user-centric privacy

designing effective privacy protections that meet users' needs

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SCHOOL OF INFORMATION
UNIVERSITY OF MICHIGAN

legal requirements

user trust

why we build privacy into systems

reputation

limit liability

ethics

UMSI

privacy compliance

privacy management

privacy engineering

expert perspective

user

~~expert~~ perspective

no one reads privacy policies

UMSI

time to read policies of websites you visit:

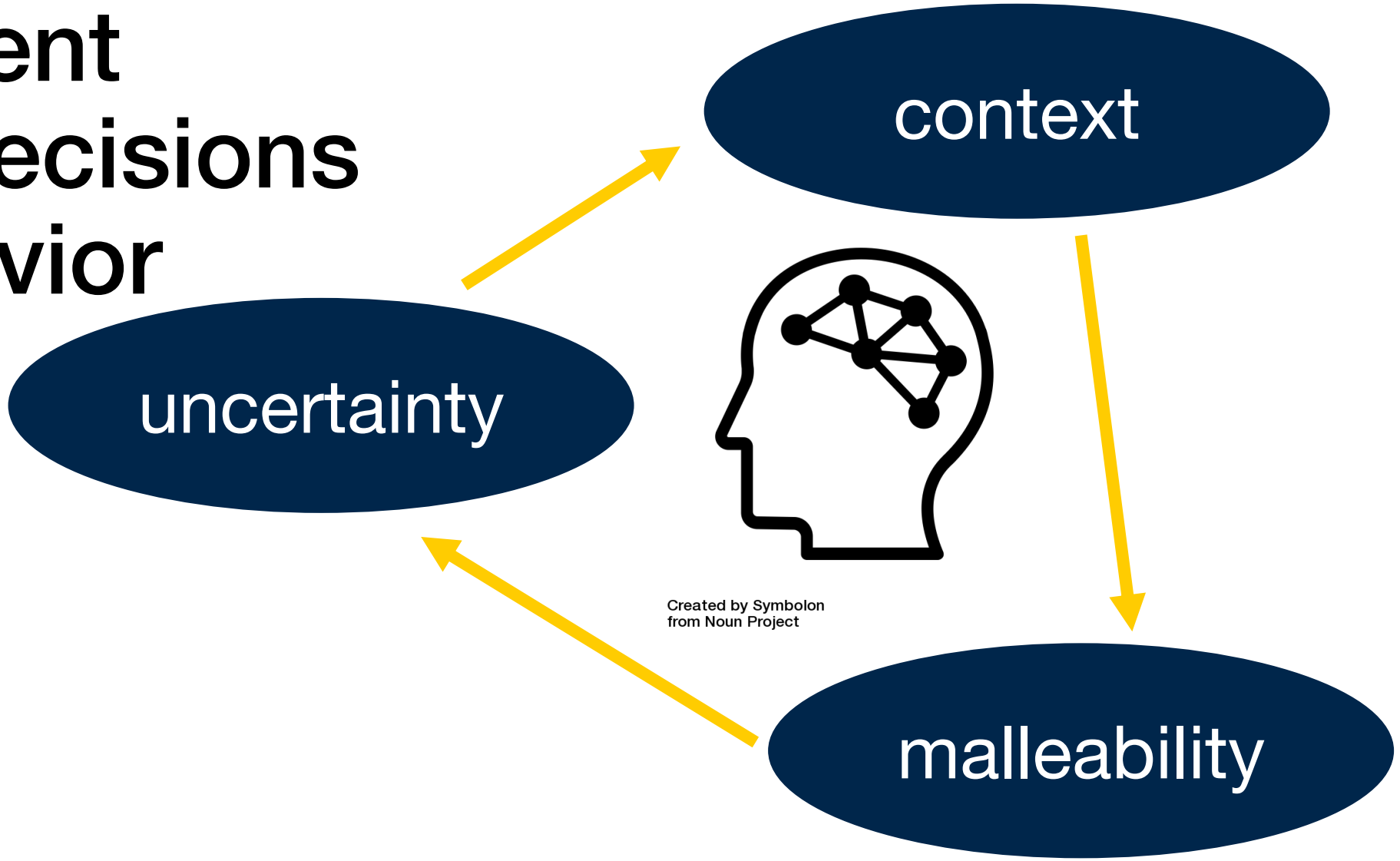
244 hours per year

McDonald & Cranor, *The Cost of Reading Privacy Policies*,
I/S: A Journal of Law and Policy for the Information Society, 2008.

no one reads privacy policies

UMSI

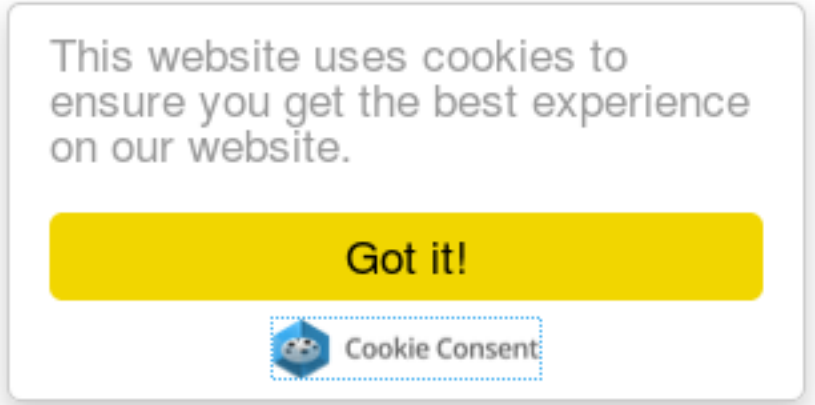
inconsistent privacy decisions and behavior

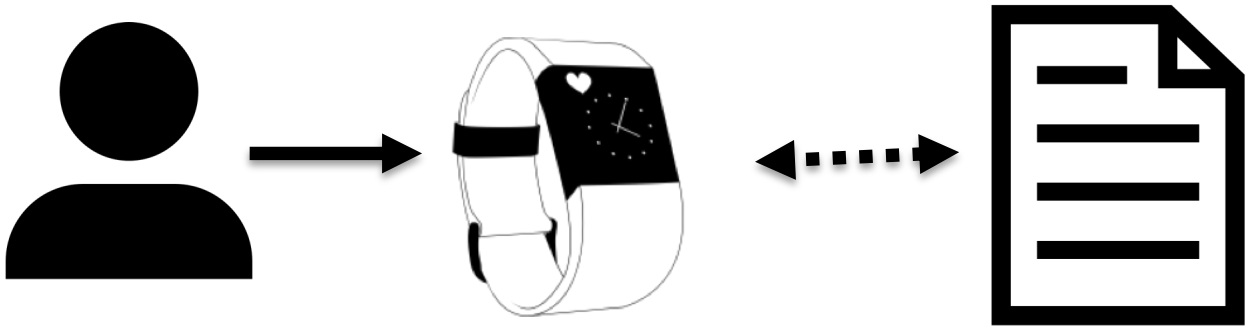


Privacy and Human Behavior in the Age of Information
Alessandro Acquisti, Laura Brandimarte, George Loewenstein
Science. 2015

limited mental models of data practices

no one uses privacy settings





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privacy resignation

The Corporate Cultivation of Digital Resignation
Nora Draper, Joseph Turow
New Media & Society 2019

no one reads
privacy policies

limited
mental
models

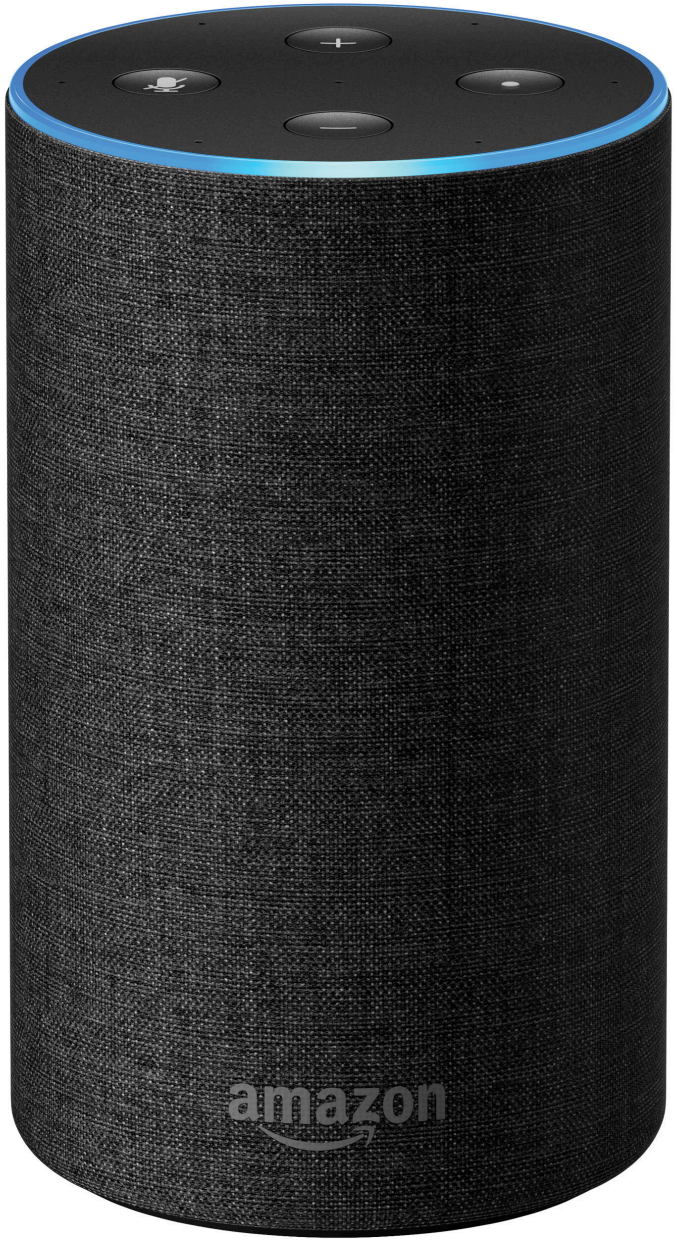
user
~~expert~~ **perspective**

inconsistent privacy
decisions and behavior

no one uses
privacy settings

privacy resignation

example:
smart speakers



wake word

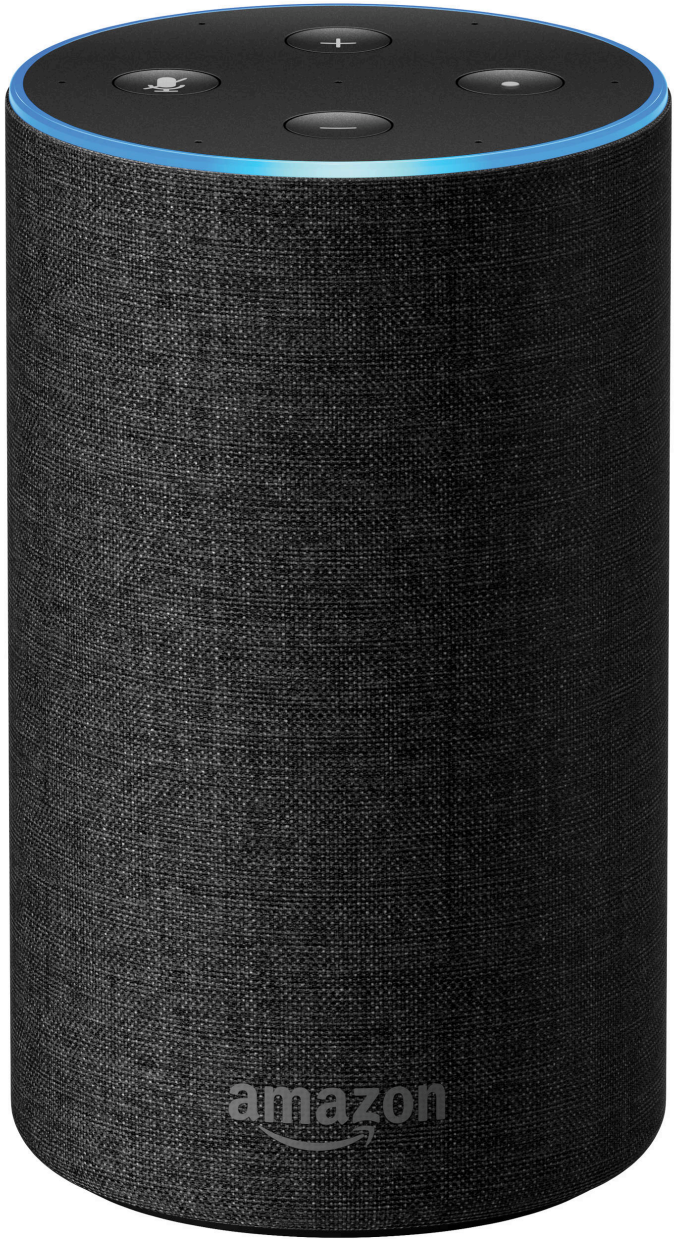
mute button

audio logs

speaker recognition

purchase pin

example:
smart speakers



people don’t use privacy controls

misaligned with needs

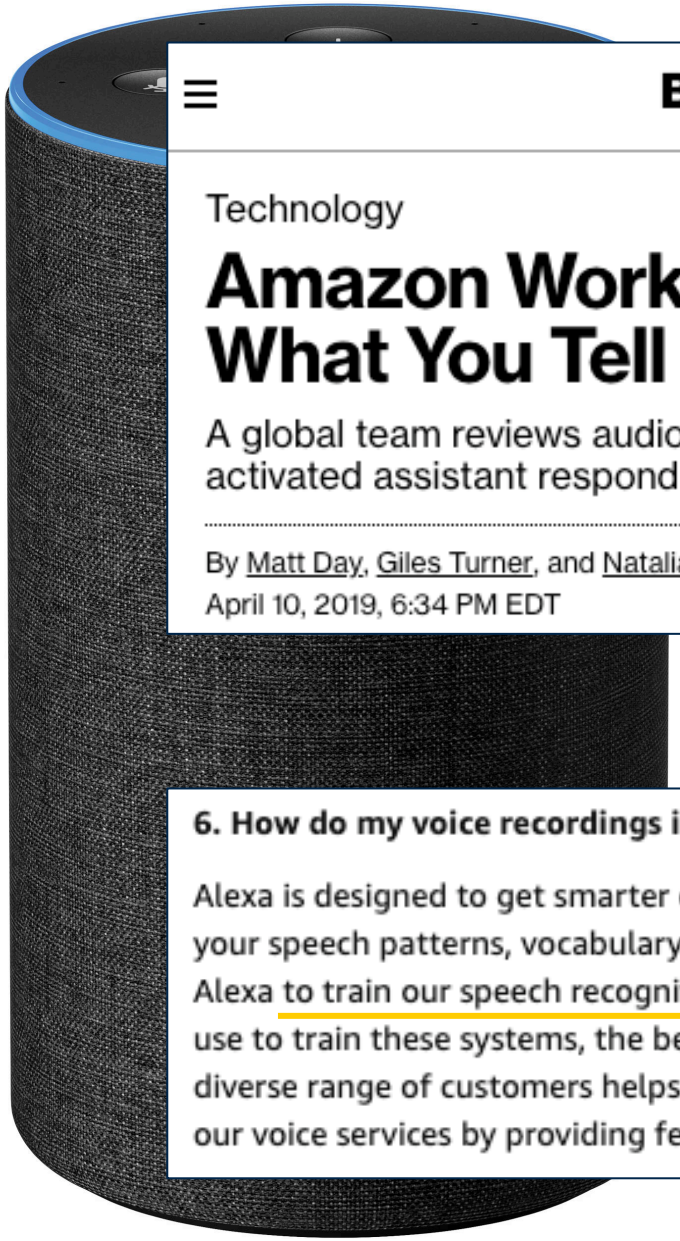
controls misunderstood

modality change

used to invade privacy

“Alexa, are you Listening?”: Privacy Perceptions, Concerns, and Privacy-seeking Behaviors with Smart Speakers
Josephine Lau, Benjamin Zimmerman, Florian Schaub
CSCW. 2018

example:
smart speakers



Bloomberg Subscribe

Technology

Amazon Workers Are Listening to What You Tell Alexa

A global team reviews audio clips in an effort to help the voice-activated assistant respond to commands.

By Matt Day, Giles Turner, and Natalia Drozdiak
April 10, 2019, 6:34 PM EDT

versus

Alexa FAQ

6. How do my voice recordings improve Alexa?

Alexa is designed to get smarter every day. The more you use Alexa, the more the service adapts to your speech patterns, vocabulary, and personal preferences. For example, we use your requests to Alexa to train our speech recognition and natural language understanding systems. The more data we use to train these systems, the better Alexa works, and training Alexa with voice recordings from a diverse range of customers helps ensure Alexa works well for everyone. You can also help us improve our voice services by providing feedback within **Settings** > **Alexa Account** > **History**.

suspicion and distrust

(social) media outrage

why care about user perspective?

suspicion and distrust

(social) media outrage

why care about user perspective?

liability

FEDERAL TRADE COMMISSION
PROTECTING AMERICA'S CONSUMERS

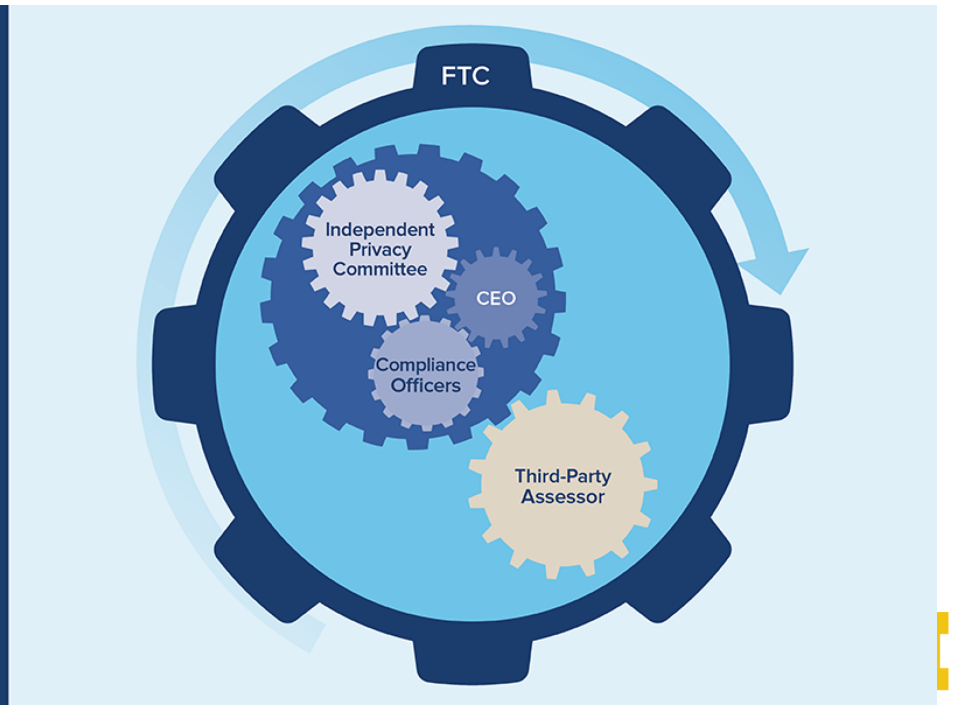
FTC Imposes $5 Billion Penalty and Sweeping New Privacy Restrictions on Facebook

FTC settlement imposes historic penalty, and significant requirements to boost accountability and transparency

New Facebook Privacy Compliance System

A multilayered incentive structure of accountability, transparency, and oversight

Source: Federal Trade Commission | FTC.gov



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suspicion and distrust

(social) media outrage

why care about user perspective?

liability

waste of resources

how to design privacy ~~past~~ for user?*

*assuming it's not all intentional

privacy = ~~compliance issue~~
user experience &
product design issue

privacy policy

data protection

privacy impact assessment

data minimization

Designing Effective Privacy Notices and Controls
Florian Schaub, Rebecca Balebako, Lorrie Cranor
IEEE Internet Computing 2017

user mental models, expectations, needs

privacy policy

data protection

privacy impact assessment

data minimization

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user mental models, expectations, needs

privacy user experience

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user mental models, expectations, needs

privacy user experience

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user mental models, expectations, needs

privacy user experience

relevant

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relevant to context / transaction

context / transaction

relevant to understand specific practice

context / transaction

understand specific practice

relevant to understand privacy risks

context / transaction

understand specific practice

understand privacy risks

relevant to understand protections

user mental models, expectations, needs

privacy user experience

relevant

understandable

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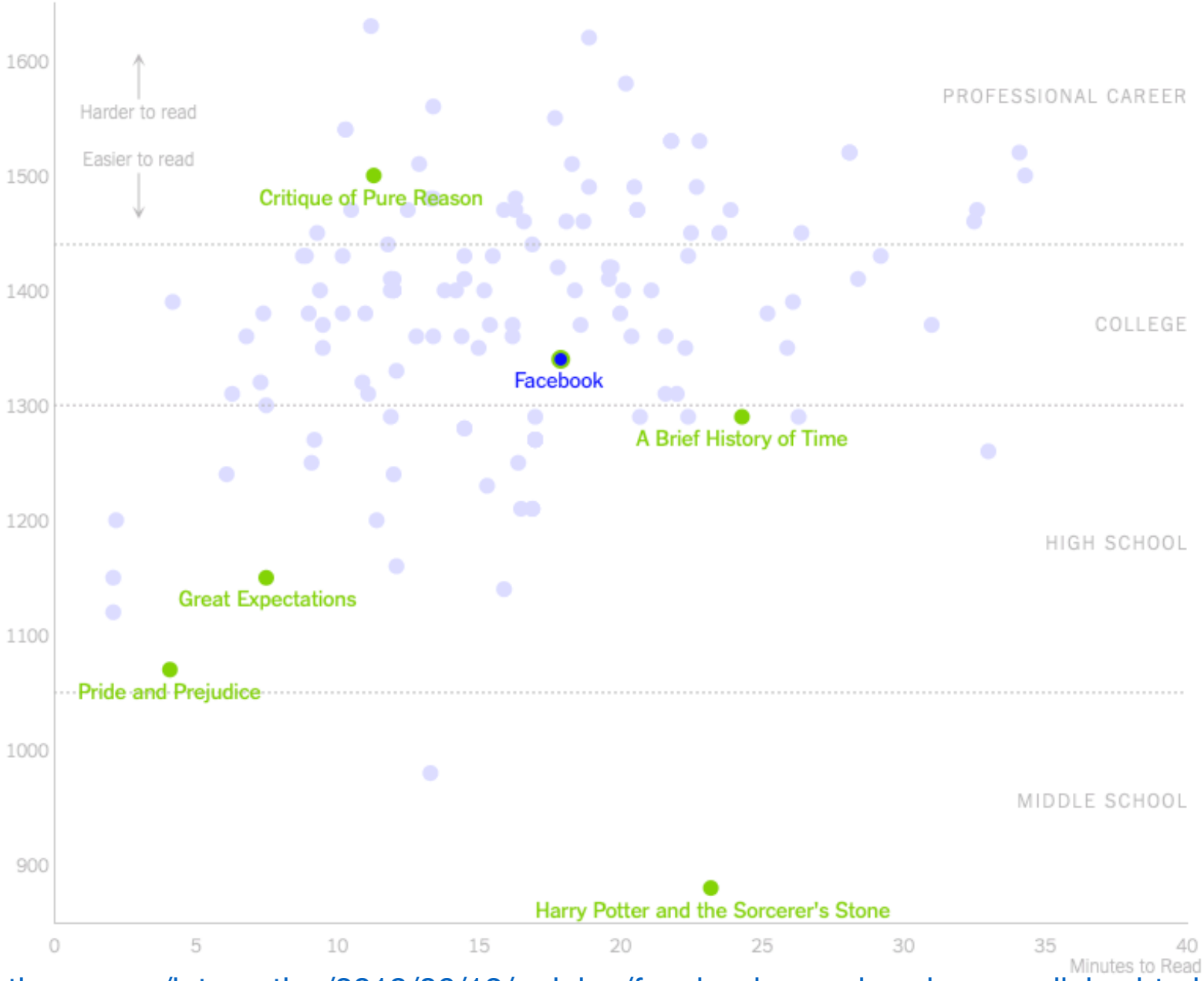
understandable reading level



https://www.nytimes.com/interactive/2019/06/12/opinion/facebook-google-privacy-policies.html

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reading level

understandable length

3,044 words average privacy policy post-GDPR

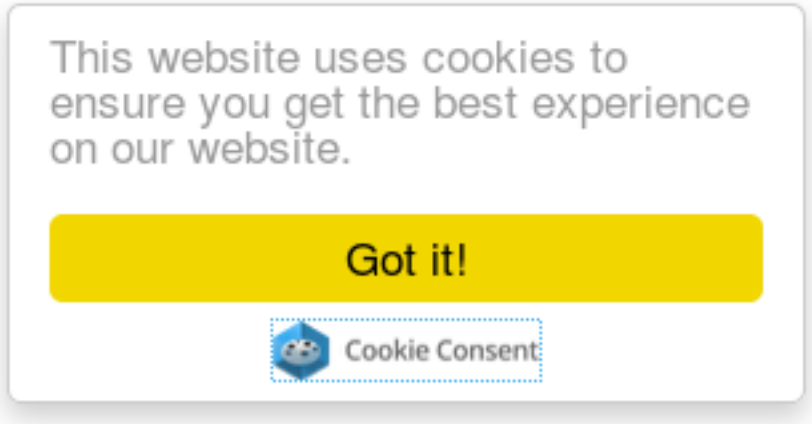
42% longer than 2016

We Value Your Privacy ... Now Take Some Cookies: Measuring the GDPR's Impact on Web Privacy
Martin Degeling, Christine Utz, Christopher Lentzsch, Henry Hosseini, Florian Schaub, Thorsten Holz
NDSS 2019

reading level

length

understandable level of abstraction



user mental models, expectations, needs

privacy user experience

relevant

understandable

actionable

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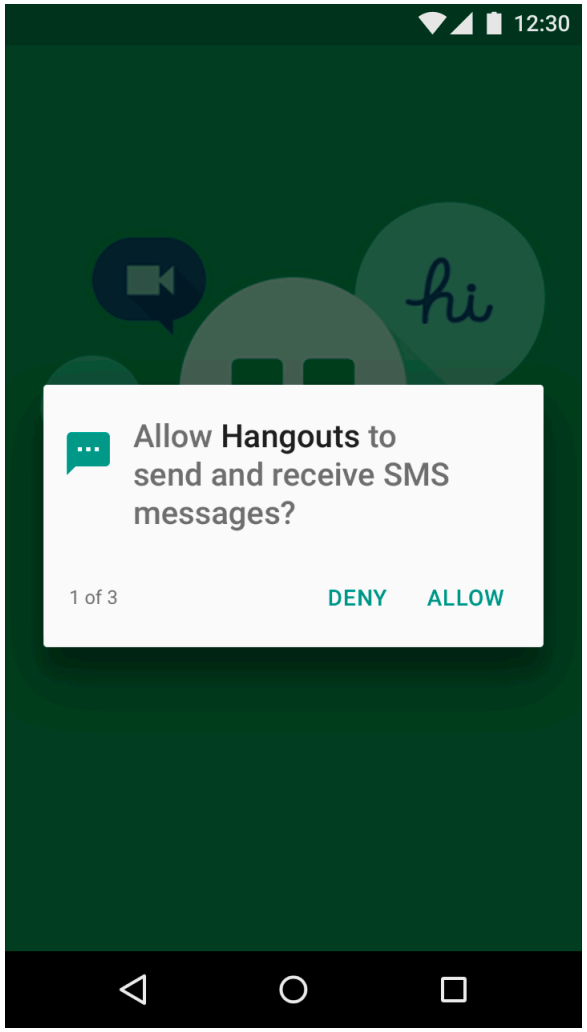
IEEE Internet Computing 2017

actionable information
choice

actionable information choice



user mental models, expectations, needs

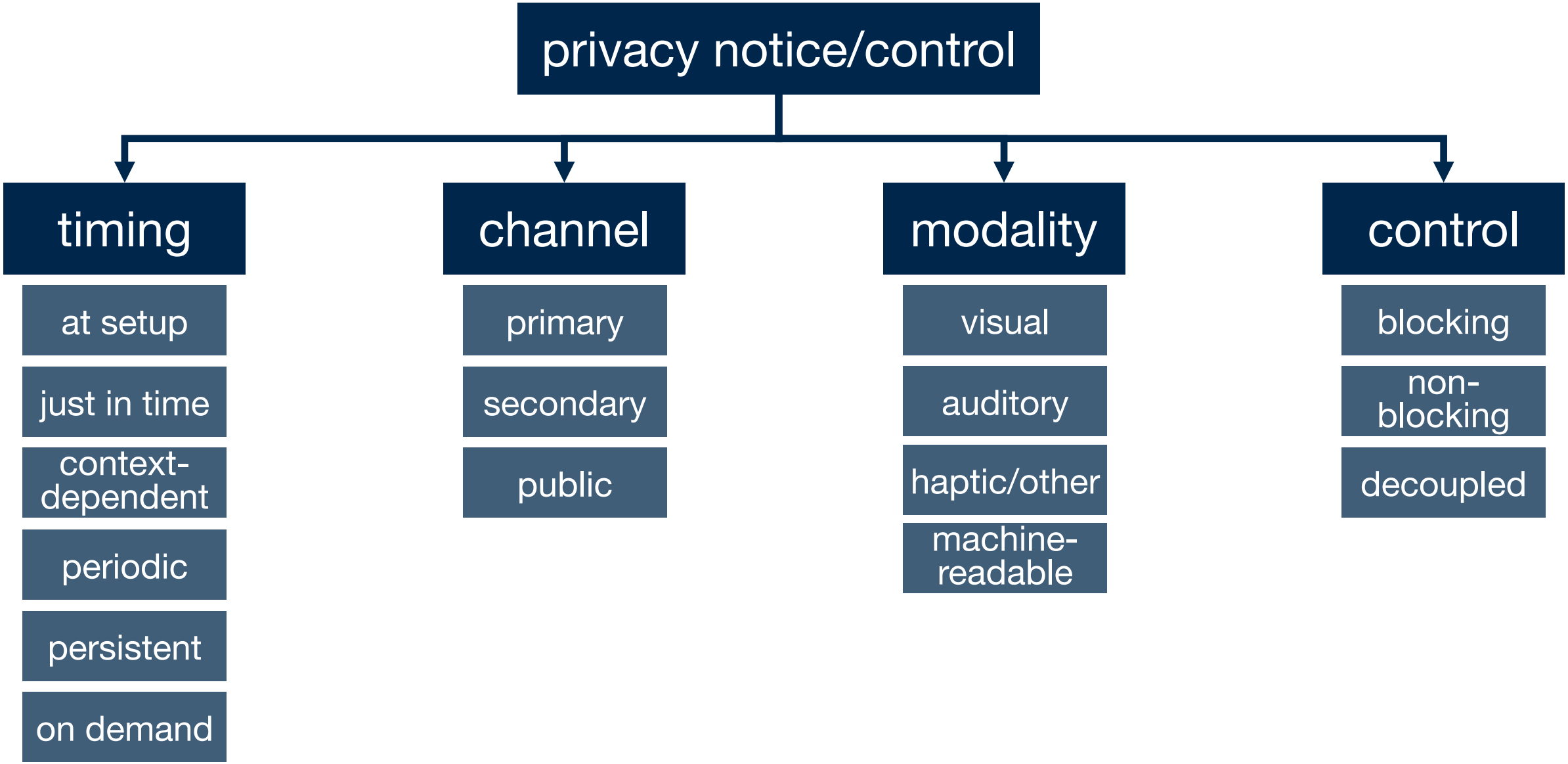
privacy user experience

relevant

understandable

actionable

integrate privacy into
user experience



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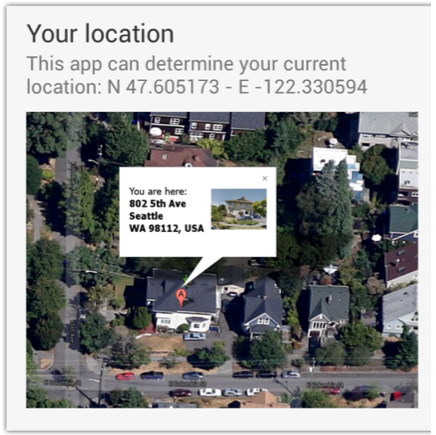
Florian Schaub, Rebecca Balebako, Adam Durity, Lorrie Faith Cranor
SOUPS 2015

privacy notice/control

- timing
  - at setup
  - just in time
  - context-dependent
  - periodic
  - persistent
  - on demand
- channel
- modality
- control



Harbach et al. CHI '14

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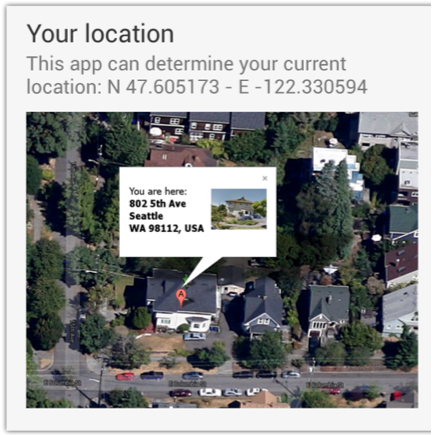

Harbach et al. CHI '14

modality

control

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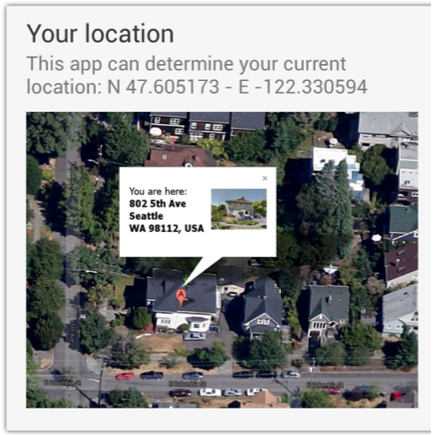

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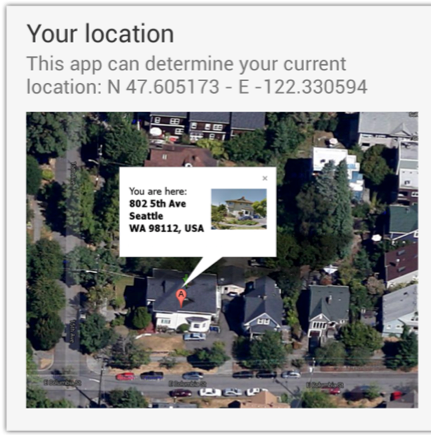

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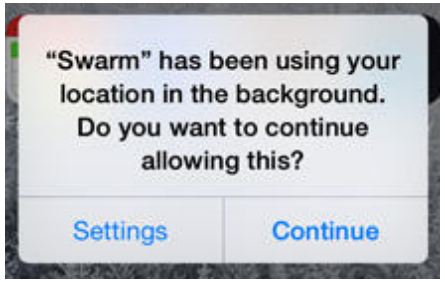

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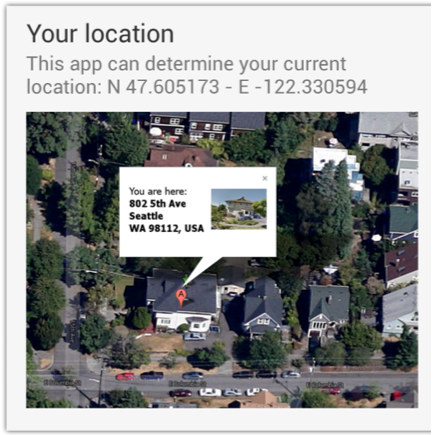

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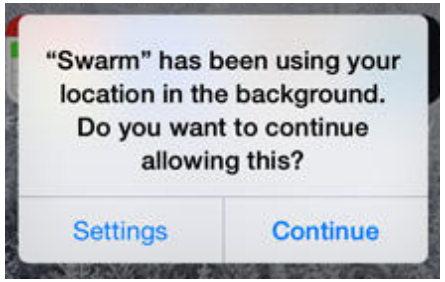

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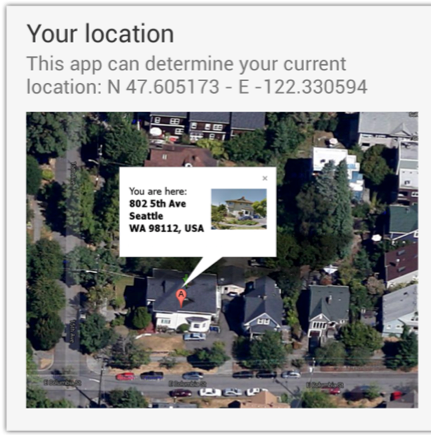

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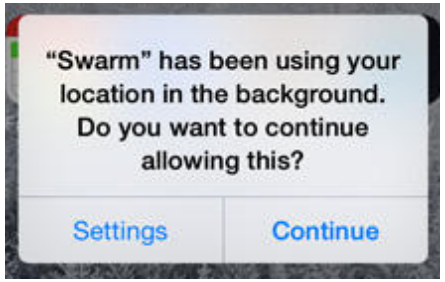

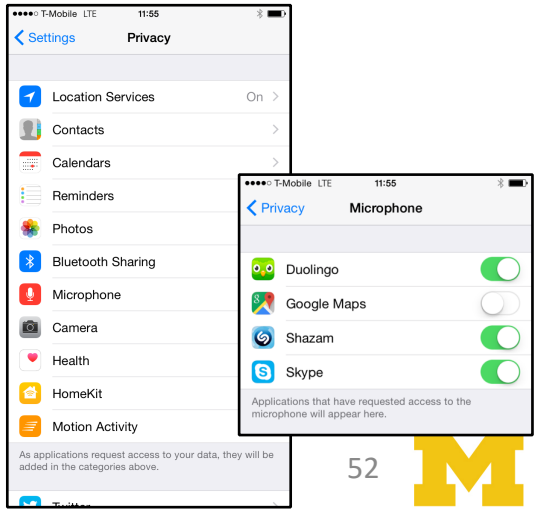

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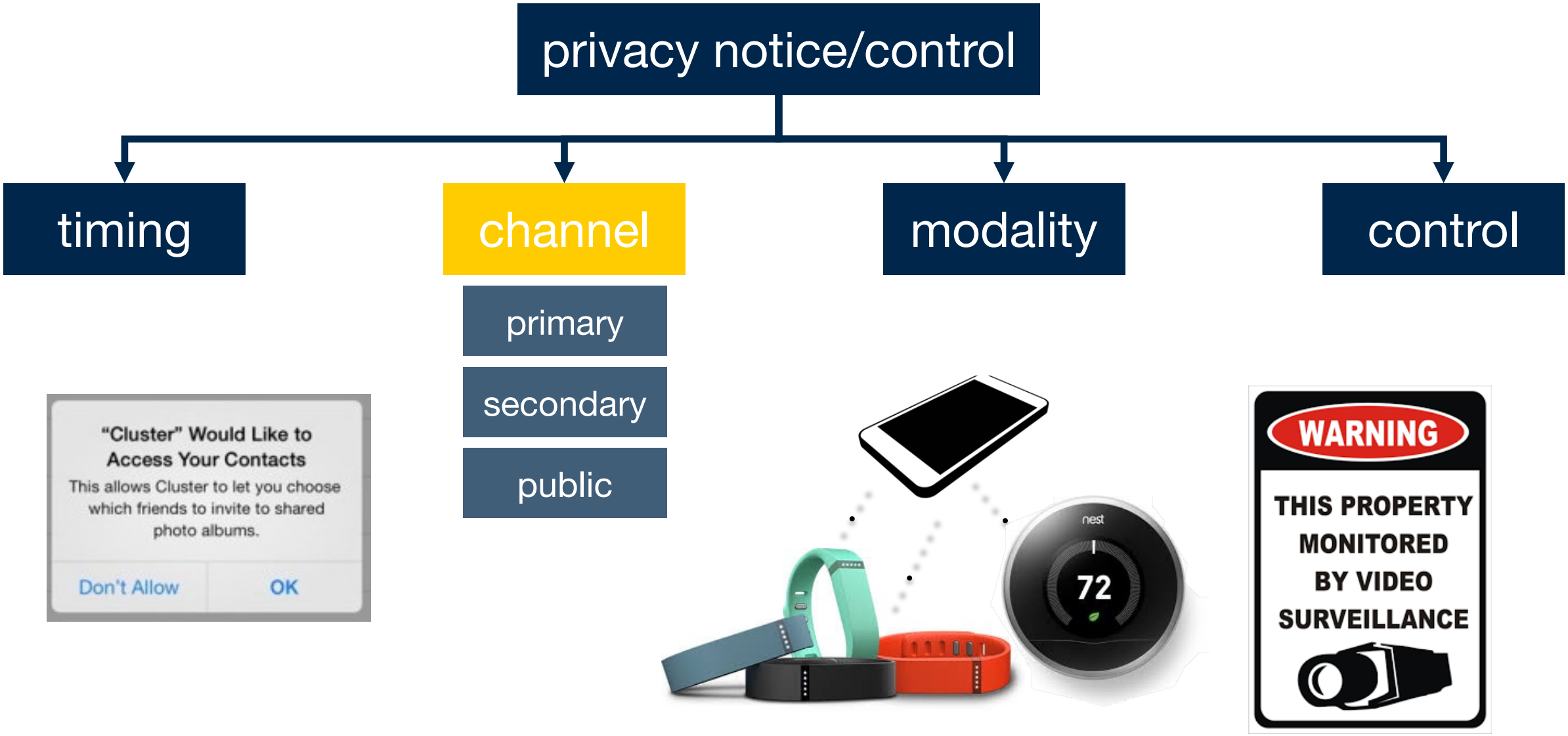

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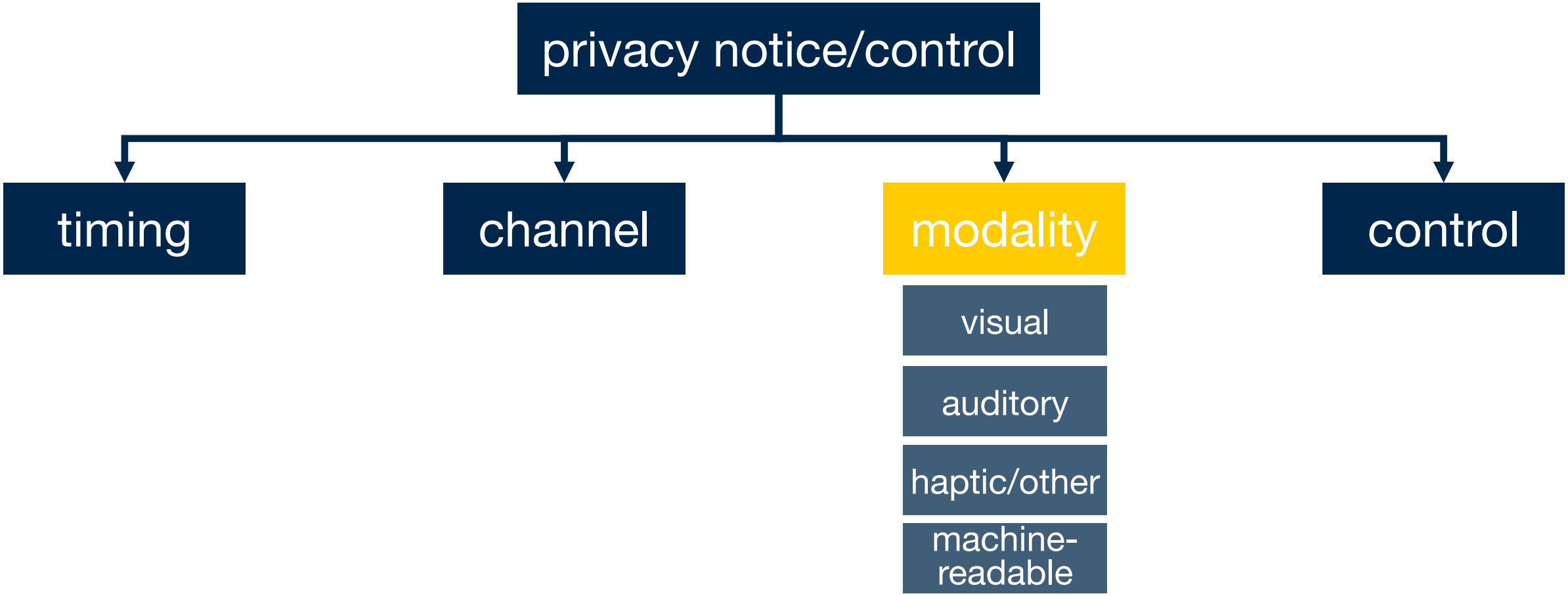

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privacy notice/control

timing

channel

modality

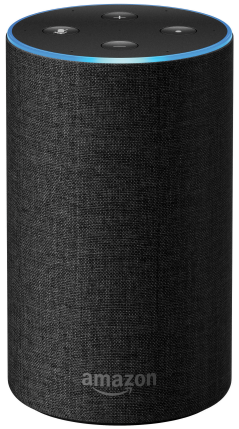
control

visual

auditory

haptic/other

machine-readable



"Alexa, delete everything I said today"

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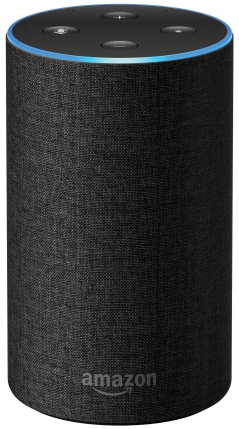

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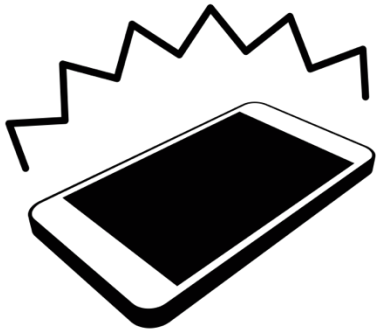

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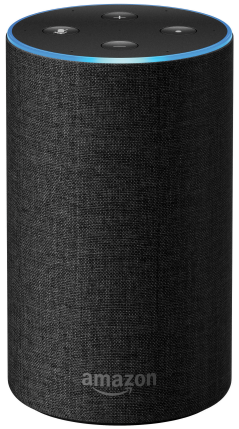

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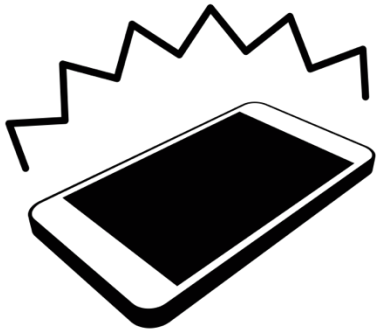

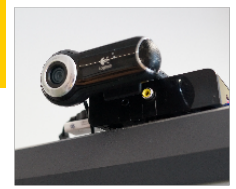

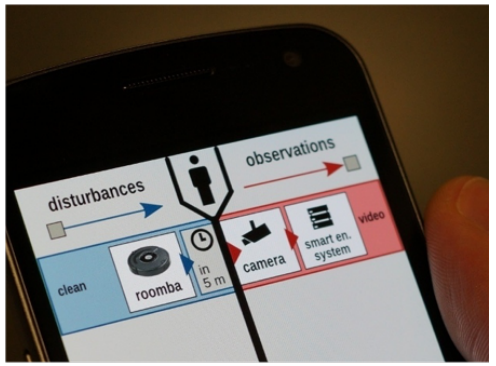

Schaub et al.
IEEE Pervasive Computing 2015

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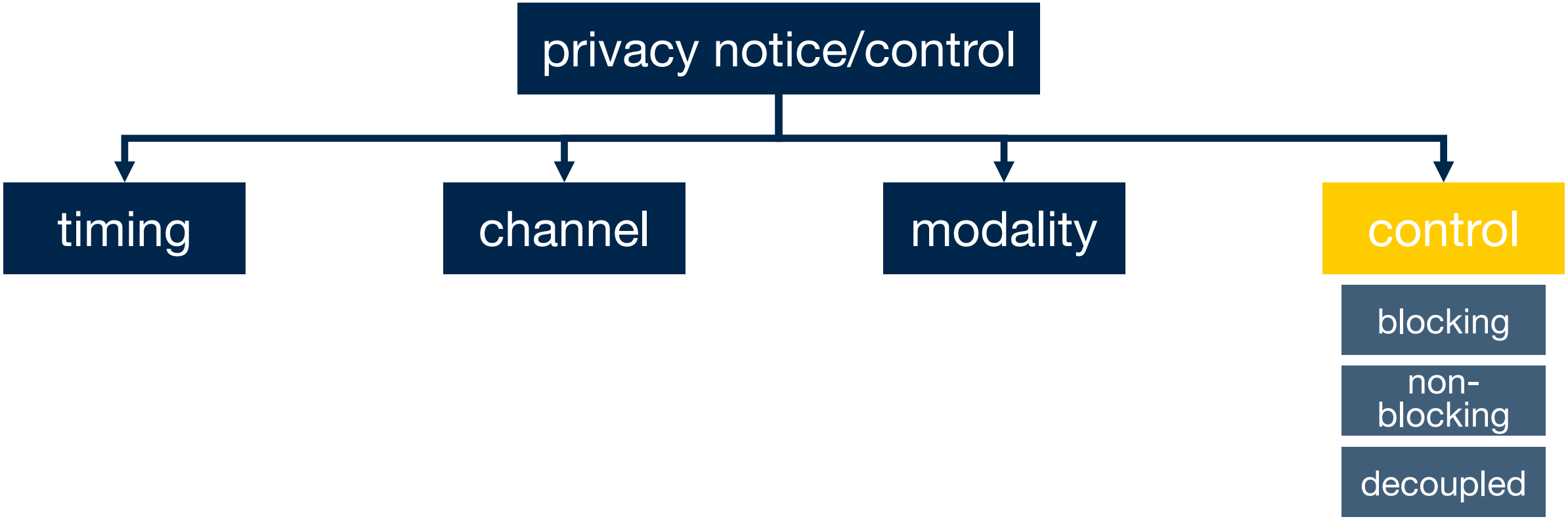

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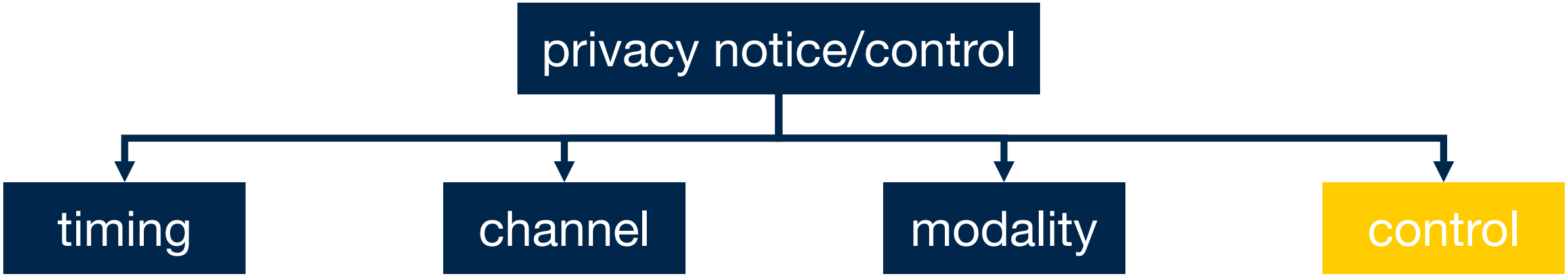

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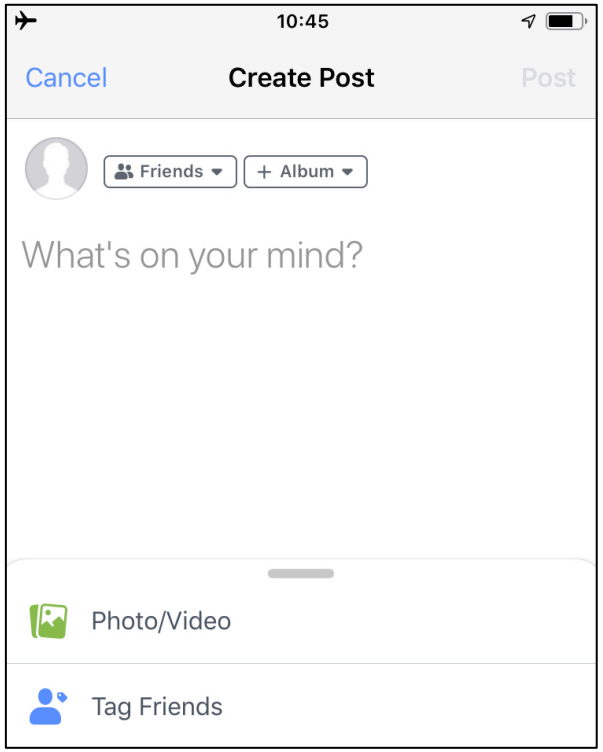
privacy notice/control

- timing
- channel
- modality
- control
  - blocking
  - non-blocking
  - decoupled



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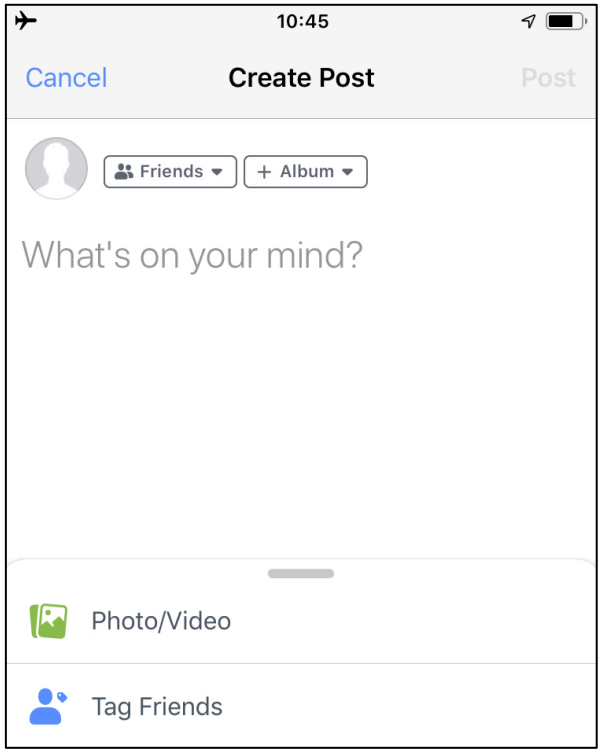

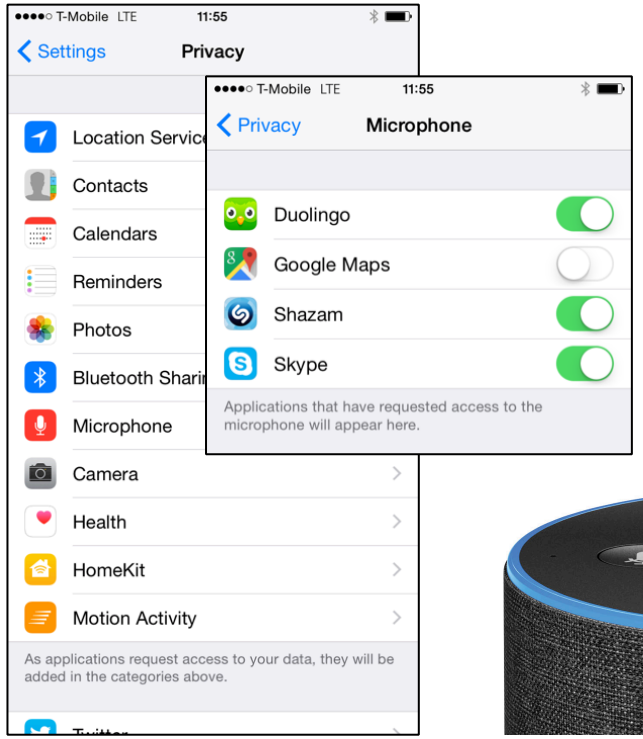

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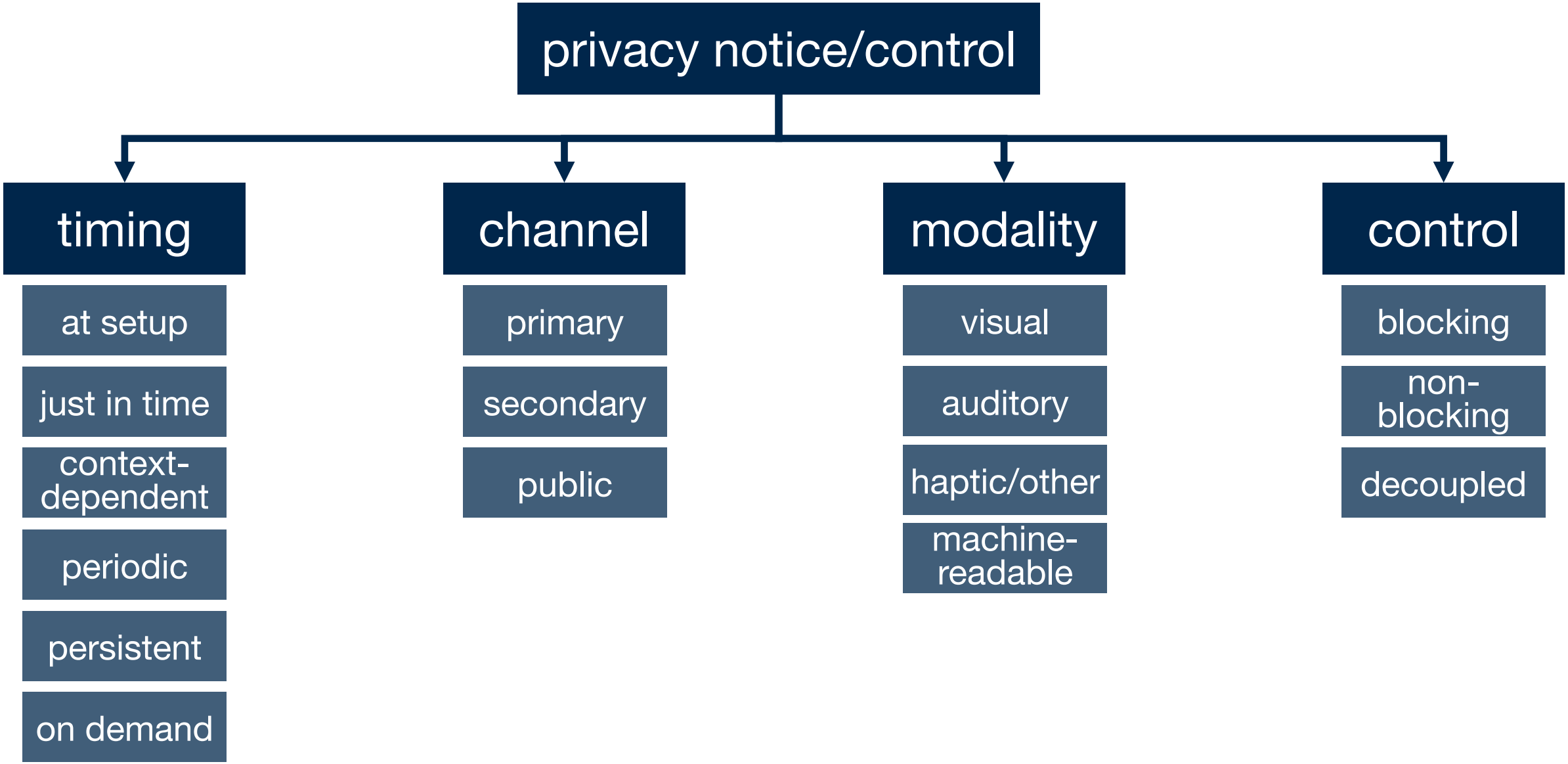

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integrate privacy into user experience

leverage design space

layer privacy interfaces

emphasize unexpected practices

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leverage design space

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emphasize unexpected practices

94% expect collection of **steps**

only 31% expect **location** collection

How Short is Too Short? Implications of Length and Framing on the Effectiveness of Privacy Notices
Joshua Gluck, Florian Schaub, Amy Friedman, Hana Habib, Norman Sadeh, Lorrie Faith Cranor, Yuvraj Agarwal
Symposium on Usable Privacy and Security 2016

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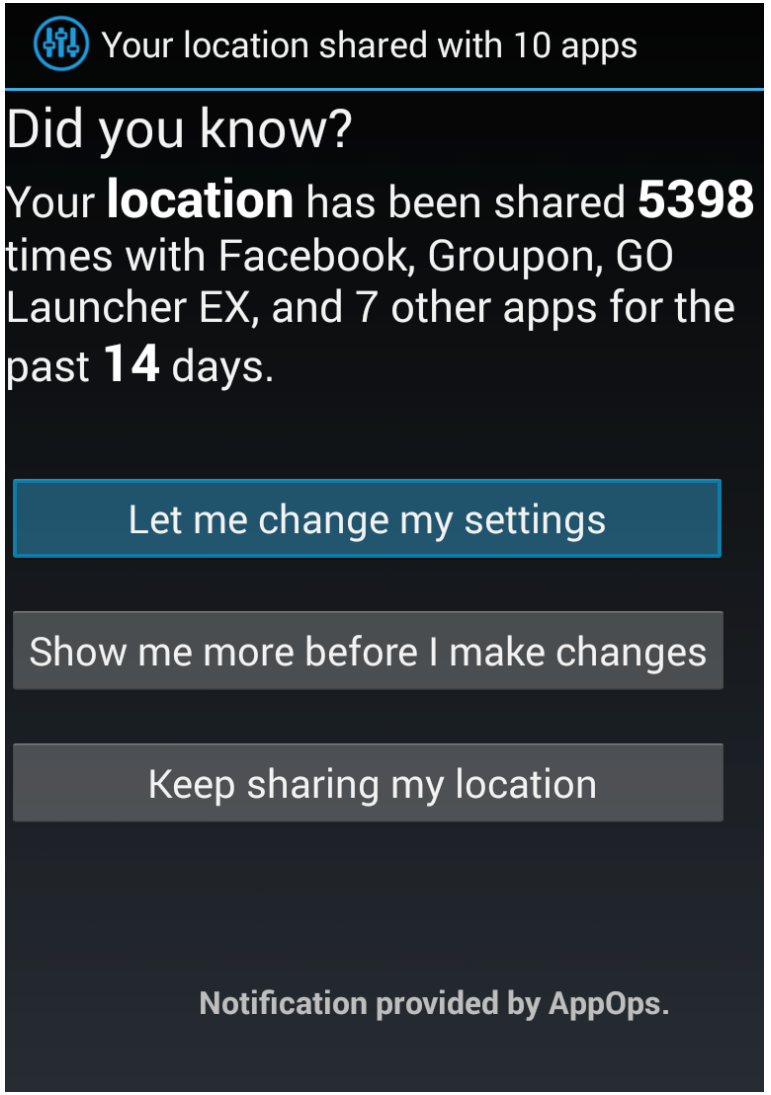
layer privacy interfaces

emphasize unexpected practices



Your Location has been Shared 5,398 Times! A Field Study on Mobile App Privacy Nudging
Hazim Almuhimedi, Florian Schaub, Norman Sadeh, Idris Adjerid, Joshua Gluck, Lorrie Faith Cranor, Yuvraj Agarwal
CHI 2015

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privacy interface
= opportunity to explain practices

explain protections

reduce surprise

build trust

test with users!

user-centric approach to privacy

understand users' privacy needs

relevant, understandable, actionable

integrate privacy into user experience

opportunities for privacy communication

user-centric approach to privacy

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