Cybersecurity OT&E Myths

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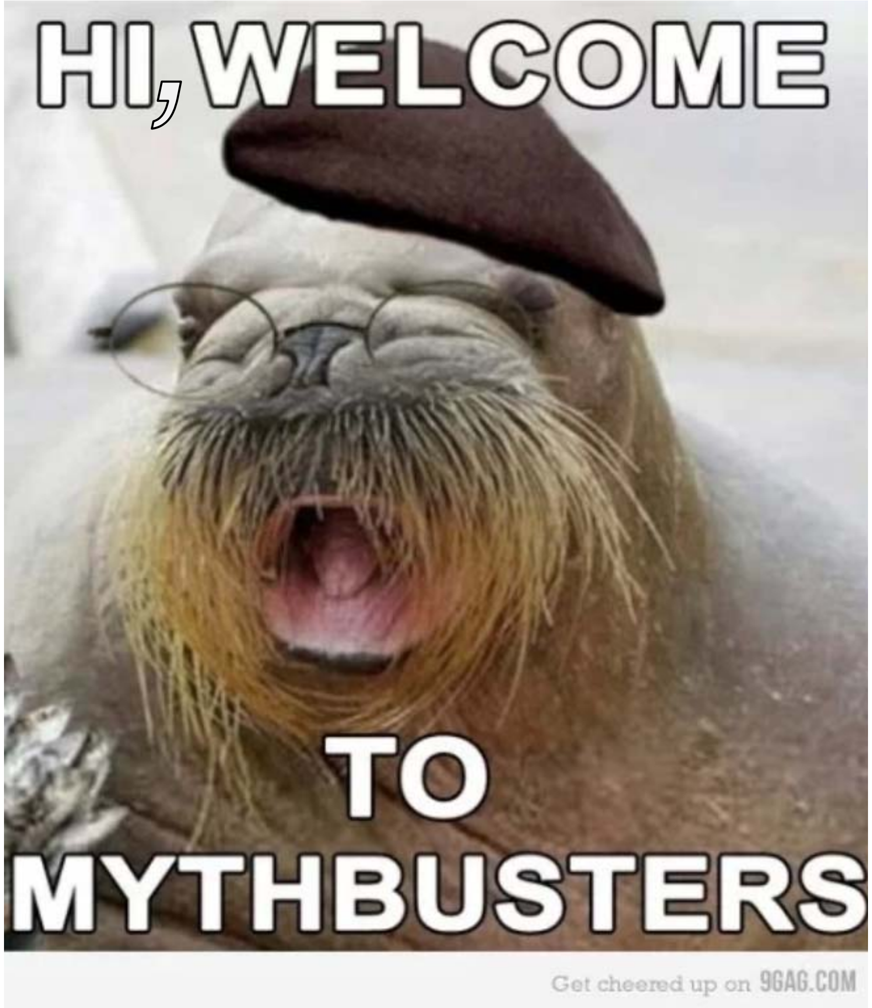
HI, WELCOME
TO
MYTHBUSTERS
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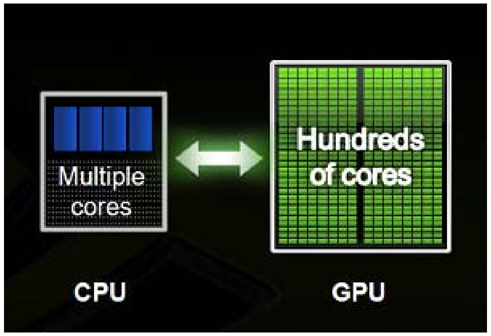
Myth 1: Breaches are preventable

- **Long, complex passwords aren't enough.**
  - E.g., CyberVor (2014) or GPUs

- **Does it use electronics? It can probably be compromised.**
  - E.g., tanks, helicopters, radar, and rocket launchers

- **Classified networks can be compromised.**
  - E.g., SIPR and other networks

- **Air-gapped systems can be compromised.**
  - E.g., TEMPEST program



Credit: InfoSec Institute

- **No matter the system, always assume it has been breached**

Known active insiders on classified networks

Average Time Active in Months: 53

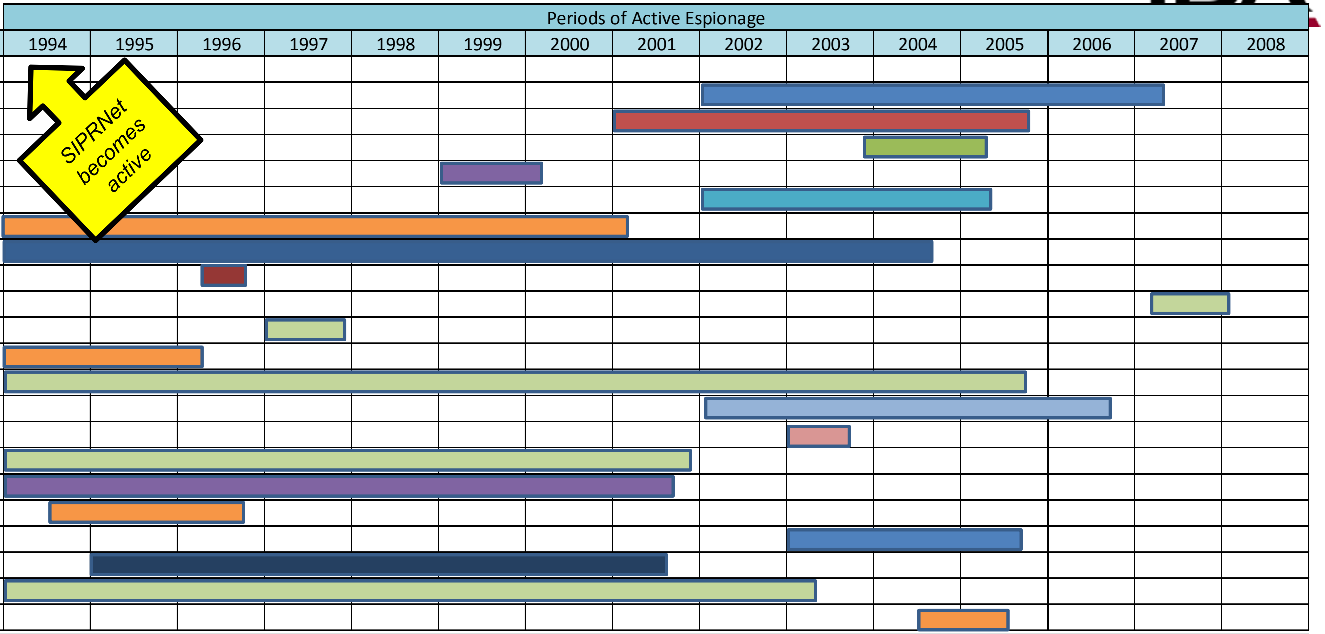
Only 3 of 21 had significant computer skills

They all worked alone.

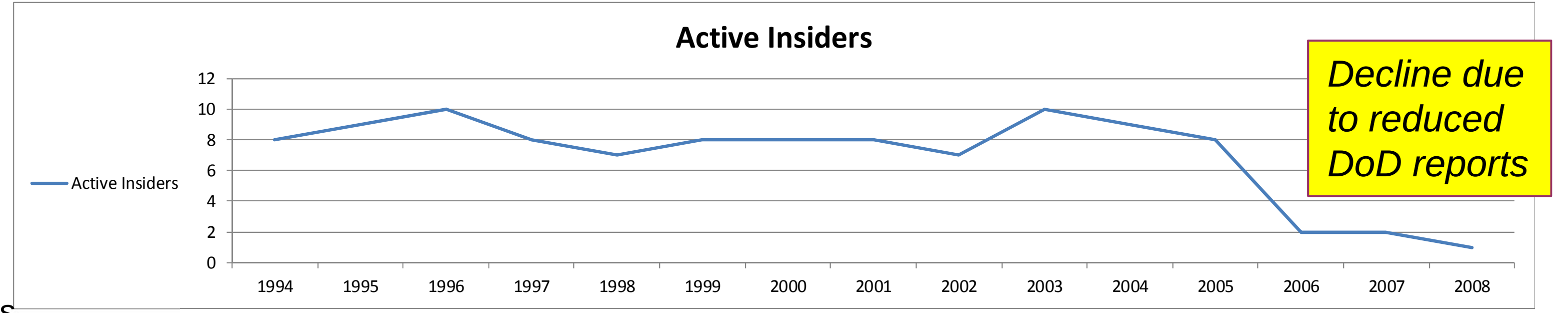
20 of 21 were men

18 of 21 were volunteers

Last Name	Start Date	End Date
Abu-Jihaad	1/1/2002	3/27/2007
Aragoncillo	1/1/2000	9/10/2005
Diaz	12/1/2003	3/1/2005
Faget	1/1/1999	2/17/2000
Franklin	1/1/2002	5/3/2005
Hanssen	3/3/1994	2/18/2001
Keyser	3/3/1994	9/15/2004
Kim	4/1/1996	9/24/1996
Bergersen	3/1/2007	2/11/2008
Lee	1/1/1997	12/8/1997
Lessenthien	3/3/1994	4/22/1996
Mak	3/3/1994	10/28/2005
Maziarz	1/1/2002	10/1/2006
Mehalba	1/1/2003	9/23/2003
Montaperto	3/3/1994	12/1/2001
Montes	3/3/1994	9/21/2001
Nicholson	6/27/1994	11/16/1996
Nour	1/1/2003	9/1/2005
Regan	1/1/1995	8/3/2001
Smith	3/3/1994	4/9/2003
Weinmann	10/1/2004	7/1/2005

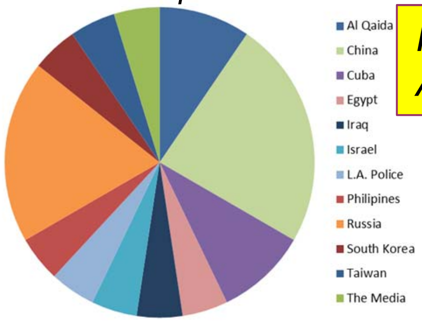


SIPRNet becomes active



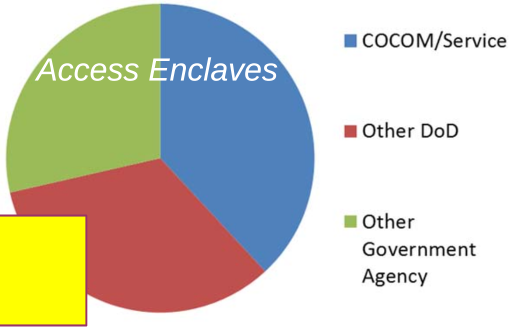
Decline due to reduced DoD reports

Data Recipients

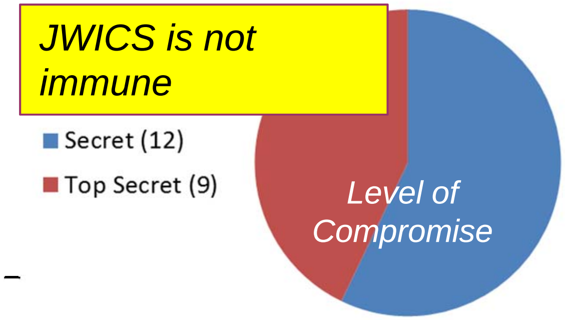


Friends and Adversaries

It's not just COCOMS



JWICS is not immune



Myth 2: Cybersecurity is not my responsibility

- **Anti-virus only works on known malware.**
  - Does not entail all vulnerabilities (e.g., incorrect firewall rules)
- **Intrusion Detection Systems (IDSs) need data.**
  - Attackers can obscure logs.

OSSEC

Open Source IDS

- **IT professionals are imperfect.**
  - Cyber defenders miss alerts or are slow to react
- **Mantra: protect, detect, react, and restore (PDRR)**
  - Defense-in-depth, a practical strategy for IA

Myth 3: Cybersecurity is a product

- **Good cybersecurity is a process.**
  - – A stationary warrior is unlikely to defeat a dynamic adversary

Credit: *Wikimedia Commons*

Sun Tzu

- **Regularly update.**
  - – Protect
  - – Software, firmware, anti-virus, and HIDS

- **Regularly review the systems & devices.**
  - – Protect
  - – Accounts, privileges, passwords, services, network

- **Regularly check the defense-in-depth.**
  - – Detect, react, restore
  - – Tactics, techniques, and procedures (TTPs)

Myth 4: Cybersecurity testing is optional

- **If it uses electronics, it is theoretically susceptible.**
  - E.g., tanks, helicopters, radar, and rocket launchers
- **Authority to Operate (ATO) is only a first step.**
  - “Will this system present an unacceptable risk to the rest of the network?”
- **Controls compliance is an additional consideration.**
  - “How should we operate the system?”
- **Assuming breach, testing measures the impact.**
  - Defense-in-depth mantra: protect, detect, react, and restore

Myth 5: This system isn’t worth the effort

- **Tell that to Sony.**
  - E.g., Female star paid ~2% less than male leads = lawsuits
- **Every system contains potentially usable information.**
  - E.g., information about other systems or classified information
- **Unfortunately, usernames and passwords are often recycled.**
  - E.g., Dropbox (2014)

Myth 6: Intrusion detection is sufficient

- **Without a plan, the only recourse is to shut down.**
  - Mission compromised
- **You may not have identified the attacker.**
  - Future missions at risk
- **You may not know what information has been lost.**
  - Current & future missions at risk

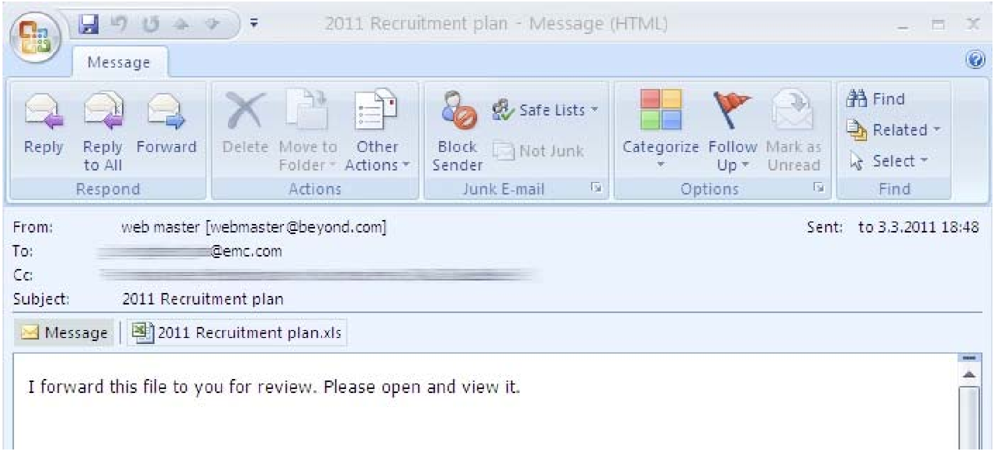
credit: jokeroo.com

Myth 7: Best to deal with cybersecurity at the end

- **Some forethought could save time,**
  - E.g., RSA (2011)

- **… effort …**
  - E.g., JP Morgan (2014)

- **… and expense.**
  - E.g., CurrentC (2014)



From: web master [webmaster@beyond.com]

Sent: to 3.3.2011 18:48

To: [redacted]@emc.com

Cc: [redacted]

Subject: 2011 Recruitment plan

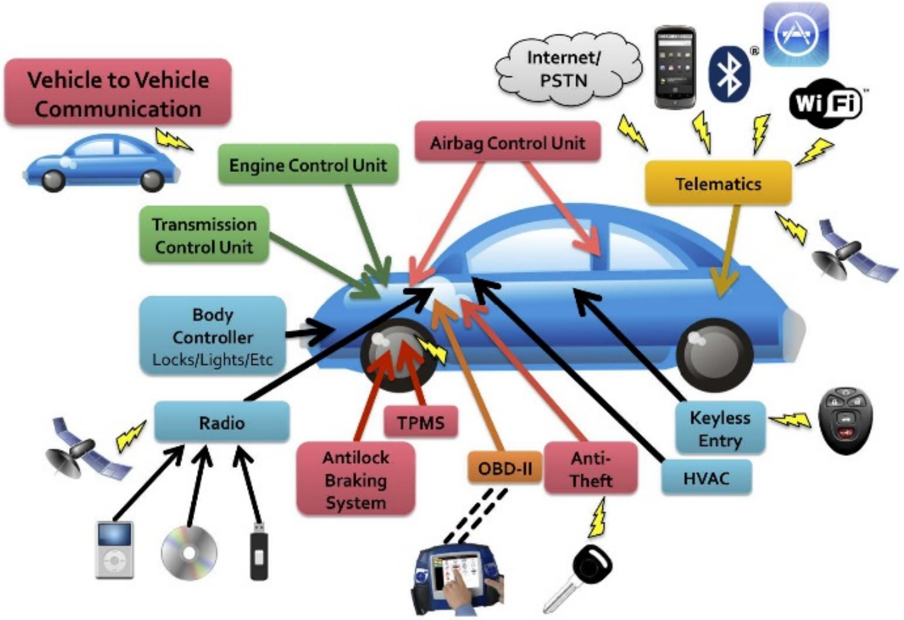
Message | 2011 Recruitment plan.xls

I forward this file to you for review. Please open and view it.

Credit: wired.com

Myth 8: Xxx machines don’t get viruses

- **If it has or relies on digital electronics, it’s susceptible.**
- **Examples:**
  - Cars, power plants, etc., Stuxnet (2010)
  - Cell phones, Linux devices, etc., XOR.DDoS (2015)
  - Web browsers



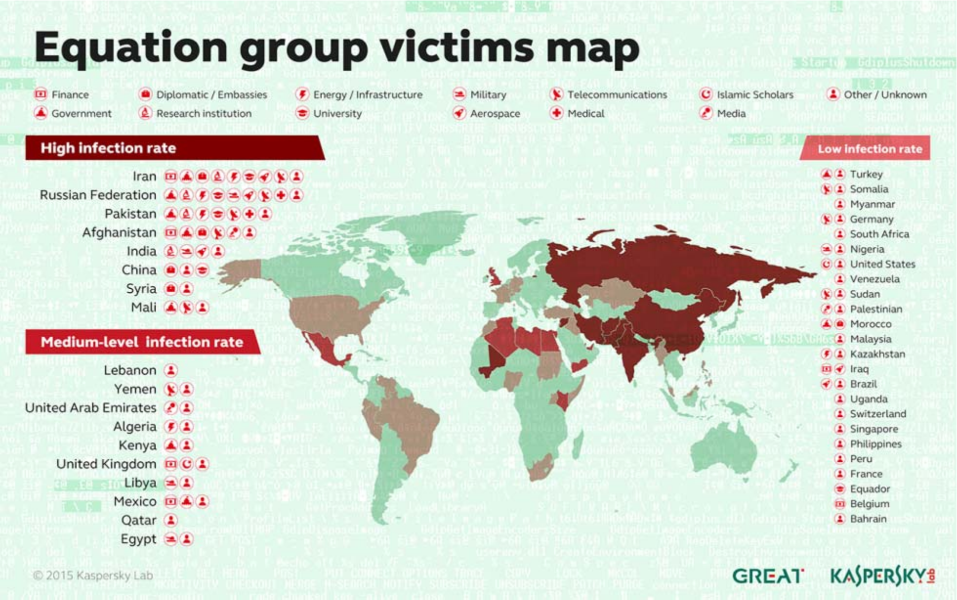
Credit: autosec.org

Myth 9: An APT is a hacker with a larger toolbox

- **An advanced persistent threat (APT) is:**
  - well-trained
  - well-resourced
  - capable of multi-year reconnaissance & attack campaigns
  - possibly can leverage intelligence tradecraft

- **APTs are thought to be government sponsored**

- **Equation Group (2015)**



See Cyber OT&E for more info!