

Privacy-by-ReDesign: Alleviating Privacy Concerns for Third-Party Applications PI: Heng Xu | CNS-0953749 | College of Information Sciences and Technology | Pennsylvania State University http://pal.ist.psu.edu/

In online social networks, the aggressive way of data access and transmission by third-party applications (apps) has made privacy concerns particularly salient. A heightened need for empowering user control for third-party apps arises due to the inability to monitor the data use by app providers within and outside of the social networking platform and the inherent uncertainty about their privacy practices. The approach of Privacy by ReDesign is employed to investigate whether users can more adequately represent their preferences for sharing and releasing personal information with two newly proposed designs.

Apps' Problema	atic Data Practices		
	Users' Info	ormation Releasi	ing Description.
- Collect data from	Data Category	No. of apps request for the data	Total times of user information are requested by apps
the most popular	Access my basic information	1305	857,821,274
1800 Facebook	Send me email	454	238,991,048
TOUU FACEDUUK	Post to my wall	670	137,473,280
apps in Dec 2010	Access my profile information*	148	178,912,316
	Access my data any	76	17,450,664
- There is no way	time Manage my pages	8	237,067
for users to limit	Access my photos and videos	128	43,227,008
	Access my friends information	148	68,436,680
apps' data access	Access posts in my News Feed	66	30,635,352
or publishing	Online Presence	16	4,003,824

relationship Access Facebook	8	1,739,160
Chat	Ŭ	1,755,100
Send me SMS	10	1,195,720
messages		



The Amount of Information Could Be Released by Extended Permission "user_photos"

Proposed New Designs

Design Principles:

• [Control] The privacy authentication dialogue should provide options for a user to control an app's information access and use before adding the app to the user's Facebook profile.

• [Awareness] The privacy authentication dialogue should provide alert signals for a user when an app asks for the user's sensitive private information such as date of birth and address. Installed Not Installed

		90.00%
Request for Permission	Request for Permission	Request for Permission 80.00% 70.00% 70.00%
Application Survey is requesting permission to do the following:	Application Survey is requesting permission to do the following: (Move your mouse over ① and ① for more information.)	Permission Experiment is requesting permission to do the following: 60.00%
What types of information are impacted Allow access to provide service Application survey	What types of information are Allow access to provide service Service Allow access to post on wal / send message	Access my basic information Includes name, profile picture, gender, networks, user ID, list of friends, and any other information I've shared with everyone. 50.00% 40.00% Send me email remission Experiment may email me directly at the Genral come (Change) 30.00% 1000%
My basic information Includes name, profile picture, gender, networks, user ID, list of friends, and any other information I've shared with everyone. Email Application Survey may email you	Hy basic information Includes name, profile picture, gender, networks, user ID, list of friends, and any other information I've shared with everyone.	at @gmail.com · Change Post to my Wall Permission Experiment may post status messages, notes, photos, and videos to my Wall C CCS
directly. My photos Image: Comparison of the second seco	Email Application Survey may email you Image: Comparison of the second sec	Access my custom friend lists
My videos Image: Constraint of the second	My videos 🗹 🖳	Access my prome mormation 90 Birthday and Hometown 80
Birthday V V Hometown V V Current City V V	Birthday V O V Hometown V O V	Report App Logged in as (Not You?) Allow Don't Allow 50
Information people share with me	Current Oty Current Oty Information people share with me	
Birthday V Hometown Current City V V V V V V V V V V V V V V V V V V V	Birthday V V Hometown V V	Original Design on Facebook (Baseline)
Photos and Videos	Current City V V Photos and Videos V V	0 Baseline C CS
Report App	Report App	50 Facebook users were recruited per treatment from MTurk
g Out Allow Don't Allow	Log Out Don't Allow	I (Baseline) Current Facebook privacy notice
Proposed Design for Empowering Control (C)	Proposed Design for Promoting Awareness (CS)	II (C) Check-box design (for Empowering Control)

Proposed Design for Empowering Control (C)

Proposed Design for Promoting Awareness (CS)

III (CS) **Check-box and Signal design (for Promoting Awareness)**

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Selected Publication:

Wang, N., Grossklags, J. and Xu, H. (2013). "An Online Experiment of Social Applications' Privacy Authorization Dialogues," Proceedings of CSCW, San Antonio, TX.

Xu, H., Wang, N., and Grossklags, J. (2012). "Privacy-by-ReDesign: Alleviating Privacy Concerns for Third-Party Applications," Proceedings of ICIS, Orlando, FL.

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