
Personal Privacy Management

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Sharing personal information

Mark Zuckerberg, founder of Facebook:

“People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people. That social norm is just something that has evolved over time ”

Interview with Michael Arrington, Jan 2010.

- Facebook: 3 billion photos a month
- Twitter: 95 million tweets per day
- Smart phones: 172 million sold in 2009

How well are we managing?



Page last updated at 12:29 GMT, Thursday, 21 January 2010

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updated 9:57 a.m. EDT, Fri September 7, 2007

The sinister side of social networking

Young facing online fraud risks



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Hackers infiltrate search engines, social networks

MI6 chief blows his cover as wife's Facebook account reveals family holidays, showbiz friends and links to David Irving

By JASON LEWIS

14 August Last updated at 7:14 PM on 05th July 2009

Sophos Facebook ID probe shows 41% of users happy to reveal all to potential identity thieves

Research highlights dangers of irresponsible behavior on social networking sites

What is privacy?

Contextual Integrity

- Information sharing is governed by the social norms of a given context
 - Norms of appropriateness: what information about persons is appropriate to reveal in a context
 - Norms of distribution: movement of information from one party to another
- Privacy problems occur when information appropriate for one context is inappropriately shared in another
- Online, users must judge context from *perceived* information flows

Nissenbaum, H. (2004). Privacy as Contextual Integrity. *Washington Law Review* 79 (2004), 101-39.

Improving privacy management

- What are users' privacy concerns and current coping strategies?
- How can we improve access control mechanisms to help users manage their privacy?
- Methodology
 - Qualitative, formative studies of privacy needs and behaviors
 - Prototyping and evaluation of new privacy mechanisms and interfaces

Photo sharing

Facebook | Photos of You

facebook Search

Photos of You

Photo 12 of 18 | Photos of Me Previous Next



So multiply by the inverse square you say...

In this photo: Heather Richter Lipford (photos | remove tag), Andrew Besmer

From the album: "UNC Charlotte - Theres work to be done!" by Andrew Besmer

Focus group study

- Photos uploaded and tagged by others
 - Owners have a right to upload, but a *moral obligation* to respect those in the photo
- Concerns regarding sharing with individuals already in social circles
- Very little recourse

“I spend probably an unhealthy amount of time un-tagging pictures on Facebook.”

“My friends would be like no, no you look really bad. That’s why its of you, we want people to see that, it amuses us.”

Besmer and Lipford. “Beyond Untagging: Photo Privacy in a Tagged World,” Proc. CHI 2010.


Design considerations

- Photo privacy solutions must maintain the **identity management** and **social value** of photo sharing
- Users can generally **identify specifically** who they do not want to share with
- Tools need to adhere to notions of **ownership**, and the **tensions** between owners and tagged users.
- Users desire **immediate action** to protect themselves.
- Bring **negotiation** over photos into privacy tools.

Solution: RestrictOthers

Restrict others from seeing this photo

To: Andrew Besmer
From: Heather Richter Lipford

Regarding: A photo I have been tagged in: 

Please prevent: from seeing this photograph.

Optional Reason:

- Utilizes collaborative negotiation to manage privacy
- Changes tensions between owner and tagged user

Results from lab study

- Easily understood and liked:

“... it conveys a message to a friend who uploaded the picture that I did not like it. So next time he can keep it in mind. ”

“I like the fact that once it’s done, it is extremely unlikely that it will be undone, whereas untagging may be easily undone.”

- Most would likely grant such requests

“it would be pretty ridiculous to deny the request for any reason”

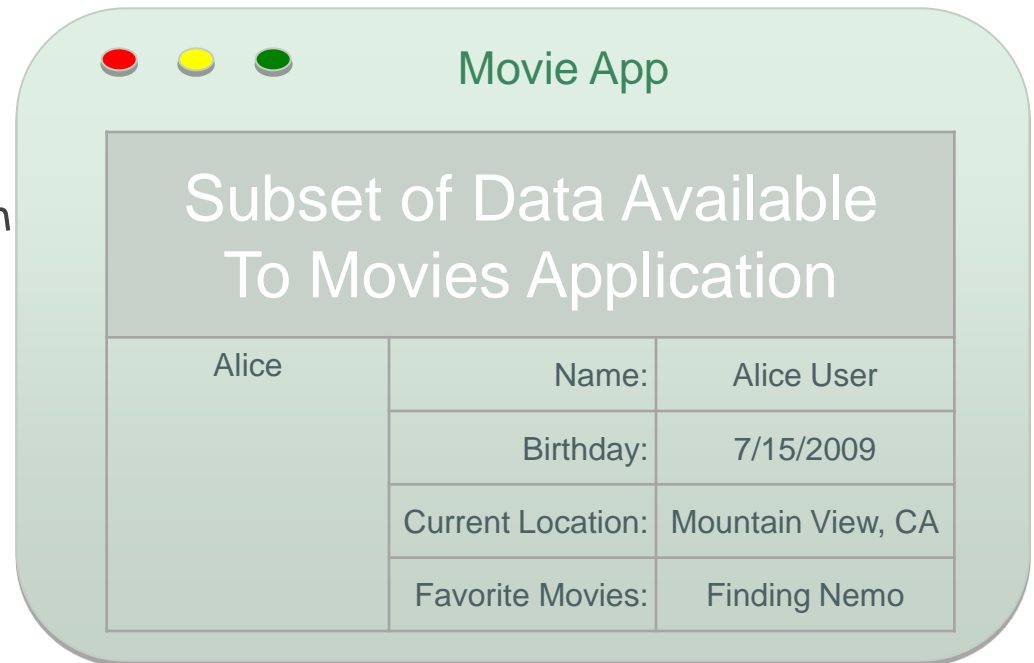
- But a lack of social consequences can still lead to denying the request

Application platforms



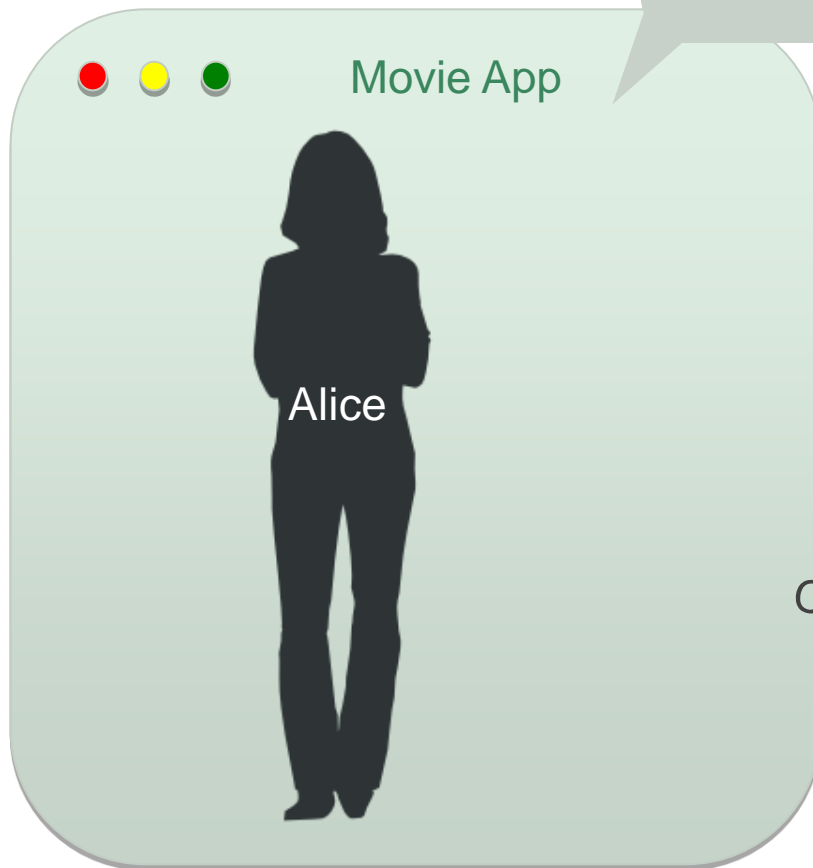
This movie app says it will give me a movie I will like, I'll add it.

Alice's profile data
Movie recommendation



Application Usage

With Alice's friends' info I can suggest a movie they can watch together!



Bob's Profile Information



Charlie's Profile Information



Application Usage

Movie App

Subset of Data Available To Movies Application

Alice	Name:	Alice User
	Birthday:	7/15/2009
	Current Location:	Mountain View, CA
	Favorite Movies:	Finding Nemo
Bob	Name:	Bob User
	Birthday:	7/16/2009
	Current Location:	Pittsburgh, PA
	Favorite Movies:	Up
Charlie	Name:	Charlie User
	Birthday:	7/17/2009
	Current Location:	Charlotte, NC
	Favorite Movies:	A Bugs Life

Produces



The user interface

THIS APP HAS ACCESS TO...



This application has access to the following:

- Your location:**
fine (GPS) location
- Network communication:**
full Internet access
- System tools:**
prevent device from sleeping
modify global settings

✕ Cancel

Request for Permission

Zuma Blitz is requesting permission to do the following:

-  **Access my basic information**
Includes name, profile picture, gender, networks, user ID, list of friends, and any other information I've shared with everyone.
-  **Send me email**
Zuma Blitz may email me directly at richter@uncc.edu · Change

By proceeding, you agree to the Zuma Blitz [Terms of Service](#) and [Privacy Policy](#) · [Report App](#)

Logged in as Heather Richter Lipford (Not You?)

Users don't know!

- So who do users think they are sharing data with?
 - Friends, business (advertising)

“Well I mean based on my privacy settings I think my profile is limited view, so only my friends.”

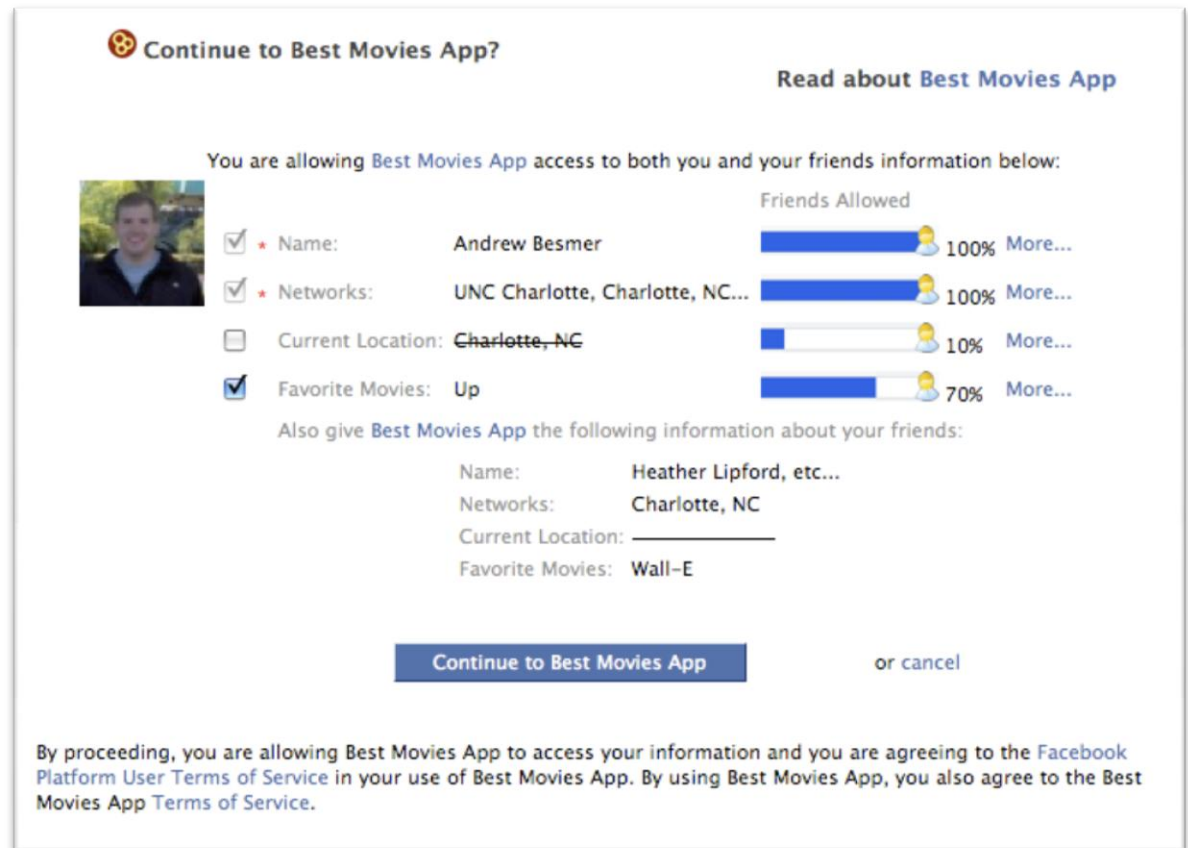
- What are they willing to share?

Name	100%
Picture	80%
Friends	60%
Birthday	60%
Political Views	36%
Work History	36%

Besmer and Lipford. “Users (Mis)conceptions of Social Applications.” Proc. GI 2010.

Solution: App Access Control

- Motivate user
- Build mental model
- Selective disclosure



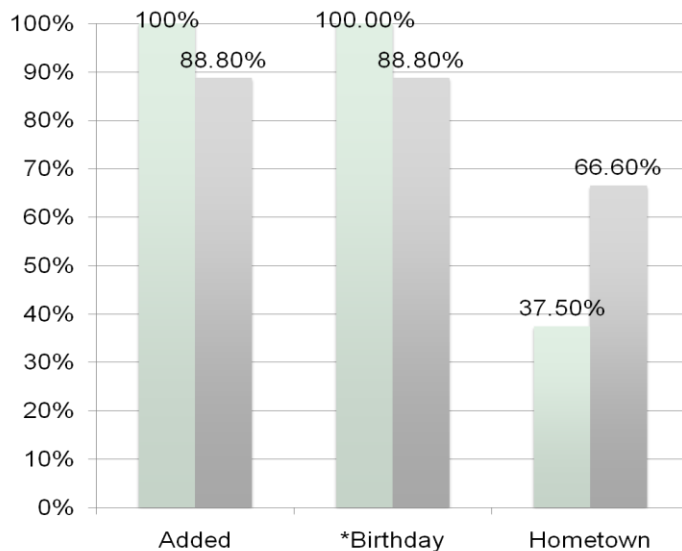
Besmer et al. "Social Applications: Towards a Secure Framework," Proc SOUPS 2009.

Would it work?

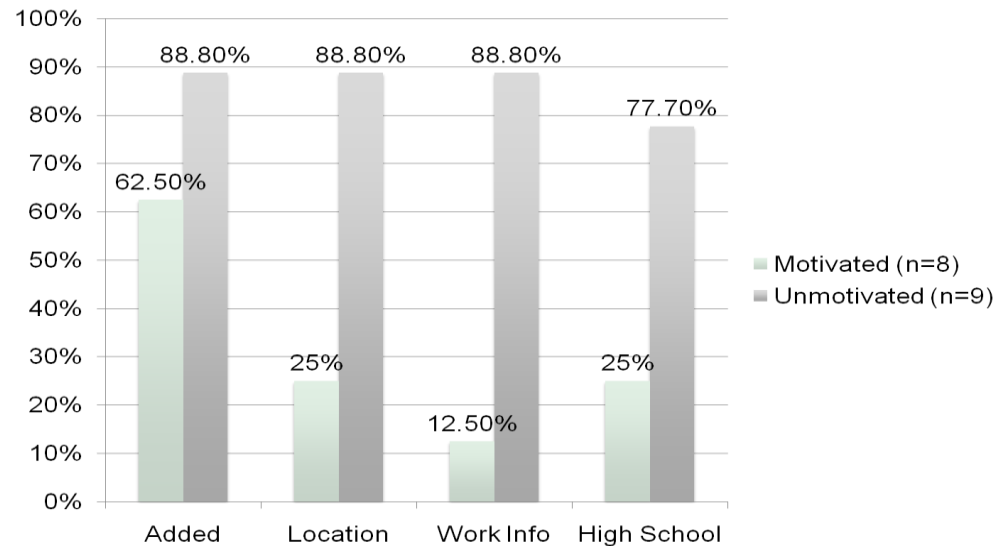
- Model depends on users setting policies
 - Will users set policies?
 - What strategies might they use?
 - Will users be able to protect themselves?
- Tested with simulating the installation experience
 - 11 Applications, with mixture of context-appropriate and inappropriate scenarios

Results

Horoscopes - Appropriate



High School Buddies - Inappropriate



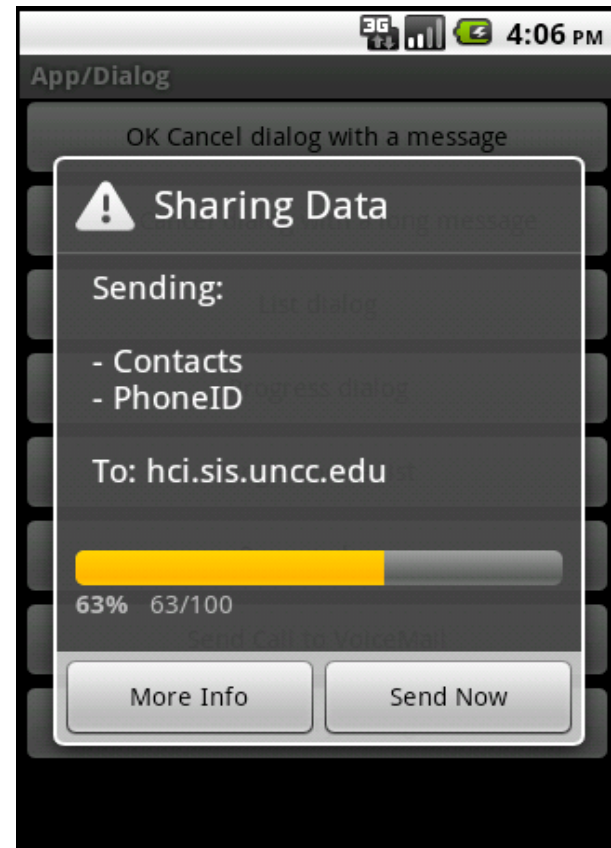
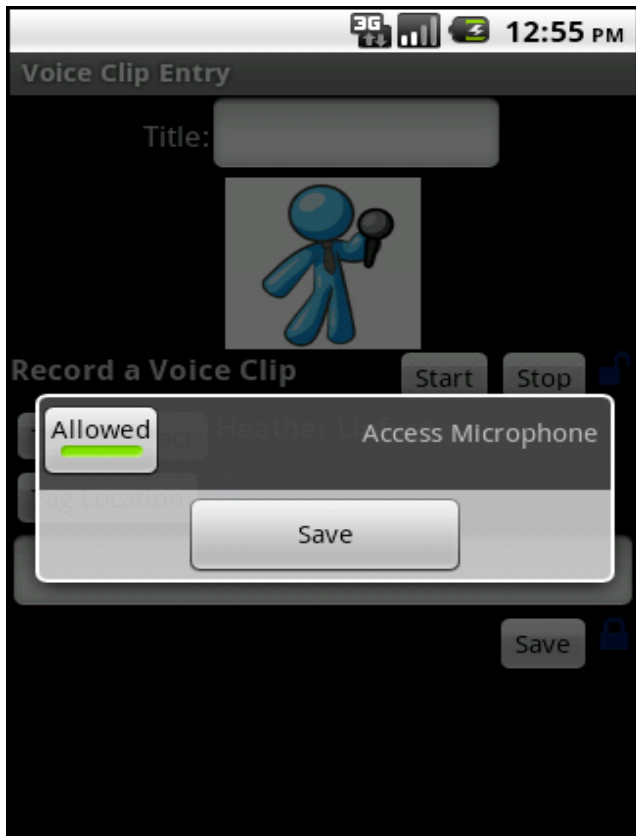
- Half our users modified policies on some applications to reduce their exposure
- Most still allowed context appropriate information to be shared

Summary of Results

- Motivated users are likely to protect themselves, while still using applications and sharing context-appropriate information.
- Unmotivated have some protection, but are likely to accept defaults, resulting in higher risks.

- Key problem: Authorization occurs before interaction with application

New interaction models



Conclusion

- Exploring mechanisms that:
 - Provide greater **control** over the information shared
 - Make privacy decisions **contextual**
 - Make information flows **transparent** during regular activities
 - Make information and context **concrete**

Thank you!

The HCI Lab: <http://hci.sis.uncc.edu/>



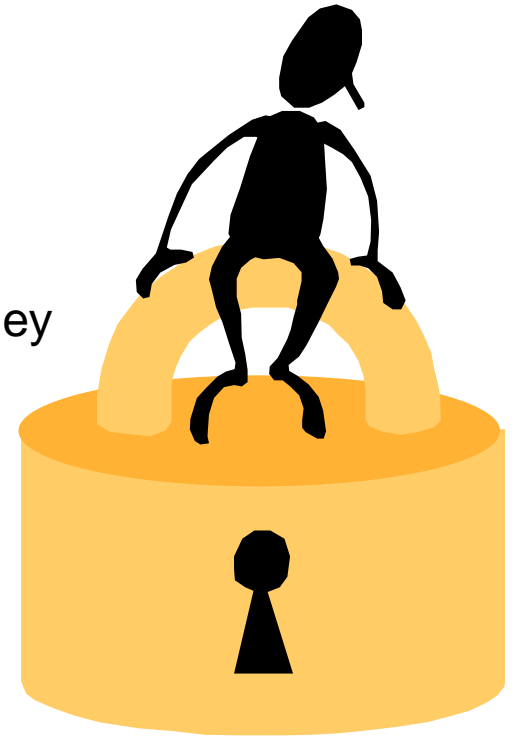
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