## Creating a research poster

## December 10 Poster Fair

- During class in 4<sup>th</sup> floor Gates lobby
- 32x40 inch foam core boards, 9x12 inch construction paper, glue sticks, and thumb tacks will be made available
  - You can get them from Tiffany Todd ttodd@cs.cmu.edu in Wean 4114
- Present your preliminary project results and get feedback you can use as you finish your paper

## Creating a research poster

- Any word processor, drawing, or page design software will work
  - PowerPoint is well-suited for making posters
- Design poster as single panel or modular units
  - Single panel posters
    - Have a professional look (if well designed)
    - Should be printed on large format printers (SCS has one for student use, requires SCS account but TA can print for you if you plan ahead)
    - Other large printers on campus or local copy shops some can also print on fabric
  - Modular units
    - Easier to design and transport
    - Print on letter paper (optionally, mounted on construction paper)

## Research poster content

- Don't try to present your whole paper
  - Convey the big picture
  - Don't expect people to spend more than 3-5 minutes reading your poster
  - 500 words, maximum (can be a lot shorter!)
- Introduce problem, your approach, and results
- Provide necessary background or glossary
- A picture is worth 1000 words
  - Graphs, diagrams, etc.
- Use bullets and sentence fragments, similar to making slides
- Don't forget to include title and author

## Research poster design

- Use a large, easy-to-read font
  - Most text should be at least 20 point font, >36 point font is even better
  - No text less than 14 point font
  - Headings should be larger and in bold
- Use color consistently
- Arrange elements for a sensible visual flow

## Presenting your research poster

- Be prepared to give a 1-minute overview of your poster and answer questions
- Let people read your poster without interrupting them
- Consider bringing a laptop if you have software to demo or a video to show
- Consider making handouts available with abstract, web URL for obtaining your paper, and your contact information



#### Goals

 Facilitating Usable Privacy Policy Project (usableprivacy.org) affiliated by:



NEISTI STAN

- Identifying key policy features from Retail and News Entertainment sectors
- Extracting different types of information collected and their sharing targets for each sector

#### **News Entertainment**

- 14 News Websites:
  - 4 from top ten broadcast media
  - 3 political websites
  - 3 business websites
  - 4 personal finance websites

Statest areas the guardian TIME #55 CBS 
 Statest green the guardian TIME #55 CBS 
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 WALL STREET ACCENT PARADE @NEWS © Smithsonian

#### **Retail Sector**

#### 15 Retail Websites

4 popular online stores 3 not so popular stores 2 each Health foods & Kid stores 2 each Electronic & Home goods



Towards Information Extraction From Natural Language Privacy Policies In Retail & News Sectors

> Aditya Marella Dilek Yuksel Civelek Poster Fair – December 5, 2013

#### Methodology

- Identify key features in each sector
- · Build questionnaire to reflect key features
- Determine what each privacy policy says about each feature
- Collect terms used for information types, categories & sources; usage types; sharing targets
- Identify any patterns or anomalies in the privacy policies

#### **Key Features**

#### News Entertainment

- Services other just offering news?
- Share behavioral data with other third parties?
- Collection and usage of Social media data incase the user connects to the website using social media services
- Online Retail
  - Collection & Sharing of sensitive information (credit card, credit history)
  - Restrictions on sharing target's privacy policies
  - Use of SSL while transferring sensitive information
  - Opt-out choices w.r.t advertising and promotional emails

#### Questionnaire

- 22 Questions for News Entertainment Sector
- 18 Questions for Retail Sector
- The questions are designed to be
- answered as:
- a) Yes
- b) No
- c) Not clear from the policy
- d) Policy does not answer the question

#### **Results: News Entertainment**

- News websites not limited to "news", 100% of the samples sell product and services, offer interactive services...
- If registered, all of them collect contact information
- 72.8 % collect current location of a user
- 92% use cookies, beacons or other tracking technologies
- 78% use (OBA) to deliver targeted advertising

#### **Results: Online Retail**

#### Contact Information

- all of them collect contact information and
- 70% share for purposes other than provisioning core services,

#### Financial Information

- all of them collect credit card information and
   20% collect credit history information
- SSL 50% protect personal information; 30% protect only sensitive information; 20% do not mention SSL

#### Results: collection of terms

- Personal Information: name, address, phone, email, age, dob, credit card information, social security number, personal description, photograph, location, deviceidentifier, purchase-information, redemption-information, etc
- Behavioral Information: purchase-history, products viewed, products searched, session-information, pageresponse-times, download-errors, viewing-duration, clicks, scrolls, mouse-overs, page-view-information, search-term, search-result, paid-listings, etc
- Technical Information: IP, computer, browser, version, timezone, plugin-types, plugin-versions, OS, platform, etc.
- Full spreadsheet is available on request

#### Web Application for Searching and Comparing Financial Companies' Privacy Practices

Gabriel Moreno gabrielm@cs.cmu.edu

#### Overview

- Comparing the privacy policies of financial institutions is a time-consuming task for consumers.
- No centralized place to find the policies
- · This web application allows users to:
  - Look at policies
  - Search for institutions with specific privacy practices and other criteria
  - Compare privacy practices of multiple institutions side-byside

#### Motivation

- The Federal Trade Commission (FTC) envisioned that privacy notices would enable competition in a market where privacy practices would be part of the consumer's decision.
- Consumers are expected to comparison shop on privacy policies to protect their privacy.
- Doing this comparison puts too much burden on consumers
  - It is time-consuming task

#### Limitations of Existing Tools

· Compare things other than privacy policies

- consumer products
- · Examples: pricegrabber.com, shopper.com
- for banks: offered services, financial strength indicators, user reviews
- Example: findthebest.com
- insurance policies (health, auto, homeowner's)
   Example: ehealthinsurance.com
- Focus on the online practices of organizations

· Example: privacyscore.com



 Most financial institutions use the model privacy notice to comply with the requirements of federal regulations.

 Standardized privacy notices are easier to compare, but still it involves a manual process for the consumer.

#### Find the privacy notices Compare them

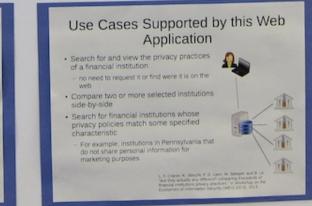
## 

#### Current Burden on Consumers

- Consumers must first obtain privacy notices from the different financial institutions and then compare them.
- What if a consumer wants to find a financial institution with specific privacy practices?
- The consumer must first obtain all the privacy notices.
   Go one by one to select those that satisfy the specific criteria.



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#### **Research Questions**

What are the similarities or differences between the privacy policies of top US and Turkish wireless communications companies?

Can these similarities or differences be attributed to the country wide or sector specific privacy laws or regulations in place in each country?

#### Privacy Policy Analysis in the Electronic Communications Sector

Ayse Gul MIRZAOGLU December 5, 2013

#### Metada on Privacy Policies (US)

	Title	Version	Certifi cation?	Accredi tation?	Summary ?	Page
Verizon Wireless	Privacy Policy	English, Spanish	TRUSTe	BBBOnli	*	13
AT&T Wireless	Privacy Policy	English, Spanish	TRUSTe		•	15
Sprint Nextel	Privacy Policy	English, Spanish			FAQ	3
T-Mobile (DT)	Privacy Policy	English, German		-	-	2+112
Leap Wireless	Online Privacy Stmt	English				2

Personal Data within the Deutsche Teinkom Group (worldwide)

#### Why the Electronic Communications Sector?

- 220,000 subscribers in US<sup>1</sup> 69,000 subscribers in Turkey<sup>2</sup>
- Sectoral business operations are highly data intensive; collect, process and store huge amounts of personal data
- Sector-specific privacy regulations are in place in both countries

<sup>1</sup> INSWorld, Wireless Telecommunications Canters in the US Report, Estimated 2013 Revenues <sup>1</sup> ICTA, Quarterly Market Data Report, 2013 Q3 Number of Subscribers

#### **Primary Motivation**

"to generate valuable input to the Usable Privacy Policy Project\*"

\*Aims to "semi-automatically extract key privacy policy features from natural language website privacy policies and present these features to users in an easy-todigest format that enables them to make more informed privacy decisions as they interact with different websites" (usableprivacy.org)

#### Metada on Privacy Policies (TR)

	Title	Version	Certifi cation?	Accredi tation?		Page <sup>1</sup>
Turkcell	Security and Privacy	Turkish	•			62
Vodafone	Privacy Policy	Turkish, customized for each country in which Vodafone operates				1
Avea	Security and Privacy	Turkish, English		-	- 10	1
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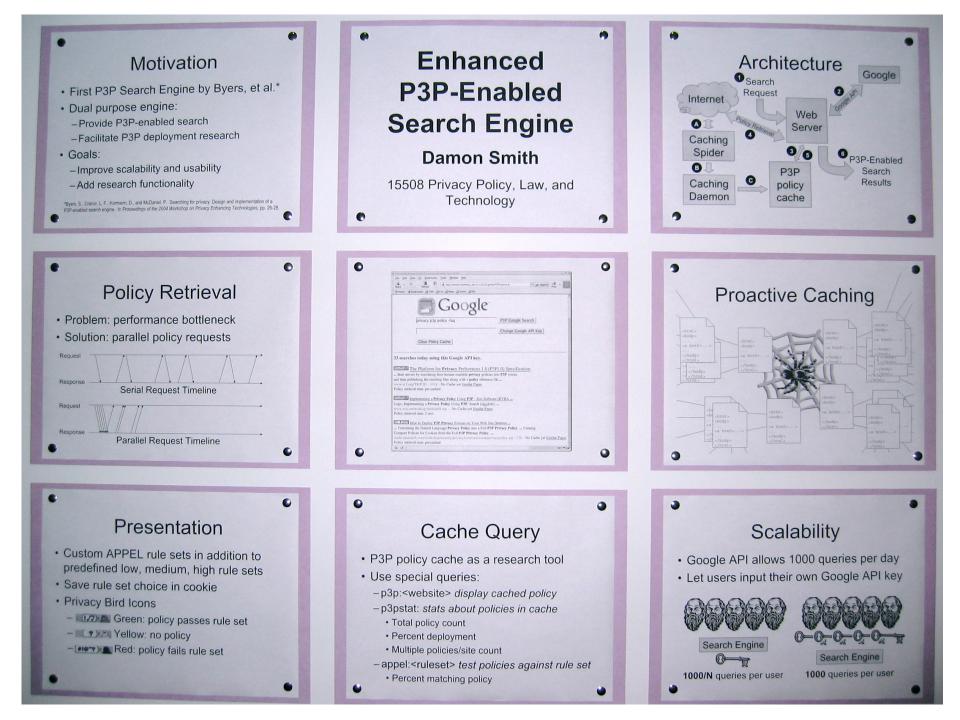
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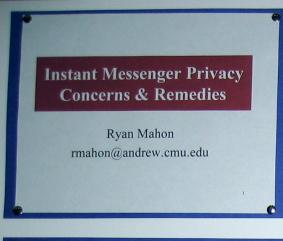
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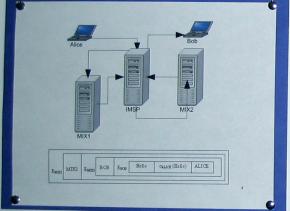
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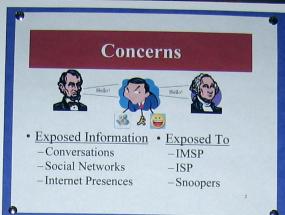






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- · Focus: AIM, YIM, & WinMessenger
- Three Main Problems (all solvable):
  - -Poor Default Privacy Settings
  - -Lack of Granularity in Configurations
  - -No Notice of Presence Viewing

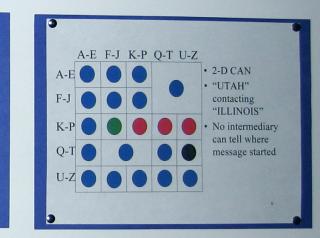


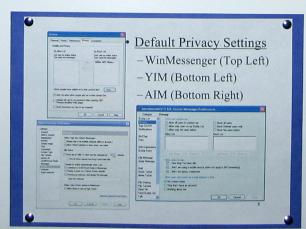
#### Private Conversations With Existing Architecture

- Chaum's Mix Nets [1981]
- · Onion Routing via other IM Clients
- · Advantages: Interoperability, Privacy
- IMSP, ISP, snoopers
  - Cannot tell what is being said
  - Cannot tell who is being spoken to
- · Disadvantages: Latency, Centralization

#### Private Conversations With Peer-To-Peer Infrastructure

- Content-Addressable Networks: Overlay network by Ratnasamy et al. [2001]
- Crowds: Anonymity tool by Reiter and Rubin [1999]
- Advantages: Decentralized, Better Latency-Privacy Tradeoff
- Disadvantages: Interoperability, Misbehavior-Detection





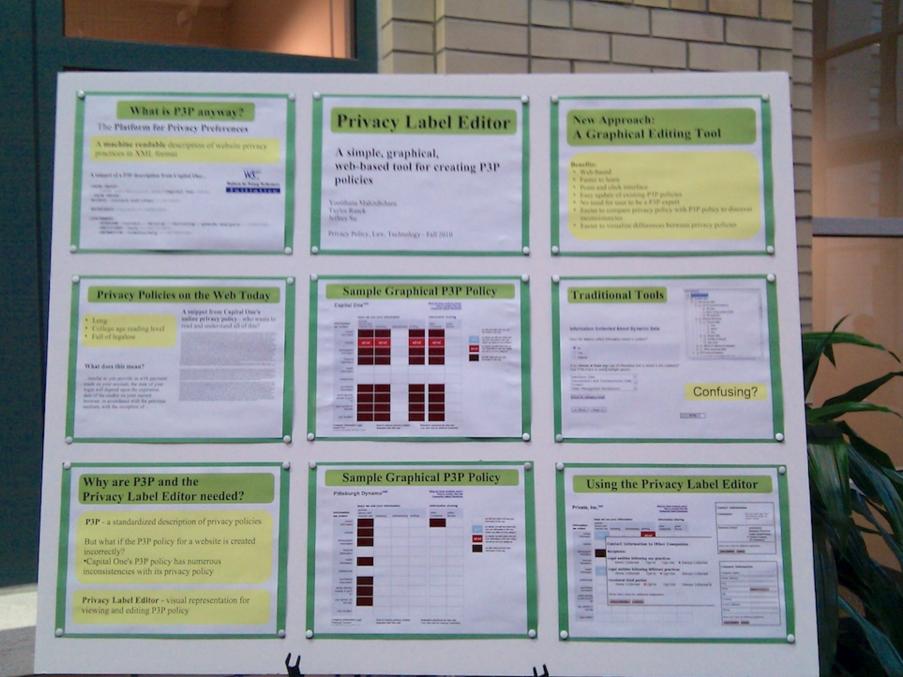
#### Conclusions

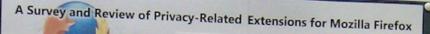
- Future Work
  - -Implementation of Architectures
- -Evaluation: Fault Tolerance, Latency -Examination of Legal and Ethical Issues
- Privacy in Current Popular Instant Message Systems is Poor, But Fixable!











Aaron J. Couch **Carnegle Mellon University** Heinz College aaroncouch@cmu.edu

#### Introduction

"Privacy software" is available to users to address the concerns and problems associated with the distribution of personal information online.

Fears of identity theft, the annoyance of unwanted marketing, and the general desire to be left alone are the greatest drivers of the market for privacy software.

This project is intended to survey and review extensions for Mozilla Firefox that offer privacyrelated functionality.

Firefox extensions offer a means of altering the web-browsing experience to protect personal and private data. With some extensions, users can regain control over their online interactions and privacy.

#### Background

Firefax has seen growing adoption, now the second-most used browser at 31.5% marketshare.1

Users can be tracked and individually identified through a browser's fingerprint', which may include: Cookies, IP addresses, user opent strings, nation forts installed LSO's/SuperCookies, etc.

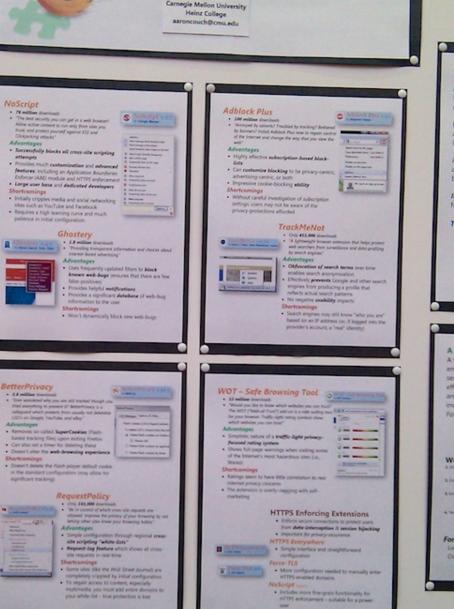
Companies specialize in aggregating browsing data to amass significant knowledge about users' online activities and personal interests."

The most popular Firefox extension, Adblock Plus, has over 12 million daily users."

#### Evaluation

Various privacy-related extensions will be addressed in their implementation, usability, their adoption and reception by consumers, and their potential to serve as effective safeguards in the largely unregulated realm of online privacy.

- . the installation process is carefully logged for each extension
- · sequences of websites are browned for anability and protection checking
- · extensions' various configuration aptions are explored
- · privacy-related functionalities are assessed using suitable analyses
- · more adjective measures of privacy-protection, such as counting. tookies, are used where relevant



#### Conclusions

Empowering users with the obility to control their online privacy is crucial in a political and legal landscape which offers negligible safeguards or reparations for privacy-intrusive practices.

Extensions frequently serve as front-line defenses against new or previously unexploited privacy threats. like session hijocking.

As web developers get trickier with obscuring tracking activities, extension developers do their best to fight. back

Increasing awareness of extension options is critical for all users to protect their privacy.

#### **Top Recommendations:**

- Adblock Plus Ghostery
- BetterPrivocy
- Tenck MeMat
- any of the HTTPS enforcing extensions

#### A note on proxy-enabling extensions

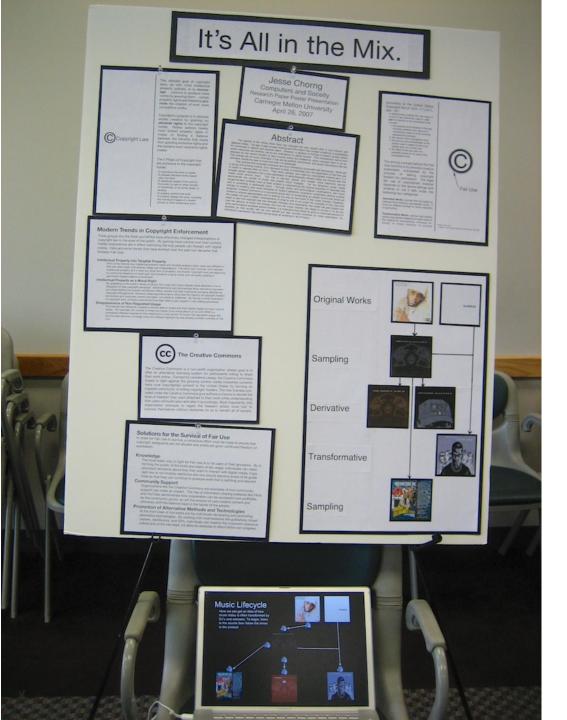
A variety of extensions are available for Firefox to enable anonymized web browsing via proxies. Proxy servers can act as intermediaries for Internet requests. effectively anonymizing users. While these extensions are not specifically explored here, users may want to investigate popular proxy extensions such as Torbutton, Fory/Proxy, AutoProxy, and QuickProxy.

#### Works referenced

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#### For more info

Look at my draft paperi Contact me at aaroncouch@cmu.edu



### Get Me off Your Wearable Cameras

Yuan Tian yt@cmu.edu

#### Motivation

- , Wearable cameras are pervasive
- . No usable notifications to individuals about the video session
- . Individuals cannot opt-out conveniently
- . When combined with social network and face reorganization scheme, the privacy violation is even worse.

#### Methods

Result

#### Background

Goal of the system:

- Usable notification for the video session Refine the privacy violation by the wearable cameras
- Easy and efficient opt-out/opt-in scheme
- Techniques related:
- Privacy concerns against wearable cameras
- · Information encoding in audio
- Indoor localization



- Choice of transfer channel: why audio?
- · Encoding and decoding information from audio: 1500-1800 Hz works best \*Extracting distance from the magnitude of collected video

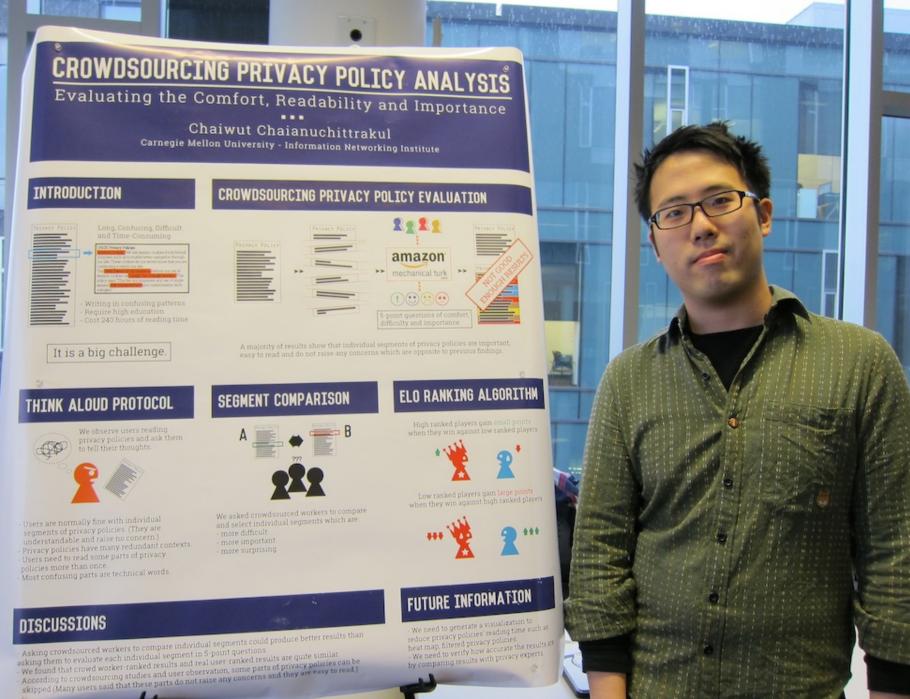
#### **Conclusion & Future Work**

- Improve the accuracy of distance of devices, so as to analyze the position of people with the device
- · Evaluate the usable privacy of the notification
- Combine with social network service & provide meta data to opt-out individuals.

#### Acknowledgments

We thank Professor Lorrie Cranor for her guidance on the project, and our peers Manya Sleeper, Zheng Sun and Yasmine Kandissounon for their help with the project.

#### **Carnegie Mellon University**



#### Do Teens Have a Right to Privacy? Parents' and Teens' Perspectives

Adam Durity, Abigail Marsh, Blase Ur

#### Motivation

- Legally, teens have few rights to privacy from their parents
- FERPA protects education records, but mandates sharing with parents/guardians
- COPPA protects children under age 13 from online third-party tracking
- · No omnibus protections beyond age 12
- Hypothesis: Families believe teens have a de facto right to privacy from their parents
- Teens and parents have differing expectations of the boundaries
- Boundaries expand with age
- What do parents feel they have a right to know? Not to know? What is acceptable and ethical in their view?
- What do teens feel parents have a right to know? Does this differ from parents' opinions?

#### Methodology

- Semi-structured interviews with teens in high school and parents of teens in high school
- · 2 participants (Eventually 20 participants)
- Recruited participants from Pittsburgh, PA using Craigslist and flyers
- · Selected only one participant per family
- In participant's eyes, to what extent do teens have a right to privacy from their parents?

#### Area of inquiry Examples

Privacy at home	Closing bedroom doors, areas that are off-limits, knocking
Social privacy	Knowing their friends, always knowing where they are
Monitoring	Reading texts, monitoring computer, parental controls

#### Preliminary Results

Theme	Participants
Respect for teen → Privacy	P0, P1
A parent's concerns override a teen's right to privacy	P0, P1
Privacy as parent toop poppition	D0 D1

invacy as parent-teen negotiation P0, P

- Teens' bedrooms are generally private
- P0: "If they are actually in there and don't want me in there . . . I respect their wishes."
- · P1: "It's his private [area], it's his domain."
- However, P1 examines son's room when he is not at home "just to make sure...he's not doing nothing he shouldn't be doing."
- Some privacy attitudes varied
- P0 tried to use parental controls, whereas P1 never tried to monitor technology usage
- P1 knows most of son's friends, whereas P0 knows only a handful

- · Teens' right to privacy is not absolute
  - P0: "[they] have a right to privacy to some extent ... but not overriding a parent's need know some things."
  - P1: "It's my house and I'm gonna go in that room whenever I want to."
- · Responsibility for teens' actions vs. privacy
- P0's nephew was arrested for downloading child porn on grandparent's computer and nearly liable
- P1: "Hell, there could be a mad man living in the room, how would I know? I could see Dr. Phil, 'Well, you never went in your son's room, huh?'"
- Teen years are a privacy transition
- P0: "By the time you're done with it you have a right to privacy; when you start it you don't."

Carnegie Mellon University CyLab

#### Anonymous Dislike:

#### Users' Reaction to Anonymous Peer Reviews in Social Networks

Pranshu Kalvani pok@andrew.cmu.edu Chao Pan chaop@andrew.cmu.edu

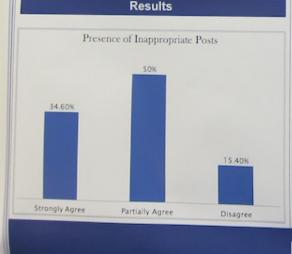
#### Introduction

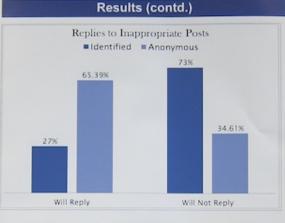
This study explores the effects of anonymity on users behavior and also tries to find out their response to anonymous comments. Its primary objective is to provide feedback, so people can realize the error of their ways and thus make them more conscious with future posts.

#### Methodology

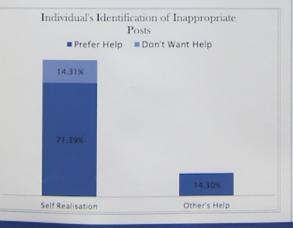
We have performed two surveys on Amazon's MTurk. Based on these surveys we have created an anonymous commenting system. It is a Google Chrome add-on for Facebook and we are currently conducting a user study to test the efficacy of our system.

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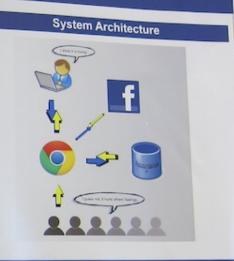


These were the important results from the first survey. However, we wanted to see if after receiving these comments if any steps to improve privacy were taken.



Master of Science in Information Technology

Carnegie Mellon University



#### **Challenges & Future Work**

- Due to Facebook changing its source code and DOM regularly our extension stops functioning. This leads to difficulties in conducting a user study.
- . Getting large groups that provide meaningful data is one of the other sizeable challenge we face.
- . We intend on adding more features to our system to make it more informative. A report dashboard is at the top of this list.
- Delimiting the anonymous post content via peer review or natural language processing is another feature we intend on adding.
- . There is still a lot more work possible, in this area.

## Demonstration of financial companies' privacy practices Privacy Bank

s

#### WHY?



Have you ever wonder how your banks deal with your personal info?

#### Jie Chen, Ziwei Hu, Zhipeng Tian 5000 Fobres Ave, Pittsburgh, PA

- Do they sell your personal info?
- Do they share your personal info? with whom? for what?
- OR do they keep your info secure and protected?



Traditional privacy policies have been difficult to read and understand. It also takes lots of time to read.

More importantly, it does not allow users compare privacy practices across different financial organization.

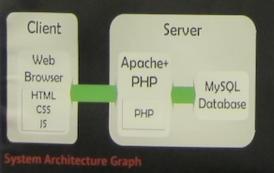
#### WHAT?

The Project is to design a website that allows users to search, compare, and review financial companies privacy policy..

Our Focus is not noly on the main features, but also on communication and presentation.

#### HOW?

#### Comprehensive and detailed data



c) How to opt out? d) Number of affiliates

#### MAIN FEATURES:

#### Search

Our database includes 729 financial companies info across the United States.

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#### Rate, Review, and Share

You can rate and review a bank after you search it. You can also share the search results on Facebook.

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Are your banks selling your info?



Scan and Check out our website!

#### Analyzing Software Architectures for Privacy

Jeff Barnes (jmbarnes@cs.cmu.edu)

08-733 Privacy Policy, Law, and Technology Carnegie Mellon University

#### 1. Background

- Organizations use privacy policies for many reasons:
- To demonstrate their privacy commitment to consumers, regulators, and industry groups
- To protect against litigation
- To assess their own compliance with relevant law
- To engender trust.

But what happens when the privacy policy is wrong?

- 2000: Chase Manhattan Bank violated its own privacy policy by selling personal information about 18 million customers to marketers. Chase agreed to correct its privacy practices and pay the New York attorney general \$101,500.
- 2000: Due to a software error, a subsidiary of Sony Munic transmitted personal e-mail addresses to marketers in violation of its privacy policy. The company agreed to take measures including hiring an independent auditor and paid \$75,000.
- 2004: The FTC fined Gateway Learning Corp. for renting the personal information of users of its flagship product, Hooked on Phonics.
- 2006: New York used Gratis Internet for selling personal information to a marketer in violation of its own privacy policy. A \$1.1M settlement was reached.

Companies misunderstand their own privacy practices and consequently misrepresent themselves, underestimate their legal culpability, and damage their reputations.

#### Why is this a hard problem?

Part of the problem is human misunderstanding or ignorance of organization privacy policies. But another problem is the complexity of the software systems that manage and store personal information.

Even the developers of a software system may find it difficult to make statements about its privacy characteristics, because its complexity makes it difficult to infer how privacy-sensitive information travels through the system as a whole. My approach is to use software architecture to confront this problem directly.

#### 2. Software Architecture

Software architecture views software systems as comprising, at a high level, software components that communicate with each other through connectors.

Primary uses of software architecture include:

Engineering a new system

 $\mathbb{N} \to \operatorname{First} \to \operatorname{\overline{sm}}$ 

Reverse-engineering an existing system



Analysis techniques can be applied to both uses: analyzing the properties of proposed designs for a new system and analyzing the properties of an existing system.

Such properties include performance, security, etc. Privacy can be analyzed in this way too.

#### **3.** Conceptual Overview

Key idea: Rather than trying to determine the privacy properties of a software system holistically, evaluate the privacy behaviors of its constituent elements and model the flow of privacysensitive data through the system.

#### Why does this make sense?

Figuring out the privacy properties of an entire system is hard. But figuring out those of a small software component should be easy for the software engineers responsible for a project.

Then, we can apply our analysis to infer the global privacy properties of the system from those of the constituent elements.

#### 4. Theoretical Framework

Graph theory provides a mathematical model of our approach.

We can view a software architecture as a directed graph where the vertices are components and the edges are connectors.

Model the set of privacy-sensitive information as a set of labels, like contact for contact information.

Annotate each vertex with a set of labels indicating the privacy-sensitive information that enters the system at that component.

Annotate each edge with a set of labels indicating the privacy-sensitive information that may pass through that connector.

Finally, use these annotations to model how different types of data flow through the system.



#### 5. Example

Consider a company that collects sensitive user information (name, contact information, Social Security Number) through a Web interface. All of this information is stored in a secure database of user information. Individuals' names and contact information are periodically extracted from this database and sent to a marketing database to be shared with marketing partners, in accordance with the privacy policy. SNs are not supposed to be sent to the marketing database.



This architecture violates the policy, because SSNs can flow through the DataManager to the MarketingDatabase, even though they cannot flow directly from the UserDatabase to the MarketingDatabase.

#### 6. Implementation

An architecture description language (ADL) is used to describe software architectures in a clear and unambiguous way. A typical ADL:

- Provides a way to describe components and connectors and how they are hooked up
- Allows elements of an architecture (components and connectors) to be annotated with userdefined properties such as performance attributes
- Allows definition of architectural styles classes of software architectures. An architectural style is characterized by a vocabulary of architectural elements and a set of constraints on how they may be assembled.

Acme is an ADL developed at CMU. I picked it in part because of its GUI, AcmeStudio, which allows easy usage of Acme, provides graphical representation of architectures and supports extensions for analyses. I implemented my privacy analysis in Acme by:

- 1. Developing a style to accommodate the
- expression of privacy-relevant information 2. Developing an external privacy analysis for systems of that style
- This is a screen shot of our example in AcmeStudio:



#### 7. Future Work

- Basic improvements: better UI, more sophisticated definition of data types
- Sophisticated description and analysis of where and how data exit the system
- Model information that is anonymous or pseudonymous but privacy-sensitive.
- Check conformance between an implemented system and its described privacy characteristics
- · Check conformance with a privacy statement

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#### Digital Enhancement of the Female Figure: Harmful Fallacy of Perfection or Fair Marketing Tool?

#### Background

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#### Experiments Concerning Women and Advertising

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#### Conclusion

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#### Digital Enhancement Programs

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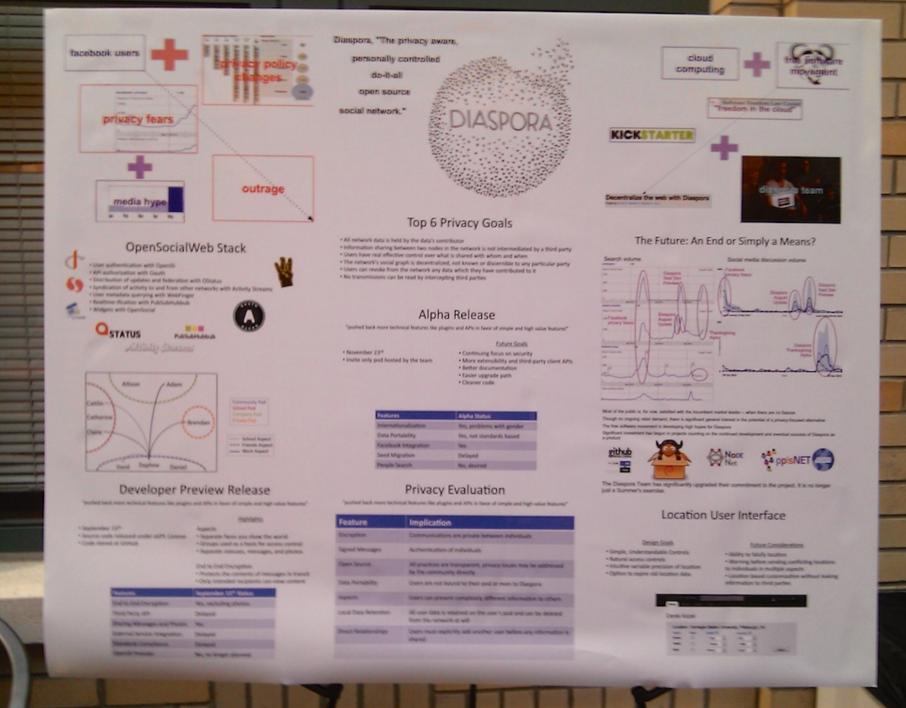
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#### Survey of Online Privacy Browser Extensions Privacy Policy Law and Technology Brian Johnson, Steven Johnson, Jorge Medina

#### Objectives

...........

- Create a complete picture of the marketplace of
- Develop of privacy framework for the available
- Analyze in detail particular privacy features on the
- Complete a broad survey and categorization of
- + Focus on desktop browsers: IE, Firefox, Chrome,



**Privacy Framework** 

PREVENTION	Detect/Block cookies
<ul> <li>Anonymize browsing</li> </ul>	
and searches	<ul> <li>Detect/Block third party trackers</li> </ul>
<ul> <li>Force HTTPS, DNT</li> </ul>	<ul> <li>Detect/Block advertisement</li> </ul>
Mask e-mail address,	Detect/Block analytics
credit card.	<ul> <li>Block social networks</li> </ul>
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RECOVERY

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#### **Final Thoughts**

Many of the most popular PET browser extensions cover every component of the framework - Especially extensions that have paid

· Detection and Response go hand in hand; · Many of the most popular PET browser extensions cover every component of the

Especially extensions that have paid

#### **Carnegie Mellon University**

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#### Protection Practices of Facebook Users: Awareness, Attitudes, and Privacy

Methodology

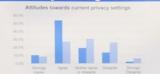
#### Background and Motivation

 Facebook's interfaces for controlling privacy settings for features have gone through many changes and have faced criticism since the inception of Facebook's social media platform.



 We aim to analyze users' privacy attitudes and practices on Facebook and see if they adapt to today's market.

#### Preliminary Findings & Recommendations



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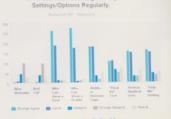
Main Results: We found that Facebook users mainly used the privacy settings that control who can see one's posts, profiles and which photos they are tagged in. These privacy settings were mainly used to keep their activity on social media private, to prevent strangers from contacting them, to protect dagainst identify theft and statikers, and to protect their public persona. We also found that many users were satisfied with the current privacy settings, yet still feit as if Facebook could make significant changes to improve privacy. Users expressed other concerns/insight about their privacy on Facebook. This data is currently being analyzed.

Recommendations: Increase controls for privacy over limeline activity, increase and improved disclosure about how data is being used/shand with third partices, clear easy to understand policies, limit how much and what data is shared with third parties like advertising companies, consider the option for users not to user their real name.



Survey: To gain a first hand understanding of

 Research Discoveries: The survey revealed commonalities and differences between users of Facebook in their individual privacy strategies. We analyzed the results of the survey and use



#### Carnegie Mellon

#### Privacy Software Development: Tracker Analyzer

08-533/08-733/19-608/95-818 Privacy Policy, Law, and Technology Chunye Du, Sally Lee, Majeed Alibrahim, Rahul Yadav

Browser trackers are everywhere. But what do we actually know about them? With ideas behind Ghostery, Lightbeam and Disconnect, we started our project to make a browser extension that would more intuitively show and analyze trackers so that users can clearly control the flow of information to these trackers. Our plan was to take each key feature of each existing extensions and incorporate them into our own extension for Chrome.

Ghostery found 15 tra	okers 0	GHOSTERY	Like Observed Same
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[fig.1] Ghostery results of www.cnn.com and detailed page of Chartbeat.

#### Lightbeam



[fig.2] Lightbeam results after visiting different sites.

#### Disconnect



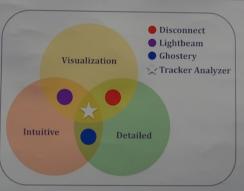
[fig.3] Disconnect results for www.cnn.com. List view and tracker map.



[fig.4] Tracker Analyzer list of trackers of www.cnn.com.



[fig.5] Tracker Analyzer results of www.cnn.com and a tracker.



#### Method:

- 1) Researched all source codes of all extensions.
- 2) Attempted to merge Disconnect's map with Ghostery's detailed tracker information as a sidebar.
- This turned out to be a problem because there is no centralized database of all the trackers; each has its own.
- 4) Tried again with just Disconnect.
- 5) Modify the code and change around javascript to display tracker information we obtained from Disconnect's database in the source code.
- 6) After figuring out the data structures of each tracker, javascript code was written to display the details as a sidebar.
- 7) Tweaked the code and CSS to adjust the design and the layout.

#### **Results**:

- I. Analyzing trackers found to be difficult due to lack of standardized database of trackers.
- II. Finding the relationship between the sites with first-party/third-party tracker was also difficult due to lack of information on each tracker.

In order to protect the Internet users' privacy, there is a dire need of a centralized database that keeps track of trackers.

#### References

Ghostery. About Ghostery. [Online]. Available: http://www.ghostery.com/about Lightbeam. About Lightbeam. [Online]. Available: https://addons.mozilla.org/en-US/firefox/addon/lightbeam/ Disconnect. About Disconnect. [online]. Available: https://disconnect.me/

#### Variations in Online Tracking in Relation to Geographic Location

Nathaniel Fruchter, Hsin Miao, Scott Stevenson (nhf, hsinm, sbsteven)@andrew.cmu.edu • Privacy Policy, Law, and Technology

#### Background

Different countries have different privacy regulatory models. These models impact how countries handle privacy both legally and culturally, specifically in the realms of online tracking and advertising policy.

With these differences in mind, we investigated if regulatory models had any effect on the amount of tracking present on websites that were accessed from or based in locations with these varying models.

## Vigna (Cardinal Congellation)

Methodology

We used OpenWPM [2], hosted on Amazon EC2, to crawl the 250 most popular websites as listed by Alexa (see Figure 1). We recorded attributes including third-party cookies and HTTP requests, both of which were used as a metric of tracking activity. The Adblock Plus EasyList<sup>[3]</sup> was used as an additional metric of tracking activity. Comparisons were then made between countries and regulatory models. A similar process was used with a list of the top 500 sites globally to determine the presence of tracker churn.

#### Figure 1 Amazon EC2 availability zones used for web crawle. Each zone was chosen to represent a different privacy regulatory regime [1] and configured with a t2.micro server instance running Ubuntu Linux and the OpenWFM software.

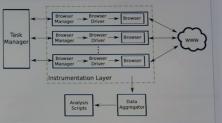


Figure 2 A simplified version of the OpenWPM [2] architecture. The framework was developed by Engelihardt et al. to automate many web measurement tasks. It was used in this study to control the crawl-and-record process on all of our EC2 instances.

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Table 1 Summary statistics for		Sect/All			n.s		
difference	s between			Comp./All	< 0.001	4.40	+1.05%

Table 2 Differences in tracking hits by regulatory model using Adblock metrics.

#### Results

- Third-party cookies were more prevalent in the US compared to JP, but there were no significant differences by model.
- Third-party domain requests were also higher in the US with no significant difference between models. This agrees with our Adblock analysis, which showed a 2-4% higher proportion of tracking related 'hits' in the US, compared to other countries.
- · Location-based tracker churn is insignificant across our countries.
- Using Adblock rules, a significant difference was found in the number of tracking hits between regulatory regimes. Pairwise comparisons are shown in Table 2.

#### Conclusions

- · Location-dependent tracker churn does not seem to be significant across a set of top worldwide sites.
- · Most sites have a proportionally higher number of trackers than ads.
- Tracking activity is much higher in the top 250 sites from the United States.
- · All countries had notable outliers, some with over 1000 cookies. Most were news sites.
- · No significant differences found between regulatory models using third-party metrics.
- · Top sites in comprehensive model countries have fewer trackers according to the Adblock metric.

### A Spoonful of Sugar? The Impact of Guidance and Feedback on Password-Creation Behavior

Richard Shay, Lujo Bauer, Nicolas Christin, Lorrie Faith Cranor, Alain Forget, Saranga Komanduri, Michelle L. Mazurek, William Melicher, Sean M. Segreti, Blase Ur

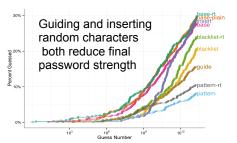
#### Motivation

- Websites provide requirements feedback and multistep password creation to help users make passwords under strict requirements
- Do feedback and guidance help users make passwords? Are the passwords still as secure? What kind of feedback works best?

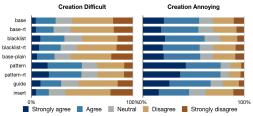
#### Methodology

- · Online MTurk study with 6,435 participants
- · Password made with different feedback conditions
- · Recall password after 5 minutes and in 3 days
- Metrics include password cracking, user sentiment, and attempts to create / recall

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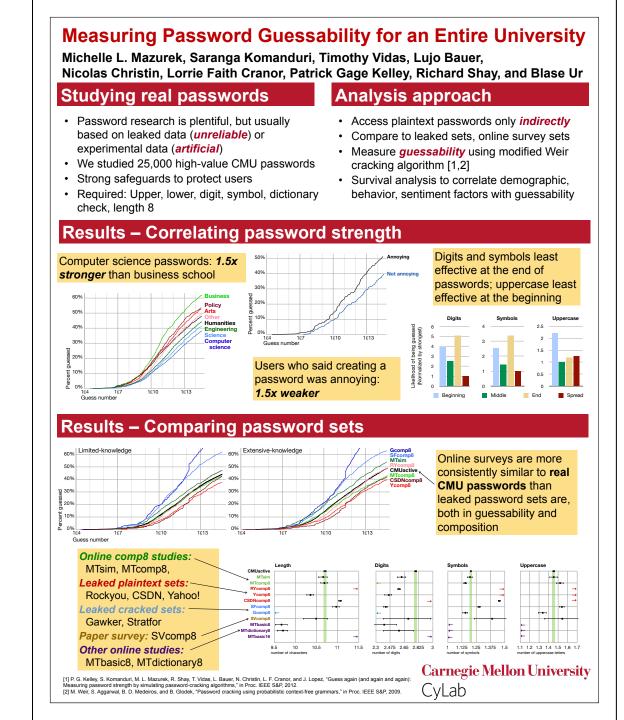


#### How requirements are presented to users is important.



Feedback helps users create secure passwords with fewer errors and improved sentiment

**Carnegie Mellon University** CyLab



## Poster creation

- Have poster draft ready to discuss in class on Tuesday
- If you want Abby to print it on SCS poster printer, email it to her by 9 pm Tuesday
  - Alternatively, you can print it yourself at Kinkos or other CMU printer
  - Or you can print on 8.5x11 paper