
Privacy Preferences



Edgardo Vega

Privacy Preferences

- Introduction to P3P (2002)
- User Interfaces for Privacy Agents (2006)

Lorrie Faith Cranor



Praveen Guduru

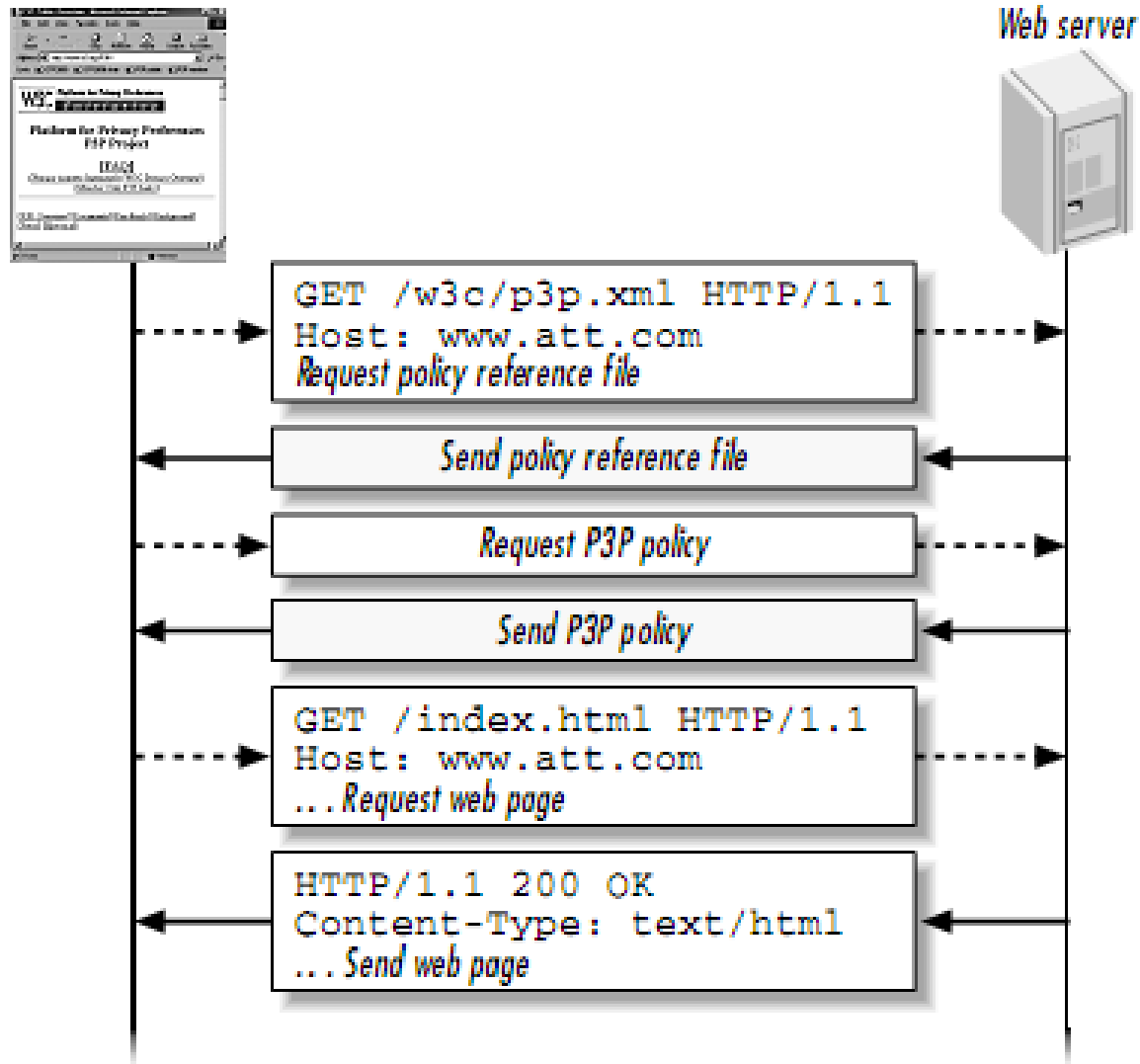
Manjula Arjula

INTRODUCTION TO P3P

P3P

- Platform for Privacy Preferences
 - Goals
 - Enable the end user to understand what data will be gathered by the site, how the data will be used, and allow the user to have control over that data
 - Enable the websites to show their privacy policies in a standard, computer-readable format
 - Specification
 - Standard, computer-readable format for privacy policies
 - Protocol to read and process privacy policies automatically

How P3P Works



Major components of a P3P policy

ENTITY—contact information for the business, organization, or person who owns the site

ACCESS—whether individuals can find out what personal data a site keeps about them in its databases (6 types of access policies are specified)

DISPUTES—how to resolve privacy-related disputes with the site (customer-service desk, privacy seals, relevant privacy laws, etc.); also includes REMEDIES subelement

STATEMENT {

- DATA**—the kinds of data collected (17 data CATEGORY elements and dozens of specific data elements are specified)
- PURPOSE**—how collected data is used and whether individuals can opt-in or opt-out of any of these uses (11 types of purposes and an “other-purpose” are specified, each may take a “required” attribute)
- RECIPIENT**—whether and under what conditions data may be shared and whether there is an opt-in or opt-out (6 types of recipient policies are specified; each may take a “required” attribute)
- RETENTION**—policies for periodic purging of collected data (5 types of retention policies are specified)
- CONSEQUENCE**—human-readable explanation of site’s data practices

Policy File

```
<POLICIES xmlns="http://www.w3.org/2002/01/P3Pv1">
<POLICY discuri="http://p3pbook.com/privacy.html"
  name="policy">
  <ENTITY>
  <DATA-GROUP>
    <DATA
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    </DATA>
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    </DATA>
    <DATA ref="#business.name">Web Privacy With P3P</DATA>
  </DATA-GROUP>
  </ENTITY>
  <ACCESS><nonident/></ACCESS>
  <STATEMENT>
    <CONSEQUENCE>We keep standard web server logs.</CONSEQUENCE>
    <PURPOSE><admin/><current/><develop/></PURPOSE>
    <RECIPIENT><ours/></RECIPIENT>
    <RETENTION><indefinitely/></RETENTION>
    <DATA-GROUP>
      <DATA ref="#dynamic.clickstream"/>
      <DATA ref="#dynamic.http"/>
    </DATA-GROUP>
  </STATEMENT>
</POLICY>
</POLICIES>
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          ref="#business.contact-info.online.email">privacy@p3pbook.com
        </DATA>
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        </DATA>
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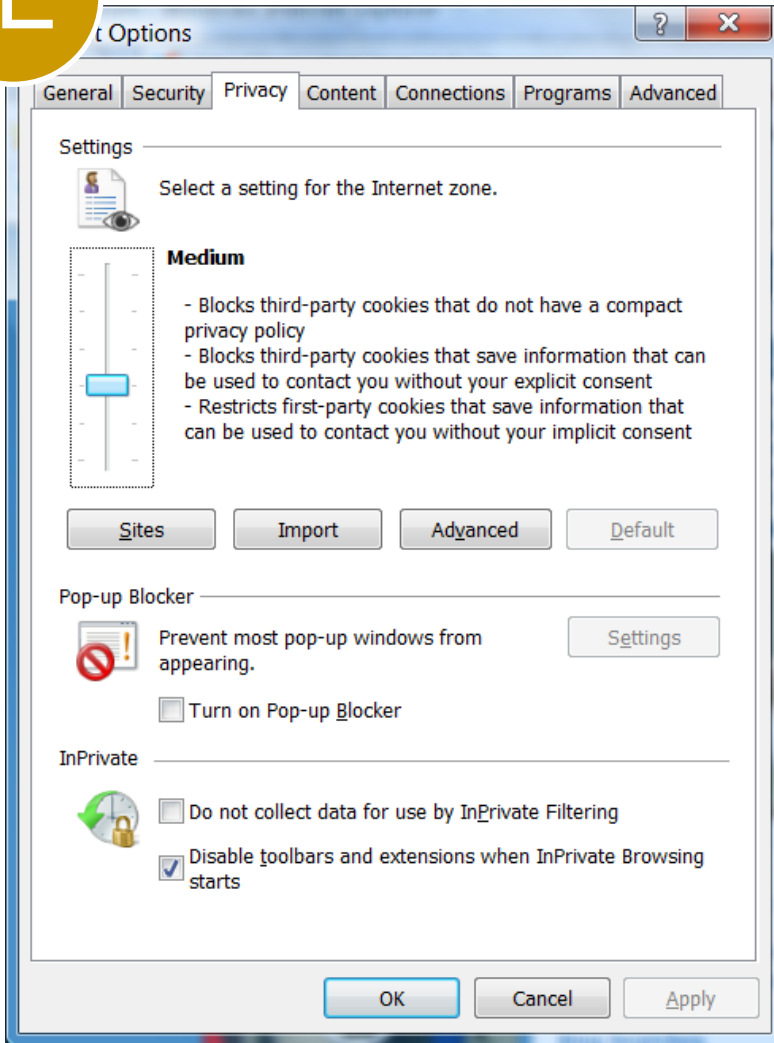

User Agents

- Generic term to describe any P3P implementation
 - Web browsers
 - Mozilla
 - IE6
 - Netscape 7
 - Electronic Wallet
 - ISP software
 - Standalone application
 - Search Engines

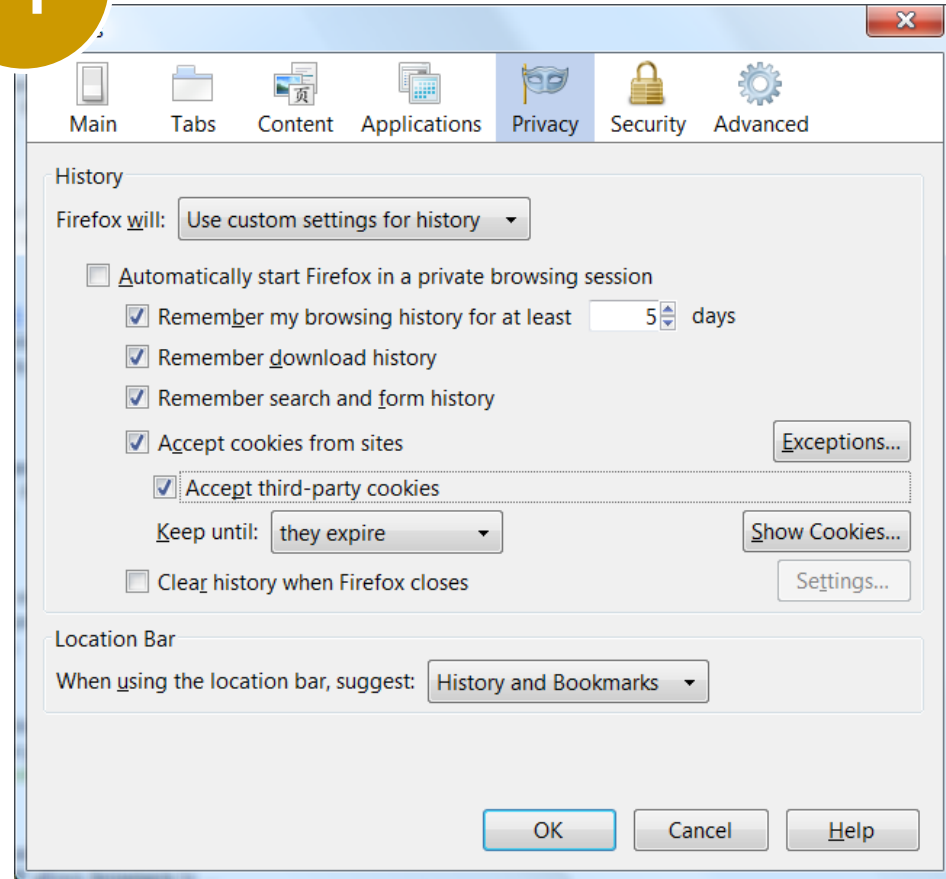
Implementations

- Compact Policies
 - Cookie filtering decisions only
- P3P Preference Exchange Language (APPEL)
 - Use by an organization to create custom P3P files to distribute to end user
- Privacy Bird and Fox

IE



FF



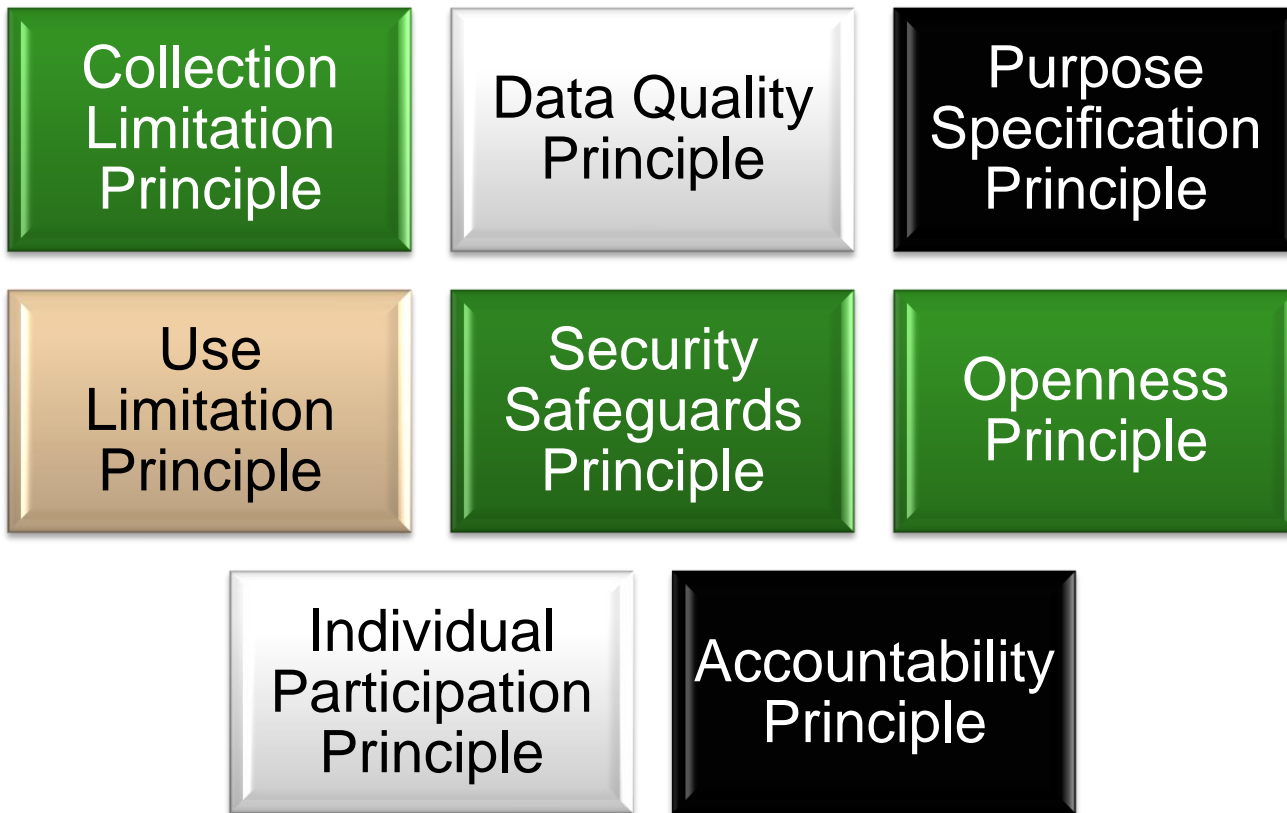
PRIVACY BIRD

Issues

- Interface for informing users about website privacy policies
- Interface for configuring a user agent to take actions based off the user's privacy preferences

Role

- Privacy Enhancing Technologies (PETs) is part of Fair Information Practices (FIPs)



Challenges

- Privacy policies are difficult
- User preferences are also complex and have nuances
- Users are unfamiliar with the terms
- Users are inexperienced in expressing their preferences
- Users have contradictory expectations

Design

W3C Prototype



Privacy Minder



AT&T/Microsoft P3P Browser Helper Object

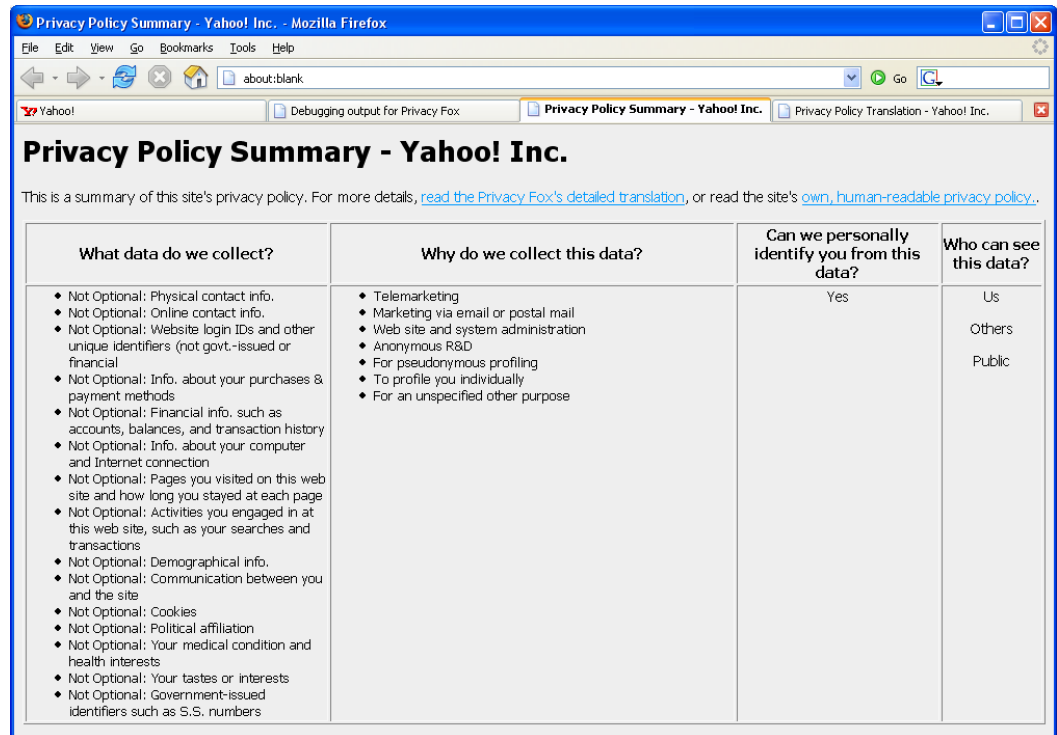


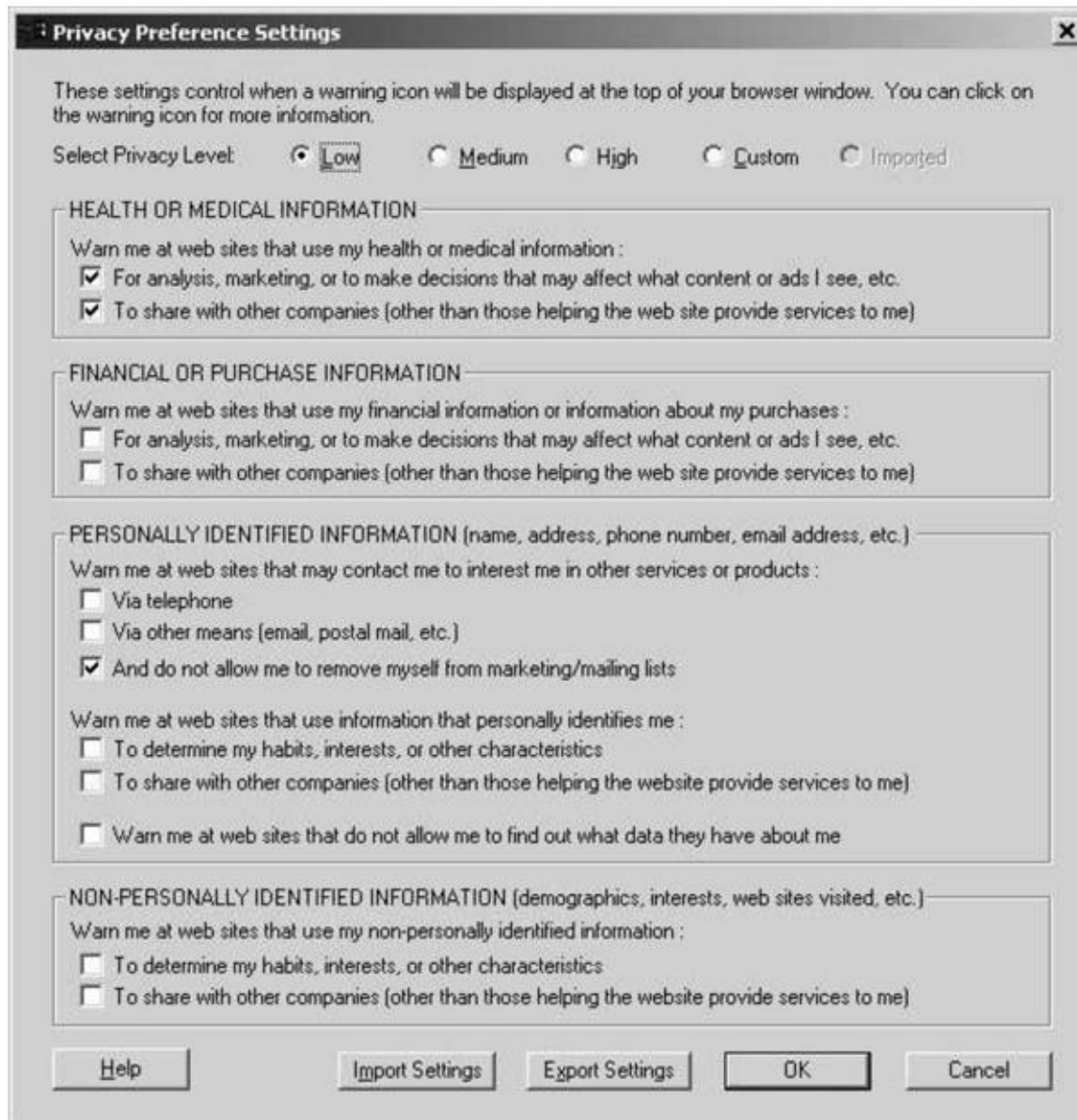
AT&T Usability Testing Prototype

Privacy Bird

- A P3P user agent
- Add on for IE 5.01, 5.5, and 6.0

User Interface





Design Decisions

Vocabulary
Subset

Bundling Similar
Vocabulary
Elements

Removing
Jargon

Using
Vocabulary
Elements in
Combination

Layered
Interfaces

Default Settings

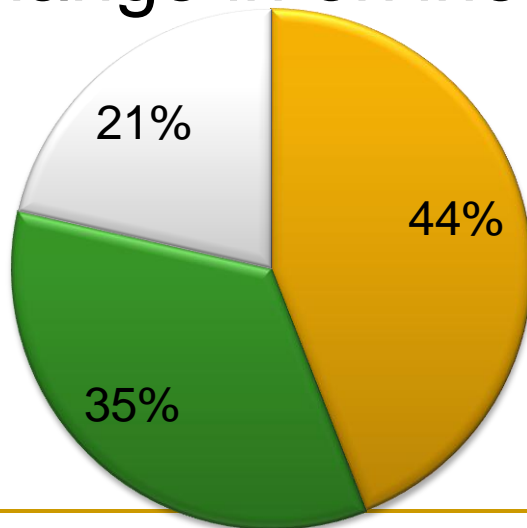
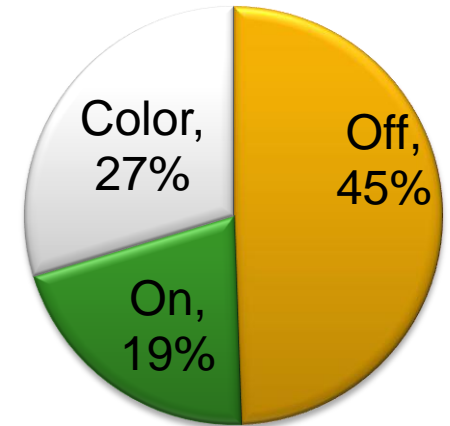
Icons and
Earcons

Evaluation

- Usefulness and usability of P3P user agents from the perspective of their users
- Controlled laboratory setting as well as how it is used in practice
- Bellotti's privacy-sensitive design criteria

User Survey

- Yellow bird appeared at most websites
- Strong feelings about the optional sound effects
- Change in online behavior at 88%



- Fewer Form and Opt-Out
- Stopped Visiting Websites
- Compare and Prefer Sites

Laboratory Study

- 12 experienced Microsoft Internet Explorer users who had never used Privacy Bird or the P3P features in IE6
- Given a brief tutorial on Privacy Bird beta 1.2 and the IE6 P3P features
- Answer four questions about a website's privacy policy.
- Control was to ask user to read an privacy policy at a different website

Questions

1. Whether or not the site might send a visitor unsolicited email
2. Whether or not the site might share a visitor's email address with another company that might send the visitor unsolicited email
3. Whether or not the site uses cookies
4. Determining what steps a visitor could take to exercise opt-out or unsubscribe options.

Results (Compare User Agents)

Table II. Comparison of Results for Privacy Bird, IE6, and Privacy Policies

	Privacy Bird	IE6	Privacy Policy
Average number of correct responses to four questions	3.33 out of 4	2.58 out of 4 [3.55 adjusted]	3.08 out of 4
Average time to answer four questions	259 seconds	408 seconds	285 seconds
Average time to answer question 1	99 seconds	162 seconds	175 seconds
Average time to answer question 2	61 seconds	81 seconds	28 seconds
Average time to answer question 3	26 seconds	23 seconds	19 seconds
Average time to answer question 4	73 seconds	142 seconds	64 seconds
Average rating of ease of finding information on five point scale (where five is very easy and 1 is very difficult)	4.17	2.83	2.08

Results (Usefulness)

Table III. Average Ratings of Privacy Bird and IE6 on a Five-Point Scale Where 5 is More Favorable Than 1

	Privacy Bird	IE6	Paired t-test, two tailed
Usefulness	4.17	3.25	$t = 3.53, df = 11, p < .0047$
Likely to use in the future	4.60	3.50	$t = 2.54, df = 9, p < .032$
Likely to recommend to a friend	4.58	2.75	$t = 4.53, df = 11, p < .00086$
Ease of understanding policy summary	4.00	2.67	$t = 5.20, df = 11, p < .00029$
Ease of finding information	4.17	2.83	$t = 5.20, df = 11, p < .00029$

Results (Other)

- Information Presented by P3P User Agents
- Icons
- Language used in Preference Configuration Interface and Policy Summary
- Privacy Agents as Educational Tools.

Evaluation Criteria

Trustworthiness

Appropriate
timing

Perceptibility

Unobtrusiveness

Minimal
intrusiveness

Fail safety

Flexibility

Low effort

Meaningfulness

Learnability

Low cost

Summary

- Privacy Bird to be both useful and usable.

Good

- Summary format
- Persistent privacy icon
- Able to determine why warned

Improve

- Policy summary
- Wording
- Icons
- Obvious expand/collapse

Discussion

- Does simplification run the risk of misleading or confusing users
- What do users want out of privacy policies
- Are privacy preferences independent of the capabilities of a P3P user agent
- Do tools really provide the best way to educated end users
- Why hasn't P3P adoption taken off