Automating privacy decisions – where to draw the line? IWPE'23 EuroS&P

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Automated consent?

Automated Consent: Previous work has demonstrated that automated consent models can predict users' data-sharing decisions with high accuracy and avoid prompting users for most decisions, drastically reducing user burden [42]. How-

What is Cookie Banners Handling?

Firefox now clears these annoying cookie banners on your behalf. We'll always hit "Reject all" if we have that option though in absence of a "Reject all" we'll do what you'd do otherwise and hit "Accept all"

But can we automate consent? If yes, to what extent? (And is it the only type of privacy decision?)

Informing the Design of a Personalized Privacy Assistant for the Internet of Things, Colnago et al., 2020 https://community.mozilla.org/en/campaigns/firefox-cookie-banner-handling/

Privacy decisions



Consent



Privacy preferences





Legal background

Consent in the EU

GDPR says:

- ★ informed, specific, freely given, and unambiguous, and
- ★ entails a clear statement or an affirmative action, also
- ★ as easy to withdraw as to give.
- ★ Consent must be explicit for sensitive data, profiling, and transfers to third countries without adequate protection (e.g. USA).

Other relevant considerations

\star ePD

- ★ Right to object (e.g. direct marketing and profiling)
- ★ Data Protection by Design and by Default

What about usability?

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15 minutes a day rejecting cookie banners!

https://www.vice.com/en/article/m7epda/its-bad-design-on-purpose-why-website-cookie-banners-look-like-that

Can't we have the best of both worlds?



Are usability and lawfulness mutually exclusive?

Manual decisions



Preferences



Consent

Did someone say ... cookies?

Twitter and its partners use cookies to provide you with a better, safer and faster service and to support our business. Some cookies are necessary to use our services, improve our services, and make sure they work properly. Show more about your choices.

Accept all cookies

Refuse non-essential cookies

Reject



Semi-automated decisions



Fully automated decisions

Permissions



Automatically inferred (over 95% accuracy)

Consent



And the other approaches mentioned before.

Preferences

Against Data Protection by Design?



In a nutshell

Manual decisions

Set the onus on users

Fully automated decisions

Almost always in conflict with legal requirements (with the exception of reject decisions)

Semi-automated decisions

Can meet both ends of usability and legal compliance. But careful about the design!

Future work - SoK

- ★ Systematic Literature Review methodology
- ★ 111 papers after screening
 - ▶ 18 about consent
 - ▶ 51 about permissions
 - ▶ 36 about preferences
 - ▶ 6 about reject
- \star Trend in the 201x to design recommender systems for social networks
- ★ Interesting things to quantify can be:
 - ▶ the source of data (preferences, past choices, metadata, external data, etc)
 - ▶ the end-goal environment (social media, IoT, mobile apps, web generally speaking)
 - the accuracy
 - ▶ whether the solution uses machine-learning or not, and if the decision made is explainable

Future work - Usable Permissions in IoT TAP



Application to IoT Trigger-Action Platforms.

Future work - Usable Permissions in IoT TAP

Dynamic Consent & On the Fly Permission Management



(Ask "on the fly" only if predicted permission preferences "suggest" permission changes)