Grip op Privacy in een Big Data Samenleving

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https://www.design4values.tudelft.nl

Overzicht

- Grip op Context
- Grip op “Privacy”
- Grip op Data door innovatie
- Grip op Verantwoordelijkheid

Grip op de context

BIG DATA

2005
Luca Bruno / AP
2013
NBC NEWS
Michael Sohn / AP

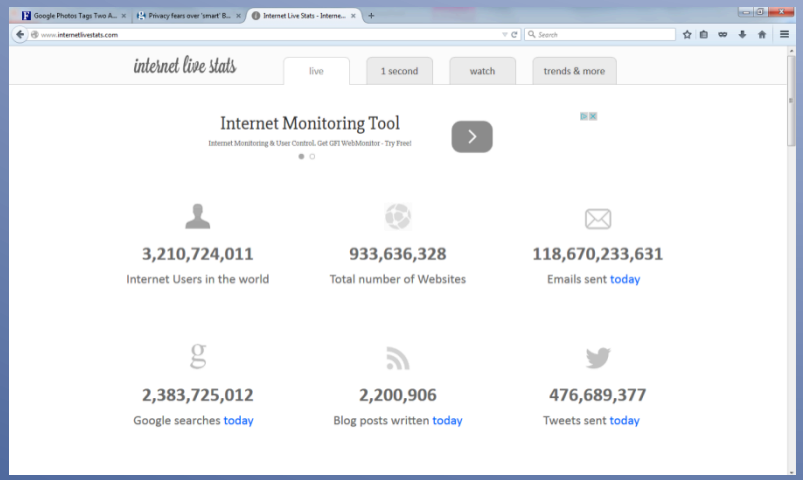
CONVERGING ICT'S

Zettabyte Level

- Cloud Computing
- Social Networking
- Mobile Computing
- Internet of Things
- AI
- Robotics

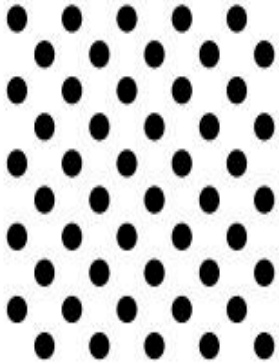
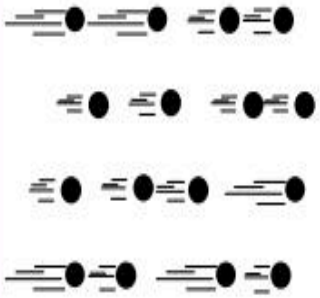
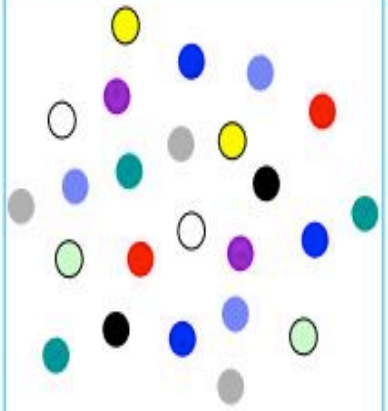
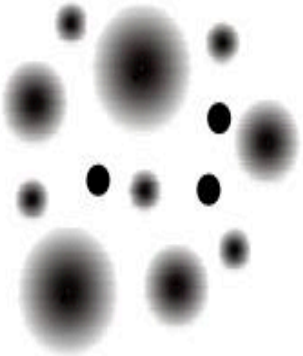
BIG DATA

Persoonlijk verschaft



Geobserveerd

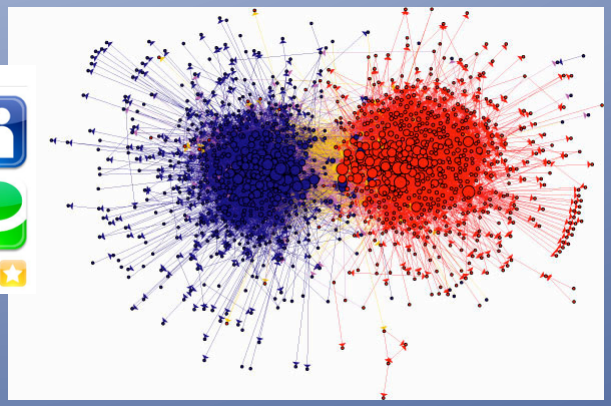
Afgeleide data

Volume	Velocity	Variety	Veracity*
			
Data at Rest	**Data in Motion**	**Data in Many Forms**	**Data in Doubt**
Terabytes to exabytes of existing data to process	Streaming data, milliseconds to seconds to respond	Structured, unstructured, text, multimedia	Uncertainty due to data inconsistency & incompleteness, ambiguities, latency, deception, model approximations

BIG DATA PROXIES OF SOCIAL LIFE

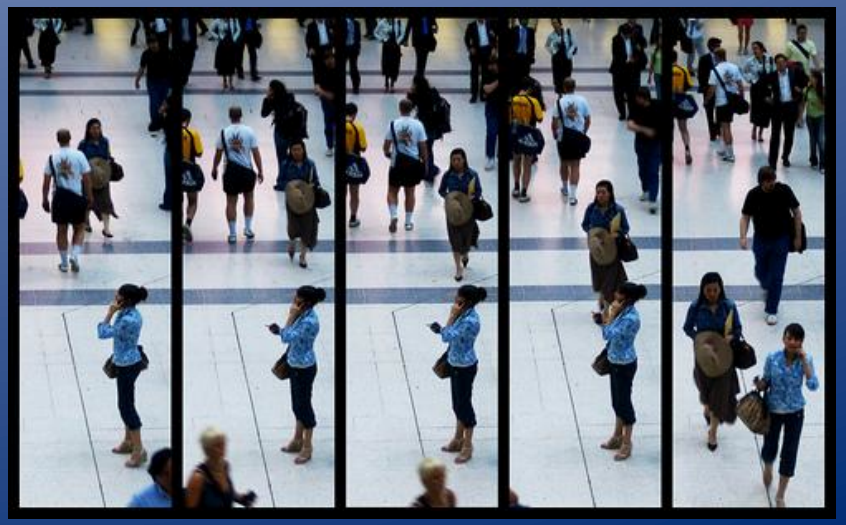
SHOPPING PATTERNS & LIFESTYLE

RELATIONSHIPS & SOCIAL TIES



DESIRES, OPINIONS, SENTIMENTS

MOVEMENTS



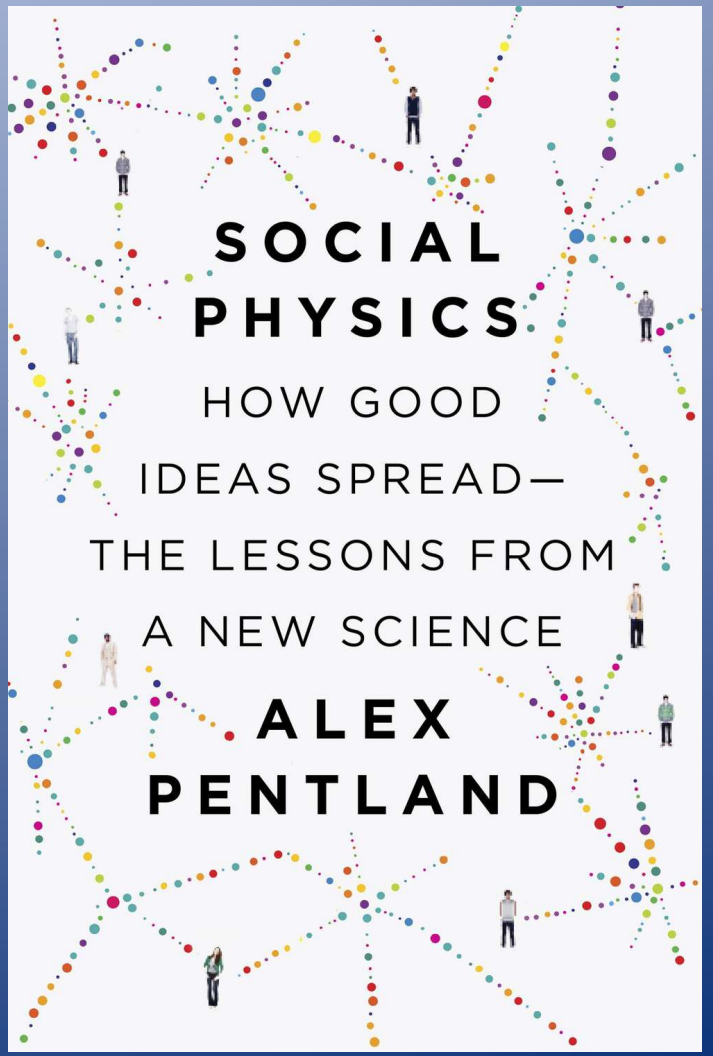
Computationele Sociologie
Network Science

Barabasi

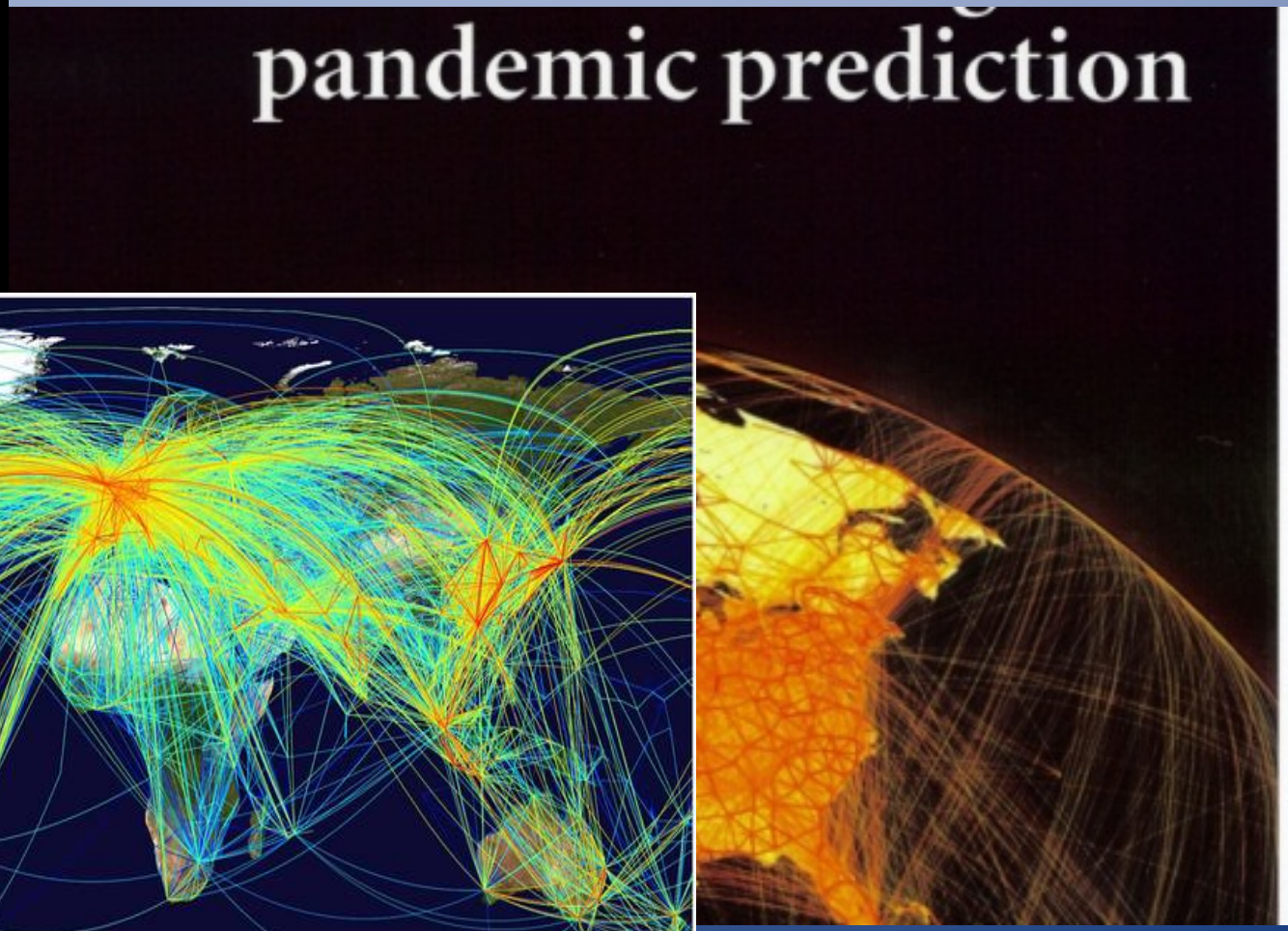
Helbing

Vespignani

MIT's mr."Big Data" Sandy Pentland

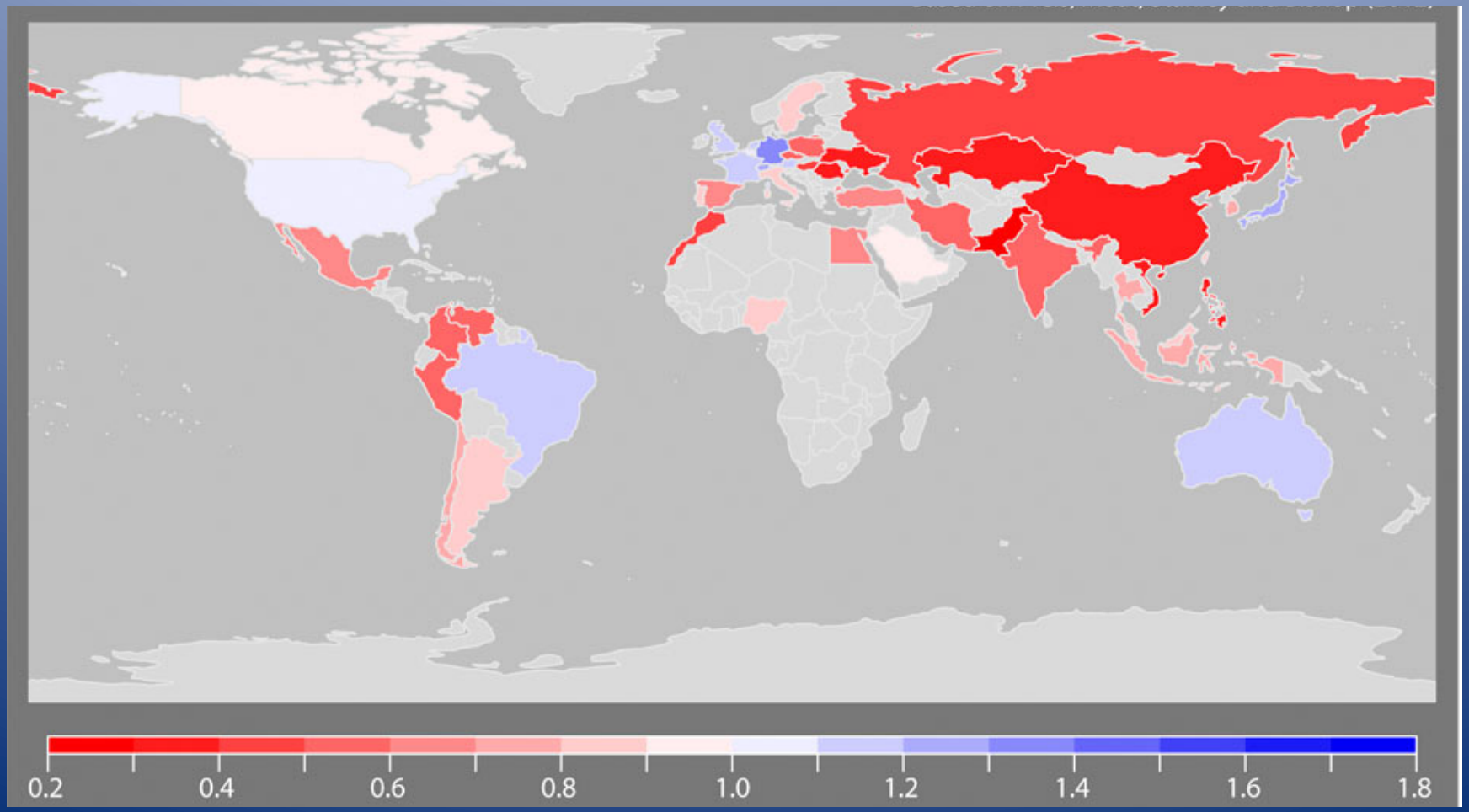


Modeling Infectious Diseases

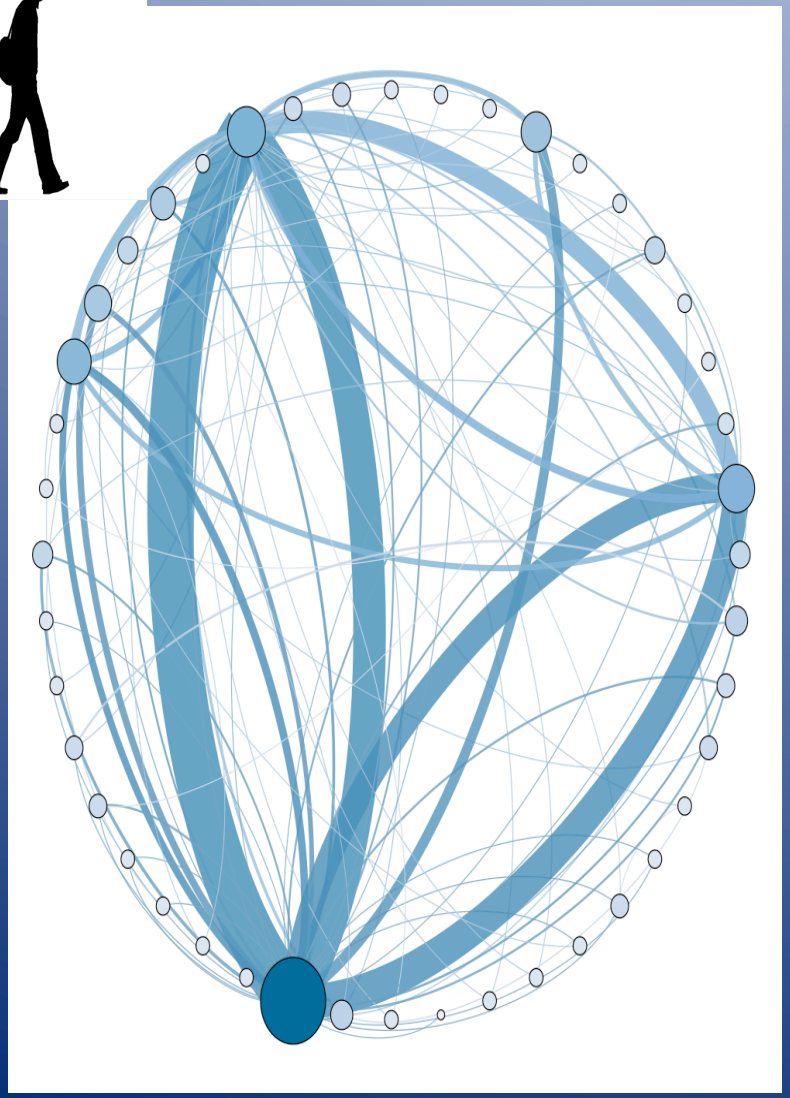


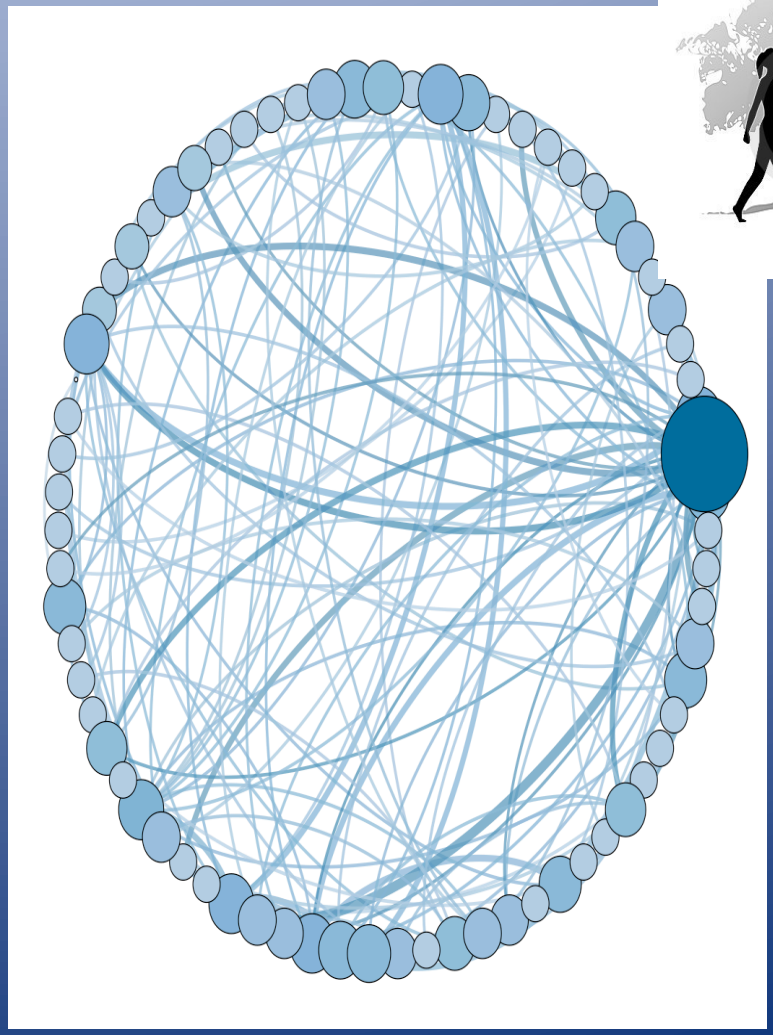
Contagious Ideas

Innovatie: Future Orientation Index

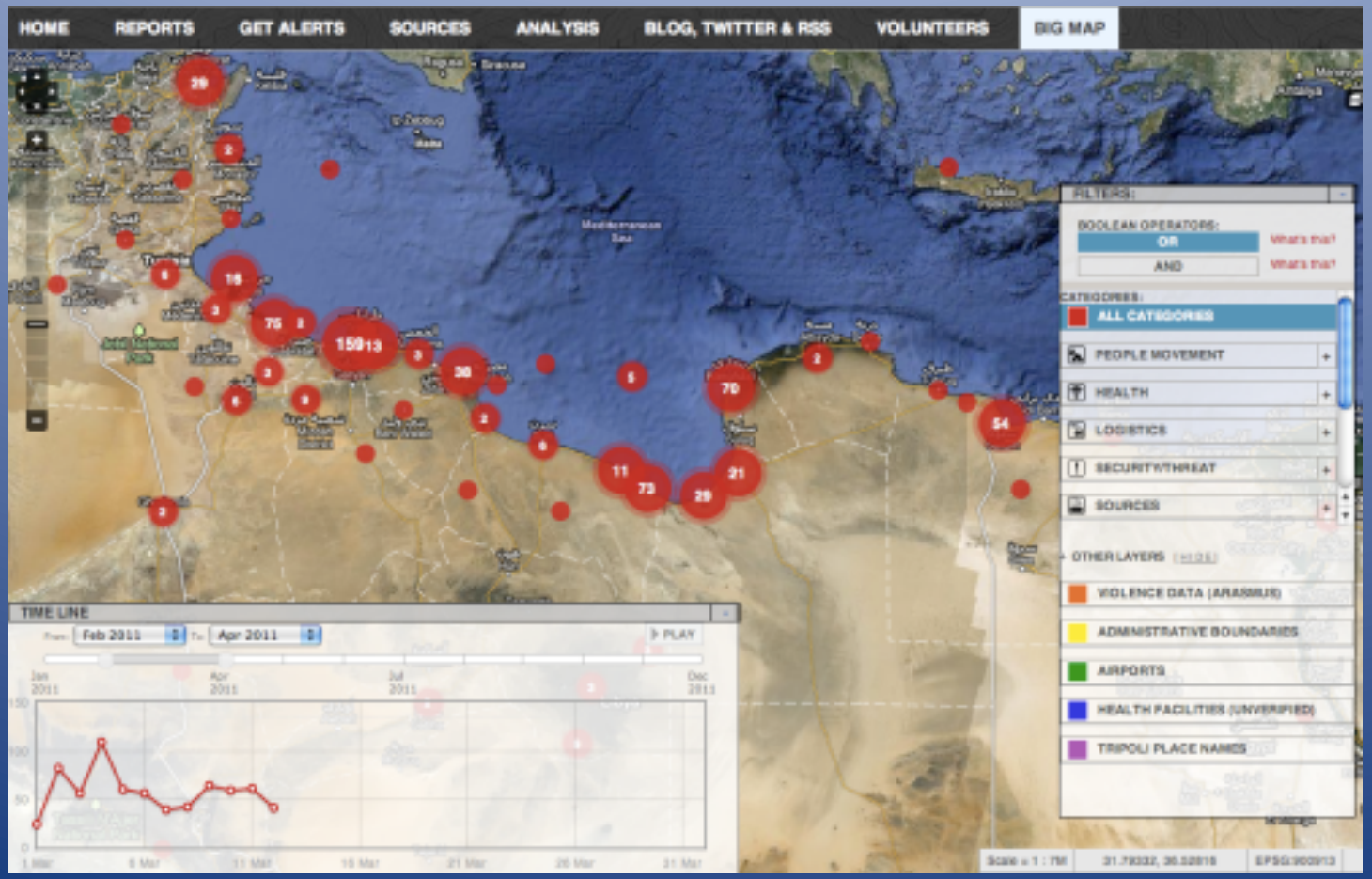


Diversiteit en Mobiliteit





UN real time crisis maps



& THE SDGs

How data science and analytics can contribute to sustainable development

1 NO POVERTY
Spending patterns on mobile phone services can provide proxy indicators of income levels

2 ZERO HUNGER
Crowdsourcing or tracking of food prices listed online can help monitor food security in near real-time

3 GOOD HEALTH AND WELL-BEING
Mapping the movement of mobile phone users can help predict the spread of infectious diseases

4 QUALITY EDUCATION
Citizen reporting can reveal reasons for student drop-out rates

5 GENDER EQUALITY
Analysis of financial transactions can reveal the spending patterns and different impacts of economic shocks on men and women

6 CLEAN WATER AND SANITATION
Sensors connected to water pumps can track access to clean water

7 AFFORDABLE AND CLEAN ENERGY
Smart metering allows utility companies to increase or restrict the flow of electricity, gas or water to reduce waste and ensure adequate supply at peak periods

8 DECENT WORK AND ECONOMIC GROWTH
Patterns in global postal traffic can provide indicators such as economic growth, remittances, trade and GDP

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Data from GPS devices can be used for traffic control and to improve public transport

10 REDUCED INEQUALITY
Speech-to-text analytics on local radio content can reveal discrimination concerns and support policy response

11 SUSTAINABLE CITIES AND COMMUNITIES
Satellite remote sensing can track encroachment on public land or spaces such as parks and forests

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Online search patterns or e-commerce transactions can reveal the pace of transition to energy efficient products

13 CLIMATE ACTION
Combining satellite imagery, crowd-sourced witness accounts and open data can help track deforestation

14 LIFE BELOW WATER
Maritime vessel tracking data can reveal illegal, unregulated and unreported fishing activities

15 LIFE ON LAND
Social media monitoring can support disaster management with real-time information on victim location, effects and strength of forest fires or haze

16 PEACE, JUSTICE AND STRONG INSTITUTIONS
Sentiment analysis of social media can reveal public opinion on effective governance, public service delivery or human rights

17 PARTNERSHIPS FOR THE GOALS
Partnerships to enable the combining of statistics, mobile and internet data can provide a better and real-time understanding of today's hyper-connected world

Big Data Samenleving

- Eigendom, Open Data, Open Access, Open Source
- Transparantie en verantwoording
- Democratie
- Ongelijkheid en Macht
- Privacy

Confused

Confused

Democracy
Trust
Privacy
Property
Community
Person
Intelligence
Life
Democracy
Work
Health
Friendship
Life

Digital: more **confused**

Digital
Cyber
Informational
On-line
Cyber
Electronic
E
2.0
Facebook
Artificial

Democracy
Community
Privacy
Friendship
Trust
Life
Intelligence

Conceptual Vacuum

“New Sort of Community”

“New Sort of Privacy”

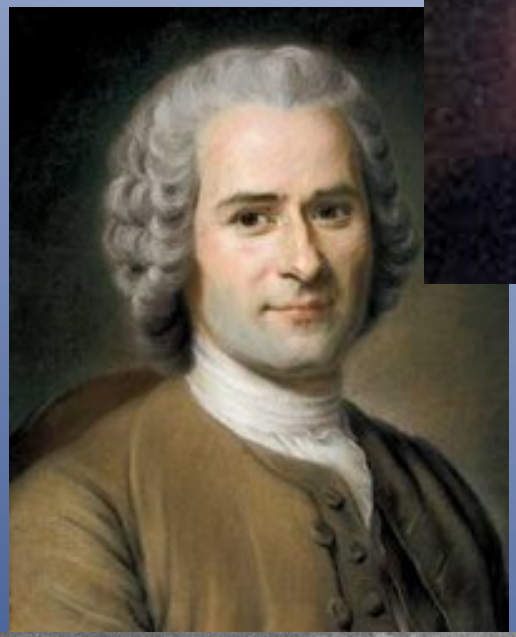
“New sort of Trust”

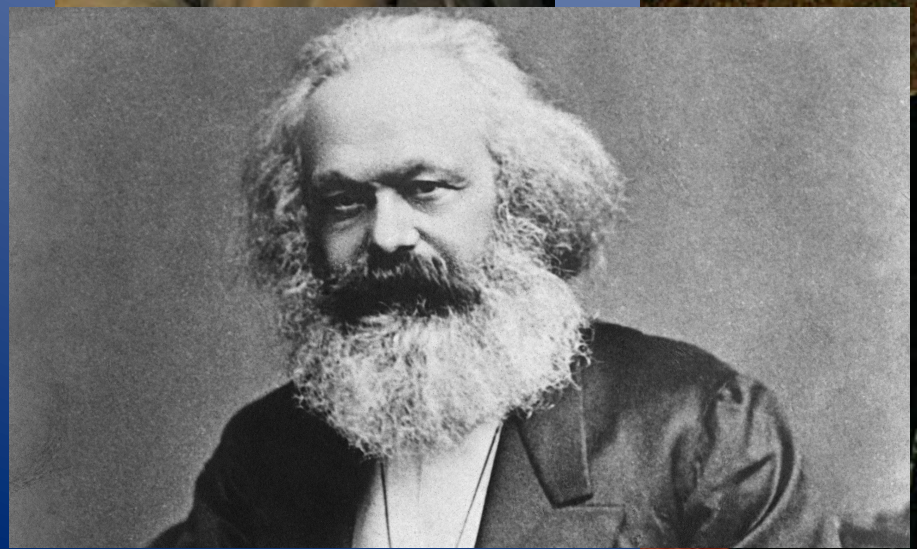
“New sort of Friendship”

“New sort of Life”

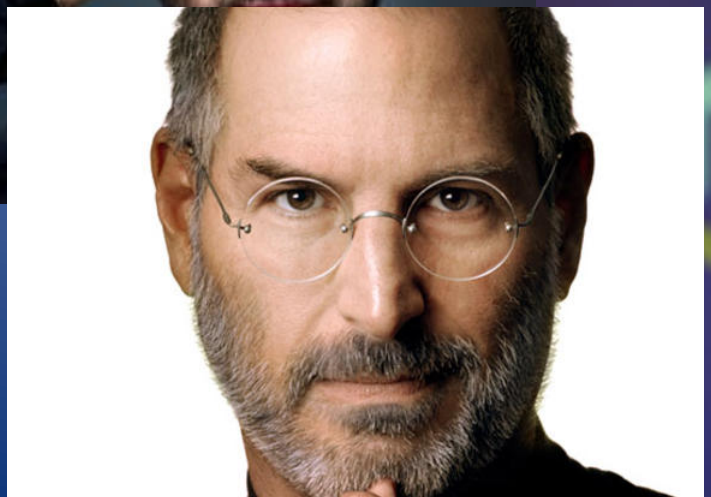
Conceptual Vacuum

- **Policy Vacuum**
- **Design Vacuum**
- **Moral vacuum**





534 million shares
$20.3
billio
PHOTOS: JOHN R. COUGHLIN/CNNMONEY(BACKGROUND); KIM WHITE/GET



mazon

Tragedy of the Digital Commons

DATA & “meaningful human control”

We slowly begin to understand ….

Technologie is not Neutral

Technology comes with Inscribed Values of designers and makers

Churchill

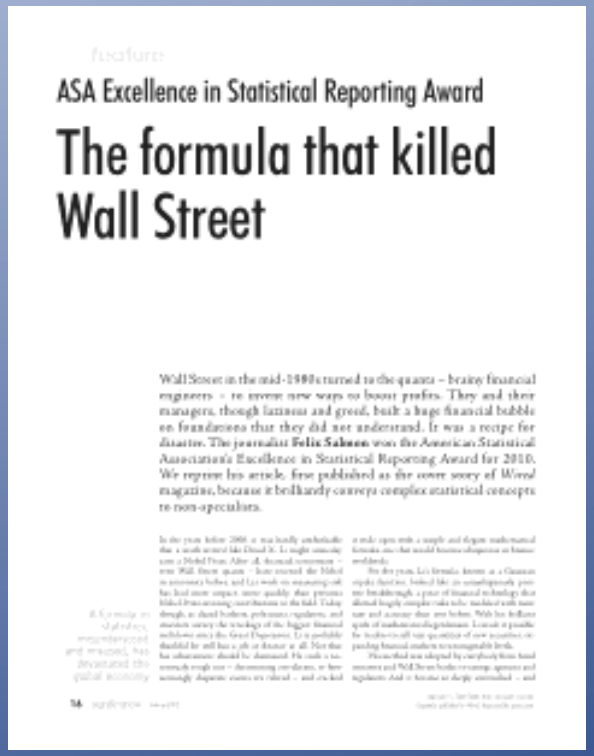
"WE SHAPE OUR BUILDINGS; THEREAFTER THEY SHAPE US."
WINSTON CHURCHILL
Lifehack Quotes

BIAS IN SEARCH ENGINES

THE FORMULA THAT KILLED WALL STREET

THE
SECRET FORMULA
That Destroyed Wall Street

$$P=\phi(A,B,\gamma)$$



fxfeatures

ASA Excellence in Statistical Reporting Award

The formula that killed Wall Street

Wall Street in the mid-1980s turned to the quants – brainy financial engineers – to invent new ways to boost profits. They and their managers, though famous and good, built a huge financial bubble on foundations that they did not understand. It was a recipe for disaster. The journalist **Felix Salmon** won the American Statistical Association's Excellence in Statistical Reporting Award for 2010. We reprint his article, first published as the cover story of *Wired* magazine, because it brilliantly conveys complex statistical concepts to non-specialists.

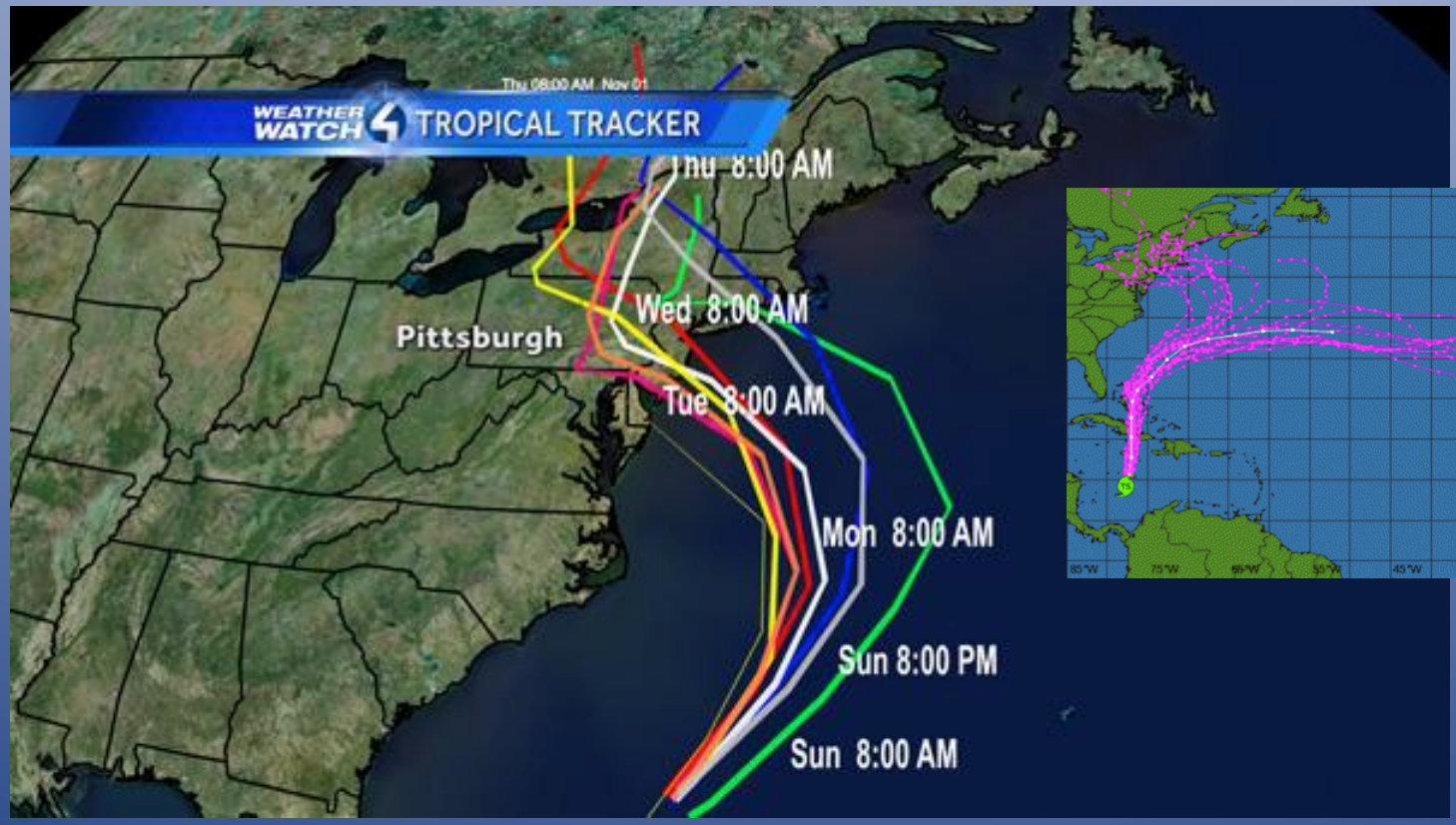
A formula for statistics, misunderstood and misused, has devastated the global economy

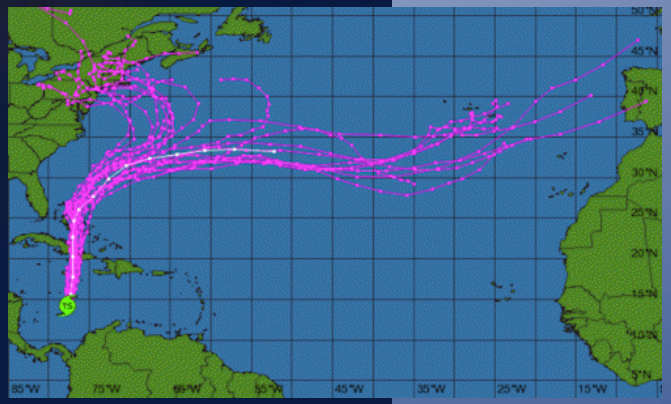
In the years before 2008, a way hardly unthinkable that a math wizard like David X. Li might someday win a Nobel Prize. After all, financial conservatives on Wall Street quants – have revered the Nobel in economics before, and Li's work on measuring credit risk lived more compact terms quickly than previous Nobel Prize-winning contributions in the field. Today through an shared bottom, policymakers regulators, and investors survey the wreckage of the biggest financial meltdown since the Great Depression. Li is probably shuddered he still has a job or fortune at all. Not that his enhancements should be dismissed. He made a tremendously tough task – determining correlations, or how seemingly disparate events are related – and cracked a tricky open with a simple and elegant mathematical formula one that would become ubiquitous in finance worldwide.

For five years, Li's formula, known as a Gaussian copula function, looked like an extraordinarily powerful breakthrough, a piece of financial technology that allowed hugely complex risks to be modeled with unmatched ease and accuracy. Then suddenly it didn't. Investors lost billions of dollars on securities that were built using Li's formula, and the collateral damage spread throughout the financial system. Li's method was adopted by everybody from hedge managers and Wall Street banks to mortgage agencies and regulators. And it became so deeply embedded – and

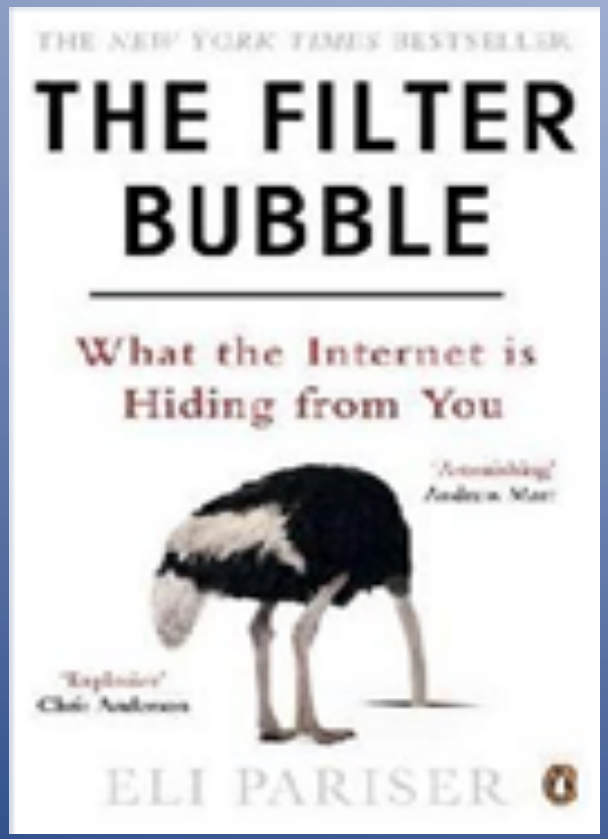
$$Pr[T_A<1, T_B<1] = \Phi_2(\Phi^{-1}(F_A(1)), \Phi^{-1}(F_B(1)), \gamma)$$

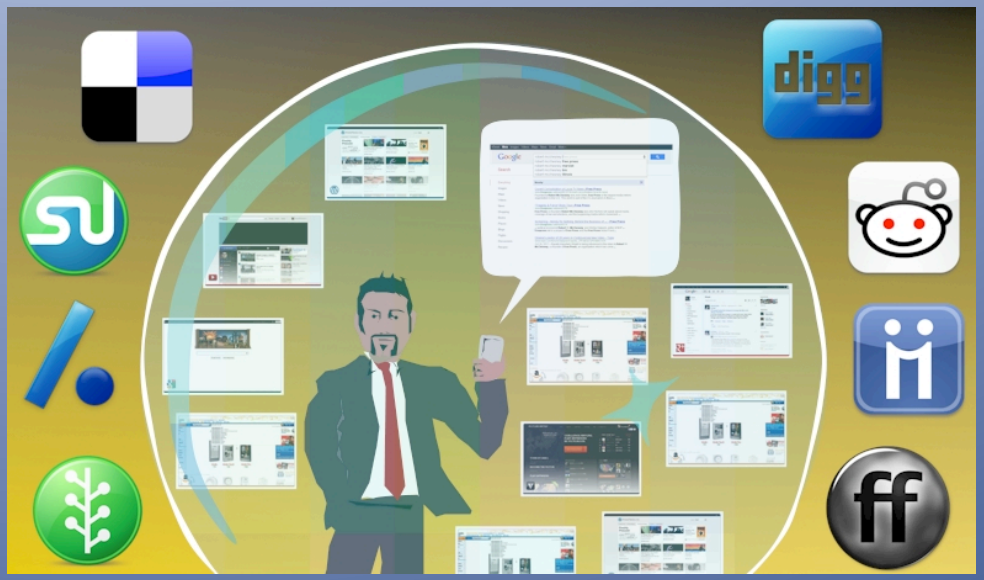
MODELS AND THEIR ASSUMPTIONS





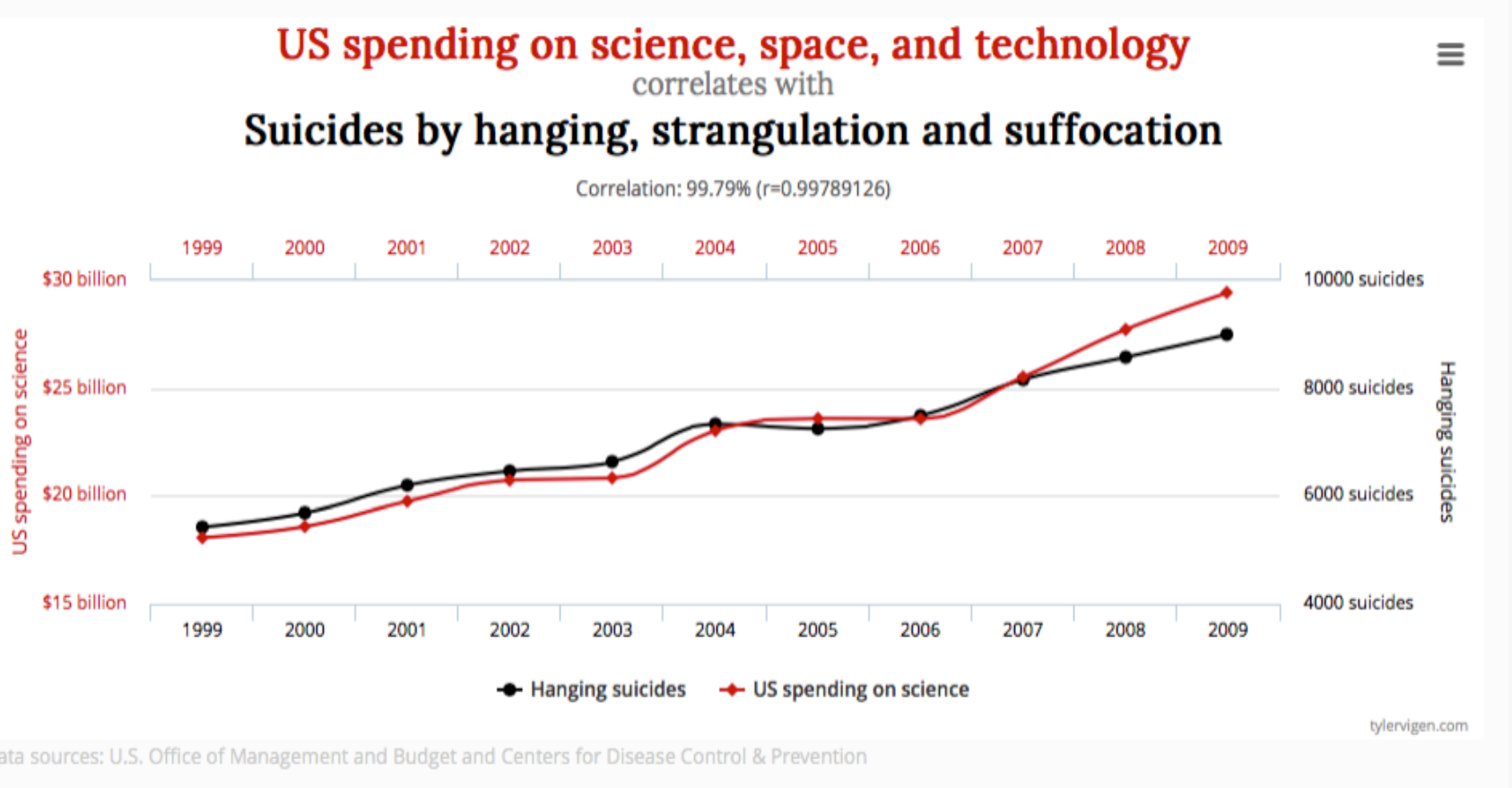
FILTER BUBBLES



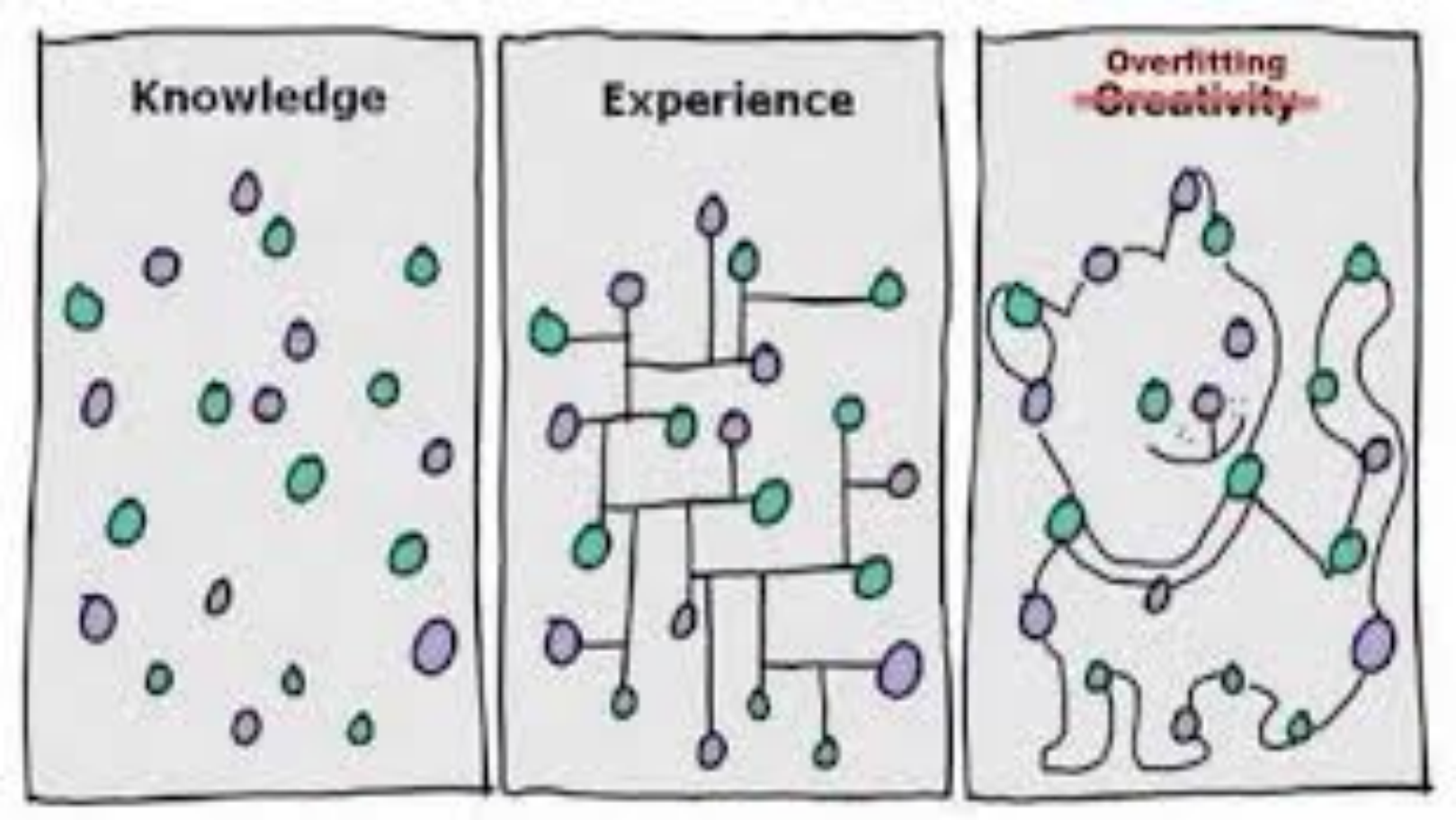


Likes
Recommender Systems
Customization
Daily Me

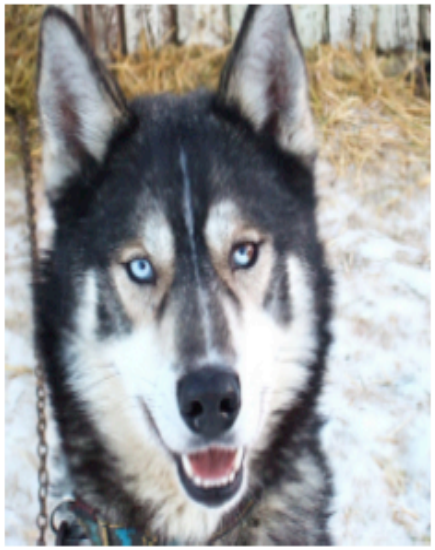
SPURIOUS CORRELATIONS



OVERFITTING



MACHINE LEARNING: BLACK BOX

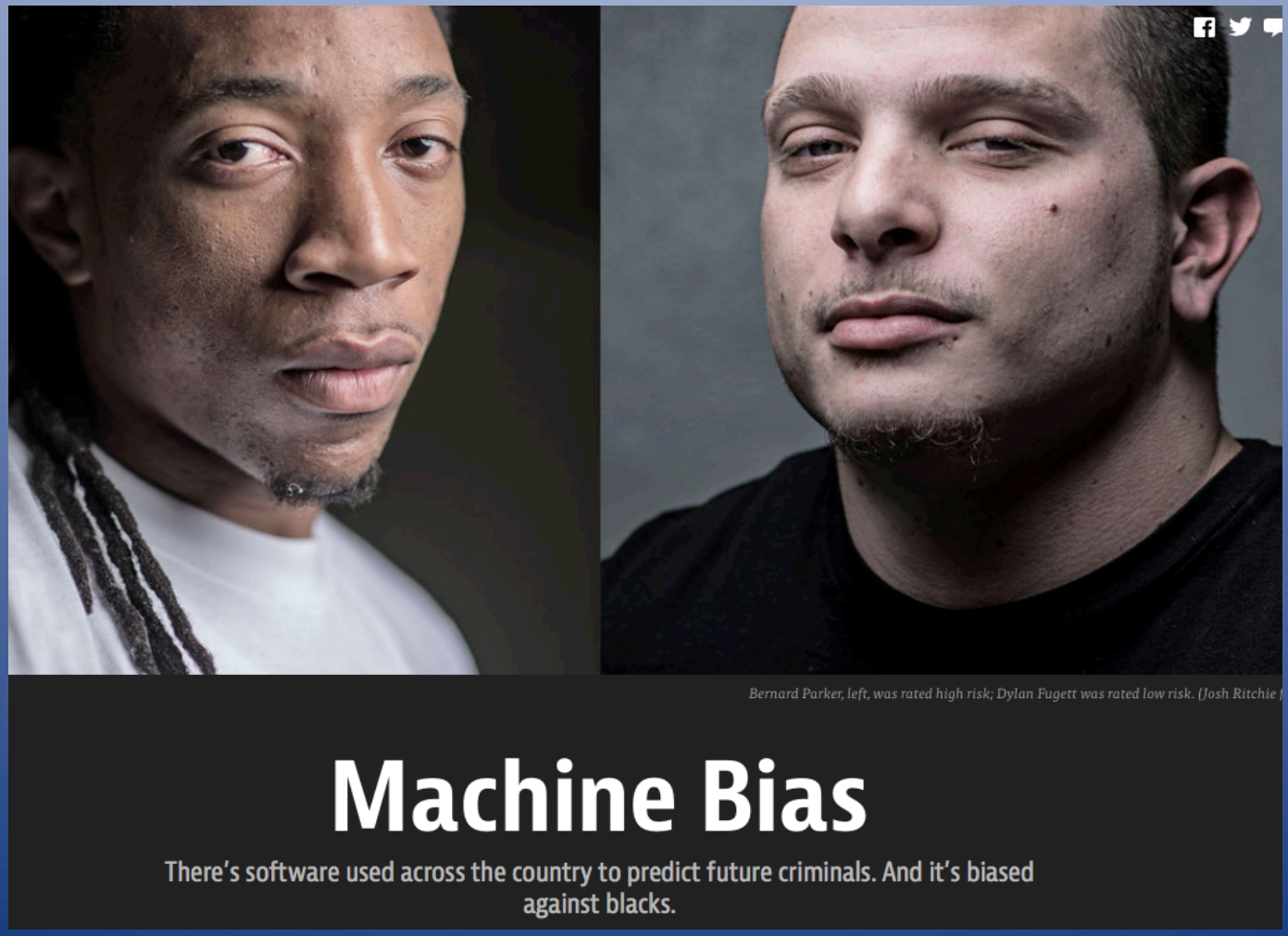


(a) Husky classified as wolf

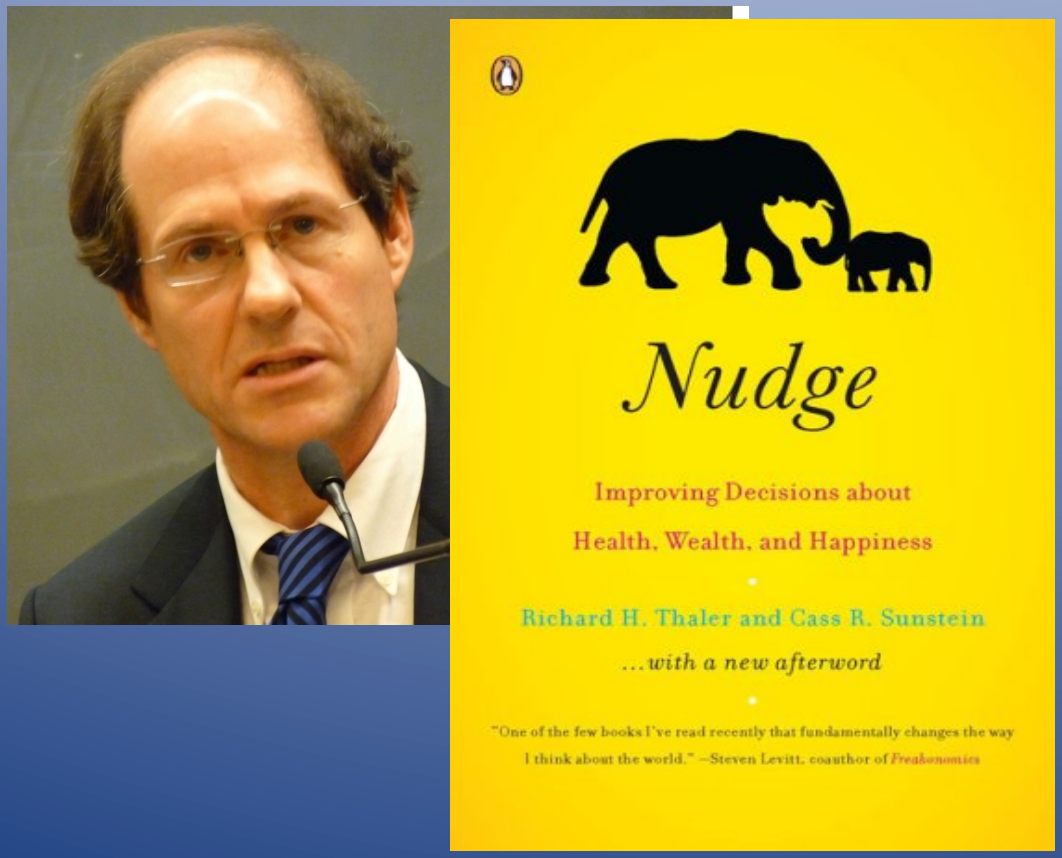
(b) Explanation

Figure 11: Raw data and explanation of a bad model's prediction in the "Husky vs Wolf" task.

PREDICTIVE ANALYTICS, ...POLICING, SENTENCING



Big Data …Big Nudging



CHOICE ARCHITECTURES

CASS SUNSTEIN

Nudging

Markt

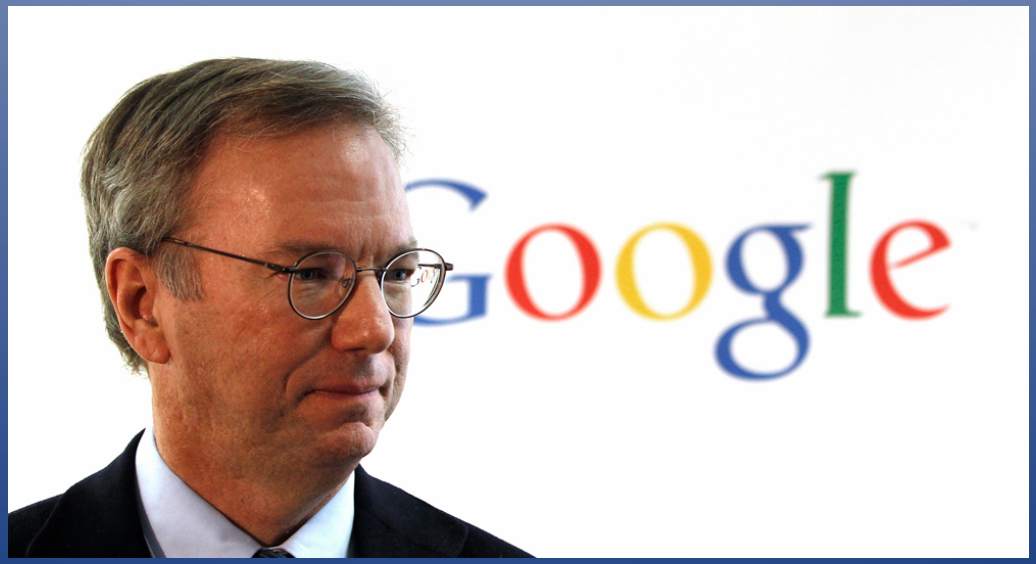
- Profiling
- Behavioral targetting
- A/B testing
- Persuasion profiles
- Choice models

Overheid

- Public policy
- Government

Eric Schmidt CEO Google

- “We weten wie je bent. We weten waar je bent geweest, We kunnen min of meer weten waar je aan denkt”



Google: Alphabet

- 60.000 werknemers jaaromzet van 70 miljard
- Advertentie inkomsten
- Adwords
- Adsense
- Google Car
- Googledocs
- Google glass
- Youtube
- Android
- Gmail
- Calendar
- Google maps
- Google Play
- Google hangouts
- Google Analytics
- Google drive
- Double Click (aantal eigenschappen website bezoek > 100)

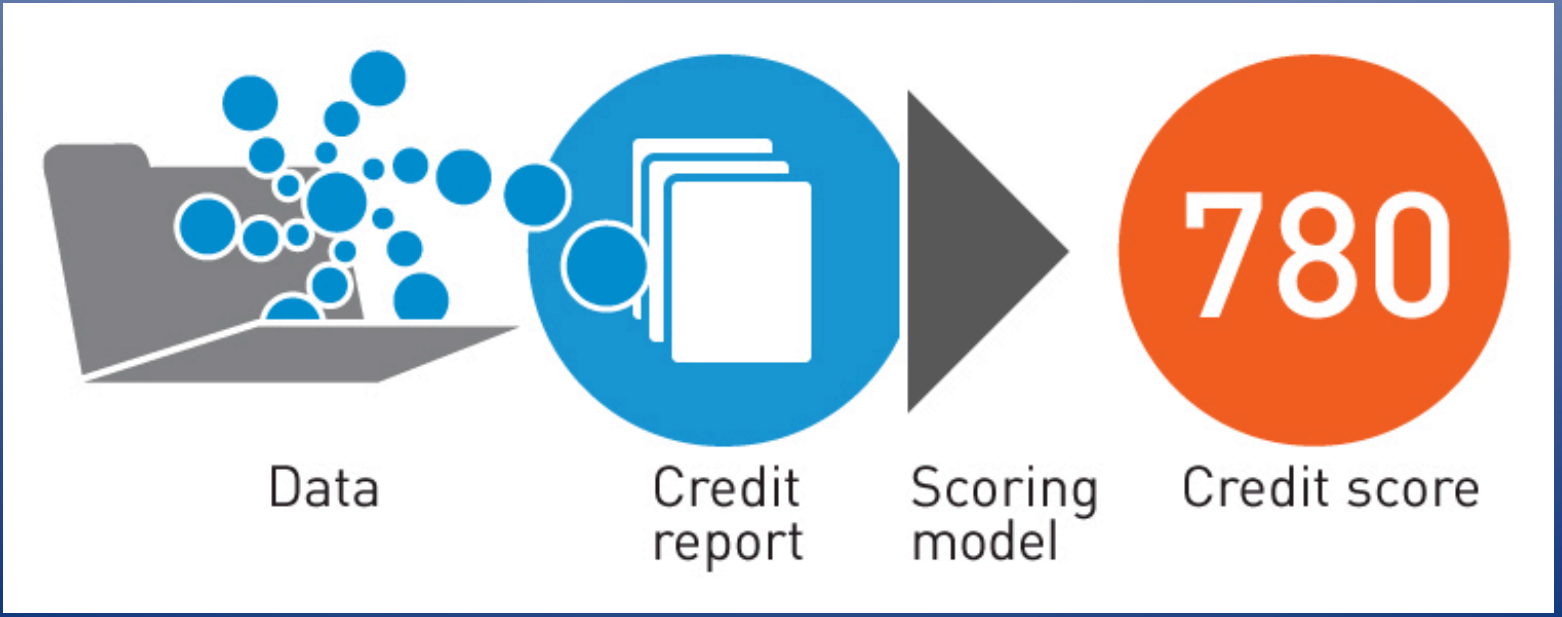
Zuboff: Surveillance Capitalism

Internet of things

US intelligence chief: we might use the internet of things to spy on you

James Clapper did not name specific agency as being involved in surveillance via smart-home devices but said in congressional testimony it is a distinct possibility

CREDIT SCORES



CITIZEN SCORES

Algorithmic Citizenship

What Your "Algorithmic Citizenship" Says About Your Web Habits

by Rafi Schwartz

Share June 2, 2015

International Journal of Communication 10(2016), 1721–1742 1932–8036/20160005

Jus Algoritmi: How the National Security Agency Remade Citizenship

JOHN CHENEY-LIPPOLD
University of Michigan, USA

Classified U.S. National Security Agency (NSA) documents released in the summer of 2013 detailed a trove of controversial surveillance programs, igniting a debate about state power and the rights of citizens. But how can citizenship be evaluated in a digital, networked world? In response to this question, the NSA created an algorithmic, data-based version of citizenship (and foreignness), where a user is legally foreign if his or her "selectors" are "at least 51 percent confidence" foreign. These selectors, which can include telephone numbers, Internet protocol addresses, or language, became effectual arbiters of citizenship online. This article explains what algorithmic citizenship means, what the NSA's citizenship and foreignness look like, and what the implications are when a formal rubric of U.S. citizenship is based exclusively on algorithmic interpretations of communications data.

You are your Data

You are data

[Source:TIME - Person of the Year: You, 25/12/2006]

ZORGEN OM PRIVACY

EDPS: Buttarelli

EDPS

PRESS RELEASE

EDPS/2016/05

Brussels, 28 January 2016

EDPS starts work on a New Digital Ethics

Today, the European Data Protection Supervisor (EDPS) announced that the work on a new Digital Ethics is ready to begin. The EDPS has launched a broader **discussion,** both in the EU and globally, on how to ensure the integrity of our values while embracing the benefits of new technologies. Speaking at the annual Conference of Computers, Privacy and Data Protection (CPDP), he said that yesterday he established an **Ethics Advisory Group** which will enable the realisation of the **benefits of technology** for society and the economy in ways that reinforce the rights and freedoms of individuals.

Giovanni Buttarelli, EDPS, said: "*Most of us agree that we are each **more** than the **sum of our data** and yet we are more defined by our quantified selves than ever. Our privacy has almost become a **commodity**, used to sell ideas and products back to us or to influence our behaviour. I am, therefore, delighted to announce that the*

Conceptual problems

- Purpose specification
- Use limitation
- Informed Consent
- Personal Data
- Transparantie van AI
- “Privacy”

GRIP op “Privacy”

Bescherm X

Beperk
Genereren
Verwerven
Toegang
Verwerken
Verspreiding
Persoons
Gegevens

Data Protectie

Van PRIVACY naar DATA PROTECTIE

op morele gronden

- Schade
- Exploitatie
- Discriminatie
- Manipulatie
- Beperking keuzevrijheid
- Verlies van morele autonomie
- Stigmatisering
- Respectloze behandeling

Grip op Data door Verantwoord Innoveren

Privacy
Electronisch patienten dossier

300 Miljoen verspild

Privacy vs. Duurzaamheid: De “Slimme” Meter

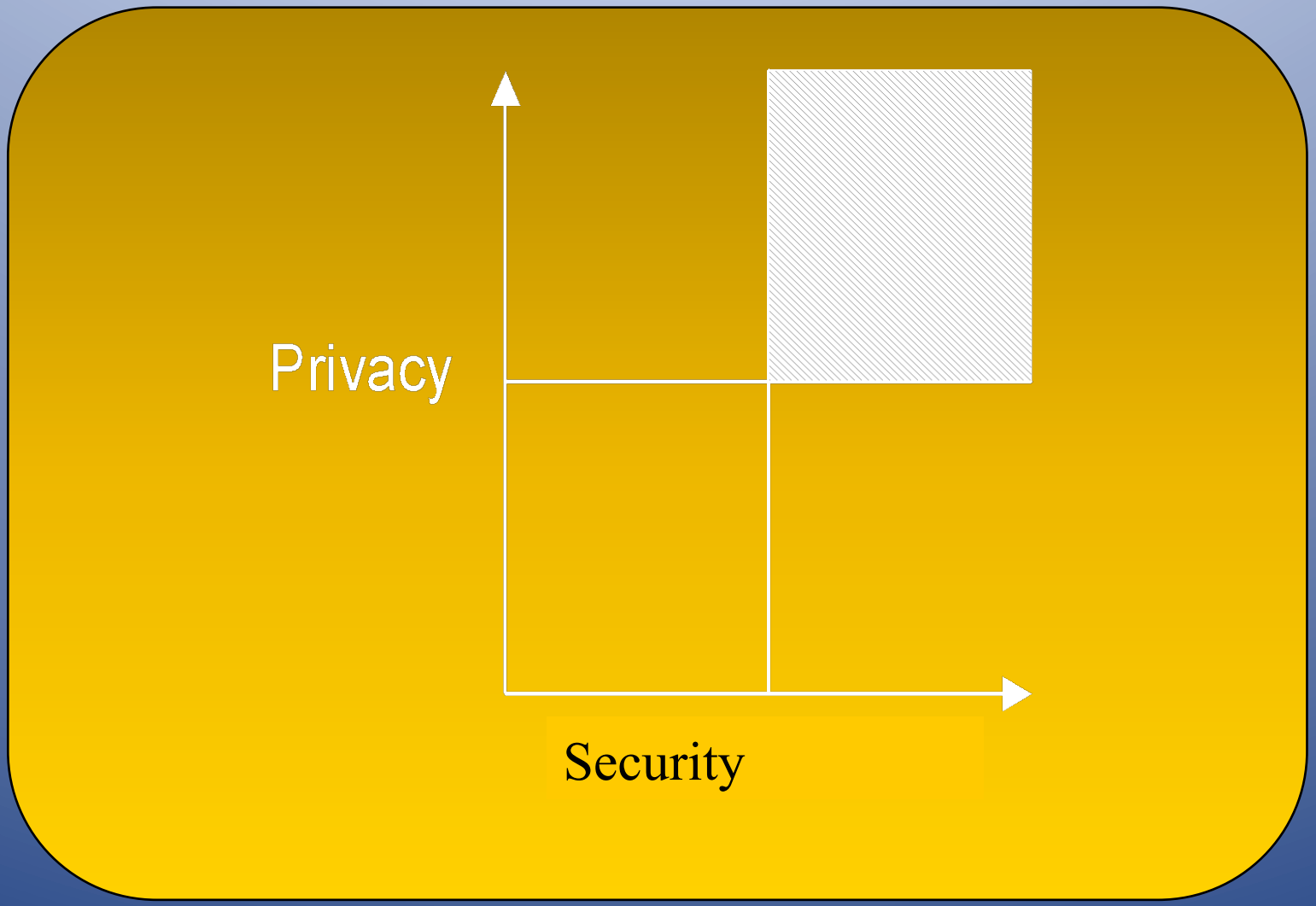
MORELE OVERBELASTING (MORAL OVERLOAD)

- Economische groei **EN** duurzaamheid
- Security **EN** Privacy
- Efficiency **EN** Safety
- Accountability **EN** Confidentiality

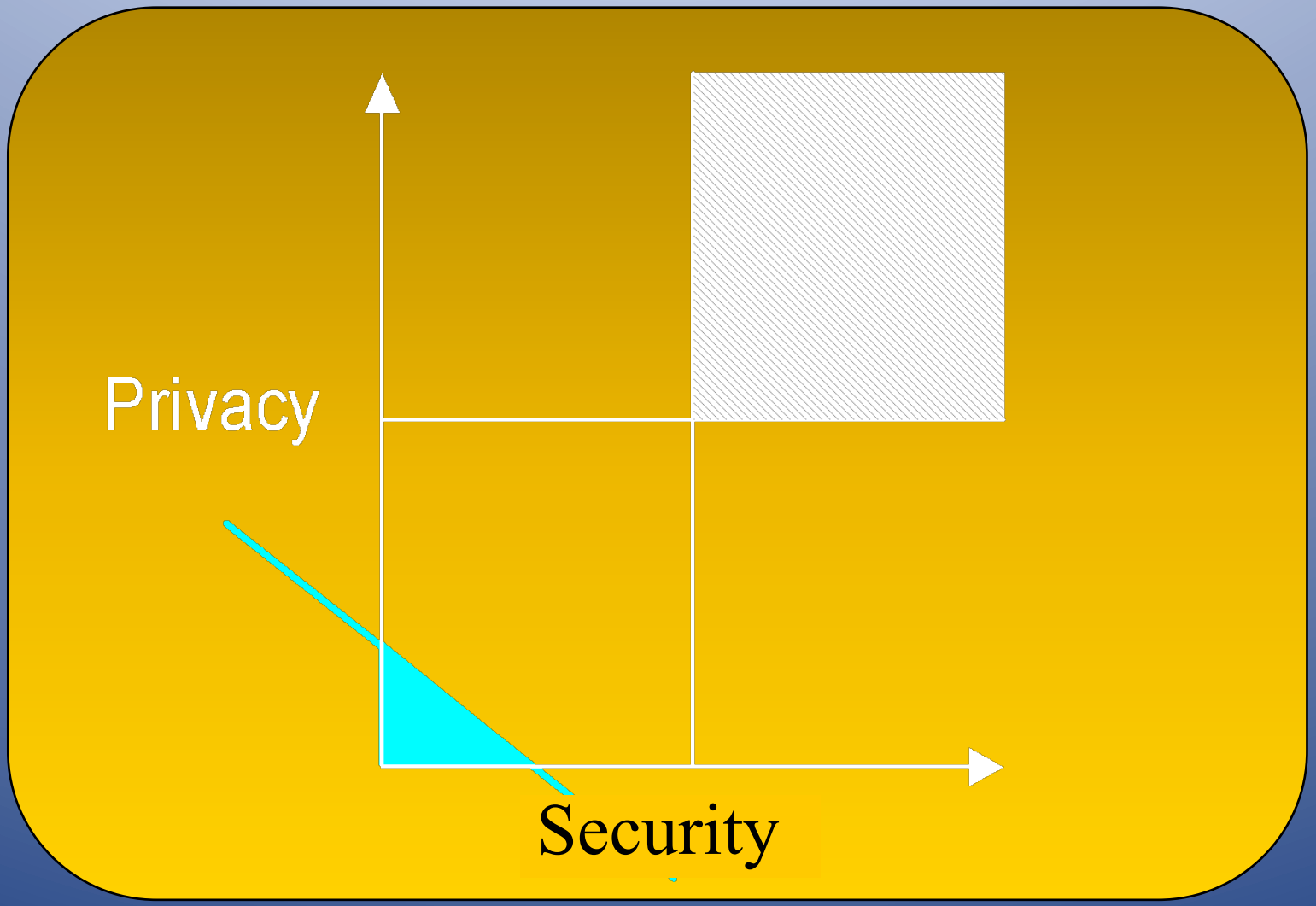
DUURZAAMHEID

PRIVACY

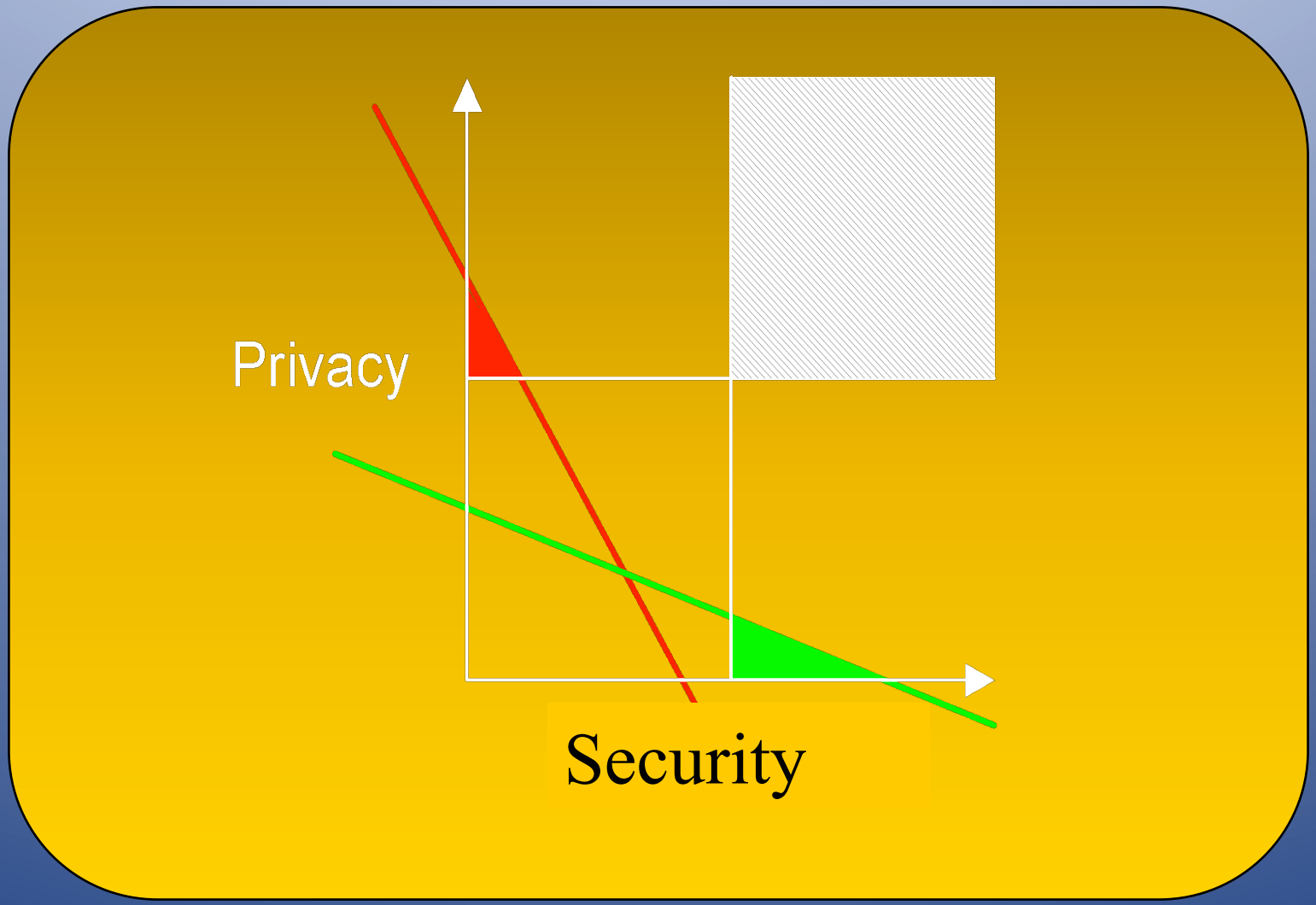
SECURITY



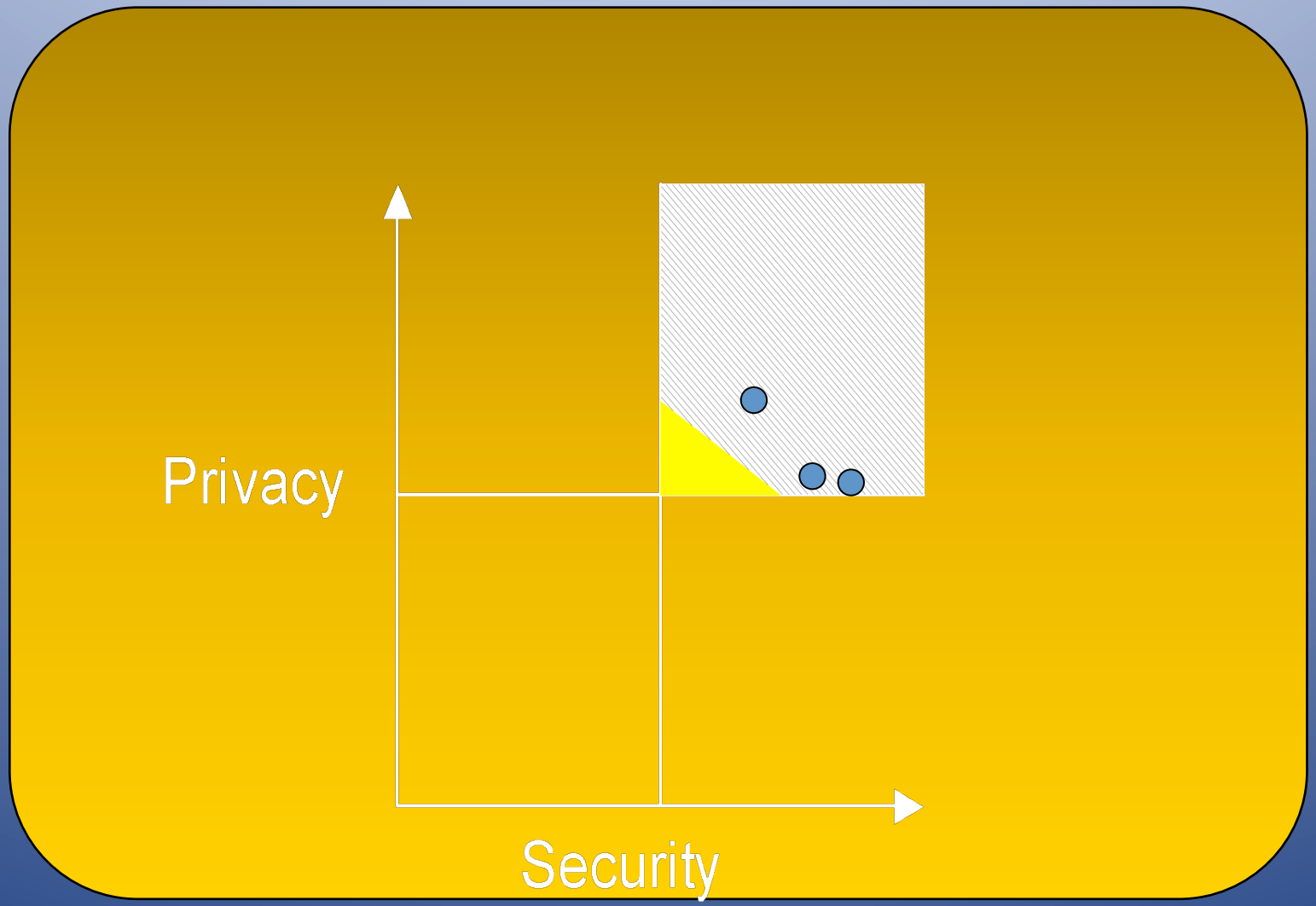
MORAL OVERLOAD



NOCH PRIVACY, NOCH SECURITY (1.0)



PRIVACY OF SECURITY (2.0)



PRIVACY EN SECURITY (3.0)

MAATSCHAPPELIJK VERANTWOORD INNOVEREN

Als je door een innovatie de wereld vandaag zo kan veranderen dat je morgen aan meer van je verplichtingen kan voldoen, dan heb je een verplichting om vandaag te innoveren

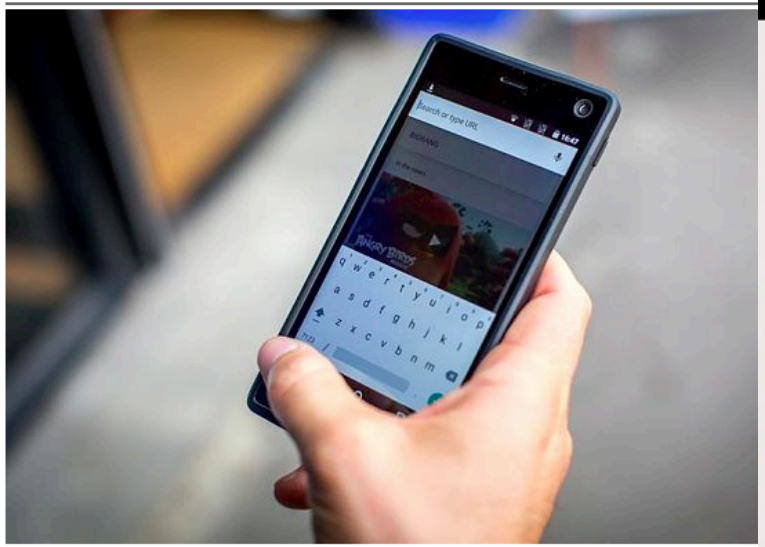
ETHICAL FAIRPHONE

HOME » TECHNOLOGY » MOBILE PHONES

'Ethical' Fairphone 2 smartphone launched to combat electronic waste

The Fairphone 2 aims to challenge the "throwaway" nature of consumer electronics and ever-shorter product cycles

196 0 59 255 Email



The new Fairphone 2

FOLDABLE CONTAINER

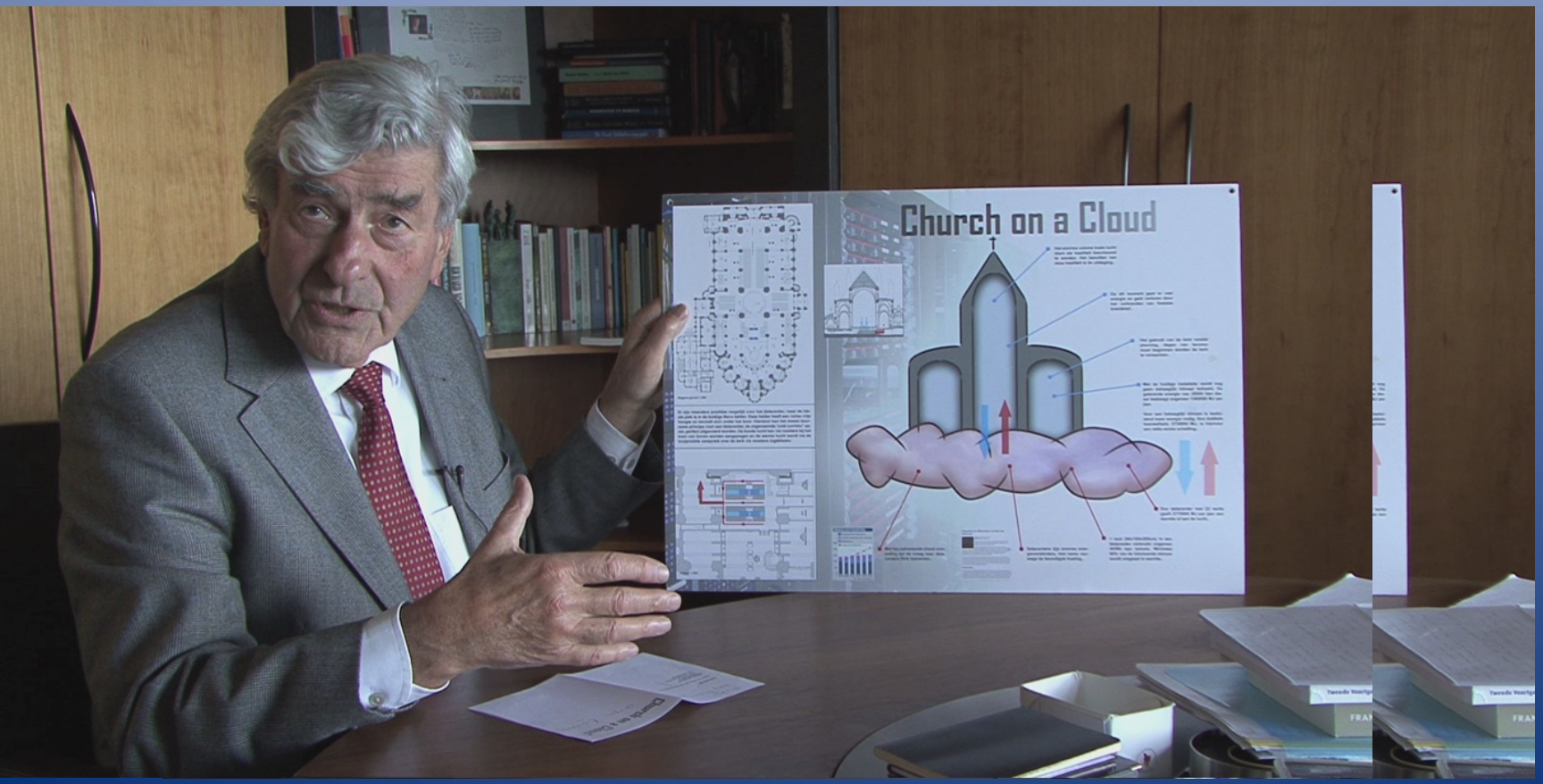
SUSTAINABILITY

TIDAL ENERGY

Grevelingen Tidal Energy Proposal (Van Lier -Lels, May 2012

- Mobile Datacentres and Glasshouses

CHURCH ON A CLOUD



Het Patroon

Conflicterende waarden en gezichtspunten kunnen

(I) een driver van innovatie zijn

(II) Veronderstelt dat je ze serieus neemt in vroeg stadium van ontwikkeling en

(III) er werk van maakt

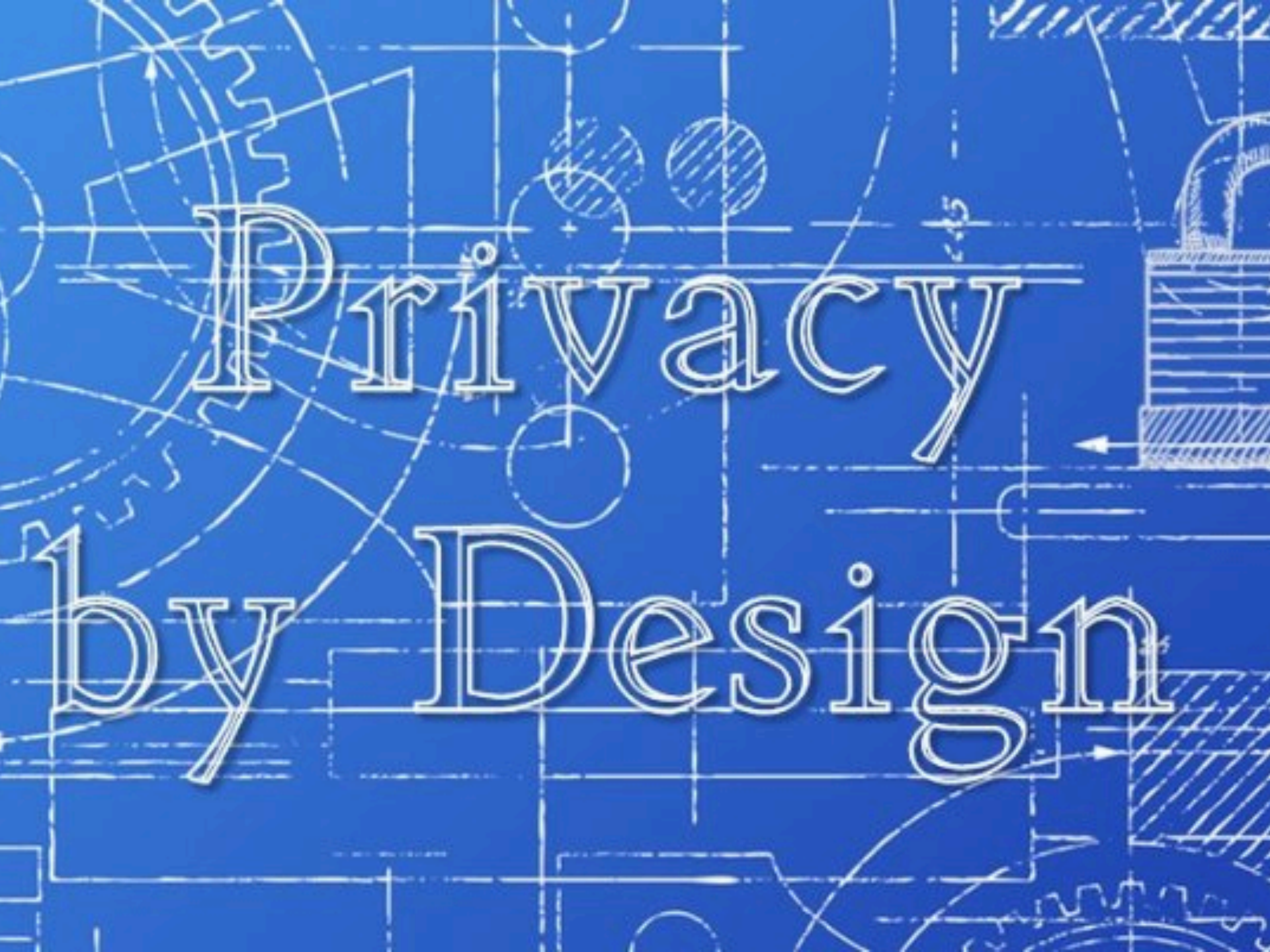
ELIZABETH DENHAM – UK INFORMATION COMMISSIONER

"I do not believe data protection law is standing in the way of your success"

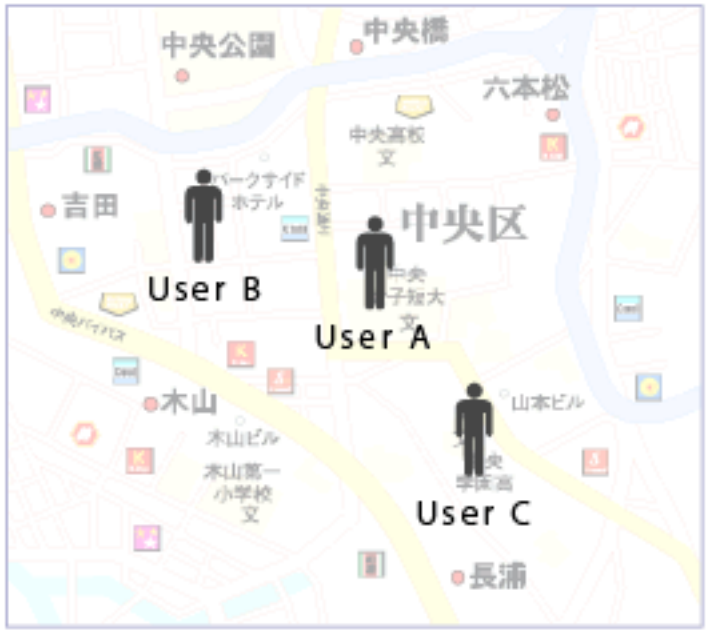
"It's not privacy OR innovation it's privacy AND innovation"

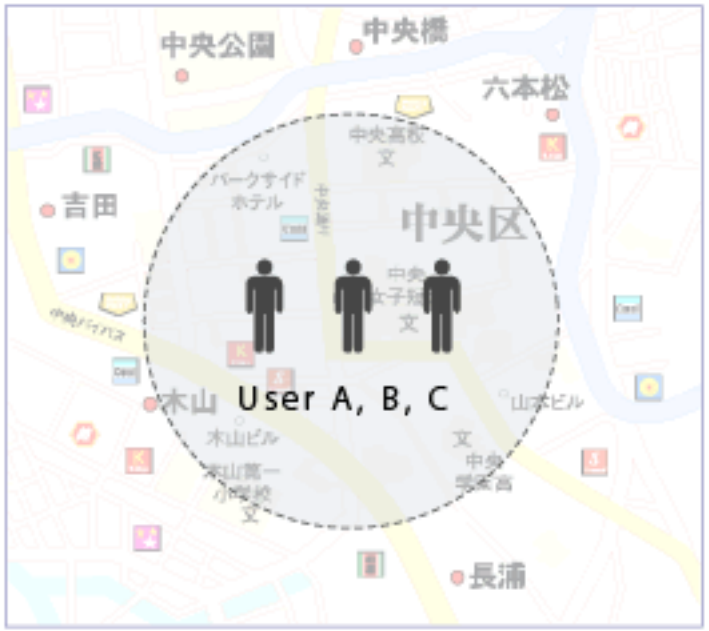
"...there is a single common inescapable factor: Consumer Trust is *essential* to achieving growth"

(Debuutrede 29 juli, 2016)


Privacy
by Design

k-anonymity
(k=3)





Can identify the user's detailed location from latitude and longitude.

When the location information is blurred, it becomes impossible to tell who is where in the circle.

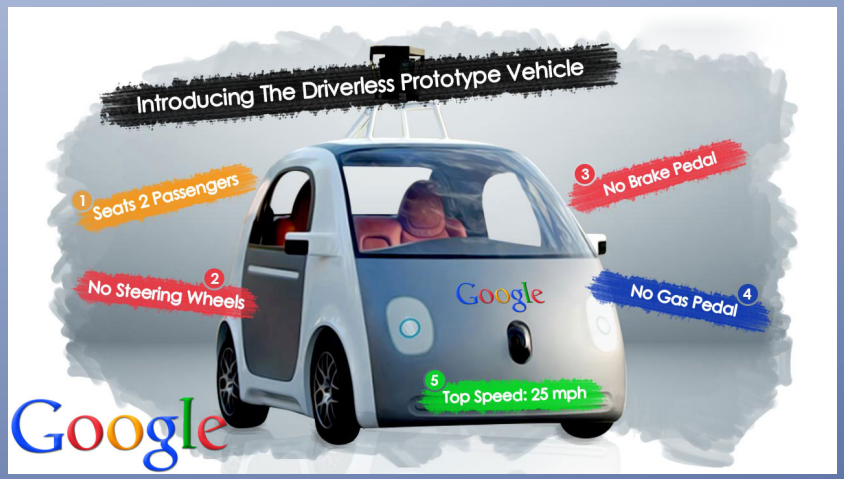
Morozov: “solutionism”

Grip op Verantwoordelijkheid

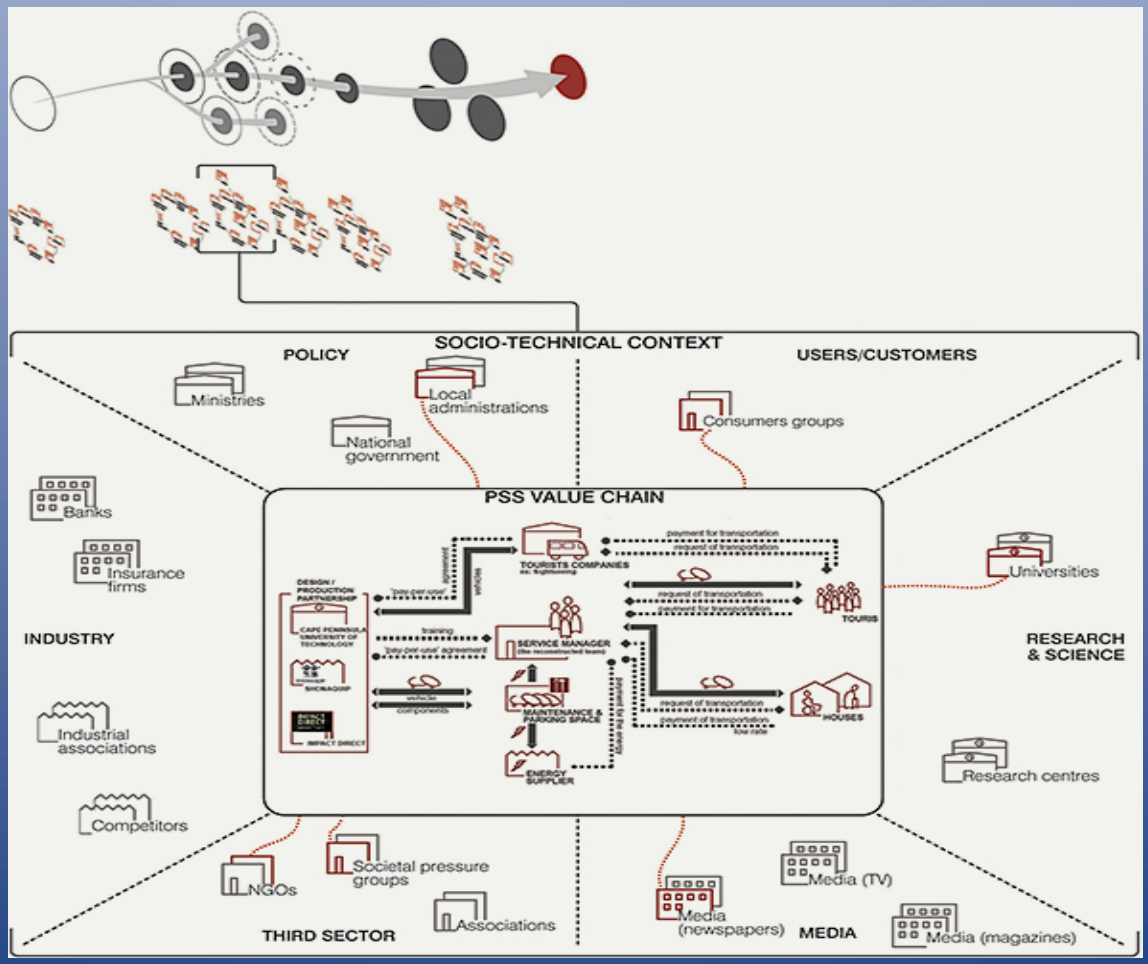
Responsibility

- Design Issue

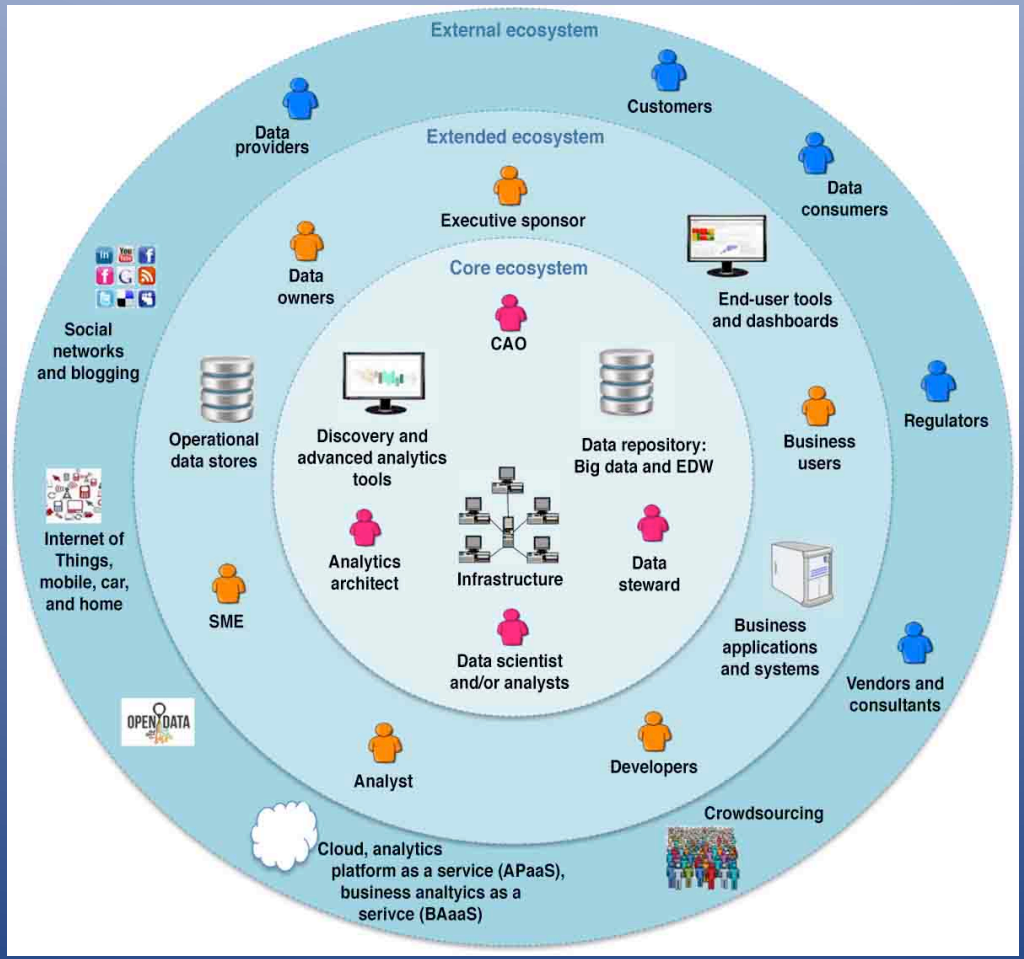
Human Responsibility



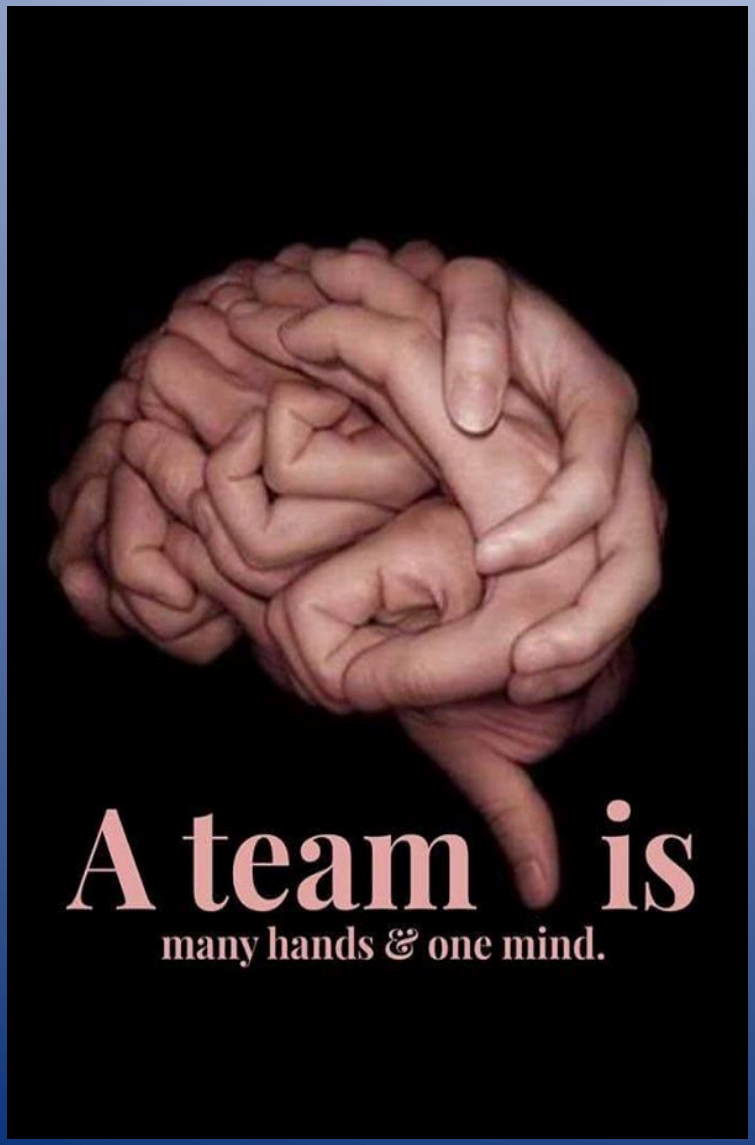
In Complex Systems

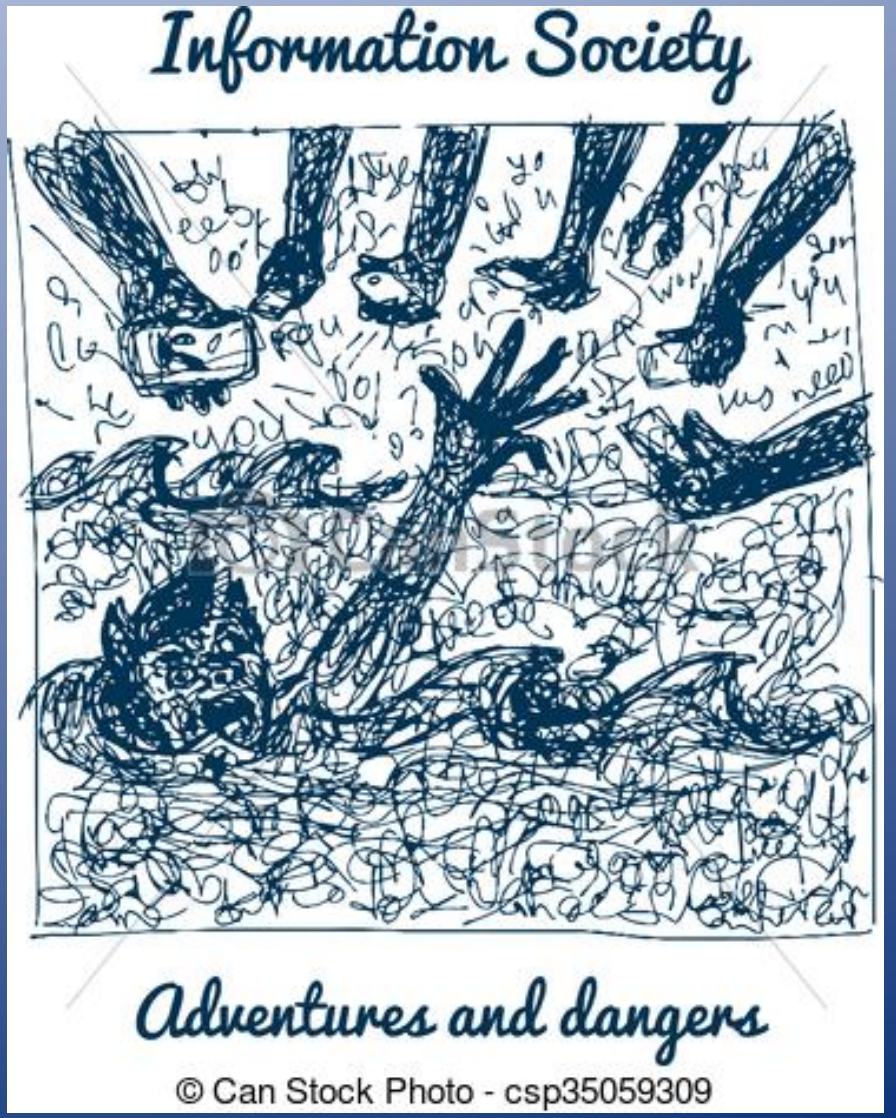


In Big Data Eco- system
Big data Society



Responsibility & Problem of many hands

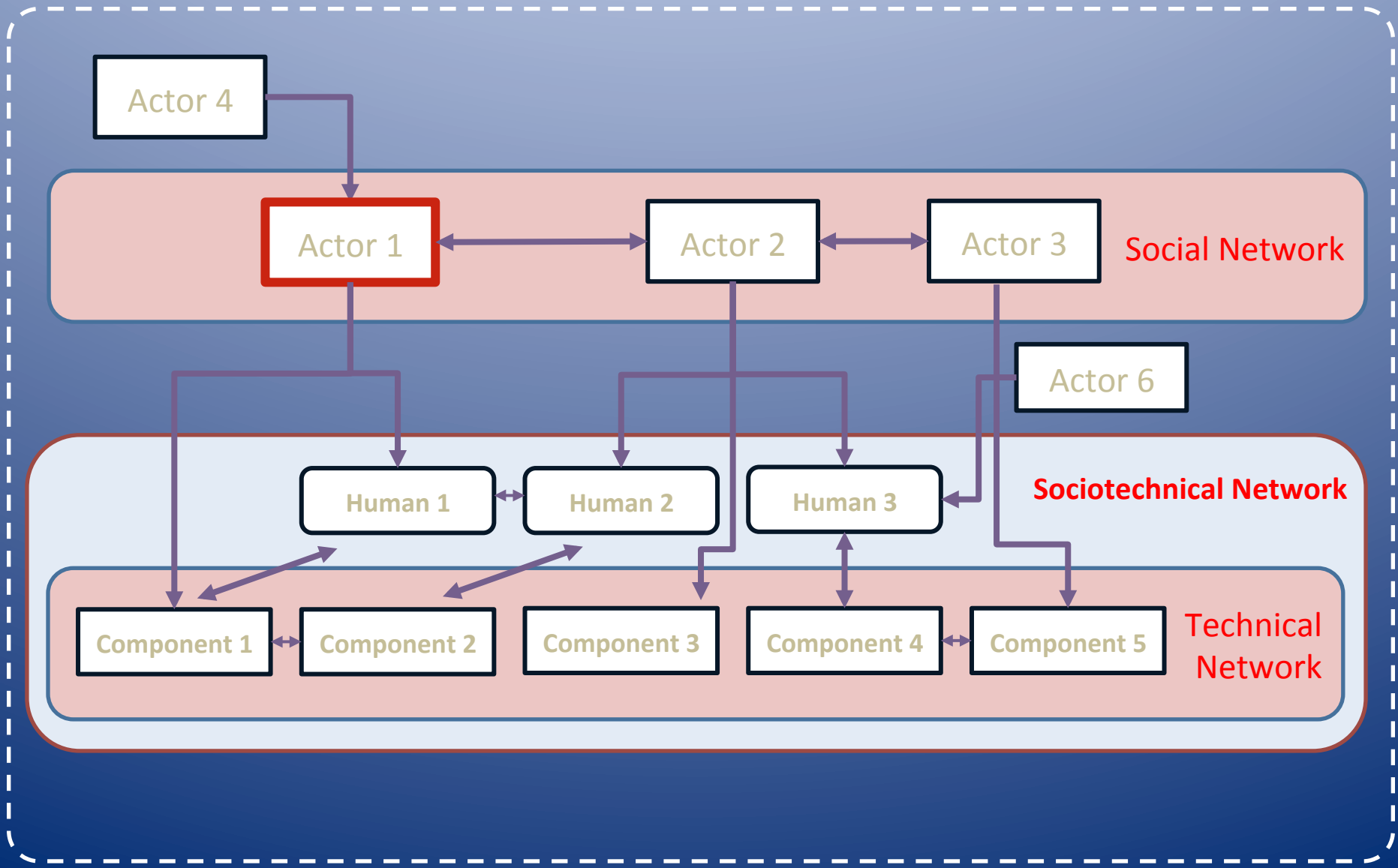

A team is
many hands & one mind.


Information Society
Adventures and dangers
© Can Stock Photo - csp35059309

Determine

1. Causality
2. Blame
3. Accountability
4. Liability
5. Role/task

Designing complex systems



Dank voor uw aandacht