



# 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

limit liability

reputation

ethics

privacy compliance  
privacy management  
**privacy engineering**

# expert perspective



user  
~~expert~~ perspective

# Privacy Policy



January 1

Published: January 1, 2015

The WP Company LLC ("The Washington Post") is committed to protecting the privacy of your personal information. This Privacy Policy explains how we collect, use, and disclose your information, and how you can control your privacy. This Privacy Policy applies to our website, mobile applications, and other online services. It does not govern or apply to information collected or disclosed by WP Company LLC through other means.

This Privacy Policy covers the following:

[Information We Collect](#)



en français  
suomeksi  
på svenska  
USA  
한국어

Last updated: October 2013

## Rovio Entertainment Ltd Privacy Policy

Rovio Entertainment Ltd, including its affiliates ("Rovio"), collects, stores, and uses your personal information as a data controller in connection with our products, mobile applications, services and websites (together "Services") according to this privacy policy ("Privacy Policy").

For questions and information about Privacy Policy and data subject's rights, please contact us at [privacy\[at\]rovio.com](mailto:privacy[at]rovio.com) or alternatively at Rovio Entertainment Ltd, Legal Department, Keilaranta 17 C, 02150 Espoo, Finland.

For information about our privacy practices related to data from children, please see "Special Note About Children's Privacy" below.

**All Rovio Services are governed by this Privacy Policy and by using or accessing a Service You give consent to the processing, use and disclosure of your data. Please do not install or use the Services if you do not agree to this Privacy Policy.**

Rovio reserves the right to modify this Privacy Policy. Your continued use of Services will signify your acceptance of the changes to this Privacy Policy.

### 1. How We Collect Your data

Likely situations when you make personal data available to Rovio include, but are not limited to: (i) by using Rovio's mobile apps or visiting our website; (ii) registration for Services, contests and special events; (iii) accessing Services using a third party ID, such as social networking services; (iv) subscribing to newsletters; (v) purchasing a product or services through Rovio's online stores or within the app; (vi) requesting technical support; and (vii) other similar features.

**Data Policy**

We give you the power to share your information and connect with friends, family and communities. We use your information to help you do that. We also use your information to help us improve our products and services. We use your information to help us understand how you use our products and services, and to help us improve our products and services. We use your information to help us understand how you use our products and services, and to help us improve our products and services.

- What kinds of information do we collect?
- How do we use this information?
- How is this information shared?
- How can I manage or delete information about me?
- How do we respond to legal requests or prevent harm?
- How our global services operate
- How will we notify you of changes to this policy?

**SOUNDCLLOUD** Explore Search for artists, bands, tracks, podcasts

We have updated our Privacy Policy as of 10 June 2015.

## SoundCloud Privacy Policy

Welcome to SoundCloud®, a service provided by SoundCloud Limited ("SoundCloud"). Your privacy is important to us. This Privacy Policy explains how we collect, store, use and disclose your information when you use soundcloud.com and m.soundcloud.com (together, the "Website"), our mobile and desktop apps (the "Apps") and all related services (together, "Services"), our data, software, APIs and other services provided by SoundCloud.

**Microsoft**

## Privacy & Cookies

View Privacy Statement for:

- Bing & MSN
- CRM
- Microsoft.com
- Mobile Devices
- Office
- Enterprise Services
- Windows Services
- Xbox
- Other Products

Last Updated: October 2014

### Microsoft.com Privacy Statement

This privacy statement applies to Microsoft.com and Microsoft websites, services and products that collect data and display these terms, as well as their offline product support services. It does not apply to Microsoft sites, services and products that do not display or link to this statement or that have their own privacy statements.

Please read the summaries below and click on "Learn More" for more details on a particular topic. You may also select from the products listed above to view that product's privacy statement. Some products, services or features mentioned in this statement may not be available in all markets. You can find more information on Microsoft's commitment to protecting your privacy at <http://www.microsoft.com/privacy>.

### Cookies & Similar Technologies

Most Microsoft websites use "cookies," which are small text files stored on your device, to help operate the sites and collect information about online activity. For instance, we use cookies to store your preferences and settings; help with sign-in; provide targeted ads; combat fraud; and analyze site operations.

We also use web beacons to help deliver cookies and compile analytics. These may include web beacons from third-party service providers.

You have a variety of tools to control cookies and similar technologies, including:

- Browser controls to block and delete cookies;

# no one reads privacy policies



en français  
suomeksi  
på svenska  
USA  
한국어

Last updated: October 2013

**Rowio Entertainment Ltd Privacy Policy**

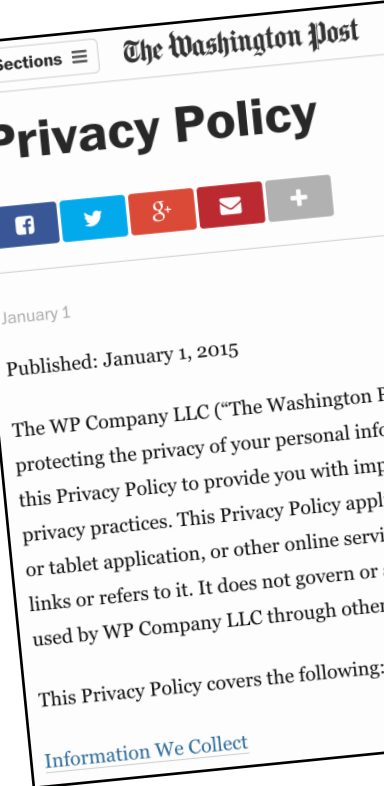
Rowio Entertainment Ltd, including in order to provide and develop Rowio ("Privacy Policy").

For questions and information about Rowio Entertainment Ltd, Legal Department

For information about our privacy practices, please contact us at [privacy@rowio.com](#)

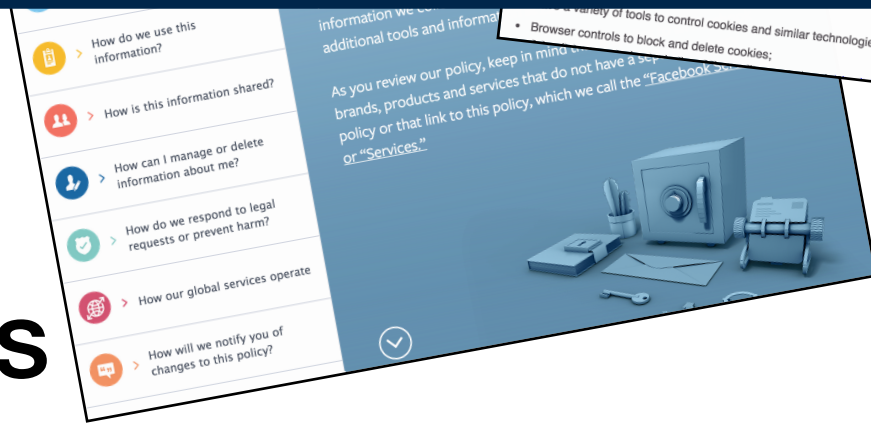
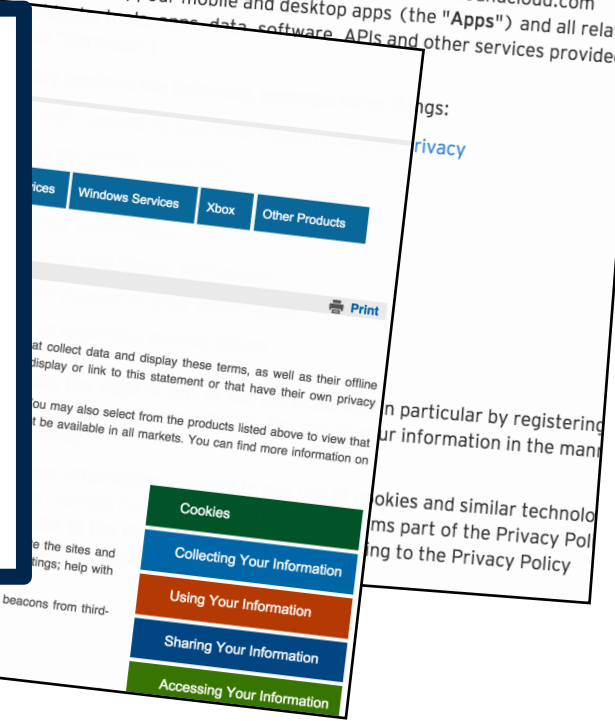
**All Rowio Services are governed by this Privacy Policy. Please do not disclose your data.**

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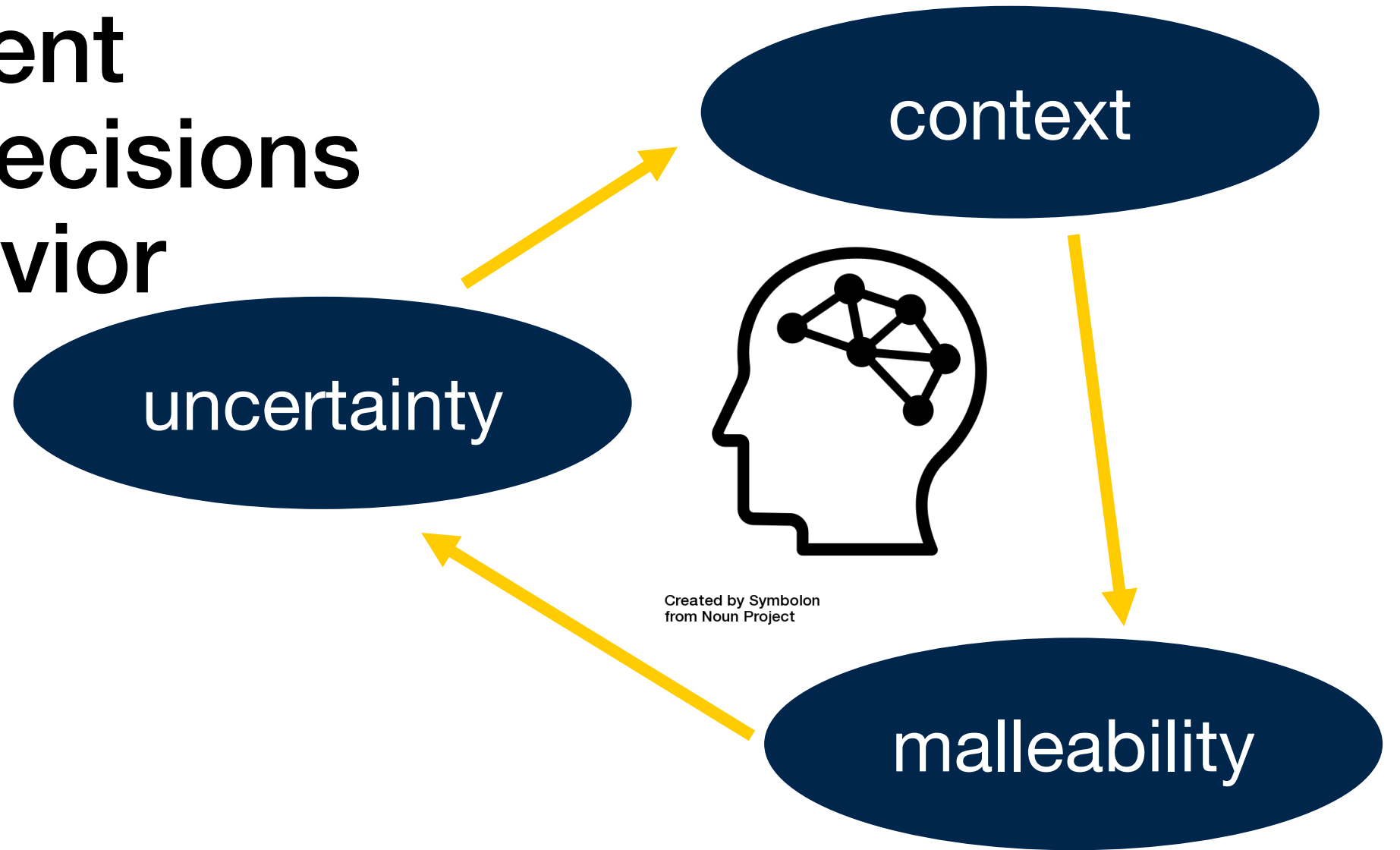
**time to read policies of websites you visit: 244 hours per year**

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



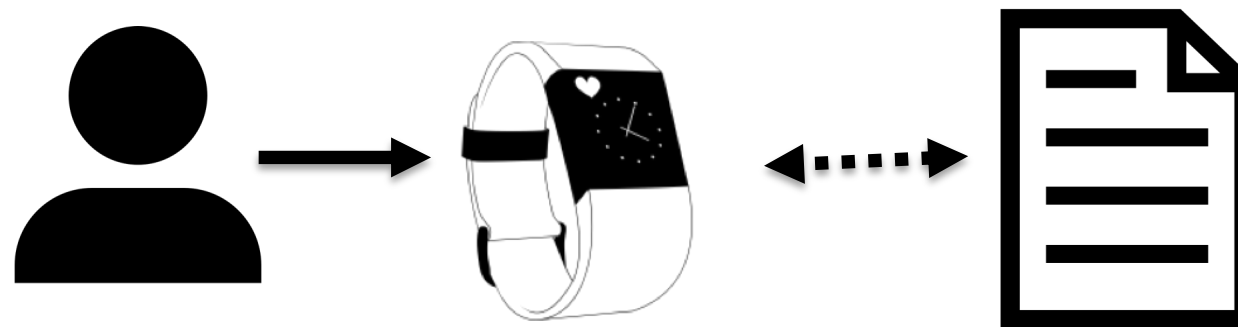
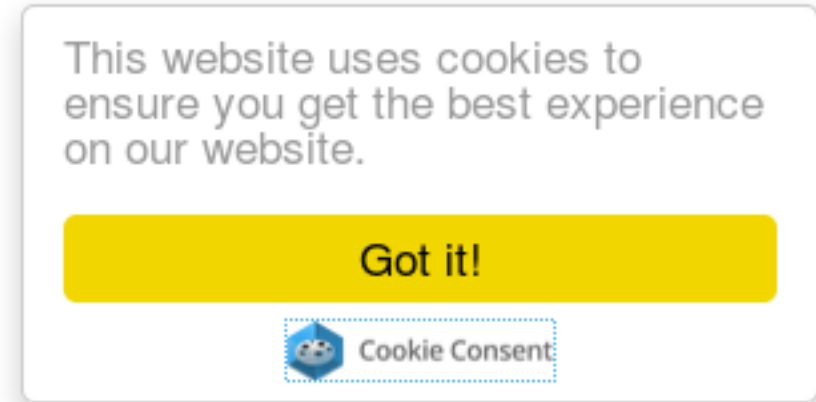
**no one reads privacy policies**

# inconsistent privacy decisions and behavior



# limited mental models of data practices

no one uses  
privacy settings



# privacy resignation

no one reads  
privacy policies

limited  
mental  
models

## ~~user~~ expert perspective

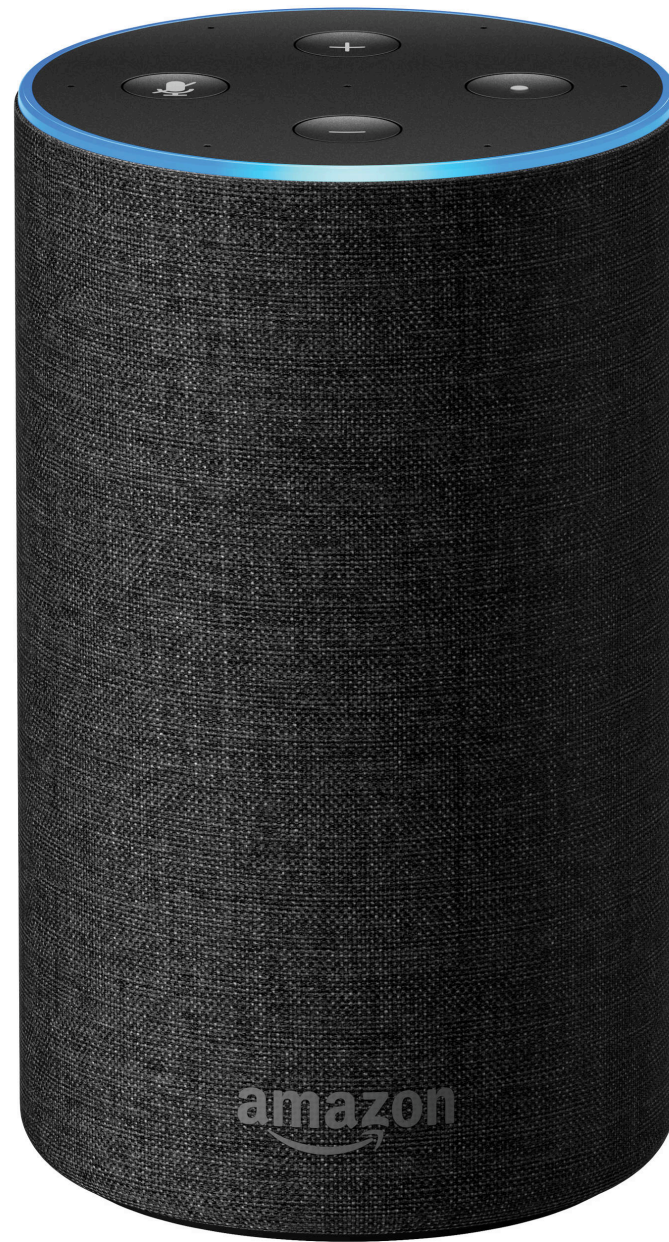
inconsistent privacy  
decisions and behavior

no one uses  
privacy settings

privacy resignation



example:  
**smart  
speakers**



wake word

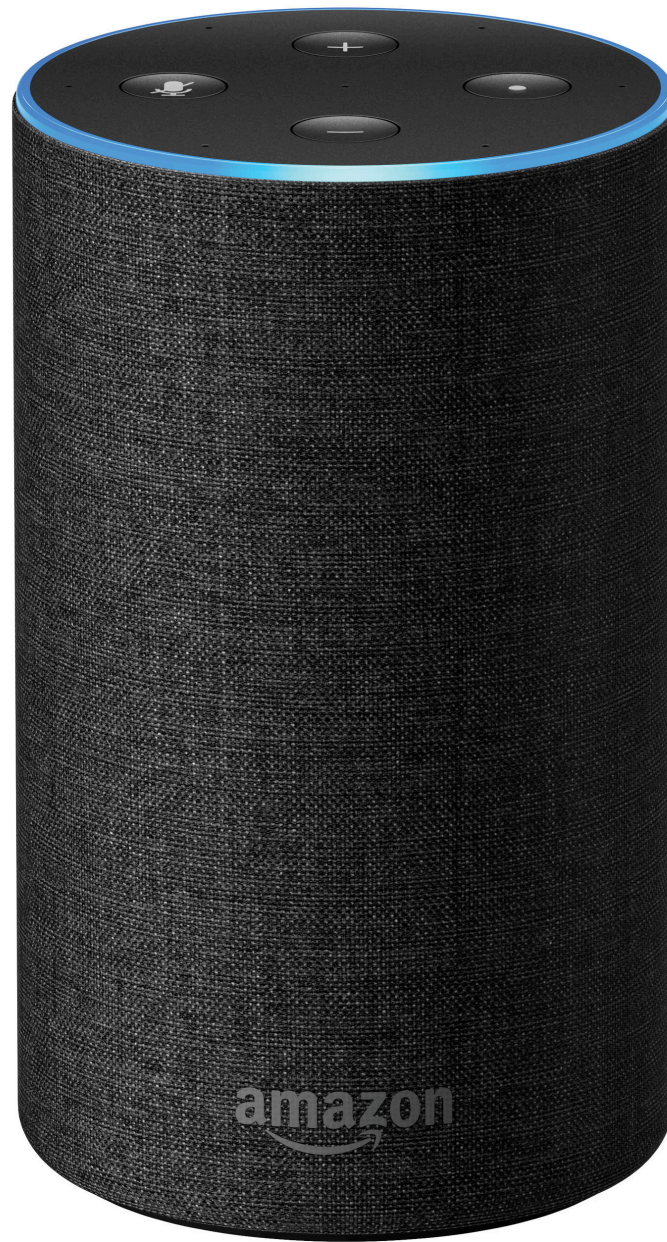
mute button

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

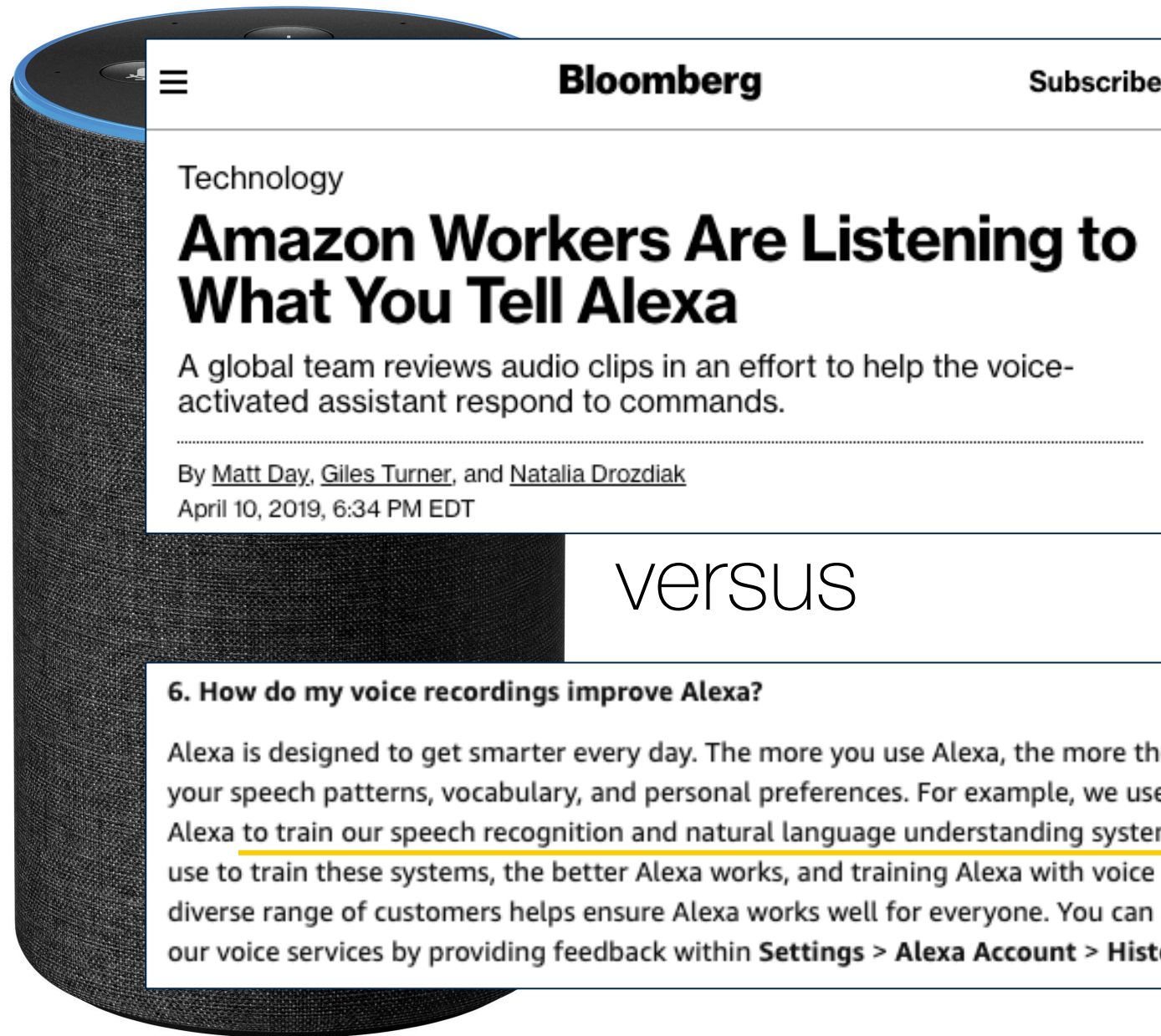
**“Alexa, are you Listening?”: Privacy Perceptions, Concerns, and Privacy-seeking Behaviors with Smart Speakers**

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

### 6. How do my voice recordings improve Alexa?

Alexa FAQ

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



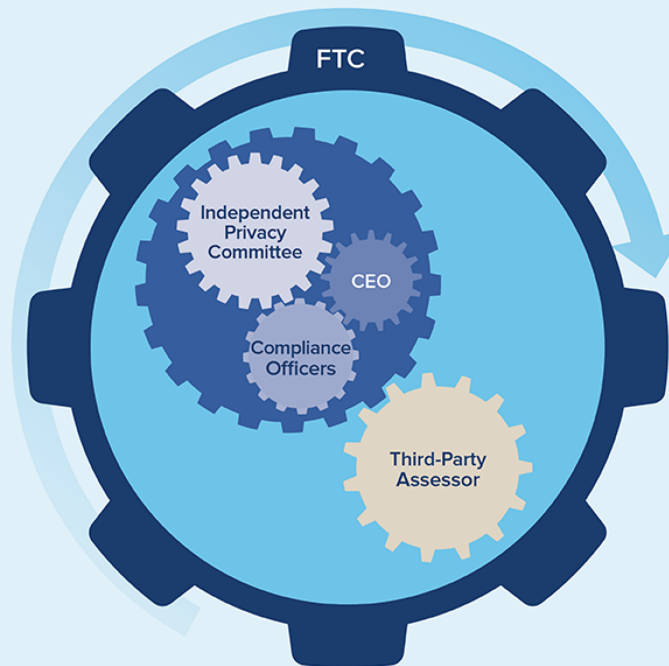
## FTC Imposes \$5 Billion Penalty and Sweeping New Privacy Restrictions on Facebook

**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](https://www.ftc.gov)



suspicion and  
distrust

(social) media  
outrage

## **why care about user perspective?**

liability

waste of  
resources

how to design privacy ~~past~~ <sup>for</sup> user?\*

\*assuming it's not all intentional



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

privacy policy

data protection

privacy impact  
assessment

data  
minimization

user mental models,  
expectations, needs

privacy policy

data protection

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user mental models,  
expectations, needs

privacy user experience

privacy policy

data protection

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user mental models,  
expectations, needs

privacy user experience

user mental models,  
expectations, needs

privacy user experience

relevant

**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

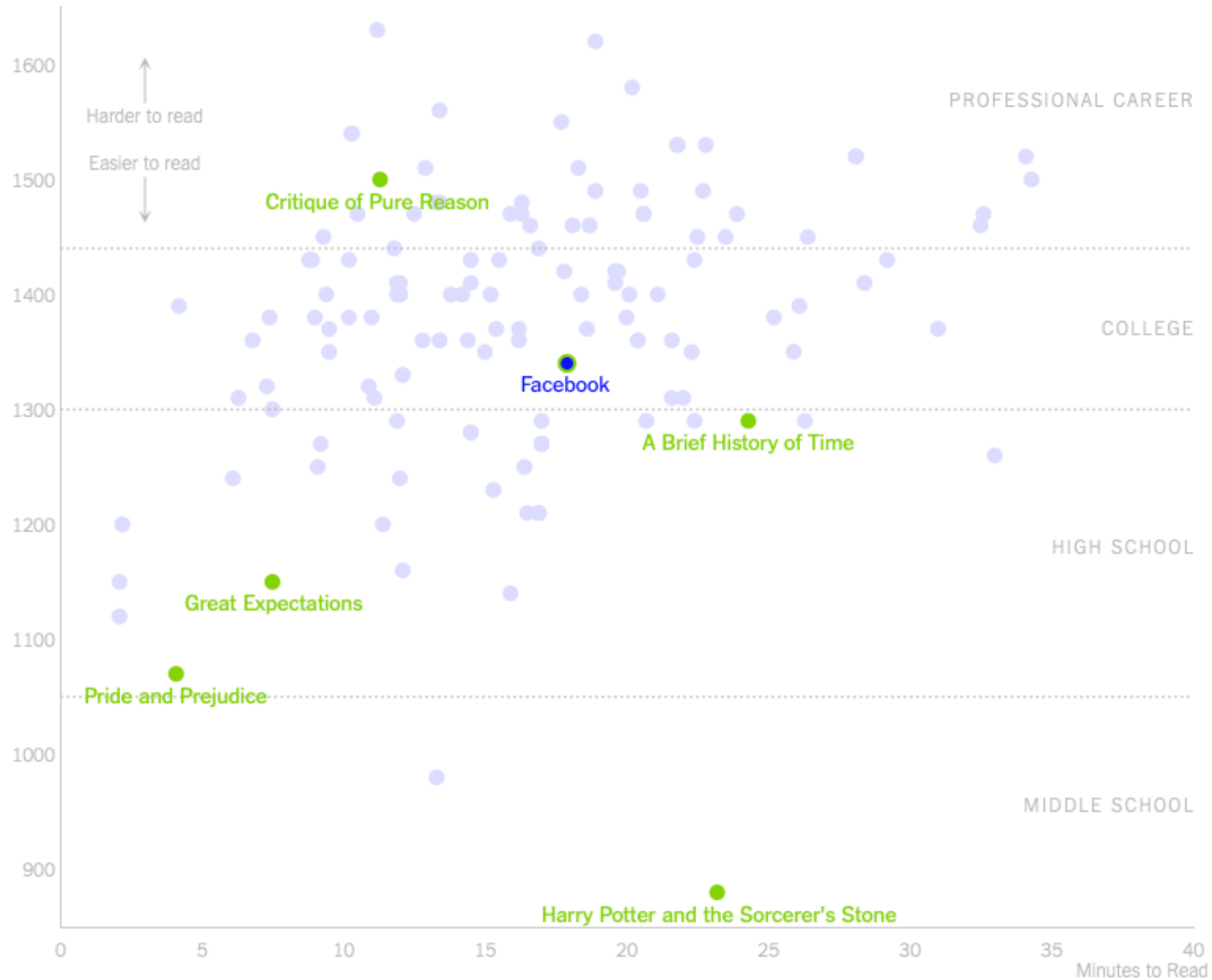
user mental models,  
expectations, needs

privacy user experience

relevant

understandable

**understandable** reading level



**understandable** reading level  
length

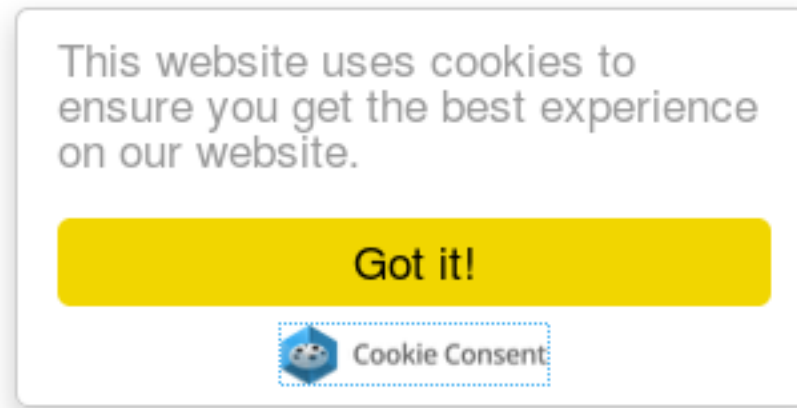
**3,044 words** average privacy policy  
post-GDPR

**42% longer** than 2016

reading level

length

**understandable** level of abstraction



user mental models,  
expectations, needs

privacy user experience

relevant

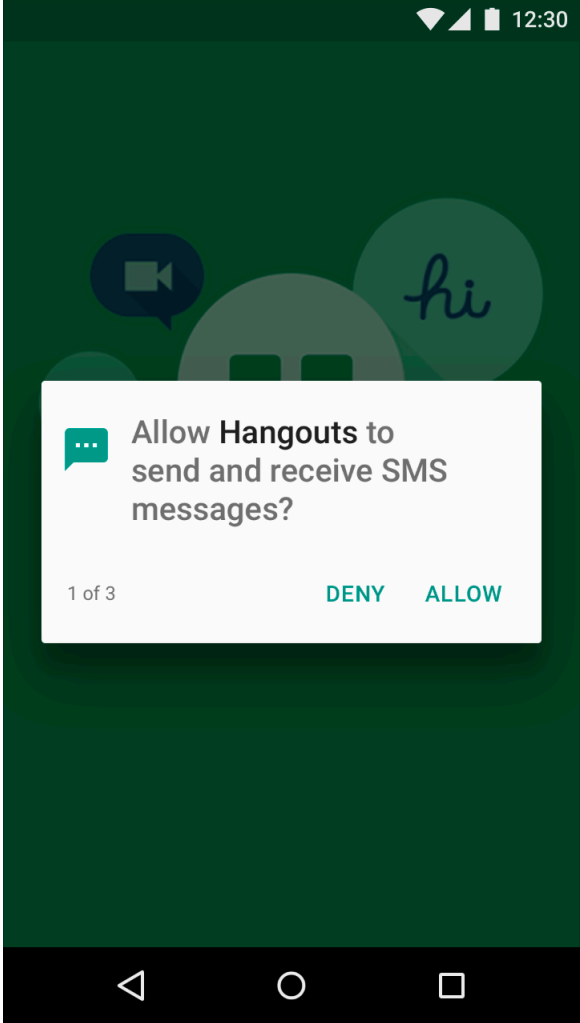
understandable

actionable



**actionable** information  
choice

# actionable information choice



user mental models,  
expectations, needs

privacy user experience

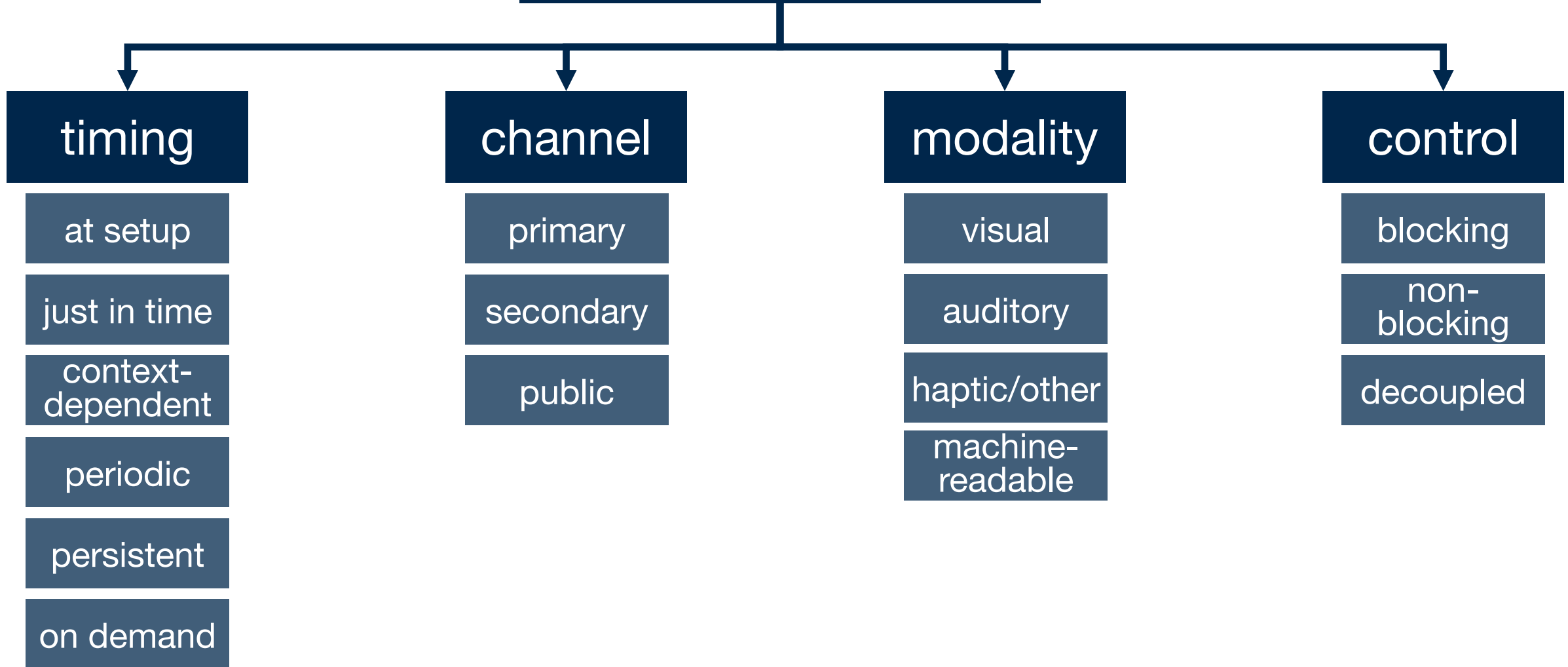
relevant

understandable

actionable

**integrate **privacy** into  
**user experience****

# privacy notice/control



## A Design Space for Effective Privacy Notices

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

SOUPS 2015

# privacy notice/control

timing

at setup

just in time

context-  
dependent

periodic

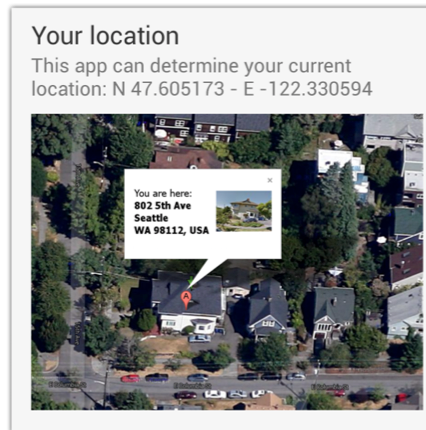
persistent

on demand

channel

modality

control



Harbach et al. CHI '14

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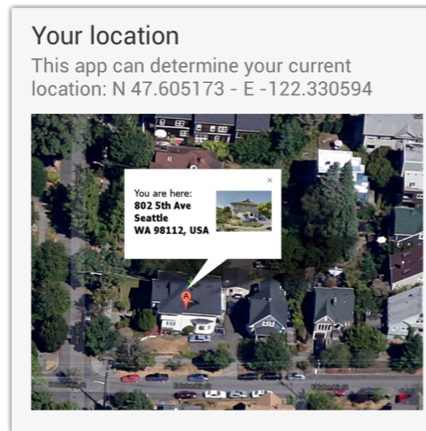
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Harbach et al. CHI '14

"Cluster" Would Like to Access Your Contacts  
This allows Cluster to let you choose which friends to invite to shared photo albums.

Don't Allow

OK

modality

control

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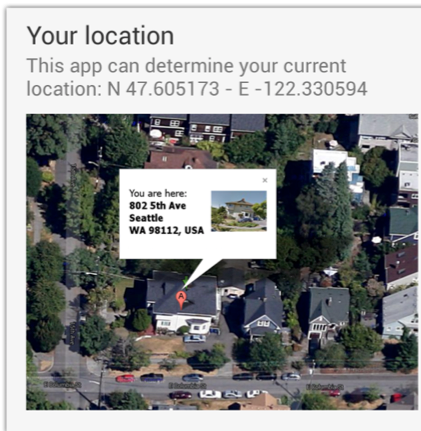
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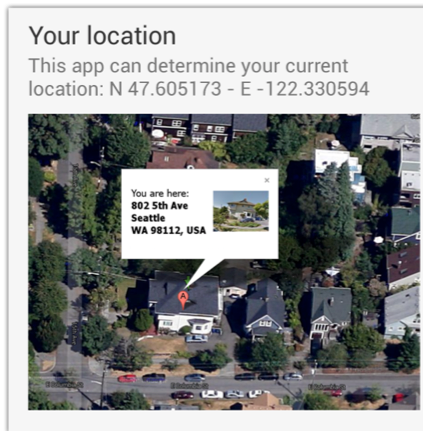
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Harbach et al. CHI '14

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Don't Allow

OK

"Swarm" has been using your location in the background.  
Do you want to continue allowing this?

Settings

Continue

modality



control

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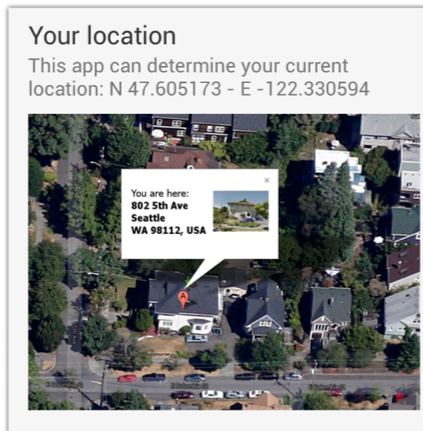
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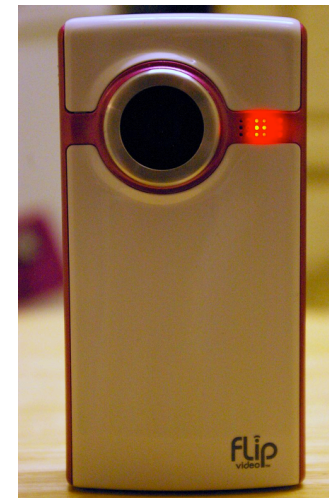
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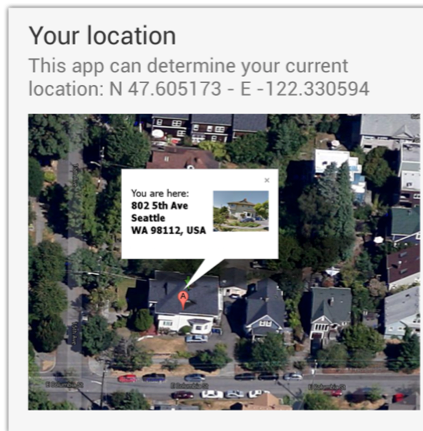
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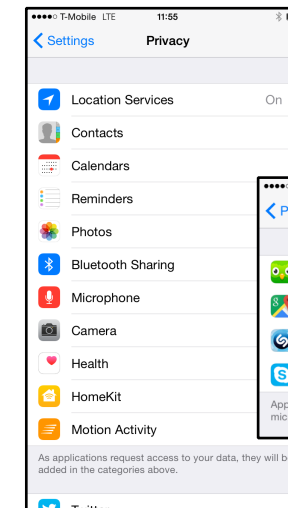
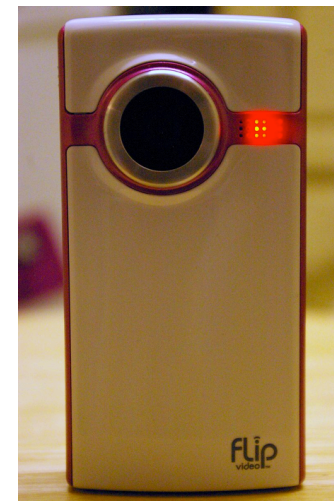
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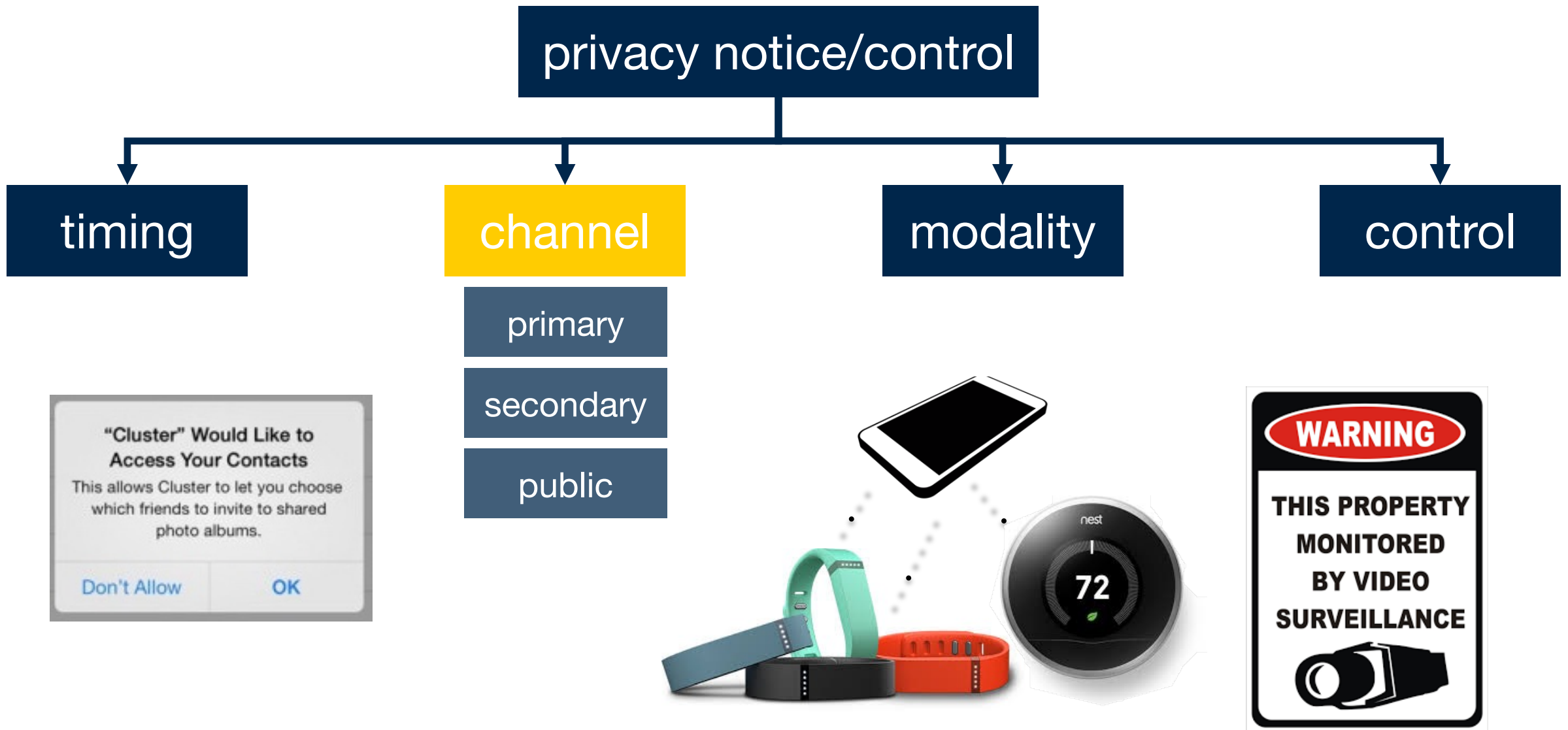


control

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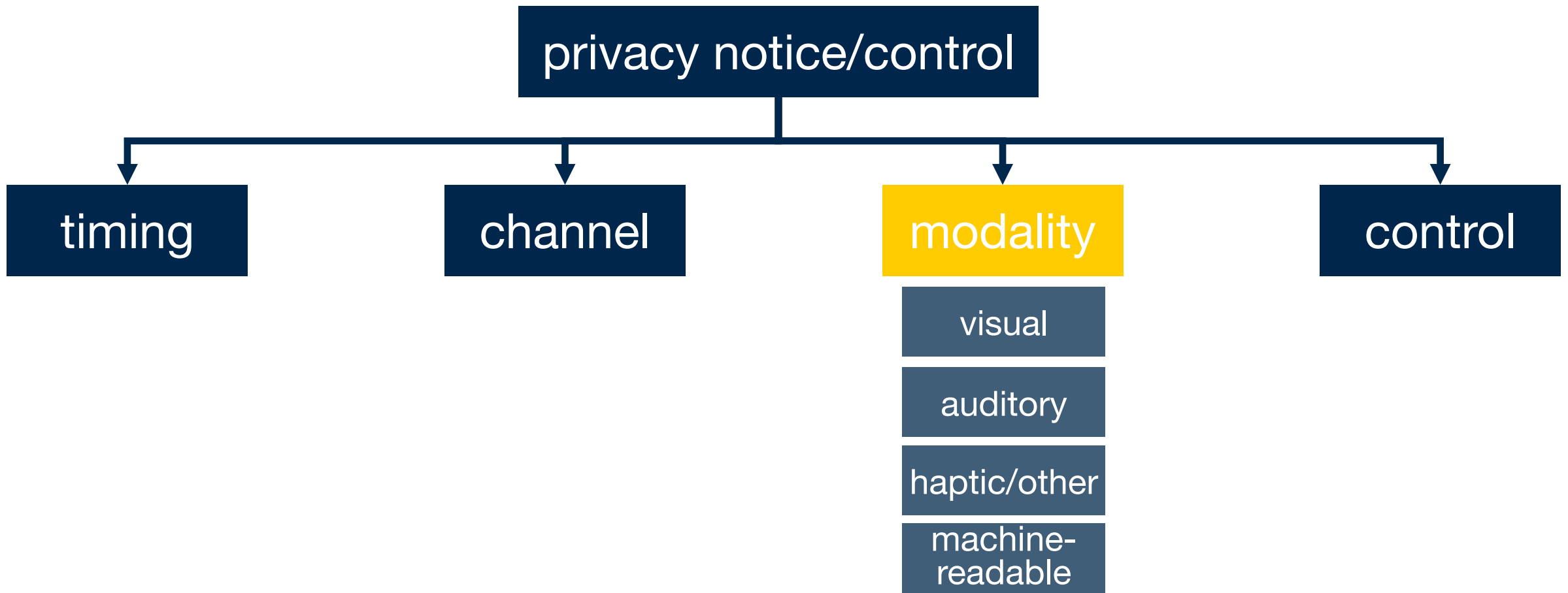
SOUPS 2015



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visual

auditory

haptic/other

machine-readable

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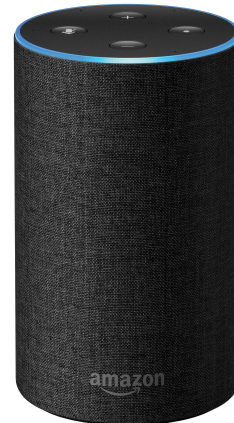
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*"Alexa, delete everything I said today"*

visual

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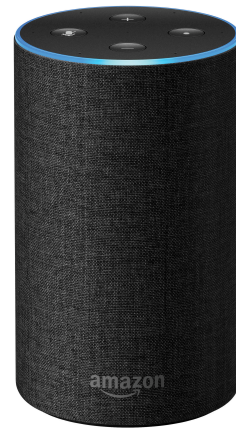
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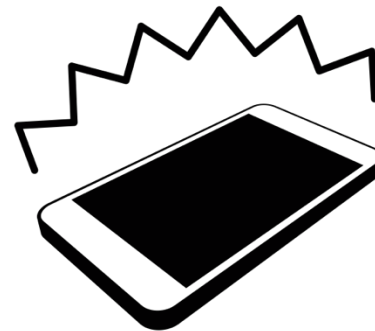
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modality

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visual

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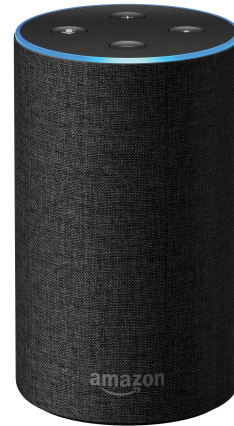
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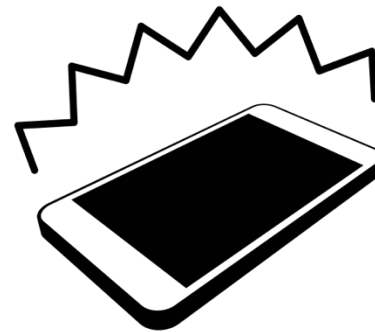
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*"Alexa, delete everything I said today"*

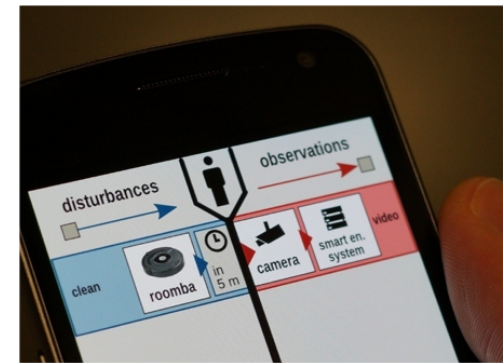


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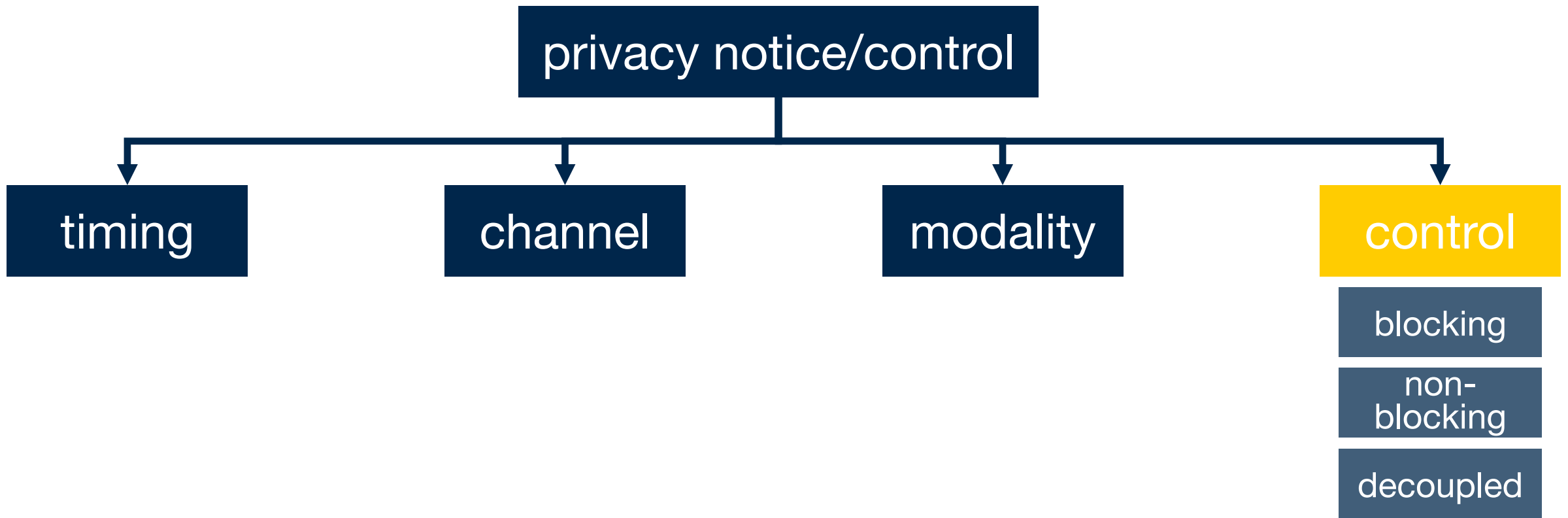


Schaub et al.  
IEEE Pervasive Computing 2015

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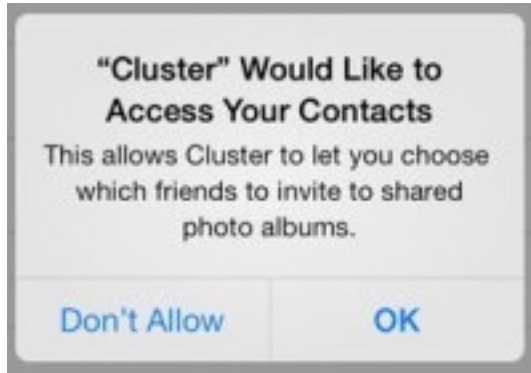
modality

control

blocking

non-blocking

decoupled



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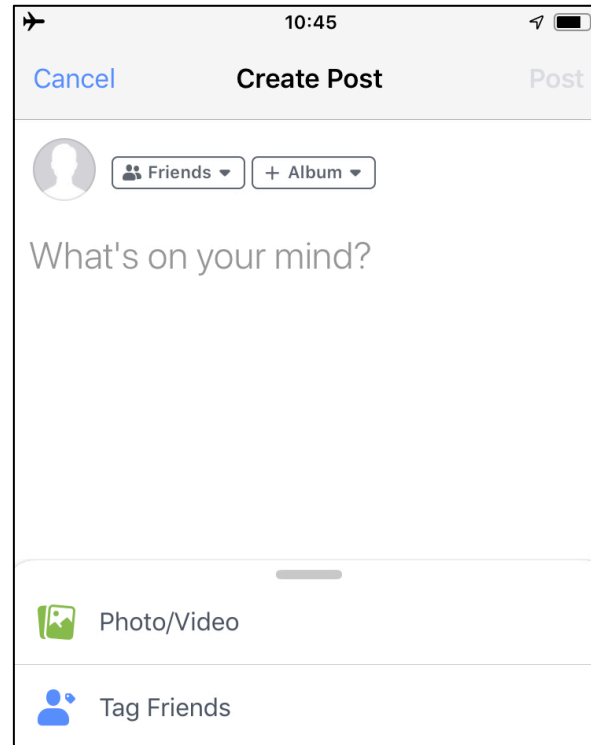
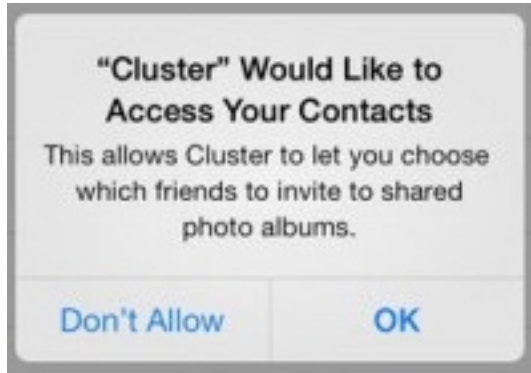
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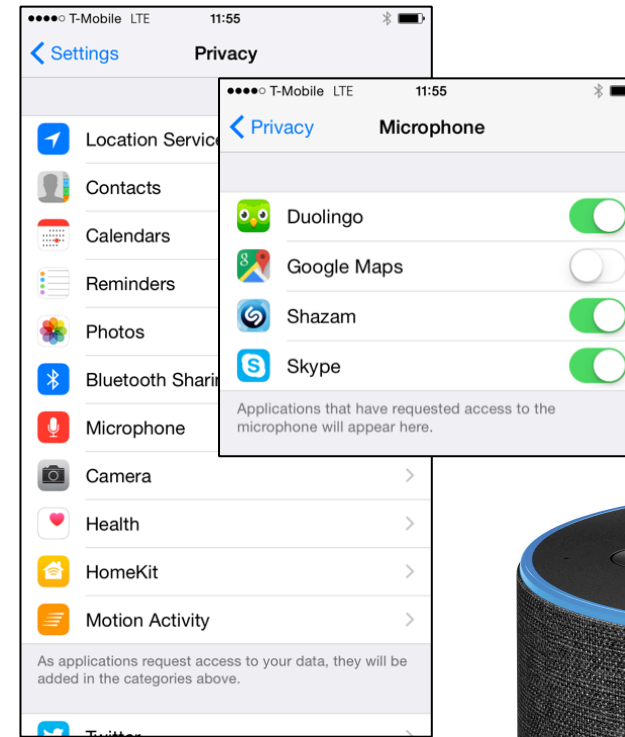
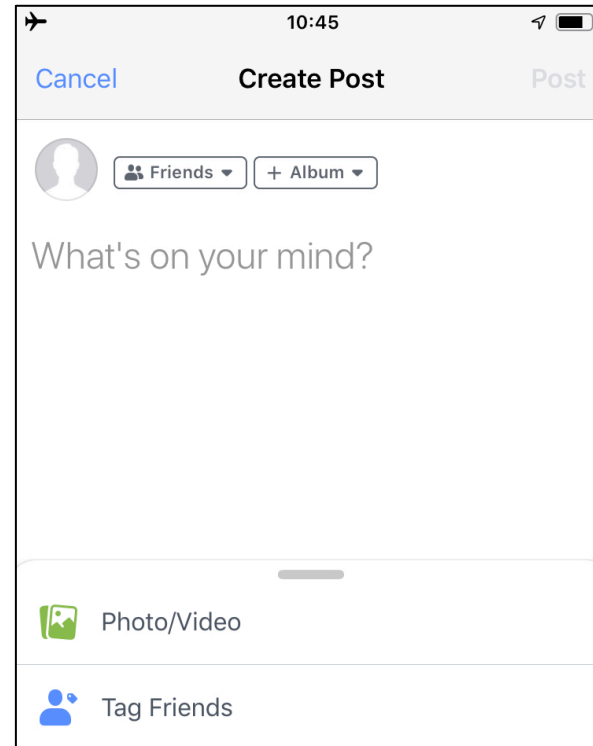
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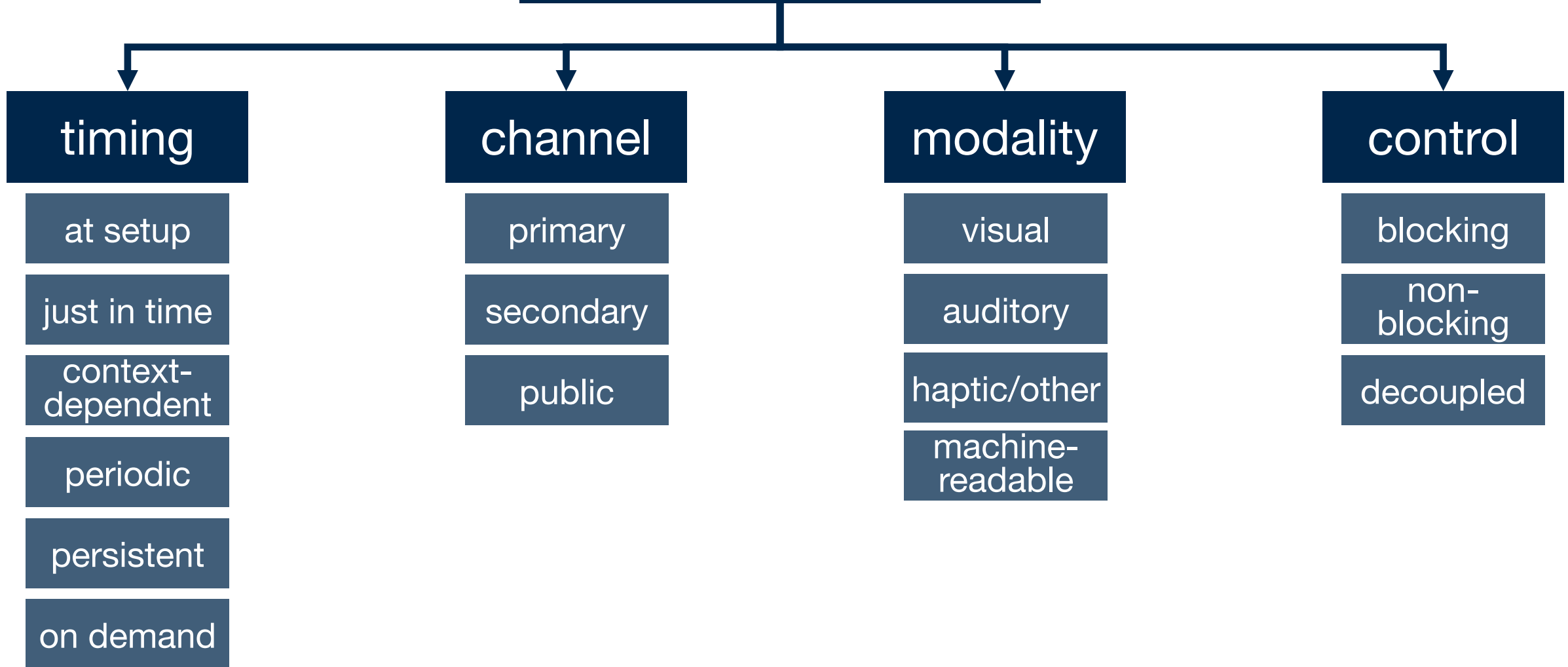
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SOUPS 2015

# integrate **privacy** into **user experience**

leverage design space

layer privacy interfaces

emphasize unexpected practices

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leverage design space

layer privacy interfaces

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**94%** expect  
collection of **steps**

**only 31%** expect  
**location** collection

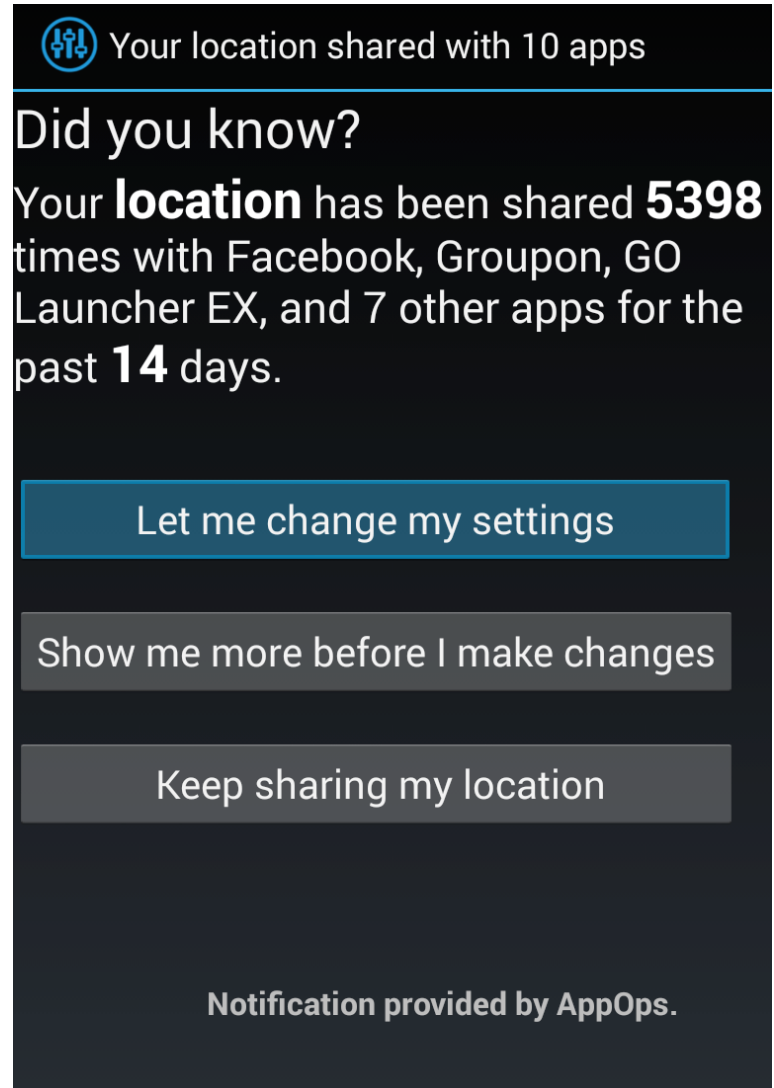


# integrate **privacy** into **user experience**

leverage design space

layer privacy interfaces

emphasize unexpected practices



**Your Location has been Shared 5,398 Times! A Field Study on Mobile App Privacy Nudging**

Hazim Almuhammedi, Florian Schaub, Norman Sadeh, Idris Adjerid, Joshua Gluck, Lorrie Faith Cranor, Yuvraj Agarwal

CHI 2015



**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

understand users' privacy **needs**

**relevant, understandable, actionable**

**integrate** privacy into user experience

**opportunities** for privacy communication

**florian schaub**  
fschaub@umich.edu



**SCHOOL OF INFORMATION**  
UNIVERSITY OF MICHIGAN

funding:



INSTITUTE of  
Museum and Library  
SERVICES



**FUTURE OF  
PRIVACY  
FORUM**