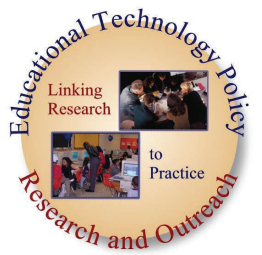
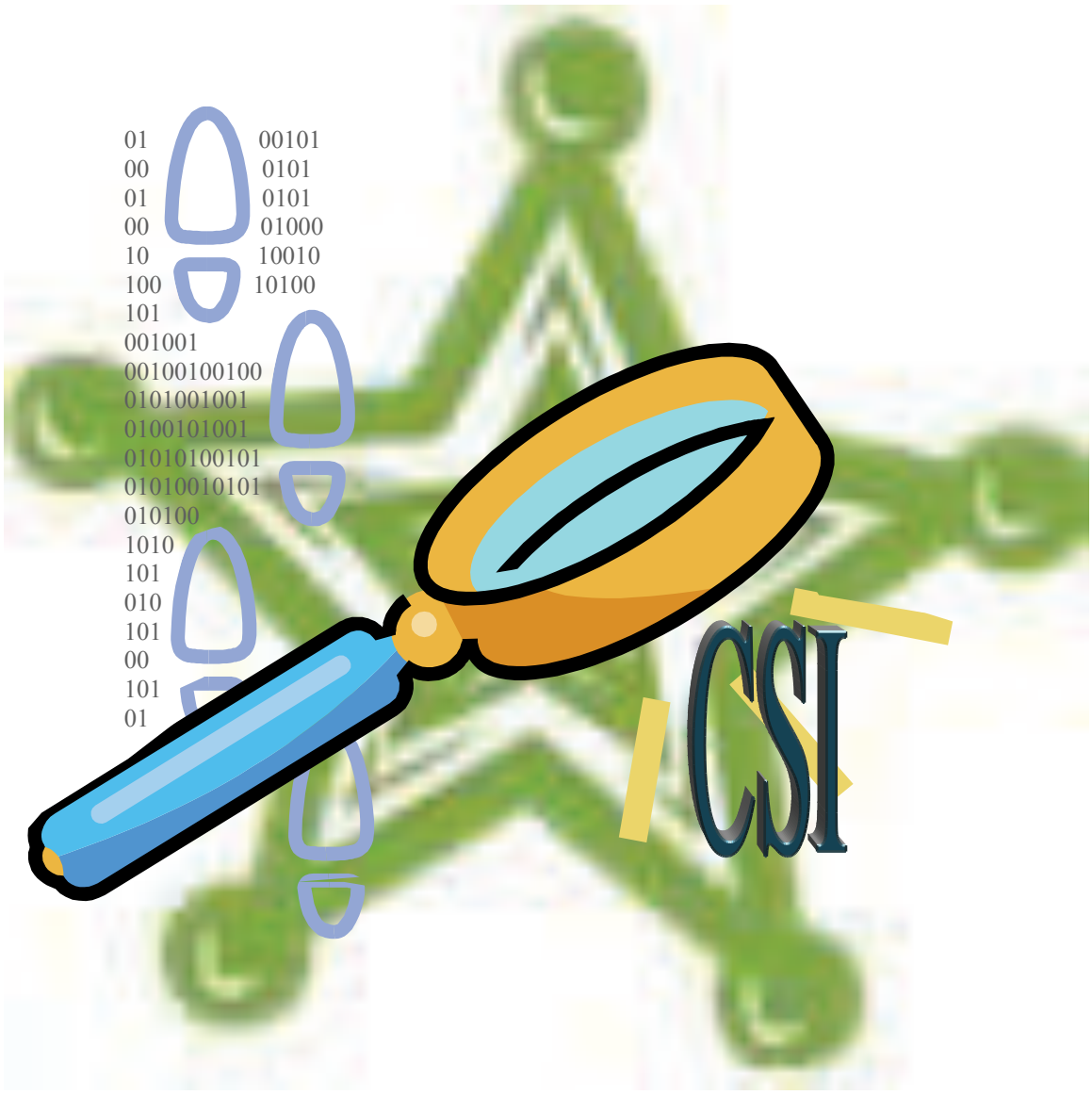


# Cool Careers for Girls in Cybersecurity 2010

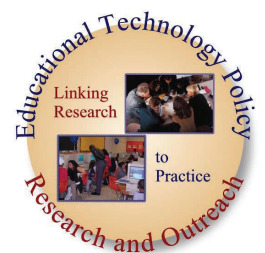




Middle school girls become Celebrity Stalker Investigators (CSI) for a day to solve a cyberstalking crime.

During this interactive crime solving event, girls learn from women in companies and agencies throughout the state what it takes to navigate the professional pipeline in the vast fields of Cybersecurity and Information Assurance, as well as other science, technology, engineering, and mathematics (STEM) fields.

The 2010 event will be held October 29, 2010 at the National Electronics Museum from 10 a.m. until 1:30 p.m.





# Agenda

Arrival - 9:30 a.m.

Explore National Electronics Museum and  
Meet Cyber Career speakers

9:30--10:00:

Welcome and setting the stage for scenario and activities  
Break into groups of 10 and complete 4 activities

10:00-10:30: Activity 1

10:30-11:00: Activity 2

11:00-11:30: Activity 3

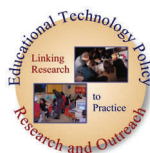
11:30-12:00: Activity 4

12:00-12:30: Lunch & booth exploration

12:30-bus pickup:

Solve the crime together with the lunch speaker: Careers in  
Cybersecurity.

Tour of Museum





## Activity Summary

Girls break into forensic teams of 10 and will complete 4 of the following activities.

### Cell Phone Forensics:

Students will use a SIM card reader to retrieve deleted files from a cell phone. This can lead to a discussion about secure communications or the permanence of digital information.

### Cryptography:

Students will decrypt a message using a frequency chart and cryptography wheel. Students will learn the importance of encryption in every day life: UPC, credit card transactions, and texting.

### Wireless:

Students will access a wireless data stream and investigate the data. The vulnerability of wireless technologies will be connected to instruction on how to identify safe wireless hotspots.

### Robotics:

Students will program a "human robot" to retrieve a package. This activity links to a conversation about the many disciplines required for a successful robotics program including: electrical, and mechanical engineers and mathematicians and computer scientist.

### Malware:

Students will perform diagnostics on a machine and find a key logger. Risky behaviors that put student data, information and identities in jeopardy will be explained.

### Steganography:

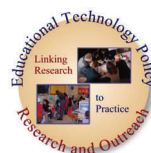
Students will use diagnostic tools and skills to determine if photographs have been altered. Connections to digital forensic investigations will be explored.

### Computer Hardware

Students will assemble a computer. Students will name the part and function of each computer part.

### Logic

Students will solve logic puzzles use Venn diagrams and make logical arguments. The principals of logic and solving puzzles will be connected to careers that use these skills.



# Cool Careers for Girls in Cybersecurity

## 2010



### Scenario

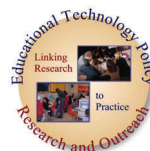
NEWS FLASH!!!! Teen Idol and star of the successful movie series *MiFi Musical*, Crisp Rollins has entered hiding as a result of several disturbing pictures that have surfaced on the Internet. These pictures were taken from behind the walls of his personal compound on his the remote island just off the coast of Washington State. Evidence found on Mr. Rollin's island indicated that the person who took these pictures may have intended foul play. Mr. Rollins' representative has released the following statement,

“Crisp's physical welfare is of utmost concern to the studios and his personal team. While he remains safe, this obvious invasion of privacy has left us shaken. Crisp thanks all his fans for their support and he remains in touch with them on his twitter account to reassure them he is doing great. He will see them all soon when this is resolved. We trust that the all female elite team of the Cyber Stalker Investigators (CSI) will have this resolved very soon because Crisp fully intends to attend the premier of his latest film *MiFi Musical V*.”

The all female elite team of Celebrity Stalker Investigators (CSI) is Hollywood's answer to the increasing number of Cyberstalking incidents plaguing entertainers. Celebrity representatives have been educating the stars to use complex passphrases, firewalls, malware scanning programs and frequent updates to their software and operating systems. But this effort has been met by stronger social engineering efforts on behalf of the cyberstalkers. It appears that celebrities are easily tricked into clicking on links in their emails and opening attachments. A new education campaign has begun to help eradicate the effectiveness of these social engineering methods.

The all female elite CSI team investigating the Crisp Rollins Cyberstalking incident has reported that they are using a variety of digital forensics tools and techniques to find the perpetrator of this heinous crime. They have recovered deleted files from a discarded cell phone, monitored the suspect's wireless communications and are decrypting some notes found at the scene of the crime. It is also rumored that sophisticated robotics have been used to collect evidence. A keystroke logger has been discovered on Crisp's laptop so biometrics interventions are being implemented to secure Crisp's technology. The CSI team has also said that the hard drive from a machine recovered from the boat used to access the island is currently missing. “This hard drive has crucial evidence that will reveal the identity of our cybercriminal; finding it is our top priority.”

Stay tuned to CyberEntertainment TV for more information on this developing investigation.



# Cool Careers for Girls in Cybersecurity

2010



## Suspects



### *Irvin Marvin Innocent (Alias: I. M. Innocent)*

Owns the boat used to access the island. Everyone on the mainland has said that I.M. always complains that Crisp talks too much and always wants to drive the boat when I.M. takes Crisp to his private island.

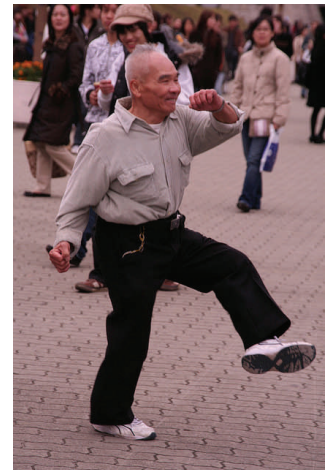
I.M. claims he was at the dentist the day of the pictures were posted

### *Crisp “The Man” Rollins (Celebrity Impersonator)*

This aging actor has made a living performing songs dressed as what Crisp Rollins would look like at 80

He claims he does not need to stalk Crisp... He IS Crisp.

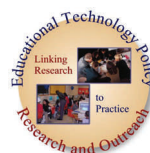
Claims he was napping before heading out to the early bird special at the Hollywood Diner <http://www.flickr.com/photos/crschmidt/3039527699/>



### *Crystal Light (Ultimate Fan-Girl)*

This crazed teen has made no secret of her Crisp Rollins obsession. She has been kicked out of the Crisp Rollins fan club for posting Crisp Rollins’s hotel room number on the fan website. She has started her own fan site and the pictures appeared here first.

Claims she was grounded and her laptop was taken away the day the pictures were posted. <http://www.flickr.com/photos/vithassan/3505239856>



# Cool Careers for Girls in Cybersecurity 2010



## Steganography

**Duration:** Each student session last for 30 minutes. Students will have a few minutes to travel to their next session.

### Session Overview:

The pictures that were found online were altered. Investigators will look at the pictures to determine if there are any clues in the changes which were made to the pictures.

### Objectives:

- Use software to look for altered pictures
- Inspect altered images for clues to the criminal's identity

### Materials/Supplies (include AV needs):

- Computer or Laptop
- Image files

### Introduction:

The students are sure to know about ways to use Photoshop to alter images. But how does an investigator determine what has been changed? Ask the students for ideas – forensic programs, dates in the properties, file sizes, prior images that are almost the same.



# Cool Careers for Girls in Cybersecurity 2010



## Steganography

### Lesson:

Ask the students to record what they see when they.

Right click the image and look at the properties.

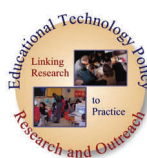
Compare the file sizes of the images to some other existing photos

Compare the photos to other existing photos and make observations about the photos

If time and technology permits, look at the photo using a forensic program.

### Final Thoughts:

Be skeptical about what you see online. Images are easily altered and some contain payloads with executable files which can damage your computer.







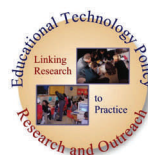
## Steganography

Clue: The picture turns out to be a composite of pictures that are publically available online. A home magazine published the picture of the island, and the picture of Chip was photo-shopped out of a beach shot from a teen magazine.

Resources:

Career Connection Notes (make notes here about how you connect this activity to your job and the organization/corporation/agency where you work):

Helpful Hints/Lesson Learned (suggestions for the future presenter of this lesson):





## Steganography

Clue: \_\_\_\_\_

\_\_\_\_\_

CyberCareer: \_\_\_\_\_

\_\_\_\_\_

What is cool about this job?

\_\_\_\_\_

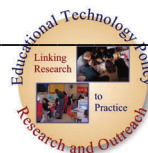
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# Cool Careers for Girls in Cybersecurity 2010



## Master Clue Sheet

### Cell Phone Forensics:

This cell phone will have some deleted texts about how the owner wanted to move to live on Chip Rollins' private island. ("today just wanna move 2 chipzI sland mom making me crazy!") And another text that said that the owner wants to marry Chip Rollins. (Gonna b mrs chip R 4-srue!!)

### Cryptography:

The decrypted note says: The password to Chip Rollins boat dock is rockon

### Wireless:

The suspect is using his/her computer and is using an unencrypted chat/instant message service. Part of the stream includes this quote: I am being watched by the police, I am not sure what they are looking for but I don't want them to know anything!!!

### Robotics:

When the box is opened it just contained packing materials, from an order of fishing lures that were ordered by I.M. Innocent. The return address label confirms that the box was shipped to I.M.

### Malware:

The keylogger was installed when Chip looked at pictures of cute cats in his email. It recorded everything he typed ever since it was installed. The information was sent to an IP address in China.

### Steganography:

Students will use diagnostic tools and skills to determine if photographs have been altered. Connections to digital forensic investigations will be explored.

### Computer Hardware

The pieces of the computer were found scattered around I.M. Innocent's boat. They had fingerprints from I.M., Chip, and several of the security personnel. I.M. has said that the pieces of hardware were gifts from Chip. I.M. said that chip gives him the parts when he upgrades his hardware, I.M. had not yet had the time to put the parts into his existing desktop computer.

### Logic

Students will solve logic puzzles use Venn diagrams and make logical arguments. The principals of logic and solving puzzles will be connected to careers that use these skills.



# Cool Careers for Girls in Cybersecurity 2010

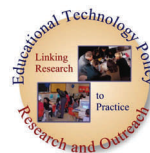


## Crime Wrap-Up

1. Call the girls back together.
2. Explain to the girls that the forensic team's role is to report the facts gathered from the evidence it is not to make a conclusion from the fact of the case.
3. Review the clues from all of the speakers
4. Record the clues on chart paper, or type the clues into a computer connected to an overhead projector.
5. Discuss the clues from the perspective of an analyst.

While the evidence seems to point to I.M. Innocent, there is still not enough evidence. The crime is not solvable at this point but students should consider that it is possible that no one was on the island at all. The key logger points away from all the suspects and the pictures found on the internet appear to be photo shopped. The threatening messages that Chip received may just be one of the many he receives every week.

1. Students should be reminded that forensic investigators just report the facts of the evidence and do not make the conclusions and their reports will be turned over to the detectives.
2. Thank the forensic teams for their work.



# Cool Careers for Girls in Cybersecurity 2010

**Middle School Girls!  
Join the Celebrity Stalker  
Investigations (CSI) team for a day  
solving a Cyberstalking crime**

**Date: 10/29/2010**

**Time: 10 a.m. to 1:30 p.m.**

**Where: National Electronics  
Museum**

**In order to solve a  
Cyberstalking crime the  
elite all girl CSI teams will**

- **assemble a computer and**
- **use digital forensics tools**  
**on**
  - **cell phones**
  - **wireless data  
streams**
  - **hard drives and**
  - **pictures**



## SPONSORS

T-Shirts and lunch provided to all participants thanks to the generous sponsorship of the following organizations



### Details

National Electronics Museum  
1745 West Nursery Road  
Linthicum Hts., MD 21090

Contact the coordinator at your school for more information or email [dpruitt@edtechpolicy.org](mailto:dpruitt@edtechpolicy.org)

**During this interactive crime solving event, girls learn from women in companies and agencies throughout the state what it takes to navigate the professional pipeline in the vast fields of Cybersecurity and Information Assurance.**

Name \_\_\_\_\_

School \_\_\_\_\_

T-shirt Size: S    M    L    XL

Box Lunch Choice (circle one)

Turkey            Roast Beef            Vegetarian