Cyber-Crime, Cyber-Warfare, Cyber-Conflict

Part 2

John DiMarco
john.dimarco@utoronto.ca
http://www.cs.toronto.edu/~jdd

Cyber-Warfare

International and Civil Conflict

Stuxnet Worm+

- March 2010: Windows and Embedded
- Spreads via USB flash drives (virus)
- Exploits many different network vulnerabilities to propagate on a network (including three "0-day" vulnerabilities). (worm)
- Payload: targets certain Siemens Supervisory Control and Data Acquisition (SCADA) Controllers: modifies rotational frequency.

Stuxnet = Cyberwar

- Jan 15, 2011: New York Times reported on "newest and strongest clues that the [Stuxnet] virus was designed as an American-Israeli project to sabotage the Iranian [Nuclear] program."

- Feb 15, 2011: "this malware contained important evidence indicating that its target was the IR-1 centrifuges at… [the Iranian nuclear enrichment facility at] Natanz – Institute for Science and International Security, Dec 22, 2010 Report on Stuxnet Malware

Iran vs Dissidents

- The Iranian Government appears to be engaging in … deep packet inspection… to monitor [internet communications] to gather information about individuals… – Wall Street Journal, 22nd Jun 2009
- "Nearly 4000 people were arrested solely on the basis of monitoring of their private internet traffic" – Iranian journalist Ahmad Jalali Farahani 30th December 2011.

- **SSL/HTTPS provides privacy?**

Iran and DigiNotar

- July 2011 – Small Dutch SSL certification authority DigiNotar hacked, fraudulent certificates issued for google.com and others.
- August 2011 – Substantial surge in Iranian uses of DigiNotar certificates
- "…Iranian Internet users were exposed to a large-scale man-in-the-middle attack… to read all of the email messages an Iranian Internet user sent with his/her Gmail account." – Trend Micro blog, 5th Sept 2011

Submarine Warfare Breach

- June 8, 2018: Washington Post reports that US Naval Undersea Warfare Center contractor hacked in Jan/Feb 2018, 614GB data stolen
- Included anti-ship missile plans for submarines
- Data not "classified" but "highly sensitive"
- Data was stored on an unclassified network.
- "Chinese government hackers" believed responsible

Key Element: Targeted Attack

- Target a company or government facility
  - Corporate or International Espionage, Sabotage
- Target an official
  - Blackmail, Public Embarrassment
- Target a dissident
  - Identification of Associates, Arrest
- Defence: Citizen Lab's https://securityplanner.org

Cyber-Conflict

Social and Political Struggle Online

“Anon Down”

- July 17, 2015: RCMP fatally shoots a protestor wearing a Guy Fawkes mask
- July 19, 2015: Hacker group “Anonymous” DDoSes RCMP, releases federal Cabinet secrets (Doxing)

- DDoS: distributed denial of service
- Dox: publish private information about, typically malicious intent

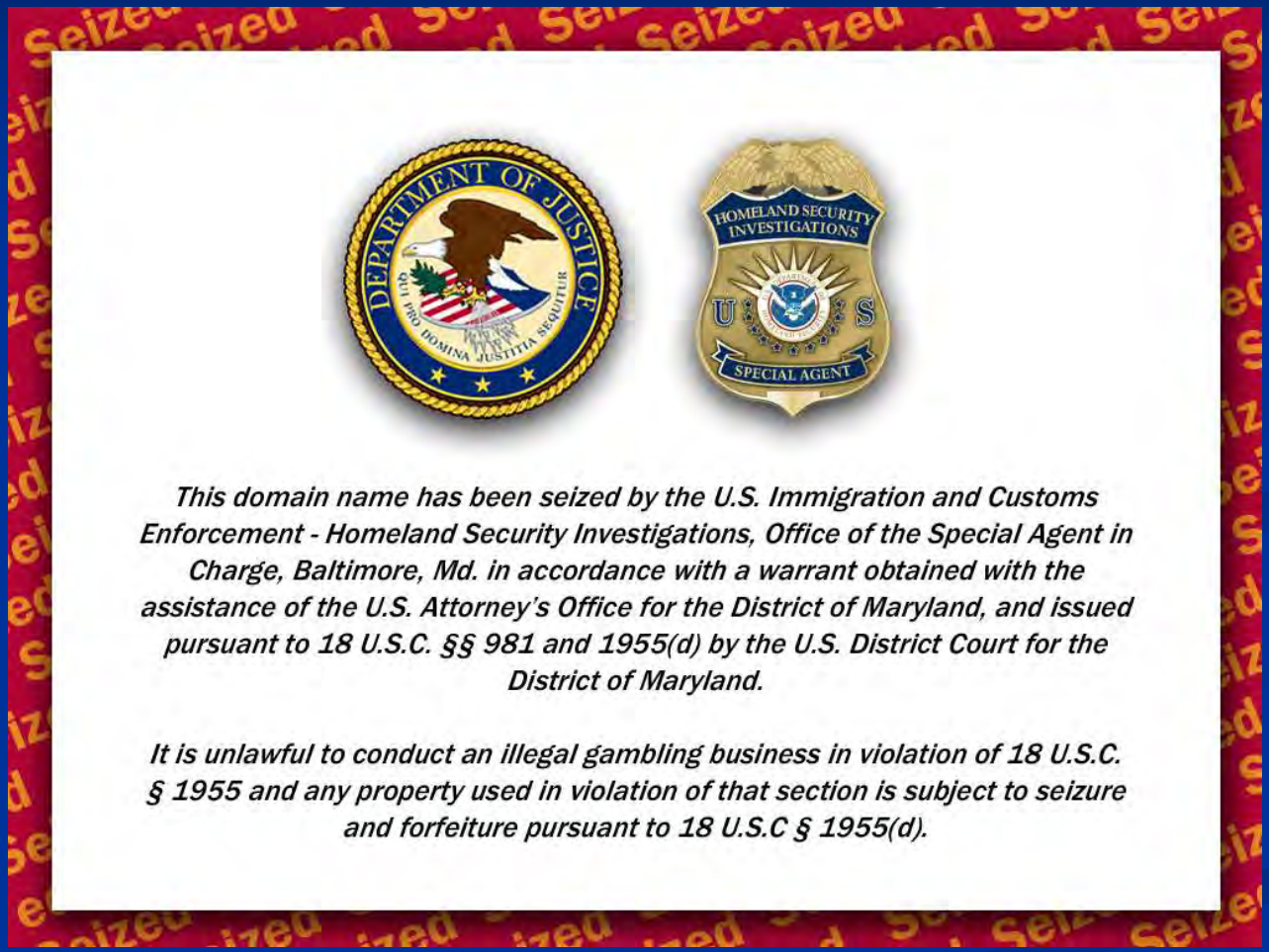
Legal Doxing

- Feb 2009: NY Times: Prop 8 Donor Map Web Site
  - "Proposition 8 changed the California state constitution to prohibit same-sex marriage. These are the people who donated in order to pass it."
  - Mashup of public donor data and Google maps.
- Dec 2012: White Plains NY *The Journal News* publishes handgun owner interactive map.
  - Shortly after Sandy Hook Elementary School shooting.
  - Public records of handgun permit holders and a map showing where they live.

Jurisdiction in Law

- Feb 2012: Gambling site Bodog was shut down by the state of Maryland.
- Bodog.com is a registered Canadian company, whose domain is registered with a non-US registrar. Bodog's activities were/are legal in Canada.
- "Maryland authorities … sent a court order to Verisign, the California-based operator of the .COM top level domain. Verisign complied, and edited the rootzone servers to reroute Bodog.com to a takedown page…" – itworld.com, 1st March 2012

www.bodog.com



Facebook & CambridgeAnalytica

- Facebook “This is my Digital Life” app
- 270k quiz-takers -> 87M friends of quiz-takers
- Aleksandr Kogan -> Cambridge Analytica
- **Psychometric profiles** created
- Psychometric profiles used to target political messages to Facebook users

What next?

- Prepare for Stormy weather: Cyber-Crime, Cyber-War, Cyber-Conflict are all increasing.
- Be aware, be willing to adapt, be prepared.

More Resources

- University of Toronto Security Matters
  - https://securitymatters.utoronto.ca
- Citizen Lab Security Planner
  - https://securityplanner.org
- CERT Security Tips
  - https://www.us-cert.gov/ncas/tips
- Public Safety Canada Cyber Security
  - https://www.publicsafety.gc.ca/cnt/ntnl-scrt/cbr-scrt