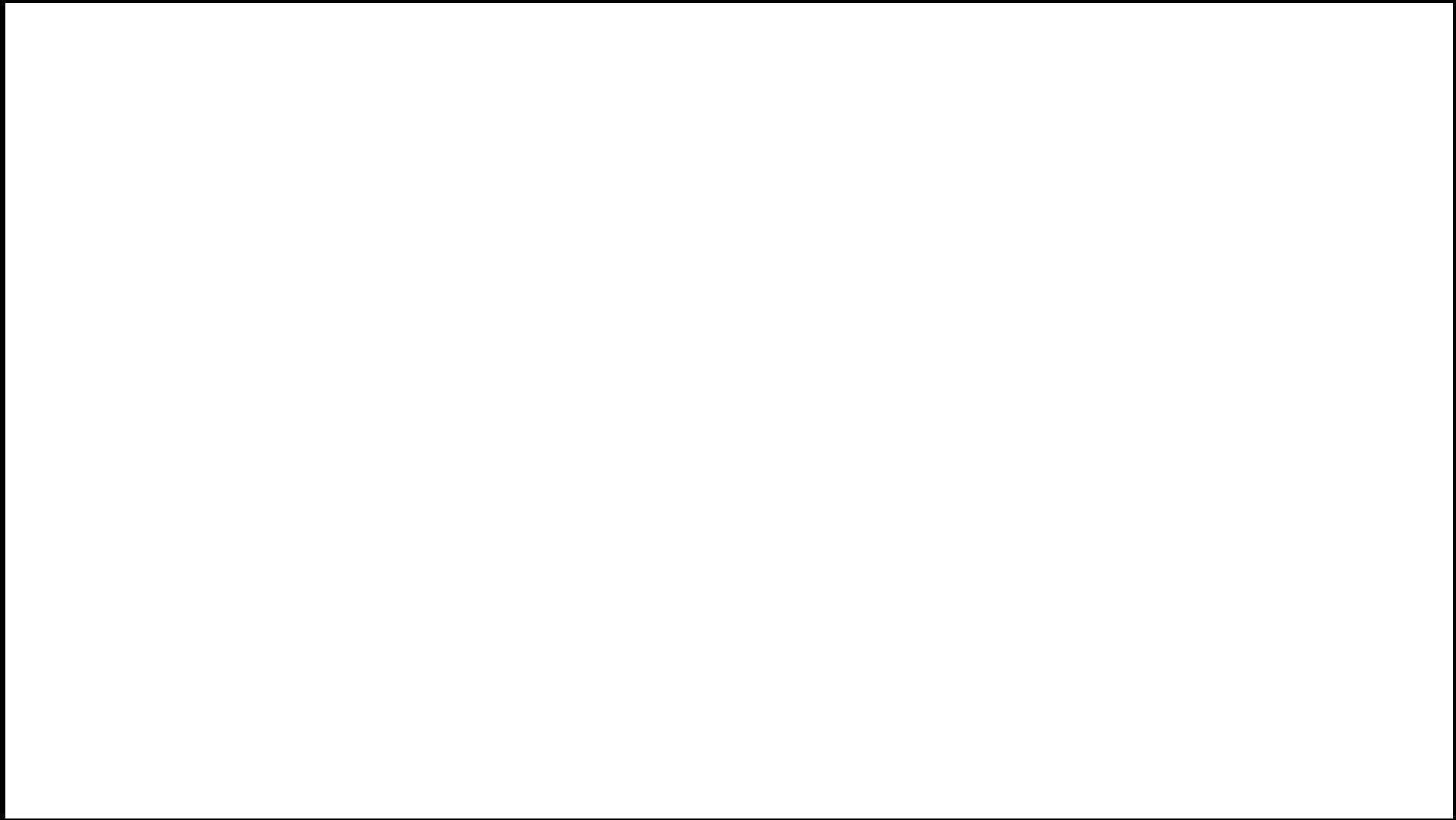




SECURITY AND NETWORK ENGINEERING



SECURITY AND NETWORK ENGINEERING



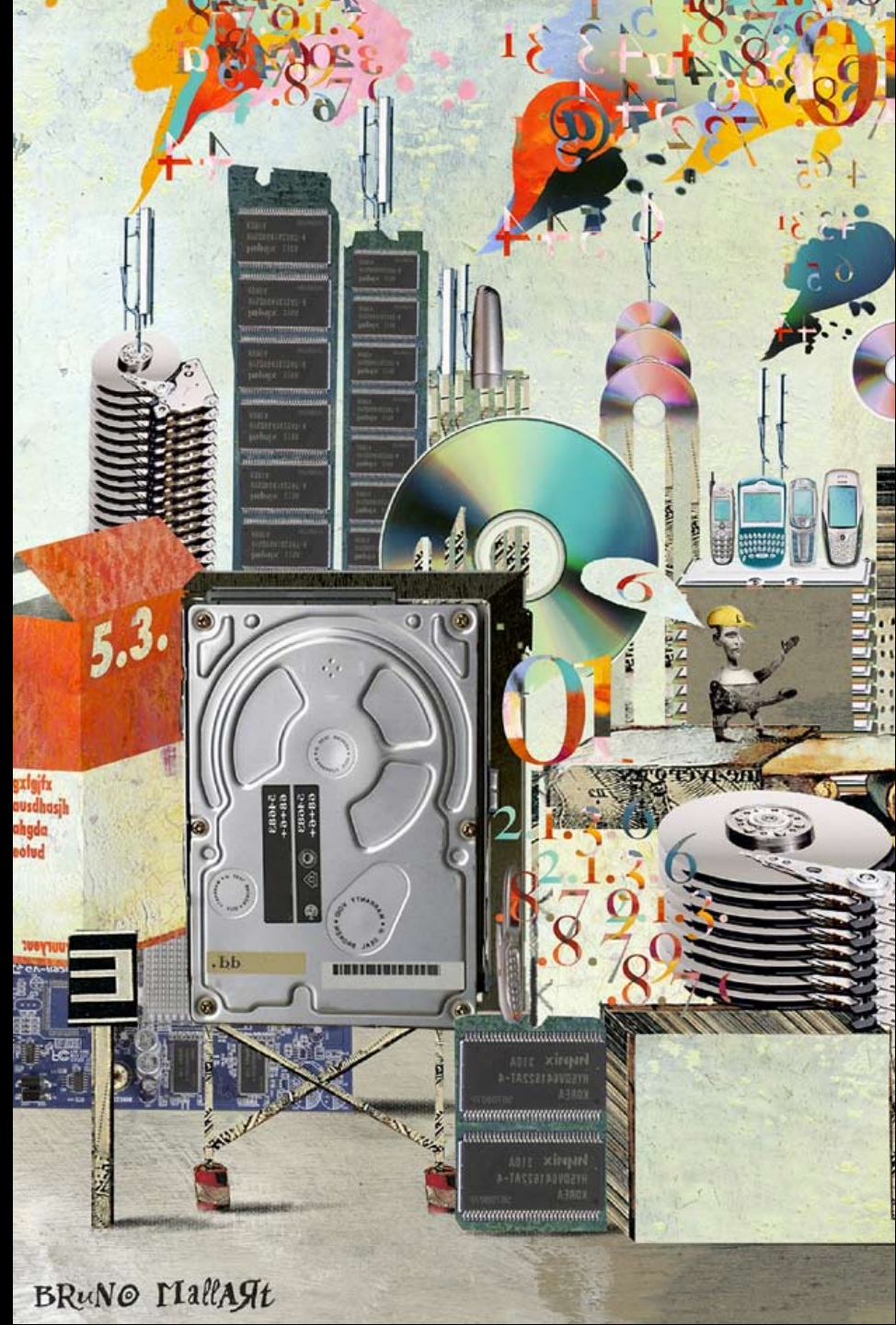
SECURITY AND NETWORK ENGINEERING



From King's Dutch Academy of Sciences The Dutch Research Agenda

“Information technology (IT) now permeates all aspects of public, commercial, social, and personal life. bank cards, satnav, and weather radar... IT has become completely indispensable.”

“But to **guarantee** the **reliability** and **quality** of constantly **bigger** and more **complicated** IT, we will need to find answers to some **fundamental questions!**”



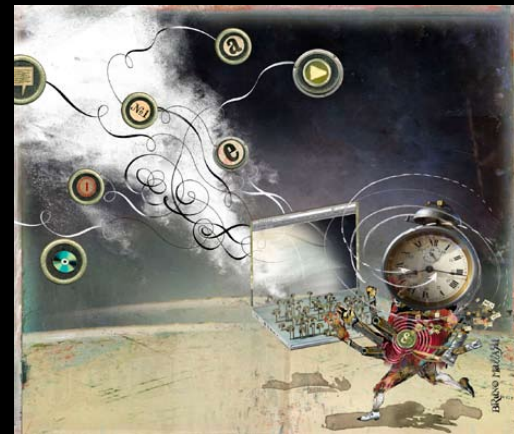
BRUNO MALLART

Reduction of Complexity by Integration

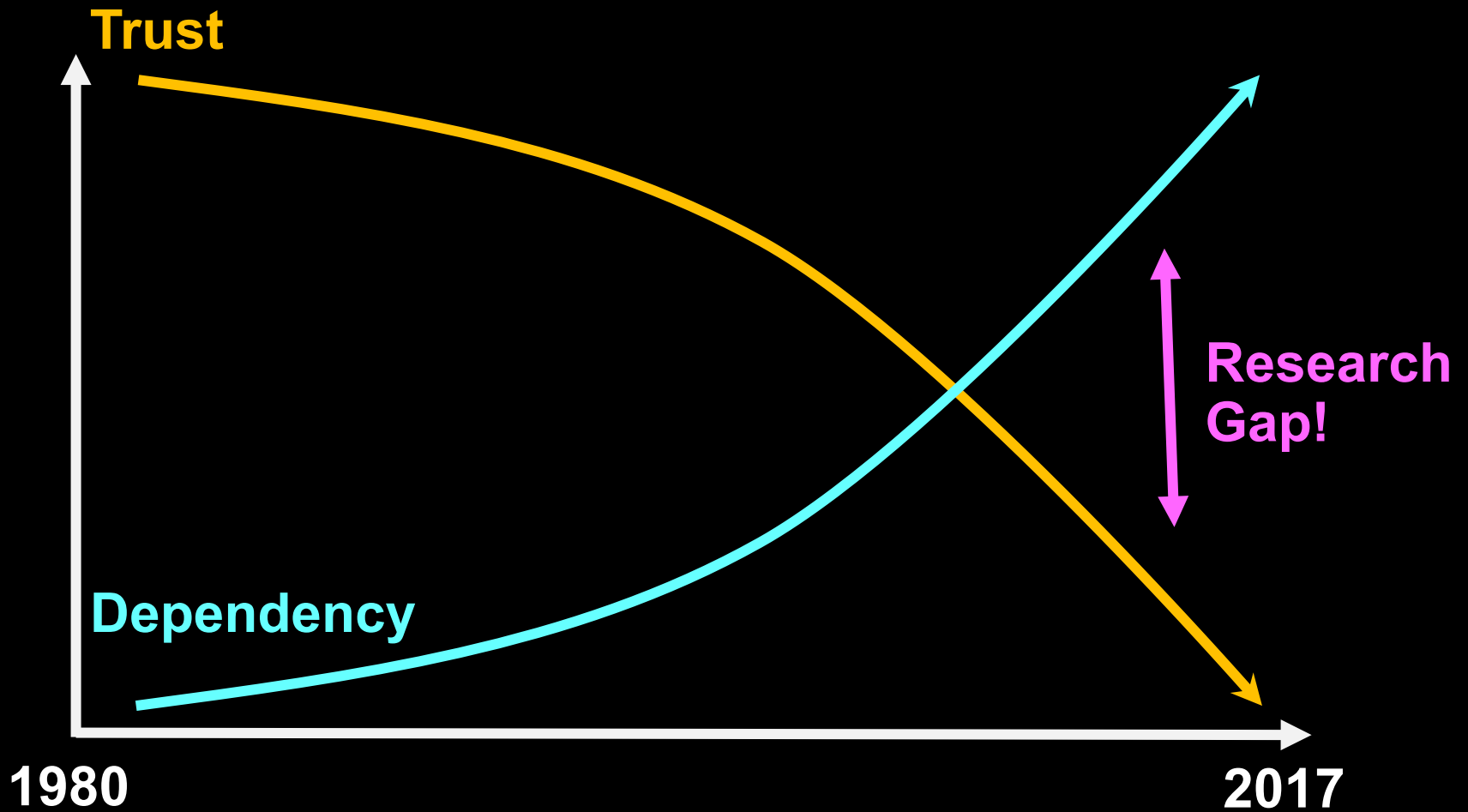
By combining services such as telephony, television, data, and computing capacity within a single network, we can cut down on complexity, energy consumption and maintenance.

- How can we describe and analyze complex information systems effectively?
- How can we specify and measure the quality and reliability of a system?
- How can we combine various different systems?
- How can we design systems in which separate processors can co-operate efficiently via mutual network connections within a much larger whole?
- Can we design information systems that can diagnose their own malfunctions and perhaps even repair them?
- How can we specify, predict, and measure system performance as effectively as possible?

SNE addresses a.o. the highlighted questions!

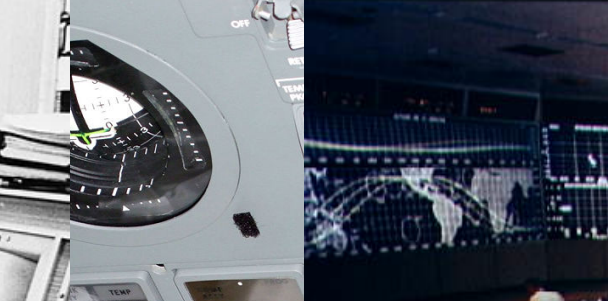


Fading Trust in Internet











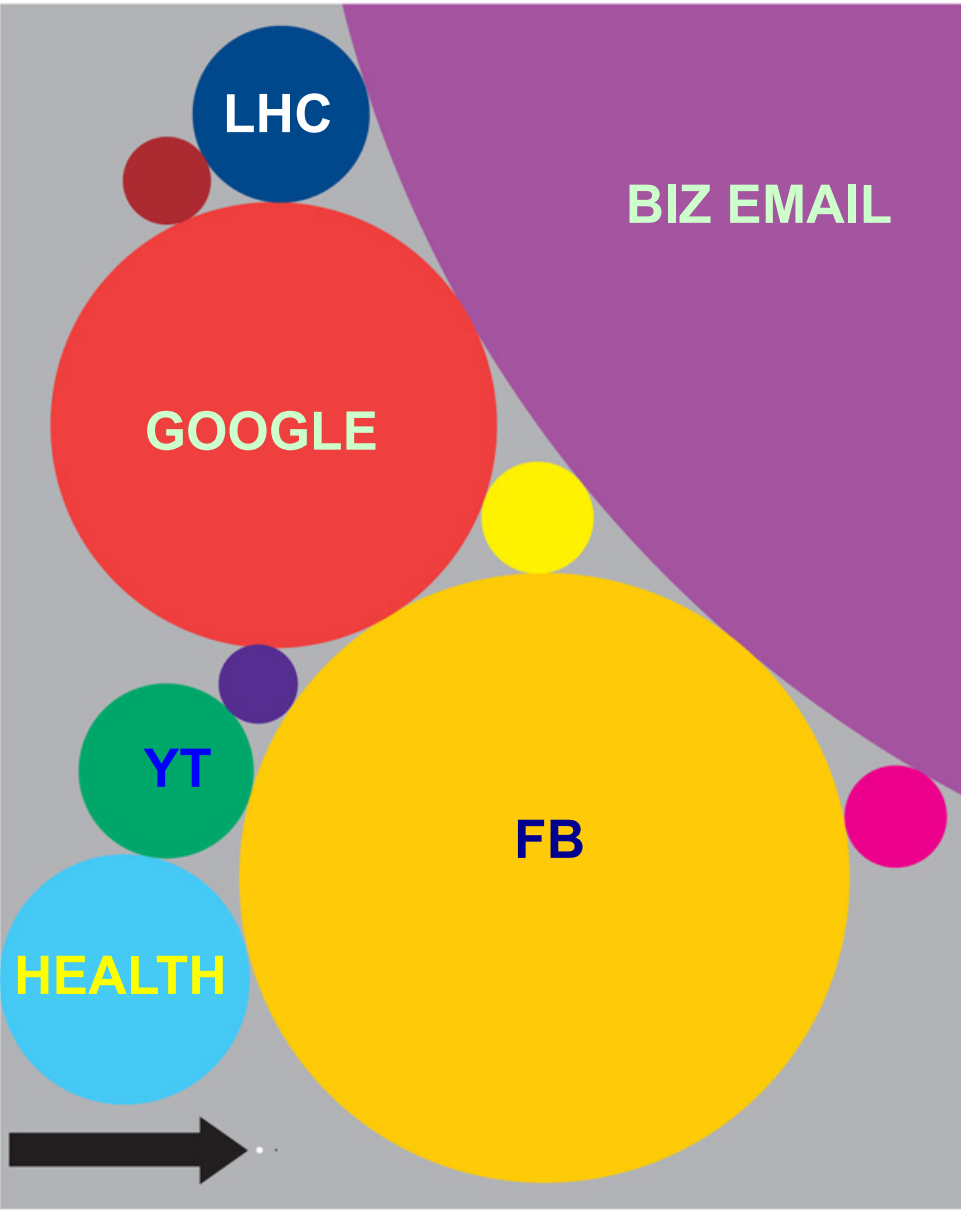
What Happens in an Internet Minute?



And Future Growth is Staggering



There
is
always
a
bigger
fish



Size of data sets in terabytes

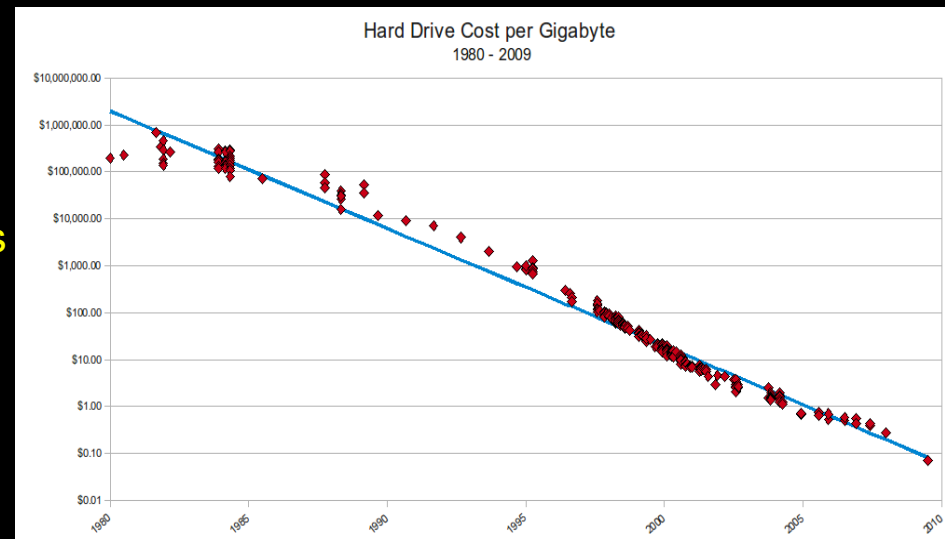
Business email sent per year	2,986,100	National Climactic Data Center database	6,144
Content uploaded to Facebook each year	182,500	Library of Congress' digital collection	5,120
Google's search index	97,656	US Census Bureau data	3,789
Kaiser Permanente's digital health records	30,720	Nasdaq stock market database	3,072
Large Hadron Collider's annual data output	15,360	Tweets sent in 2012	19
Videos uploaded to YouTube per year	15,000	Contents of every print issue of WIRED	1.26

Reliable and Safe!

This omnipresence of IT makes us not only strong but also vulnerable.

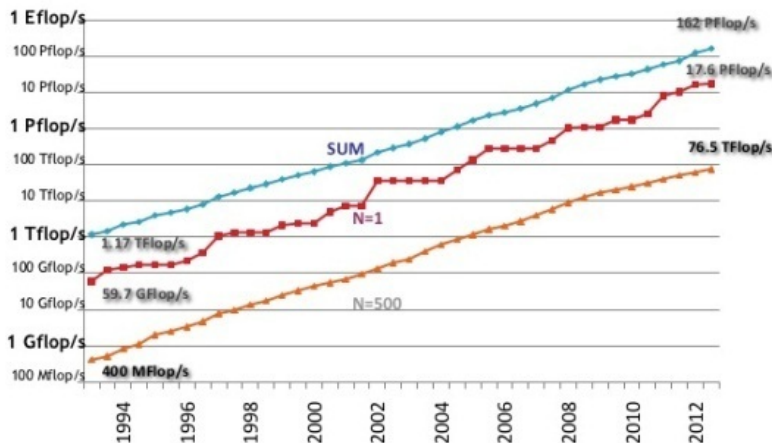
- A virus, a hacker, or a system failure can instantly send digital shockwaves around the world.

The hardware and software that allow all our systems to operate is becoming bigger and more complex all the time, and the capacity of networks and data storage is increasing by leaps and bounds.

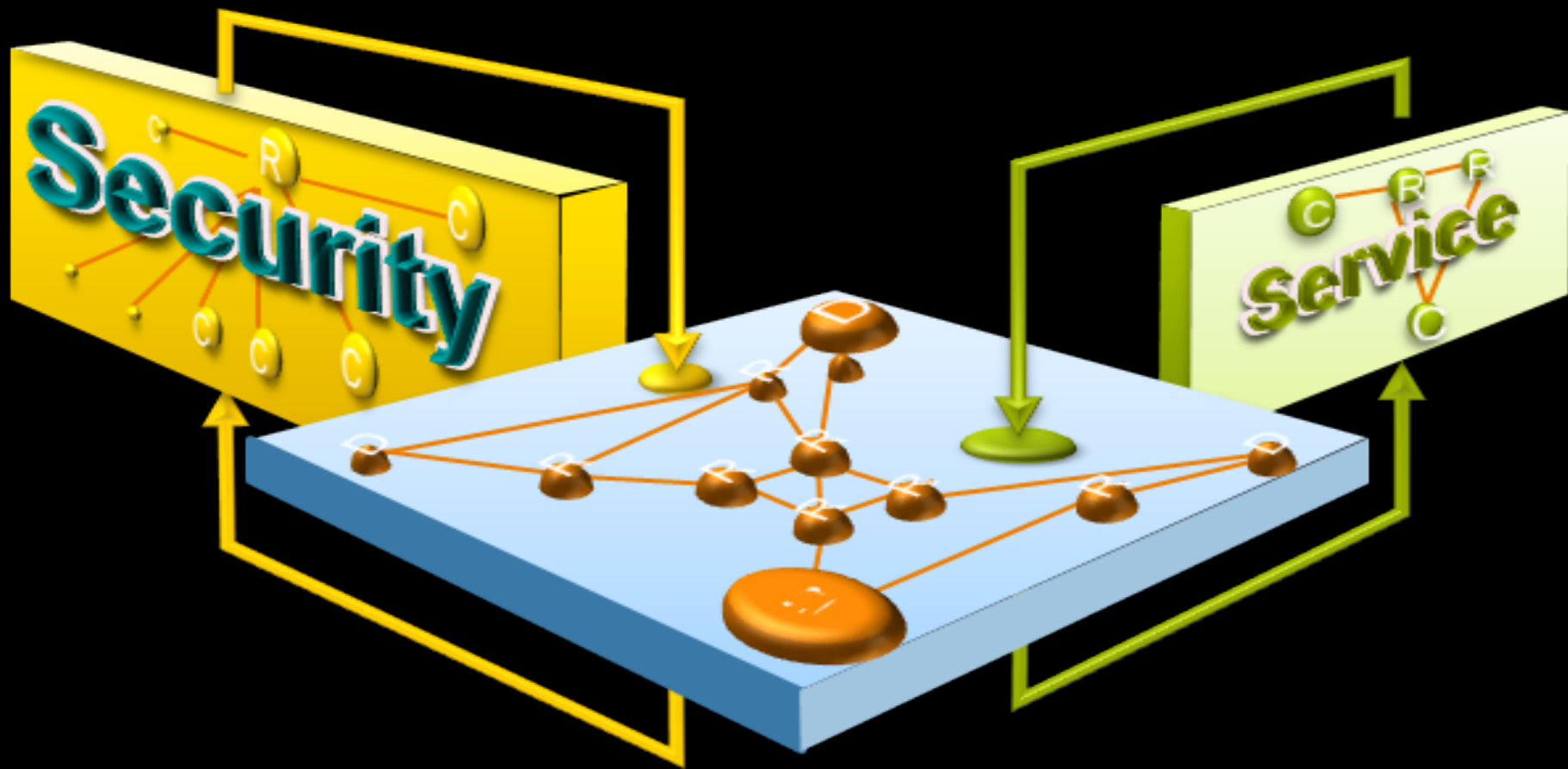


We will soon reach the limits of what is currently feasible and controllable.

Performance Development



SMART Infrastructure





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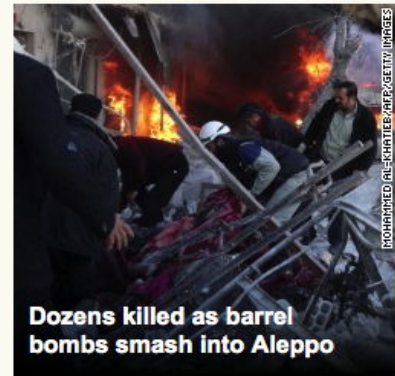
Home Video World U.S. Africa Asia Europe Latin America Middle East Business World Sport Entertainment Tech Travel IReport

February 2, 2014 - Updated 1136 GMT (1936 HKT) Edited by Peter Wilkinson in London

Make CNN Your Homepage

EDITOR'S CHOICE

Scenes from the field • Thai elections • Indonesia volcano • Woody Allen abuse claims • Ukraine • Knox extradition? • Super Bowl



Dozens killed as barrel bombs smash into Aleppo

A day of punishing air assaults on Aleppo leaves 90 dead as so-called barrel bombs rain down on the city, an opposition group said. FULL STORY

- Regime non-committal on more talks
- Satellite photos show devastation
- Syria, Iran playing Obama for a fool?

THAI CRISIS

- Thailand elections marred by violence
- Latest from Bangkok
- Gun battle leaves 7 wounded
- What is at stake in elections?
- Is Thailand safe for tourists?
- Share your images | Gallery

THIS WEEKEND

THAI ELECTIONS

What's behind Thailand's political crisis?

A state of emergency, roads paralyzed with protesters, gunfire on the streets - why have things soured so badly in a nation hailed as a rising regional powerhouse?

- Understanding the turmoil
- 7 wounded in gun battle
- What does state of emergency mean?

CHILD SEX ALLEGATIONS

Woody Allen hit with abuse claims

His adopted daughter accuses the director of sex assault when



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CNN TV Royal Television Society 'News channel of the year'

Featured TV

CNN's interactive map

Life in a refugee camp

TV Programs

Full Schedule

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2005

Click the chart to advance, or click on a year

2005

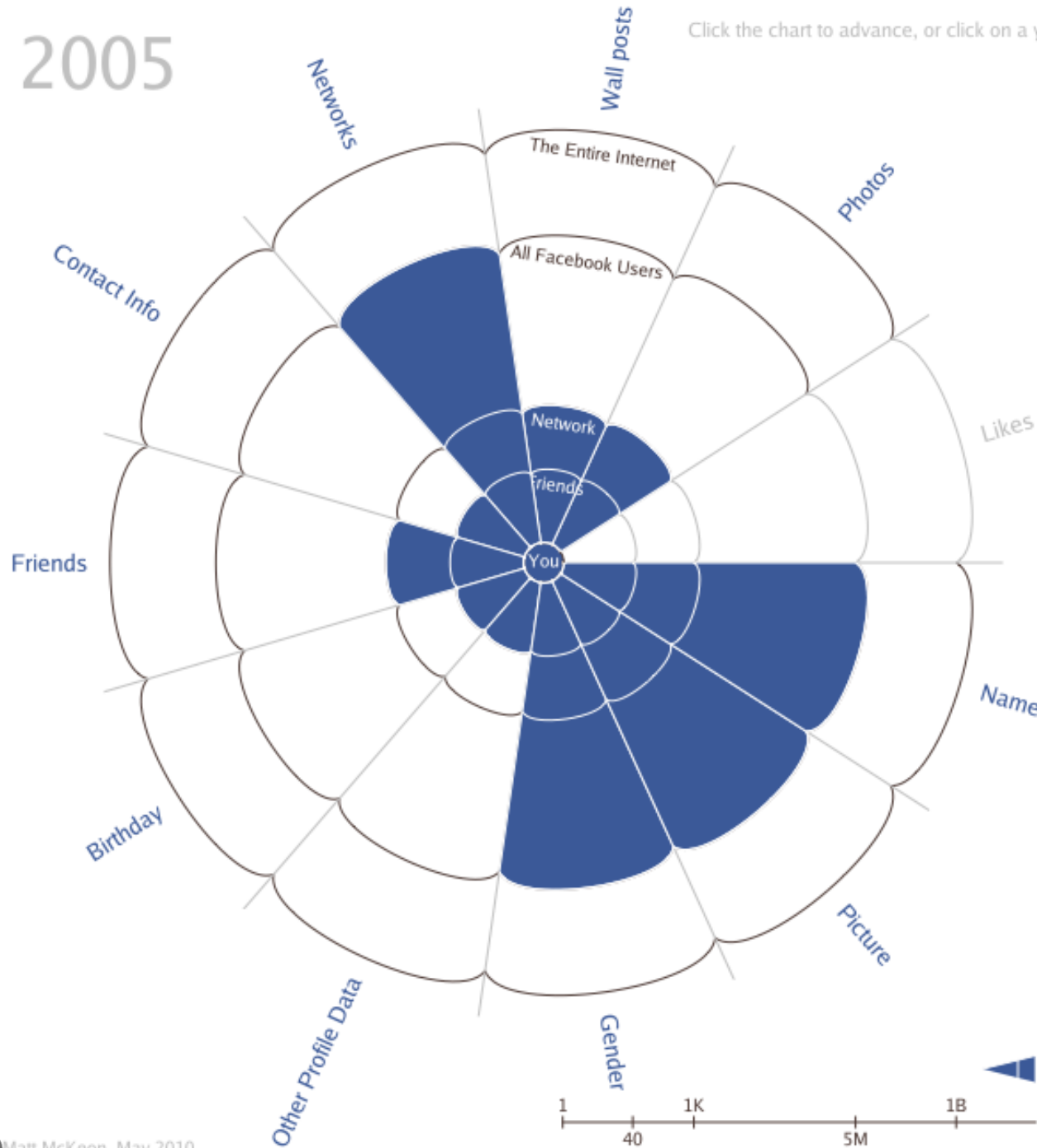
2006

2007

2009 (Nov)

2009 (Dec)

2010 (Apr)



Availability of your personal data on Facebook (default settings)

Number of People

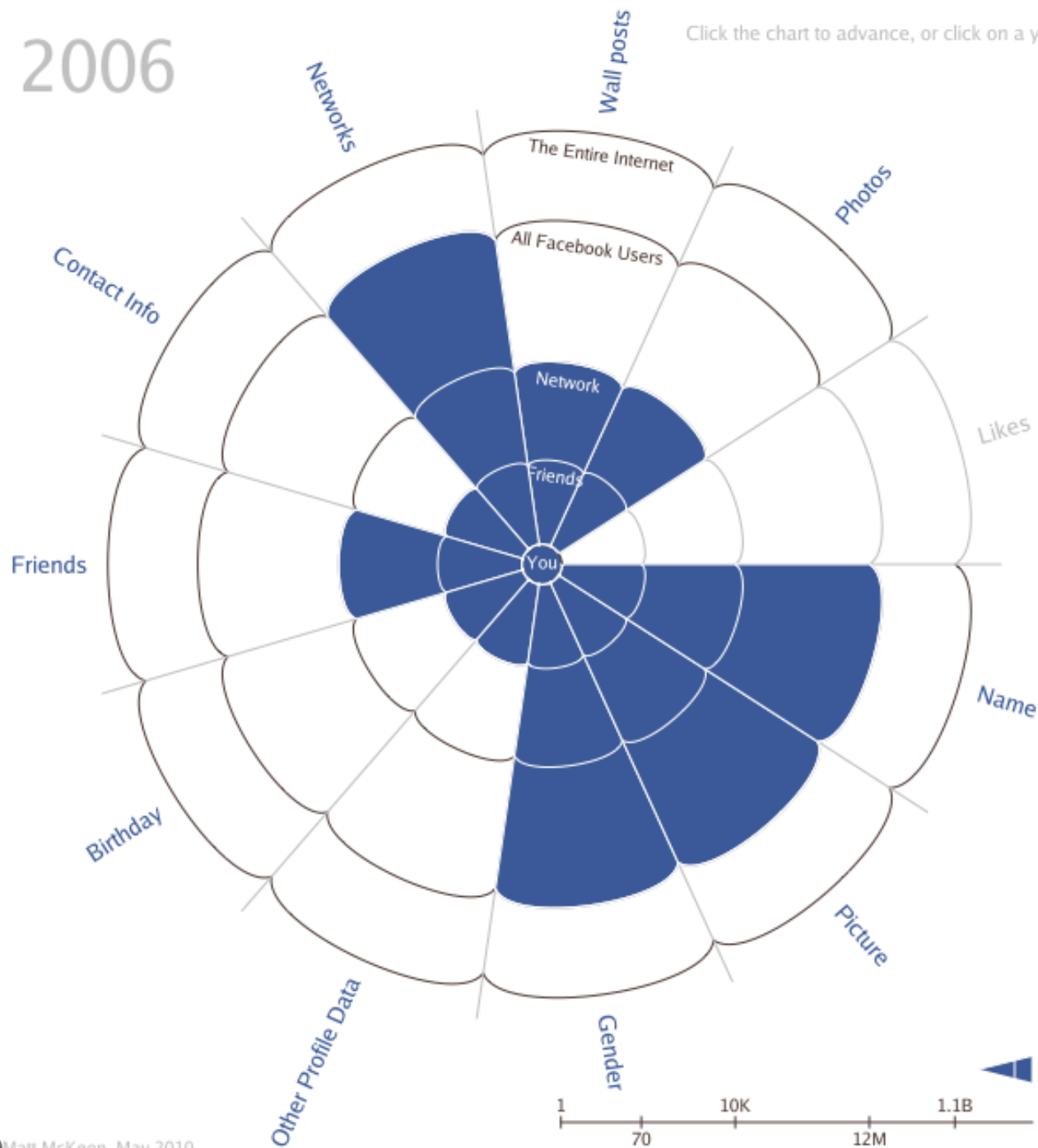


2006

Click the chart to advance, or click on a year

2005
2006

2007
2009 (Nov)
2009 (Dec)
2010 (Apr)



Availability of your personal data on Facebook (default settings)

Number of People



2007

Click the chart to advance, or click on a year

2005

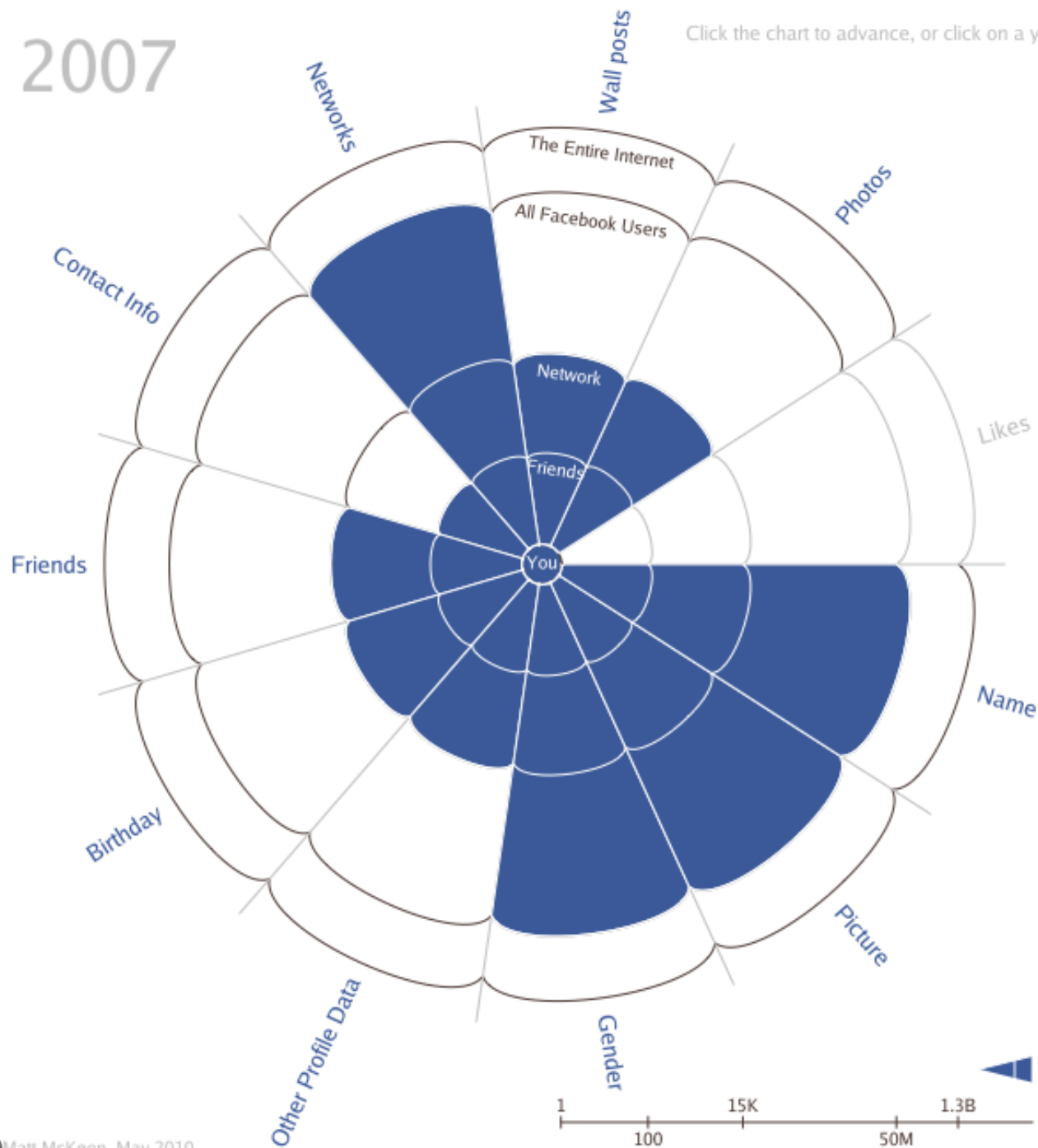
2006

2007

2009 (Nov)

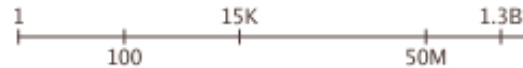
2009 (Dec)

2010 (Apr)



Availability of your personal data on Facebook (default settings)

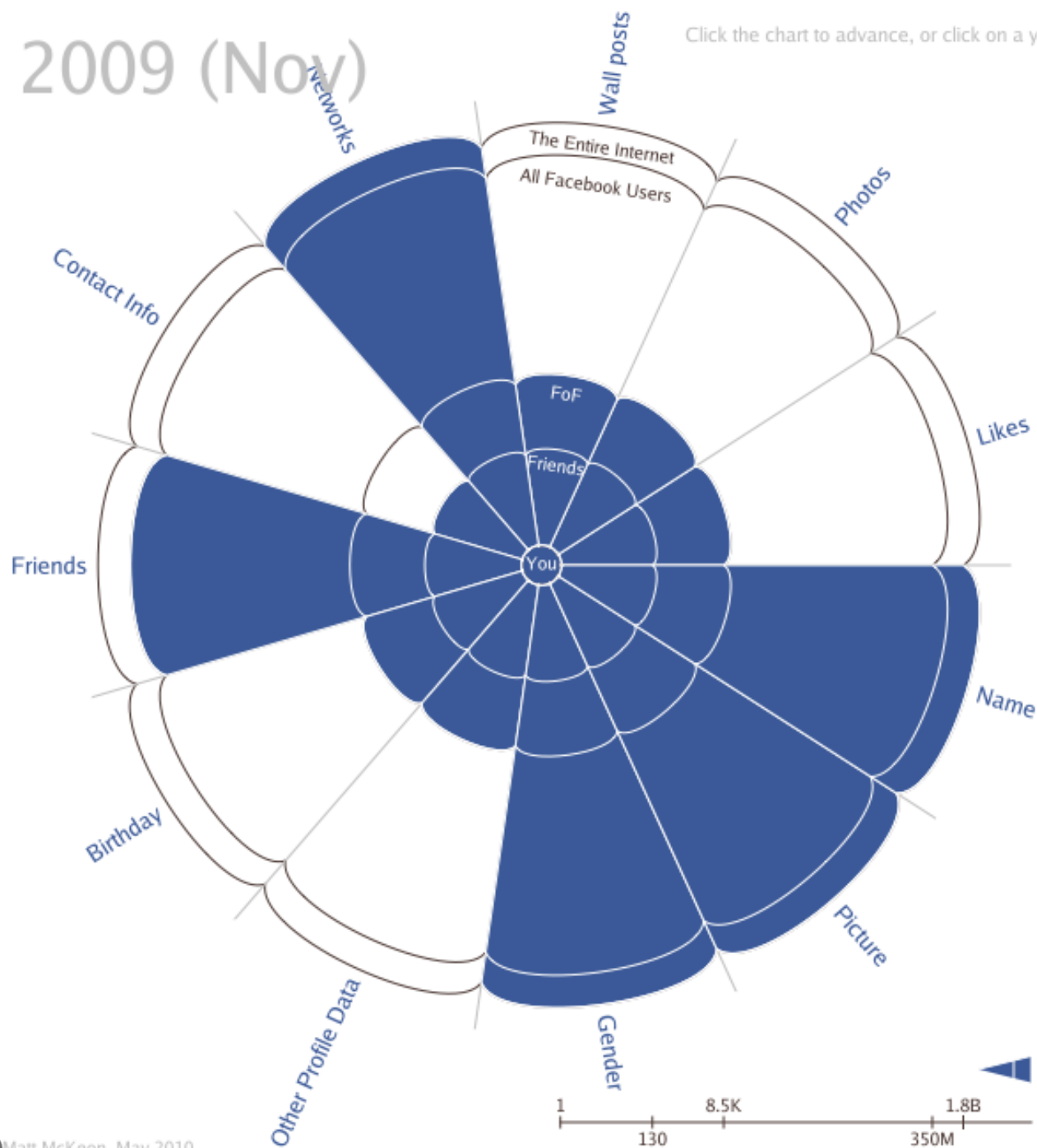
Number of People



2009 (Nov)

Click the chart to advance, or click on a year

- 2005
- 2006
- 2007
- 2009 (Nov)**
- 2009 (Dec)
- 2010 (Apr)



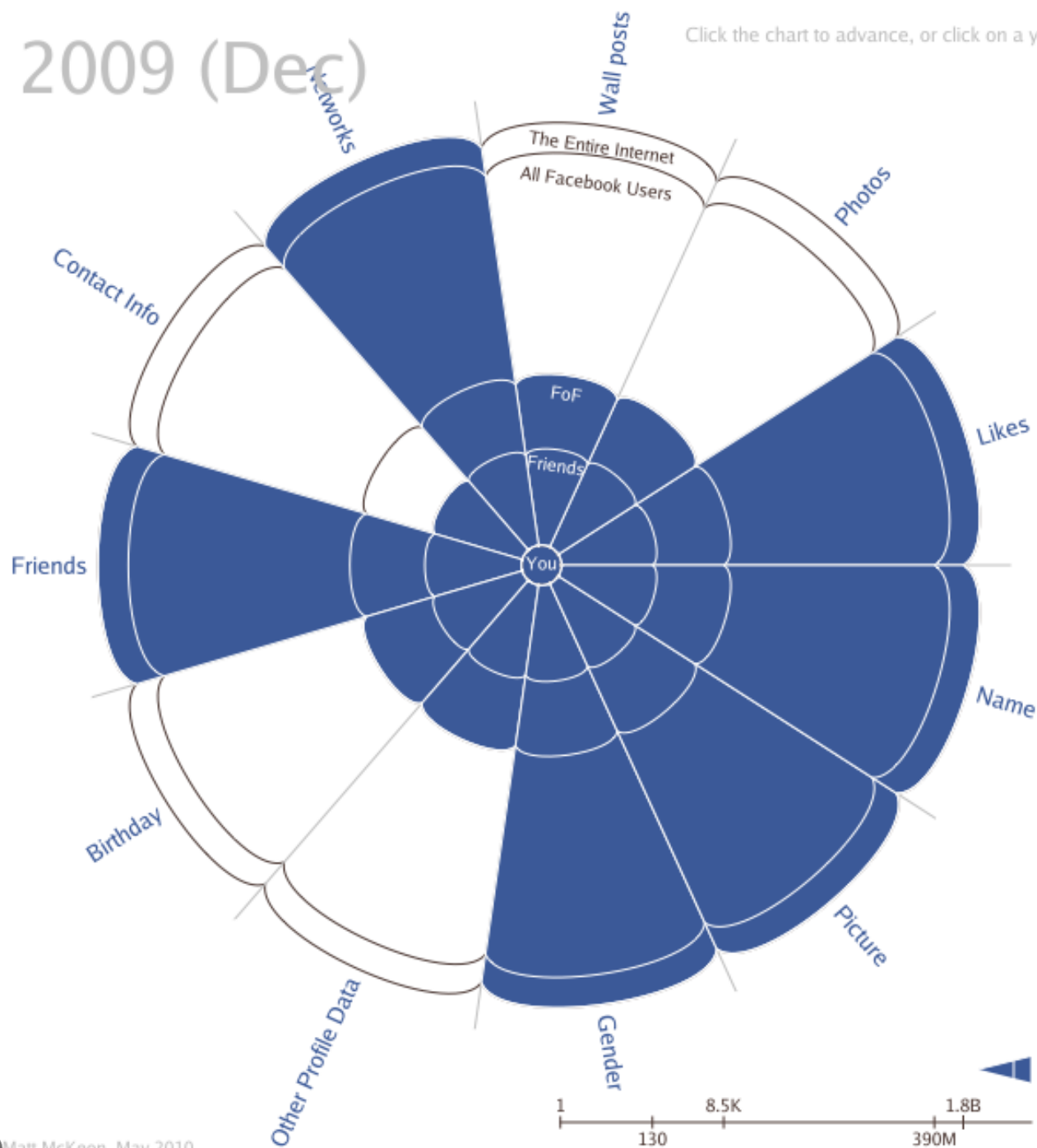
▲ Availability of your personal data on Facebook (default settings)
Number of People



2009 (Dec)

Click the chart to advance, or click on a year

- 2005
- 2006
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- 2009 (Nov)
- 2009 (Dec)**
- 2010 (Apr)



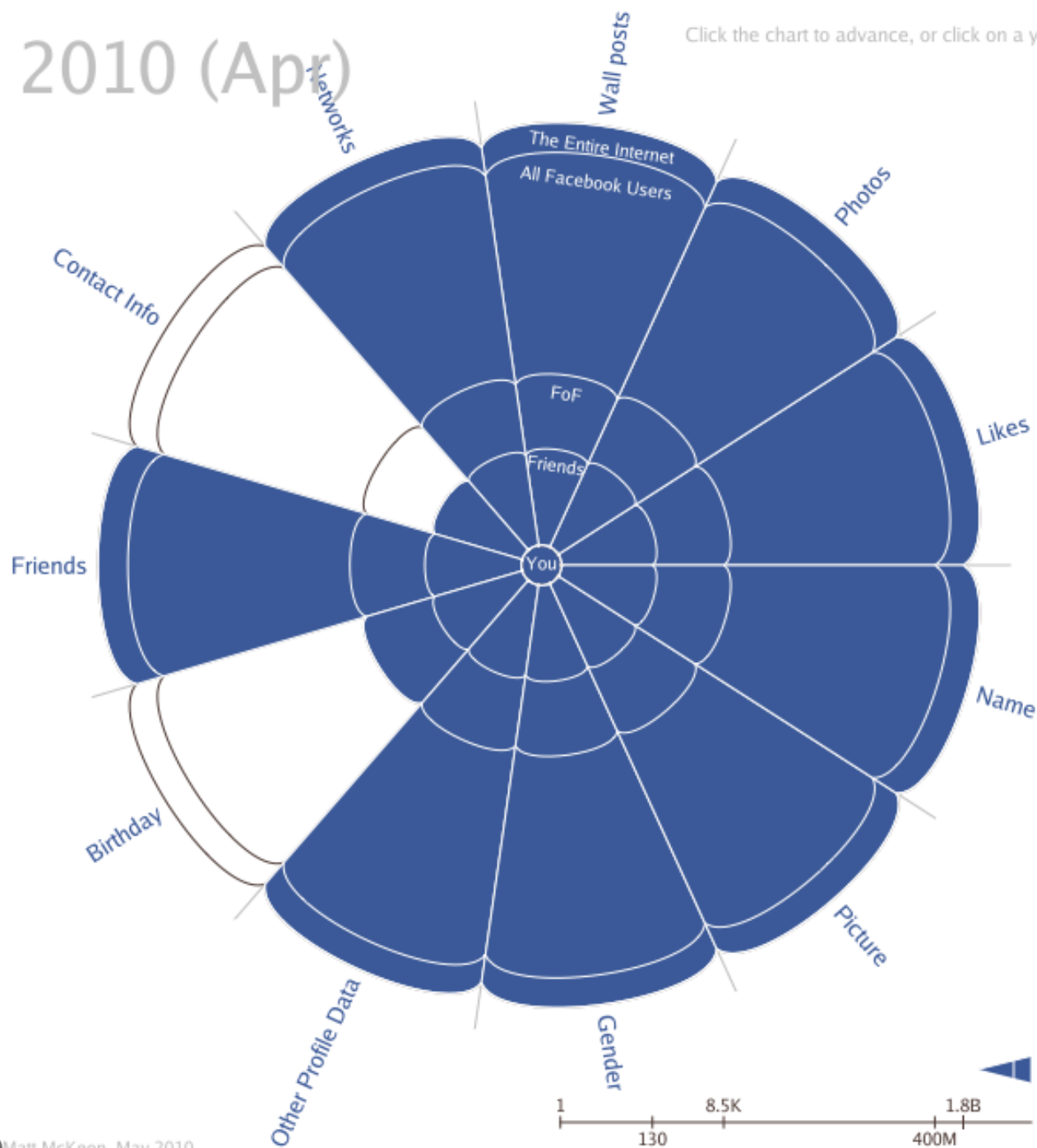
▲ Availability of your personal data on Facebook (default settings)
Number of People



2010 (Apr)

Click the chart to advance, or click on a year

- 2005
- 2006
- 2007
- 2009 (Nov)
- 2009 (Dec)
- 2010 (Apr)**



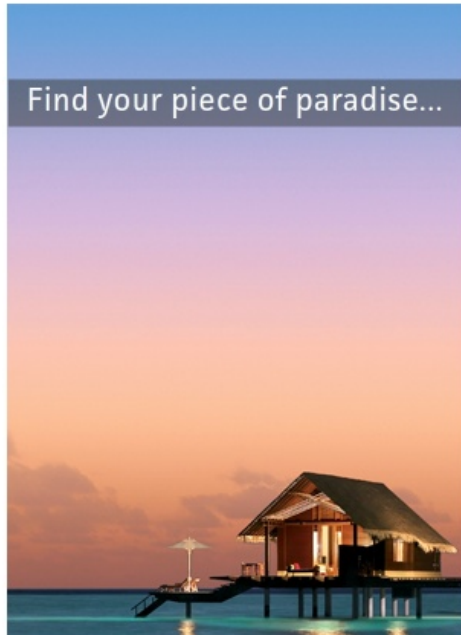
Availability of your personal data on Facebook (default settings)
Number of People





You are Facebook's product, not customer

TECHNOLOGY / 21 SEPTEMBER 11 / by OLIVIA SOLON ↗



People need to understand that they are the product of Facebook and not the customer, according to media theorist and writer Douglas Rushkoff.

Speaking at the inaugural Hello Etsy conference in Berlin, the author of *Program or Be Programmed* said: "Ask a kid what Facebook is for and they'll answer 'it's there to help me make friends'. Facebook's boardroom isn't talking about how to make Johnny more friends. It's talking about how to monetise Johnny's social graph."



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The constant factor in our field is Change!

The 50 years it took Physicists to find one particle, the Higgs,
we came from:

“Fortran goto”, Unix, c, SmallTalk, DECnet, TCP/IP, c++,
Internet, WWW, Semantic Web, Photonic networks, Google,
grid, cloud, Data³, App

to:

DDOS attacks destroying Banks and Bitcoins.

Conclusion:

Need for Safe, Smart, Resilient Sustainable Infrastructure.

CHANGE!

With knowledge comes power

With power comes responsibility

Apply your expertise with Ethics!