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Secure.
Capitalizing on
Collective Intelligence

Beyond Information Warfare: The History of the Future of Security
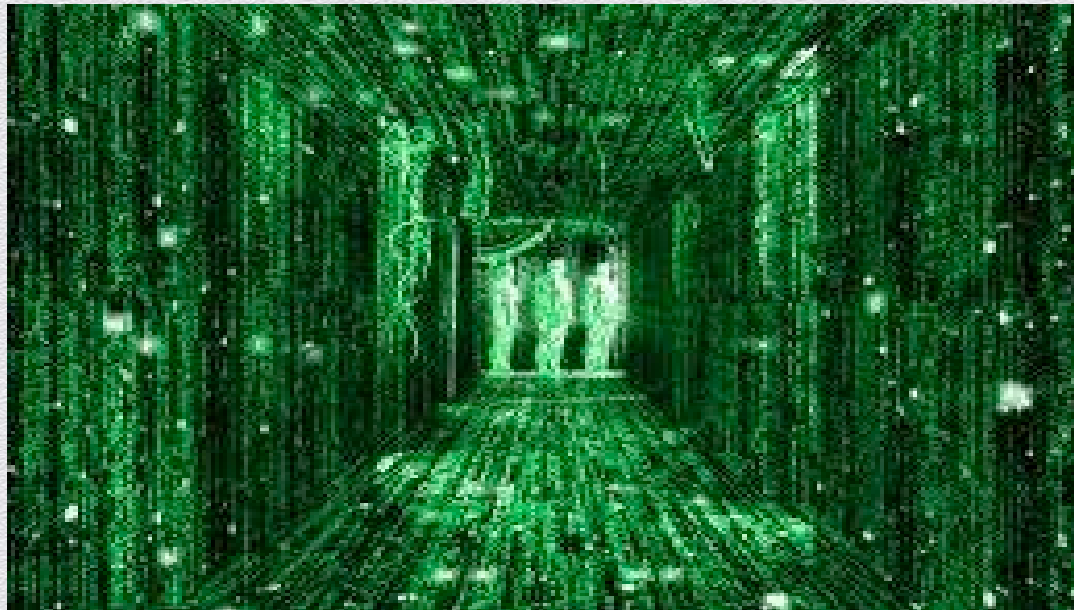
SESSION ID: TECH-W03B

Winn Schwartau

Founder and Chief Executive Officer
The Security Awareness Company

Beyond Information Warfare:
Hack Early. Hack Hard.

"We are still defending against the past.
To defend, you have to know how to attack."

Winn Schwartau
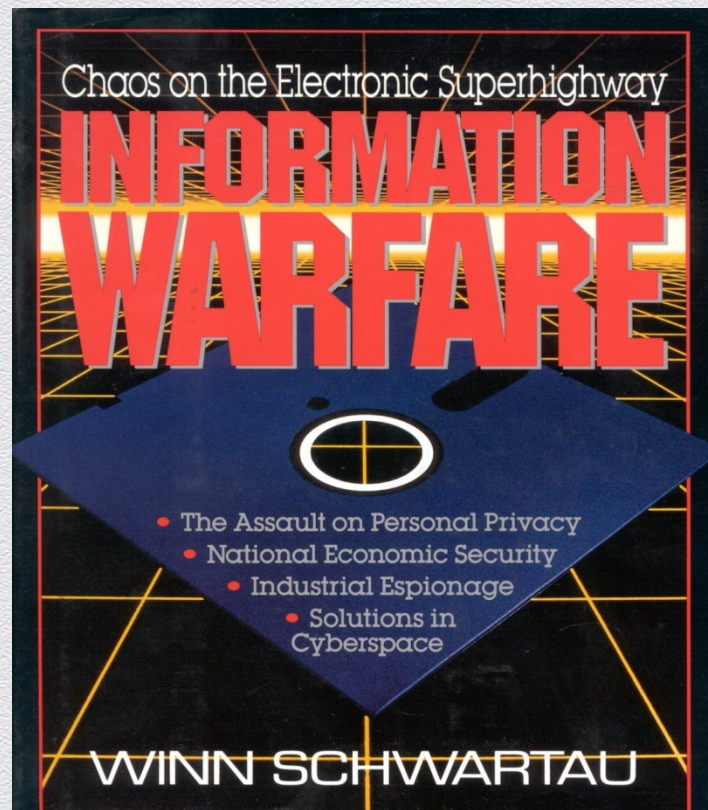
Let's Go Back to 1988-1992

Hackers vs. China: 1991

◆ *"We keep talking about and referring to hackers, and hackers are isolated, unorganized, basically individuals that perhaps don't have any real motivation other maybe technical rebellion or they are on a search to find the ends of operating systems. I don't think* **we have to worry as much about hackers as we do about organized groups who are much more well organized, well funded, and well motivated** *who may have real reasons to penetrate systems for either economic or industrial advantage."*

◆ Winn Schwartau, June 27, 1991 *(edited for readability, only)* Testimony at the Committee Hearings of the US House of Representatives Committee on Science, Space and Technology, Subcommittee on Technology and Competitiveness

Predictions

- Cyberterrorism:
  - 1988

- "Electronic Pearl Harbor"
  - *Schwartau testified before Congress on June 27, 1991 (Coined the phrase)*

- "Electronic Pearl Harbor"
  - *CIA Director John Deutch testified before Congress, June 26, 1996*

- *2014: Common Term*

Chaos on the Electronic Superhighway
INFORMATION WARFARE

- The Assault on Personal Privacy
- National Economic Security
- Industrial Espionage
- Solutions in Cyberspace

WINN SCHWARTAU

Technical Predictions: 1989-1992
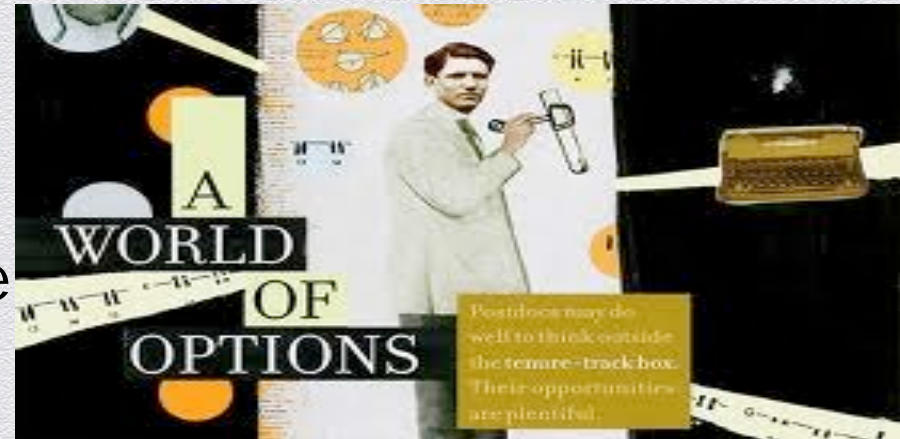
- Malware as a form of war and criminal enterprise
- Chipping
- HERF Technology
- Cyber Civil Disobedience
- DOS/DDoS Attacks
- Deception Technology

U.S. and Global Predictions: ~1991

- Economy is a National Security Asset
- Electronic Bill of Rights
- U.N. for Cyber
- Redefine National Security Threat
- Build a Secure Infrastructure
- Vigilantism
  - Private or National

A WORLD OF OPTIONS

Postdocs may do well to think outside the tenure-track box. Their opportunities are plentiful.
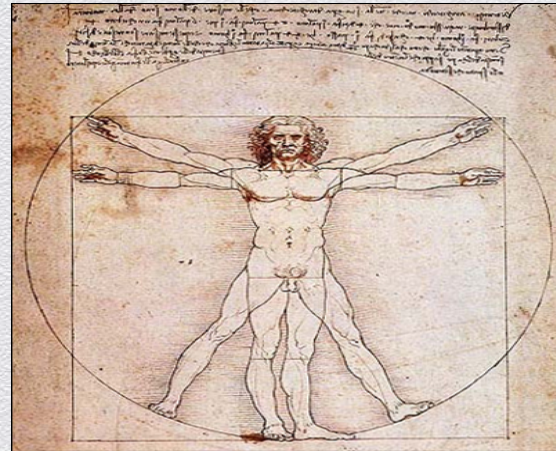
THE Answers: Arrogance, Apathy, Ignorance

- "I don't understand it."
- "It doesn't explode."
- "It'll never happen."
- "Classify It."

Opportunities are never lost; someone will take the one you miss

He Who Has The Will To Use Next Generation Technological Weapons Will Be Victorious
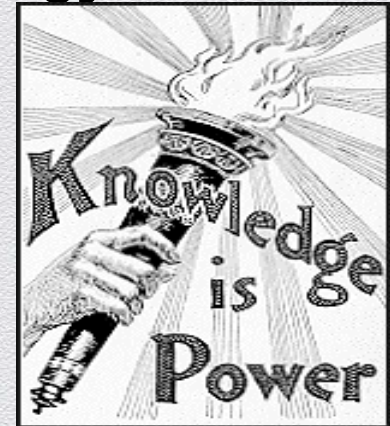
(He who doesn't, loses.)

Capability

- Access to the technology
  - (That we developed)

- Resources to pay for or develop technology

- Knowledge for applying technology

- Ability to hide/disguise operational readiness

- Private communications

- Shorten time. Expand distance.
  - Force Projection (criminal or...?)

Weaponizing 'New' Technologies

- Bronze
  - Replacing by Iron ~ 1500BCE
- Kinetic Projectile Weapons (Guns)
  - Western US Expansion
- Gatling Gun ~ 1860CE
  - US Civil War
- Aircraft
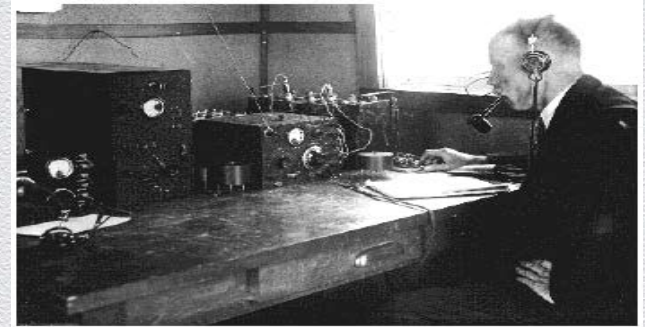 - WWI

More 'New' Technologies

- Radio Communications
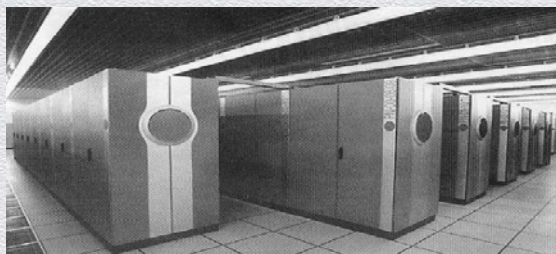 - ~1905CE
- Radar Detection
  - ~1939CE
- Atomic Weapons
  - ~1950CE

The 'New' Technologies

- Super Computers (Dual Use)
  - ~1985 CE
    - China is winning!
    - Amazon EC2
- Computer Communication (IP)
  - ~1995 CE
- Cryptography
  - ~1976 CE

Asymmetry With Today's Technology
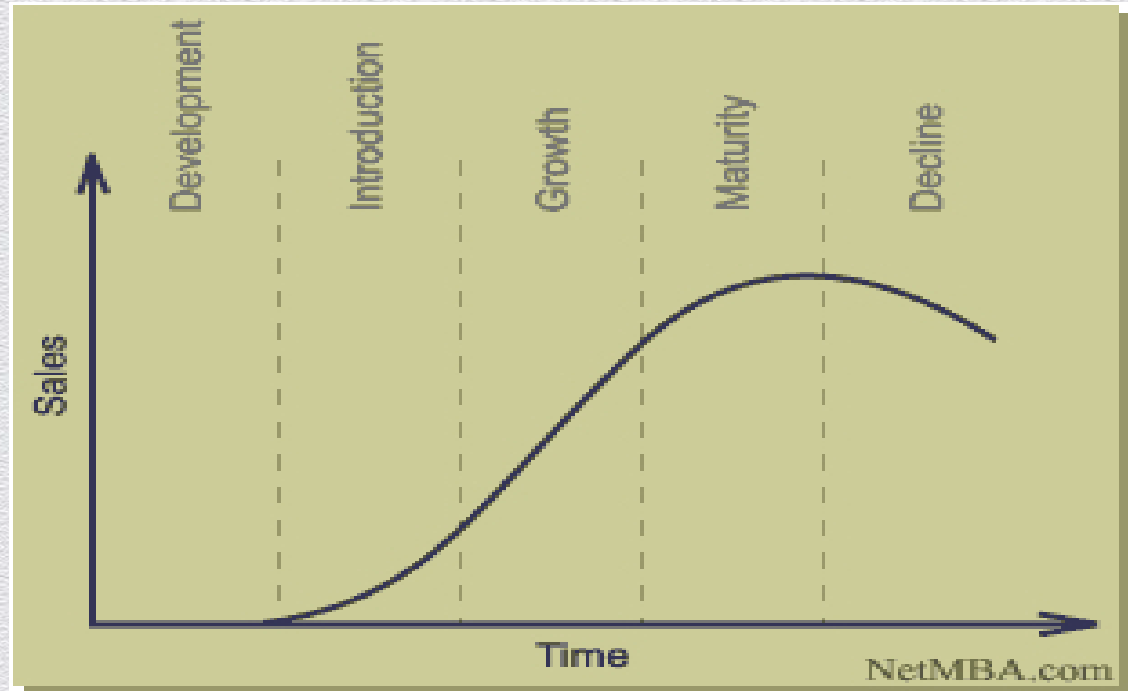
- ◆ US developed GPS

  - ◆ Adversaries can buy GPS at Radio Shack

- ◆ US Greatest Listening Post (NSA/NRO)

  - ◆ Defeated by strong cryptography? Hmmm

- ◆ Satellite Reconnaissance

  - ◆ Available from Private Sector Internationally

SBAS GEO Footprints
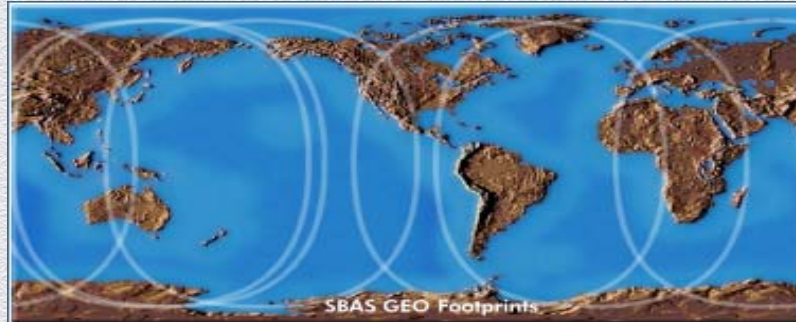
Life Cycle Curve

- Technology
  - Idea
  - Test/Lab
  - Commercial
  - Consumerize
  - Adapt Malware
  - Hostile
  - Weapons

All New Technologies Will Be Weaponized

The Mobile World: Cyberwar 4G

- 2B+ Today

- 20B 2020

- PDA/Cell-Phone = Pocket Computer

- Differing OS's
  - (heterogeneity)

- $1B+ Month in losses from system abuse
  - US/CA/EU

Chat Bots

- Customer Service, Technical Support, Education, Adult online services.

The Source for Artificial Intelligence Chat Bots

- Chatter
  - Terrorists/Criminals
 - Filtering
  - Adding Chaff

Un-Manned Vehicles

- ◆ Cyber-Physical Convergence
- ◆ Home Versions
- ◆ Shut Down the Schools…

Flying Bots

◆ Technology recently discovered on how to mechanically reproduce birds and flying bugs with new aerodynamic principles.

  ◆ Miniature surveillance by flies, ants or other silicon-based "life forms"

  ◆ Nearly invisible Bio-Chem distribution by bots.
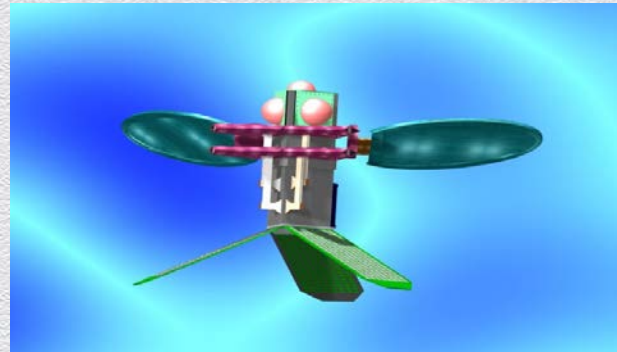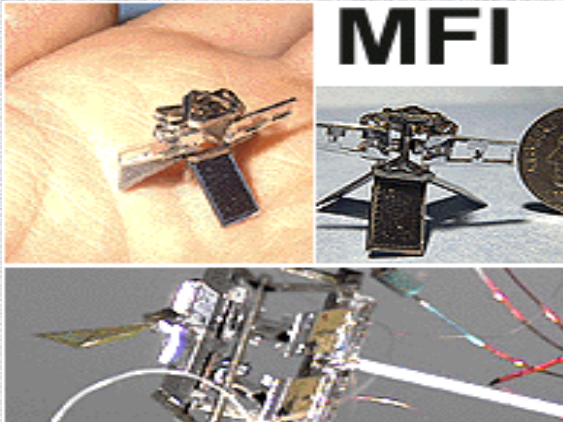
Home Brew HERF & EMP

- 100 Meter range
  - $20 weapons
- 1km Range
  - $500-$5K weapons
- Finance and CIP Targets

http://www.voltsamps.com

Bio-Engineering

- ◆ RF Prosthetics
- ◆ Brain Interfaces
- ◆ Enhanced Soldiers

How the arm works
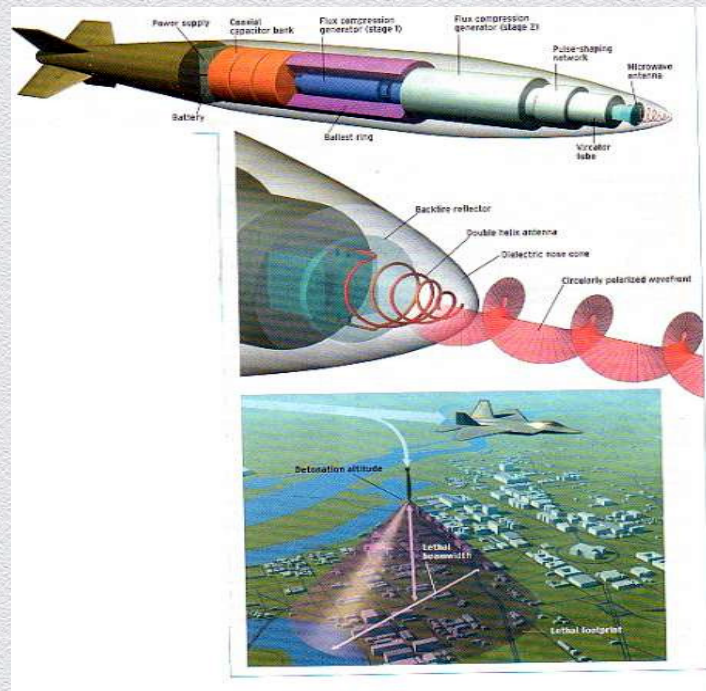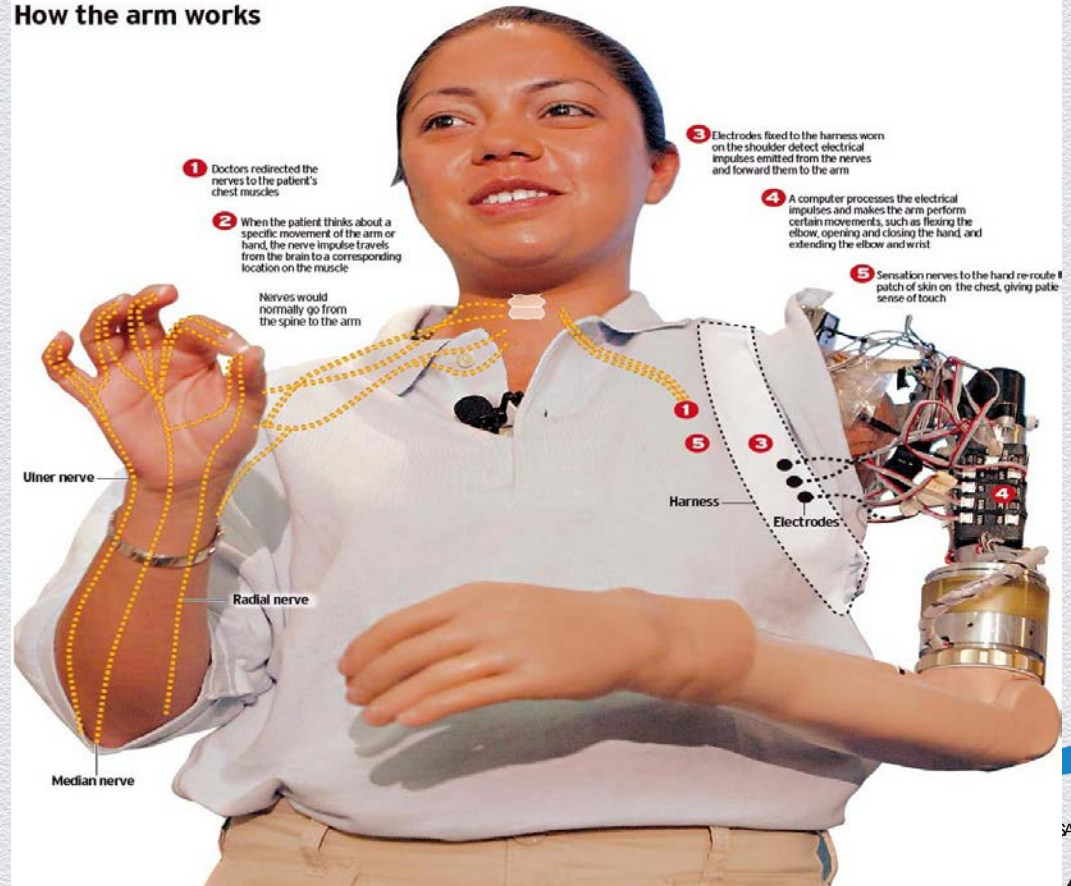
1. Doctors redirected the nerves to the patient's chest muscles

2. When the patient thinks about a specific movement of the arm or hand, the nerve impulse travels from the brain to a corresponding location on the muscle

Nerves would normally go from the spine to the arm

3. Electrodes fixed to the harness worn on the shoulder detect electrical impulses emitted from the nerves and forward them to the arm

4. A computer processes the electrical impulses and makes the arm perform certain movements, such as flexing the elbow, opening and closing the hand, and extending the elbow and wrist

5. Sensation nerves to the hand re-route patch of skin on the chest, giving patie sense of touch

Ulner nerve

Harness

Electrodes

Radial nerve

Median nerve

Brain Engineering

- Brain Control
  - Technology Control

- Mental Illness
  - (electronic Prozac)

Nano Tech: Convergence Phys/Cyb

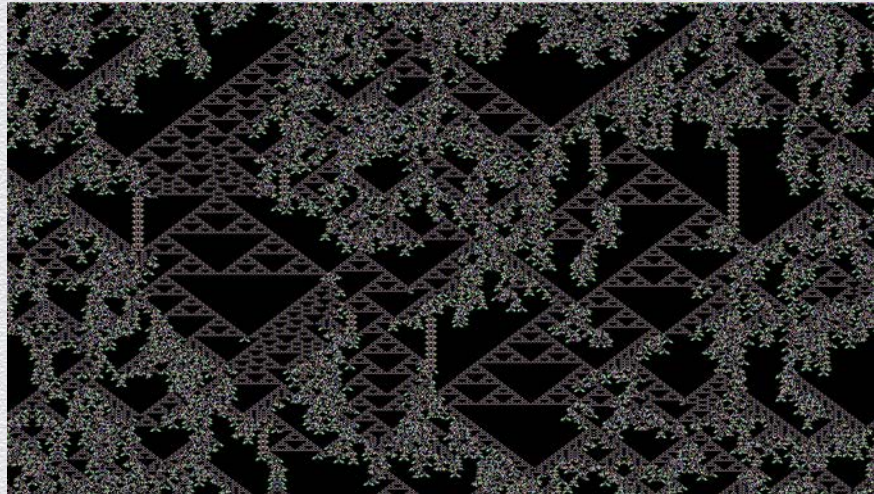- ◆ Can do immense good... or harm
- ◆ Nano-toys are on the Shelves.

Swarming & Self-Organization

◆ Unpredictable Outcome

◆ Simple Rules > Complex Output

   ◆ Automaton, von Neumann (1940)

◆ Nanogames - Toys R Us

Instigating Chaos

- Financial Markets, Communications, CI

- Public Trust

- Unpredictable behavior of simple rule systems placed in larger 'habitat'.

Photo Courtesy of:
Fidelity Exterminating Company
Aberdeen, MD

I am Scared **IT-less of...

- The Sun
  - 2012-2013
  - Carrington Effect
    - (1873)
- Complete Failure
  - Satellites
  - Power Grid
  - Communications
  - Medical Care
  - Transportation (food, necessities)

SCARED SHITLESS

at least the horse didn't have underwear to ruin.

Our Options…?

- Classify Research
- Closed Academic Discussions
  - Only the "good" guys. (Whatever that means)
- US Gov. buy and classify "Great Inventions"
- Declare Technologies for Military Use Only?
- Redefine Patents
- Expand and Refine Dual-Use Technology List and Specifications

One Extreme . . .

- Turn West into a Trusted, Benevolent quasi-police-state.
  - No one is trusted.
  - Verify everything and everyone
  - Everything is suspect.
- Xenophobic.
- Monitoring (a la Snowden)
  - Behavior
  - Words
  - Communications
  - Affiliations?

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Winn's Answer

- We need to develop both offense and defense of all new technologies before they come to market.

  - Hack Early: Hack Hard

- New Internet

- We have to know how to 'Turn It Off' to make systems more survivable

  - Graceful Degradation

- It's our responsibility! Not the users.

  - Ethics, Morals and Social Responsibility

Questions?

Answers or Responses:

◆ Winn Schwartau

    ◆ 727.393.6600