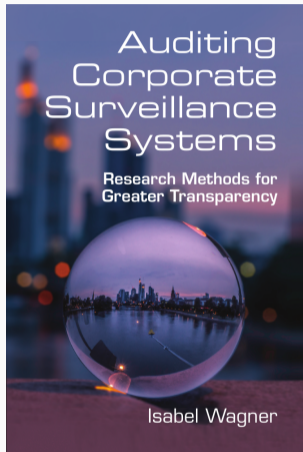


TOWARDS REAL-WORLD IMPACT

MAKING IT COUNT

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MOTIVATION

- We have seen methods and results from ~a decade of research into corporate surveillance
- Level of transparency about corporate surveillance has increased
- Some aspects of corporate surveillance have improved:
 - Facebook stopped some discriminatory ad targeting¹
 - Some apps improved their privacy²
- But overall, real-world level of corporate surveillance has *increased* during this time
- Two fundamental issues are open:
 - Many (new) corporate surveillance practices have not been studied
 - Protection of privacy and human rights online have not improved

¹N. Scheiber and M. Isaac, "Facebook Halts Ad Targeting Cited in Bias Complaints," *The New York Times*, Mar. 2019.

²Privacy International, "No Body's Business But Mine: How Menstruation Apps Are Sharing Your Data," Tech. Rep., Sep. 2019, S. T. Peddinti, I. Bilogrevic, N. Taft, et al., "Reducing Permission Requests in Mobile Apps," in *Proceedings of the Internet Measurement Conference*, ser. IMC '19, Amsterdam, Netherlands: ACM, Oct. 2019, pp. 259–266. doi: 10.1145/3355369.3355584.

HOW MAY TRANSPARENCY RESEARCH LEAD TO REAL-WORLD CHANGE?

- Current state of impact from transparency research
- Planning for impact
- Knowing and engaging stakeholders and communities

CURRENT STATE OF IMPACT FROM TRANSPARENCY RESEARCH

COMMON OUTCOMES FROM TRANSPARENCY RESEARCH

- Academic publications: highly incentivized
- Publication of code
 - Common practice, intended to improve reproducibility of research
 - Sometimes tools for users or regulators
 - Code is usually not maintained, becomes obsolete, not usable for replication
- Media engagement
 - Most often when findings are directly relevant to readers, e.g., discrimination in advertising
 - Increases public awareness, may increase pressure on regulators/policymakers
- Responsible disclosure
 - Often when research groups have a history of disclosing security vulnerabilities
 - Often restricted to individual websites/apps, typically no changes to big tech business practices
- Provision of evidence to regulators

OUTCOMES COMMONLY CALLED FOR IN TRANSPARENCY RESEARCH

- Auditability and external oversight
 - Possibility to subject platforms to external oversight, ensure they respect societal norms
 - Platforms should be designed so that external audits are possible
 - Allow access to platform internals for audits
 - Financial and institutional resources for independent third-party auditors
- Regulatory enforcement of existing rules
 - Existing rules include competition/antitrust law, consumer protection law, data protection law
 - Often not strictly enforced, especially enforcement of antitrust law
- Effective countermeasures
 - Countermeasure must be available to all users by default
 - Mechanisms for truly informed consent
 - Visual explanations for algorithms

PLANNING FOR IMPACT

WHICH TYPES OF IMPACTS COULD RESEARCH POSSIBLY HAVE?

Type of impact	Research causes...	Examples
Understanding and awareness	people to have better understanding or more awareness	Awareness of corporate surveillance practices
Attitudinal	people to change attitudes/views	Views about the importance of privacy
Economic	monetary benefits or reduced costs	Positive: new business models, negative: improvements in ad blockers
Health, wellbeing	better health outcomes and improved quality of life	Reduced stress caused by attention economy
Policy	contributions to laws/regulations	Informing data protection regulation or contributing to its enforcement
Decision-making, behavior change	groups or organizations to change their behaviors or decisions	Websites removing trackers, browsers enabling countermeasures by default
Social	benefits to society such as improvements to human rights	Freedom from discrimination when accessing online services
Capacity or preparedness	improved ability to cope with changes or improved capacity to derive benefits in the future	Automated evidence collection for regulatory action

HOW TO REALIZE IMPACT FROM RESEARCH PROJECTS?³

- Envisioning impact
 - What impacts may result from the research?
 - Who will benefit?
- Planning for impact
 - Which concrete steps will lead from the research to real-world change?
- Achieving impact
 - Follow planned steps and monitor progress

³M. S. Reed, *The Research Impact Handbook*. Huntly, Aberdeenshire: Fast Track Impact, Jul. 2018.

QUESTIONS TO GUIDE IDENTIFICATION OF IMPACTS AND STAKEHOLDERS

- What is the research? New project, part of a project, research idea?
- What problems, needs, barriers exist in policy, economy, practices or behaviors that this research could help address?
- Trends or current issues linked to the research?
- Who are the stakeholders that might be interested in the research?
- What would change for these individuals, groups, and organizations? How would they benefit? Would some of them be disadvantaged?
- How would you know that they have benefited? What can you measure?
- How can you engage each stakeholder group? Specific activities? How do you know the activities were successful?

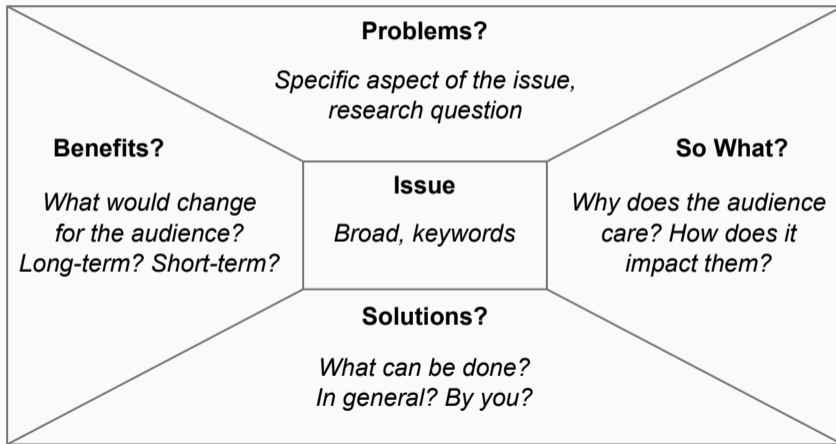
ENGAGING STAKEHOLDERS

STAKEHOLDERS ARE NOT SCIENTISTS

- Don't know how to read papers, how to judge their quality
- Researchers need to understand what each stakeholder needs, adapt the message accordingly⁴
 - Policymakers: what do my constituents think about this issue?
 - NGOs: does this issue fit our agenda?
 - Media and journalists: is this newsworthy? Is it a good story?
 - Citizens: does this directly affect my life?

⁴N. Baron, *Escape from the Ivory Tower: A Guide to Making Your Science Matter*. Island Press, Aug. 2010.

Audience: *Who is the stakeholder? What is their level of influence?*



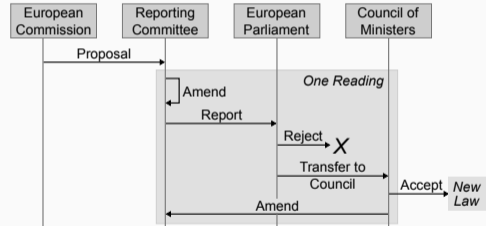
- Media coverage
 - Mass media as well as specialized media outlets
 - Journalists need to become aware of the research: via existing contacts, press releases, pitching articles to The Conversation
- Press releases⁶
 - Researcher contacts press office
 - If research is likely to attract interest: researcher drafts a press release
 - Press officer refines and polishes
 - Journalists can contact researcher for follow-up information or interviews
- Publish browser extensions or apps
 - Often small user-base, self-selected tech-savvy people

⁶C. Schubert, *Do I make myself clear? Media training for scientists*, <https://www.sciencemag.org/features/2018/01/do-i-make-myself-clear-media-training-scientists>, Jan. 2018.

STAKEHOLDER: POLICYMAKERS, PARLIAMENTS, GOVERNMENTS

- Lawmaking process substantially different in different countries
- Ways to influence the process also differ

- EU: External expertise given to rapporteur, MEPs in reporting committee
- US: connections to local congressmen and their staffers, congressional testimony



- Work with NGOs and advocacy groups in the areas may be more promising

- Transparency research may have direct legal implications, e.g., violation of laws/regulations
- Legal implications of research findings often difficult to judge for technical researchers
- Laws differ between countries, e.g., discrimination in hiring processes⁷
- Collaborations with experts are beneficial
 - With researchers from law school who can judge compliance with (e.g.) GDPR⁸
 - With nonprofit organizations (e.g., ACLU, noyb)⁹

⁷J. Sanchez-Monedero, L. Dencik, and L. Edwards, “What does it mean to solve the problem of discrimination in hiring? Social, technical and legal perspectives from the UK on automated hiring systems,” *arXiv:1910.06144 [cs]*, Sep. 2019. arXiv: 1910.06144 [cs].

⁸C. Matte, N. Bielova, and C. Santos, “Do Cookie Banners Respect my Choice?” In *2020 IEEE Symposium on Security and Privacy (SP)*, San Francisco, CA, USA: IEEE, May 2020, pp. 1612–1630. doi: 10.1109/SP40000.2020.00076.

⁹N. Scheiber and M. Isaac, “Facebook Halts Ad Targeting Cited in Bias Complaints,” *The New York Times*, Mar. 2019.

STAKEHOLDER: OVERSIGHT AND REGULATORY BODIES

- Most important regulators: Federal Trade Commission (US), data protection authorities (EU, e.g., CNIL, ICO)
- FTC: mandate to prevent unfair and deceptive business practices
 - Can impose fines or consent orders
 - Often: are promises in privacy policy kept?¹⁰
- EU data protection authorities
 - Can impose fines, up to 4% of annual turnover
 - Largest fine so far: Google, 50 million EUR¹¹, based on complaints by NGOs: La Quadrature du Net and noyb, the European Center for Digital Rights
 - Individuals can file complaints, but collaboration with legal experts beneficial

¹⁰S. Zimmeck, P. Story, D. Smullen, et al., "MAPS: Scaling Privacy Compliance Analysis to a Million Apps," *Proceedings on Privacy Enhancing Technologies*, vol. 2019, no. 3, pp. 66–86, Jul. 2019. doi: [10.2478/popets-2019-0037](https://doi.org/10.2478/popets-2019-0037).

¹¹CNIL, "Deliberation of the Restricted Committee SAN-2019-001 of 21 January 2019 pronouncing a financial sanction against GOOGLE LLC.," CNIL, Tech. Rep., Jan. 2019, p. 29.

- World Wide Web Consortium (W3C) can consider privacy implications at design stage¹²
- Ambient Light Sensor API¹³
 - Implemented in Chrome/Firefox in 2017
 - Researchers demonstrated attacks based on light reflected from human skin
 - Browser makers: Firefox dropped the API, Chrome caps resolution of light value and frequency
- Practical demonstrations help contextualize discussions
- But interaction can be time-consuming

¹²G. Acar, C. Eubank, S. Englehardt, *et al.*, "The Web Never Forgets: Persistent Tracking Mechanisms in the Wild," in *Proceedings of the 2014 ACM SIGSAC Conference on Computer and Communications Security*, ser. CCS '14, Scottsdale, Arizona, USA: ACM, 2014, pp. 674–689. doi: [10.1145/2660267.2660347](https://doi.org/10.1145/2660267.2660347).

¹³Ł. Olejnik, "Shedding light on web privacy impact assessment: A case study of the Ambient Light Sensor API," in *2020 IEEE European Symposium on Security and Privacy Workshops (EuroSPW)*, Sep. 2020, pp. 310–313. doi: [10.1109/EuroSPW51379.2020.00048](https://doi.org/10.1109/EuroSPW51379.2020.00048).

STAKEHOLDER: NGOS AND ADVOCACY GROUPS

- NGOs in privacy/transparency area are very active: engage policymakers, file lawsuits and regulatory complaints, do research, develop countermeasures, communicate with public
- EFF: PrivacyBadger, Panopticklick
- Mozilla: maintains openWPM, publishes research¹⁴
- Privacy International: transparency for Facebook SDK¹⁵
- ProPrivacy: programmatic advertising in charity sector¹⁶

¹⁴S. Bird, I. Segall, and M. Lopatka, "Replication: Why We Still Can't Browse in Peace: On the Uniqueness and Reidentifiability of Web Browsing Histories," in *Sixteenth Symposium on Usable Privacy and Security (SOUPS 2020)*, USENIX, 2020, pp. 489–503, D. Zeber, S. Bird, C. Oliveira, et al., "The Representativeness of Automated Web Crawls as a Surrogate for Human Browsing," in *Proceedings of The Web Conference 2020*, ser. WWW '20, Taipei, Taiwan: ACM, Apr. 2020, pp. 167–178. doi: 10.1145/3366423.3380104.

¹⁵Privacy International, *Guess what? Facebook still tracks you on Android apps (even if you don't have a Facebook account)*, <http://privacyinternational.org/blog/2758/appdata-update>, Mar. 2019.

¹⁶S. McGrath and A. Theodorou, *Exposing the Hidden Data Ecosystem Behind UK Charities*, <https://proprivacy.com/privacy-news/exposing-the-hidden-data-ecosystem-of-the-uks-most-trusted-charities>, Sep. 2020.

STAKEHOLDER: PUBLISHERS AND DEVELOPERS

- Responsible disclosure process
 - Researcher discovers vulnerability, informs vendor before publicizing the finding
 - Vendor can fix the issue before it becomes publicly known (and exploited by malicious actors)
 - Deadline for vendors before researcher will publish increases pressure to fix, e.g., 90 days (Google Project Zero) or 45 days (CERT)
- Responsible disclosure in transparency
 - Removal of Facebook's SDK from apps
 - Security issues in data-saving mobile browsers
 - Password leaks to third parties
 - Additional entries for ad block filter lists
- Challenge: how to communicate if many parties are affected¹⁷

¹⁷B. Stock, G. Pellegrino, C. Rossow, et al., "Hey, You Have a Problem: On the Feasibility of Large-Scale Web Vulnerability Notification," in *25th USENIX Security Symposium (USENIX Security 16)*, Austin, TX, USA: USENIX, 2016, pp. 1015–1032.

SUMMARY

SUMMARY: TOWARDS REAL-WORLD IMPACT

- Types of impacts
 - that are often realized
 - that are often suggested as desirable
 - 8 generic types that help to plan impact
- Questions to guide impact planning
- Stakeholders to engage
 - The public
 - Policymakers
 - Lawyers and courts
 - Oversight, regulatory bodies
 - Standardization bodies
 - NGOs
 - Publishers, developers

ABOUT THIS SLIDE DECK

- These slides are designed to accompany a lecture based on the textbook “Auditing Corporate Surveillance Systems: Research Methods for Greater Transparency” by Isabel Wagner, published in 2022 by Cambridge University Press.
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