NJ Cyber Aces Academy

Brookdale Community College

A project funded through NSF SFS Grant DUE#1331170

Mike Qaissaunee

Ed Skoudis

September 17-19, 2013

"Someone's sitting in the shade today because someone planted a tree a long time ago."

– Warren Buffett

MOTIVATION:

To Align to and Help Support DHS Task Force on CyberSkills Recommendations

Objective III:

Radically expand the pipeline of highly qualified candidates for *technical mission-critical* jobs through innovative partnerships with *community colleges*, universities, *organizers of cyber competitions*, and other federal agencies.
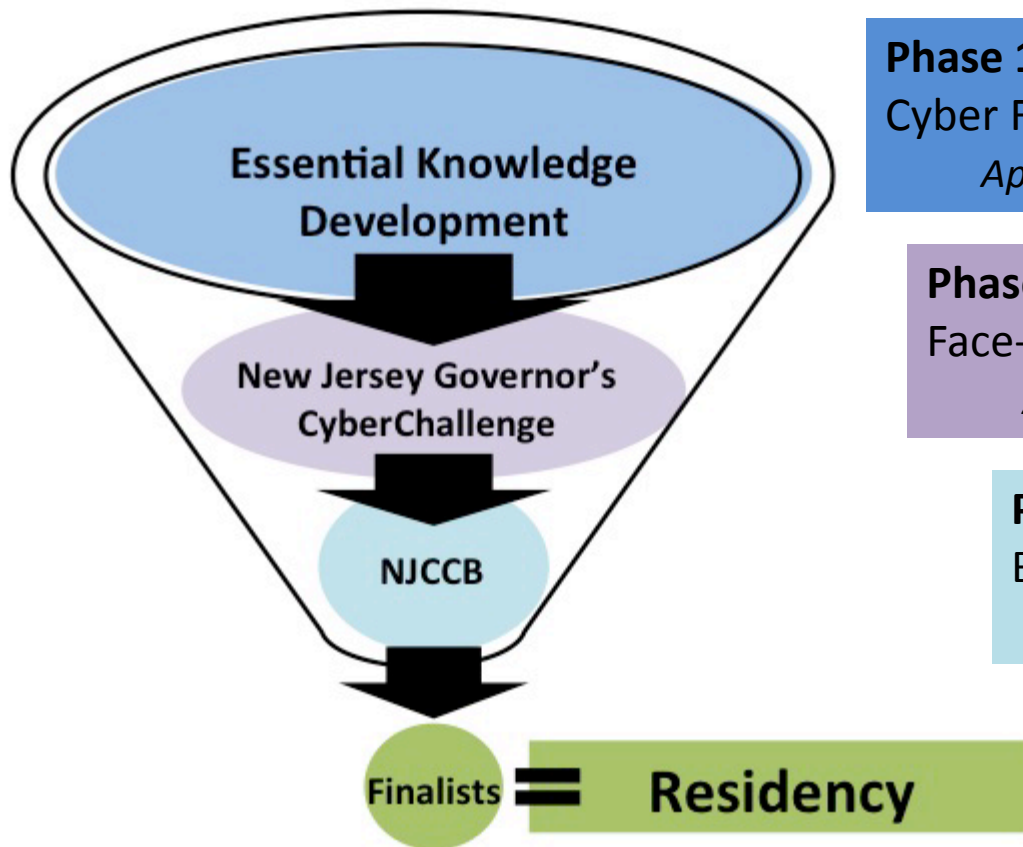
- **Recommendation 6:** Establish a two-year, community-college-based program that identifies and trains large numbers of talented men and women to prepare them for mission-critical jobs in cybersecurity (Page 17).

- **Recommendation 7:** Raise the eligibility criteria for designation as CAE and SFS schools to ensure that graduates are prepared to perform technical mission- critical cybersecurity jobs (Page 19).

- **Recommendation 8:** Launch a major, sustained initiative to enhance the opportunities for U.S. veterans to be trained for and hired in mission-critical cybersecurity jobs (Page 21).

Objectives I and V:

- **Objective I:** Ensure that the people given responsibility for mission-critical cybersecurity roles and tasks at DHS have demonstrated that they have high proficiency in those areas.

- **Objective V:** Establish a "CyberReserve" program to ensure a cadre of technically proficient cybersecurity professionals are ready to be called upon if and when the nation needs them.

4 Phase NJ Cyber Aces Academy Pilot

Essential Knowledge Development

New Jersey Governor's CyberChallenge

NJCCB

Finalists = Residency

Phase 1
Cyber Foundations Training & Quizzes
Approximately 250-300 people for pilot

Phase 2
Face-to-face NetWars Competition
Approximately 50-75 people for pilot

Phase 3
Brookdale Curriculum & SANS Training
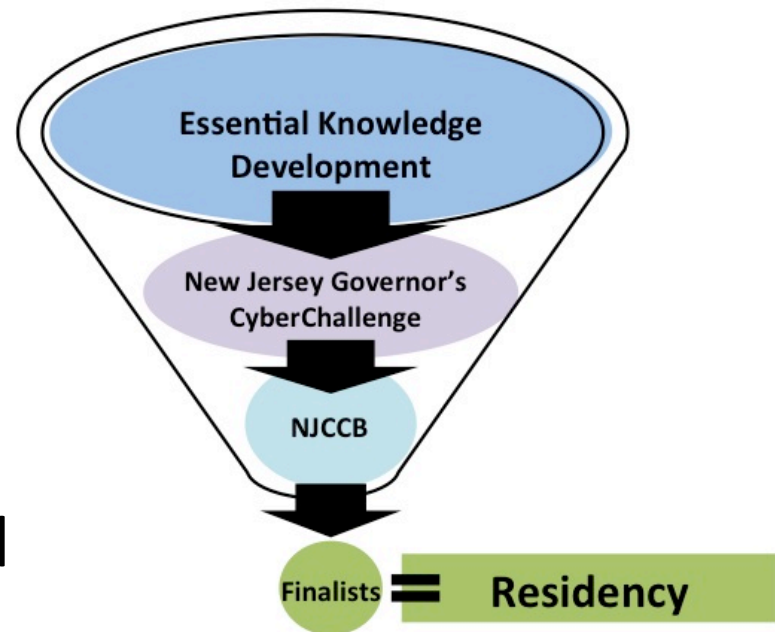*Approximately 10-30 people for pilot*

Phase 4
Placement at Residency
Approximately 5-8 people

4 Phase NJ Cyber Aces Pilot

Participants who **do not** move to the next level **still have useful skills**

The **program will help place them** with State, Federal, and commercial organizations

After the pilot,

we plan to scale **two-to-five** times larger

Phase 1
Cyber Foundations Training & Quizzes

Plan: *Approximately 250-300 people for pilot*

Actual: *233*

Cyber Foundations Program: Entry to the Funnel

- Cyber Foundations is designed to prepare students in the fundamentals of information technology:
  - Networking (TCP/IP, routing, DNS, etc.)
  - Operating Systems (Windows and Linux config and usage)
  - System administration for the enterprise (scripting with Bash, PowerShell, Perl, PHP, and more)

Cyber Foundations Program: Entry to the Funnel

- Cyber Foundations consists of:
  - Written training materials
    (with hands-on exercises and links to related videos)
  - Streaming audio and slides
    (through AuthorStream)
  - Three on-line, competitive quizzes, offered every other week
  - Whole program takes 6 to 7 weeks to complete across the Internet

- We offer it in the Fall and Spring each academic year
  - Just finished our fifth bi-annual run with over 1,500 high school students

- Direct linkage to existing Brookdale courses (supplementary)

Phase 2
Face-to-face NetWars Competition

**Plan:** *Approximately* **50-75** *people for pilot*

Actual: **63**

NJ Governor's CyberChallenge

March 23, 2013

Top Cyber Foundations (Phase 1) participants will compete in a face-to-face NetWars challenge, the system used by the US Military, US Government agencies, and many commercial companies to evaluate and train their people

- Verify participants really have capabilities and skills
- Give program organizers a chance to meet participants
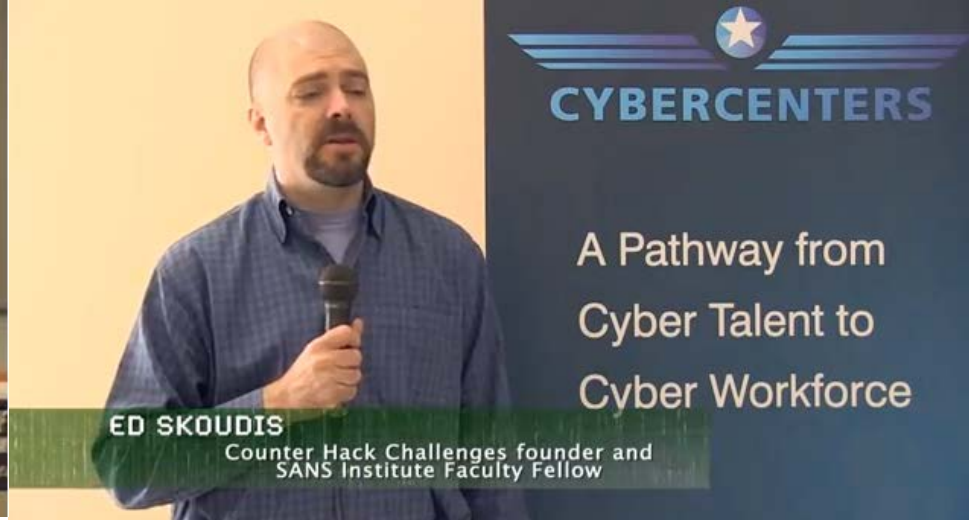
http://www.youtube.com/watch?v=D5Msf_stdJ4

Phase 3

Brookdale Curriculum & SANS Training

Plan: *Approximately 10-30 people for pilot*

Actual: *12*

PHASE 1

233
Essential Knowledge
Development

104
Invited

NJ high school juniors
and seniors; college
students (2-yr., 4-yr.,
graduate); veterans,
long-term unemployed

PHASE 2

63 Compete
NJ Governor's Cyber Challenge

25
Interviewed

PHASE 3

12
NJCAAB

PHASE 4

Finalists = Residency

Phase 1 Demographics

Breakdown for NJ Winter	Registered	Quiz 1	Quiz 2	Quiz 3
NJ number of quiz takers/registrants	**613**	**233**	**149**	**108**
Job seekers	127	44	28	20
HS junior or senior	182	83	55	44
College student	207	85	53	37
Military – long term veteran	46	13	7	5
Military – recently returned	20	6	5	2
Military – active	31	2	1	0

Curriculum

BROOKDALE COMMUNITY COLLEGE **+** SANS
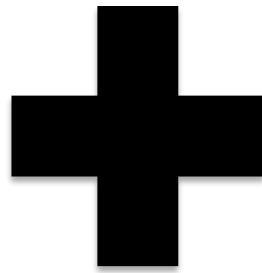
NJCCB
New Jersey Cyber Aces Academy at Brookdale

Immerse the "winners" **(top 10-30)** of the NJ Governor's CyberChallenge competition in rigorous and intensive Cyber Security curriculum.

The pilot of the NJ Cyber Aces Academy program will utilize existing Brookdale courses and established SANS Institute training (available at a significant discount and further subsidized by a SANS grant), taught via distance learning across the Internet.

BROOKDALE
COMMUNITY COLLEGE

NJCCB
New Jersey Cyber Aces Academy at Brookdale

Brookdale faculty, local SANS faculty, and industry experts will supervise the training, provide support to the students and meet periodically with the students to ensure their progress.

NOTE: Beyond the pilot, the Program can opt to continue the use of SANS training or substitute an alternate training organization that provides the same skills at a comparable quality to ensure consistency of the program

BROOKDALE COMMUNITY COLLEGE

Requirements

General Education – 20 Credits

Career Studies – 40 credits as follows:

NETW 106	Introduction to Networking	3
NETW 107*	Introduction to Security	3
NETW 110*	Introduction to UNIX Network Administration	3
NETW 111**	UNIX Network Administration II	4
NETW 125**	Introduction to Wireless	3
NETW 151*	Router Internetworking/CCNA	6
NETW 152**	Virtual LANs and WANs/CCNA	6
NETW 190*	MCTS Guide to Microsoft Windows	3
NETW 191**	MCSE Managing and Maintaining a Microsoft Windows Server	3
NETW 243	Computer Repair & Maintenance	3
NETW 253**	Juniper Network Routers	3

Linked to Cyber Foundations

Most of the courses are ~ 50% hands-on

Courses delivered online, face-to-face, and hybrid.

NJCAAB Curriculum

In addition to the normal course of study for an associate degree, these individuals will be immersed in a program of information security courses to prepare them for part-time work during and full-time work immediately following completion of the course of study.

NOTE: For a BCC student, completion of the entire Program requires nine courses (four from BCC and five from SANS)

Curriculum

Secure Configuration

Penetration Testing

Advanced Forensics

Step 2: 3 courses in one of 3 areas of focus

Step 1: 2 core courses:

- **SEC401:** Security Essential Bootcamp Style
- **SEC504:** Hacker Techniques, Exploits and Incident Handling

Secure Configuration

SEC502: Perimeter Protection In-Depth

SEC505: Securing Windows and Resisting Malware

SEC506: Securing Linux/Unix

Penetration Testing

SEC560: Network Penetration Testing and Ethical Hacking

SEC542: Web App Penetration Testing and Ethical Hacking

SEC575: Mobile Device Security and Ethical Hacking

Advanced Forensics

SEC408: Computer Forensic Investigations-Windows In-Depth

SEC508: Advanced Computer Forensic Analysis and Incident Response

SEC610: Reverse-Engineering Malware: Malware Analysis Tools and Techniques

SANS Virtual Mentors E-Mail Format:

Subject should include class number and section or topic question:

Subject: 401-Three Way Handshake Question

Body of e-mail should include details of what you need/question

Lab Weekends

- Build hands-on skills
- Conduct research
- Build camaraderie
- Building skills and publishing our findings

Stick Time

Focus on hands-on skills

Each course 35 to 50 % hands-on labs

Plus supplementary labs

Phase 4

Placement at Residency

Approximately 5-8 people

Objective for
NJ Cyber Aces Academy Residency

Build a cohort of ***workplace-ready*** Cyber Warriors by combining the foundational knowledge and technical expertise developed in Phases 1, 2 and 3, with Phase 4 – placement of highly-qualified students into a ***real-world, hands-on*** learning environment modeled after medical student residencies.

Residency Program

Place the top 5–8 students in Residencies at BCC-partner businesses or other appropriate locations nationwide.

These are paid positions where the student works on real-world projects in a team with experts to meet clients' needs and develop actual hands-on experience in a cyber security job.

Residency Program

Students will work under the supervision of practicing cyber security professionals and have actual deliverables associated with projects in digital forensics, attack analysis, vulnerability assessment, penetration testing, and other critical areas of cyber security.
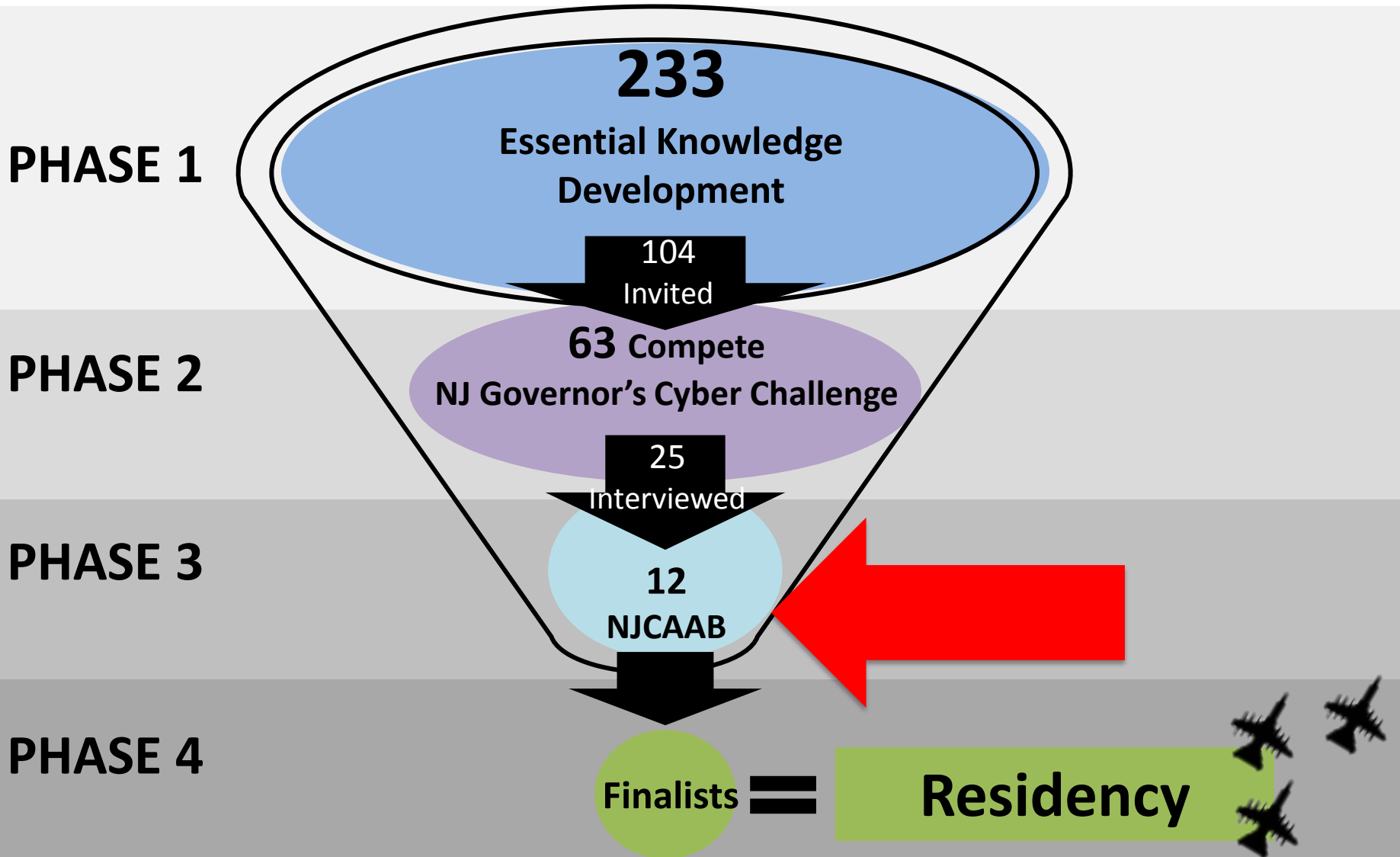
Residency Program

Each resident will be assigned a coach to provide supervision and guidance regarding project work, further skill refinement, and career development.

We will monitor the residencies and conduct assessments and skills validations.

Conclusion

Pilot is underway:

- **Phase 1** ended 1/15/13
- **Phase 2** March 23, 2013
- **Phase 3** Underway
- **Phase 4** (Residencies) will begin as soon as possible

We will document the entire process and lessons learned to share with other institutions.

Contact Info

Ed Skoudis

ed@counterhack.com

Mike Qaissaunee

mqaissaunee@brookdalecc.edu