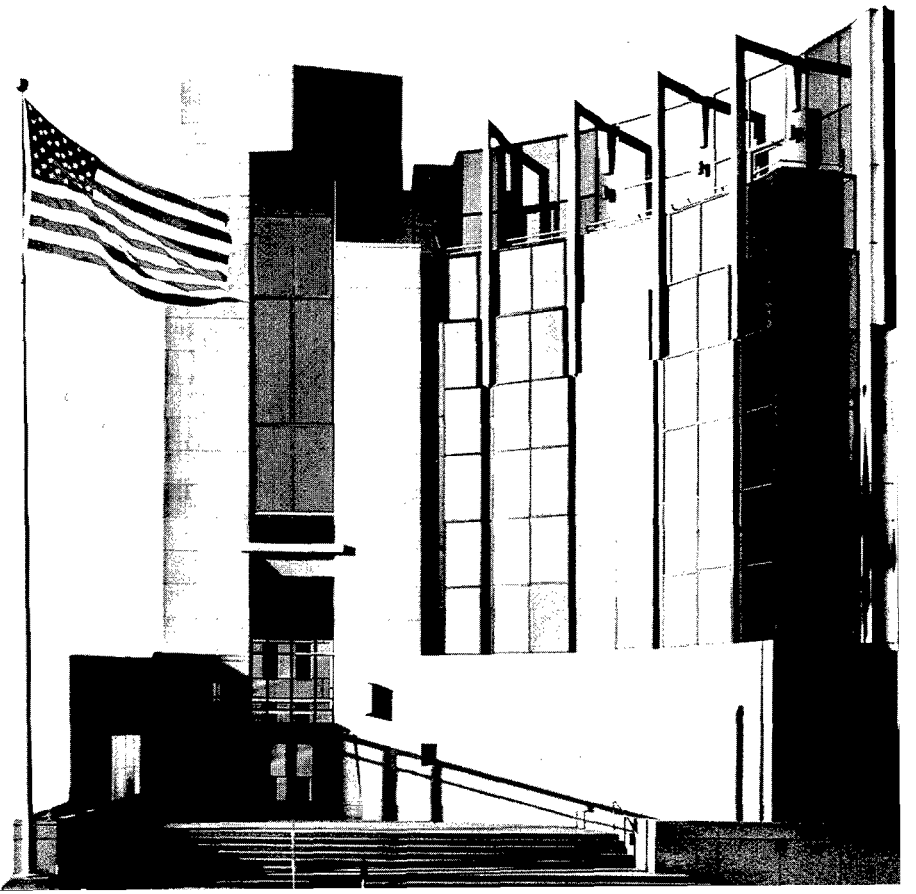
Report on Annual Regional Information Assurance Symposia

Carol A. Sledge, Ph.D.

June 2005

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

SPECIAL REPORT
CMU/SEI-2005-SR-007



Carnegie Mellon
Software Engineering Institute

Pittsburgh, PA 15213-3890

Report on Annual Regional Information Assurance Symposia

CMU/SEI-2005-SR-007

Carol A. Sledge, Ph.D.

June 2005

Networked Systems Survivability Program

Unlimited distribution subject to the copyright.

20051223 023

This report was prepared for the

SEI Administrative Agent
ESC/XPK
5 Eglin Street
Hanscom AFB, MA 01731-2100

The ideas and findings in this report should not be construed as an official DoD position. It is published in the interest of scientific and technical information exchange.

FOR THE COMMANDER

Christos Scondras
Chief of Programs, XPK

This work is sponsored by the U.S. Department of Defense. The Software Engineering Institute is a federally funded research and development center sponsored by the U.S. Department of Defense.

Copyright 2005 Carnegie Mellon University.

NO WARRANTY

THIS CARNEGIE MELLON UNIVERSITY AND SOFTWARE ENGINEERING INSTITUTE MATERIAL IS FURNISHED ON AN "AS-IS" BASIS. CARNEGIE MELLON UNIVERSITY MAKES NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, AS TO ANY MATTER INCLUDING, BUT NOT LIMITED TO, WARRANTY OF FITNESS FOR PURPOSE OR MERCHANTABILITY, EXCLUSIVITY, OR RESULTS OBTAINED FROM USE OF THE MATERIAL. CARNEGIE MELLON UNIVERSITY DOES NOT MAKE ANY WARRANTY OF ANY KIND WITH RESPECT TO FREEDOM FROM PATENT, TRADEMARK, OR COPYRIGHT INFRINGEMENT.

Use of any trademarks in this report is not intended in any way to infringe on the rights of the trademark holder.

Internal use. Permission to reproduce this document and to prepare derivative works from this document for internal use is granted, provided the copyright and "No Warranty" statements are included with all reproductions and derivative works.

External use. Requests for permission to reproduce this document or prepare derivative works of this document for external and commercial use should be addressed to the SEI Licensing Agent.

This work was created in the performance of Federal Government Contract Number F19628-00-C-0003 with Carnegie Mellon University for the operation of the Software Engineering Institute, a federally funded research and development center. The Government of the United States has a royalty-free government-purpose license to use, duplicate, or disclose the work, in whole or in part and in any manner, and to have or permit others to do so, for government purposes pursuant to the copyright license under the clause at 252.227-7013.

For information about purchasing paper copies of SEI reports, please visit the publications portion of our Web site (http://www.sei.cmu.edu/publications/pubweb.html).

Table of Contents

Executive Summary iii

Abstract v

1 Introduction 1
- 1.1 SEI Software Engineering Education Program 1
- 1.2 Regional Collaborative Clusters 2
  - 1.2.1 Hub Educational Transition Partners 2
  - 1.2.2 Operation 2
- 1.3 Information Assurance Capacity Building Program 3

2 Kick-Off Symposia: Participants and Topics 7
- 2.1 Mid-Atlantic Regional Collaborative Cluster 7
- 2.2 Southern California Regional Collaborative Cluster 9
- 2.3 Southern Texas Regional Collaborative Cluster 12

3 Subsequent Annual IA Symposia 15

4 Conclusions 17

Appendix Mid-Atlantic Regional Collaborative Cluster 19

References 21

Executive Summary

One goal of the Networked Systems Survivability Program of the Software Engineering Institute (SEI) is to transition information assurance courseware, materials, and a curriculum on survivability and information assurance to various departments at institutions of higher education in the United States, with a particular focus on selected minority-serving institutions. To accomplish this, the SEI utilizes partnerships that leverage the strengths of the SEI and the strengths of its partner educational institutions. The SEI builds upon the partners' existing trusted relationships and infrastructure, rather than building a new infrastructure. This partnership approach sustains the incorporation of new and evolving materials by the partners, and is more cost-effective for all parties. The SEI seeks to strengthen the information assurance capacity of these "hub" educational partner institutions, which are capable of then refining and (in the future) transitioning educational materials and courses to other educational institutions in their region (termed an Information Assurance Regional Collaborative Cluster). This second-level transition helps to increase the educational capacity in information assurance in the United States.

Since 2004, the SEI has established three Regional Collaborative Clusters (RCCs) and their associated hub educational transition partners across the U.S. A key component of each RCC—and the event that launches it—is the Annual Regional Information Assurance Symposia co-hosted by the SEI and that region's hub educational transition partner. In the initial 14-month period (February 2004-April 2005), the prototype RCC, the Mid-Atlantic RCC, has held two successful annual symposia and a third symposium is scheduled. Two RCCs whose hub educational transition partners are California State Polytechnic University, Pomona (Cal Poly Pomona) and neighboring Mt. San Antonio College (Mt. SAC), and Texas A&M, Corpus Christi (TAMU-CC), have each held a successful initial annual symposia, and their second symposia are scheduled. This initial report on these annual regional symposia describes the RCC concept, the SEI approach, and the results to date.

Abstract

The Networked Systems Survivability Program at the Carnegie Mellon Software Engineering Institute (SEI) seeks to transition information assurance and information security courseware to institutions of higher education within the United States, with a particular focus on minority-serving institutions. Rather than build an infrastructure to accomplish this, the SEI utilizes partnerships, through Regional Collaborative Clusters, that leverage the strengths of the SEI and the strengths of the partner educational institutions. The SEI builds upon the partner's existing trusted relationships and infrastructure, creating an environment that sustains the incorporation of new and evolving materials, and is more cost-effective for all parties. The annual Regional Information Assurance Symposia are a key transition component of the Regional Collaborative Clusters.

1 Introduction

1.1 SEI Software Engineering Education Program

From the inception of the Carnegie Mellon Software Engineering Institute[1] (SEI) until 1995, the SEI's Education Program defined master's and undergraduate software engineering curricula, created materials and courses in those areas, and transitioned them to the academic and continuing education communities. As a member of the SEI's Education Program, transitioning software engineering materials and courses to the academic community, the author found that it was not difficult to extract what worked well and what barriers to transition existed under that Education Program model.

Successful transition meant that an educational institution had the capacity to initially incorporate those software engineering materials and courseware, as appropriate, into its own courses and curricula and, over time, could continue to refine and expand the materials and courseware to better reflect its educational interests and strengths, while also incorporating changing technology. In other words, the SEI's materials and courseware provided a "jump-start," enabling the institution to more quickly incorporate and offer software engineering subjects.

While materials and courseware might be shared among faculty at a particular institution, unless a faculty member moved to a different institution and used derivative materials, the transition was basically 1:1, from the SEI to the original institution, and on a course-by-course basis. An annual Conference on Software Engineering Education provided opportunities for faculty to present new or adapted materials, but the sustained transition of applicable new materials and the ability of faculty to attend a second conference (the first conference being one in their primary field of interest) proved limited.

Given that experience, a new model was constructed: a partnership that leverages the strengths of the SEI and the strengths of the partner educational institutions, and that builds upon existing trusted relationships and infrastructure to reach a far larger set of educational institutions than could be achieved by the old model. This sustains the incorporation of new and evolving materials. Leveraging other complementary programs, events, and organizations broadens the offering and makes it more cost effective to all parties involved. Central to the new model is the concept of the Regional Collaborative Cluster.

[1] The SEI is a federally funded research and development center sponsored by the U.S. Department of Defense and operated by Carnegie Mellon University.

1.2 Regional Collaborative Clusters

A Regional Collaborative Cluster (RCC) is a collection of educational institutions in a particular geographic region that at some level

- share a common vision and target student population
- have cooperated in the past, or can reasonably be expected to cooperate
- have a desire to incorporate or expand their information assurance content
- are within a day's drive (preferably less) of one another

1.2.1 Hub Educational Transition Partners

At the heart of the Regional Collaborative Cluster is the hub educational transition partner. Qualities of a successful hub educational transition partner include

- the capacity to understand, adapt, refine, and incorporate information assurance materials and courseware into existing courses and curricula
- support by the educational institution to accomplish the above
- active leadership and commitment by a faculty member who is respected by the community
- the existence of trusted relationships with other computer science, information science, (computer) information systems, or software engineering departments in the immediate geographical region and beyond
- a commitment to advance the state of information assurance education in the region through the sharing of materials and courseware, the facilitation of workshops and symposia, and other means
- the ability to leverage other complementary relationships and activities
- a relatively central location with respect to the other educational institutions in the region to reduce travel time to workshops, symposia, and other events

1.2.2 Operation

The SEI Education Program model, of necessity, needed to transition on a 1:1 basis to define and then nurture the establishment of Master's in Software Engineering programs (its stated goal.) It did not create an infrastructure that would encourage and empower the schools that taught those programs to transition and sustain the teaching of software engineering topics and courses in other educational institutions. Creating and sustaining such an infrastructure from scratch is problematic at best.

The new model leverages existing, trusted working relationships of the hub educational transition partner with other computer science and information science departments (or computer information systems departments/software engineering departments, or similar departments) to help create an infrastructure (the Regional Collaborative Cluster) capable of transitioning

information assurance (IA) concepts, materials, and courseware through workshops, symposia, and other means to additional educational institutions to increase the IA educational capacity in that region.

The SEI provides the hub educational transition partner with IA materials and courseware, speakers for a kick-off regional IA symposium, other SEI materials and courseware (as appropriate), entrées into other Carnegie Mellon University outreach programs, and other benefits. Over time, the hub educational transition partner adapts, refines, and incorporates additional IA materials and courseware as appropriate to its particular environment and curriculum and also shares the adapted, enhanced, or new materials, courseware, and experience with other educational institutions. The hub educational transition partner also sponsors and solicits attendees for the kick-off IA symposium (again leveraging its existing relationships) and hosts other related workshops.

The partnership between the SEI and the hub educational institution, and through its efforts, the Regional Collaborative Cluster, is ongoing: this better sustains and enhances the IA educational capacity in that region. The goal is to create a self-sustaining cluster of colleges and universities that continue to create, enhance, and adapt materials to their particular curricula, and to share those materials with faculty at those educational institutions.

Whenever possible, both the hub educational transition partner and the SEI seek to leverage other complementary programs and efforts (such as the Carnegie Mellon University Information Assurance Capacity Building Program). The purpose is not to compete with other opportunities to enhance and improve educational IA capacity, but to build upon them.

1.3 Information Assurance Capacity Building Program

Since 2002, Carnegie Mellon University has offered a month-long Information Assurance Capacity Building Program (IACBP) during the summer. The primary IACBP educational faculty are from the Software Engineering Institute, in particular from the Networked Systems Survivability Program, which includes the CERT® Coordination Center.[2]

The NSF-funded IACBP at Carnegie Mellon primarily targets faculty in computer and information science, computer information systems, or similar departments at minority-serving institutions (MSIs). Due to the structure of the program, participation is limited to approximately seven educational institutions and approximately nine total faculty.

Minority-serving institutions encompass Historically Underrepresented Colleges and Universities (HUCUs)[3], Hispanic Serving Institutions (HSIs), and Tribal Colleges. To date only the

[2] CERT and CERT Coordination Center are registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.

[3] Formerly Historically Black Colleges and Universities (HBCUs)

first two categories of MSIs have been represented in the first four years of Carnegie Mellon's information assurance capacity building program. The author of this report selects the candidate educational institutions and the faculty for this program (together with the Manager, Diversity Outreach Programs at the SEI) and has led the course and curriculum development portion for three of the four years of the program. This provides the author with additional opportunities for transition of IA materials developed at the SEI and further opportunities for leverage.

Although opportunities exist to discuss research during the month-long capacity building program, the primary focus is on increasing the educational capacity with respect to IA at the participating educational institutions. One of the requirements during the program is to describe how a faculty member will inject comments, materials, topics, lectures, modules, or courses relating to information assurance into his or her existing courses or curriculum, both in the coming year and beyond. This is accomplished during the course and curriculum development portion during the third week of the program, which culminates with presentations by the faculty describing how they plan to incorporate IA into their existing courses and curricula.

Having the faculty in Pittsburgh in close proximity to the SEI for four weeks provides opportunities for after-hours presentations and discussions with staff at the SEI. Additionally, the Networked Systems Survivability Program of the SEI provides each faculty member the opportunity to receive a copy of the CERT Training and Education course Information Security for Technical Staff (ISTS) (for self-study or academic use purposes). This is in addition to the course materials received by the faculty as part of the NSF-funded capacity building program (including a text by Ross Anderson [Anderson 2001]). As in the older software engineering education model, these materials and courseware provide a "jumpstart," enabling the academic institution to more quickly incorporate and offer (additional) information assurance/security topics.

A series of after-hours discussions between the SEI and Robert A. Willis, Jr., Chairman of the Department of Computer Science at Hampton University, during the 2003 IACBP defined how to leverage the strengths of both organizations with the goal of promoting the inclusion of information assurance/information security topics and courses in the curricula of HUCUs in Hampton's region. Hampton University would be the prototype for the hub educational transition partner and its associated Regional Collaborative Cluster.

After the 2003 IACBP, the SEI and Hampton University continued to work together to define the Mid-Atlantic Regional Collaborative Cluster and plan the kick-off IA symposium. The regional extent of the RCC was based on Hampton University's and Willis's existing relationships with computer science and information science departments in HUCUs within a half-day's drive of Hampton. The Mid-Atlantic Regional Collaborative Cluster encompasses 18 HUCUs in four states and the District of Columbia (see Appendix).

The IACBP at Carnegie Mellon is one means to build or enhance the capacity of an academic institution to incorporate information assurance topics and courses into its curriculum, but of

necessity, it reaches a limited number of faculty and educational institutions. However, the results of the IACBP can be leveraged and transitioned to other faculty if some of the faculty who attend the IACBP and the institutions they represent meet the faculty leadership and institutional characterizations and commitments of the hub educational transition partners of a Regional Collaborative Cluster. Also, through the IA symposia offered in the RCCs, information about the IACBP, among other programs and opportunities, can be shared with the participants.

2 Kick-Off Symposia: Participants and Topics

Since 2004, the SEI has established three Regional Collaborative Clusters (RCCs) and their associated hub educational transition partners across the U.S.:

- Mid-Atlantic Regional Collaborative Cluster (Hampton University, Hampton, VA)
- Southern California Regional Collaborative Cluster (California State Polytechnic University, Pomona [Cal Poly Pomona], Pomona, CA, and neighboring Mt. San Antonio College [Mt. SAC], Walnut, CA]
- Southern Texas Regional Collaborative Cluster (Texas A&M, Corpus Christi [TAMU-CC], Corpus Christi, TX)

The kick-off event for the Regional Collaborative Cluster is the Annual Regional Information Assurance Symposia co-hosted by the SEI and that region's hub educational transition partner. To minimize conflicts with scheduled academic classes, the symposia are held on Saturday. The hub educational transition partner chooses the actual date for the symposium, given the partner's knowledge of the academic schedules of the educational institutions in its cluster. In the initial 12-month period (February 2004–January 2005), the three Regional Collaborative Clusters have each held a successful initial Regional Information Assurance Symposium. The prototype Regional Collaborative Cluster (Mid-Atlantic RCC) held its second annual symposium in April 2005. All three Regional Collaborative Clusters have scheduled their next annual symposia.

2.1 Mid-Atlantic Regional Collaborative Cluster

Hampton University is a hub educational transition partner, anchoring the Mid-Atlantic Regional Collaborative Cluster. The SEI's primary collaborator is Robert A. Willis, Jr., Chairman of the Department of Computer Science. On February 28, 2004, Hampton University co-hosted the "First Annual Hampton University Information Assurance Symposium: Building Information Assurance Capacity and Improving Infrastructure at HBCUs," targeting 18 Historically Black Colleges and Universities in four states and the District of Columbia. The SEI provided speakers in information assurance/security and software process for this 2004 kick-off IA symposium.

In addition to Hampton University and the SEI, other sponsors included the Advanced Networking with Minority Serving Institutions (AN-MSI) project, the Institute for Infrastructure and Information Assurance (IIA) at James Madison University, and the Association of Com-

puter and Information Science Engineering Departments at Minority Institutions (ADMI). Registration was free.

The stated purpose of the symposium was threefold:

- to provide an interface with governmental agencies and information assurance research institutions
- to provide a forum that will serve to build information assurance capacity and improve infrastructure at minority-serving institutions
- to serve as a model for other regional workshops for minority-serving institutions

The one day symposium included

- comments by Lawrence C. Hale, Deputy Director of the Department of Homeland Security, followed by a Q&A period
- a keynote address, "Computers Under Attack—What Can We Do?" by Richard Pethia, Director of the CERT Centers at Carnegie Mellon University's Software Engineering Institute
- a presentation, "Higher Education's Role in National Efforts to Secure Cyberspace," by Rodney Petersen of EDUCAUSE
- a luncheon address, "Development Principles for Secure Software," by Watts S. Humphrey, founder of the software process program at the Software Engineering Institute
- a presentation, "Developing Secure Software," by Noopur Davis of the software process program at the Software Engineering Institute
- a presentation, "Coding Flaws That Lead to Security Failures," by Shawn Hernan of the CERT Coordination Center at the Software Engineering Institute
- a presentation, "The Future of Security and Survivability Research," by Thomas Longstaff of the CERT Research and Analysis Centers at the Software Engineering Institute

Faculty (including six department chairs) and students from 14 universities in seven states and the District of Columbia attended. Nine of the 18 HUCUs in the Mid-Atlantic Regional Collaborative Cluster were represented, but a significant snowstorm around Virginia prevented a number of registered attendees from coming. Faculty from two additional HUCUs from outside the RCC attended as did faculty from three other schools, two of which were co-sponsors. A total of 62 people attended, including one from Siemens Corporation.

The Mid-Atlantic Regional Collaborative Cluster universities represented were:

- Bowie State University (MD)
- Delaware State University (DE)
- Elizabeth City State University (NC)
- Hampton University (VA)

- Howard University (DC)
- Norfolk State University (VA)
- University of the District of Columbia (DC)
- Virginia State University (VA)
- Winston-Salem State University (NC)

Additional HBCUs represented were:

- Spelman College (GA)
- Florida A&M University (FL)

Other universities represented were:

- James Madison University (co-sponsor) (VA)
- Old Dominion University (VA)
- Carnegie Mellon University (co-sponsor) (PA)

Additional details about the formation of this prototype Regional Collaborative Cluster, the initial kick-off IA Symposium, and other IA workshops held by Hampton University can be found in a paper by Sledge and Willis [Sledge 2004].

Two additional Regional Collaborative Clusters have been established, both targeting Hispanic Serving Institutions.

2.2 Southern California Regional Collaborative Cluster

The Southern California Regional Collaborative Cluster focuses on California State University campuses and community colleges in southern California. The hub educational transition partners are California State Polytechnic University, Pomona (Cal Poly Pomona) in Pomona, CA (primary), and neighboring Mt. San Antonio College (Mt. SAC) in Walnut, CA. Dr. Dan Manson of Cal Poly Pomona's College of Business Administration and Mr. John Blyzka of Mt. SAC's Computer Information Systems Department are the primary collaborators for the Southern California RCC. Like Robert Willis of Hampton University, these faculty members from Cal Poly Pomona and Mt. SAC have also participated in the IACBP at Carnegie Mellon.

The kick-off IA Symposium was held on December 11, 2004, at Cal Poly Pomona. As co-sponsor, the SEI provided speakers in information assurance/security and software process. The other sponsors were the Cal Poly Pomona Center for Information Assurance and the Regional Information Systems Security Center: A Consortium for Security Education Training and Service—Mt. San Antonio College and California State Polytechnic University, Pomona.

The symposium Web site is located at http://www.bus.csupomona.edu/ias.asp, while a list of targeted educational institutions (universities, colleges, and community colleges) can be found at http://www.bus.csupomona.edu/ias_target_inst.asp.

For faculty and students who responded by December 1, 2004, registration was free; it was $25 thereafter (charged by Cal Poly Pomona). For others (non-faculty and non-students) registration was $25 if they responded by December 1, 2004; it was $50 thereafter. The first 100 registrants received a free 128 MB USB 2.0 flash drive.

The stated purpose of the symposium was threefold:

- to provide an interface with governmental agencies and information assurance research institutions
- to provide a forum that will serve to build information assurance capacity and improve infrastructure at minority-serving institutions
- to serve as a model for other regional workshops for minority-serving institutions

The one-day symposium included

- comments by Eric Robles, Field Deputy for Congresswoman Lucille Roybal-Allard (34th District, CA)
- comments and a presentation by distinguished guest Hun S. Kim, Deputy Director for the Strategic Initiatives Branch at the Department of Homeland Security, National Cyber Security Division.
- a keynote address, "Computers Under Attack—What Can We Do?" by Richard Pethia, Director of the CERT Centers at Carnegie Mellon University's Software Engineering Institute
- a presentation, "Incident Management at California State University," by Georgia Killcrece, of CERT Training and Education at the Software Engineering Institute
- a luncheon address, "Enhancing Software Curriculum with Personal Software Process and Team Software Process," by Iraj Hirmanpour, visiting scientist, software process program at the Software Engineering Institute
- a presentation, "Developing Secure Software," by Noopur Davis, of the software process program at the Software Engineering Institute
- a presentation, "Coding Flaws That Lead to Security Failures," by Dan Plakosh of the CERT Coordination Center at the Software Engineering Institute
- a presentation, "Next Steps," by Carol Sledge, of CERT Training and Education at the Software Engineering Institute, and Daniel Manson, of the College of Business Administration, California State Polytechnic University, Pomona

Faculty and students from 18 California universities and colleges (10 Hispanic Serving Institutions and eight others), plus faculty from the University of Las Vegas in Nevada were in attendance, in addition to the representatives from Carnegie Mellon University in Pennsylvania. Eleven corporate/government agencies were also represented. A total of 90 people attended the symposium.

California Hispanic Serving Institutions represented were:

- California State Polytechnic University, Pomona
- California State University, Fullerton
- California State University, Long Beach
- California State University, Los Angeles
- California State University, Northridge
- California State University, San Bernardino
- Mt. San Antonio College
- Long Beach City College
- San Bernardino Valley College
- University of La Verne

Other California institutions represented were:

- California Polytechnic State University, San Luis Obispo
- Coastline Community College, Garden Grove
- College of the Canyons
- California State University, Sacramento
- Cypress College
- Humboldt State University
- University of California, Los Angeles
- National University

Corporations and governmental agencies represented were:

- Beckman Coulter
- Bank of the West
- Boeing
- City National Bank
- Countrywide Financial Corporation
- Disney Consumer Products
- Los Angeles County Auditor Controller

- Nation Smith Hermes Diamond
- OCTFCU
- Pacific Alternative Asset Management Company
- Systems Control & Security Inc.

The Second Annual Regional Information Assurance Symposium will be held on December 10, 2005.

2.3 Southern Texas Regional Collaborative Cluster

The second HSI Regional Collaborative Cluster focuses on southern and coastal Texas with Texas A&M, Corpus Christi (TAMU-CC) as the hub educational transition partner. Dr. John Fernandez and Dr. Mario Garcia of the Department of Computer and Mathematical Sciences at TAMU-CC are the primary collaborators for the Southern Texas RCC. Like our primary collaborators at Hampton University, Cal Poly Pomona, and Mt. SAC, these faculty members from TAMU-CC participated in the IACBP at Carnegie Mellon.

The kick-off IA Symposium was held on January 29, 2005, at Texas A&M, Corpus Christi. As co-sponsor, the SEI provided speakers in information assurance/security and software process. The other co-sponsor was TAMU-CC. The symposium Web site is located at http://iasymposium.tamucc.edu, and a list of targeted educational institutions (universities and colleges) can be found at http://iasymposium.tamucc.edu/institutions.html.

TAMU-CC charged a registration fee of $20 to defray the cost of meals and incidentals.

The stated purpose of the symposium was threefold:

- to provide an interface with governmental agencies and information assurance research institutions
- to provide a forum for
  - building information assurance capacity and improving infrastructure at minority-serving institutions
  - building information assurance awareness within academic, industrial, and governmental organizations
  - sharing knowledge and experience with faculty, researchers, and institutional leaders
- to serve as a model for other regional workshops for minority-serving institutions, and sharing information assurance knowledge and experience with regional government and industry leaders

The one-day symposium included

- comments by Dr. Alex Ramirez, Executive Director for Information Technology Initiatives, Hispanic Association of Colleges and Universities (HACU)
- comments and presentation by distinguished guest Hun S. Kim, Deputy Director for the Strategic Initiatives Branch, Department of Homeland Security, National Cyber Security Division
- a keynote address, "Computers Under Attack—What Can We Do?" by Richard Pethia, Director of the CERT Centers at Carnegie Mellon University's Software Engineering Institute
- a luncheon address, "Enhancing Software Curriculum with Personal Software Process and Team Software Process," by Dr. Iraj Hirmanpour, visiting scientist, software process program at the Software Engineering Institute
- a presentation, "Developing Secure Software," by James Over, software process program, Software Engineering Institute
- a presentation, "Coding Flaws That Lead to Security Failures," by Dan Plakosh, CERT Coordination Center, Software Engineering Institute
- a presentation, "Next Steps," by Dr. Carol Sledge, CERT Training and Education, Software Engineering Institute, and Dr. Mario Garcia, Texas A&M, Corpus Christi

Faculty and students from five universities and colleges (four Hispanic Serving Institutions and one other institution), plus faculty from the Rochester Institute of Technology in New York were in attendance, in addition to the representatives from Carnegie Mellon University in Pennsylvania (from the Software Engineering Institute and CyLab). Six corporate/government agencies were also represented. A total of 145 people attended the symposium.

Texas Hispanic Serving Institutions represented were:

- Texas A&M University, Corpus Christi
- Texas A&M University, Kingsville
- Texas A&M International University
- Del Mar College

One other Texas institution was represented:

- Trinity University

Corporations and governmental agencies represented were:

- AbsolutSafe, Inc.
- City of Corpus Christi

- Hispanic Association of Colleges and Universities (HACU)
- Raytheon, Naval Air Station Contractor
- South Central Regional Maintenance Center
- Whataburger, Inc.

The Second Annual Regional Information Assurance Symposium is scheduled for January 28, 2006.

Although the three established RCCs share similarities, the RCCs and their hub educational transition partners also exhibit differences, which reflect not only the other programs that are being leveraged at these hub partners, but also the goals these partners have for the educational institutions in their regions and for their own programs. Information on the activities of the hub educational partners can be found in the publication *news@sei* [Thomas 2005].

3 Subsequent Annual IA Symposia

Due to the relative newness of the Regional Collaborative Clusters and their associated IA symposia, only one RCC has held its second IA symposium. The Second Annual Hampton Information Assurance Symposium was held on April 2, 2005, at Hampton University. As co-sponsor, the SEI provided speakers in information assurance/security and software architecture/component technology. The other co-sponsors were:

- Hampton University
- Elizabeth City State University
- Association of Computer and Information Science Engineering Departments at Minority Institutions (ADMI)
- The Institute for Infrastructure and Information Assurance (IIA) at James Madison University (JMU)
- Electronic Systems
- Cisco Systems
- National Information Assurance Training and Education Center

The symposium Web site is located at http://www.hamptonu.edu/events/ia_symposium/. Registration was free.

The one-day symposium included

- comments and a presentation by distinguished guest Hun S. Kim, Deputy Director for the Strategic Initiatives Branch, Department of Homeland Security, National Cyber Security Division
- a keynote address, "Evolving Cyber Threats: Three Things for You to Do," by Richard Pethia, Director, of the CERT Centers at Carnegie Mellon University's Software Engineering Institute
- a presentation, "ADMI's Role in Information Assurance," by Dr. Andrea W. Lawrence, Chair of Computer Science at Spelman College and current President of ADMI
- a presentation, "NIST Computer Security Division Activities," by Dr. Alicia Clay, Deputy Chief for the Computer Security Division of the National Institute of Standards and Technology (NIST)
- a luncheon address, "Putting the Play into 'Plug and Play,' " by Linda Northrop, Director, Product Line Systems Program at the Software Engineering Institute

- a presentation, "Prediction-Enabled Component Technology," by Scott Hissam of the Product Line Systems Program at the Software Engineering Institute
- a presentation, "Coding Flaws That Lead to Security Failures," by Dan Plakosh of the CERT Coordination Center at the Software Engineering Institute
- a presentation, "Future: Survivability and Information Assurance Curriculum," by Dr. Carol Sledge, CERT Training and Education at the Software Engineering Institute

Faculty (including seven department chairs) and students from 11 universities in four states and the District of Columbia attended. Eight of the 18 HUCUs in the Mid-Atlantic Regional Collaborative Cluster were represented. Total attendance over the course of the day was 85: 42 faculty (31 HUCU faculty), 37 students, three commercial attendees, and three government attendees.

Mid-Atlantic Regional Collaborative Cluster Universities represented were:

- Bennett College (NC)
- Elizabeth City State University (NC)
- Hampton University (VA)
- Morgan State University (MD)
- North Carolina A&T (NC)
- Norfolk State University (VA)
- University of the District of Columbia (DC)
- Winston-Salem State University (NC)

One additional HUCU was represented:

- Spelman College (GA)

One community college was represented:

- Thomas Nelson Community College (Hampton, VA)

Commercial/government organizations represented were:

- National Defense University
- Booz Allen Hamilton
- Cisco Systems
- Electronic Systems
- Chesterfield County (VA)

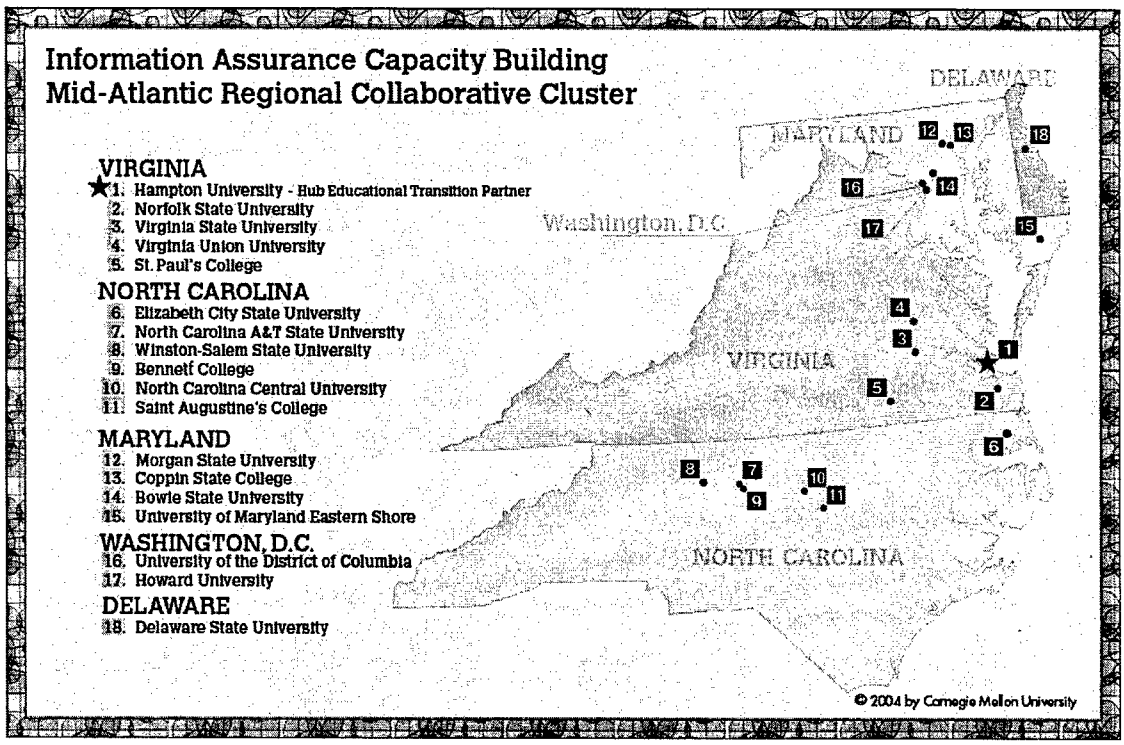
The Third Annual Hampton Information Assurance Symposium has been scheduled for April 6, 2006.

4 Conclusions

One goal of the Networked Systems Survivability Program of the Software Engineering Institute (SEI) is to transition information assurance/security courseware, materials, and a curriculum in survivability and information assurance to various departments at institutions of higher education in the United States, with a particular focus on selected minority-serving institutions. To accomplish this, the SEI utilizes partnerships that leverage the strengths of the SEI and the strengths of its partner educational institutions. The SEI builds upon the partners' existing trusted relationships and infrastructure, rather than building a new infrastructure. This partnership approach sustains the incorporation of new and evolving materials by the partners, and is more cost-effective for all parties. The SEI seeks to strengthen the information assurance capacity of these "hub" educational partner institutions, which can then refine and (in the future) transition educational materials and courses to other educational institutions in their regions. Our goal is to create a self-sustaining cluster of schools (termed an Information Assurance Regional Collaborative Cluster) that continue to enhance and adapt materials to their particular curricula, and share those materials with faculty at colleges and universities. This second-level transition helps to increase the educational capacity in information assurance in the U.S.

Since 2004, the SEI has established three Regional Collaborative Clusters (RCCs) and their associated hub educational transition partners across the U.S. A key component of the RCC (and the kick-off event) is the Annual Regional Information Assurance Symposia co-hosted by the SEI and that region's hub educational transition partner. In the initial 14-month period (February 2004–April 2005), the prototype RCC (Mid-Atlantic RCC) has held two successful annual symposia, while the two RCCs with hub educational transition partners California State Polytechnic University, Pomona (Cal Poly Pomona) and neighboring Mt. San Antonio College (Mt. SAC), and Texas A&M, Corpus Christi (TAMU-CC) have each held a successful initial annual symposia, with their second symposia scheduled. This initial report on these annual regional symposia described the RCC concept, the SEI approach and the results to date. Further information on the educational outreach project of the Networked Systems Survivability Program can be found in [Sledge 2005].

Appendix Mid-Atlantic Regional Collaborative Cluster



References

URLs are valid as of the publication date of this document.

[Anderson 2001] Anderson, Ross J. *Security Engineering: A Guide to Building Dependable Distributed Systems*. New York, NY: John Wiley & Sons, Inc., 2001 (ISBN 0-471-38922-6).

[Sledge 2004] Sledge, Carol A. & Willis Jr., Robert. "Regional Collaborative Clusters: Building on Trusted Relationships to Increase IA Capacity." *Proceedings of the May 2004 Association of Computer and Information Science Engineering Departments at Minority Institutions (ADMI) Symposium*. Orlando, FL, May 2004. ADMI: May 2004.

[Sledge 2005] Sledge, Carol A. "Information Assurance Educational Outreach: Initiatives at the Software Engineering Institute." *Proceedings from the Ninth Annual Colloquium for Information Systems Security Education (CISSE)*, 6-9 June 2005, Georgia Institute of Technology, Atlanta, GA. ISBN: 1-933510-99-4.

[Thomas 2005] Thomas, Bill. "University Hubs Help SEI Spread Information Assurance Curricula and Methods." *news@sei 8*, 1 (2005): 8-9.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE June 2005	3. REPORT TYPE AND DATES COVERED Final
4. TITLE AND SUBTITLE Report on Annual Regional Information Assurance Symposia		5. FUNDING NUMBERS F19628-00-C-0003
6. AUTHOR(S) Carol A. Sledge, Ph.D.		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Software Engineering Institute Carnegie Mellon University Pittsburgh, PA 15213		8. PERFORMING ORGANIZATION REPORT NUMBER CMU/SEI-2005-SR-007
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) HQ ESC/XPK 5 Eglin Street Hanscom AFB, MA 01731-2116		10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES		
12A DISTRIBUTION/AVAILABILITY STATEMENT Unclassified/Unlimited, DTIC, NTIS		12B DISTRIBUTION CODE

13. ABSTRACT (MAXIMUM 200 WORDS)

The Networked Systems Survivability Program at the Carnegie Mellon Software Engineering Institute (SEI) seeks to transition information assurance and information security courseware to institutions of higher education within the United States, with a particular focus on minority-serving institutions. Rather than build an infrastructure to accomplish this, the SEI utilizes partnerships, through Regional Collaborative Clusters, that leverage the strengths of the SEI and the strengths of the partner educational institutions. The SEI builds upon the partner's existing trusted relationships and infrastructure, creating an environment that sustains the incorporation of new and evolving materials, and is more cost-effective for all parties. The annual Regional Information Assurance Symposia are a key transition component of the Regional Collaborative Clusters.

14. SUBJECT TERMS information assurance education, information security education, regional collaborative cluster, capacity building	15. NUMBER OF PAGES 36
16. PRICE CODE	

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL