Summary of Discussion

NICE Summit; August 11-2, 2010; Track 2 – Formal Cybersecurity Education

Attendees

- Beth Harrison, Union County College, Chair of the ACM 2 Year College Education Committee. This group held a strategic summit in April, and is currently writing a report for NSF. One of the report's findings will be the need for Cyber Education.
- Heather Dinan, Institute for Information Infrastructure Protection (I3P), Dartmouth. She is looking to expand I3P's activities to community colleges.
- Karen McDowell, U of VA, here to network and see how to do more outreach to community colleges, high schools, and more.
- Aimee Larsen Kirkpatrick, National Cyber Security Alliance co-chair of a working group with Davina.
- Maura Kinney, also from NCSA, wants secure behavior on the net to be 2nd nature.
- Judy Westburg-Warren, with Web Wise Kids, non-profit doing work in the field, major area is middle school, but want to move younger, such as 4th grade. Program is 10 years old. Trained over 4k teachers in nation and over 10 million children. Computer games, to train kids, but train teachers on the implementation and they can take this to kids. Proven successful. Look to expand – piracy and other issue areas.
- John Stevenson, with Maryland Higher Education Commission
- Jeff Landry, with U of South Alabama.
- Don Moon, U Dayton Professor but currently a Visiting Professor with Chaminade Univ. in Hawaii.
- Zach Tanko, Champlain College, Burlington, VT. Champlain has a standalone program in cybersecurity. He is looking at the requirement to do more outreach to maintain CAE and want to do better.
- Ben Hopper, Savvy Cyber Kids to teach pre-school children cybersecurity through toys, etc. Oct 1 they launch their first teaching materials for pre-school teachers and parents.
- Pat O'Reilly, NIST. Educator and family of educators. Interest in this area
- Dino Schweitzer, USAFA. Not only with academy, but working with the Community at Large.
- Leslie Vincent-Martinez, Delaware Technical and Community College – facing the challenge of coordinating a single program across four campuses. Is part of CyberWatch.
- Maureen Moore, Sec Awareness Training policy for FDA. Had to educate along the way, still seeing a need for ETA outside and even inside.
- Brian Hay, U of Alaska Fairbanks. Working on a national infrastructure – virtual labs for schools.
- Paul Schembari, East Stroudsburg, Full program for general, tech. bachelors, and admin masters.
- Mark Gobel, GS of USA. Need to listen to kids as they are using technology differently than originally intended. Highlighted the site "Let me know" LMK.girlscouts.org (partner with Microsoft).
- Beverly Troutmel
- Renee Murphy, Dept of Agriculture, Foreign Services, works Cybersecurity for posts throughout the world as well as local area.
- Bob Ubell, NYU Polytech – NYU Poly offers virtual and on site Masters' programs, virtual labs. Recently signed a contract with SAIC to put 600 of their employees through their program. They have also received funding to establish a cybersecurity doctoral program on campus.
- Maureen Higgins, OPM from Track 3
- Dr. Alicia Clay Jones, BAH, passionate about STEM. Day job is IA. Particularly interested in pre-k. Interested in how you make the links and build the cyber security awareness to the workforce. Looking at the "checking the box" but also need the innovative experience and core engineering experience. So looking at 2 year transition to the core.

- Agnes Chan, Northeastern University at Boston. Prof. and Assoc Dean for Grad Education. Launching an interdisciplinary MS degree with EE, CS and Social Science (Criminal Justice, Sociology and Government). Economics would be good to include, but driven by faculty interest and they aren't yet. Interested in looking at gaps, etc. Interdisciplinary hard to run because of infrastructure to help them improve and share their experiences.
- Lance Hoffman, GWU, CAE and a CAE-R. Director of Cybersecurity Inst at GW Interdisciplinary, though it sits in EE. Start a series 22 Sep with Jeff Rosen. Interested in a number of other things like the DoD IASP, SFS and the CyberWatch. Co-PI with Leadership at GW.
- Gus Moldonado, PayPal, Consumer security strategists (off E-Bay). Work with Fraud (81M users…). Working with consumers – he mentioned that PayPal has between 30 seconds to 1 minute to grab a customer's attention and educate him or her. Have on-line security center to address Phishing, etc.
- Daniel McKenna, ECPI College of Technology – Curriculum for Law Enforcement (department head for Criminal Justice) – became clear as a recovering prosecutor that attorneys do not know how to prosecute these cases. He wants to have an education strategy that is interdisciplinary and that features cross-training. Such a program would need to train law enforcement and future lawyers in both Computer Science and Law Enforcement.
- Dave Perlowski, NSA CAE Coordinator. 2year to 4 year link, and roles 2 year can play in community for general education and outreach.
- Dr. Melissa Dark, Purdue (land grant inst). Affiliated with CERIAS, which was championed by Gene Spafford, and his vision was the interdisciplinary. Has offered an MS program for 10 years, and a PhD for three years. CAE-R. Worked with K-12 institutions throughout Indiana, worked with CPA, manufacturing, outreach to small businesses. This outreach sometimes depends on funding and people. Particular interest in faculty and curriculum development to increase their skills to develop courses and programs to institute on their programs. In 2003/-04 figured about 200 courses done and 10k students. Model Curriculum about 10 years ago, but work is on-going again.
- Rhonda Anderson-Speight – Wise Comprehensive Solutions (WCS) - looking for interns, etc. Also interested in community groups, ties to GS and other volunteer efforts to give back to public and private and independent schools.
- Deb Penna, Anne Arundel Community College. CAE2Y. In cyber security since 2005. Offers many courses including in the field of Homeland Security. Launched a Cyber Center – close proximity of NSA, etc.
- Christine Nickell, NIETP at NSA. Manage CAEs/IACE…
- Nan Poulious, Walsh College, CAE, Business School. Walsh offers an interdisciplinary program, but they have the Economics department on board. Vice Chair of Automation Alley, bringing security into this. Strictly dependent on 2 year schools, gave their curriculum to the 2 year schools and looking to update to the current fields. Students from banking, energy, and critical infrastructure. Want to ensure security is infused into this. Making sure we have right mix for the workforce.
- S.K. Bhaskar, UMUC, graduate and UG majors. UMUC is a CAE and CyberWatch participant.
- Julia Plonowski, FTC. FTC has produced the NetCetera guide to parents and distributed 4M copies since last October. In October FTC will be coming out with a community outreach toolkit. Piece for kids, video, etc. Fits in Track 1 and 2. Want to help the audience in outreach.
- Portia Pusey, CyberWatch K-12 division. Her unique focus is that she is in the last year of doctoral program with pre-service teacher education. A survey she designed and implemented looked at teaching ethics: Of 75 ethics topics, they could only teach 4 – thought they were digital natives, she calls them digital tourists.
- Davina Pruitt-Mentle. UMCP ET-PRO, CyberWatch. Was bio-chemistry person at NRL, then got into HS teaching and moved into STEM focus, now college. Cyber Ethics Safety and Security. Pre-svc, K-12, and looking at evaluations, working with State Departments of Education.
- Kara Lynch, Baltimore County Public Schools. Pilot (eligible for Perkins grant); also working with CyberWatch with SecureIT program; wants to learn, find resources, eligible for fast track for other

schools to take it on. Working with dual enrollment to allow high school students to get both AS and HS degree.

- Angela Turnbull, CIO/OPM. Looking to bring the federal workforce and contractors up to speed on the programs out there. From a staffing perspective, beefing this up and needing to have the right skills. Also participates in Catherine K Shelter – working with family and kids (model shelter) because of rapid re-shelter in IT and 360 training.
- Mary Roy, NSA K-12 outreach. Focus is on having employees that go out to local schools for science fairs, math tutoring, robotics, chess, etc. Many are with Math Speakers' bureau and average year, 300 requests to talk to 1000 classrooms, fill about 65% of those. Adding Cyber security this fall.
- Bob Spear, CyberWatch. Vera will be the lead for Mentoring of the 2 year schools towards CAE2Y. Digital Forensics lab: DFL.umd.edu (dig forensics lab at UMCP).
- PM – COL Ron Dodge, USMA

Missing Stakeholders

The Track 2 Facilitators noted the broad range of participants represented in the working group, but also noted that the overall problem of cybersecurity education is already being worked by groups far beyond the attending organizations. The facilitators hosted a brainstorming session to discover additional groups that should be considered for invitation to follow-on events. Examples (not a comprehensive listing) of such stakeholders include the following.

Associations for Educators

Computer Science Teachers Association (CSTA)
State Education Departments and Local School Boards
American Council of Education
State Education Technology Education Directors Association
National Assn of School Boards
National Assn Principals
National Assn Superintendents
ASCD Association for Supervision and Curriculum Development
National Career and Technology Association
National School Guidance Counselors
NBEA – Nat Business Education Assn
American Federation of Teachers
National Educators Assn
National Science Teachers Assn
PTA
American Assn of School Librarians
National Council of Teachers of Mathematics
American Association Community Colleges, Ellen Hause
League for Innovation in the Community College
NCPA - Nation Career Pathways Network

Charitable Foundations and Non-Profits

SLOAN Foundation
GATES Foundation
MacArthur Foundation
Ford Foundation
Intel Foundation
Motorola Foundation
CISCO Foundation
Edutopia
Verizon Foundation

AT&T
EDUCAUSE

Professional Organizations
CCRC – Community College Research Center out of Columbia
ISACA
USCEA (Poss. The University Professional & Continuing Education Association – ucea.edu)
International Society for Technology in Education (ISTE)
HITEC (Poss. the High-Impact Technology Education Conference)
ASTM International (Formerly the American Society for Testing and Materials)
IEEE

Certifiers and Accreditors
CompTIA
ABET

Corporations
EMC2 (owns RSA)
Banking Industry

Civic Groups and Partnerships
Parents Council of Washington
InfraGard
Junior Achievement

Military
JR ROTC

Outcomes
The objectives of the Track 2 Breakout sessions were to: (1) begin the process of developing and describing some firmly accountable goals that can be met in a short timeline; (2) discuss possible organizational structure that can help meet these goals, and (3) decide when and how to meet next.

Two-Year Goals
Examples of potential two-year goals discussed by the group include the following.

1. Increase the numbers of Centers of Academic Excellence in Information Assurance Education and Research and the Centers for Academic Excellence for Two-Year Institutions.
2. Develop a National Remotely Accessible IA/Comp Security Lab Infrastructure that would allow educators to focus on curriculum development and teaching without the need to focus on the mechanics of providing lab infrastructure. This lab environment can be used by colleges, universities and high schools that lack the resources to build and administer their own laboratories.
3. Identify the core competencies across five elements from PreK through 20+, revised every six months to remain current (e.g. produce the top 20 per element). Core competency is understood here to include cyber content, principles and/or standards. It is generally recognized by the Track 2 participants that much of this material exists. The goal will be to develop an agreed-upon structure for selecting the best current materials and updating these materials in a timely manner.
4. Develop a system of Scalable articulation. Articulation in this context is the process of comparing the content of courses that are transferred between postsecondary institutions. This goal envisions a structure that provides consistency across academic levels: Middle school to HS, HS to college, two year to four year schools and undergraduate to graduate programs. The transition between two and four year institutions is a significant challenge currently resolved primarily locally.
5. Develop, field, and promote methods for giving teachers access to best-in-class reaching materials, measuring the success of this through market penetration metrics. Ensure that the content provided

remains accessible and current. The participants in the Track 2 working group recognize that the success of this initiative will rely heavily on the awareness work being done in Track 1.

6. Train teachers using effective Career and Technology Education materials.
7. Make informal training materials available to instructors and community leaders. Existing networks that share affinities with the educational community can be leveraged for this purpose. The example proposed in Track 2 is to leverage the Girl Scouts of America to identify large numbers of dedicated, active mentors and scout leaders who are also educators. The materials provided to these individuals can form the basis of a train-the-trainer program that can reach both scout leaders and teachers nationwide. The DHS Cyber Ambassador program provides a model in pursuing this goal.
8. Clarify and describe the basic elements of 4 year college curricula in cybersecurity.

Governance

Federal government entities will remain engaged in the NICE working group as peers. This Federal group encourages the community at large to organize themselves around their shared cybersecurity education goals and interests. A 'big-tent' organization composed of individuals and institutions representing the full spectrum of stakeholders from across the non-Federal education, training, commercial, policy, and other sectors, could provide an effective partner for working with the Federal group towards shared goals.

Next Meeting

The group agreed that a goal of meeting again within the next 6 months is desirable to preserve momentum and ensure timely progress.

Guest Speaker

Ms. Meredith Fascett from Dept. of Labor introduced Vernon Ross, Jr. Director Talent and Org Capability at Lockheed Martin, Information Systems and Global Services; Vernon.ross@lmco.com. Mr. Ross spoke on the subject of Building a Cyber Security Workforce. Lockheed Martin implemented an innovative and successful Information Technology Apprentice Program that brings high school juniors and seniors into the company on a limited basis, provides training, places them on IT services contracts, and provides them with a career path into higher-level positions within the company. This apprentice program started in the Valley Forge, PA area and is now active in the Gaithersburg, MD area. There is also a program targeting Native American populations in Goodyear, AZ. The program works with partner high schools to identify a pool of 50 high-talent individuals from underrepresented populations. Out of this pool, approximately 25 students are selected. In their junior year they work at Lockheed Martin one day a week. In their senior year they work two days a week. Upon graduation they become full-time employees. Generally between 18 and 20 students successfully complete the program each year. Approximately 100 people have completed the program overall. The program also includes an orientation component for parents to ensure they understand the expectations and standards associated with the program. Student training is provided in partnership with Bucks County Community College and NOVA Community College, and students complete an Associate's Degree during the program. Mr. Ross identified five key areas for the success of this program: Learning and Talent mgmt., Leadership and workforce development, strategic development, and Engineering and Technology Development.