SESSION ID: PROF-W02

MEETING BUSINESS NEEDS BY FILLING THE CYBERSECURITY SKILLS GAP

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It Took Me a While, But I Began to Wonder...

Source: SANS 2016
Why Do Some Do So Much Better Than Others?

- 1579 breaches in 2017
  - What did the other 8,400 of the F10000 do differently?
  - (1091 in 2016)

- On average, 113K records exposed per breach
  - What did those who limited breach size do differently?
  - (Average = 33k in 2016)

- Almost invariably, the organizations with the least cyber incident impact have the strongest CISOs and security teams.

Source: Identity Theft Resource Center
The Gap is More About Quality than Quantity

55% of respondents report that practical, hands-on experience is the most important cyber security qualification.

25% of respondents say today’s cyber security candidates are lacking in technical skills.

45% of respondents don’t believe most applicants understand the business of cyber security.

69% of respondents indicate that their organizations typically require a security certification for open positions and most view certifications as equally, if not more, important as formal education.

Source: ISACA 2017
Is it possible to find young people with the DNA to become elite cyber pros, even if they don’t think they qualify? - Alan Paller

Can adults be found who will develop into cyber elite? How quickly can you develop them? What about those who have no IT backgrounds? - James Lyne

What did you discover when you tried some of these ideas at Montgomery College (Maryland)? And where do you go next? – Joe Roundy
ALAN PALLER – SANS
FINDING TALENT EARLY
CyberStart – The “Game”

• **Finds talent** in young people – even those who didn’t think they were capable.

• The game **delights** young people who are curious, **tenacious**, fast-learners

• The Field Manual, hints and search tips enable it to work everywhere, without onsite support – **non-techy schools / rural schools / kids at home**

• **Motivates an interest in cybersecurity** and STEM careers

• **Teaches the foundations of cybersecurity**
Evidence: Finds talent—even if they didn’t think they were capable.

• I am a girl who has been put down many times for her “lack of skill” in a field dominated by boys. This game has given me the confidence to know that I know what I am doing and to be with other amazing young women who share my passion and interest for cyber security.

• Before I recruited girls to be a part of this wonderful program I struggled to get girls to realize they could be computer scientists. I had girls actually saying they were too stupid to do this until I said, “Just try it”. Some of my girls found out they were good at puzzles, some found out they liked programming. I now have girls asking our counselor about computer science degrees.
Motivates an interest in cybersecurity and STEM careers

Key Finding: Girls’ STEM Career Interest Doubled

• Many of the girls at my school who participated in this contest are now interested in looking into cybersecurity for a career. This contest gave them the “why” and the “how to use this knowledge” that they needed to get them extremely excited about computer science.

• You have motivated me to pursue cybersecurity as a possible career and believe that I actually have a chance to succeed.
Delights tenacious, curious, fast-learners

• Thanks for giving our students an opportunity to try something completely new and discover that they are smarter than they think. My students were completely engaged and requested that we work on Saturday because they were enjoying it so much. They would dig for hours and were thrilled when they solved a difficult problem. Several times they expressed that it was really fun and they really learned a lot.

• The final weekend of the challenge was the beginning of our school vacation week. Three of the four girls spent most of Saturday and Sunday in my classroom with me! There aren’t too many things that would get high school students to sacrifice two days of vacation to work on education!
Rural schools / non-tech savvy schools

• Thank you so very much. My students were able to participate in something they normally would have no knowledge of in our rural area. At first, they were unsure they could even figure any of it out. By the end, they were yelling and jumping up and down as they finished a challenging section and moved on to the next. They were so sad the time ran out on this experience.

• In my high school, there are rarely any opportunities like this where someone like me who knows nothing about cybersecurity gets to learn about it and love everything about it. I hope that an opportunity like this will come again to not only me, but all those who have been waiting for this golden opportunity in their lives.
Teaches the foundations of cybersecurity

• The team from Padua Academy – Wilmington DE
• 7th ranked team out of 2,700 teams in 16 states
• Youngest player on the team at Women in CyberSecurity Conference in Chicago
College Students, too.

- You can't imagine how much this helped me improve my skills in multiple programming languages, and understanding what cybersecurity really is. (Chioma Nwizu, College Freshman)

- This program taught me more than an entire semester in college (Ryan Nakata, College Junior)

- I learned how to reverse-engineer stripped binaries! (Iowa College Junior)

- This was amazing. Even as a 5th year computer science student I was learning new things. I especially liked how it encouraged you to do the research necessary to solve the problems: it didn’t just teach you how to do everything. (Jordan Newton, George Mason University)

91% of students who said they had not considered cyber as a career, said they would after having played CyberStart.
Thank you for allowing girls in our state to have this exposure that we are not receiving in school. You have motivated me to pursue cybersecurity as a possible career and believe that I actually have a chance to succeed. You have motivated me to continue.

Before I recruited girls to be a part of this wonderful program I struggled to get girls to realize they could be computer scientists. I had girls actually saying they were too stupid to do this until I said, "just try it". Some of my girls found out they were good at puzzles, some found out they liked programming. I now have girls asking our counselor about computer science degrees at our local community college.

Thank you so much for this program! I am a girl who has been put down many times for her "lack of skill" in a field dominated by boys. This game has given me the confidence to know that I know what I am doing and to be with other amazing young women who share my passion and interest for cybersecurity. I am truly grateful to be a part of this game and to be given this opportunity to learn more! Thank you, thank you, THANK YOU! Thank you for showing us that we are capable of anything boys can do.

You have motivated me to continue pursuing this as a possible career and believe that I actually have a chance to succeed.

Thank you for this opportunity. I had no idea what I wanted to do with my life and now I do thanks to this program.
JOE ROUNDY – MONTGOMERY COLLEGE (MD)
Montgomery College (MD) Pilot Program: Lessons Learned

1. Used CyberStart to select students

2. We invited Cybersecurity and Networking, degree seeking students to try CyberStart – 80 accepted the offer

3. Set eligibility score at level 6 and a minimum score of 12,000; 32* achieved that; 28 enrolled; 23 had/have A or B. *wanted more time!

4. Lesson 1: They were different from other students I teach.
Montgomery College (MD) Pilot Program: Lessons Learned

1. Used CyberStart to select students

2. Taught CyberStart Essentials Live

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<thead>
<tr>
<th>Category/Topic</th>
<th>Level</th>
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<tbody>
<tr>
<td>Linux</td>
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<tr>
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<td>Programming</td>
<td>4</td>
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<tr>
<td>Common Attacks</td>
<td>4</td>
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1. 15 weeks – all five essentials - Fall’17 and Spring ‘18
2. Really challenging to teach all that in 15 weeks
3. Found online CyberStart Essentials (CSE) covered 40% more with built-in labs.
4. All my students now started CSE
5. Lesson 2: Even a skilled teacher won’t benefit students by trying to cover all the Essentials.
January 17, 2018
Maryland State Government Announces EARN Grant

1. $1.2 million in scholarships
2. Two SANS immersion courses – one in residential academy; one on-demand
3. Two corresponding GIAC certifications
4. Employer participation to maximize rapid placement with great employers
5. 10 of my students have already applied.
6. Lesson 3: Maryland is willing to invest in programs that put their most talented citizens into important, high-paid jobs.

Win Maryland EARN Scholarship for the Immersion Cyber Academy
- SANS immersion training and certification exams
- Proven for Veterans and Women

"Completing the SANS VetSuccess Academy not only influenced my career plans, it defined them. The education and certifications opened doors that were inaccessible to me otherwise, short of winning the lottery. In fact, being selected into the inaugural cohort was a "hitting the jackpot" moment for me." - Ed Russell, NTT Security, retired USAF SM Sgt
MARYLAND CYBER FAST TRACK: MOVING TALENTED STUDENTS INTO IMPORTANT CYBER JOBS - FAST
Free, open to all Maryland community college students

1. **Discover if you like cyber**

CyberStart: the Game

- "The most fun I have had learning."  
  (Adam, community college freshman)
- "I loved CyberStart challenges – the coolest game I ever played."  
  (Frank, community college)
- "Taught me a lot and proved cybersecurity wasn’t too hard to learn."  
  (Mariana, college sophomore)

2. **Master the essentials**

CyberStart Essentials Course

- "This course helped make it possible for 51 people with no IT security experience to master more advanced cybersecurity courses and get good cyber jobs."  
  (UK Cyber Retraining Academy director)

3. **Demonstrate Maturity and Employment Readiness**

CyberStart Interviews

- "We now hire cyber people only if they have mastered the essentials. Without those skills they are useless in technical roles."  
  (CISO, multi-Billion Silicon Valley tech leader)

4. **Win Maryland EARN Scholarship for the Immersion Cyber Academy**

- $15,000 worth of SANS immersion training and certification exams

A Maryland Cyber initiative supported by the SANS Institute
MARYLAND CYBER FAST TRACK: MOVING TALENTED STUDENTS INTO IMPORTANT CYBER JOBS - FAST
Free, open to all Maryland community college students
No previous cyber or IT experience required
More than 340 fun challenges protecting real-world bases
Available completely online
Everything you need is in the online Field Manual
Hints keep you moving when you get stuck
Learn the foundations of cybersecurity while you solve the challenges
Both women and men excel in the game
See more at cyberstart.us

1. Discover if you like cyber
2. Master the essentials
3. Demonstrate Maturity and Employment Readiness
4. Win Maryland EARN Scholarship for the SANS Immersion Cyber Academy

CyberStart: the Game

CyberStart Essentials Course

Category/Topic | Level
--- | ---
Linux | 4
Windows | 2
Computing | 3
Networking | 5
Programming | 4
Common Attacks | 4

"This course helped make it possible for 51 people with no IT security experience to master more advanced cybersecurity courses and get good cyber jobs." (UK Cyber Retraining Academy director)

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CyberStart Interviews

You have demonstrated you are in the top 2% of all Maryland students studying cybersecurity
Cool employers in Maryland and Silicon Valley need you.
Interview via teleconference or in person
Demonstrate you would be a credit to their organization if selected
If at least one partner employer says "We have job openings and that person would be at the top of our short list if s/he does well on SANS exams," you win an EARN Scholarship

OPEN TO HIGH ACHIEVERS FROM THE GAME
OPEN TO HIGH SCORERS ON THE NATIONAL CYBERSECURITY ESSENTIALS EXAM

$15,000 worth of SANS immersion training and certification exams
- Raises your skills to the next level.
- Take GSEC course live at a SANS conference and GCIH online
- Exactly the same training and certification used by top cyber professionals in military and industry
- Covers certification exam costs, too.
- 91% placement rate of all SANS Cyber Academy graduates as of April 2018
Q&A

You have Questions
We have Answers
Resources

- CyberStart - [https://www.sans.org/cyberstart](https://www.sans.org/cyberstart)
- Vet Success - [https://www.sans.org/cybertalent/win-the-war-for-cybertalent](https://www.sans.org/cybertalent/win-the-war-for-cybertalent)
- Montgomery College Cyberlab - [http://cms.montgomerycollege.edu/cyberlab/](http://cms.montgomerycollege.edu/cyberlab/)