Cyber History, Future & Questions
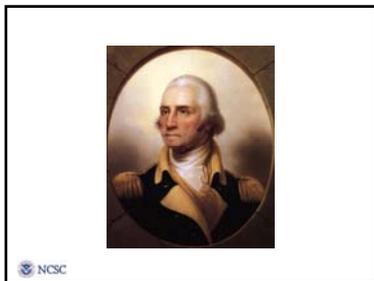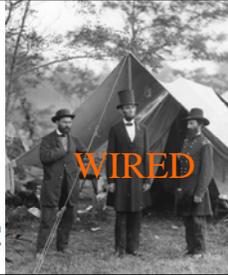
Rod Beckstrom
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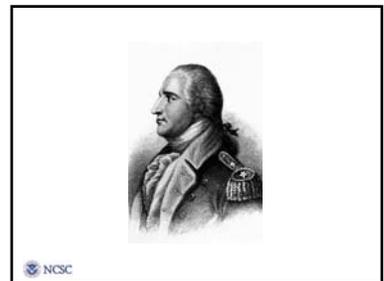
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Black Hat

Rod Beckstrom
Director

WIRED

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Insider threats and hackers…

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Who reengineered the system?

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A great challenge today

Let's work together to Create something new

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*Where do we want to go
with this system?*

*What is the
end state we seek?*

*America as
defender of the free world*

Slight problem…
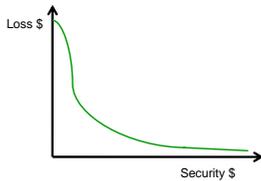
What are the rules?

*Physics of networking?
Economics of networks?
Economics of security?
Risk management?
Privacy architecture?*

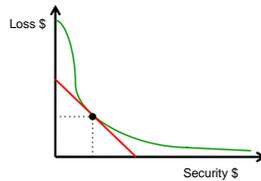## Economics of Security

MINIMIZE $C = S + L$

where C = total cost
       S = cost of security
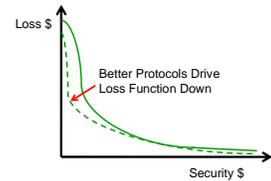   L = expected cost of loss

Economics of Security

Economics of Security

Economics of Protocols

Better Protocols Drive
Loss Function Down

Protocols Investments

IPV6, BGP, DNS, SMS/IP, POTS …

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Correlation of Losses

$$(L_{IP}) = u L_{Internet} + v L_{SMS} + w L_{Phone} + y L_{SCADA} \dots$$

Correlations of losses due to IP failure (L_{IP}) are trending towards 1.0

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Info Sharing Incentives

"information wants to be free"
but
Stovepipe perception – "information is power"

Incentives against disclosure

OSINT/SIGINT/HUMINT

Benefits of collaboration and
network effect…

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Changing Incentives

Electronic mapping and analysis

Transparency and reporting

Red Team auditing

Private Sector

How to measure security?

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Economics of Privacy

A pure externality?
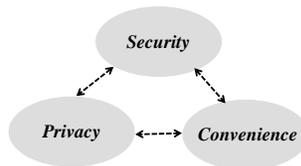
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Privacy Tradeoffs

Note: Aspen

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Privacy Tradeoffs

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Questions for Privacy?

Minimizing data?
Anonymity?
Leveraging private sector?
Clouds?
Definition & measurement?
Incentive structures?
Auditing? Red teams?
Privacy and cyber?
???

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Questions for Privacy?

Minimizing data?
Anonymity?
Leveraging private sector?
Clouds?
Definition & measurement?
Incentive structures?
Auditing? Red teams?
Privacy and cyber?
???

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Aspen - Nextgen Privacy?

The multi-stakeholder process outcome will be an open source standard, supported by a policy and legal framework, for authentication and credentialing of individuals without requiring exposing personal identifying information. At the same time, the framework will support the availability to law enforcement of relevant personal/identifying information upon presentation of a suitable warrant

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New Cyber Frontiers

Cyber democracy
Cyber governance
Cyber quarantines
Cyber justice
Cyber diplomacy

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The Prisoners Dilemma

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The Prisoners Dilemma

Player B

	Cooperate	Defect
Player A Cooperate	W/W	L/W
Player A Defect	W/L	L/L

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The Prisoners Dilemma

Player B

	Cooperate	Defect
Player A Cooperate	W/W →	L/W
Player A Defect	W/L	L/L

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The Prisoners Dilemma

Player B

	Cooperate	Defect
Player A Cooperate	W/W	L/W
Player A Defect	W/L	L/L

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Iterated Prisoners Dilemma

Player B

	Cooperate	Defect
Player A Cooperate	W/W	L/W
Player A Defect	W/L	L/L

200 X

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Iterated Prisoners Dilemma

Player B

	Cooperate	Defect
Player A Cooperate	W/W	L/W
Player A Defect	W/L	L/L

200 X

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Iterated Prisoners Dilemma

Player B

	Cooperate	Defect
Cooperate	W/W	L/W
Defect	W/L	L/L

Player A

200 X

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E Pluribus Unum

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National Cyber Security Center
   defense of Federal networks
   .ic, .mil, and .gov
   through info sharing
   collaboration
   standards
   State of Network report

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Summary

Constitutional code
New cyber rules
New economics
New protocols
Develop cyber diplomacy…
Global collaboration…

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*How can we best plant
our flag in cyberspace?*

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