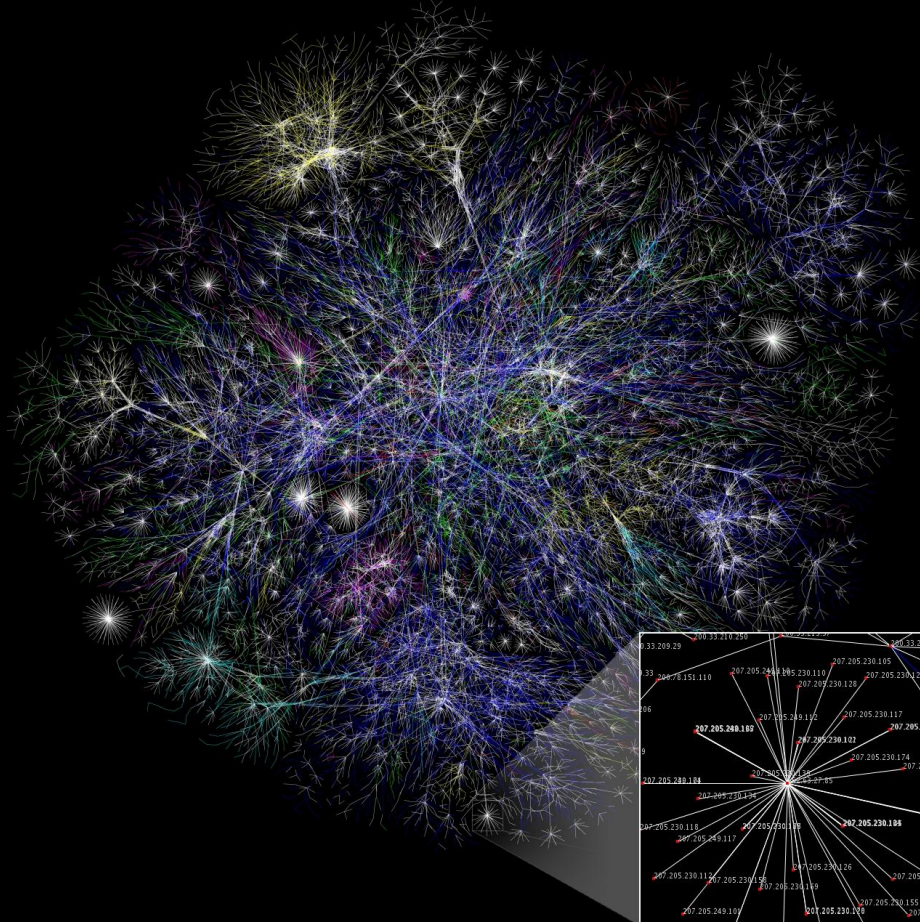




# *Saving Cyberspace*

Jason Healey

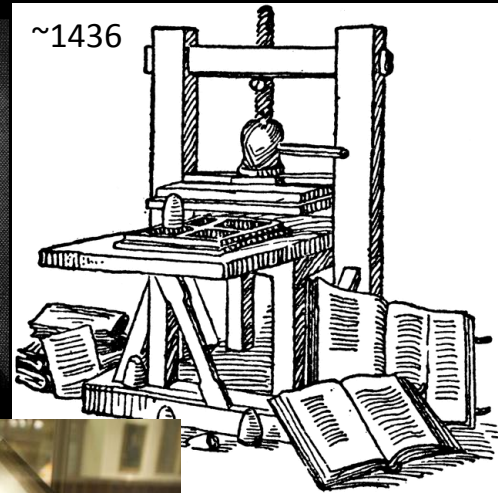
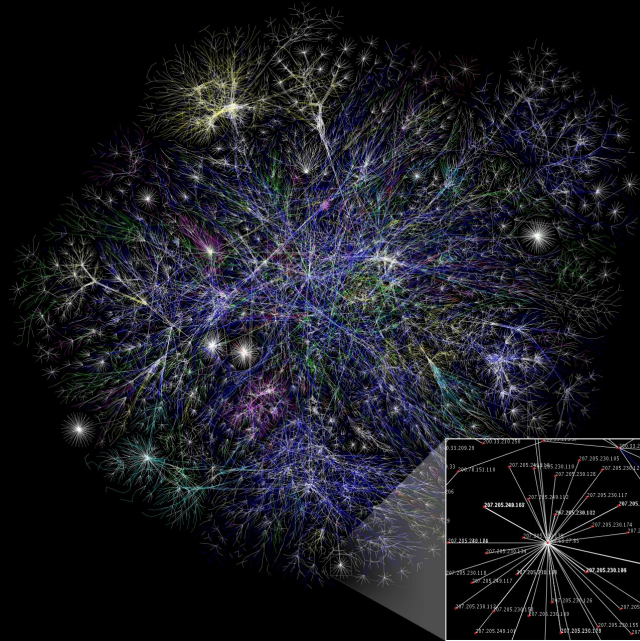
Atlantic Council





A global domain within the information environment consisting of the interdependent network of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers

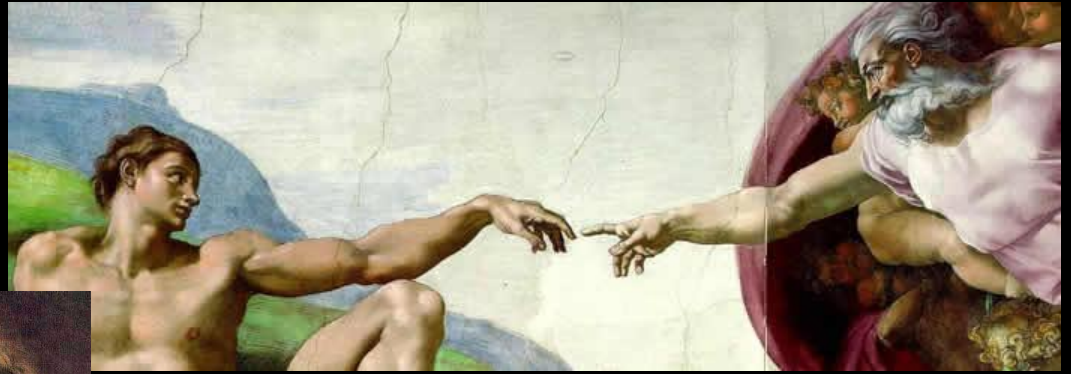
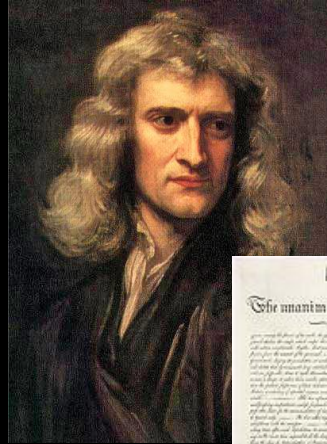
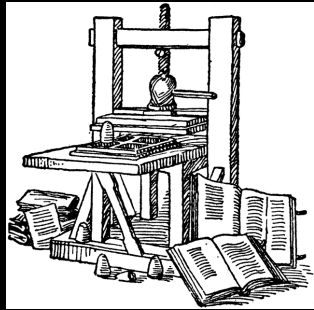




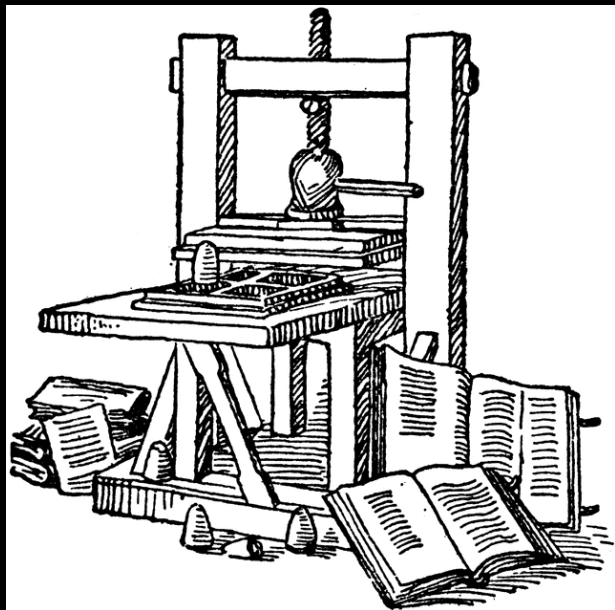
~1436



~1454

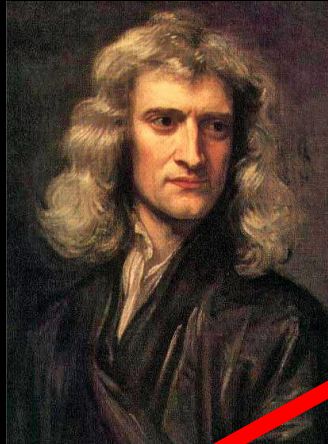
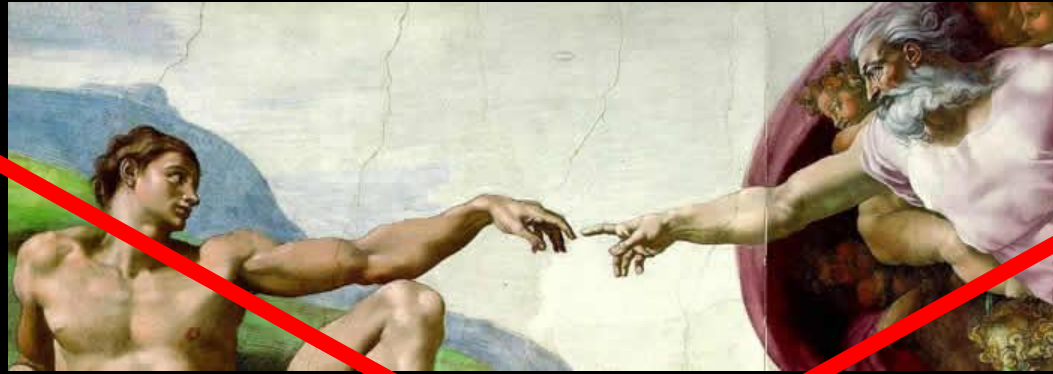


*“If there is something you know,  
communicate it.  
If there is something you don't  
know, search for it.”*



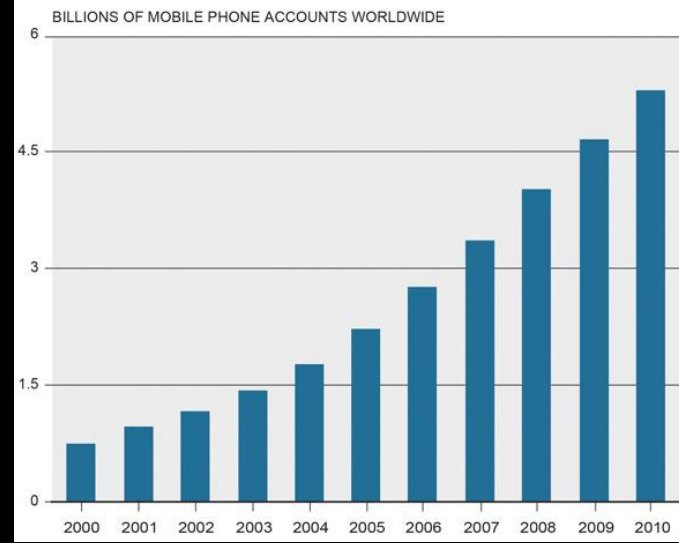
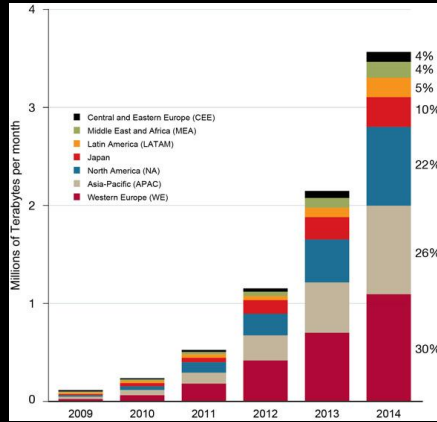
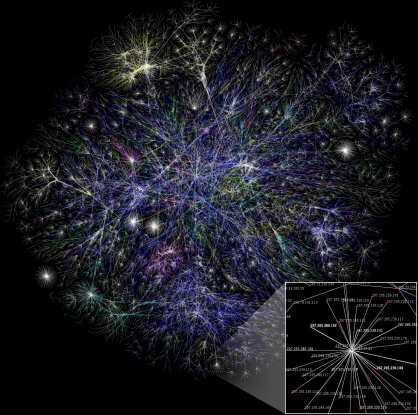
Violates Privacy? Civil Liberties?

Legal? Constitutional?



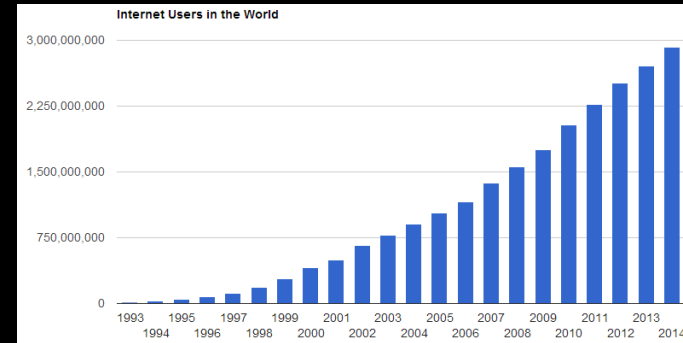
*"If there is something you know, communicate it. If there is something you don't know, search for it."*

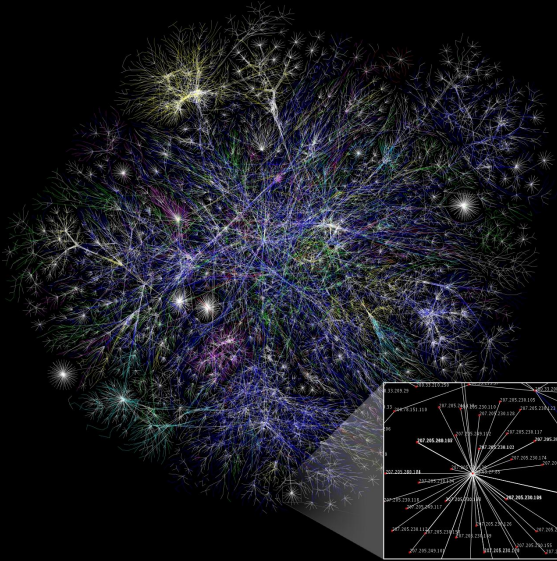




## Global Internet Users

1993: 14 million  
 2003: 778 million  
 2013: 2.7 billion  
 2030? 2280?



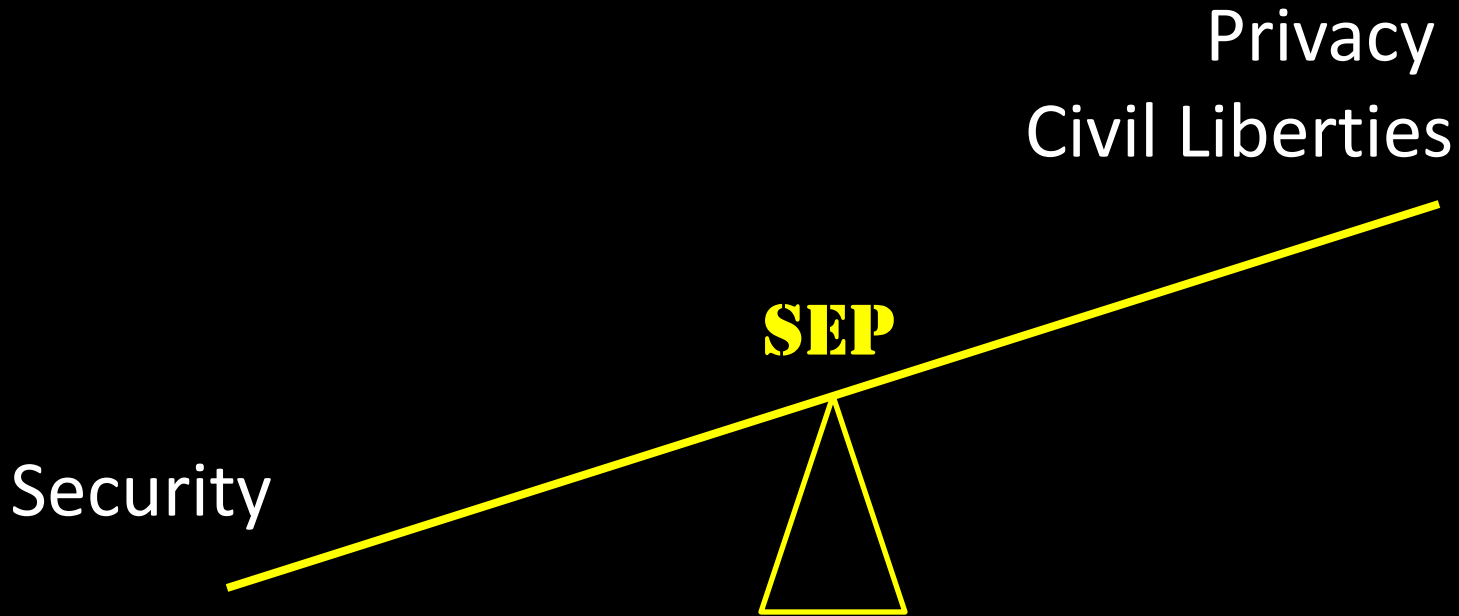


Data breaches  
Cyber crime  
Anonymous  
Malware  
Espionage  
State-sponsored attacks  
Stuxnet  
Heartbleed  
Erection of borders

...

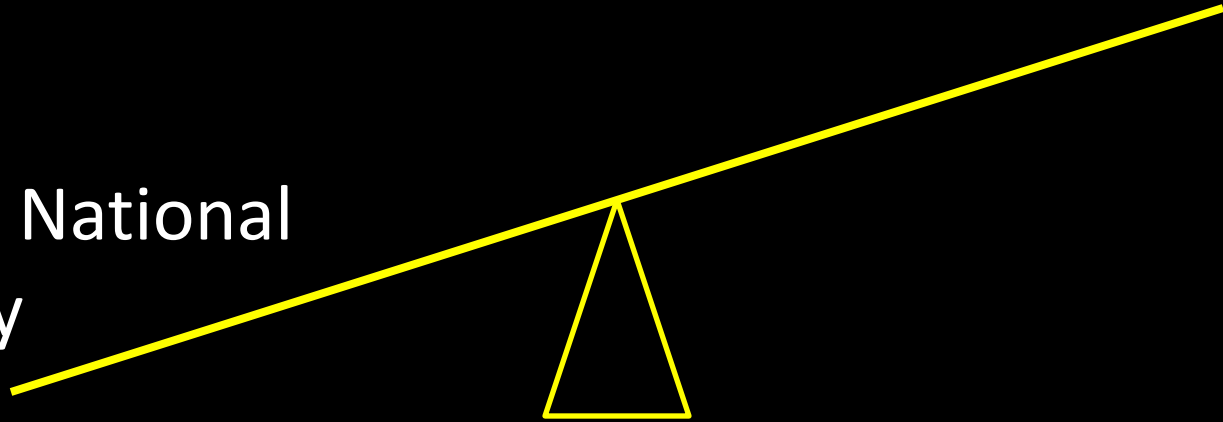
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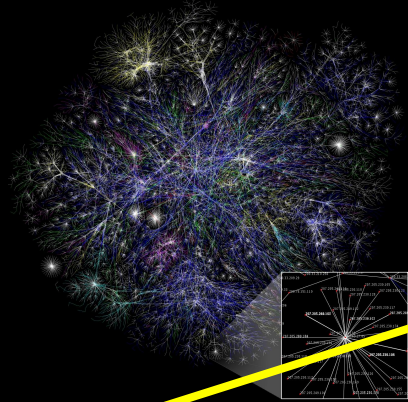


Future Economic and  
National Security

Today's National  
Security

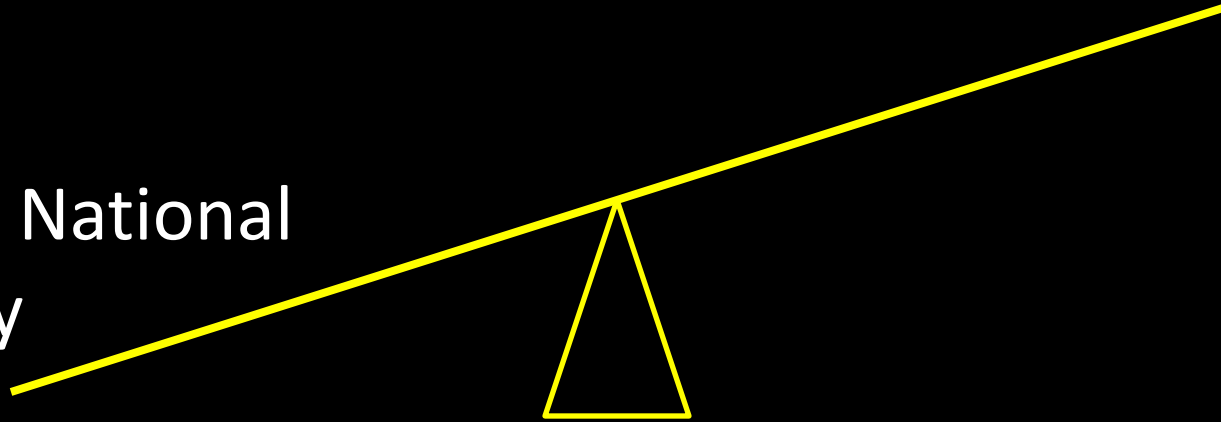


Today's National  
Security



Future Possibilities  
Until the End of  
Humankind

Today's National  
Security



# How many future Renaissances and Enlightenments will humanity miss

if we – all of us, for any purpose – keep  
treating the Internet as a place for crime,  
warfare and espionage?



**SAVING FOR WHOM?**



# Saving ... *for Whom?*

- Sustainable for future generations
  - Not just five years or fifty but two hundred and fifty
- Especially as some of the most innovative technologies in our near future *must have* strong security for us to unlock them without resulting disaster



2014

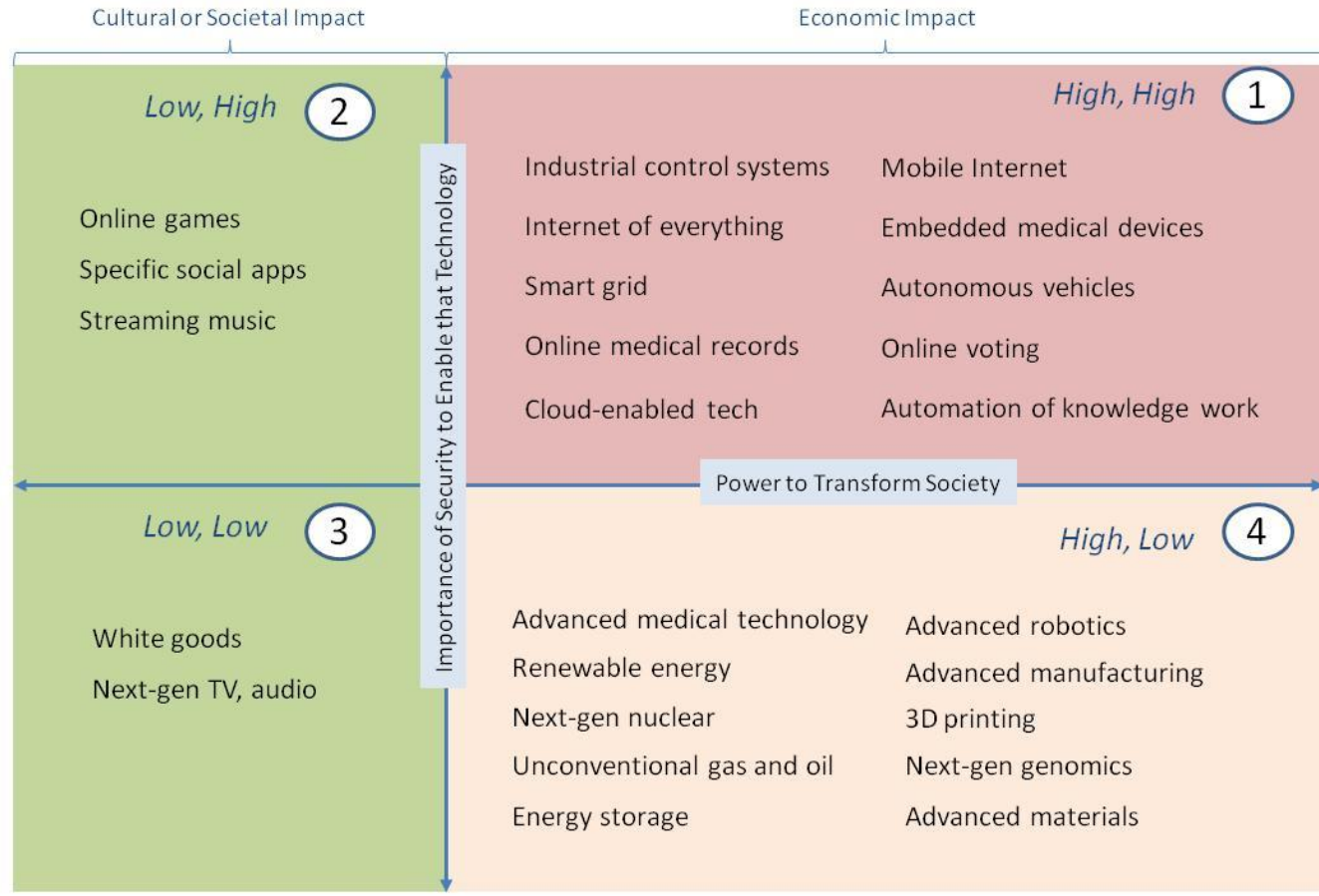
2024

2034

2074

2274

# Which of the Most Transformative Technologies Must Be Most Secure? – Illustrative





**black hat**<sup>®</sup>  
USA 2014

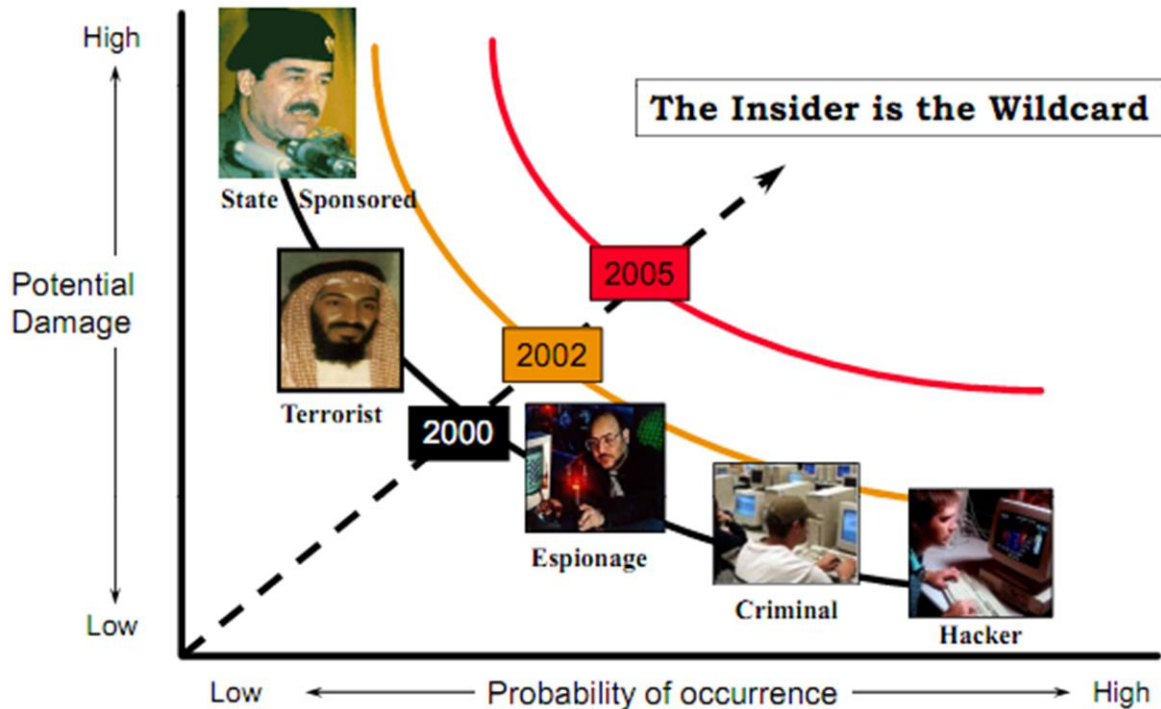
**SECURITY *FROM WHAT***

# Saving ... *from What?*

- Obvious Stuff
- Global Shocks
- Tipping Point



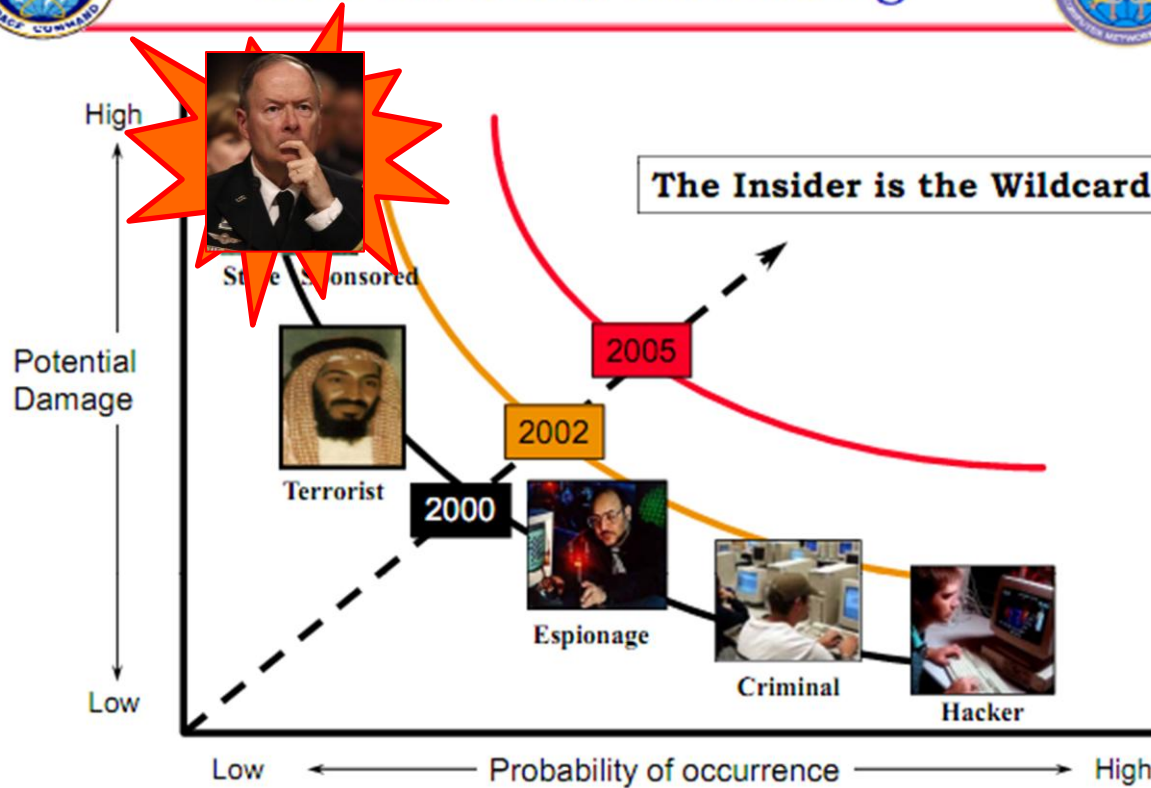
# The Threat is Increasing



Source: 1997 DSB Summer Study



# The Threat is Increasing



Source: 1997 DSB Summer Study

# Global Shocks

Initiated or Amplified Through the Internet

“As society becomes more technologic, even the mundane comes to depend on distant digital perfection.”

Dan Geer

“This increasingly tight coupling of the internet with the real economy and society means a full-scale cyber shock is far more likely to occur.”

“Beyond Data Breaches: Global Interconnections of Cyber Risk”



# Bad Guys Finish First

“Few if any contemporary computer security controls have prevented a [red team] from easily accessing any information sought.”

Lt Col Roger Schell (USAF) in 1979

# Bad Guys Finish First

“Few if any contemporary computer security controls have prevented a [red team] from easily accessing any information sought.”

O > D

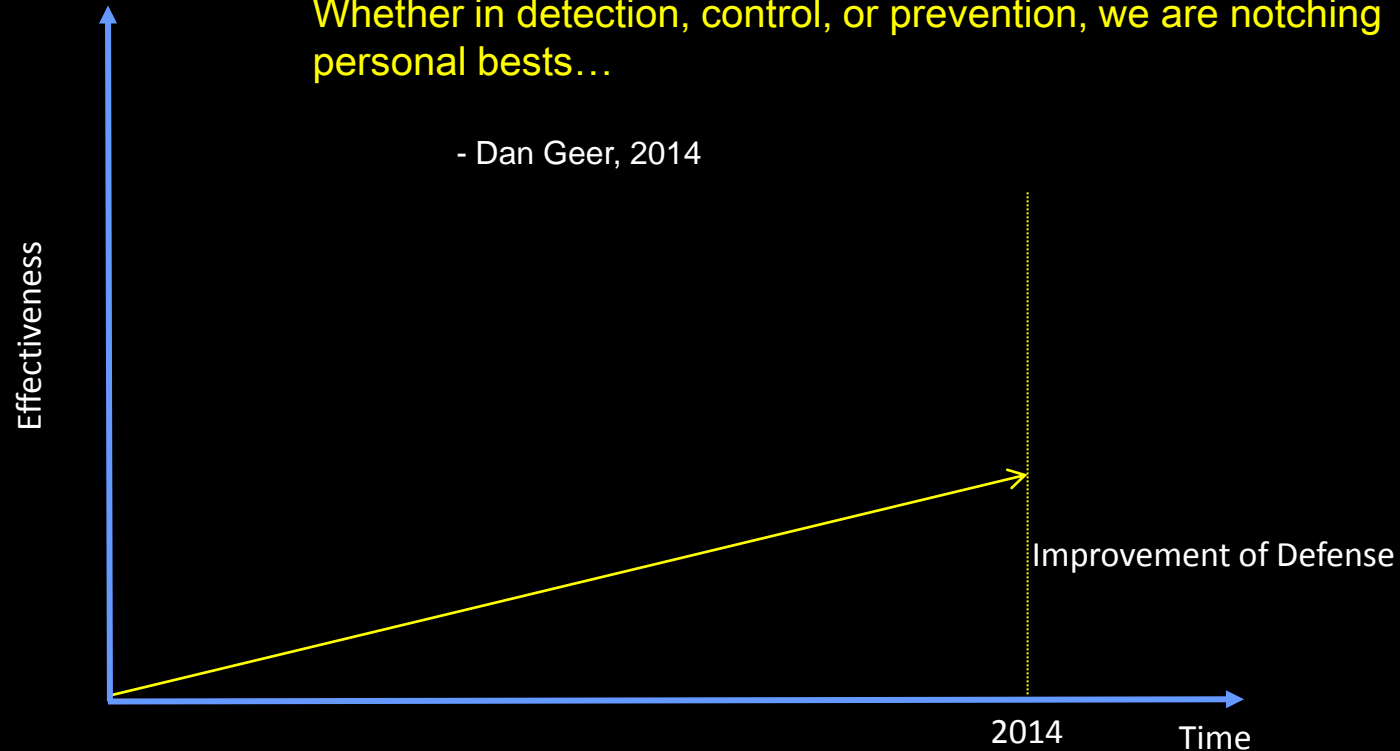
# Doesn't Have to Stay This Way



# Great News! Security is Getting Better!

Whether in detection, control, or prevention, we are notching personal bests...

- Dan Geer, 2014

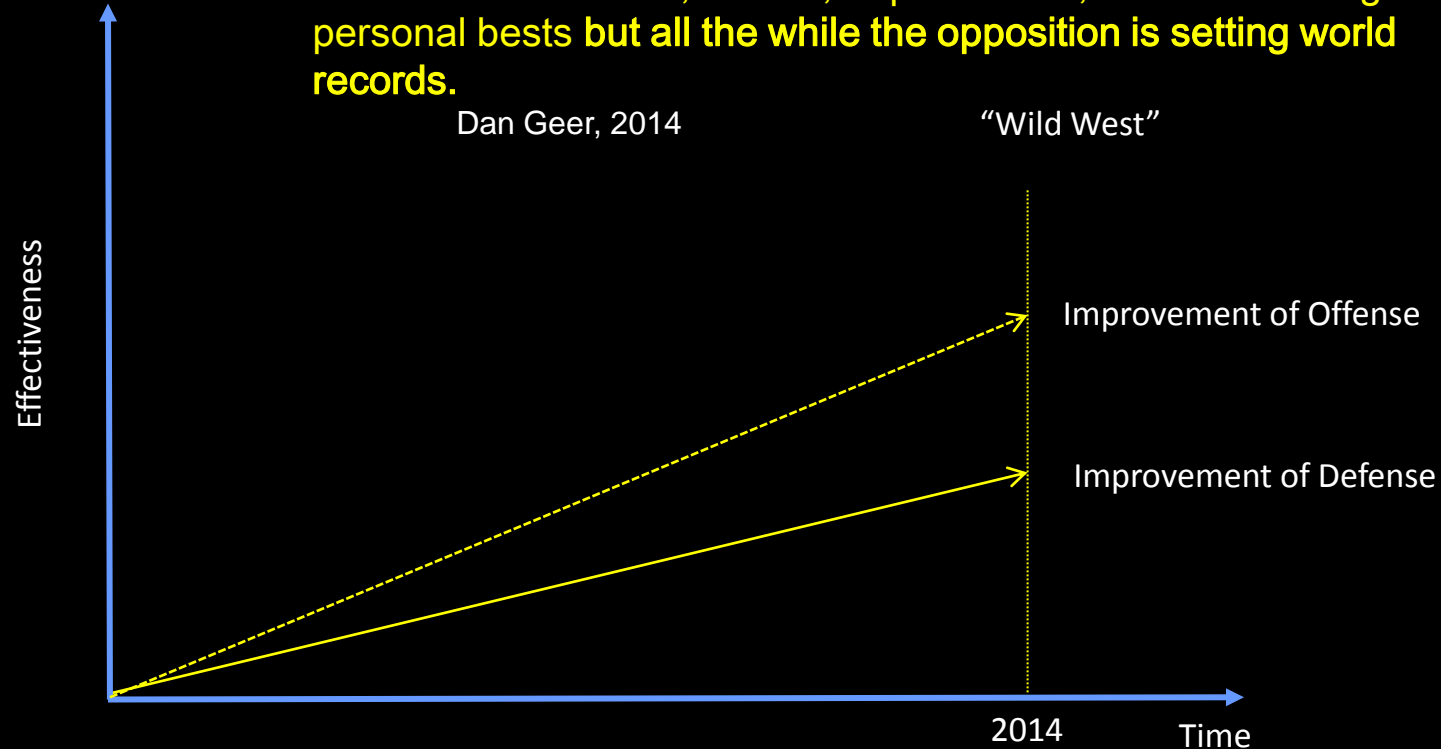


# Bad News! We're Still Losing and at a Faster Rate!

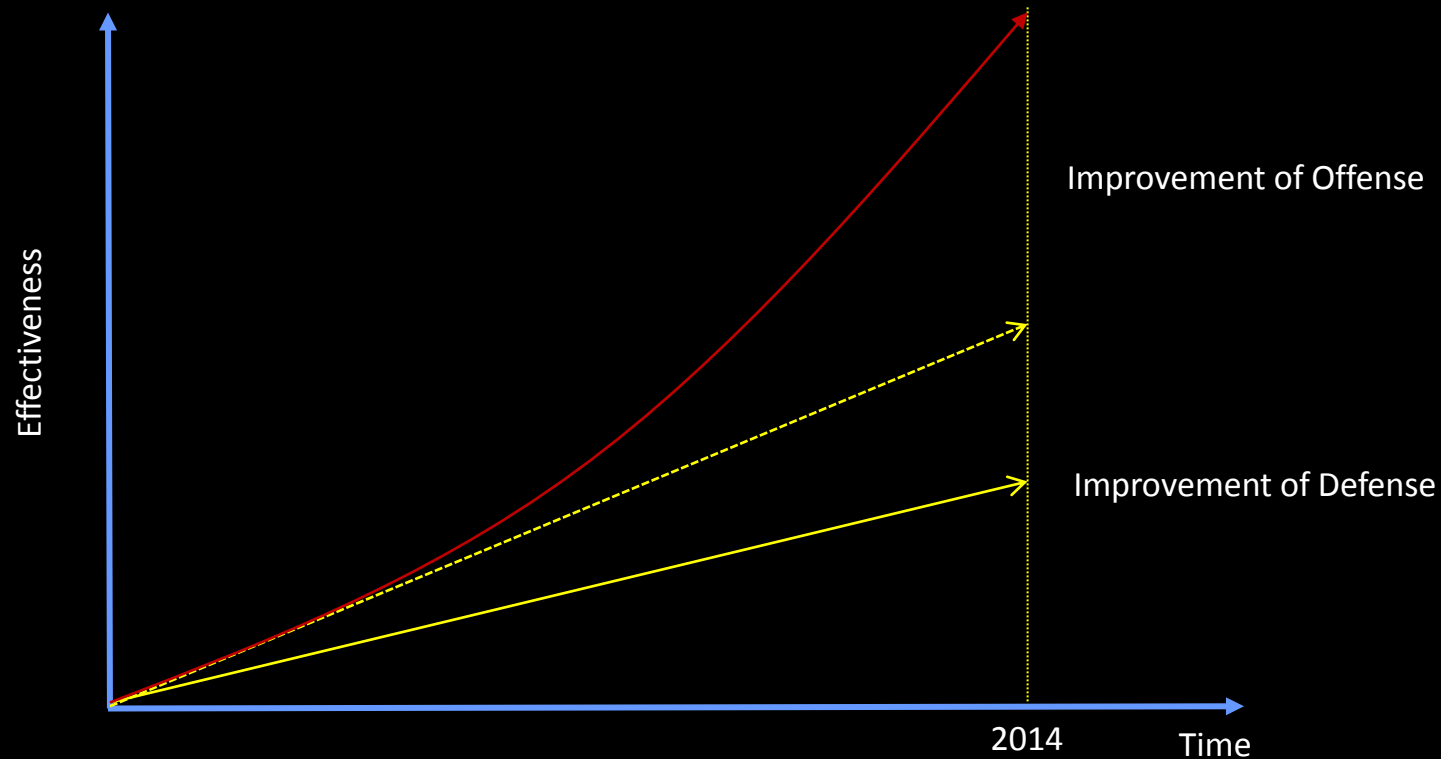
Whether in detection, control, or prevention, we are notching personal bests **but all the while the opposition is setting world records.**

Dan Geer, 2014

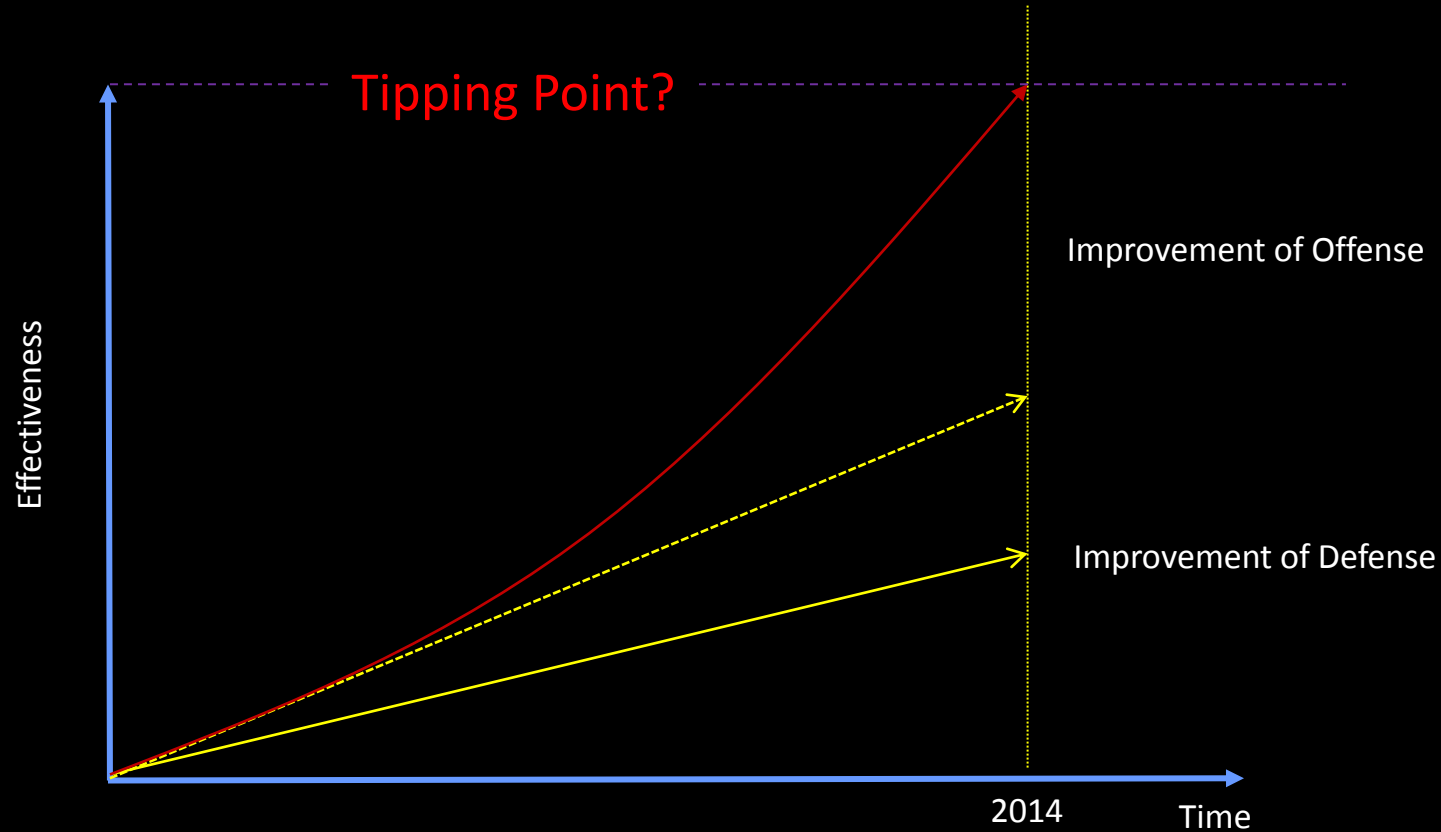
"Wild West"



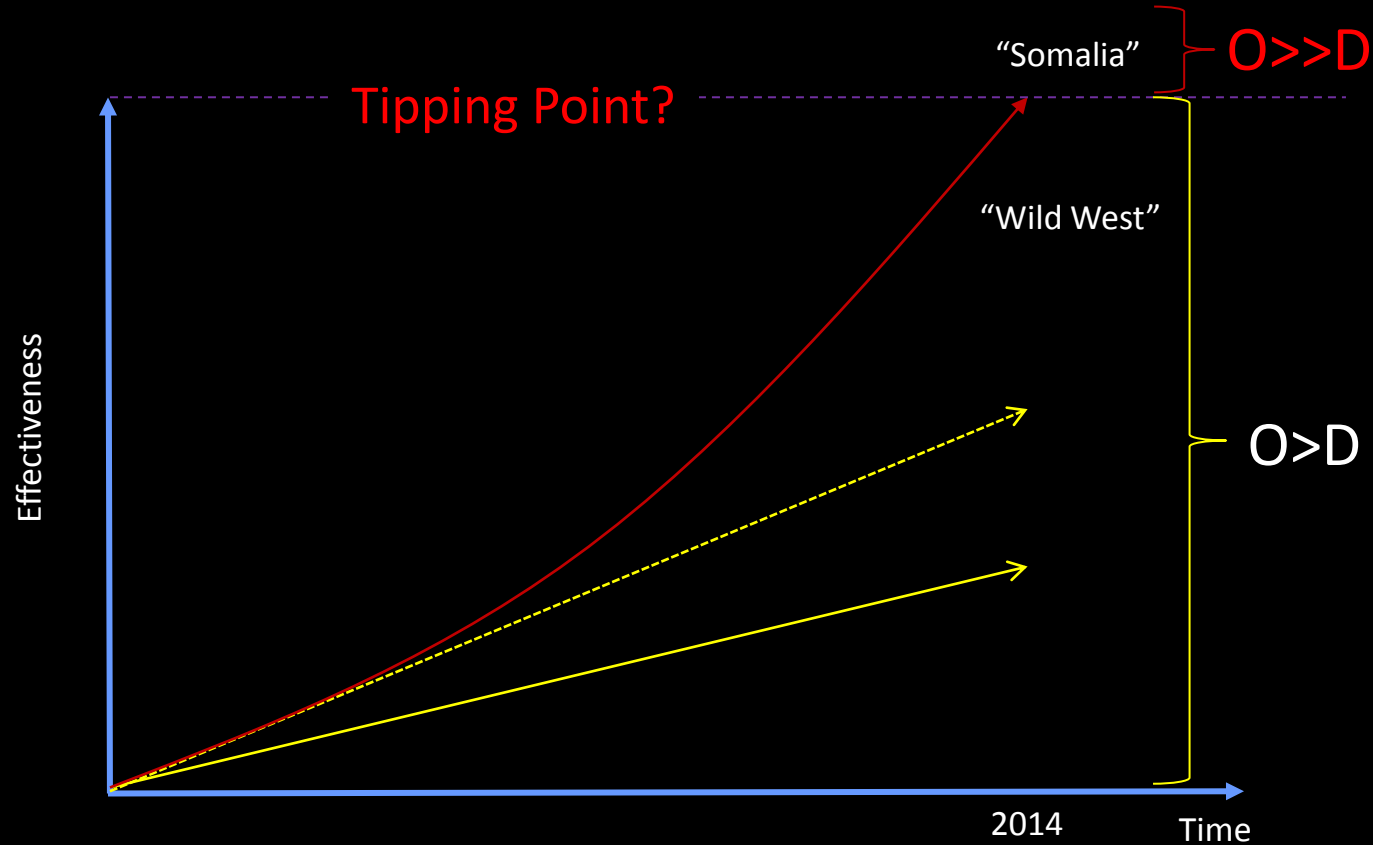
# Or Is It Exponentially Worse?



# Can This Last Forever?



# When Will There Be More Predators Than Prey?







**black hat**<sup>®</sup>  
USA 2014

**SOLUTIONS**

D > 0

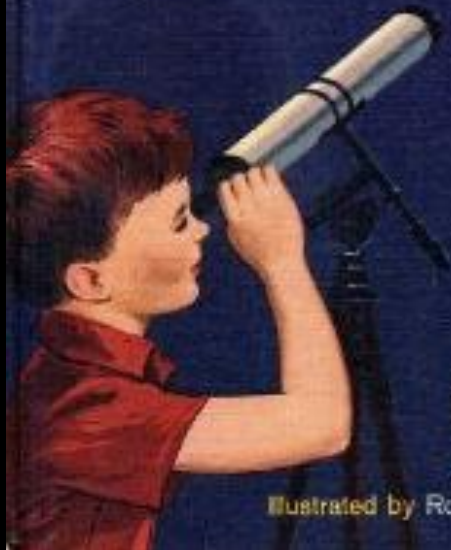
D >> 0

- Sustainable Cyberspace
- Private-Sector Centric Approach
- Working at Scale
- Single Cyber Strategy

- Disruptive Defensive Technologies ... but only if they work at scale!

# YOU WILL GO TO THE MOON

By Mae and Ira Freeman



Illustrated by Robert Patterson

**THIS HAS BEEN VERY NEGATIVE,  
SO TO END ON A POSITIVE NOTE...**



# Cyber Statecraft Initiative

- International conflict, competition and cooperation in cyberspace
- Our goal is Saving Cyberspace
- Publications (all at our website, atlanticcouncil.org)
- Public and Private Events

## QUESTIONS?

1. History of cyber conflict
2. Future of cyber conflict
3. Systemic cyber risks
4. Public sector-centric strategy
5. Sustainable cyberspace

