Privacy Tool User Studies

Lorrie Faith Cranor
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Carnegie Mellon University
CyLab

isr institute for SOFTWARE RESEARCH

Engineering &
Public Policy

CyLab Usable Privacy & Security Laboratory
HTTP://CUPS.CS.CMU.EDU

Evaluating notice and choice tools

- Lots of tools

  - Icons, short notices, opt-out tools, etc.

- Are they effective

  - Do users understand them? Can they use them effectively?

  - We need to run user studies to find out

- Carnegie Mellon University research

  - Privacy nutrition labels

  - Effectiveness of opt-out tools

  - Effectiveness of ad-choices icon

  - User understanding of Android permissions

  - Impact of varying Android permission display

- Recommendation for user studies

Towards a privacy "nutrition label"

- **Standardized format**
  - People learn where to find answers
  - Facilitates policy comparisons

- **Standardized language**
  - People learn terminology

- **Brief**
  - People find info quickly

- **Linked to extended view**
  - Get more details if needed

Standardizing Privacy Notices: An Online Study of the Nutrition Label Approach [Kelley, Cesca, Bresee, and Cranor, CHI 2010] http://www.cylab.cmu.edu/research/techreports/2009/tr_cylab09014.html
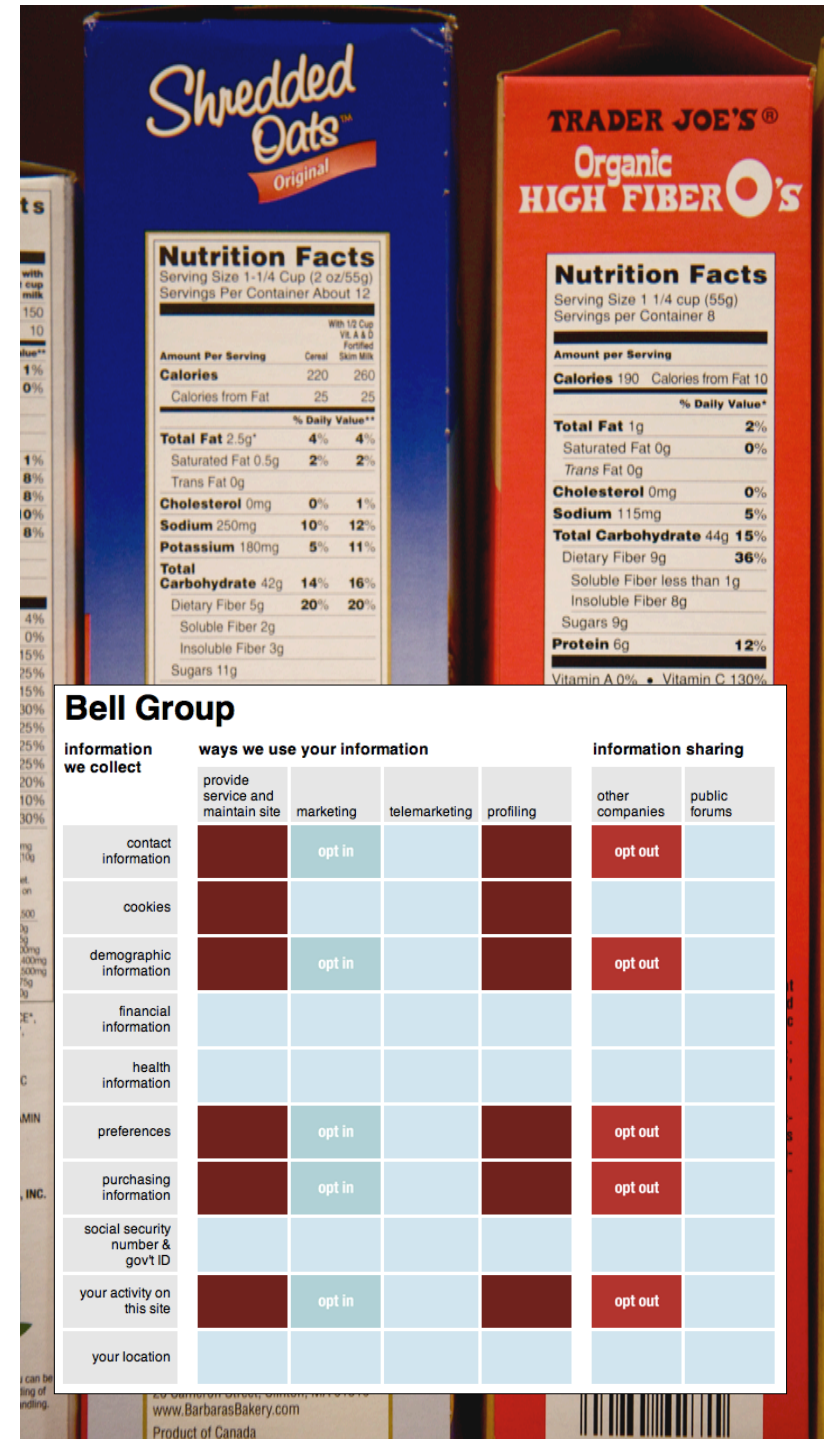
OBA notice and choice studies

Smart, Useful, Scary, Creepy:
Perceptions of Behavioral Advertising
[Ur, Leon, Cranor, Shay, Wang, SOUPS 2012, Privacy Papers for Policy Makers]
http://www.cylab.cmu.edu/research/techreports/2012/tr_cylab12007.html

Why Johnny Can't Opt Out: A Usability Evaluation of
Tools to Limit Online Behavioral Advertising
[Leon, Ur, Balebako, Cranor, Shay, Wang, CHI 2012 best paper honorable mention]
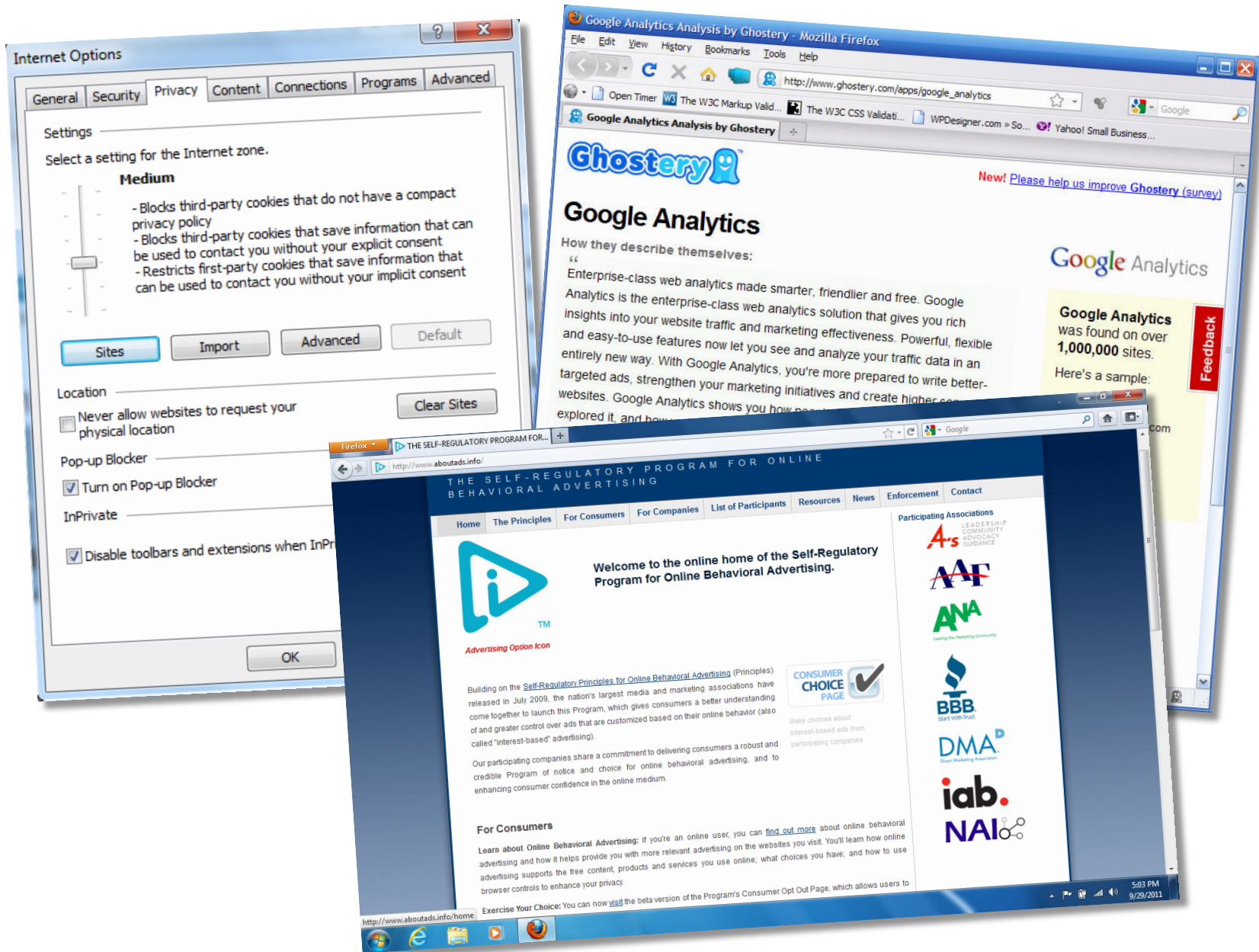http://www.cylab.cmu.edu/research/techreports/2011/tr_cylab11017.html

What do online behavioral advertising disclosures
communicate to users?
[Leon, Cranshaw, Graves, Ur, Xu, WPES 2012]
http://www.cylab.cmu.edu/research/techreports/2012/tr_cylab12008.html

OBA choice mechanisms

August 2011 lab study

- 48 in-depth semi-structured interviews with Pittsburgh residents

- Screening survey to select non-technical participants interested in testing privacy tools

- $30 payment

Semi-structured interview

- Initial knowledge and opinions about OBA

- Informational video

- Knowledge and opinions post video

- Usability testing – each participant assigned to test 1 of 9 tools

  – Task 1: Learn about and install the tool
  – Task 2: Change tool settings
  – Task 3: Browsing scenarios

- Understanding of tool and usability

- Exit questionnaire

Users have little knowledge about OBA

- Don't know when it happens

  – Think it is based only on search and social networks

- Don't understand how it works

  – Don't know about or understand tracking technology
  – Some associate it with identity theft

- Don't know about tools to control it

  – Some awareness that deleting cookies could help
  – Don't know about opt-out cookies

- Don't know which companies do it

  – Haven't heard of most online ad companies and don't associate major companies with ads
  – Don't have meaningful way to choose which companies should be allowed to track them

Icon and tagline are ineffective

- Most didn't recognize icon

- Some didn't realize it was clickable

- Some thought it was for selling ads

- Some thought it would lead to more ads

- Most would not click it

- None realized clicking leads to opt-out page

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Users have concerns about OBA, but see benefits

- Users don't like advertising, especially pop-ups

- Find OBA creepy, happens behind their backs

- Lack of understanding, they assume the worst

- Some users appreciate getting more relevant ads

- Users want to be in control, want controls in web browser or security software

- Preferences tend to be based more on context than advertising company

Major problems with all opt-out tools tested

- Communication problems and confusing interfaces
  - Jargon
  - Users not sure where to look

- Inappropriate defaults

- Users can't distinguish between trackers

- Need for feedback

- Users want protections that don't break websites

December 2011 online study

- Focus on OBA disclosures

  – Icons, taglines, and landing pages

- Recruited participants on
  Amazon Mechanical Turk
  for "Internet usage survey"

- 1,505 responses analyzed

- Average completion time: 24 minutes

- $1 payment

First exposure to OBA disclosures

Second exposure to OBA disclosures

- Icons tested

- Taglines tested
  - AdChoices
  - Why did I get this ad?
  - Interest based ads
  - Learn about your ad choices
  - Configure ad preferences
  - Sponsor ads
  - 'No tagline'

Findings

- OBA icons and taglines are not noticed

- "AdChoices" was outperformed by other taglines

  – Doesn't communicate well that ads are targeted or that icon links to choice mechanism

  – "Why did I get this ad?" and "Configure ad preferences" perform better

- Even with best tagline, most users don't realize this is a choice mechanism, are afraid to click

- Opt out mechanisms seem not to align with users expectations

  – Users think they opt-out of tracking, not just OBA

Android permissions studies

- Interview study with 20 Android users

  - Semi-structured interviews about how and why they download apps, security and privacy issues

- App selection study

  - Laboratory study with 20 Android users + online study with 378 participants

  - Asked them to choose apps for a friend in our simulated app store with different privacy displays

P.G. Kelley, S. Consolvo, L.F. Cranor, J. Jung, N. Sadeh, D. Wetherall. A Conundrum of Permissions: Installing Applications on an Android Smartphone. Workshop on Usable Security. March 2, 2012, Bonaire.http://infosecon.net/usec12/papers/kelley-usec12.pdf
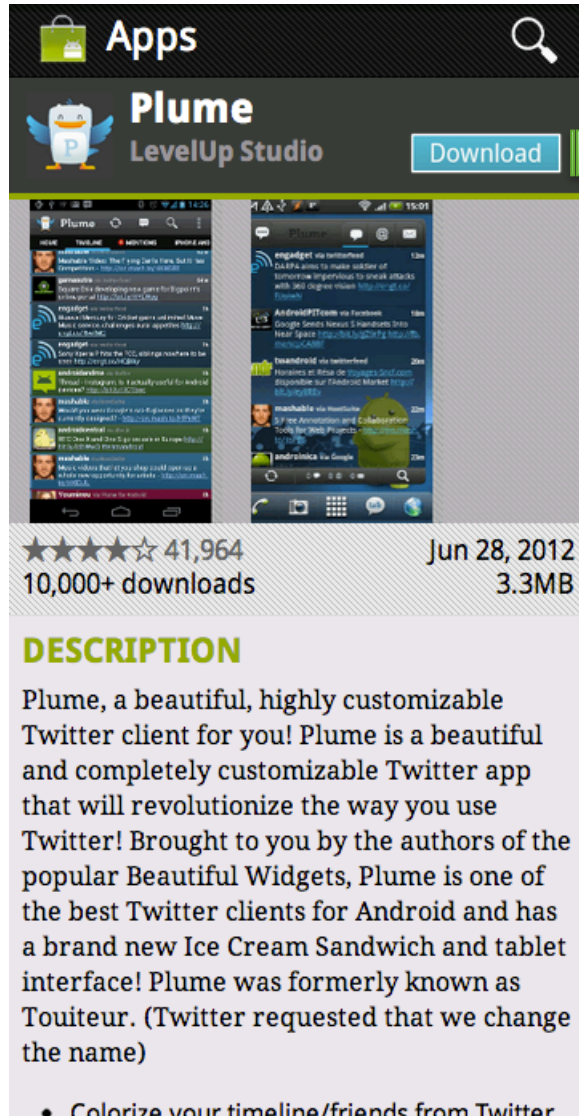
P.G. Kelley, N. Sadeh, L. F. Cranor. Privacy as Part of the App Decision-Making Process. *In progress.*

Android interview findings

- Users do not understand what Android permissions mean

  – Vague and misleading terms, jargon

- Users mostly ignore permission screens

- Users believe that "Android" protects them from bad apps

App selection study

Application Display
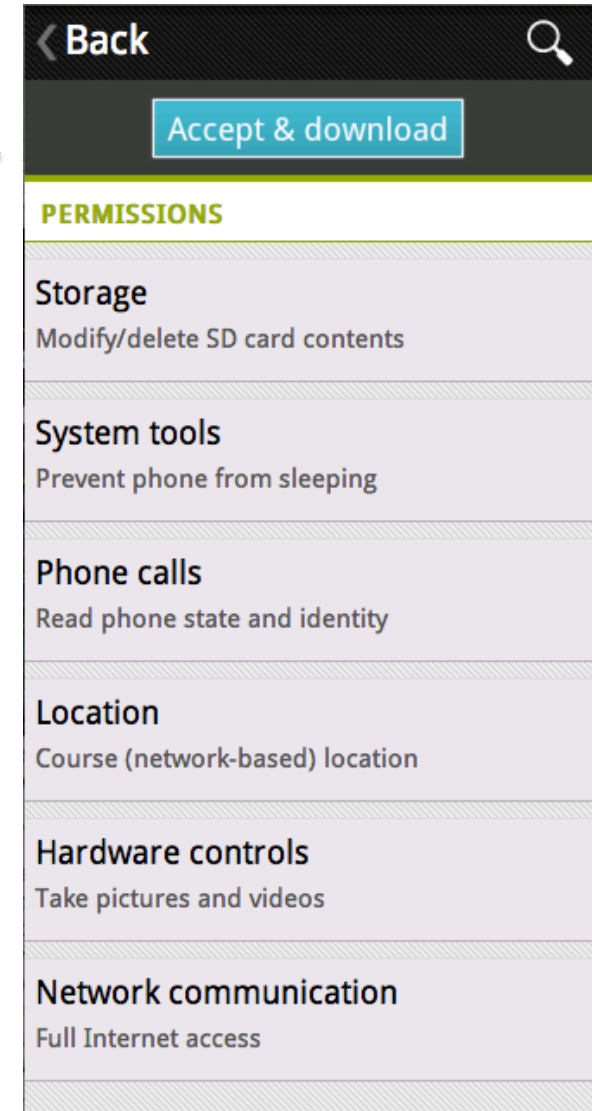
What everyone sees
when they click
the app Plume.

In the Android Market
(Google Play), after
clicking download users
see permissions

Permissions Display

After scrolling down users in our study saw...

Standard Market

Permissions Inline

Privacy Facts Label

App selection study findings

- Showing permissions/privacy info on Android Market screen influenced most participants to select apps that requested fewer permissions, all things being equal

  - But participants influenced more by major brands and star ratings than privacy

  - Privacy facts label had stronger influence than inline permissions

- Participants who care more about privacy more likely to take advantage of this info

Recommendation:
Iterative process with user studies

- Figure out what to communicate

  - What data practices?

    - What do users care about?

    - What do experts think users should understand?

  - User choices

    - What choices are available?

    - How do users exercise them?

- Figure out when and how to communicate

  - What needs to be communicated without clicking? with clicking? with clicking multiple times? before installing apps? while using apps? through pubic education campaigns?

  - What format? icons? nutrition label? short notice? long notice? interactive? personalized/context-sensitive? meta-data?

- Evaluate