Panel 1. // October 9, 2017

Health Information in Social Networks: Harvesting the Useful Data

Picture source: http://blog.ulookubook.com/wp-content/uploads/2014/07/Parthenon-on-Acropolis-in-Athens-Greece-600x401.jpg

Panelists

Moderator

Stephan Böhm,
RheinMain University of Applied Sciences, Germany

Panelists

Andrea Nanetti,
Nanyang Technological University Singapore, Singapore

Klemens Waldhör,
FOM Hochschule für Oekonomie und Management, Germany

Aviad Elyashar,
Ben-Gurion University of the Negev, Israel

Panelists: Stephan Böhm

RheinMain University of Applied Sciences

Dr. Böhm is a **Professor of Telecommunications and Mobile Media** at the Faculty of Media Management at the RheinMain University.

Co-founder of the Center for Advanced E-Business Studies (CAEBUS) in Wiesbaden and of the Mobile Media Forum.

Teaches media technology and media management topics in bachelor and master programs

Visiting professor at the International College of the NIDA in Bangkok, Thailand.

Research Interests:

- Innovation Management and Marketing,
- Technology Acceptance for Mobile Applications and Services,
- Up-front User Research for Mobile Applications,
- Mobile Prototyping,
- Mobile HCI

“Operations and appointments were cancelled and ambulances diverted as up to 40 hospital trusts became infected by a “ransomware” attack demanding payment to regain access to vital medical records.“

Source: The Telegraph UK

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News

Government under pressure after NHS crippled in global cyber attack as weekend of chaos looms

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Screenshot of the suspected ransomware message on a GP's computer in the Greater Preston area

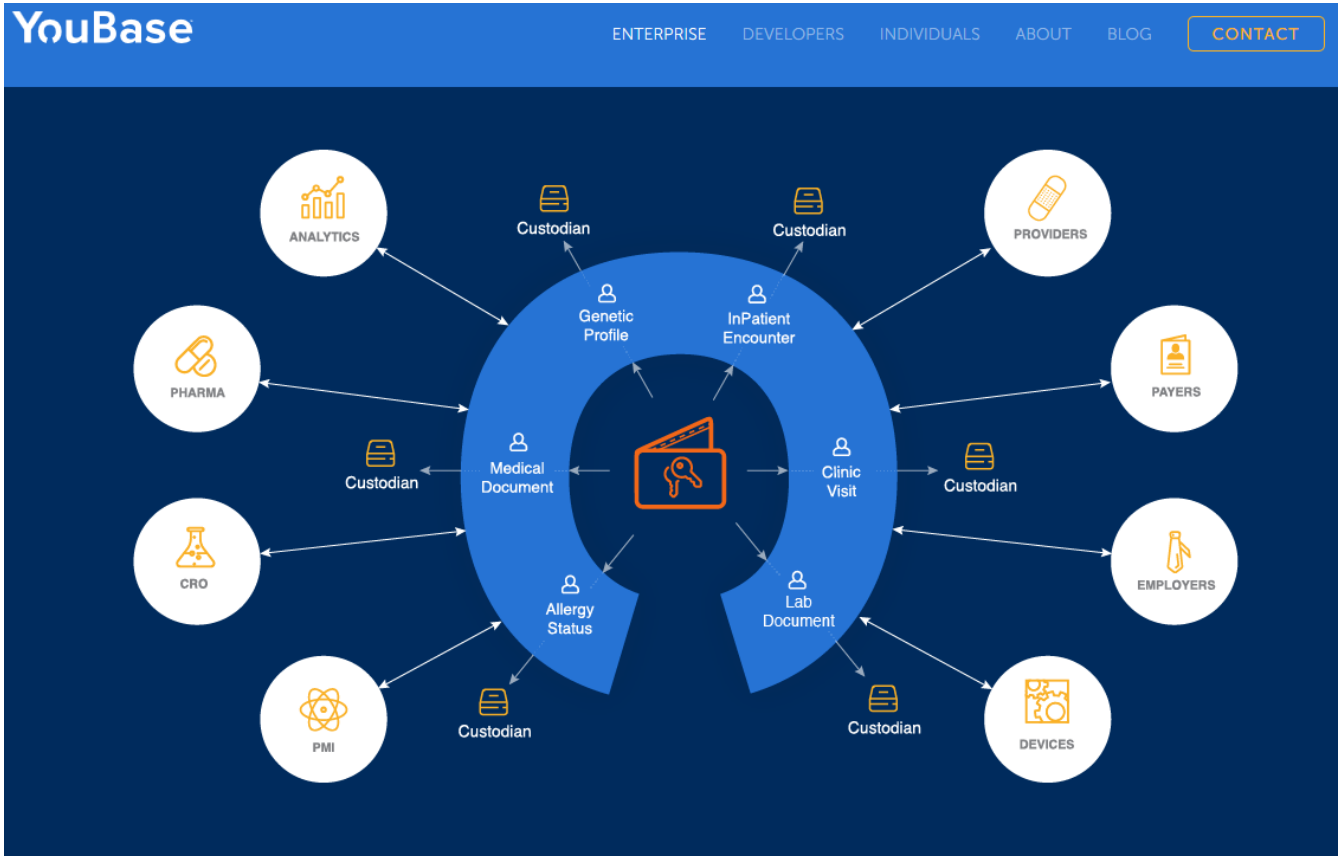
CREDIT: PA

#1 // Current health infrastructure is often vulnerable so health data can be at risk.

Source: http://www.telegraph.co.uk/news/2017/05/12/nhs-hit-major-cyber-attack-hackers-demanding-ransom/

“YouBase is a consumer-level technology. YouBase allows individuals to maintain their data and identity across various networks they use daily and share as they like. “

Source: Youbase Website

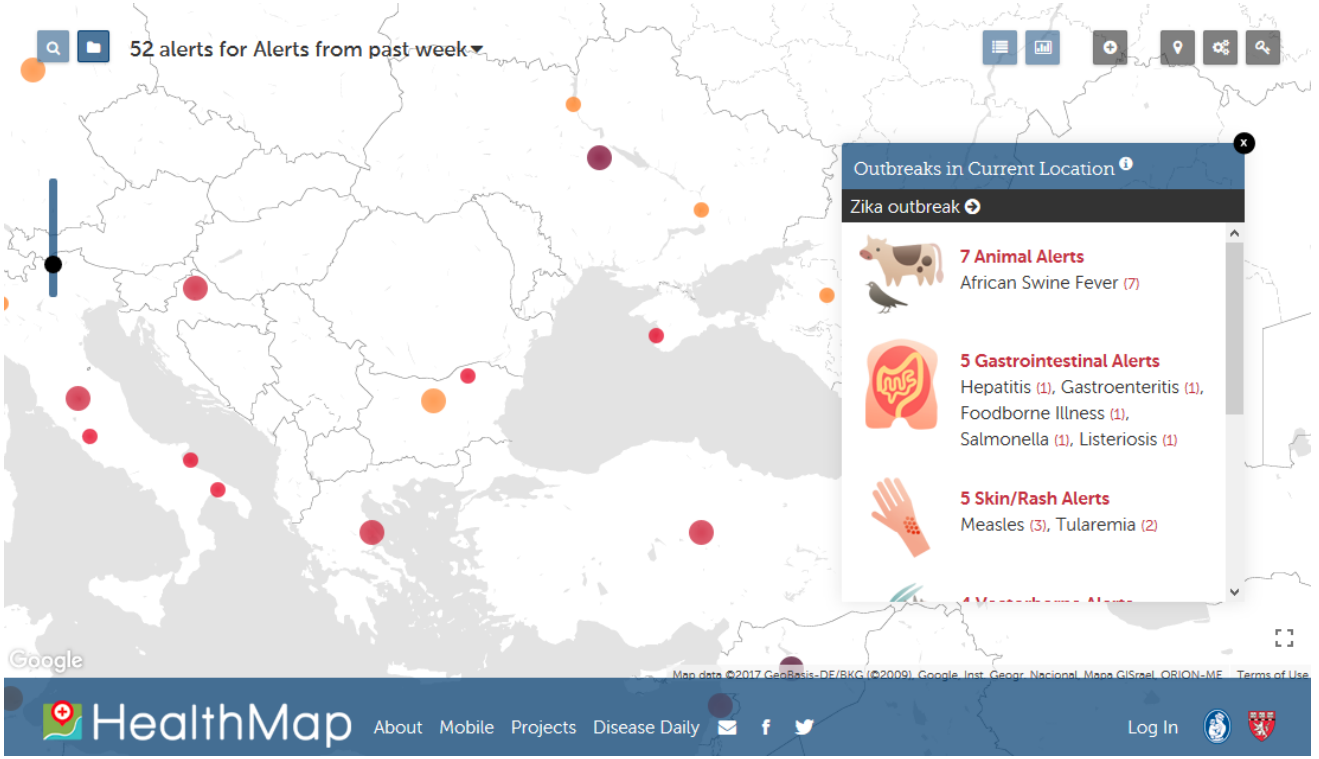


#2 // New technologies (e.g., blockchain) might help to solve some of the current health data (e.g., HER) problems.

Source: https://www.youbase.io/

"HealthMap, … is an established global leader in utilizing online informal sources for disease outbreak monitoring and real-time surveillance of emerging public health threats."

Source: Healthmap Website

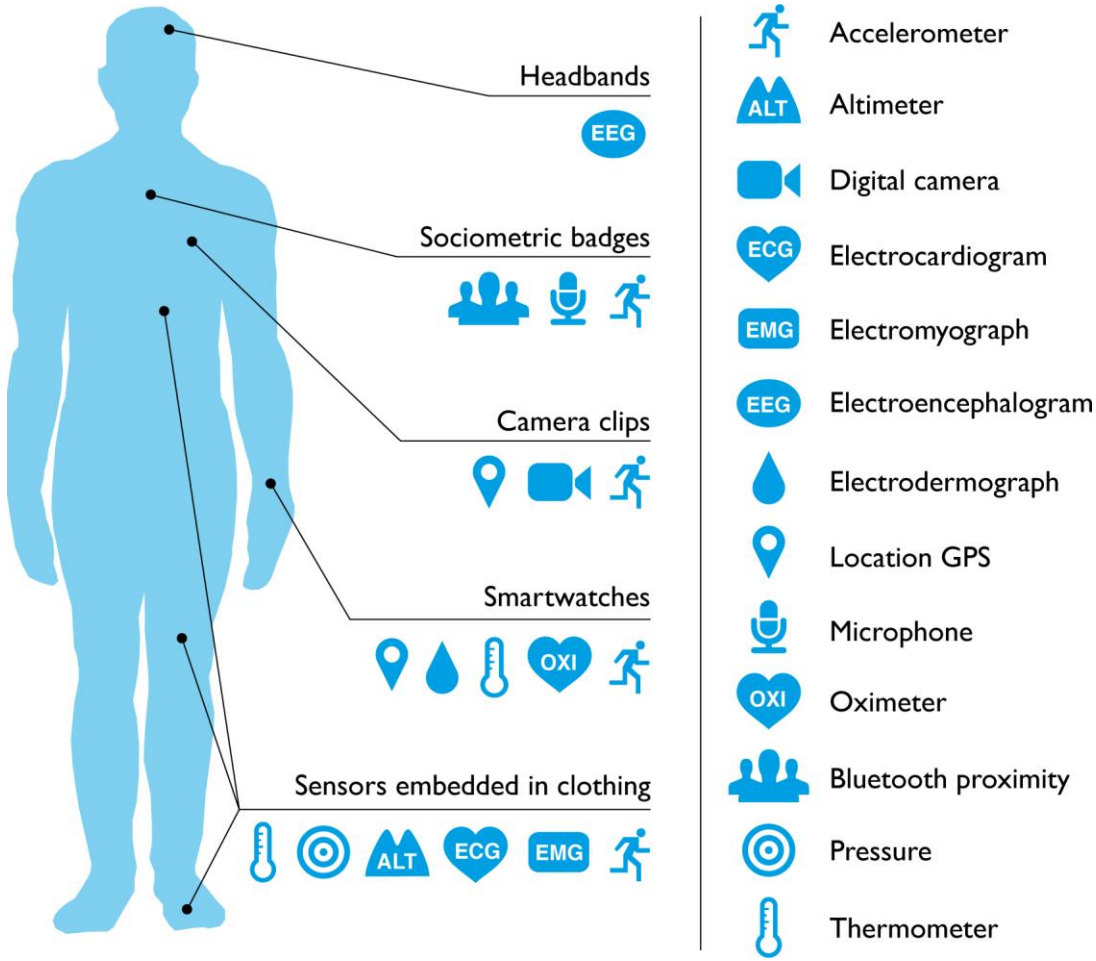


#3 // New big data and data mining technologies might also improve disease and health threats monitoring.

Source: http://www.healthmap.org/en/

“But do these [QS] interventions make people healthier? Current empirical evidence is not supportive. Evidence for the effectiveness of QS methods comes from single-subject reports of users describing their experiences. “

Source: Piwek at al. (2016)



#4 // Sensors of mobile devices/wearables can be used in health care – but effects are still subject to research.

Source: http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001953

“We are not far from days when wearable health devices will be able to diagnose illnesses. While this is not legal now, […] Fitbit could pave the way for insurance companies to use fitness tracker data to deny coverage or hike up rates for consumers.“

Source: US News Website

U.S.News & World Report News

NEWS / NATIONAL NEWS

Could Fitbit Data Be Used to Deny Health Coverage?

Soon, wearable fitness devices will be able to diagnose diseases. Could that lead insurers to deny coverage?

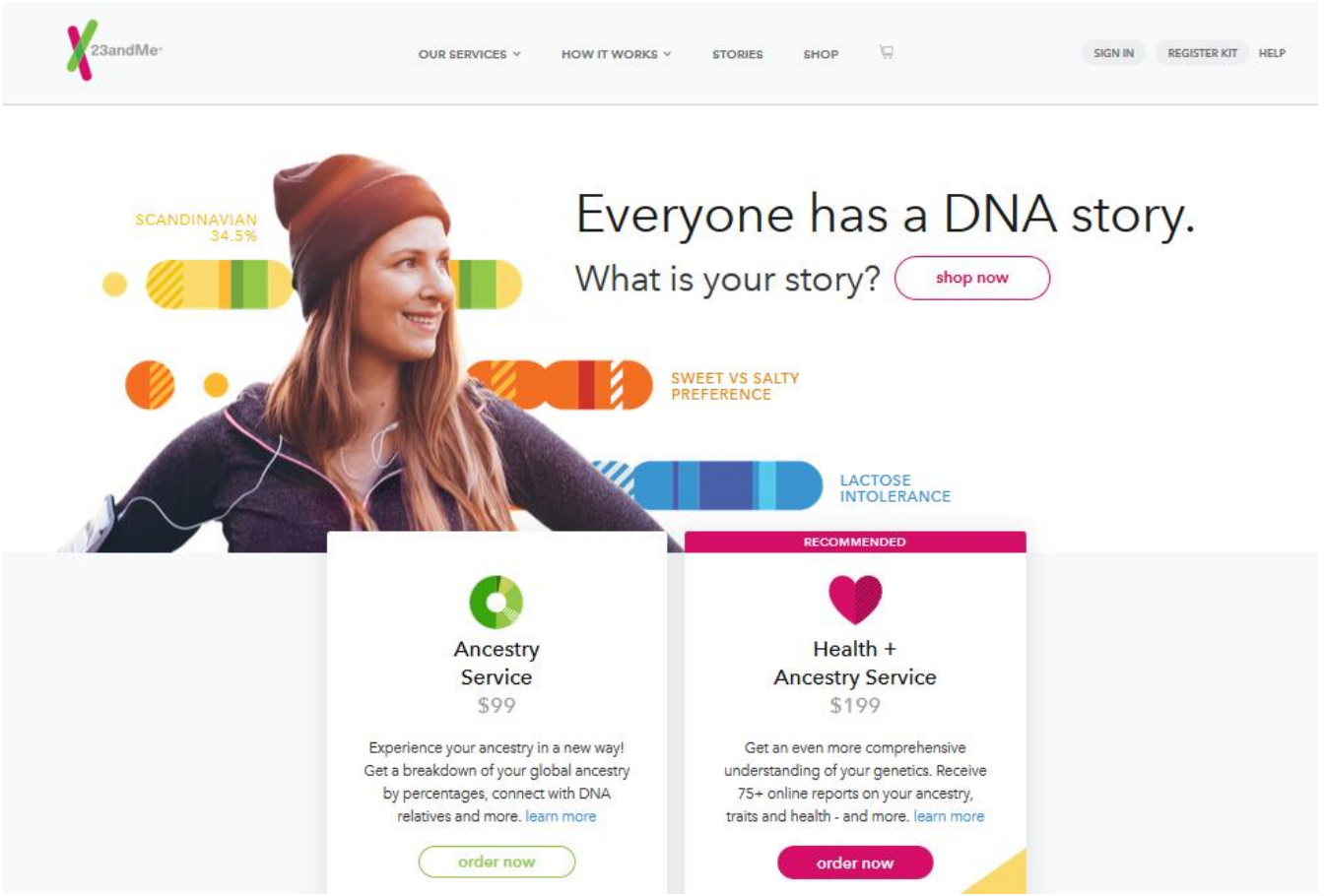
By The Conversation, Contributor | Feb. 17, 2017, at 1:26 p.m.

#5 // From a user/patients perspective there might be risks of providing health tracking data to third parties.

Source: https://www.usnews.com/news/national-news/articles/2017-02-17/could-fitbit-data-be-used-to-deny-health-insurance-coverage

“23andMe is a DNA analysis service providing information and tools for individuals to learn about and explore their DNA.“

Source: 23andMe Website

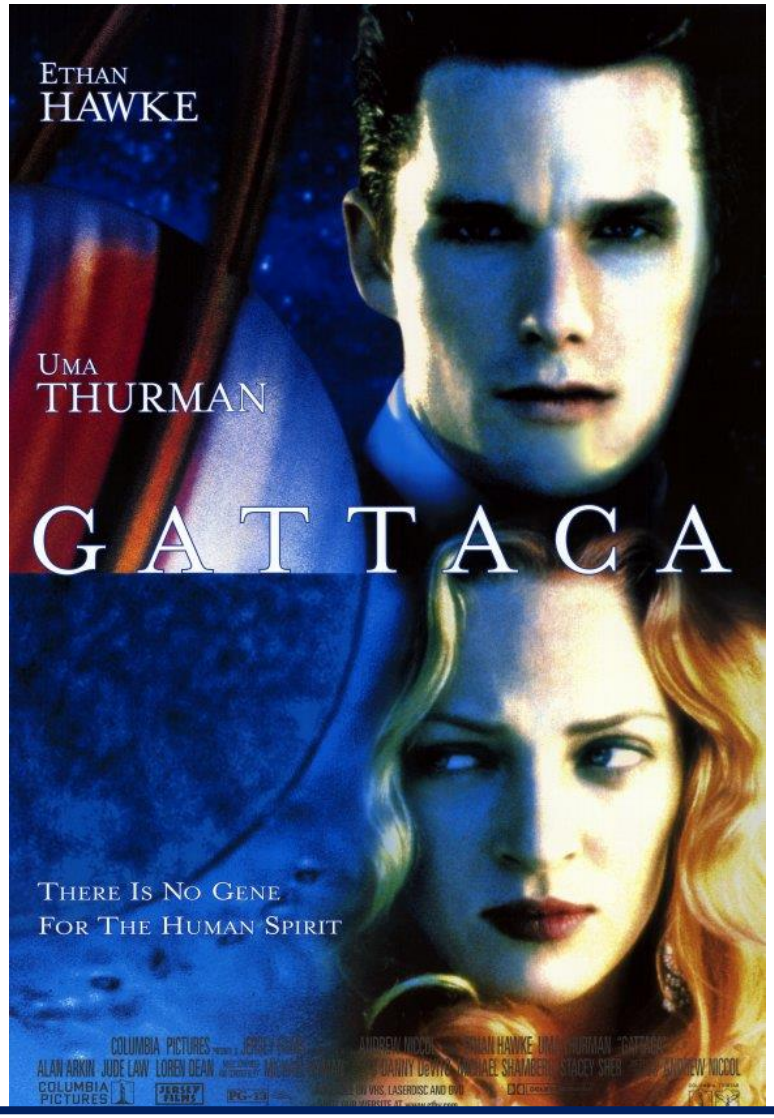


#6 // “Quantify me” goes beyond tracking your daily live – would you let someone analyze your “DNA story”?

Source: https://www.23andme.com/en-int/howitworks/

“Society has categorized Vincent Freeman as less than suitable given his genetic make-up and he has become one of the underclass of humans that are only useful for menial jobs.“

Source: IMDb



#7 // The impact of massive health data aggregation and analysis might be beyond our current imagination.

Source: http://www.imdb.com/title/tt0119177/

Dr. Andrea NANETTI, BA MA PhD
Assoc. Prof. and Associate Chair (Research)
NTU School of Art, Design and Media

Harvesting useful data

Old questions and new technologies.

What changes and what does not change?

Athens, October 10, 2017

Ghost in the Shell (2017)

In the near future, Major is the first of her kind: A human saved from a terrible crash, who is cyber-enhanced to be a perfect soldier devoted to stopping the world's most dangerous criminals.

Director:

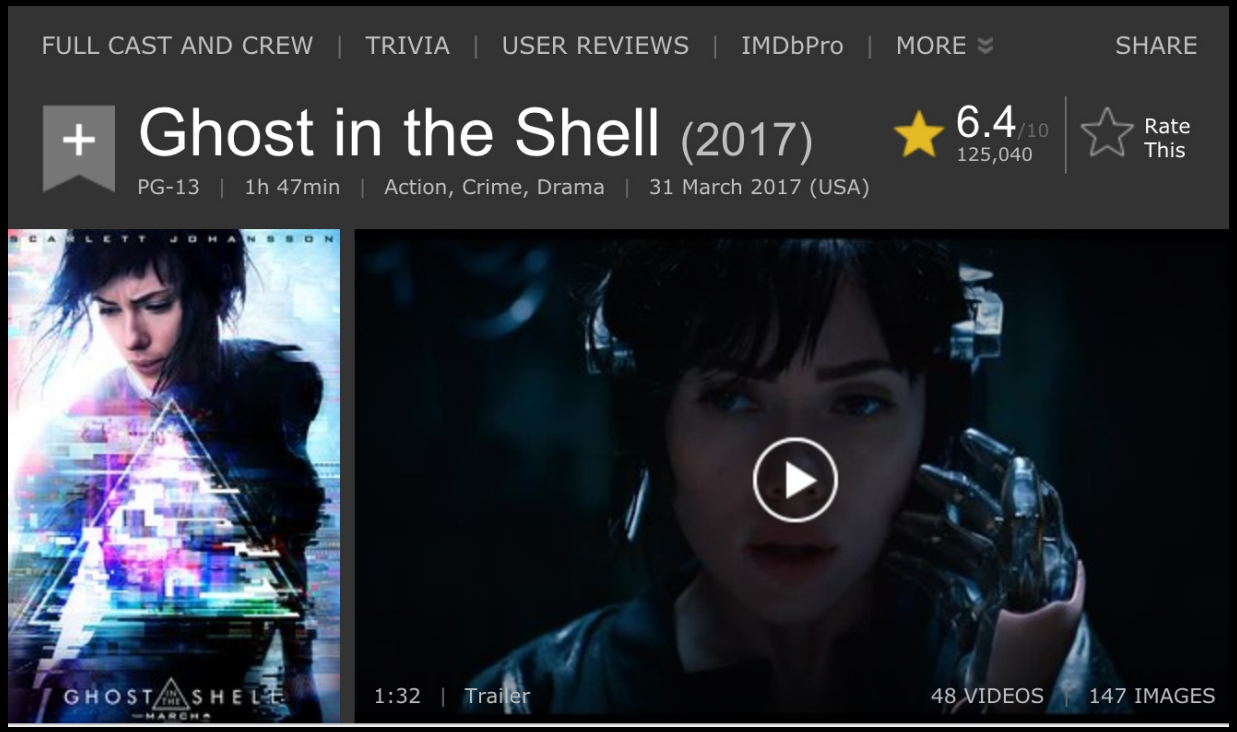
Rupert Sanders

Writers:

Shirow Masamune (based on the comic "The Ghost in the Shell" by), Jamie Moss(screenplay by) | 2 more credits »

Stars:

Scarlett Johansson, Pilou Asbæk, Takeshi Kitano | See full cast & crew »



09/10/17

The Circle (2017)

A woman lands a dream job at a powerful tech company called the Circle, only to uncover an agenda that will affect the lives of all of humanity.

Director:

James Ponsoldt

Writers:

James Ponsoldt (screenplay), Dave Eggers (screenplay) | 1 more credit »

Stars:

Emma Watson, Tom Hanks, John Boyega | See full cast & crew »

The Shadows

- Pindaros (Nem. 4.6)
- ἐπάμεροι: τί δέ τις;
  τί δ᾽ οὔ τις; σκιᾶς ὄναρ
  ἄνθρωπος.
- **Creatures of a day! What is a man?**
  What is he not? A dream of a
  shadow
  Is our mortal being
- Pindaros (Pyth. 8.96)
- Ίσκιος ονείρου ο άνθρωπος
- Man is a dream about a shadow

- W. Shakespeare
- **The very substance of the ambitious is merely the shadow of a dream**
- (Hamlet, 2.2)

https://en.wikiquote.org/wiki/Pindari

Andrea Nanetti received his university education in Medieval and Renaissance studies between 1986 and 2000 in Italy (University of Bologna), France (University of Paris I-Sorbonne and Paris X Nanterre),Germany (University of Cologne), Greece (National Hellenic Research Foundation), and USA (Brown University), where he has been instructed by world's leading professors to work on research questions and solutions through the cross-fertilization of different methodologies (historical, philological, diplomatic, aesthetic, anthropological, and computational). As a scholar—who started his research vocation in historical studies at the advent of computer operating systems with graphical user interfaces—he has always been fascinated by the exponential growth of interdependencies between artificial actions (i.e., made by humans) and computational operations (i.e., completed by electronic devices able to store and process data, typically in binary form, according to instructions given to them in a variable program) in terms of both quantity and quality. With this interest, he is proposing the theoretical need to direct traditional disciplinary knowledge towards a formal science of heritage able to study what kind of data and information—now encoded in complex interactions of written, pictorial, sculptural, architectural, and digital records, oral memories, practices, and performed rituals (i.e., the treasure of human experiences)—may be inherited by machine learning algorithms. Dr. Nanetti lives with his family in Singapore, at Nanyang Technological University, where he is Associate Chair (Research) in the School of Art, Design and Media, Senior Research Team member in the Complexity Institute, with a courtesy appointment in the History Programme.

Selected publications:

WenYuan LIU, Andrea NANETTI, Siew Ann CHEONG. *Knowledge Evolution in Physics Research: An Analysis of Bibliographic Coupling Networks*, in «arXiv preprint», Vol. 4/4 (2017) arXiv:1704.00875, and in PLoS ONE 12 (9): e0184821. https://doi.org/10.1371/journal.pone.0184821.

Andrea NANETTI, Chin-Yew LIN, Siew Ann CHEONG. (2016). Provenance and Validation from the Humanities to Automatic Acquisition of Semantic Knowledge and Machine Reading for News and Historical Sources Indexing/Summary. *The Asian Review of World Histories, 4/1*(Jan. 2016), 125-132.

Online Predator Detection in Online Social Networks

Aviad Elyashar

CBG
Cyber@Ben-Gurion University
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אוניברסיטת בן-גוריון בנגב
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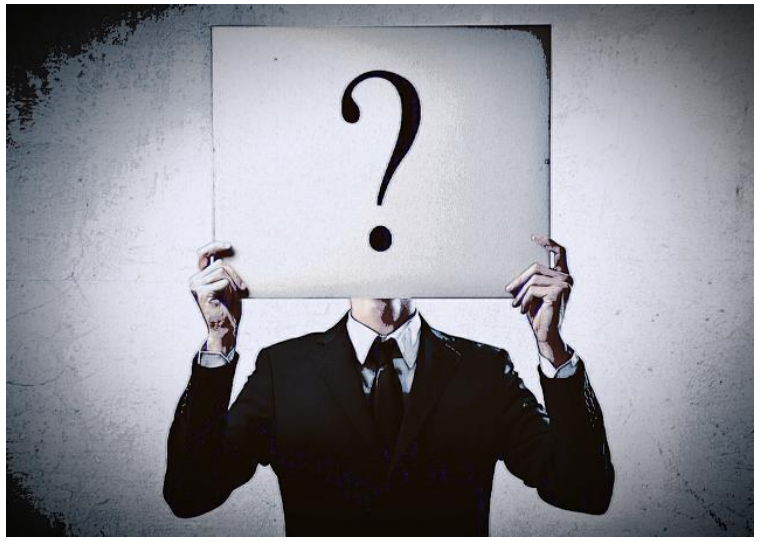
WHO AM I?



- Aviad Elyashar
- Beer Sheva , Israel
- B.Sc and M.Sc from Information Systems Engineering Department
- Ben-Gurion University of the Negev, Beer Sheva, Israel
- A researcher in Telekom Innovation Laboratories in Ben-Gurion University
- Focuses:
  - Privacy in online social networks (OSNs),
  - network analysis,
  - abuser detection,
  - fake news detection
  - clickbait detection

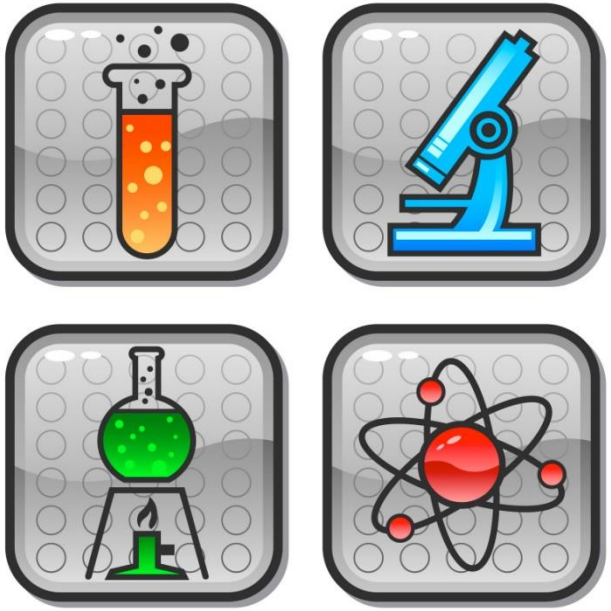
אוניברסיטת בן-גוריון בנגב
Ben-Gurion University of the Negev

MOTIVATION

- In recent years, OSNs have expanded impressively and support personal and professional relations.
- However, it is easy to misuse these OSNs for providing false identities.
- Criminals, such as Internet pedophiles / online predators, can use these platforms to groom their victims.
- The vast number of profiles and connections within OSNs make manual analysis impossible.

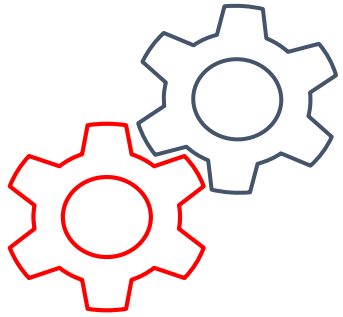
ONLINE PREDATOR DETECTION METHODS

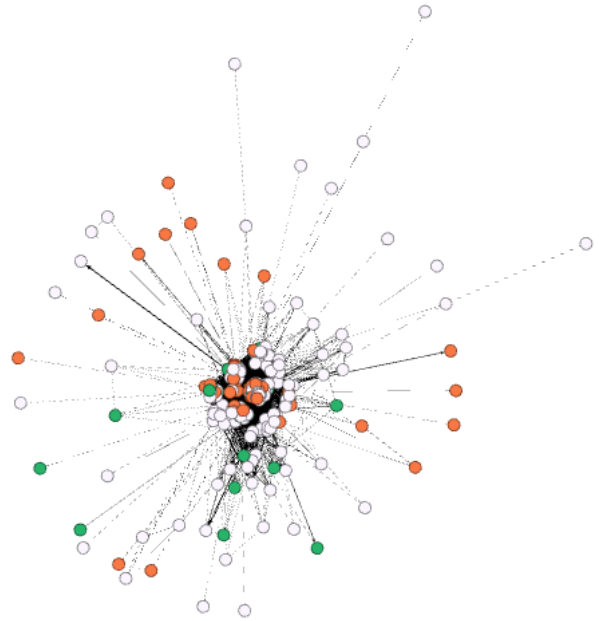
- Scientific methods
- Recommendations for parents
- Parental control software



SCIENTIFIC METHODS

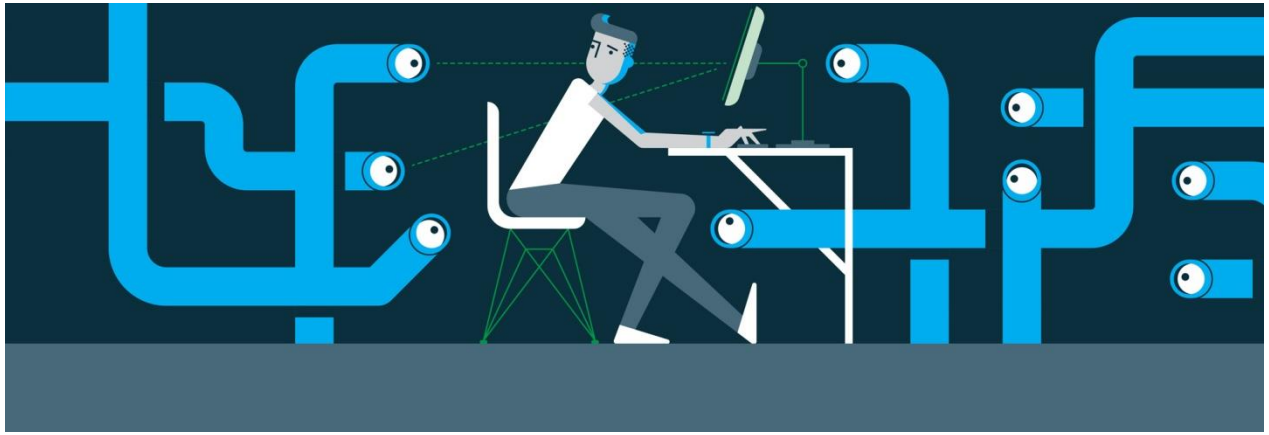
- Creating a ML classifier for age and gender detection.
- Honeypots
- Network analysis





GENERAL RECOMMENDATIONS

- Remove unnecessary personal information
- Adjust privacy and security settings
- Do not accept friend requests from strangers
- Install internet security software
- Remove installed third-party applications
- Do not publish your location
- Do not trust your OSN friends



RECOMMENDATIONS FOR PARENTS

- Monitor your children's OSN activity
- Children should be avoid using chat rooms
- Place the computer in the common room of the house
- Periodically review your child's profile

PARENTAL CONTROL SOFTWARE

- Qustodio
- Norton Family
- Surfie
- Net Nanny
- Witigo
- SpyAgent
- ContentBarrier
- WebWatcher
- Verity

The Second International Conference on Informatics and Assistive Technologies for Health-Care, Medical Support and Wellbeing

HEALTHINFO 2017
October 8 - 12, 2017 - Athens, Greece

FOM Hochschule

Topics: Health Information in Social Networks: Harvesting the Useful Data

Panel on HEALTH & SOCIAL NETWORKS

Klemens Waldhör

Vita Prof. Dr. Klemens Waldhör

Institut für Gesundheit & Soziales
der FOM Hochschule
für Oekonomie & Management

Vita

Study Computer Science (1978-1983)
Johannes Kepler Universität Linz, Austria

Dr. (1983-1986):
Johannes Kepler Universität Linz, Austria

AI-Research (today):
TA Triumph Adler AG, EPP, GmbH, Alpnet Technology, Heartsome Europe GmbH

Lecturer at FOM seit 2008, since 2010 Professor for IT Management at study center in Nuremberg

Smartwatches / Wearables: ADL/EDL recognition

eHealth / AAL

Big Data / Data Mining / KI

Value of health data

Smart Home, Industrie 4.0 (CPS), IoT

Project management: ProManGame – (Gamification)

Translation technology

Privacy models

What are good privacy models, esp. when transmitting huge amount of data (e.g. generated through sensors, trackers, smart watches)?

Problem

- Privacy concerns
- Is the process of data gathering conformant with GDPR?
- Esp. position tracking

  How do we guarantee that data are not (illegally) modified, hacked?
- Blockchain based models?
- Models should not be too complicated

To Dos

- Requires informed consent of the smartwatch wearer
- Requires server in the CEC
- Question: What about indirectly involved persons like spouses, children?

Regulation on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)

Evaluation / Field test

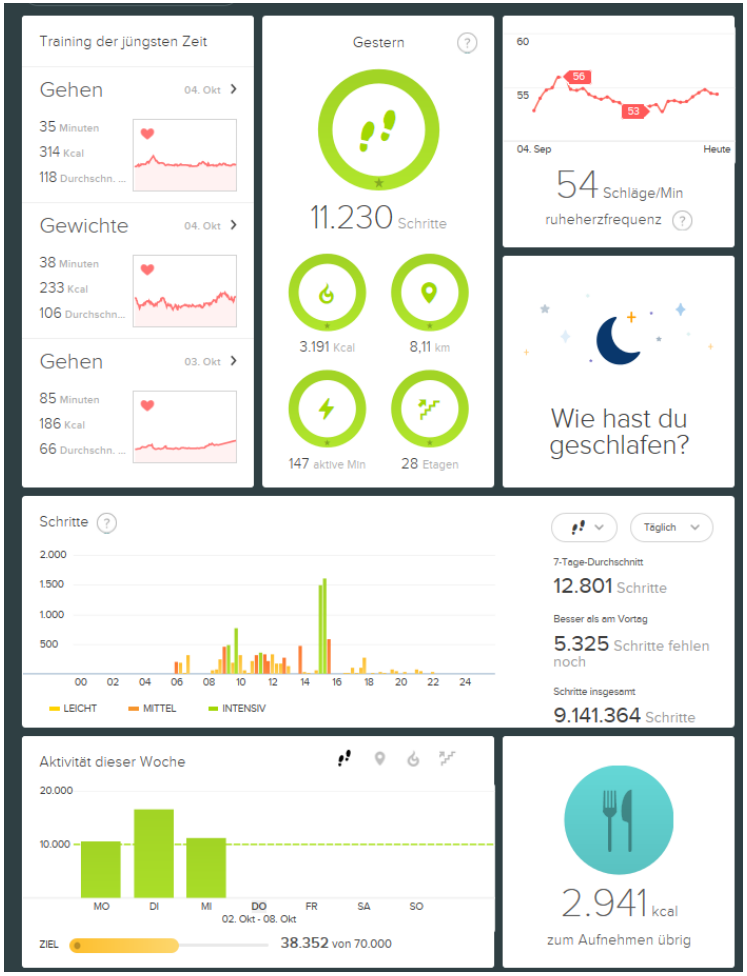
- Field Test in the State of Hesse (GSMTS project and supervised by Prof. Dr. Barbara Klein from the Frankfurt University of Applied Sciences (UAS), Hessian LOEWE excellence program).
- Date: December 2015 until May 2016
- Scope: 10 persons in the Hessen rural area around the city of Marburg, 10 persons in urban Rhein-Main area (Frankfurt, Offenbach)
- Age of participants: From 50 (disabled wheelchair driver) until 80, males and females
- Data protection and privacy: The field test setup and IT systems, configuration have been analyzed prior to test begin by Prof. Dr. jur. Andrea Ruppert, privacy commissioner of the Frankfurt University of Applied Sciences (UAS)
- Consent: All participants in the field test have given their “informed consent” to the use of the smartwatch app, being aware
  1. about which kind of sensor data have been recorded and analyzed by the smartwatches,
  2. which condensed data have been transferred for further analysis to a central server farm hosted in Germany (and the German Red Cross Home Emergency Call Center) and
  3. which kind of central data analyses have been performed on the central data.

Value of Health Data

What is the real value (in €?) provided by data collected with smartwatches, wearables and other sensors?

- eHealth / Fitness portal gather data for “free” or you have even to pay for “premium” models
- But depending on type of data collected they can be the basis of future research 👍 or used to sell for marketing reasons. 👎

So why do users (customers) not get money from the providers for our data and not the other way round?



Value of Health Data

Questionnaire

https://www.soscisurvey.de/meddatawert/

- This questionnaire mainly asks for the individual value estimations (€) for your health data
- Health data is seen very wide – from fitness data to medical treatments
- Goal is to find out individual preferences
- Just the start of a research project in this area

xHealth.io

0% completed

Preliminary study on the commercial value of health data

"Health is the most valuable asset." This statement is heard again and again. How valuable are the health data of the individual really? This is difficult to quantify, so it seems at least.

The aim of this study is to examine **the value of your personal health data** and **the amount of money you would require to provide this data for different purposes**.

Each of us generates health data in different ways:

using fitness trackers (eg pulse detection) or other sensors
through the use of mobile phones (step counters, ...)
Visit relevant websites
by medical visits (diagnoses, laboratory tests, ...)
for hospital stays,
when taking medicines,
in the future in the determination of genetic features by genetic analysis,
through everyday activities (sports activities, gathering of meals, ...)

These data can be used to develop new drugs or treatments, but also to clarify general medical questions (eg, what influence does movement have on life expectancy?). **This means that these data represent a commercial value that should not be underestimated.** Different institutions (universities, research facilities) and companies (pharmaceutical industry, insurance companies, health insurance funds, etc.) can use this data for various purposes.

With methods of data mining, artificial intelligence and big data, completely new possibilities for medical evaluations result. A prerequisite is a corresponding data basis, with which scientists can carry out their analyzes. And perhaps your data will help you in the future if you are going to benefit from new drugs or treatment methods.

This study aims to establish a **first rough estimate of the market value of health data**. The market value of these data will be assessed differently by companies than by the data suppliers. The challenge now is to bring together and match the different expectations in the form of a marketplace. Always with the knowledge in the background that health data are of a different quality and meaning, as data, which are generated in other activities (online purchases, ...).

All your input within the scope of this study will be strictly confidential.

4. How much would you ask for to get to payed for non-commercial research projects / facilities for your health data?

Please indicate in Euro (€) how much you would expect to pay for your health data as non-commercial research (universities, research facilities). The value is for one month.

0	1	2	3	4	5	6	7	8	9	10	11
0 €	10 €	20 €	30 €	40 €	50 €	70 €	100 €	200 €	500 €	> 500 €	invaluable

5. How much would commercial research projects / companies have to pay for your health data?

Please indicate in euros (€) how much you would expect for the provision of your health data as payment for commercial research purposes, such as pharmaceutical companies. The value is for one month.

0	1	2	3	4	5	6	7	8	9	10	11
0 €	10 €	20 €	30 €	40 €	50 €	70 €	100 €	200 €	500 €	> 500 €	invaluable

6. How much would companies have to pay for your health data for general commercial purposes?

Please indicate in Euro (€) how much you would expect to receive your health data as payment for general purposes, such as advertising, recommendations, etc. The value is for one month.

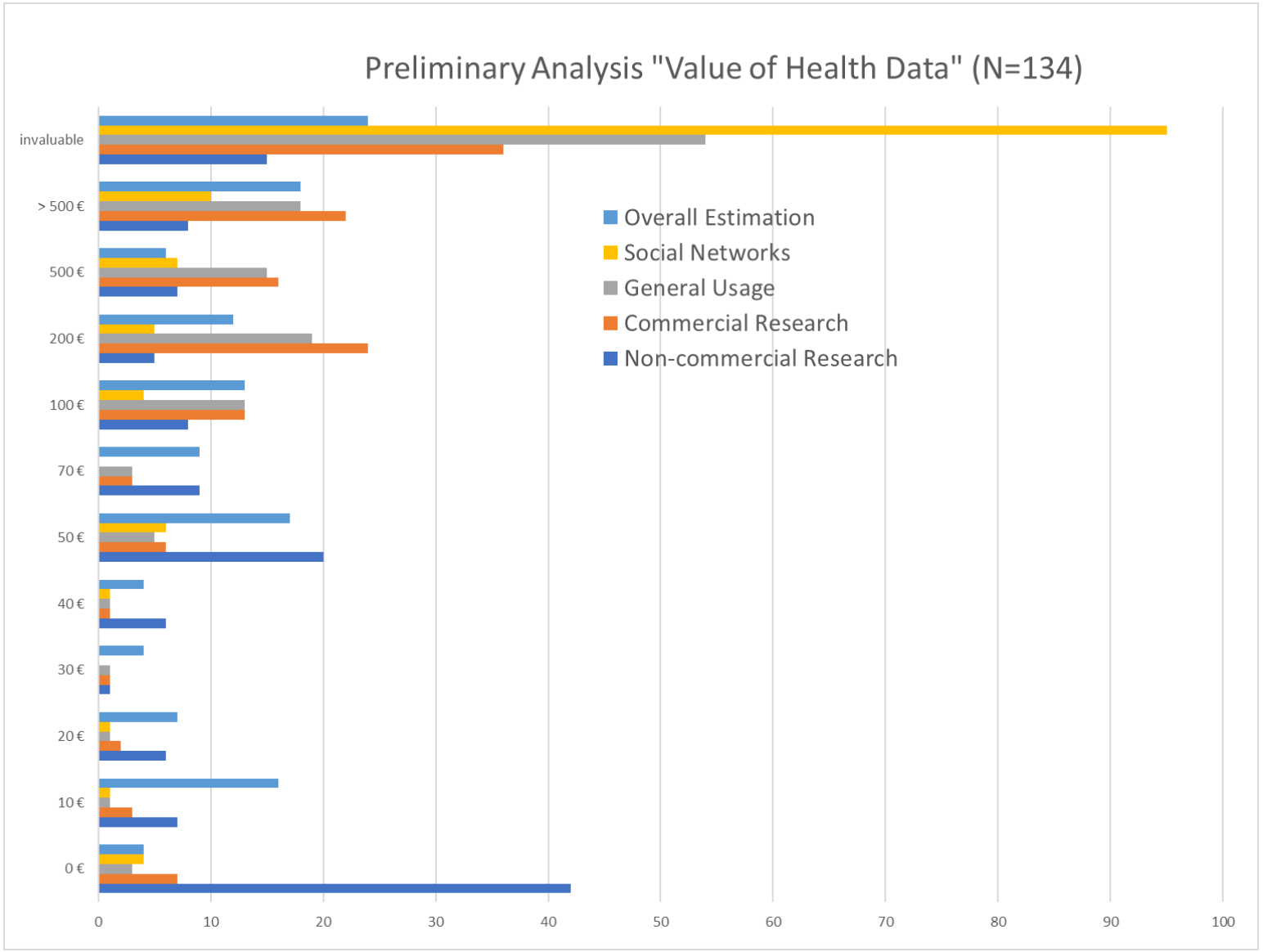
0	1	2	3	4	5	6	7	8	9	10	11
0 €	10 €	20 €	30 €	40 €	50 €	70 €	100 €	200 €	500 €	> 500 €	invaluable

7. How much would social networks like Facebook or similar have to pay for your health data?

Please indicate in € how much you would expect to receive for your health data as payment for social networks. The value is for one month.

0	1	2	3	4	5	6	7	8	9	10	11
0 €	10 €	20 €	30 €	40 €	50 €	70 €	100 €	200 €	500 €	> 500 €	invaluable

Value of Health Data - Prelimary Results



Questionnaire: Value of Health Data
https://www.soscisurvey.de/meddatawert/

Thank you for your time and interest,

I‘m looking forward to your questions !