Teknologirådet

Opportunities and limitations of big data in evidence-based policy making

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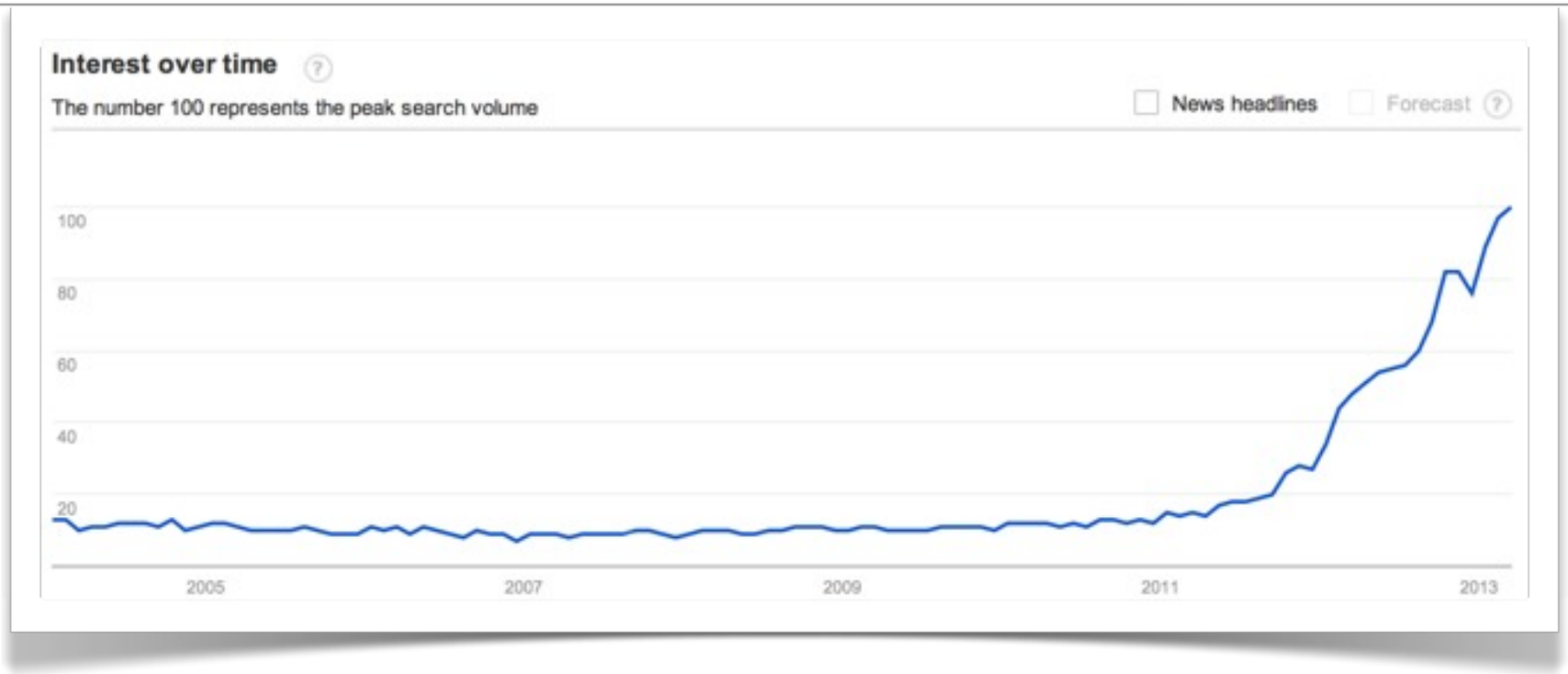
“Data is the new oil!”

- or is it?



McKinsey (2011) **Obama adm. (2012)** **United Nations (2012)** **Policy Exchange (2012)**

World Economic Forum (2012)

Big data for Government

Teknologirådet

Monitoring physical infrastructure

Energy

Public health

Smarter cities

Transportation and mobility

Education

Taxation and public finances

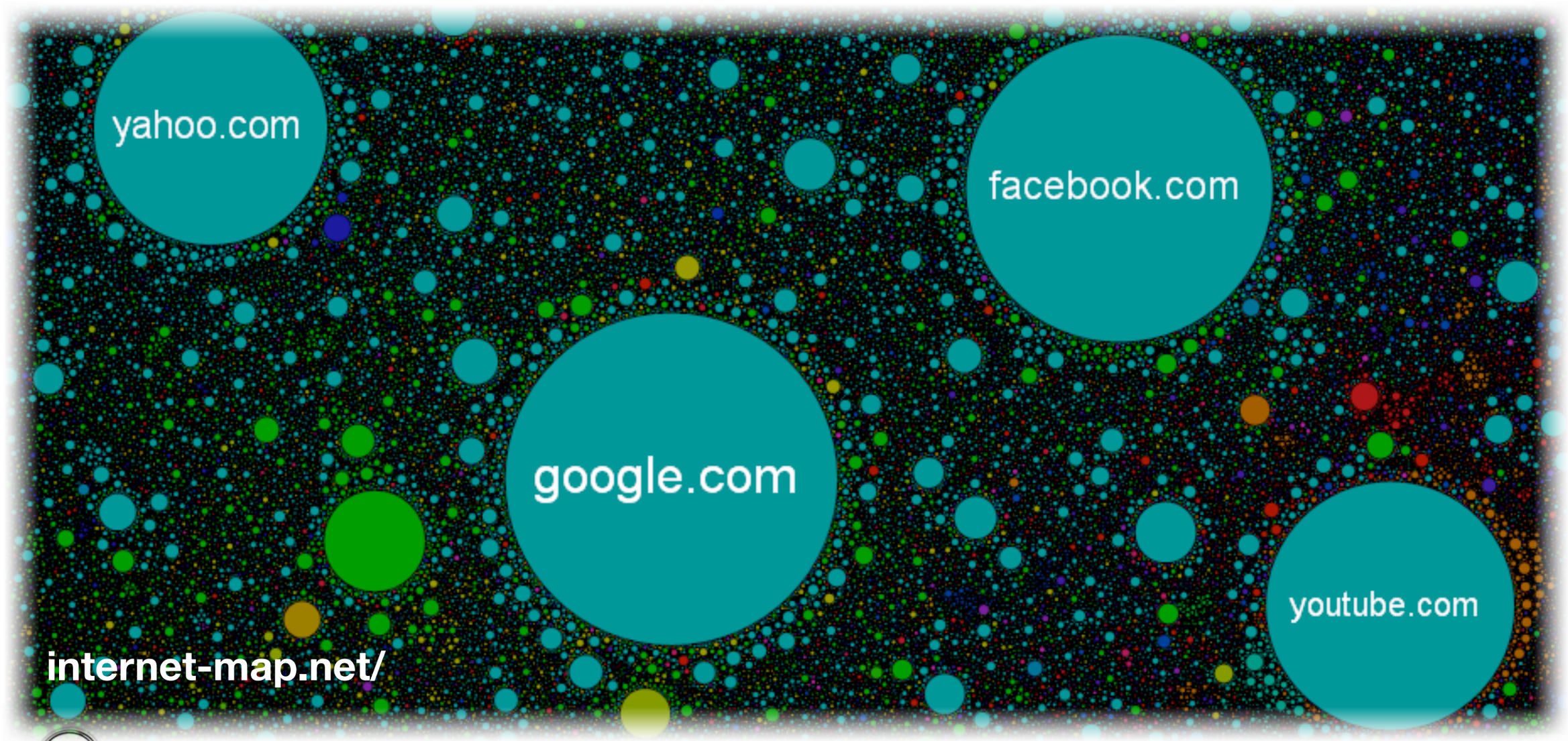
Democracy and governance

Security, crisis management and law enforcement

Monitoring of public services

Personalised services

The Web 2.0

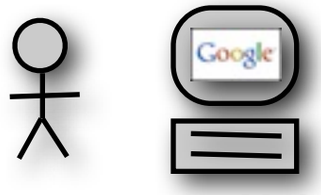


Every minute:

- 204 M emails
- 6 M Facebook “views”
- 47 K app downloads
- 100 K tweets
- 2 M Google searches
- 30 hrs of video uploaded

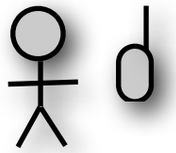
Digital traces...

Surfing the web...



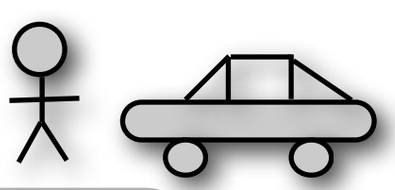
site tracking - clickstream - site analytics - email replication on devices via cloud infrastructure - social media trails

Using your smartphone...



location tracking (towers) - phone log files
data streams created/stored by apps

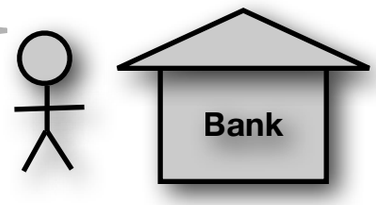
Driving your car...



location tracking at toll booths
instrumentation data (OnStar)

data streams initiated by ATM withdrawals
- transaction pattern logs
- audit/verification trails

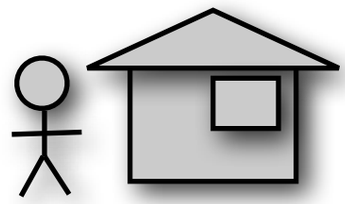
Visiting your bank...



data streams from credit card transaction
product inventory changes
buying pattern logs (loyalty programs)

Out shopping...

Chillin´at home...



smart meter
(electricity usage)

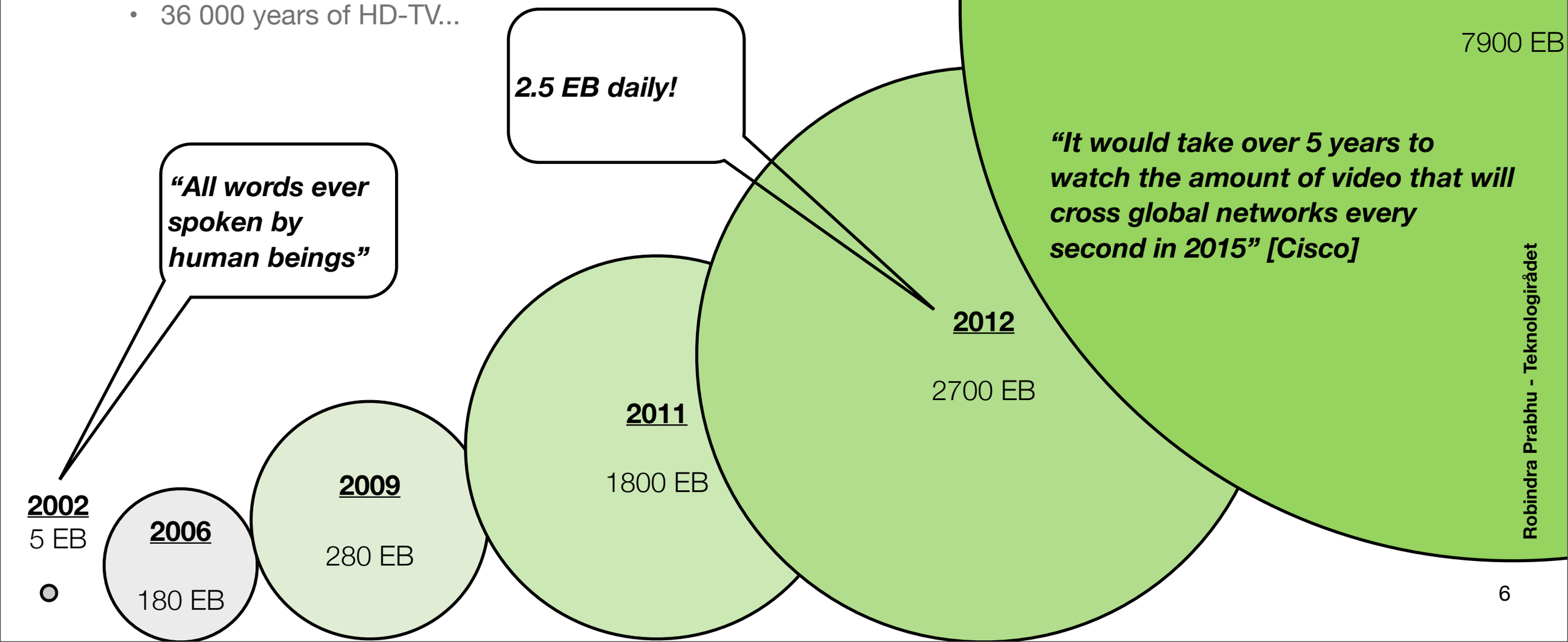
We constantly emit digital "exhaust" in daily interactions

[Adapted from: http://fountnhead.blogspot.no/2012/02/growth-of-data-growth-my-digital.html]

An ocean of data

- Volume of digital data increases more than ten-fold every 5 years!

- 1 Exabyte (EB) = 10^9 GB
  - 36 000 years of HD-TV...



Digital traces

- Traces left in the digital world can be used tackle **real-life problems**:

Physical World

[bigbelly.com]

Embedded sensors

Social World

Human sensors

Real-time transactional data!

- Exciting time for policy makers! New ways to ***sense your surroundings***, ***forecast future, collaborate with citizens, assess impact*** and ***evaluate risk***…

Using Big Data in to inform and guide public policy

Teknologirådet

- e-government initiatives focus on bringing out the right forms...
- current focus: Open Data initiatives
- Next step - use the data and engage the public!
  - *link, collate, analyse and visualise* - **reveal unanticipated insights!**
  - *listen to the crowds* - **social computing** and **sentiment mining**
  - *engage the crowds* - **collaborate** with citizen experts
  - *communicate* - develop policy models that can be **visualised and monitored**

Digital “exhaust” in Genève

Teknologirådet

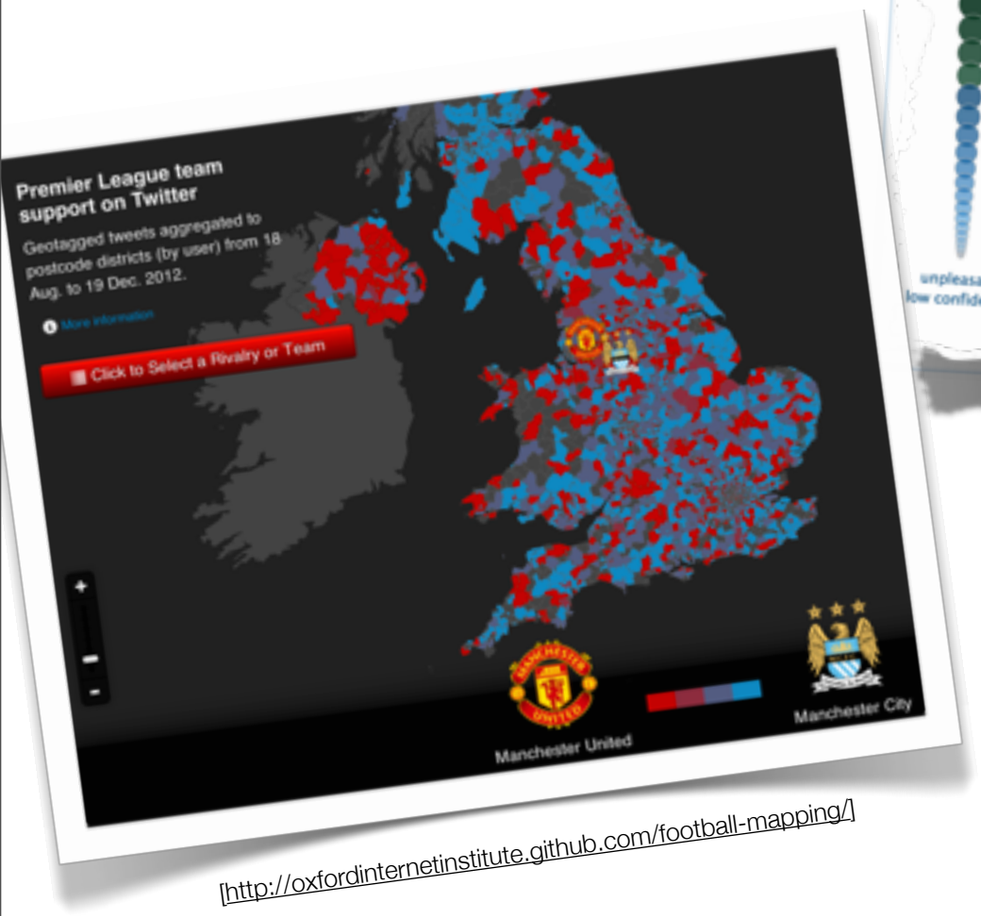
Sensing the world in new ways

Teknologirådet

"When a 5.9 earthquake hit near Richmond, Virginia on August 23rd, 2011, residents in New York City read about the quake on Twitter feeds 30 seconds before they experienced the quake themselves."

[http://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government.html]

[http://www.csc.ncsu.edu/faculty/healey/tweet_viz/tweet_app/]

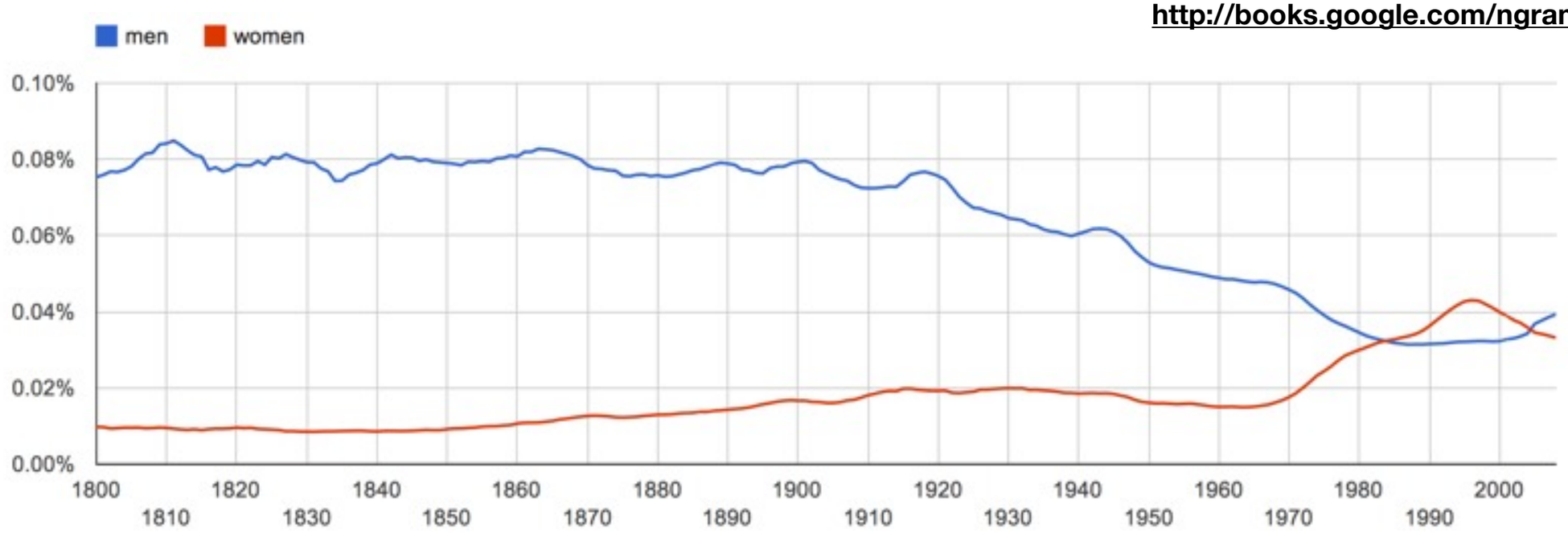


[http://oxfordinternetinstitute.github.com/football-mapping/]

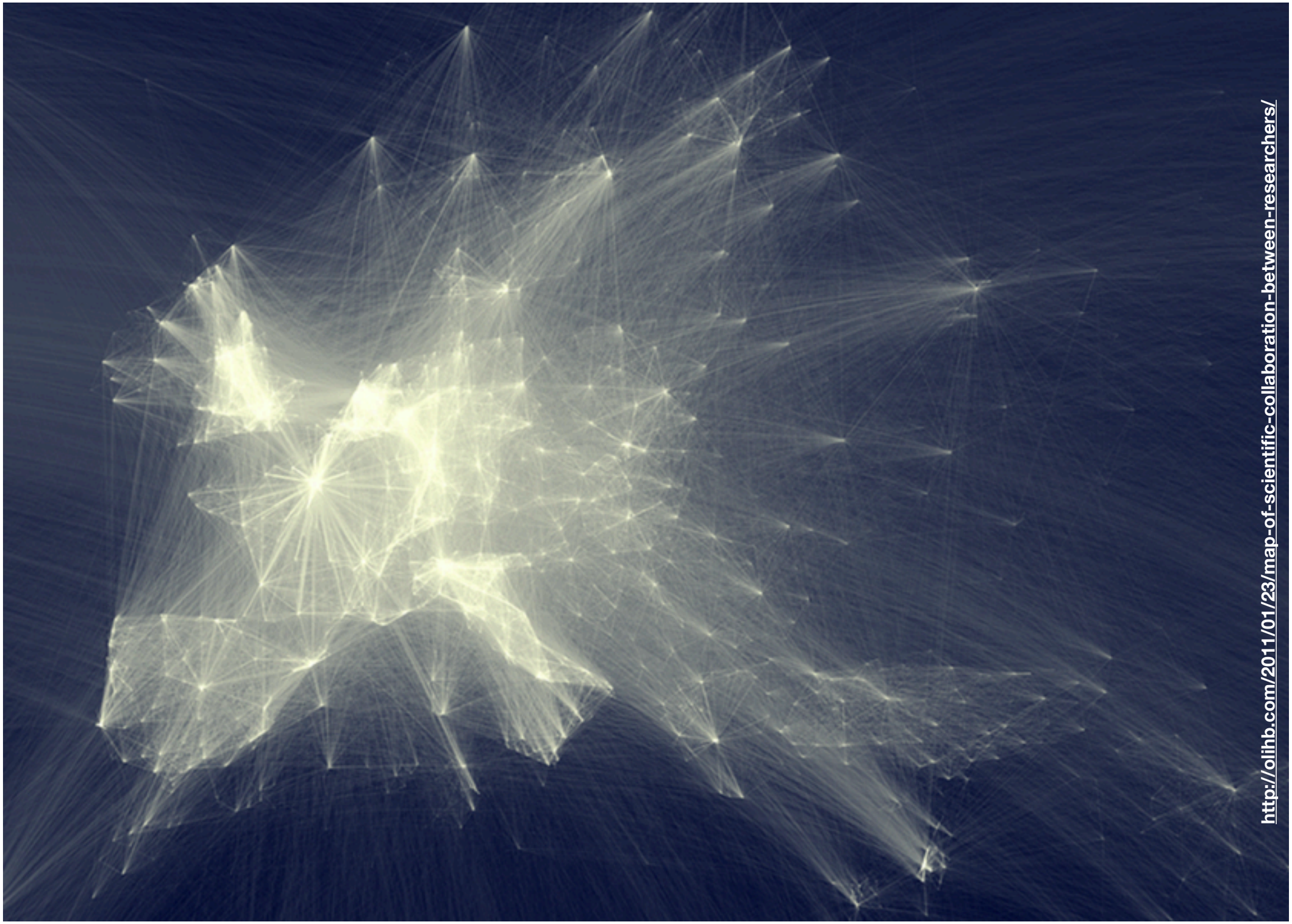
Mining swathes of text...

Teknologirådet

http://books.google.com/ngrams/info



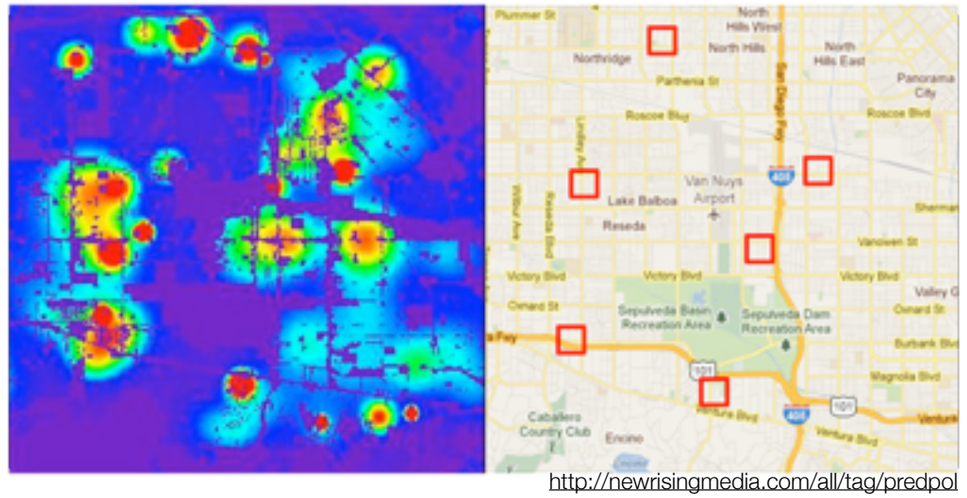
Visualising relationships



http://olihb.com/2011/01/23/map-of-scientific-collaboration-between-researchers/

Prediction and forecasting

http://www.bigideas.com/wp-content/uploads/2012/02/blog_image.jpg



http://newrisingmedia.com/all/tag/predpol

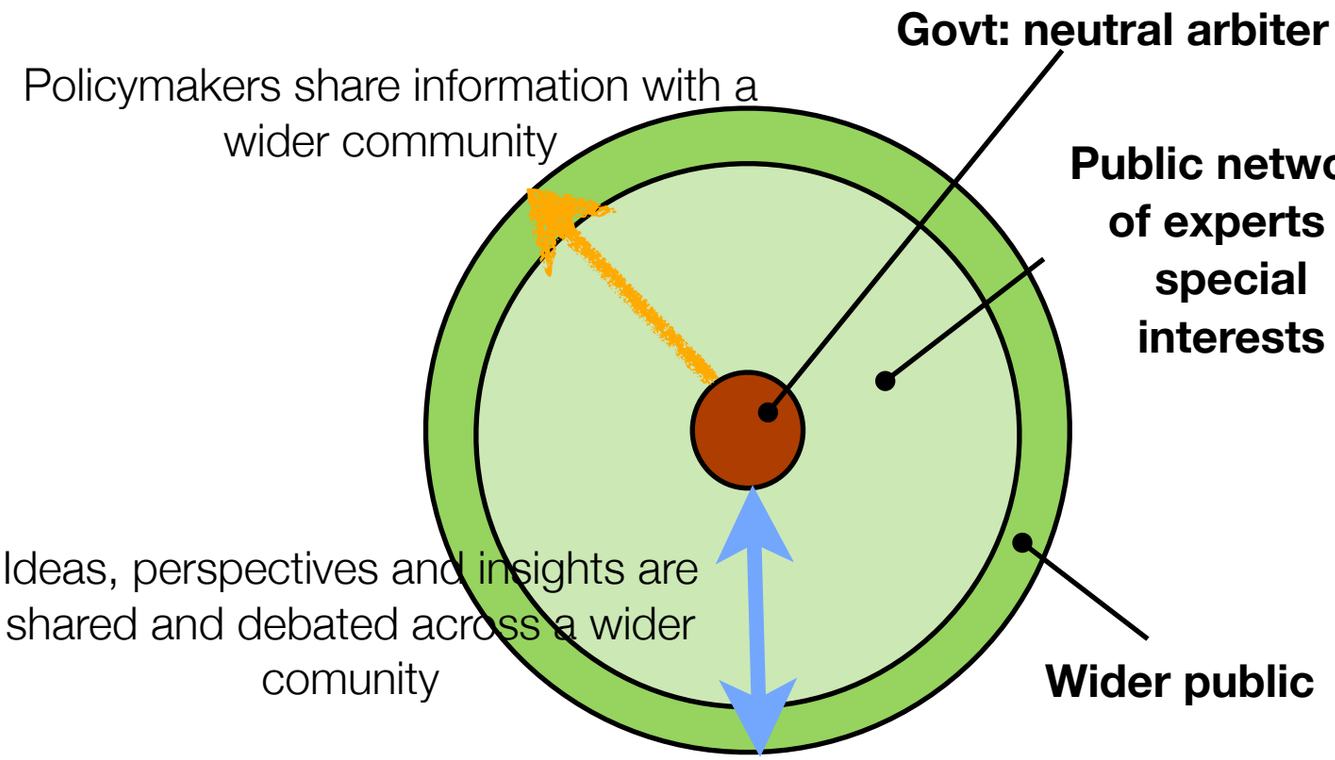
Predictive retailing → **Predictive policing / Preemptive government**

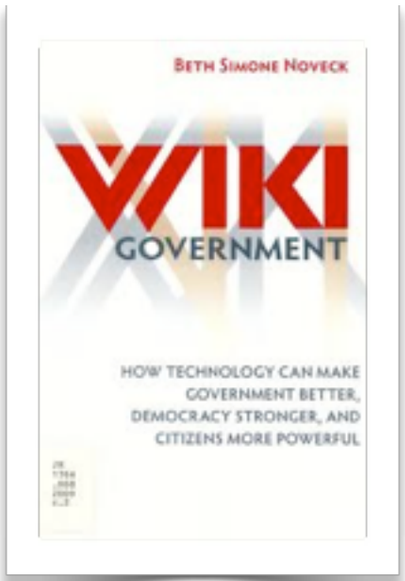
http://fivethirtyeight.blogs.nytimes.com/fivethirtyeights-2012-forecast/

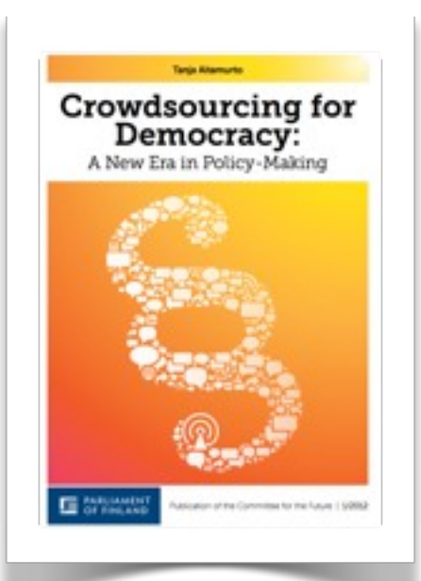
Building platforms and tools for decision-making

Teknologirådet

- need robust platforms and tools for:
  - public deliberation
  - agenda setting
  - public decision-making







Visualise impact of policy measures

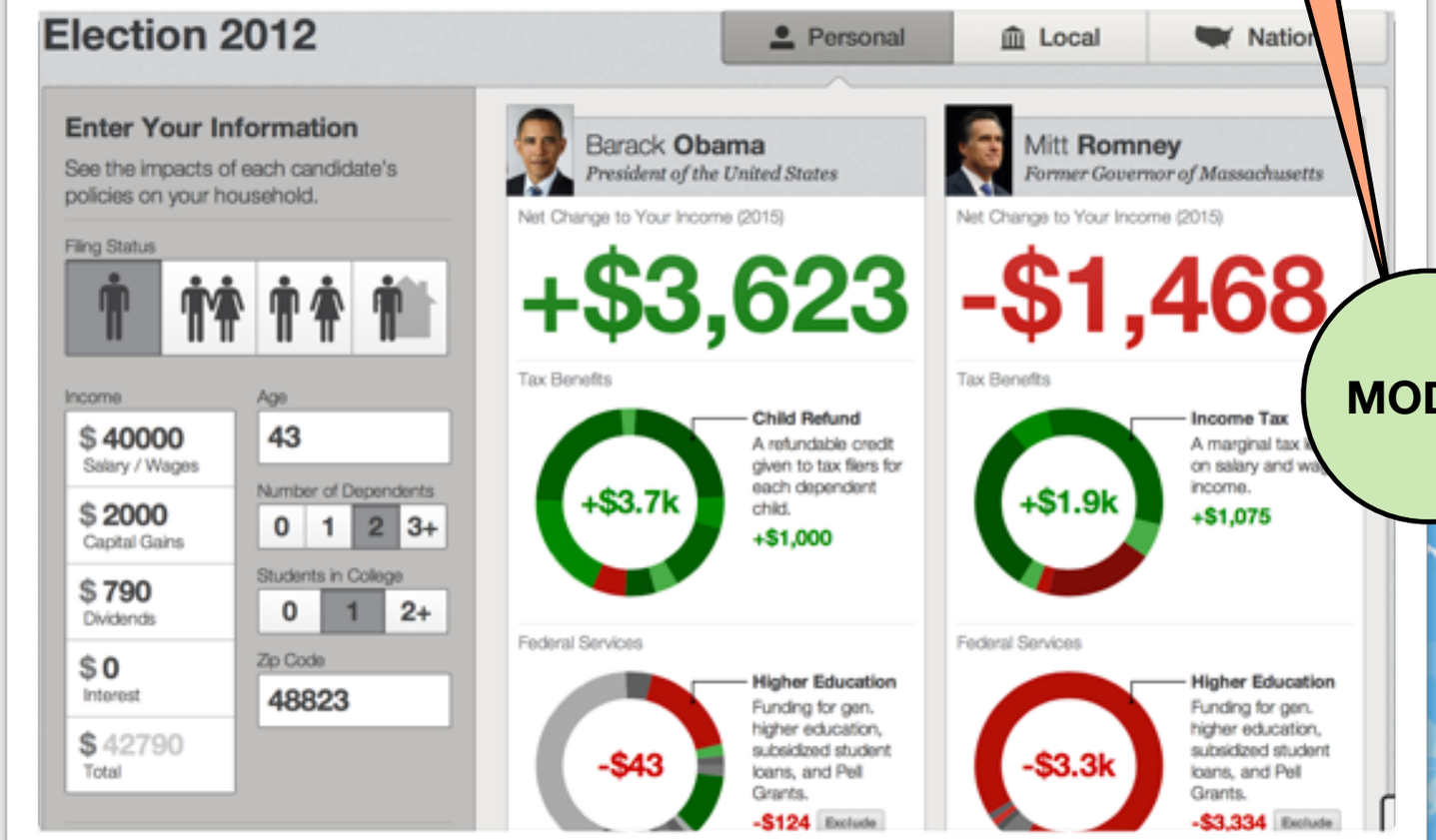
Teknologirådet

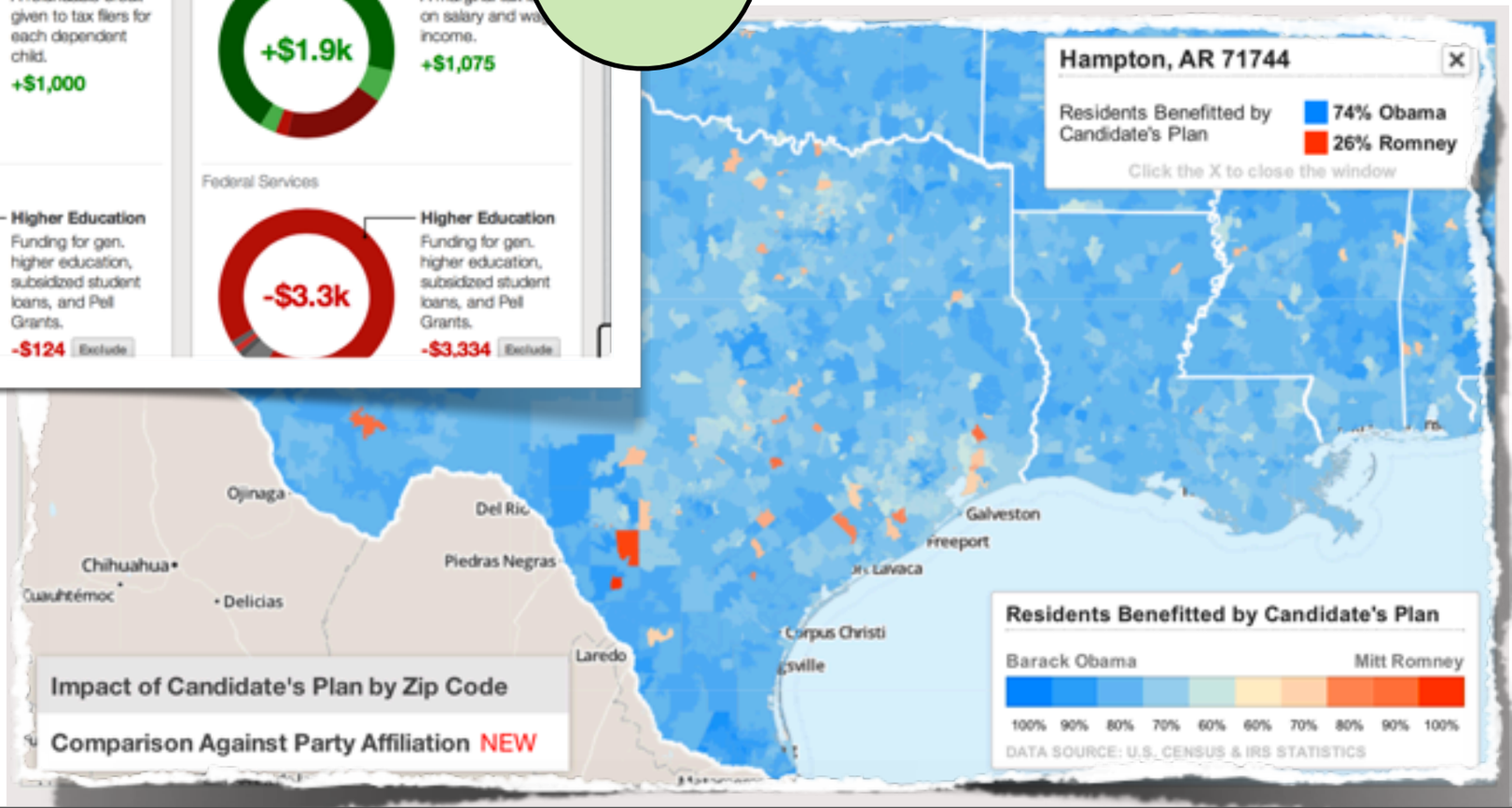
Fiscal policies from candidates´ websites

Federal survey data (federal service usage and household family structure)

IRS income data

MODEL





politify.com

Summary

Teknologirådet

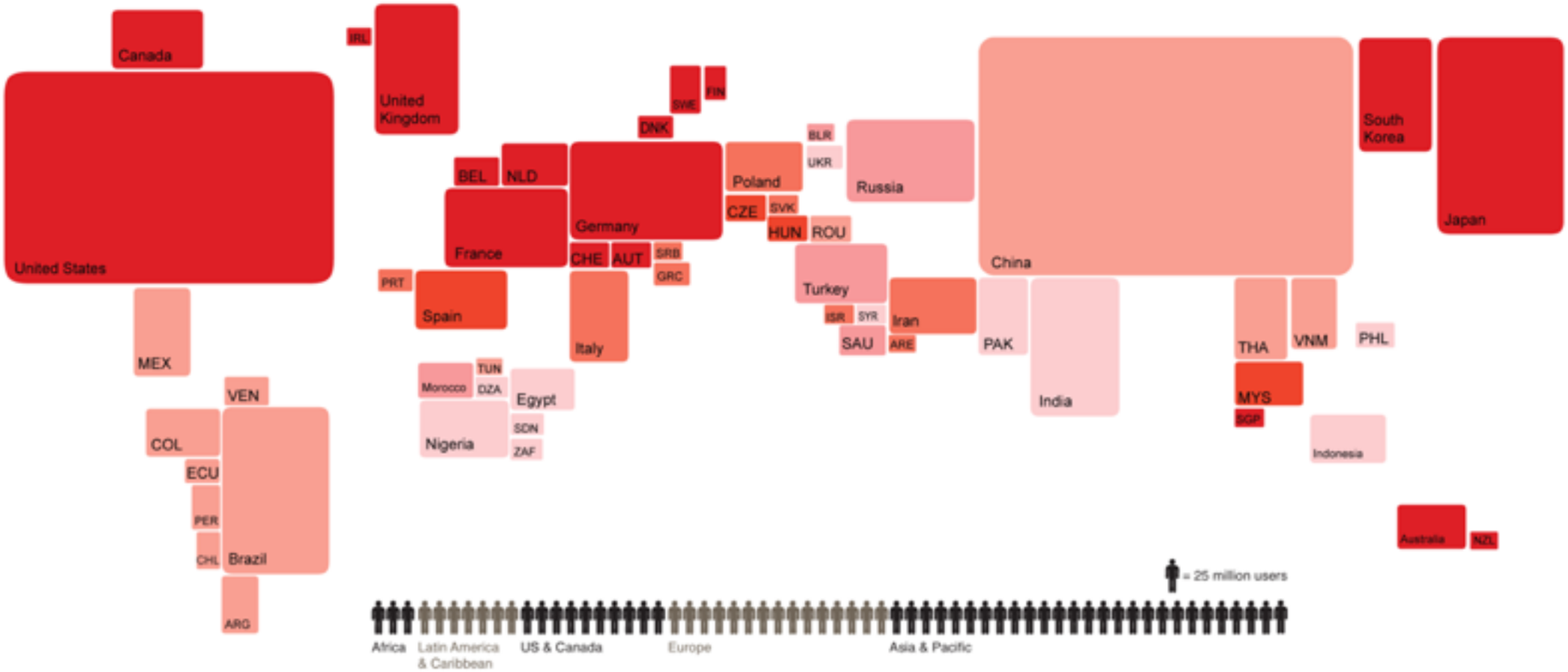
We have profound new ways of sensing the world...

...with a potential to challenge what "passes for wisdom"

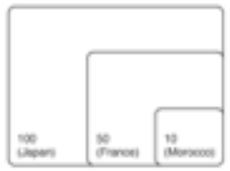
- ...beyond improving efficiency, quality of service, transparency, accountability, *etc*...
  - re-think the decision-making process:

create spaces for deliberation and collaboration

Internet penetration anno 2008



Total number of Internet users (in millions), 2008



Internet penetration (% population)

- Under 20%
- 20% - 40%
- 41% - 50%
- 51% - 60%
- Over 60%

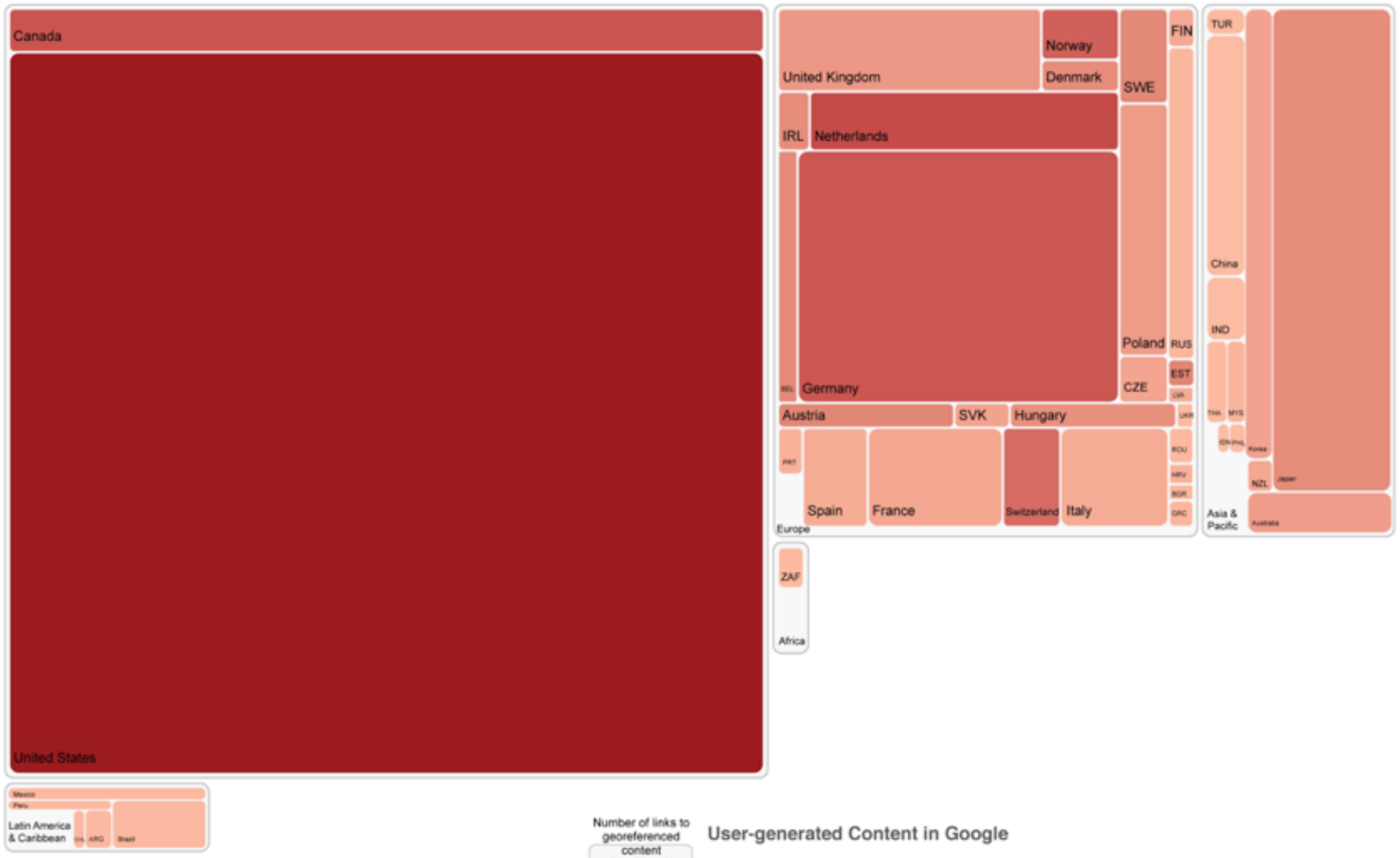
Internet Penetration

Visualization and analysis by Dr Mark Graham, Scott A. Hale and Monica Stephens in collaboration with Dr Corinne M. Flick and the Convoco Foundation.

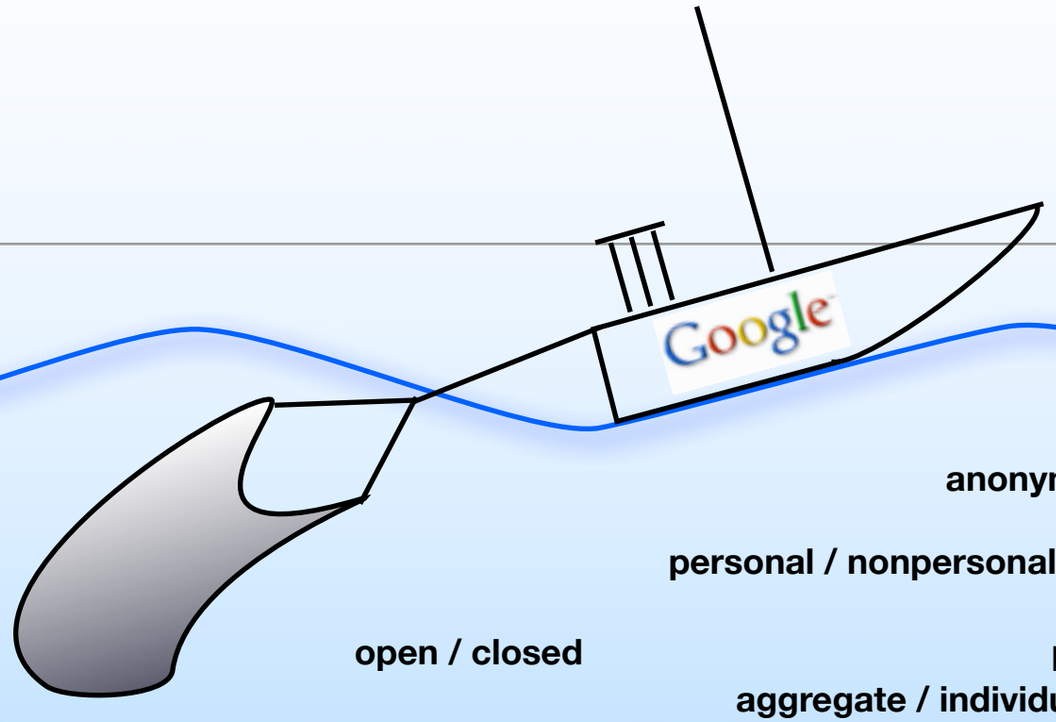
This map and other visualizations can be found on the OII visualization website at http://www.oii.ox.ac.uk/vis/

Google: user generated content anno 2009

Teknologirådet



A rich ecosystem



Surface Web

(visible web)

20 %

anonymized / identified

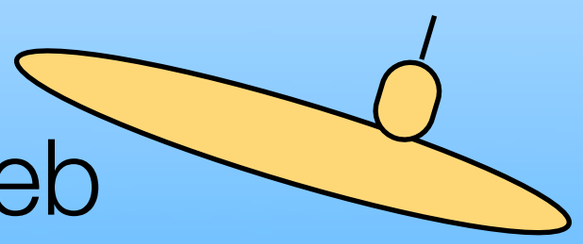
personal / nonpersonal

open / closed

public / private

aggregate / individual

big / small

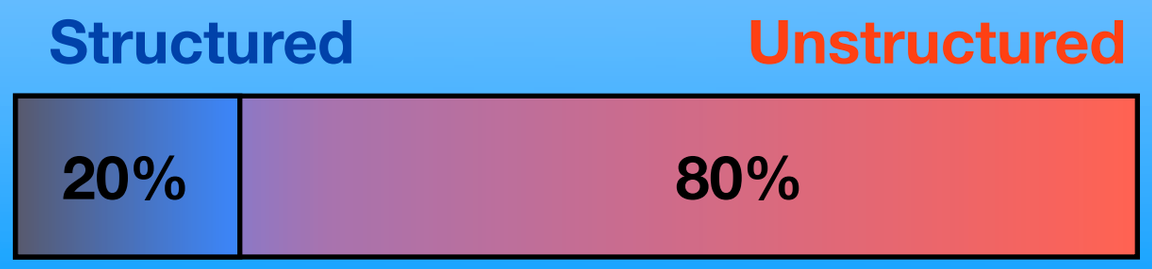


Deep Web

(invisible web)

“Young” data:

90% of the world´s data was created in the last 2 years...



Dark Web