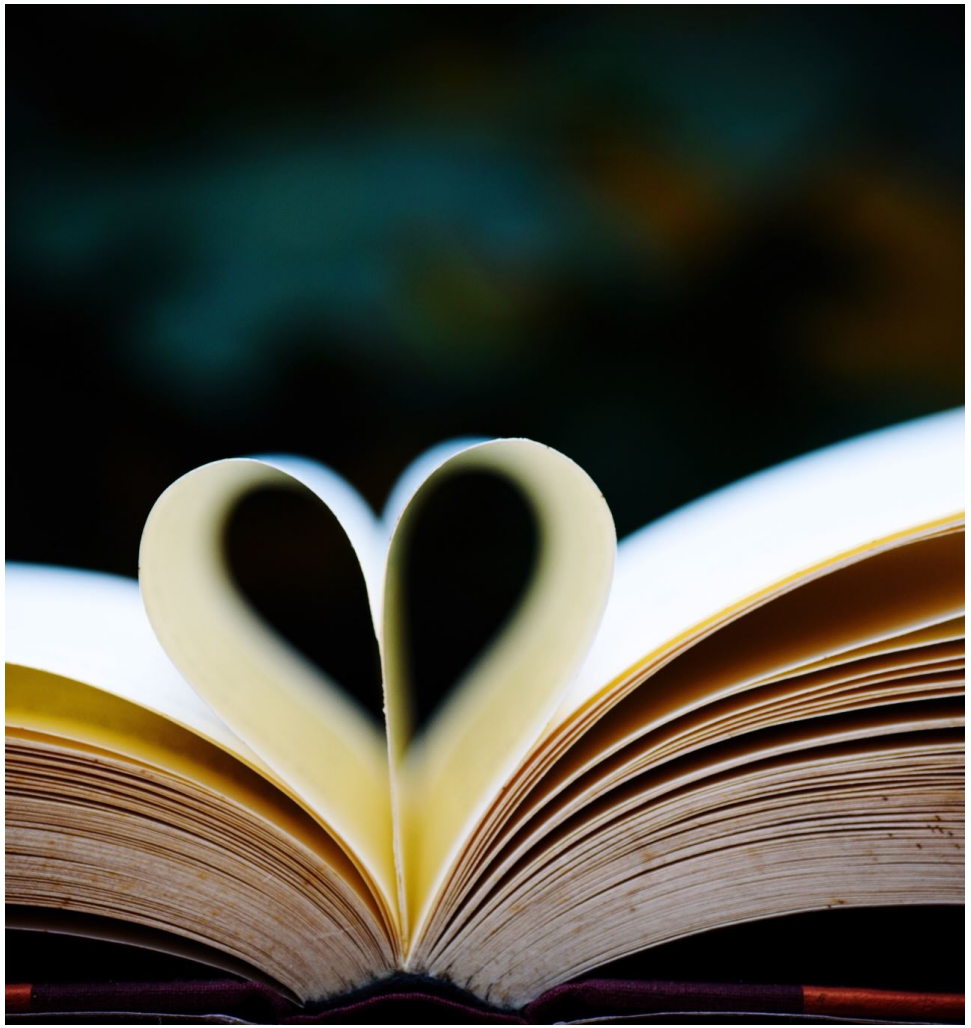
Ethics in the digital age

Lecture 6

Literature:

- **Chapter 6**: "Ethics" in *Bit by bit: Social science in the digital age (2017)*, Matthew Salganik
- Keymolen, E., Taylor, L. (2023) "Data Ethics and Data Science: An Uneasy Marriage?" In: Liebregts, W., van den Heuvel, WJ., van den Born, A. (eds) *Data Science for Entrepreneurship*.

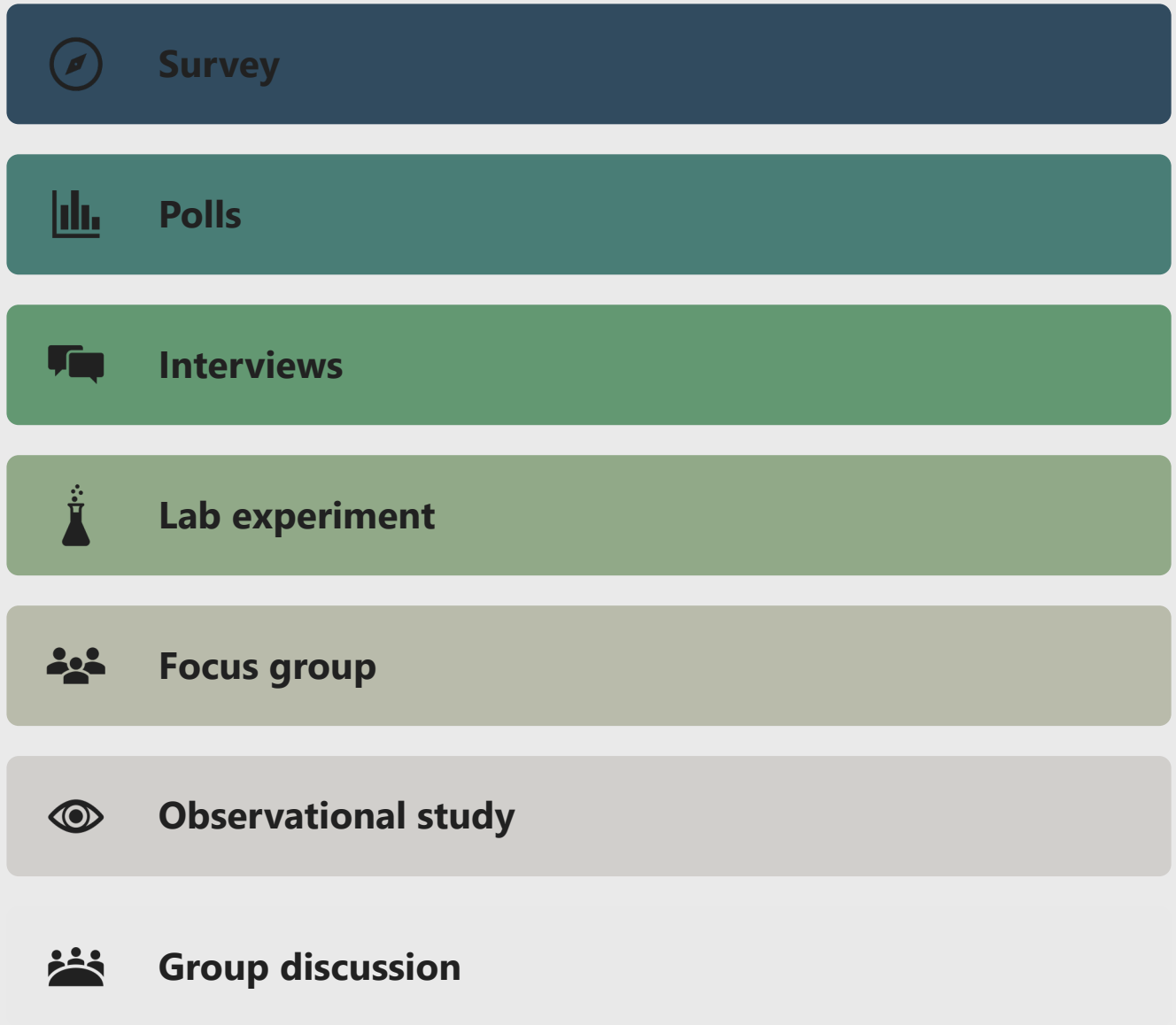


Lecture goals

- Understand different ethical frameworks
- Understand the four ethical principles
- Provide an ethical reflection of research projects
- Understand how ethics in research in the digital age is intertwined with the public and commercial domain

What does ethics mean to you?

Traditional data collection for social science research



Digital data collection for social science research

- Web scraping
- Apps
- Sensors
- Tracking
- Plugins
- Data donation
- APIs
- Direct collaboration with platform
- Experimenting on platform

Ethics in the digital age

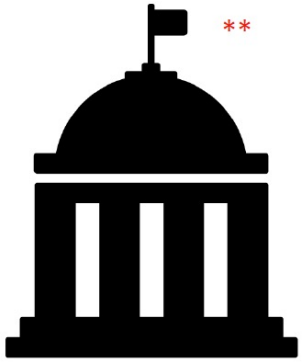
Why is this so difficult?

- Researchers (can) have more power over participants in a digital environment.

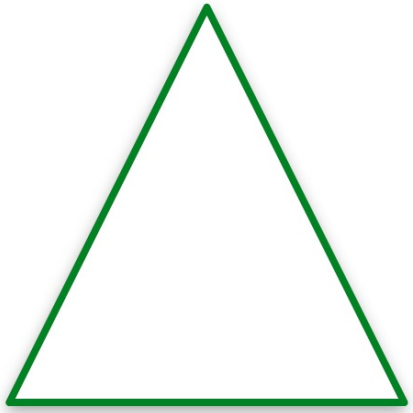
Power: *Ability to do things to people without their consent or awareness.*

- Rules about how that power should be used are not that clear (yet).
- Regulations differ substantially over regions.

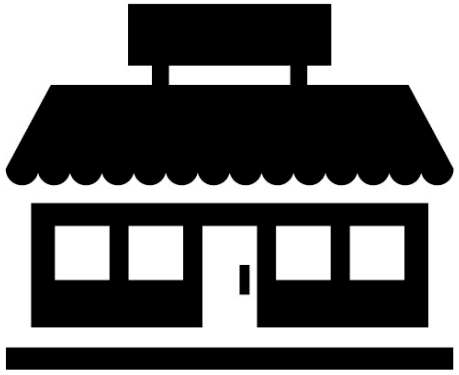
Who benefits?



Government



Citizens



Businesses

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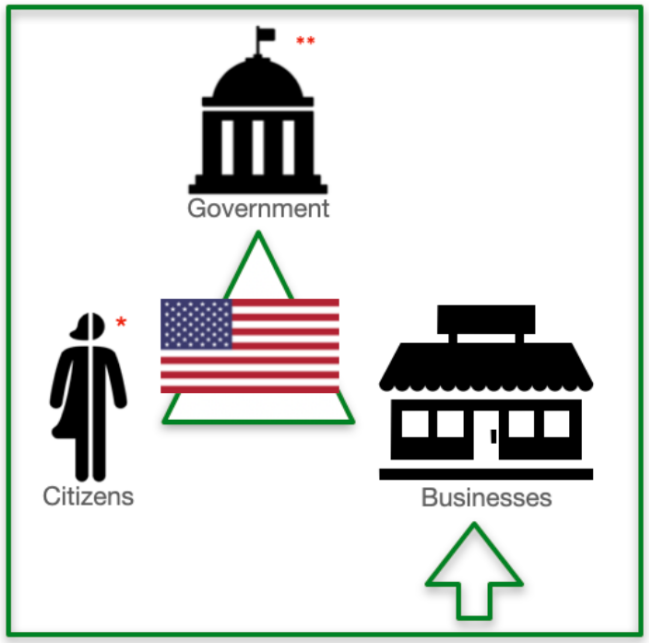
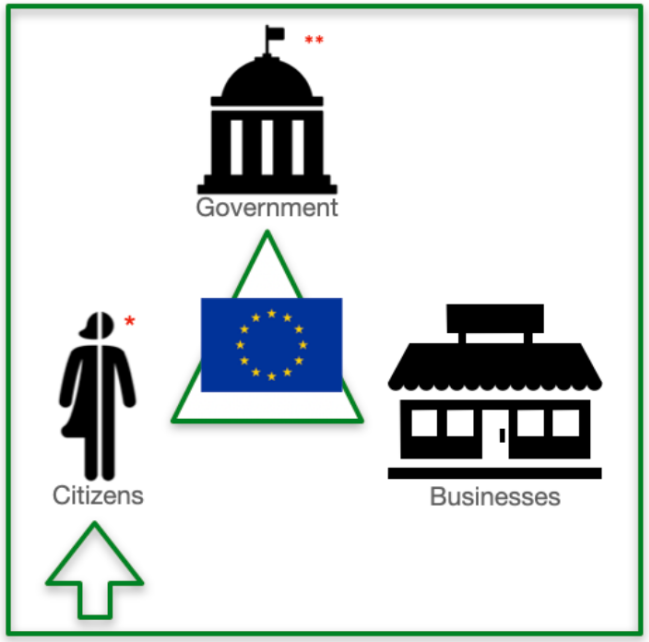
Marlon Domingus, Erasmus University Rotterdam
marlon.domingus@eur.nl June 2022

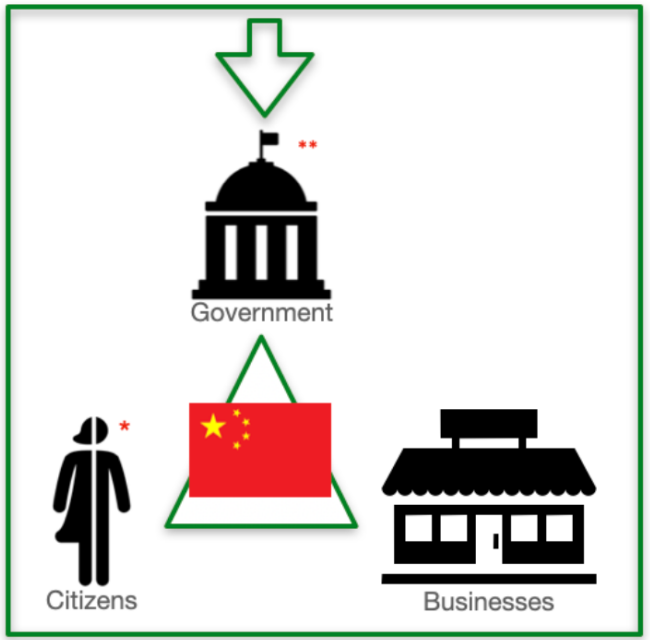
Credits: * Gender Neutral by Matt Brooks, the Noun Project. Source: https://thenounproject.com/term/gender-neutral/14064/
** Government building by Adrien Coquet, the Noun Project. Source: https://thenounproject.com/term/government-building/1101454/

Source: https://zenodo.org/records/11657150

Who benefits?

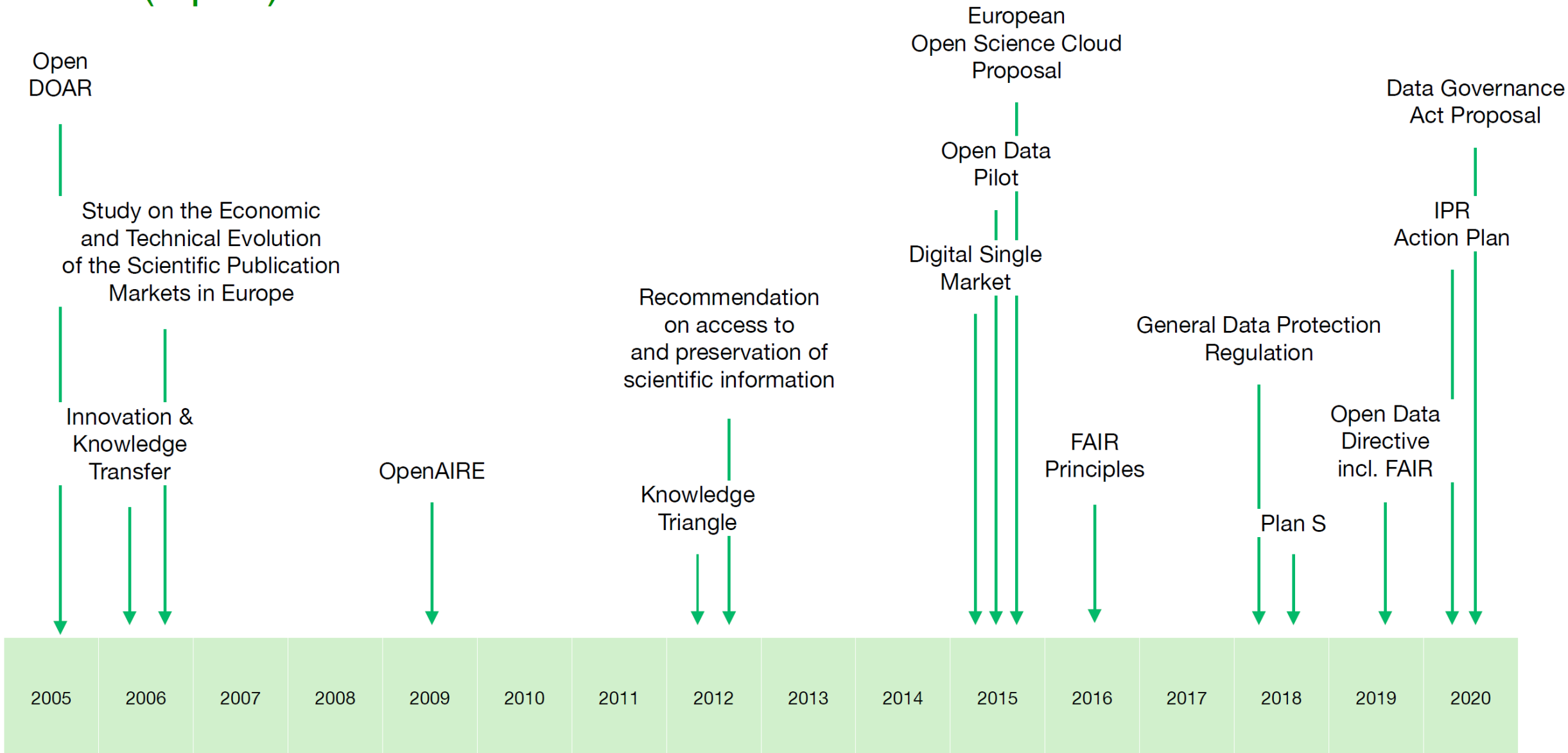






Source: https://zenodo.org/records/11657150

EU & (Open) Data Timeline



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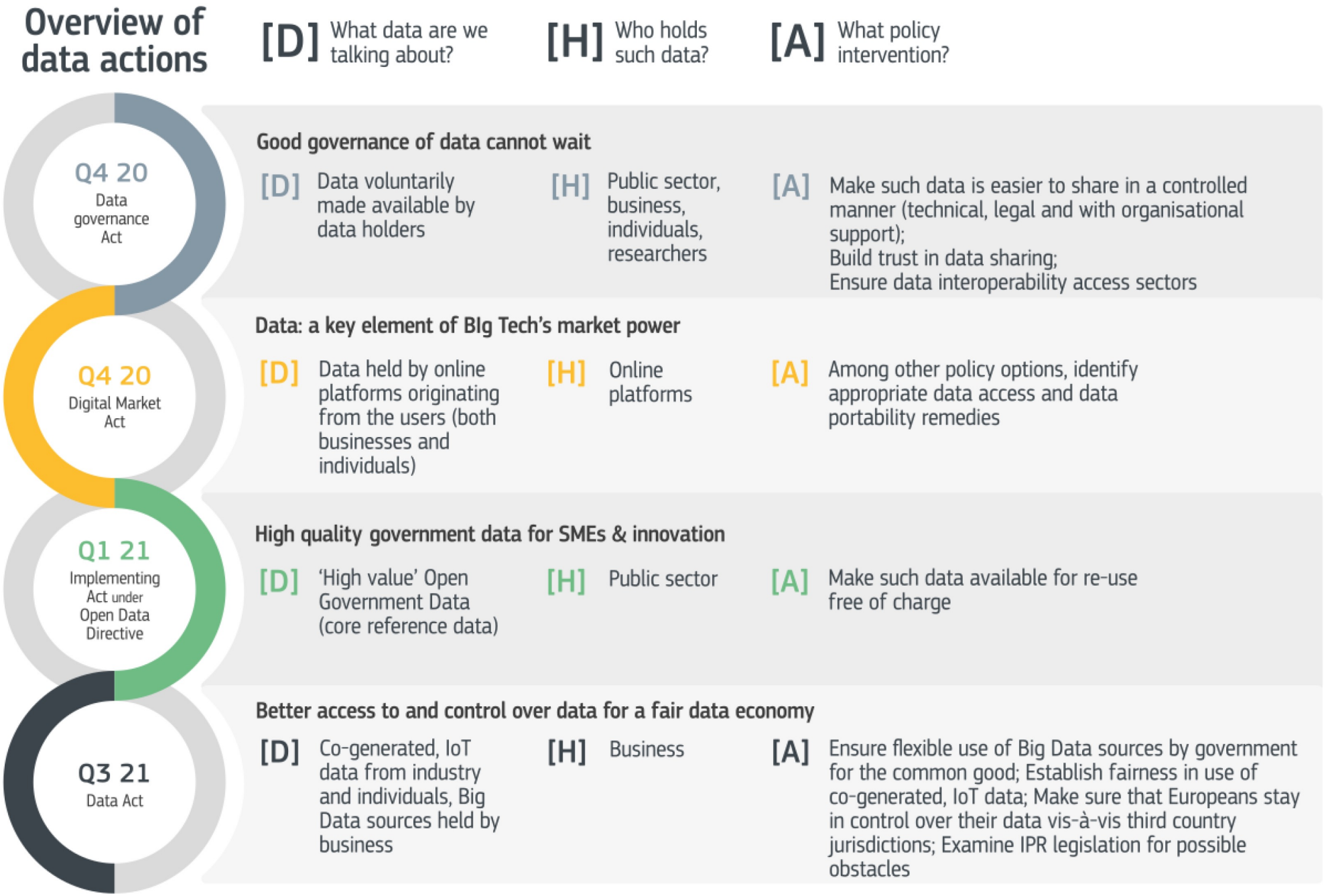
Source: https://zenodo.org/records/11657150



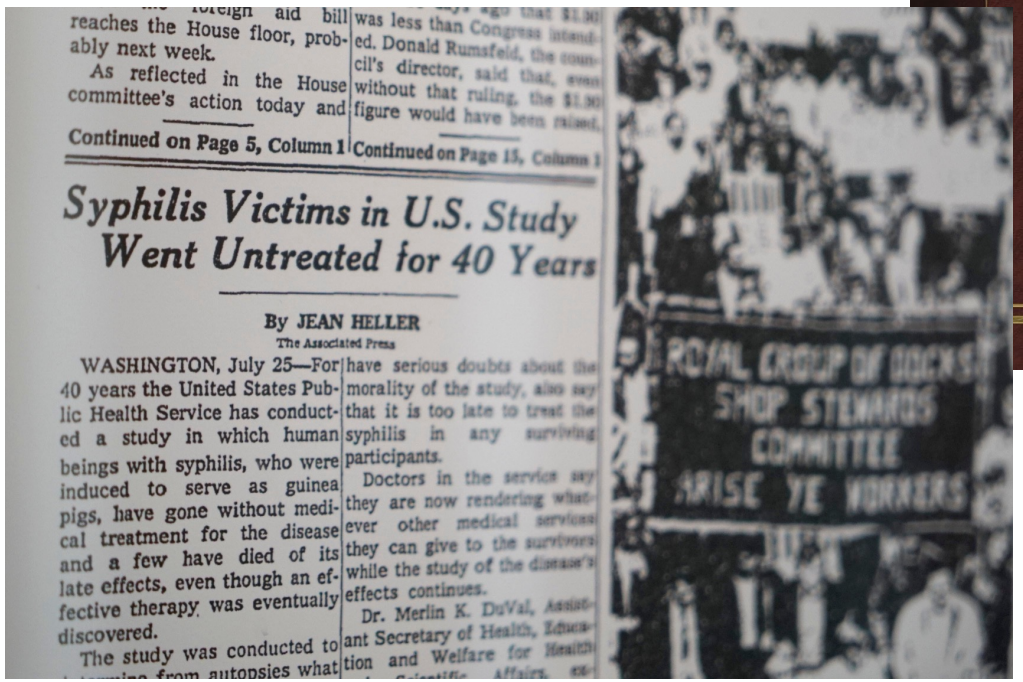
Minghini et al., (2022)

Four principles to guide researchers facing ethical uncertainty

1. Respect for persons
2. Beneficence
3. Justice
4. Respect for law and public interest

Background

1. Menlo report
2. Belmont report



reaches the House floor, probably next week.

As reflected in the House committee's action today and

Continued on Page 5, Column 1

was less than Congress intended. Donald Rumsfeld, the council's director, said that, even without that ruling, the $1.90 figure would have been raised.

Continued on Page 15, Column 1

Syphilis Victims in U.S. Study Went Untreated for 40 Years

By JEAN HELLER
The Associated Press

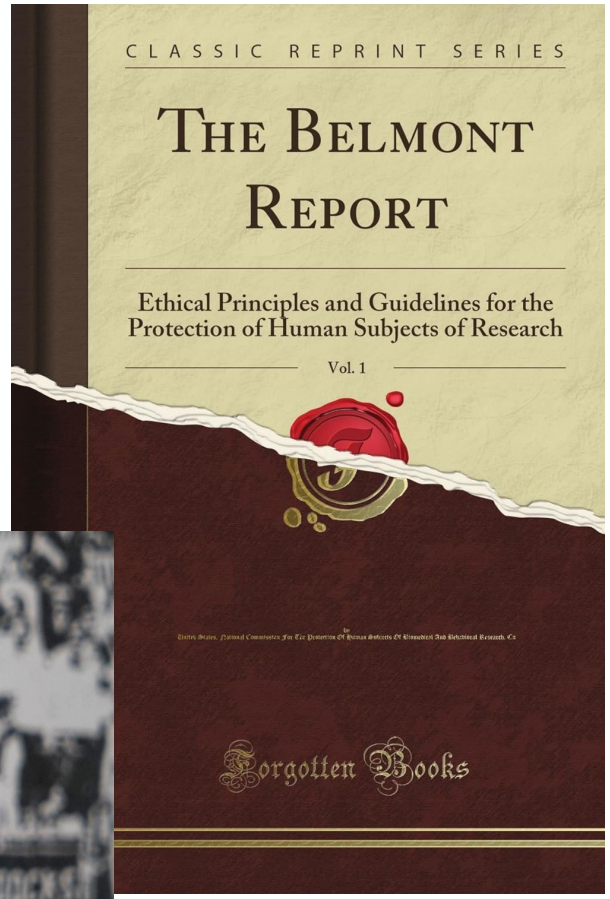
WASHINGTON, July 25—For 40 years the United States Public Health Service has conducted a study in which human beings with syphilis, who were induced to serve as guinea pigs, have gone without medical treatment for the disease and a few have died of its late effects, even though an effective therapy was eventually discovered.

The study was conducted to

have serious doubts about the morality of the study, also say that it is too late to treat the syphilis in any surviving participants.

Doctors in the service say they are now rendering whatever other medical services they can give to the survivors while the study of the disease's effects continues.

Dr. Merlin K. DuVal, Assistant Secretary of Health, Education and Welfare for Health



Principle 1: Respect for persons

Is about treating people as autonomous and honoring their wishes.

Consists of two parts:

1. Individuals should be treated as ***autonomous*.**
2. Individuals with diminished autonomy should be entitled to additional ***protections***.

Result: Researchers should not do things to people without their ***consent***.

Principle 2: Beneficence

Beneficence is about understanding and improving the ***risk/benefit*** profile of your study, and then deciding if it strikes the right ***balance***.

Two parts:
1. Do not harm.
2. Maximize possible benefits and minimize possible harms.

Principle 2: Beneficence

Researchers should undertake:

1. A **risk/benefit analysis**, including:
    1. The ***probability*** of adverse effects.
    2. The ***severity*** of those events.
2. A decision about whether the risks and benefits strike an ***appropriate ethical balance***.

Note: the impact of research can also be on ***nonparticipants*** and ***social systems***.

Principle 3: Justice

Justice is about ensuring that the risks and benefits of research are distributed ***fairly***.

- It should not be the case that one group in society bears the costs of research while another groups reaps it benefits
- Vulnerable people should be protected from researchers.
- Participant ***compensation*** is part of this principle.

Principle 4: Respect for law and public interest

Respect for law and public interest extends the principle of Beneficence beyond specific research participants to ***include all relevant stakeholders***.

Consists of two parts:

1. ***Compliance with law***. Researchers should attempt to identify and obey relevant laws, contracts and terms of service.
2. ***Transparency-based accountability***. This means that researchers should be ***clear*** about their goals, methods and results at all stages of their research and take ***responsibility*** for their actions.

It is a matter of balancing the four principles

Example 1:

A researcher creates “fake profiles” on Instagram for their research project.

This is not in line with the Terms of Service of Instagram.

It is a matter of balancing the four principles

Example 2:

You ask participants to intercept their WhatsApp web API.

By participating in your research, the participant violates the Terms of Service of WhatsApp.

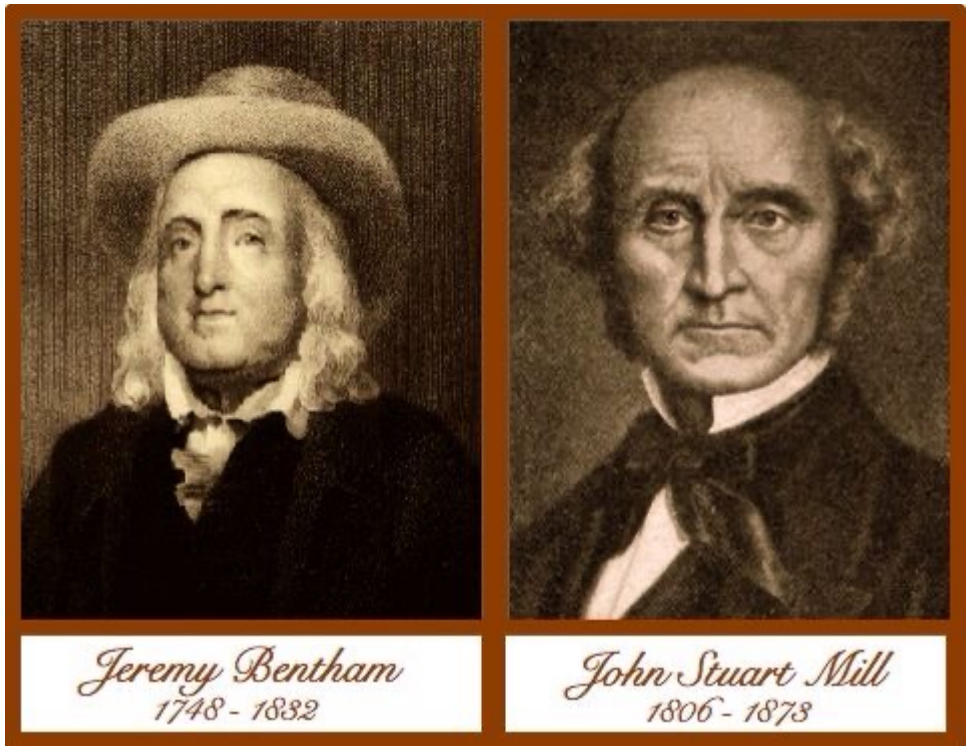
Two ethical frameworks

- Consequentialism and deontology

- Deontologists focus on ***means***, while consequentialists focus on ***ends***.

Consequentialism

- Focus on actions that lead to better states in the world.
- Informed consent helps to prevent harm to participants by prohibiting research that does not properly balance risk and anticipated benefit.
- It helps to prevent bad outcomes for the participant.



Deontology

- Focuses on ethical duties, independent of their consequences.
- Importance of the principle of Respect for Persons.
- Informed consent is a researcher's duty to respect the autonomy of her participants.

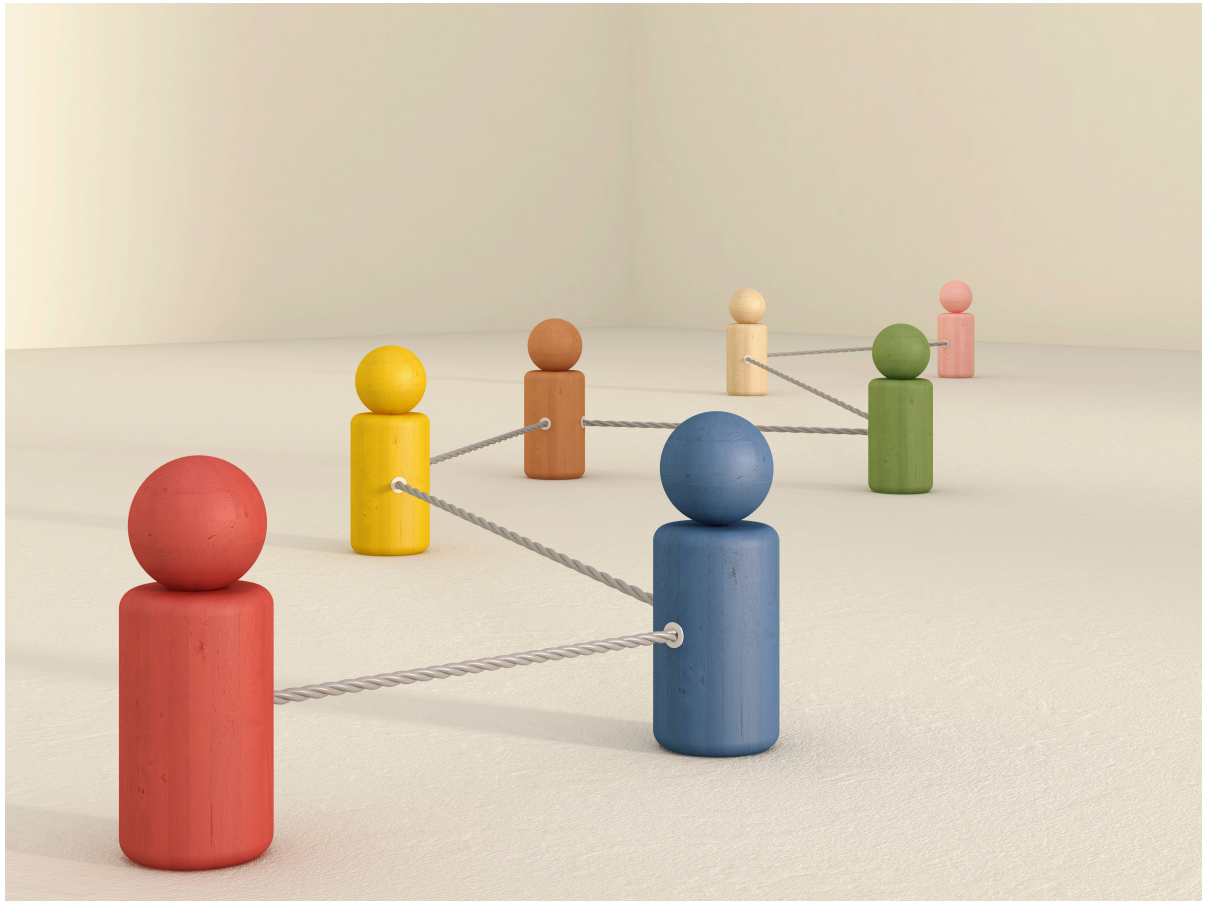
Immanuel Kant 1724 - 1804

Apply principles to an example

Exercise

Read the section 6.2.1. "**Emotional Contagion**" in Bit by Bit Chapter 6 (pages 284 – 285) and reflect on the principles together with your neighbor:

1. Respect for persons
2. Beneficence
3. Justice
4. Respect for law and public interest



6.2.1 Emotional Contagion

700,000 Facebook users were put into an experiment that may have altered their emotions. The participants did not give consent and the study was not subject to meaningful third-party ethical oversight.

For one week in January 2012, approximately 700,000 Facebook users were placed in an experiment to study "emotional contagion," the extent to which a person's emotions are impacted by the emotions of the people with whom they interact. I've discussed this experiment in chapter 4, but I'll review it again now. Participants in the emotional contagion experiment were put into four groups: a "negativity-reduced" group, for whom posts with negative words (e.g., sad) were randomly blocked from appearing in the News Feed; a "positivity-reduced" group for whom posts with positive words (e.g., happy) were randomly blocked; and two control groups, one of the positivity-reduced group and one for the negativity-reduced group. The researchers found that people in the positivity-reduced group used slightly fewer positive words and slightly more negative words, relative to the control group. Likewise, they found that people in the negativity-reduced condition used slightly more positive words and slightly fewer negative words. Thus, the researchers found evidence of emotional contagion (Kramer, Guillory, and Hancock 2014); for a more complete discussion of the design and results of the experiment see chapter 4.

After this paper was published in *Proceedings of the National Academy of Sciences*, there was an enormous outcry from both researchers and the press. Outrage around the paper focused on two main points: (1) participants did not provide any consent beyond the standard Facebook terms of service and (2) the study had not undergone meaningful third-party ethical review (Grimmelmann 2015). The ethical questions raised in this debate caused the journal to quickly publish a rare "editorial expression of concern" about the ethics and ethical review process for the research (Verma 2014). In subsequent years, this experiment has continued to be a source of intense debate and disagreement, and the criticism of this experiment may have had the unintended effect of driving this kind of research into the shadows (Meyer 2014). That is, some have argued that companies have not stopped running these kinds of experiments—they have merely stopped talking about them in public. This debate may have helped spur the creation of an ethical review process for research at Facebook (Hernandez and Seetharaman 2016; Jackman and Kanerva 2016).

Reflect:

1. Respect for persons

- Participants were enrolled in the experiment without their consent.
- Researchers could've informed them afterwards.

2. Beneficence

Measures could have been taken to reduce risks, such as:

- Screen out people under 18.
- Screen out people who are more at risk.
- Do a power analysis so that you only include the *N* that you need.

Reflect:

3. Justice

- Participants could’ve received a monetary compensation.
- The participants were a random sample of the population, this was well aligned.

4. Respect for law and public interest

- Transparency is facilitated by publishing in academic journals.
- What was in the terms of service of Facebook at the time?

CORRECTION

Editorial Expression of Concern: Experimental evidence of massivescale emotional contagion through social networks

July 3, 2014 | 111 (29) 10779 | https://doi.org/10.1073/pnas.1412469111

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PSYCHOLOGICAL AND COGNITIVE SCIENCES PNAS is publishing an Editorial Expression of Concern regarding the following article: "Experimental evidence of massive-scale emotional contagion through social networks," by Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock, which appeared in issue 24, June 17, 2014, of *Proc Natl Acad Sci USA* (111:8788–8790; first published June 2, 2014; 10.1073/pnas.1320040111). This paper represents an important and emerging area of social science research that needs to be approached with sensitivity and with vigilance regarding personal privacy issues.

Questions have been raised about the principles of informed consent and opportunity to opt out in connection with the research in this paper. The authors noted in their paper, "[The work] was consistent with Facebook's Data Use Policy, to which all users agree prior to creating an account on Facebook, constituting informed consent for this research." When the authors

Coffee break

Four areas of difficulty

1. Informed consent.
2. Understanding and managing informational risk.
3. Privacy.
4. Making decisions in the face of uncertainty.

Area 1: Informed consent

Researchers should, can and do follow the rule:
some form of consent for most research.

Three reasons why researchers might ***not*** be able to obtain informed consent:

1. Increasing risk.
2. Compromising research goals.
3. Logistical limitations.

Area 2: Understanding and managing informational risk

Informational risk is the most common risk in social research; it has increased dramatically; and it is the hardest risk to understand.

Information risk is the potential for **harm from** the **disclosure** of information. This can be:

- Economic (losing a job).
- Social (embarrassment).
- Psychological (depression).
- Criminal (arrest for illegal behavior).

“Anonymization”

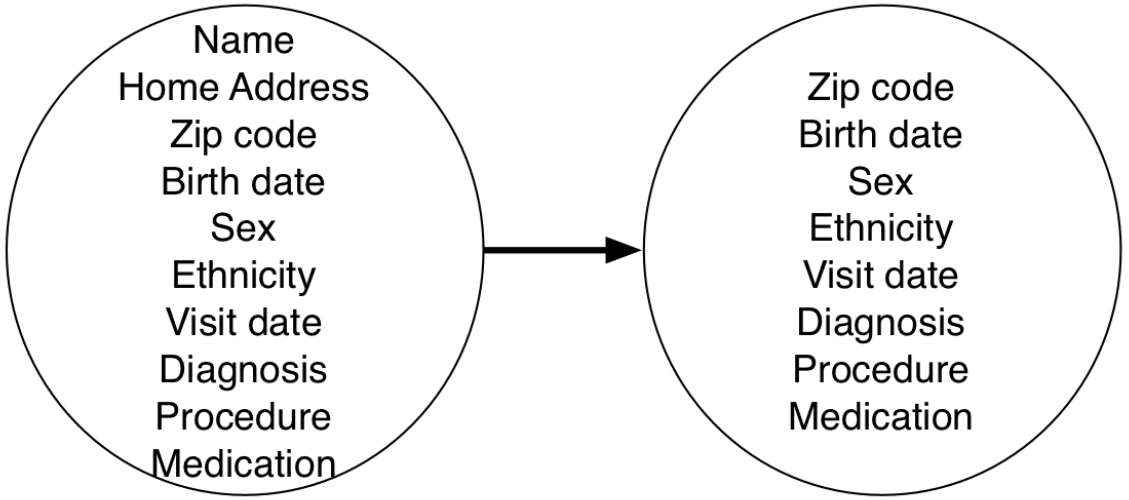
Anonymization is the process of removing obvious personal identifiers (known as “**Personally Identifying Information, PII**) such as:

- Name.
- Address.
- Phone number.

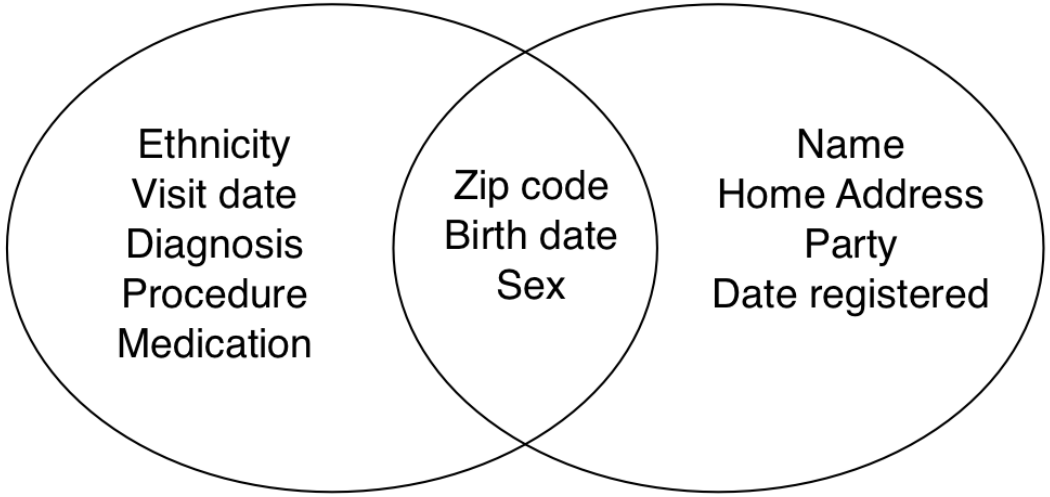
Difficult concept, because:

- Takes a lot of work.
- Deeply and fundamentally limited in its effect.
- Can give a false sense of anonymity.

Re-identification



"Anonymization"



"Anonymized" medical records

Voting records

Re-identification

Any information that is a unique fingerprint to a specific person can be used to identify them.

- **Targeted attack:** focus on a single person.
- **Broad attack:** involves a large group of people.

Any data can be(come) sensitive, see example on Netflix movie and rating data:
"[M]ovie and rating data contains information of a highly personal and sensitive nature. The member's movie data exposes a Netflix member's personal interest and/or struggles with various highly personal issues, including **sexuality**, **mental illness**, recovery from **alcoholism**, and victimization from **incest**, **physical abuse**, **domestic violence**, **adultery**, and **rape**." (Singel, 2009)

Assume that all data are potentially identifiable, and all data are potentially sensitive.

Data protection and data release

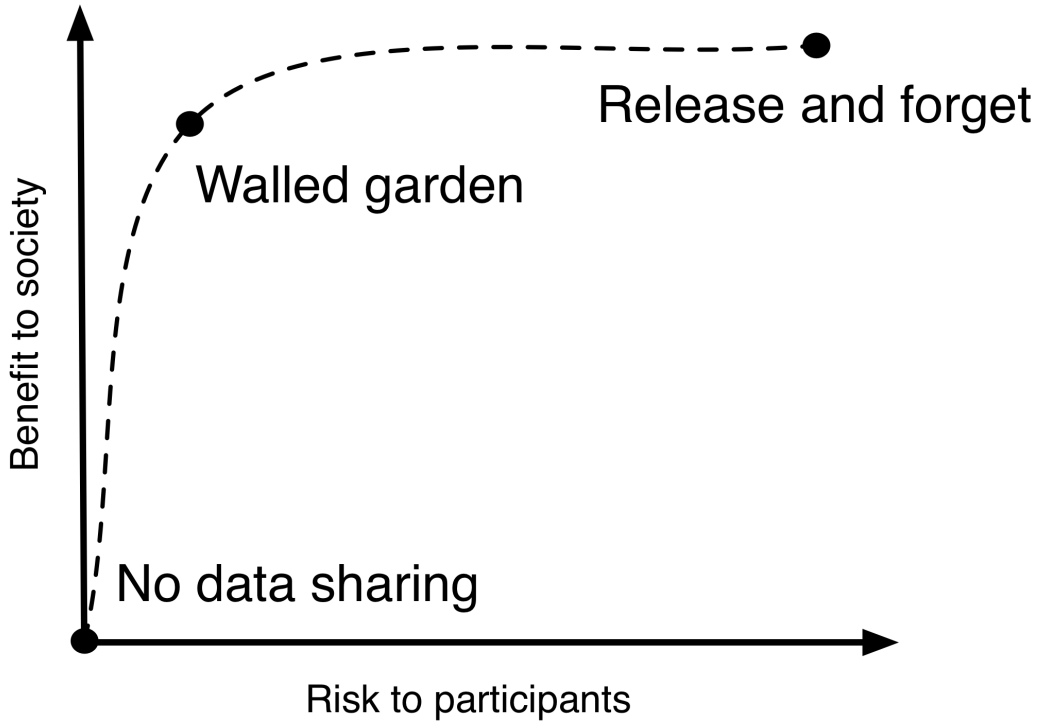


Table 6.2: The "Five Safes" are Principles for Designing and Executing a Data Protection Plan (Desai, Ritchie, and Welpton 2016)

Safe	Action
Safe projects	Limits projects with data to those that are ethical
Safe people	Access is restricted to people who can be trusted with data (e.g., people who have undergone ethical training)
Safe data	Data are de-identified and aggregated to the extent possible
Safe settings	Data are stored in computers with appropriate physical (e.g., locked room) and software (e.g., password protection, encrypted) protection
Safe output	Research output is reviewed to prevent accidental privacy breaches

How to get to good practice?

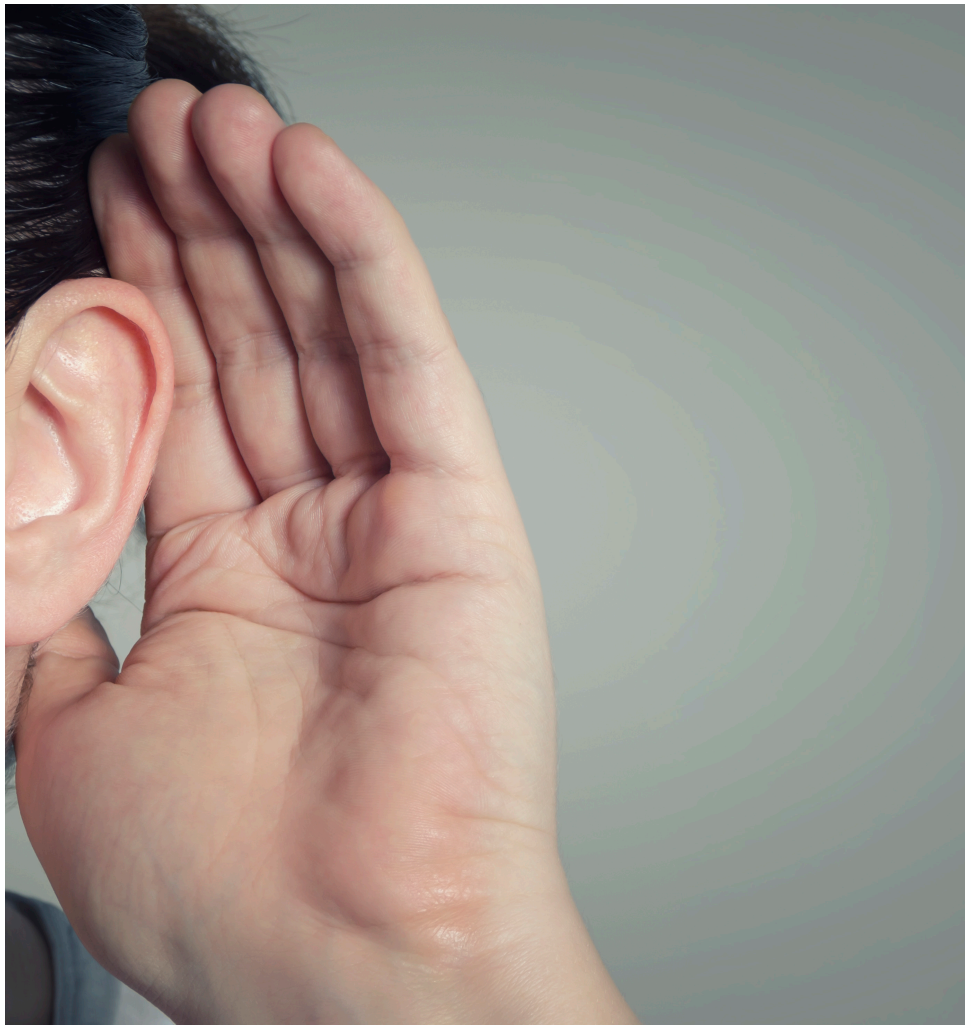
"Access to data is fundamental if researchers are to **reproduce**, **verify** and **build on results** that are reported in the literature. The presumption must be that, unless there is a strong reason otherwise, data should be fully disclosed and made publicly available." (Molloy, 2011).

What to do? Balance the four principles:

1. Respect for Persons
2. Beneficence
3. Justice
4. Respect or Law and Public Interest.

Area 3: Privacy

“Privacy should be respected because people should be respected”. (Lowrance 2012)



Contextual integrity (Nissenbaum, 2010)

- Contextual integrity focuses on the flow of information.
- "A right to privacy is neither a right to secrecy or a right to control but a right to appropriate flow of personal information.

Key concept: **Context-relative informal norms** govern the flow of information in specific settings, determined by:
1. **Actors** (subject, sender, recipient).
2. **Attributes** (types of information).
3. **Transmission principles** (constraints under which information flows).

Ask yourself: ***How do people expect information to flow?***

Compare the two situations:

Consider the use of mobile phone call logs to track mobility during the Ebola outbreak in West Africa in 2014 (Wesolowski et al. 2014). In this setting, one could imagine two different situations:

Situation 1: sending **complete call log data** [attributes]; to **governments of incomplete legitimacy** [actors]; for **any possible future use** [transmission principles]

Situation 2: sending **partially anonymized records** [attributes]; to **respected university researchers** [actors]; for **use in response to the Ebola outbreak and subject to the oversight of university ethical boards** [transmission principles]

Conclusion: You need to focus on all three parameters, never can any of them individually define informational norms.

Area 4: Making decisions in the face of uncertainty

Precautionary principle (“Better safe than sorry”)

Alternative principles:

1. **Minimal risk standard** (Benchmark the risk of a particular study against the risks that participants undertake in their daily lives).
2. **Power analysis** (Calculate the sample size you need to reliably detect an effect of a given size).
3. **Ethical-response surveys** (Do a survey prior to actual study to understand how the study is perceived by the public).
4. **Staged trials** (Run smaller studies explicitly focused on safety and efficacy).

Virtue ethics

Focus on the particularities of a certain situation and tailor one's actions to the demands of the specific context in which one acts.

Important aspects:

1. **Practical wisdom**: The ability to determine what is morally required, even if it concerns a new or unusual situation where general rules cannot easily be applied.
2. Find the **middle** between extremes.
3. **Try**, fail and learn from your mistakes.
4. Ask yourself: "***What would a virtuous person do here?***"

In the field of digital trace data, it’s not just researchers …

Data ethics in the commercial domain

Data ethics has been regarded as one important means to becoming more **trustworthy** and to establish, regain and maintain **consumer trust** (Hasselbalch & Tranberg, 2016)

Data ethics plays a role in the following aspects:
1. Technological level
2. Individual level
3. Organizational level

Technological level

- **Formulate ethical design principles** to ensure that products and services are based on key values such as:
    - Transparency
    - Accountability
    - Fairness
    - Non-discrimination
- Values can mean different things to different stakeholders.
- Awareness: Technology is not a neutral instrument (remember data feminism).

Meta

Tech at Meta | Artificial Intelligence | Engineering | Ideas

ENGINEERING

Design for safety and integrity in social technologies

PROCESS

By David G., Sara G., Hailey C. 7 min to read February 28, 2022

organization, much like we have previously invested in a dedicated Privacy team to lead our data privacy efforts and Integrity teams to enforce the policies that keep people safe on our platforms. Along with many others working across the company's different product organizations, the RAI team is building and testing

Human rights also guide our work developing responsible innovation practices, including when building, testing, and deploying products and services enabled by Artificial Intelligence (AI).

Individual level

- Employees in the commercial domain see themselves as partially **ethically responsible** for the societal impact of their work.
- Ethical and professional standards aim to guide here:
    - Aspirational codes
    - Advisory codes
    - Disciplinary codes

Organizational level

Organizational innovations such as:

- Setting up an **ethics board**.
- Hire **ethicists** within design teams.
- Install **ethics communities** to monitor activities and advise on issues.
- Organizational enforcement mechanisms, such as:
    - Structural accountability within and beyond the firm.
    - Reporting requirements.
    - Auditing of reporting.

Law and data ethics

- Law provides a kind of closure which ethics cannot.
- A legal norm is different from an ethical norm in that it is **foreseeable** and **enforceable**.

Ideally, data ethics practices **inform** our actions within the **action space** provided by the law and encourages us to **exceed a checkbox mentality** to develop data science practices in which responsibility and accountability are engrained.

Law and data ethics

- The rapidly evolving techniques challenge the ability of the law to provide and enforce the necessary action space.
- Result: ***we decide on the ethical path to follow through a process of reflection rather than following rules laid down in law.***

The impact of laws depends on their enforcement

Table 1: Selection of items that must be provided to data subjects under Arts. 13-15 GDPR that are subject to interpretation by controllers.

Controller information obligations	***Ex ante***		***Ex post***
	Art. 13	**Art. 14**	**Art. 15**
Copy of the personal data processed	-	-	(1), (3)[66]
Purposes of the data processing	(1)(c)	(1)(c)	(1)(a)
Categories of personal data concerned	-	(1)(d)	(1)(b)
Where the processing is based on Art. 6(1)(f) GDPR, the legitimate interests pursued by the controller or by a third party	(1)(d)	(2)(b)	-
Recipients or categories of recipients of the personal data, if any	(1)(e)	(1)(e)	(1)(c)
Details on potential data transfers to third countries	(1)(f)	(1)(f)	(2)
Retention period, but if that is impossible, the criteria used to determine that period	(2)(a)	(2)(a)	(1)(d)
Source from which the personal data originate, and if applicable, whether it come from publicly accessible sources	-	(2)(f)	(1)(g)
Existence of ADM, including profiling referred to in Art. 22(1) and (4), and, at least in those cases, meaningful information about the logic involved, and the significance and envisaged consequences of such processing for the data subject	(2)(f)	(2)(g)	(1)(h)
A copy of the personal data undergoing processing	-	-	(3)

Source: Janssen et al. (2024)

The impact of laws depends on their enforcement

Table 2: Evaluation of the presence of each GDPR element in platforms' privacy policies.

	Facebook	*Google*	*Instagram*	*Netflix*	*Spotify*	*TikTok*	*WhatsApp*	*X/Twitter*
Purpose of data processing	Present	Present	Present	Present	Present	Present	Present	Present
Categories of personal data	Unclear	Unclear	Present	Present	Present	Present	Present	Present
Legitimate controller interests for processing	Present	Present	Present	Present	Present	Present	Present	Present
Recipients or categories of recipients	Present	Present	Present	Present	Present	Present	Present	Present
Retention periods	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear
Data transfers to third countries	Present	Present	Present	Unclear	Present	Present	Present	Present
Sources of data	Present	Present	Present	Present	Present	Present	Present	Present
Automated Decision Making	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Missing	Unclear

Note: 'Missing' indicates that the platform provided no information on this GDPR element in their privacy policy, i.e., their privacy policy was non-compliant. 'Unclear' indicates that the information presented in the privacy policy was incomplete and therefore non-compliant. 'Present' indicates that the provided information was compliant.

Source: Janssen et al. (2024)

The impact of laws depends on their enforcement

Table 3: Evaluation of platforms' individualized GDPR information in DDPs.

	Facebook	*Google*	*Instagram*	*Netflix*	*Spotify*	*TikTok*	*WhatsApp*	*X/Twitter*
Purpose of data processing	Missing	Missing	Missing	Unclear	Unclear	Missing	Missing	Unclear
Categories of personal data	Unclear	Unclear	Unclear	Unclear	Unclear	Missing	Unclear	Unclear
Legitimate controller interests for processing	Missing	Missing	Missing	Missing	Unclear	Missing	Missing	Missing
Recipients or categories of recipients	Missing	Missing	Missing	Unclear	Unclear	Missing	Missing	Unclear
Retention periods	Missing	Missing	Missing	Missing	Unclear	Missing	Missing	Missing
Data transfers to third countries	Missing	Missing	Missing	Unclear	Unclear	Missing	Missing	Unclear
Sources of data	Missing	Missing	Missing	Unclear	Unclear	Missing	Missing	Unclear
Automated Decision Making	Missing	Missing	Missing	Unclear	Unclear	Missing	Missing	Missing

Source: Janssen et al. (2024)

Practical exercise

Browser plug-in Zeeschuimer

- You install a browser plugin developed for a specific platform (for example TikTok).
- When you use the platform of interest (like TikTok) it captures the video's that you see and stores these in a list.
- You share that file with the researcher.

Remember data collection using Zeeschuimer

Reflect on the areas of difficulty:
1. Informed consent.
2. Understanding and managing informational risk.
3. Privacy.
4. Making decisions in the face of uncertainty.

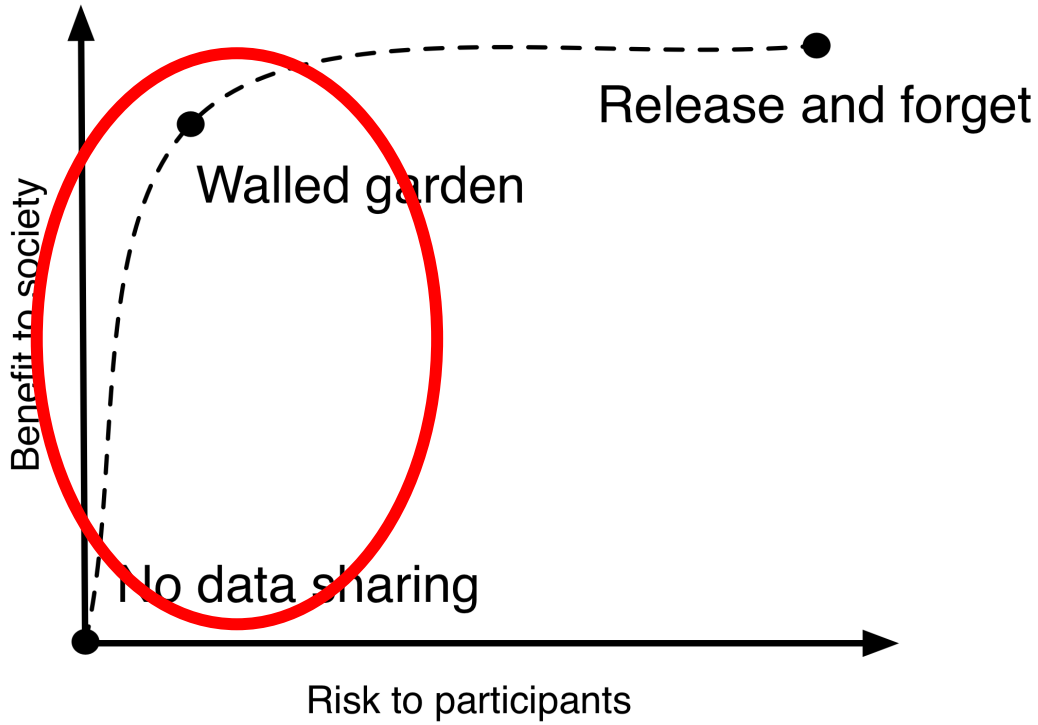
How would you propose that a “ethical” study using Zeeschuimer to collect data looks like?

1. Informed consent

Three reasons why researchers might ***not*** be able to obtain informed consent:

1. **Increasing risk:** We cannot be for sure in advance, so we need to assume sensitive and PII data is being collected.
2. **Compromising research goals:** It depends on your research purposes how explicit you can be about this.
3. **Logistical limitations:** Not everyone who generates data that is collected through Zeeschuimer can logistically consent.

2. Understanding and managing informational risk.



3. Privacy

How do participants expect the information to flow?

1. **Actors** (subject, sender, recipient).
2. **Attributes** (types of information).
3. **Transmission principles** (constraints under which information flows).

4. Making decisions in the face of uncertainty

1. **Minimal risk standard** (Benchmark the risk of a particular study against the risks that participants undertake in their daily lives).
2. **Power analysis** (Calculate the sample size you need to reliably detect an effect of a given size).
3. **Ethical-response surveys** (Do a survey prior to actual study to understand how the study is perceived by the public).
4. **Staged trials** (Run smaller studies explicitly focused on safety and efficacy).

See you after lunch!