

PRIVACY, SECURITY AND USABILITY

Privacy and Anonymity Tools

Types of privacy tools (cont.)

- Cookie/tracker blockers
- Opt-out, do not track
- Tracking awareness
- Encryption
 - Email, chat, web traffic, VPN, files, file system, disk
- Cleaners/wipers
 - Delete/don't store browser history, delete files

Types of privacy tools

- Anonymity
 - Web traffic, email, bulletin boards, surveys, voting
- Obfuscation
 - Add noise to web browsing, searches, databases
- Physical
 - Walls, curtains, blinds, laptop privacy screens, shredders
- Others?

Where can privacy tools be implemented?

- Built into browsers
- Browser pluggins
- Mobile apps
- Standalone user tool
- Web-based
- Server-side tool
- Built into operating systems
- On the network (routers, firewalls, etc.)

How to increase your online privacy

- [How to increase your online privacy](#)

Challenges

- Conveying purpose of tool
 - In what way does this tool protect privacy?
- Conveying current privacy state
 - Is tool currently on and working? Have trackers been detected?
- Configuration
 - Provide options users can understand and configure to match their preferences

Challenges

- Don't overwhelm users with too many options
- Make options easy to access
- Avoiding errors, failing safe
 - Will users believe they are protected when they are not?

Tor Usability Study [Lee Et. Al 2017]*

- Evaluated Tor Launcher
 - The graphical user interface (GUI) that Tor Browser uses to configure connections to Tor
 - in simulated censored environment
- Found that 79% of user attempts to connect to Tor in simulated censored environments failed
 - 363 of 458
- Users were often frustrated during the process and tried options at random

*A Usability Evaluation of Tor Launcher [Lee Et. Al 2017]

Tor Usability Study [Lee Et. Al 2017]*

- Findings:
 - Users struggle because:
 - interface requires them to know technical terms
 - Interface provides room for error
 - does not give proper feedback
- Recommendations:
 - Assume users do not know technical concepts
 - Explain why users need to make decisions
 - Provide appropriate guidance to users
 - Do not provide overly-technical information

*A Usability Evaluation of Tor Launcher [Lee Et. Al 2017]

Tor Usability Study [Lee Et. Al 2017]*

- Study Provided certain recommendations
 - Tor Browser 5.4.1 incorporated changes based on the work

*A Usability Evaluation of Tor Launcher [Lee Et. Al 2017]

Online Behavioral Advertising

- [How online behavioural advertising works](#)

Online Behavioral Advertising (OBA)

- Most users would not allow advertisers to track them online [Turow et. Al, 2009]
 - 68% of Americans “definitely would not” and 19% “probably would not”
 - even if their activities would remain anonymous
 - Data acquired through a user survey

Online Behavioral Advertising (OBA)

- Studies show that participants not aware of contextual targeting [Ur 2012]
 - Surprised to learn that browsing history is currently used to tailor advertisements
- Participants found OBA to be simultaneously useful and privacy invasive
 - Users felt tailored advertising could benefit the
 - However, existing notice and choice mechanisms are not effectively reaching users

Limiting Online Behavioral Advertising (OBA) - Study

- Study tested nine tools in lab settings [Leon et Al, 2011]
- 45 participants, each evaluated one tool
 - Screened for non-technical, no knowledge about privacy tools but interested in topic

Limiting Online Behavioral Advertising (OBA) – Study (cont.)

- Three types of tools tested:
 - Blocking tools: Ghostery, AdBlocks plus, etc.
 - Opt-out tools: Evidon, etc.
 - Privacy-built-in settings on browsers: Explorer and Firefox

Limiting Online Behavioral Advertising (OBA) – Study (cont.)

- Task 1: Learn about and install the tool
- Task 2: Change tool settings
- Task 3: Browsing scenario
- Exit questionnaire

Limiting Online Behavioral Advertising (OBA) – Study (cont.)

- Major problems found with all tools:
 - Communication problems, confusing interfaces
 - Inappropriate defaults
 - Users can't distinguish between trackers
 - Some tools provide users with lists of companies that they can block or opt out
 - Including the opt-out websites, as well as the Ghostery and TACO browser add-ons,
 - However, users don't recognize most of these companies

Limiting Online Behavioral Advertising (OBA) – Study (cont.)

- Major problems found with all tools (cont.):
 - Need for feedback
 - Participants were left unaware whether or not most tools were working
 - oblivious to what they were doing
 - None of the opt-out tools tested notify users while they are browsing that their preferences are being respected

Limiting Online Behavioral Advertising (OBA) – Study (cont.)

- Major problems found with all tools (cont.):
 - Users want protections that don't break websites
 - Participants had difficulty determining when the tool they were using caused parts of websites to stop working.
 - In some cases where some content was not displayed or features stopped working to protect user privacy
 - However, participants believed that the problem was due to their Internet connection

Recent Developments

- Many changes to UIs of pluggin tools
- Do Not Track standard continues to be a work in progress
- DAA website became aboutads.info
 - <http://www.aboutads.info/>

Privacy Tools Discussion

- What are your favorite privacy tools?
- What functions do they perform?
- What makes them usable?

Questions?

