



# Hacker Heroes: Building The Next Generation Of Hackers

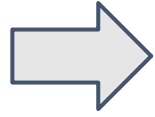
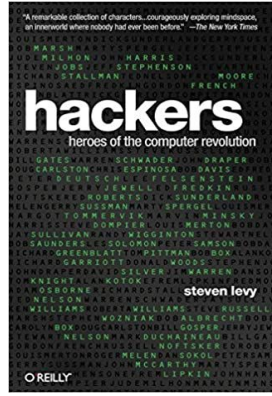
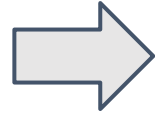
*Humanizing Cyber Security and Hacking...*



Paul Asadoorian

Founder, Security Weekly

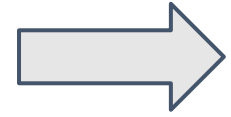
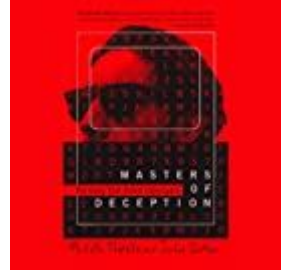
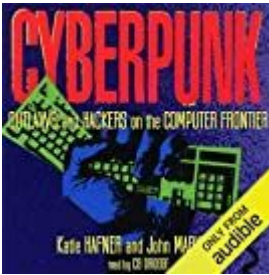
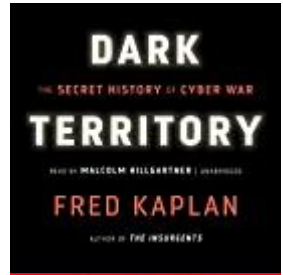
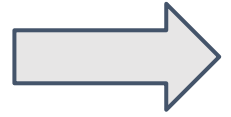
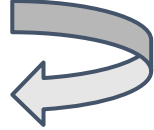
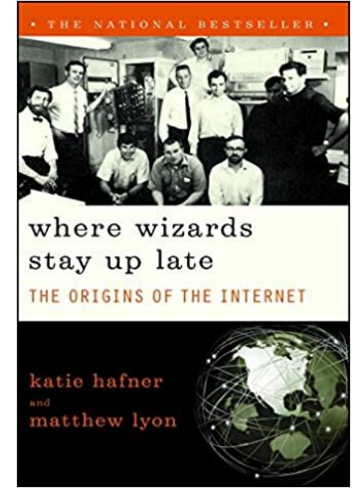
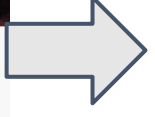
Chief Innovation Officer,  
CyberRisk Alliance



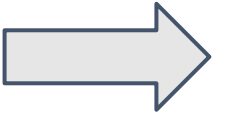
### Hacking Is... (A definition of Hacking From a Hacker's Perspective)

By Paul Asadoorian

"Hacking is satisfying one's curiosity. Hacking is finding a way to accomplish a goal, never accepting no for an answer, and being more persistent and patient than anyone else. Hacking..."



This Talk



?

# What is Hacking?

## Services curtailed

# Telephone hackers active

By Henry Lichstein

Many telephone services have been curtailed because of so-called hackers, according to Professor Carlton Tucker, administrator of the Institute phone system.

Stating "It means the students who are doing this are depriving the rest of you of privileges you otherwise might have," Prof. Tucker noted that two or three students are expelled each year for abuses on the phone system.

The hackers have accomplished such things as tying up all the tie-lines between Harvard and MIT, or making long-distance calls by charging them to a local radar installation. One method involved connecting the PDP-1 computer to the phone system to search the lines until a dial tone, indicating an outside line, was found.

Tie lines connect MIT's phone

system to many areas without a prorata charge. Among the tie-lines discovered have been ones to the Millstone Radar Facility, the Sudbury defense installation, IBM in Kingston, New York, and the MITRE Corporation.

### Tucker warns hackers

Commenting on these incidents, Prof. Tucker said "If any of these people are caught (by the telephone company) they are liable to be put in jail. I try to warn them and protect them."

While Tucker felt "we don't have too much trouble with the boys; we appreciate their curiosity," he also said that repeated involvement, for instance, caused the expulsion from the Institute of one member of the Class of '63 one week before his graduation.

Because of the "hacking", the majority of the MIT phones are "trapped". They are set up so tie-line calls may not be made. Originally, these tie-lines were open to general use.

### Lines Found by Force

While the hackers have resorted to some esoteric methods, many tielines have been found by "brute force techniques" — mass dialing until something "interesting" is found. Another, more urbane method, has been the judicious perusal of telephone directories. To quote one accomplished hacker, "The field is always open to experimentation."

While stating "We attempt to stop (hacking) because it impairs our relations with the phone company, and hurts the service for the rest of the students," Tucker observed that the MIT phone system, serving a community of about 14,000 persons, is as large as that for a small town.

Including Lincoln Laboratories, which accounts for over 50% of costs, the Institute's phone bill exceeds \$1,000,000 each year. This is the third largest bill in New England.

The General Electric Company has the largest phone bill. Raytheon Corporation has the second largest bill in the New England area.

## Next The Tech

# RFC 1392 - Internet Users' Glossary

hacker

A person who **delights in having an intimate understanding of the internal workings of a system**, computers and computer networks in particular. The term is often misused in a pejorative context, where "cracker" would be the correct term. See also: cracker.

*Internet Users' Glossary - January 1993 - <https://tools.ietf.org/html/rfc1392>*

# Defining The Term Hacker

*This is our world now... the world of the electron and the switch, the beauty of the baud. We make use of a service already existing without paying for what could be dirt-cheap if it wasn't run by profiteering gluttons, and you call us criminals. **We explore...** and you call us criminals. **We seek after knowledge...** and you call us criminals. **We exist without skin color, without nationality, without religious bias...** and you call us criminals. You build atomic bombs, you wage wars, you murder, cheat, and lie to us and try to make us believe it's for our own good, yet we're the criminals.*

*Yes, I am a criminal. **My crime is that of curiosity. My crime is that of judging people by what they say and think, not what they look like. My crime is that of outsmarting you, something that you will never forgive me for.***

*I am a hacker, and this is my manifesto. You may stop this individual, but you can't stop us all... after all, **we're all alike.***



“Now that’s cool...”

Volume One, Issue 7, Phile 3 of 10

*The following was written shortly after my arrest...*

∖The Conscience of a Hacker∖

by +++The Mentor+++

Written on January 8, 1986

<http://phrack.org/issues/7/3.html>



# Defining The Word Hacker

1. A person who **enjoys exploring** the details of programmable systems and how to **stretch their capabilities**, as opposed to most users, who prefer to learn only the minimum necessary. RFC1392, the Internet Users' Glossary, usefully amplifies this as: A person who delights in having an **intimate understanding of the internal workings of a system**, computers and computer networks in particular.
2. One who programs enthusiastically (even obsessively) or who enjoys programming rather than just theorizing about programming.
3. A person capable of appreciating hack value.
4. A person who is good at **programming quickly**.
5. An **expert** at a particular program, or one who frequently does work using it or on it; as in 'a Unix hacker'. (Definitions 1 through 5 are correlated, and people who fit them congregate.)
6. An **expert or enthusiast** of any kind. One might be an astronomy hacker, for example.
7. One who enjoys the intellectual challenge of **creatively overcoming or circumventing limitations**.
8. [deprecated] A malicious meddler who tries to discover sensitive information by poking around. Hence password hacker, network hacker. The correct term for this sense is cracker.

# What Is Hacking?

*"Hacking is satisfying one's curiosity.*

*Hacking is finding a way to accomplish a goal, never accepting no for an answer, and being more persistent and patient than anyone else.*

*Hacking is pushing technology to its limits and making technology more resilient through testing, tinkering, and exploration.*

*Hacking is a mindset, a culture, a spirit, and the execution of creative problem-solving.*

*Hacking is survival by [self]-learning as knowledge is the key to unlocking possibilities most may never consider.*

*Hacking is questioning social norms, never accepting things for what they are and believing controls are for those who follow the rules.*

*Hacking is the opposite of acceptance of cultural norms and the natural state of "things".*

*Hacking is indiscriminate, has no boundaries and is not restricted by sex, race, religion, only by how much effort you are willing to put into solving a problem.*

*Hacking is good and those that lack morals or values have given the words "hack", "hacker" and "hacking" a negative connotation as evil people who are labeled "hackers" do not deserve the moniker.*

*Hacking is believing in yourself and the notion that the impossible may be possible.*

*Hacking is manipulating rules, social norms, and common beliefs to achieve a goal, most often to identify a thief, a cheat, or a lie not previously known.*

*Hacking is not cheating. Cheating lives in the shadows of hacking.*

*Hacking is believing you don't have to follow the rules all of the time.*

*Hacking is freedom."*

- Paul Asadoorian, Founder & CTO, Security Weekly, Written May 3, 2019

<https://securityweekly.com/2020/01/02/hacking-is-a-definition-of-hacking-from-a-hackers-perspective/>



# Goals

1. Humanize hacking to encourage people to pursue careers in Cyber Security
2. Gain deeper insights into the terms “hacker” and “hacking” and understand the roots of hacking
3. Identify hacker qualities in yourself and people in your life (See #1)

***“Manipulating rules, social norms, and common beliefs to to identify a thief, a cheat, or a lie not previously known.”***

***“They needed to know that if they were going to start sending messages without wires, their information wouldn’t stay private.”***



Nevil Maskleyne, perhaps history’s first hacker, hacked Guglielmo Marconi’s live telegraph demonstration in 1903.

**“Make technology more resilient through testing,  
tinkering, and exploration.”**

# Mark Loveless (A.K.A. Simple Nomad)



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Nomad Mobile Research Centre  
A D V I S O R Y  
www.nmrc.org  
Simple Nomad [thegnome@nmrc.org]  
14Jan2006

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## Microsoft Windows Silent Adhoc Network Advertisement

Platforms : Windows 2000/XP/2003  
Application: Wireless Network Connection  
(aka Microsoft Wireless Client)  
Severity : High (albeit lame)

### Synopsis

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This advisory documents an anomaly involving Microsoft's Wireless Network Connection. If a laptop connects to an ad-hoc network it can later start beaconing the ad-hoc network's SSID as its own ad-hoc network without the laptop owner's knowledge. This can allow an attacker to attach to the laptop as a prelude to further attack.

# Joshua Wright



## Offensive

Over the year I've written a few tools that demonstrated weaknesses in wireless networks. I'm identifying these tools here, but please use them responsibly. -Josh

[Asleap](#) – Cisco LEAP Attack

[Bluecrypt](#) – Implementation of the Bluetooth Ciphers

[Cowpatty](#) – Attacking WPA/WPA2-PSK Exchanges

[eapmd5pass](#) – Attacking EAP-MD5 networks

[file2air](#) – 802.11 packet injection utility

[FreeRADIUS-WPE](#) – Attacking PEAP and other 802.1X EAP types

[wlan2eth](#) – Converting wireless packet captures to Ethernet format

# Hackers & Satellites - The History

## A history of hacks

This scenario played out in 1998 when hackers took control of the U.S.-German ROSAT X-Ray satellite. They did it by hacking into computers at the Goddard Space Flight Center in Maryland. The hackers then instructed the satellite to aim its solar panels directly at the sun. This effectively fried its batteries and rendered the satellite useless. The defunct satellite eventually crashed back to Earth in 2011. Hackers could also hold satellites for ransom, as happened in 1999 when hackers took control of the U.K.'s SkyNet satellites.

Debunking a tall tale

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The Wikipedia page for ROSAT includes a story which says that a 1999 NASA internal report raised the possibility that ROSAT's demise was instead due to some kind of hacker attack. In 1998 there was an intrusion of some kind into the NASA-Goddard network which contained the source code for the flight software of several NASA satellites. According to the author of the report, 'exploitation of the comm link could not be ruled out' - presumably the fear was that someone could use knowledge of the code to use their own ground station to command a satellite, or separately hack in to the NASA ground station.

But despite the report, this just can't have happened with ROSAT. As I've confirmed with Rob Petre who ran the Goddard part of ROSAT, all we had were copies of the downlinked science data. All commanding, scheduling and operations of ROSAT were done from Germany at GSOC - NASA had no role in the spacecraft commanding.

ROSAT was an elderly satellite in 1999, its main mission long completed. Its failure is not surprising and is fairly well understood. I've talked with several scientists involved in senior roles with the ROSAT mission and the unanimous opinion is that the story is ludicrous.

To summarize: Someone did gain inappropriate access to an internal NASA network in 1998. As far as I know there's no evidence that restricted satellite flight software was actually downloaded. But whatever happened, it was definitely nothing to do with the malfunction of ROSAT that damaged the HRI.

# Modern-Day - It's A Challenge!

## The Air Force Challenged Hackers to Break into a DOD Satellite



SHARE ARTICLE

Aug. 10, 2020 | By Alyk Russell Kenlan

Hackers took control of a Department of Defense satellite on Aug. 9.

Hacking into the satellite was the final challenge of "[Hack-A-Sat](#)," a competition run by the Air Force and DOD's Defense Digital Service intended to spur interest in aerospace cybersecurity.

"Space is an increasingly important contributor to global economies and security," Will Roper, assistant secretary of the Air Force for acquisition, technology, and logistics said in an [Aug. 3 press release](#). "Letting experts hack an orbiting satellite will teach us how to build more secure systems in the future."

Eight finalist teams completed a series of five challenges that culminated in taking control of an active satellite to take a picture of the moon.

Teams could be made up of any number of people as long as they included at least one U.S. citizen or permanent resident and did not include anyone on the Department of the Treasury's Specially Designated Nationals list. Teams could be independent groups of people or sponsored by an academic institution or company.

Over 2,000 teams made up of 6,000 individuals participated in a qualification event in late May. The eight highest-scoring teams moved onto the competition, which was held Aug. 7-9.

<https://www.airforcemag.com/the-air-force-challenged-hackers-to-break-into-a-dod-satellite/>

# Hacking is questioning social norms, never accepting things for what they are and believing controls are for those who follow the rules.

*“I had to find a way to regain access to the operating system so I could re-insert my STZ code. I finally found a way to do it. All of the passwords for the system were stored in a file called UACCNT.SECRET under user M1416. There was a way to request files to be printed offline by submitting a punched card with the account number and file name. Late one Friday night, I submitted a request to print the password files and very early Saturday morning went to the file cabinet where printouts were placed and took the listing out of the M1416 folder. I could then continue my larceny of machine time.”*



<https://www.multicians.org/thvv/compatible-time-sharing-system.pdf>, <https://www.wired.com/2012/01/computer-password/>, <https://www.csail.mit.edu/news/fernando-corby-corbato-1926-2019>



# Hacking is satisfying one's curiosity.



**Victor Gevers**



In the last **5** years, the GDI.foundation identified **39M** security issues were accessible via the internet. With the help of **38** volunteers, we were able to report **1.1M** security issues and data leaks.

<https://gdi.foundation/>



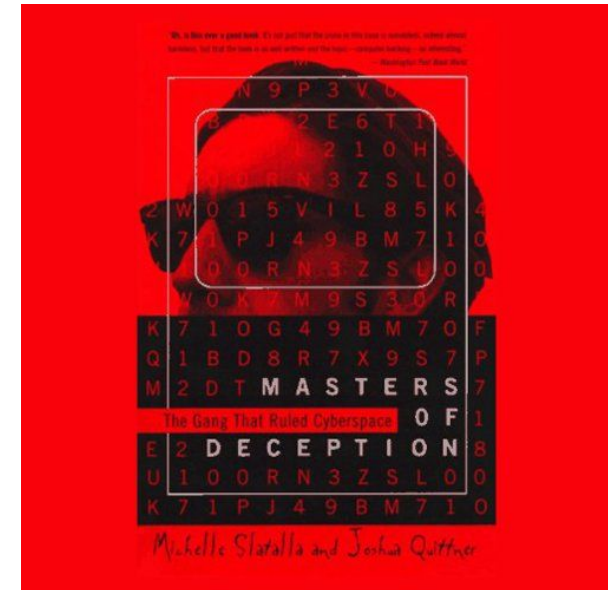
# I Am Curious Too...

I believe “Hackers” (1995) is the best hacker movie.

While doing some research, I found this book.

Legion of Doom and Masters of Deception had many parallels to the movie:

- There was a real hacker called “The Plague”
- “Acid Freak” was MoD, “Acid Burn” was a character in the movie
- “Nynex Phreak” and “Lord Micro” = Real hackers (The king of Nynex and Lord Nikon are names in the movie)



Masters of Deception: The Gang That Ruled Cyberspace Paperback  
– December 1, 1995, Michele Slatalla

# Turns Out...

The screen writer spent time with Mark Abene, A.K.A., “Phiber Optik”, member of Legion of Doom, then Masters of Deception.

**Blake Harris:** That’s great. Do you remember any other examples?

**Mark Abene:** Oh yeah. The virus in the movie, you know, the main threat, we named it the “Da Vinci Virus” as a joke. That’s because, just a little before this time, there had been a virus called Michelangelo that was in all the media. And John McAfee—from McAfee anti-virus fame—he was putting forth the latest virus propaganda that hackers had created this virus called Michelangelo that was a logic bomb and a time-bomb that was going to go off on such and such a time and it was, like, going to destroy everyone’s hard-drive. And, of course, nothing ever happened. It was questionable whether or not the virus even existed at all.

# Also, The MGM Website Was Hacked...

AND OUTLAWED US.

BUT THEY CAN'T KEEP US OUT...

AND THEY CAN'T SHUT US DOWN.

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**This is going to be a lame, cheesy, promotional site for a movie.**

**Nothing more, we're not out to become experts in hacking or forward your hacks to the FBI.**

**We're just looking for interesting scenarios to help us make money off of other people.**

## HACKERS

Hackers, the new action adventure movie from those idiots in Hollywood, takes you inside a world where there's no plot or creative thought, there's only boring rehashed ideas. Dade is a half-wit actor who's trying to fit into his new role. When a seriously righteous hacker uncovers MGM's plot to steal millions of dollars, Dade and his fellow "throwbacks of thespianism," Kate, Phreak, Cereal Killer and Lord Nikon, must face off against hordes of hackers, call in the FBI, and ponder a sinister UNIX patch called a "trojan." Before it's over, Dade discovers his agent isn't taking his calls anymore, becomes the victim of a conspiracy, and falls in debt. All with the aid of his VISA card. Want the number?

What Kool-Aid was to Jonestown...What the 6502 is to the Cellular Telephone Industry...Hackers is to every Cyberpunk movie ever made. Check out the site and see for yourself.

Hack the Planet!

Or better yet, go check out some real hacker sites like [2600](#) or [Phrack Magazine](#)

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<https://www.spokesman.com/stories/1995/aug/22/real-hackers-computer-savvy-intruders-give-united/>

# Hacking is finding a way to accomplish a goal, never accepting no for an answer, and being more persistent and patient than anyone else.

“wheel” and a team of researchers spent almost a month analyzing the source code in “sudo”

They found two vulnerabilities, developed exploits for both, and released of the first (?) exploits for sudo

The original sudo source code dates back to 1980 and is maintained today by Tod C. Miller.



<https://blog.qualys.com/vulnerabilities-research/2021/01/26/cve-2021-3156-heap-based-buffer-overflow-in-sudo-baron-samedi>,  
<https://securityweekly.com/shows/unearthing-a-10-year-old-sudo-vulnerability-wheel-psw-683/>

# Hacking is a mindset, a culture, a spirit, and the execution of creative problem-solving.

*“It was at the 1982 game, however, that a group of MIT students pulled off arguably the greatest hack in MIT history -- the culmination of five years of planning, dozens of surreptitious overnight visits inside Harvard Stadium and several other failed ideas.”*



# #securityweeklybathhouse

Larry made this painting

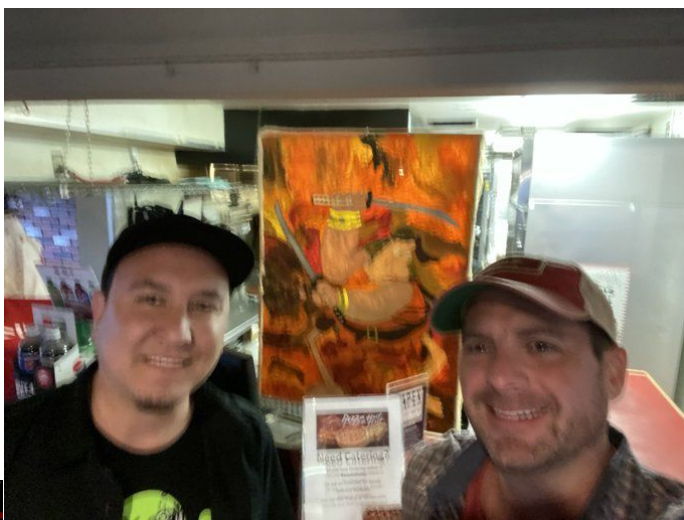
It hangs proudly in the Security Weekly studio,  
in the bathroom

It has it's own Twitter hashtag...





# Hack The Painting - 2019 - @surbo & @hevnsnt



# Hacking is survival by [self]-learning as knowledge is the key to unlocking possibilities most may never consider.

Natural Language Process (NLP) Hacking

Wes Widner - I thought he had a background and degrees in audiology, turns out he's a hacker and did a TON of research!



<https://github.com/kai5263499/audio-security-awesome>, <https://www.youtube.com/watch?v=iYFMFSNyeiA>

# Reverse Engineering Stuxnet

**Statement List (STL)** – list of instructions. This editor allows you to create a program by entering the mnemonic commands. In this editor you can create programs that can not be created in the LAD and FBD editor. Programming in STL is very similar to the assembler language, but it's more specific.

```
OBI : "Main Program Sweep (Cycle)"
Comment:
Network 1: Title:
A      M      1.1
=      Q      4.1      //open valve 2
A      M      1.2
=      Q      4.2      //open valve 3

AN     M      1.0
BEC

L      MW     10      //load setpoint
ITD                               //Integer -> Double
T      MD     20
L      W#16#114      //load 276dez bzw. 114h
/D                               //MD 20 / 114h
T      MD     28
DTR                               //Double -> Real
T      MD     32

BE
```

Fig. 4 Example of logical script in STL



Jon Snyder/Wired

The task of reverse-engineering Stuxnet's complex payload fell to Nicolas Falliere in Symantec's Paris office.

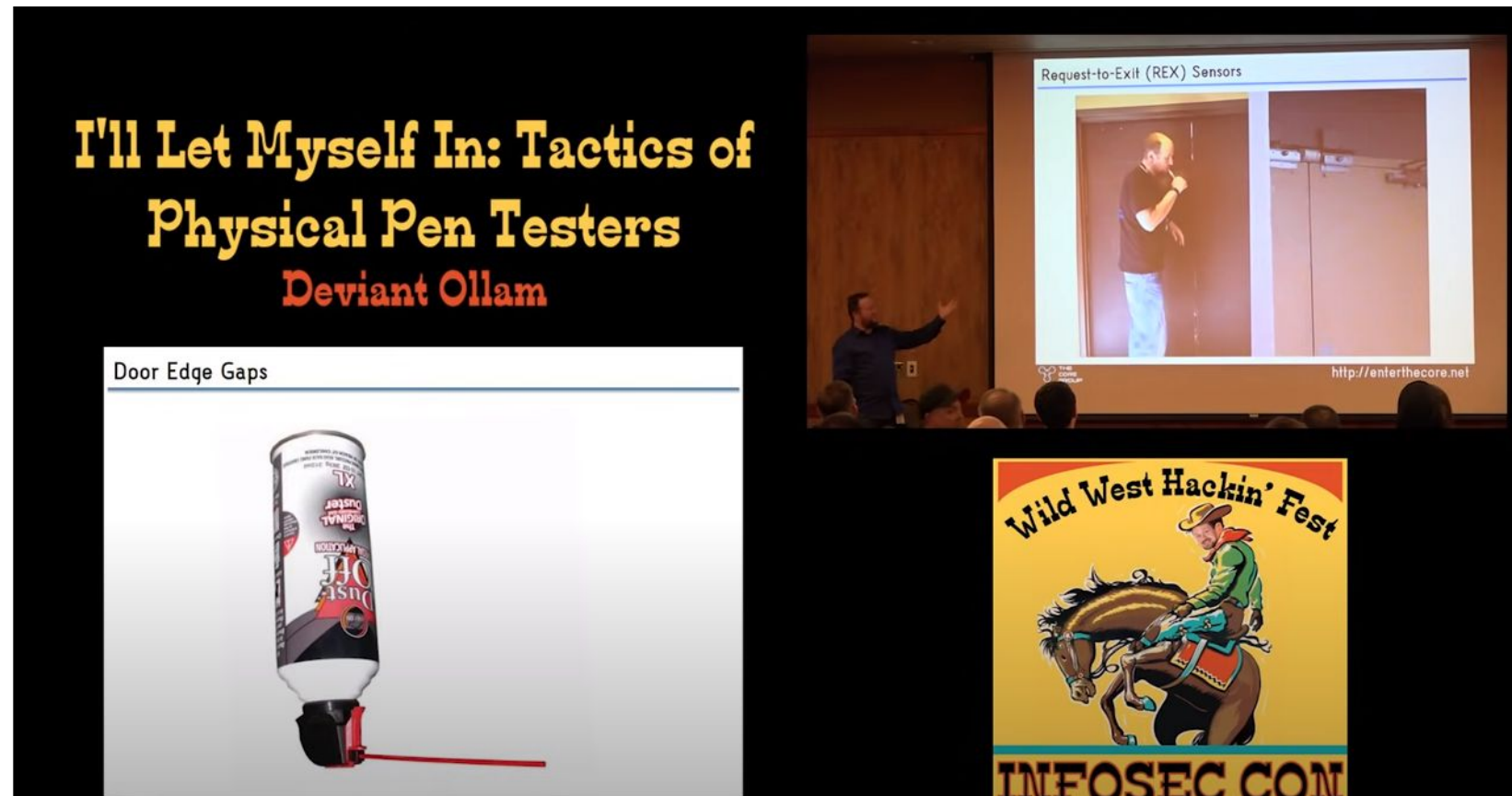
Back at Symantec, Chien and colleagues were taking a crash course in Programmable Logic Controllers. It was clear that Stuxnet was doing something nasty to the PLCs it was targeting, but they still had no idea what. So the researchers bought some books online about STL—the language Stuxnet used to communicate with the PLC—and began studying.

<https://arstechnica.com/tech-policy/2011/07/how-digital-detectives-deciphered-stuxnet-the-most-menacing-malware-in-history/4/>, [https://isd-soft.com/tech\\_blog/basics-siemens-plcs-programming-simatic-step7/](https://isd-soft.com/tech_blog/basics-siemens-plcs-programming-simatic-step7/)

# Hacking is the opposite of acceptance of cultural norms and the natural state of “things”.

A simple think like a locked door. Most people: “I should not enter”

Hackers: What if it has a Request-To-Exit sensor on the inside? Let me grab my can-of-air and maybe my vape...



I'll Let Myself In: Tactics of Physical Pen Testers (WWHF 2017 Deviant Ollom)  
<https://www.youtube.com/watch?v=rnmcRTnTNC8>

**Hacking is indiscriminate, has no boundaries and is not restricted by sex, race, religion, only by how much effort you are willing to put into solving a problem.**



## How to Manage Insider Risks in the Work-from-Anywhere World

Oleg Shomonko, Head of Business Development, Co-Founder

Anthony Palmeri, Enterprise Account Executive

Adrian Sanabria, Senior Research Engineer at CyberRisk Alliance

Paul Assadoorian, Chief Innovation Officer at CyberRisk Alliance



**Hacking is good and those that lack morals or values have given the words “hack”, “hacker” and “hacking” a negative connotation as evil people who are labeled “hackers” do not deserve the moniker.**

# Leonard Rose (AKA Terminus) - A Good Hacker

*“He wrote an article for Phrack explaining how trojan horses worked and excerpted 21 lines of the AT&T SVR3.2 "login.c" source code. This prompted both AT&T and the United States Secret Service to raid his home and seize a moving truck full of computers, books, electronics and paperwork from his home office in Middletown, MD.”*

*“During this period, Rose was also accused of being the "mastermind" of the Legion of Doom. Many newspaper articles referred to him as being somehow involved with the LoD,[4] which was never the case.[citation needed]”*

- [https://en.wikipedia.org/wiki/Leonard\\_Rose\\_\(hacker\)](https://en.wikipedia.org/wiki/Leonard_Rose_(hacker))

Citation? It's in the interview ->

His case, along with few others, were foundational cases for the Mike Godwin and the EFF. (Watch out interview with Mike here: [https://www.youtube.com/watch?v=6-yw\\_fjJG3l](https://www.youtube.com/watch?v=6-yw_fjJG3l))



Leonard Rose, Principal Security Architect at Limelight Networks - Paul's Security Weekly #558

<https://www.youtube.com/watch?v=v3oAnWjoRkq>

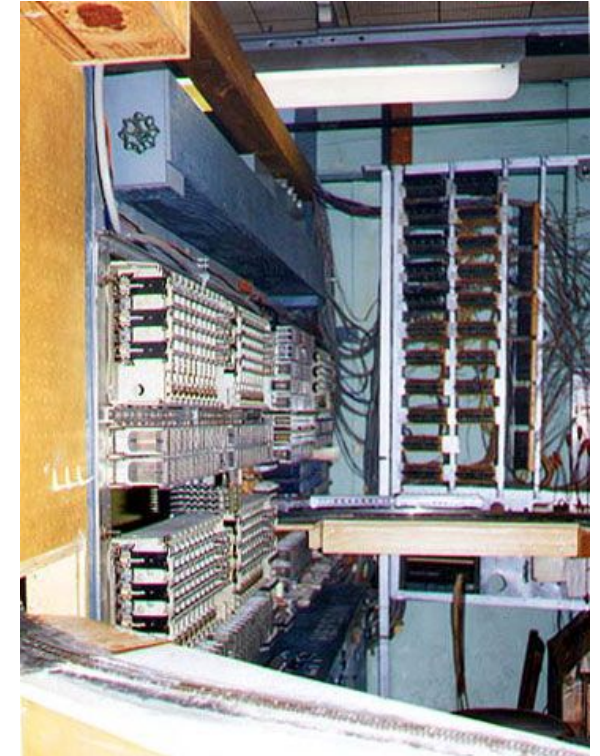
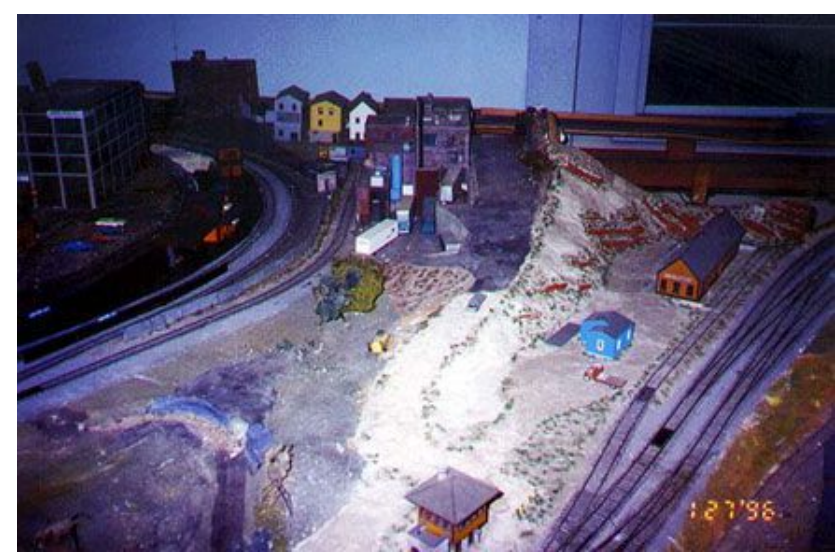


# Original Good Hackers (Circa 1946)

*“We at TMRC use the term “hacker” only in its original meaning, someone who applies ingenuity to create a clever result, called a “hack”. The essence of a “hack” is that it is done quickly, and is usually inelegant. It accomplishes the desired goal without changing the design of the system it is embedded in. Despite often being at odds with the design of the larger system, a hack is generally quite clever and effective.”*

*“The atmosphere was casual; members disliked authority. Members received a key to the room after logging 40 hours of work on the layout.”*

[https://en.wikipedia.org/wiki/Tech\\_Model\\_Railroad\\_Club](https://en.wikipedia.org/wiki/Tech_Model_Railroad_Club)

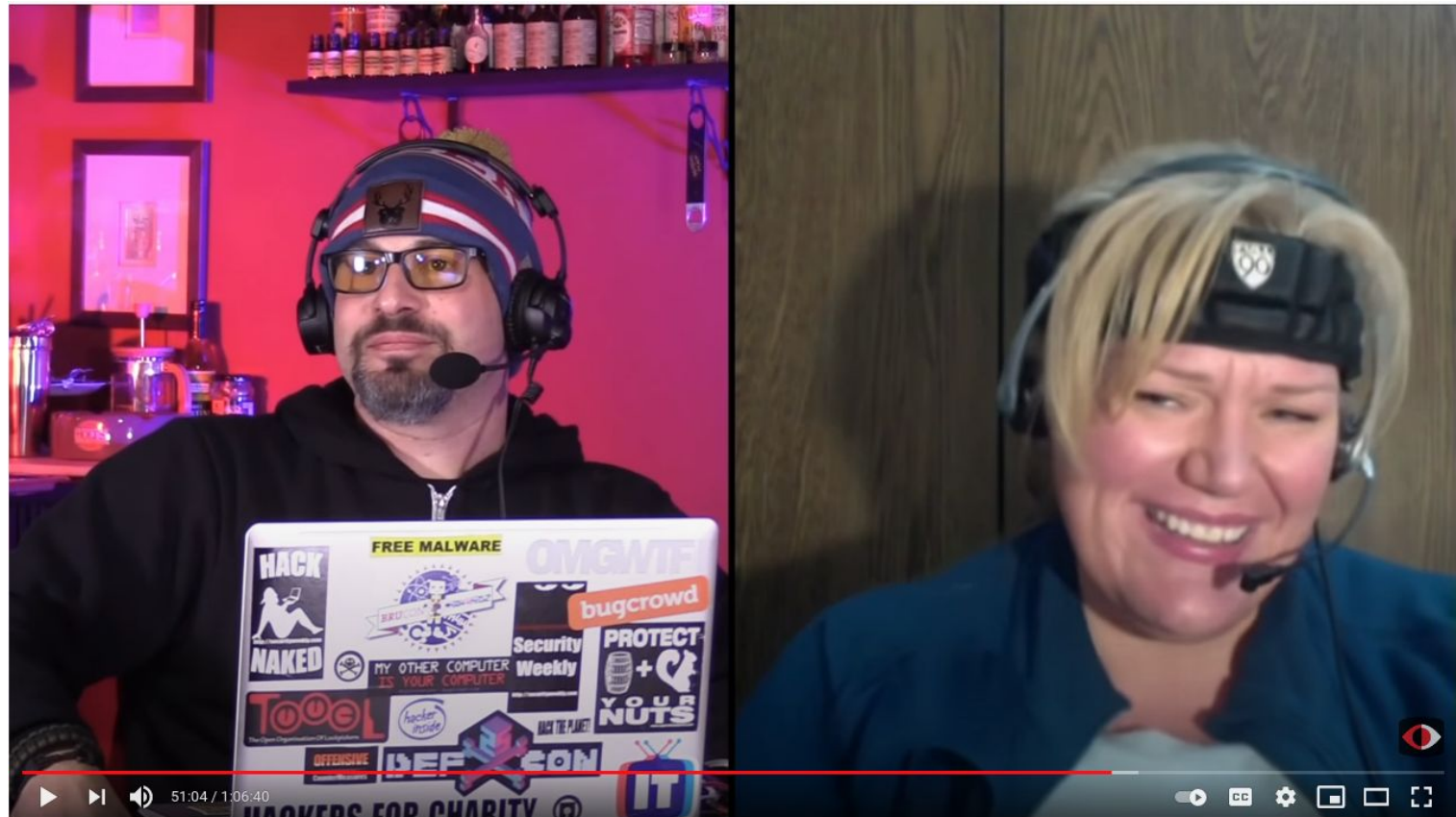


<http://tmrc.mit.edu/history/>

# Hacking is believing in yourself and the notion that the impossible may be possible.

<https://www.youtube.com/watch?v=6O3rKPSOwbl>

Following a series of 5 strokes and major head injuries, Mandy is no longer in the construction engineering industry. Instead, she is pursuing all things InfoSec with an emphasis on Incident Response, Neuro Integration, Artificial General Intelligence, sustainable, ethical neuro tech, and improving the lives and community of InfoSec professionals and Neurodiverse professionals. She enjoys art, requires loads of rest still, and hopes to be half the person her service dog, Trevor, is.



Hacking the Brainstem, Mandy Logan - Paul's Security Weekly #587

# Hacking is not cheating. Cheating lives in the shadows of hacking.

But cheating is still cheating (and sometimes gets labeled as “Hacking”)

## Mom & Daughter Duo Hack Homecoming Crown



Author:  
Becky Bracken

March 16, 2021 / 4:27 pm

A Florida high-school student faces jail time for rigging her school's Homecoming Queen election.

A 17-year-old high school senior along with her mother, Laura Rose Carroll, were arrested this week, charged with accessing student records in a fraudulent attempt to [rig her school's Homecoming Queen election](#).

# Hacking is believing you don't have to follow the rules all of the time.

Mid-Atlantic CCDC 2010 - Larry made an awesome RFID badge hacking challenge

Red and Blue teams had badges that only allowed access to your designated area

I figured out how to clone a badge, but needed the right IDs to become a blue team member

There were rules, but none stated I couldn't look at Larry's command history on the RFID writing machine...

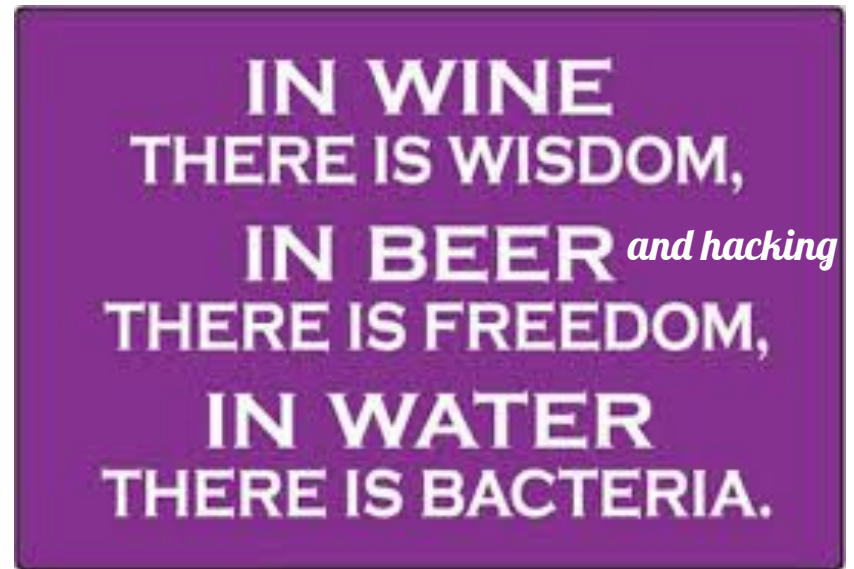


# Hacking is freedom.

You can hack just about anything:

- Travel - Get a free trip!
- TV - hidden menus are fun!
- Tivo (old DVR system) - Skip commercials!
- Wifi Routers - Install Linux!
- Your Phone (Jailbreak)
  
- Challenges at work are welcome, because we can hack our way out of them

Hacking allows you to unlock possibilities...



# There Are So Many More Hacker Heroes...

We're launching a new series called "Hacker Heroes"

Essentially, Inside The Hacker's Studio, a hacker to hacker look at hackers and cyber security professionals

These one-on-one interviews will aim to humanize hackers and cyber security professionals, provide an entertaining look at the people in security and encourage people to become part of our great community.