



The Fourth Industrial Revolution

Rewriting the rules of business, leadership and sovereignty

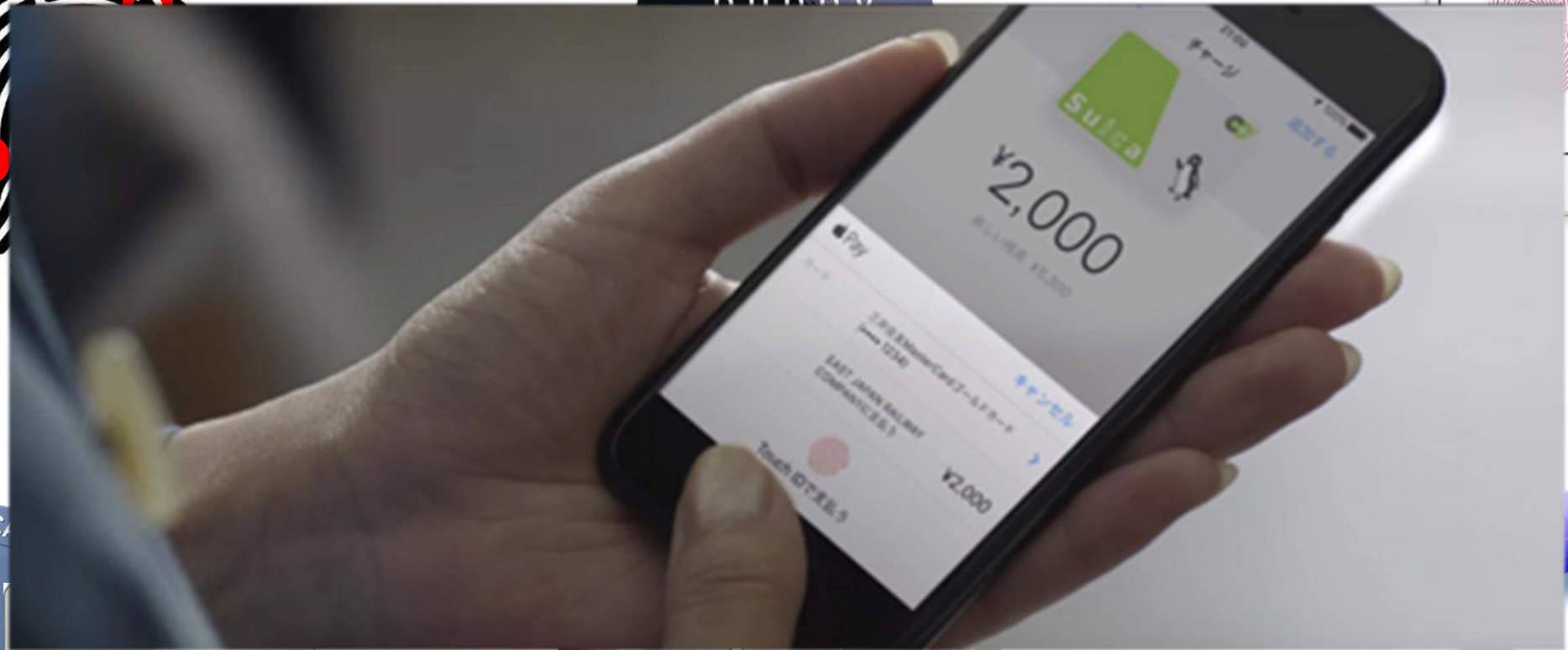
OECD NAEC

Dr. William H. Saito

Special Advisor – Cabinet Office, Government of Japan

Special Advisor – Ministry of Economic Trade and Industry (METI), Gov. of Japan

1991



164	387	2	92
246	377	1	97
132	369	1	100
181	366	2	87
153	351	2	95
188	349	1	99
143	321	1	100
287	311	2	100
188	297	1	95
153	303	2	87
192	275	2	100
173	231	1	91
239	229	1	95
140	217	1	81



Microsoft®



THE WALL STREET JOURNAL TUESDAY, MAY 2, 2000 B5

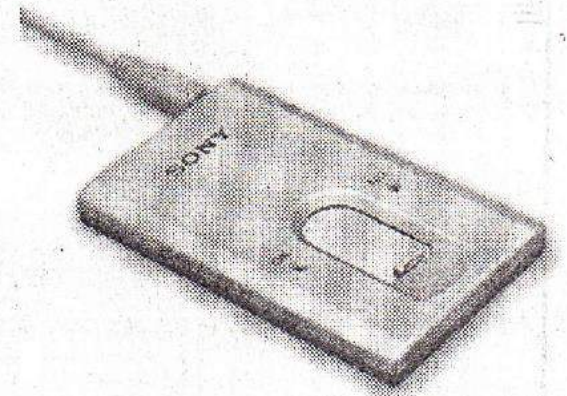
Microsoft to Use 'Biometric' Tools To Bolster Security for Windows

By JATHON SAPSFORD

Staff Reporter of THE WALL STREET JOURNAL
Microsoft Corp. has agreed to include in future versions of its Windows operating system a type of software that uses "biometric" devices such as fingerprint or eye scanners to boost online security.

Microsoft today will announce it signed a licensing agreement with closely held I/O Software Inc. of Riverside, Calif., which has a proven "application programming interface," or API, for biometrics technology. This essentially is a program that lets fingerprint or eye scanners communicate with operating systems.

Some see these scanners, which identify users based on unique individual characteristics, as eventually enhancing or replacing computer passwords. A crucial

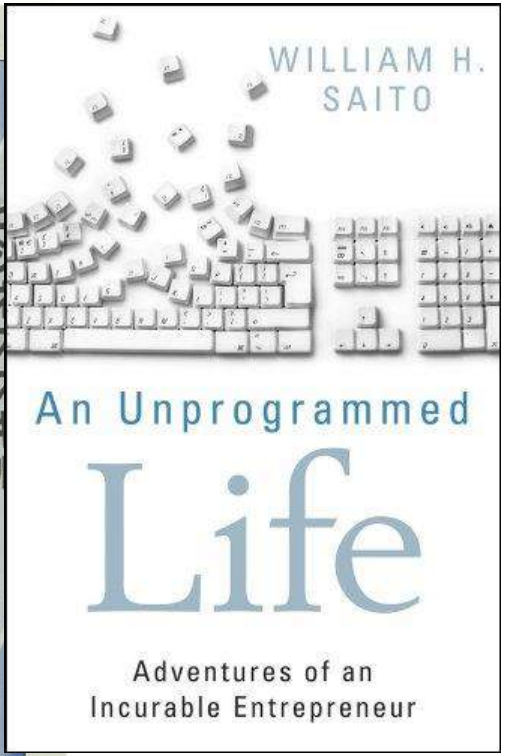
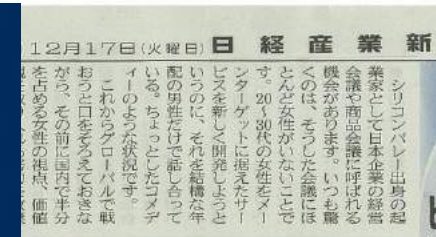
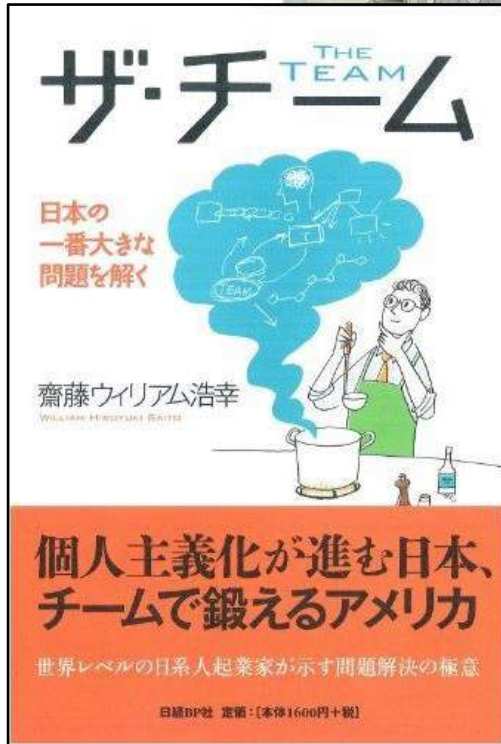


Biometric software in future versions of Windows will allow users to employ new security tools such as Sony's fingerprint recognition device.

metrics technology as a security option, said Matthew Martin, vice president of se-

Who am I?

- Investor
- Board Member
- Teacher
- Advisor
- TV Commentator
- Entrepreneur



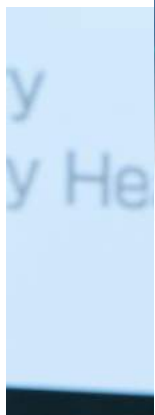
Cyber3 International Cybersecurity Conference



Cyber3 Conference Tokyo 2017

2017年10月5日(木)/6日(金)
慶應義塾大学三田キャンパス





www.npr-event.jp/cyber3/

The central graphic features a large, glowing blue sphere composed of binary code (0s and 1s) and a padlock icon in the center. The text is overlaid on this graphic.

World Economic Forum (WEF) - Davos



Navigating the next industrial revolution

Revolution	Year	What happened?
	1 1784	Steam, water, mechanical production equipment
	2 1870	Division of labour, electricity, mass production
	3 1969	The computer, electronics and the internet
	4 ?	The barriers between man and machine dissolve

World Economic Forum Annual Meeting 2016

20-23 January 2016 Davos-Klosters, Switzerland

Fourth Industrial Revolution

The Global Summit on Innovation, Science and Technology

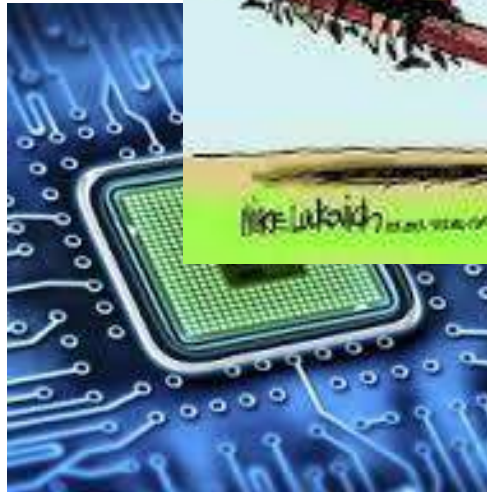
Annual Meeting of the New Champions 2017

Dalian, People's Republic of China 27-29 June

World is changing increasingly faster...

- **Market**
- **Mother Nature**
- **Moore's Law**

...at the same time!





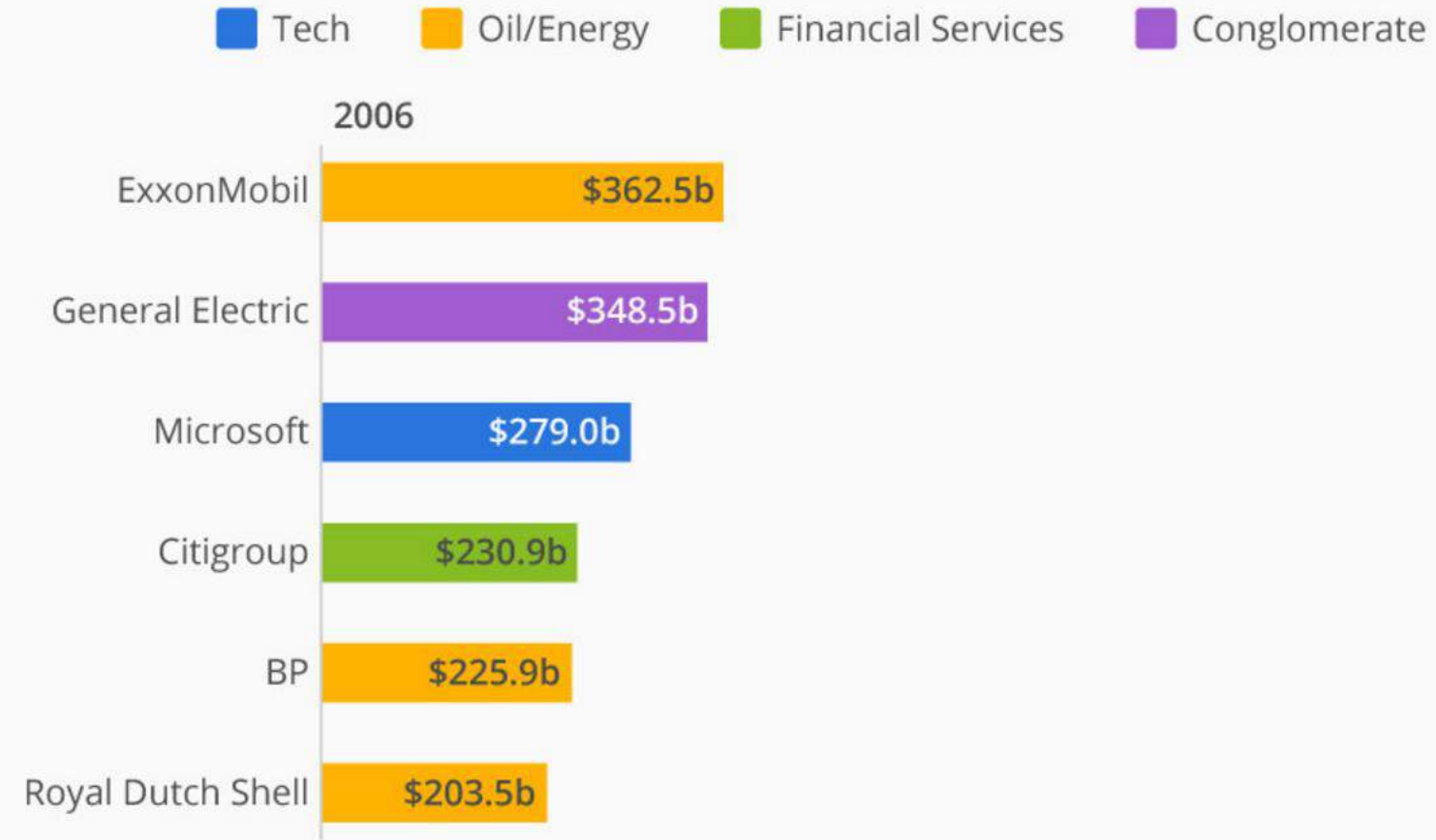
Market





The Age of Tech

Market capitalization of the world's most valuable public companies



Data = "New Oil"



Google



amazon



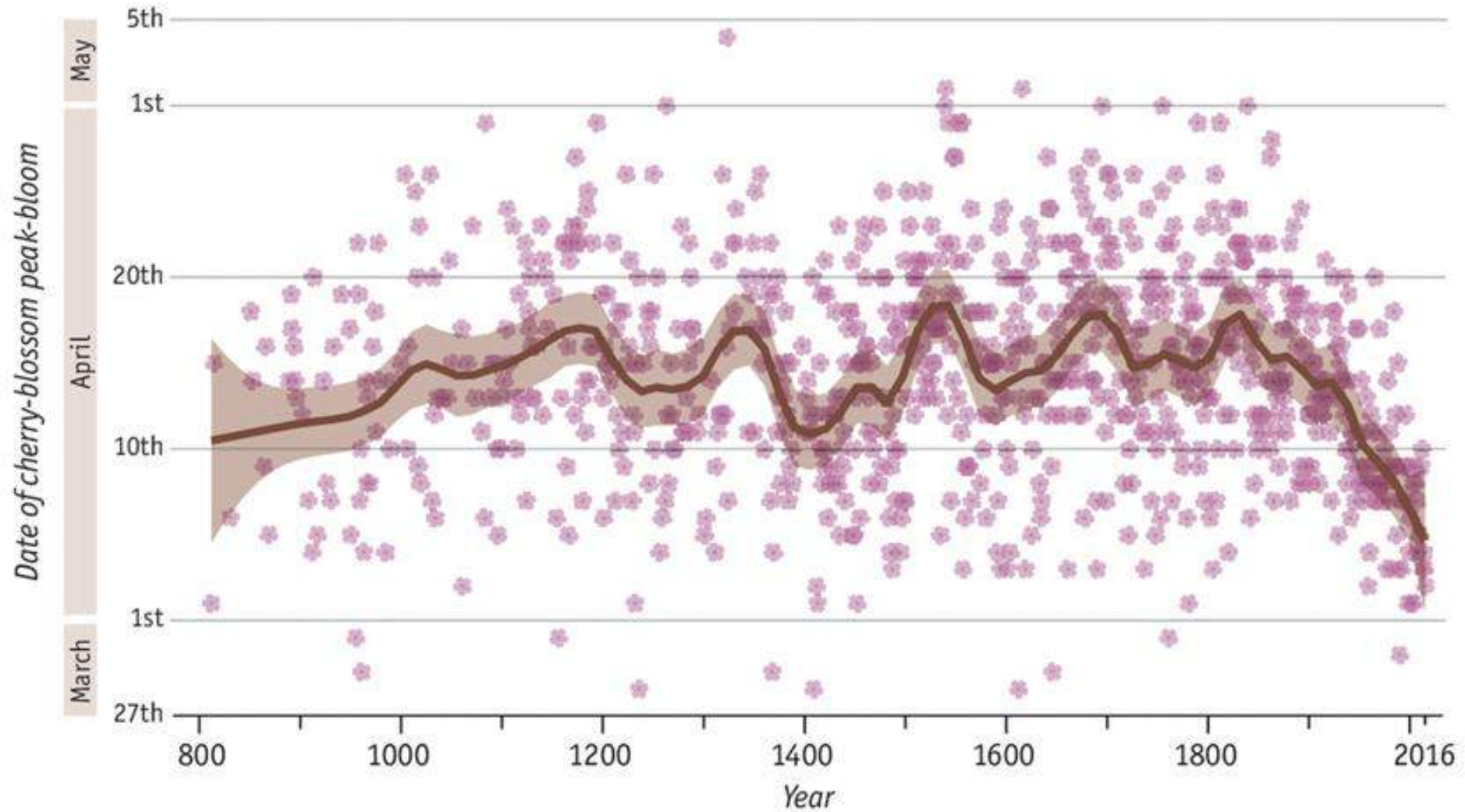
1Q2017
Net Revenue = \$25B



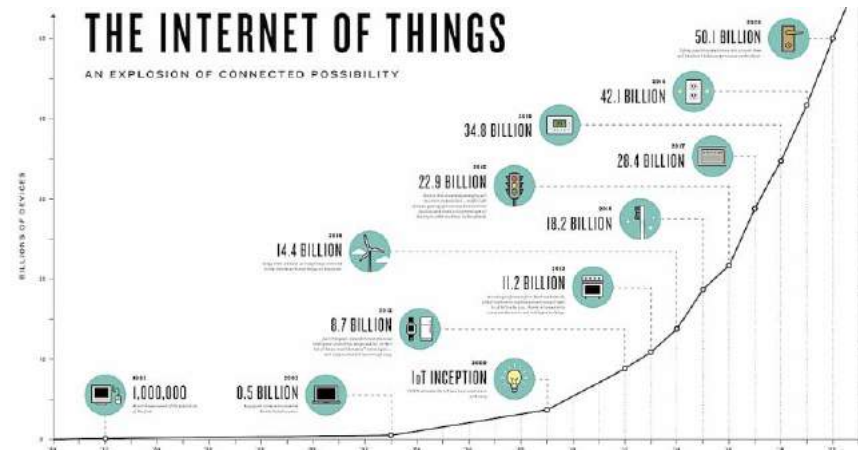
Cherry bomb

Date of cherry-blossom peak-bloom in Kyoto, Japan, 800AD - 2016

— Trend ■ Confidence interval

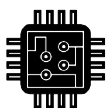


Moore's Law





ICT = Internet
Cybersecurity
Troubles



Transistor



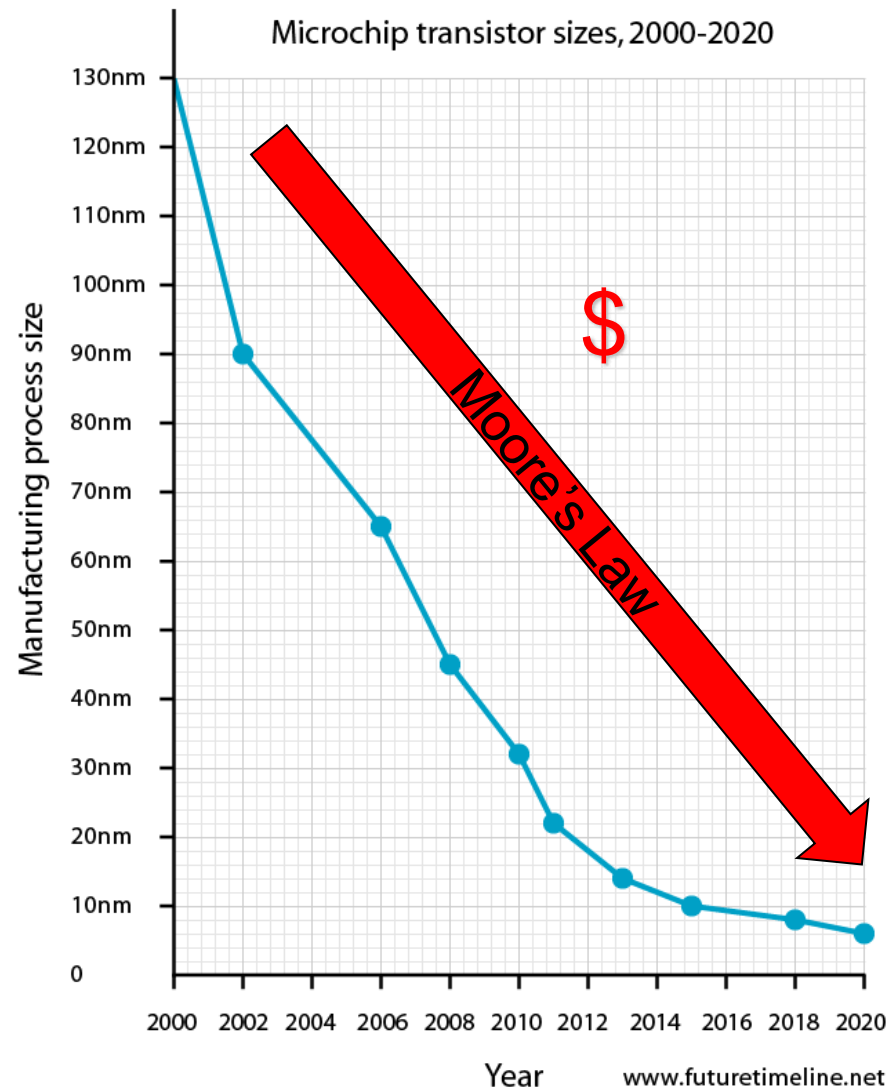
Communication



Storage



Sensors





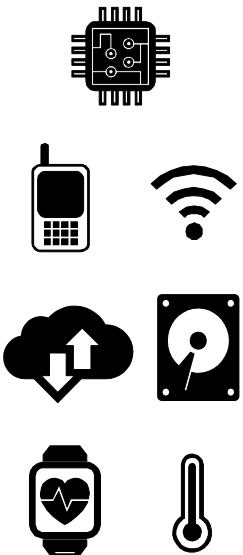
ICT

=

Information

Com
Tech

IoT



Transist

Commu

Storage

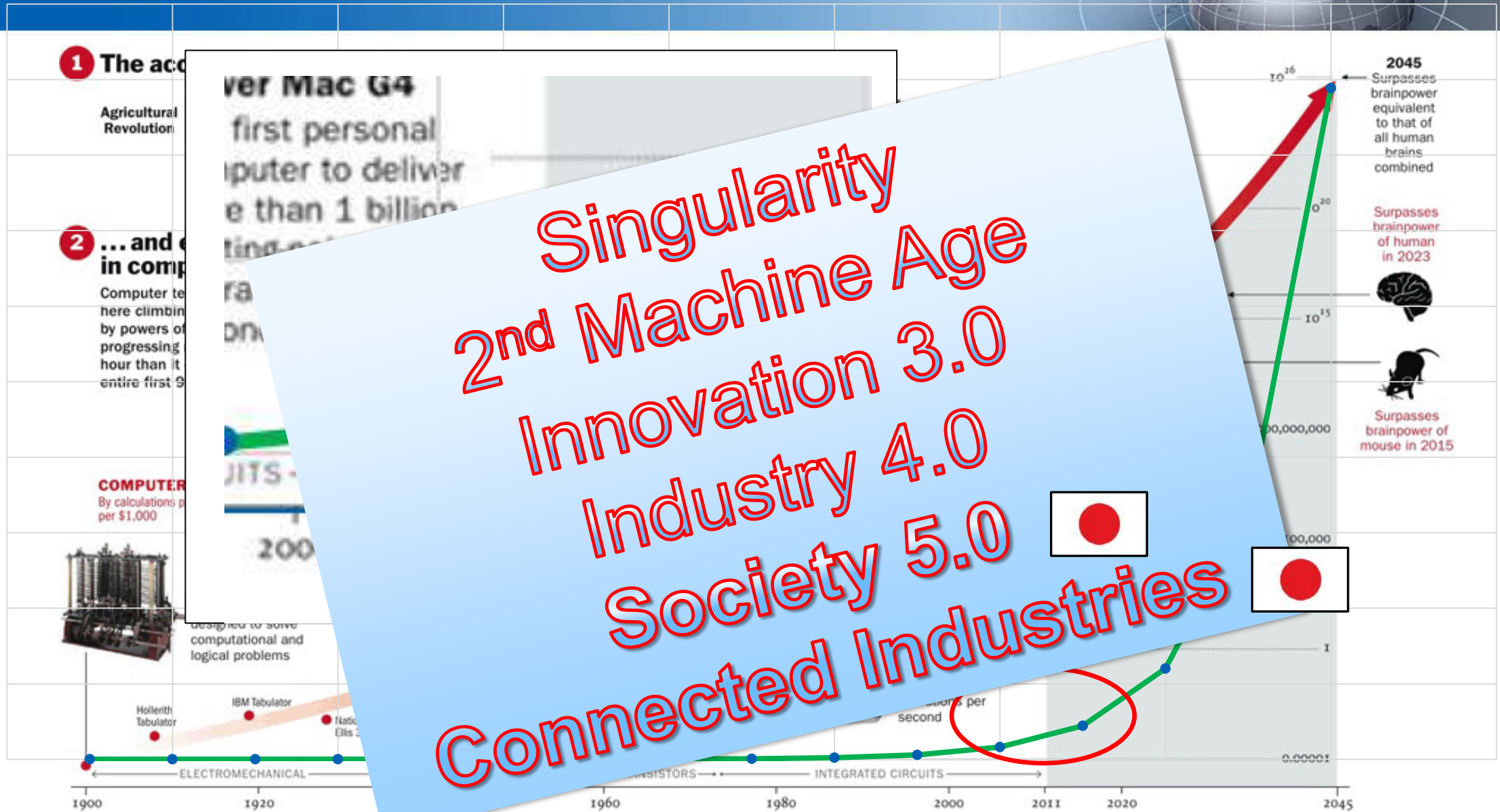
Sensors



ng to
e
rms



Moore's Law - Exponential Growth



Exponential Growth

- In the last 20 years...!



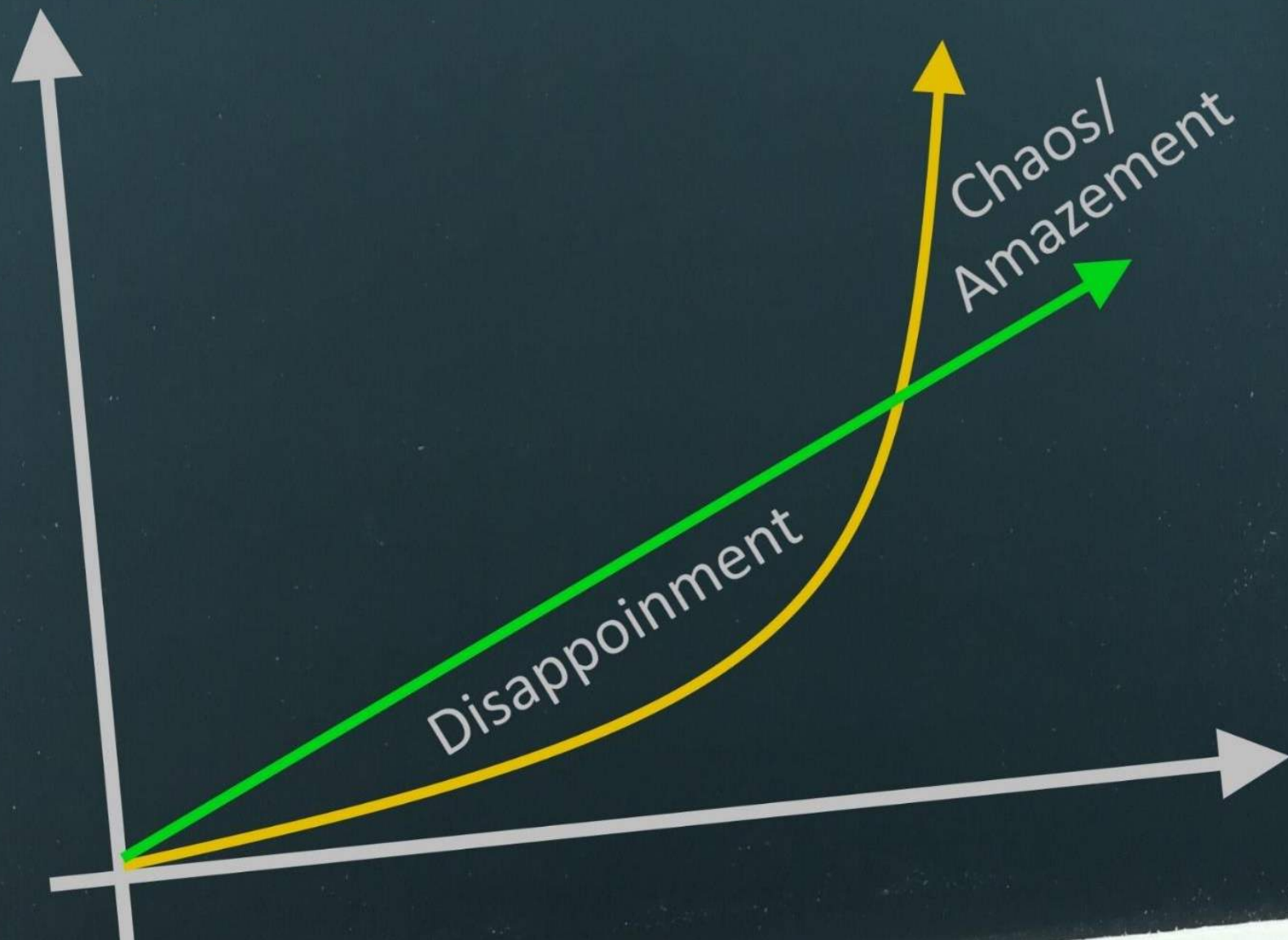
1,000x ↓

1,000,000x ↓

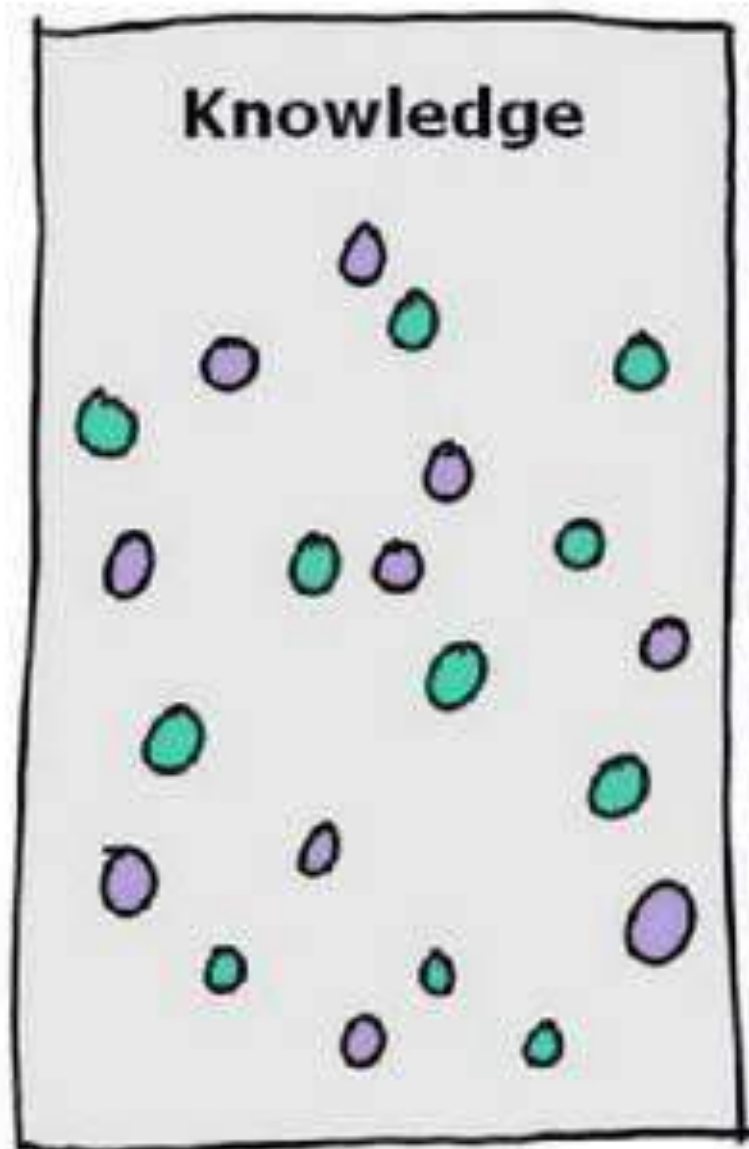
1,000,000,000x ↓



Linear vs Exponential



Being Human...





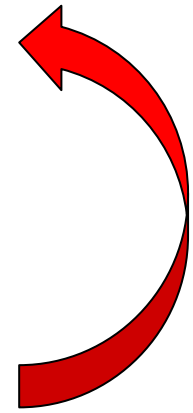
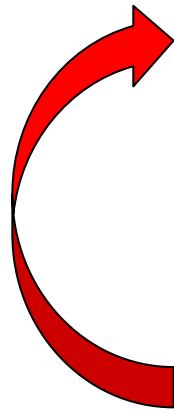
Network



Communication



Teamwork



Networked Businesses - World's largest....



- Media company



- Movie company



- Taxi company



- Hotel



- Retailer



Networked Businesses - World's Largest

\$70B market cap
Biggest data pool on supply (driver) and demand (passenger)

taxi firm

Uber

media firm

Facebook

TV company

Youtube

creates no content

retailer

Alibaba

carries no stock

accomodation provider

Airbnb

owns no property

information provider

Google

phone company

Skype/WeChat

Trust :
1 Minute = 400 hours of video uploaded

\$52B market cap
1Q2017 = 25K cars (GM = 2.3M)
1.3B miles of data

doesn't write the applications

isn't the investor

sells no camera

movie company / tv network

Netflix

owns no cinema / lays no cable

retailer*

Amazon

car company*

Tesla

IoT?

Internet of Things

-or-

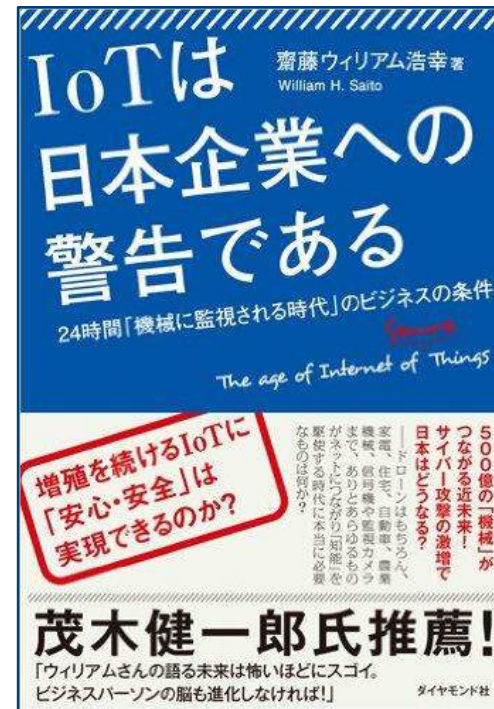
*Internet of **Threats***

-or-

***Insecurity** of Things*

IoST

Internet of *Secure* Things



Cybersecurity



Business = Security

1969 ARPANET

1983 TCP/IP

1992 Commercial use

1993 Mosaic/WWW

1995 Secure Socket Layer (SSL)

2000 RSA



Internet + Security = Business!

Security is the fundamental enabling technology of the Internet



Atomic



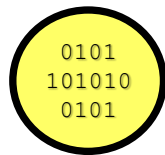
Biological



Chemical



Digital





Not constrained by Physics

Speed of Light...

... From Anywhere

Simultaneously



“Cold War” → “Code War”

Non-State Actors

Attribution

Asymmetric

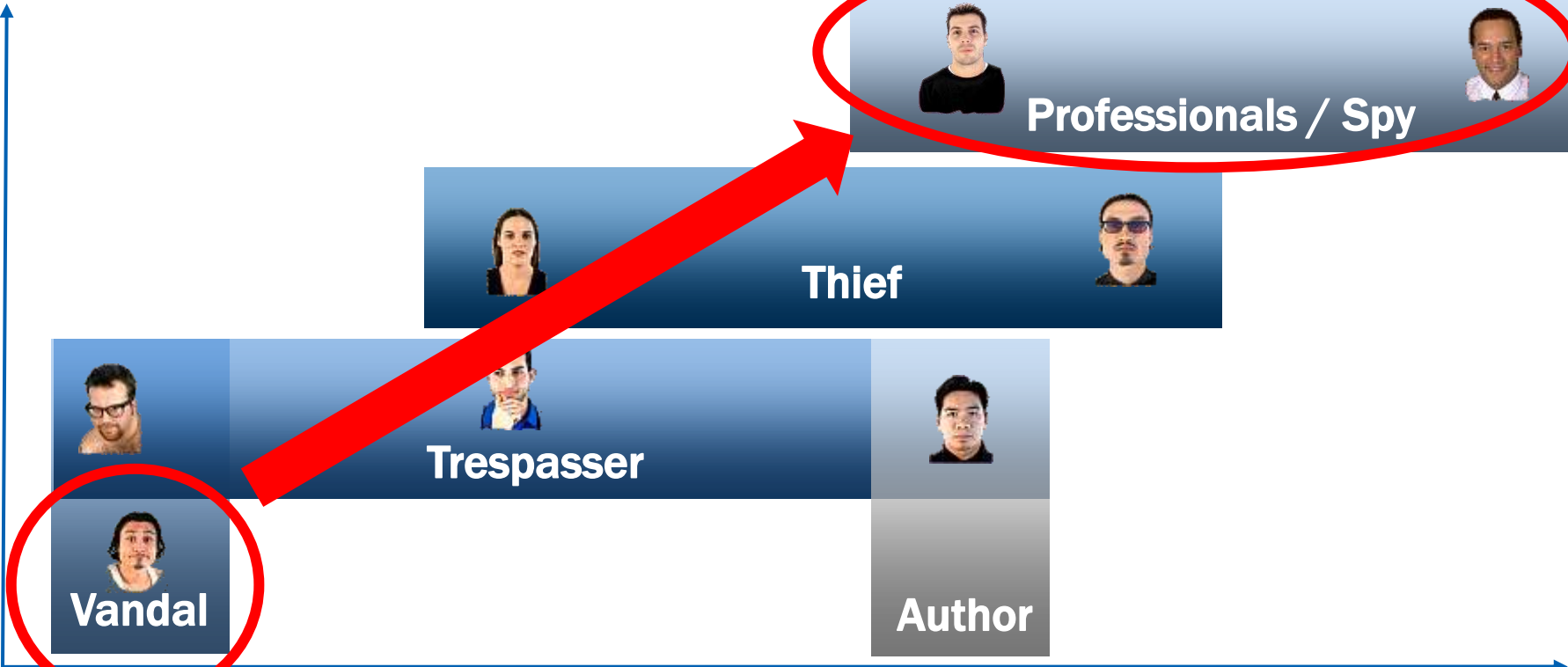
The Threat Actors

National Interest

Personal Gain

Personal Fame

Curiosity



Vandal

Trespasser

Thief

Professionals / Spy

Runs Scripts

Basic Programming & Networking

System Level Programming & Networking

Specialized Skills & Knowledge

Author

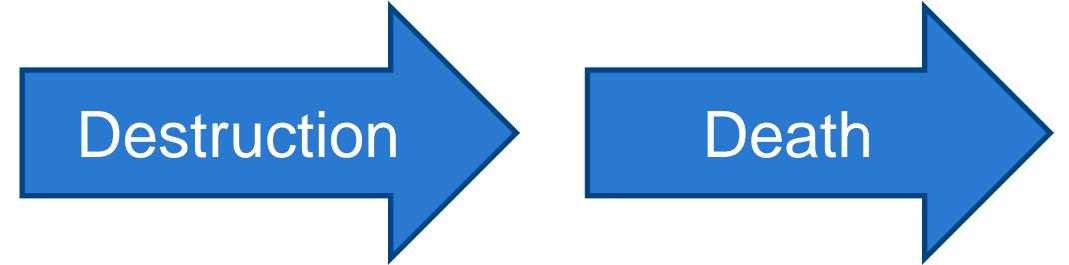
Risk: Logical → Physical

Logical



Brain - 1st PC virus
January 1986

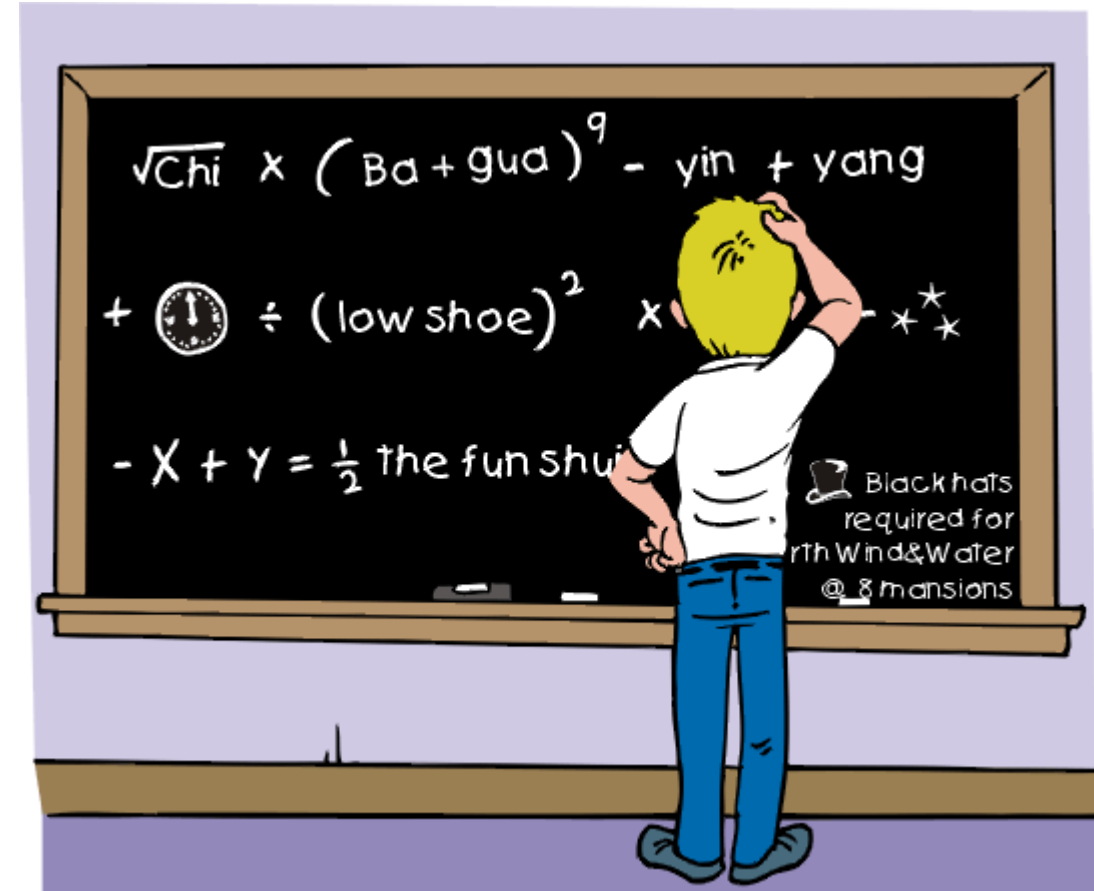
Physical (Kinetic)



Idaho National Laboratory Demo
March 2007

Security is Complicated

- Authentication
- Confidentiality
- Privacy
- Integrity
- Authorization
- Accountability
- Non Repudiation
- Availability



Security is Complicated

- Authentication
- Confidentiality
- Privacy
- Integrity ←
- Authorization
- Accountability
- Non Repudiation
- Availability



New Paradigm = "Security by Design"



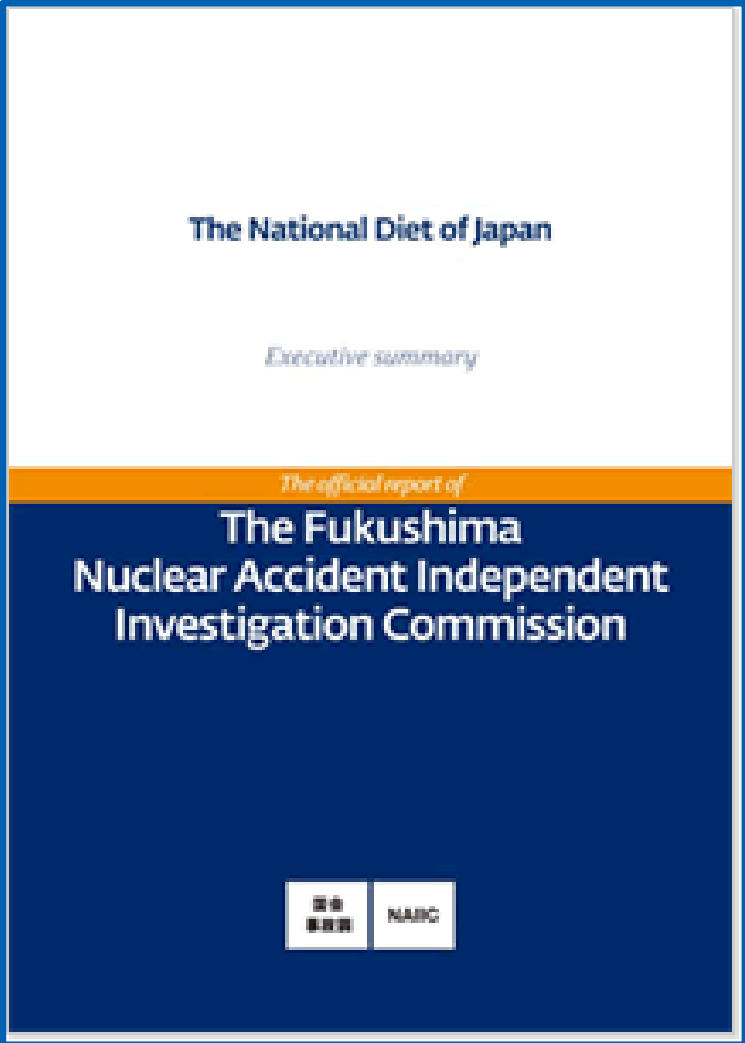
Security

- Makes things better
- Increase
- Increase
- Reduce
- Enhance
- Increase

Cybersecurity is **NOT** a technical issue.
It is a management and leadership issue.

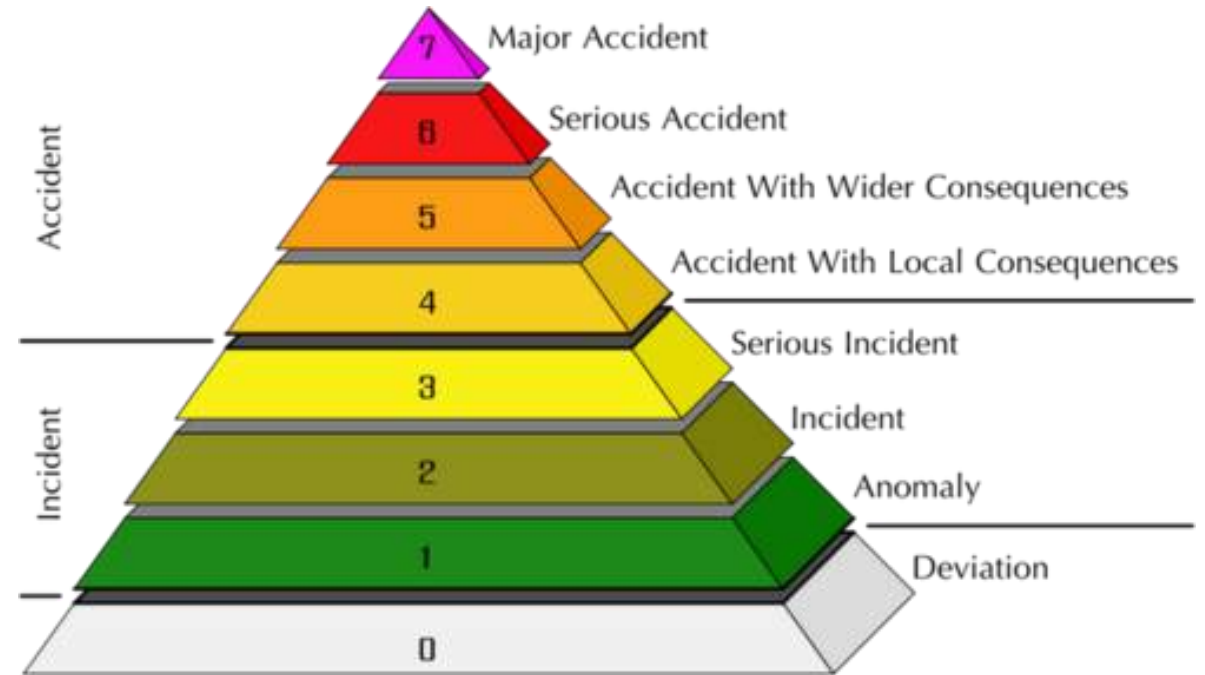
~~Cyber~~ Risk

National Diet Fukushima Nuclear Accident Investigation Commission



Accident Findings – All the same

- People make **mistakes**
- Machines **break**
- **Accidents** happen
- **No 100%**
- **Failure is normal**

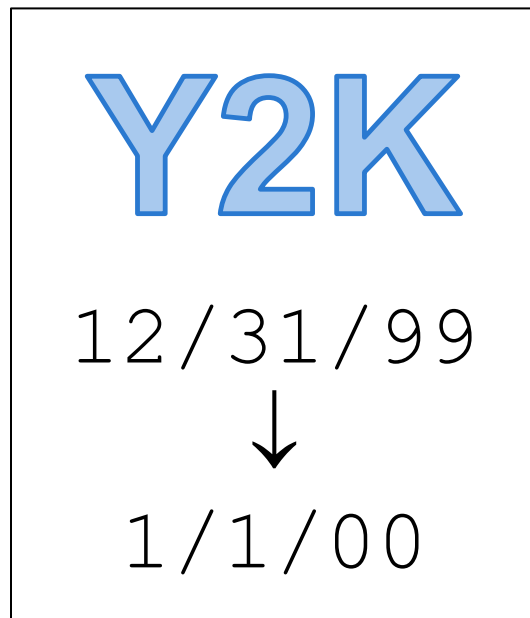




re·sil·ience

noun /ri-'zil-yən(t)s/

an ability to **recover** from or **adjust** easily to misfortune or change



The Fourth Industrial Revolution – 6 D's

- Digitized
- Deceptive growth
- Disruptive
- Dematerialized
- Demonetized
- Democratized



New Networked World

- 5,000+ sensors
- 10 GB/s per engine
- 2.04 Tbps for Boeing 737MAX
(Formula 1 car = 12.28Gbps)





תודה
Dankie Gracias
Спасибо شكراً
Köszönjük Merci Takk
Grazie Dziękujemy Terima kasih
Děkujeme Vielen Dank Děkojame
Kiitos Tänname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας Ευχαριστούμ 감사합니다
Bedankt Дěkujeme vám ขอบคณ
ありがとうございます
Tack