

User study for the Web Wallet prototype

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We introduce a new anti-phishing solution, the Web Wallet. The Web Wallet is a browser sidebar which users can use to submit their sensitive information online. It detects phishing attacks by paying attention to where users intend to submit their information and suggests an alternative safe path to their intended site if the current site does not match it. It integrates security questions into the user's workflow so that its protection cannot be ignored by users. We conducted a user study on the Web Wallet prototype and found that the Web Wallet is a promising approach.

In the study, the subject played the role of John Smith's personal assistant and was given a list of John's usernames and passwords. The briefing about the study scenario is in table 1. The task was to process 20 email messages, all of which were requests by John Smith to ask her to go to 20 different web sites, log in with his password, and add items to his wish list. Each message contained a link for the user to click. A typical email is in table 2.

Before the user study, the subjects were asked about their demographical information (`questionnaires/pretest1.doc`) and their online experience with the tested web sites (`questionnaires/pretest1.doc`). After the user study, the subjects were asked about their subjective opinions about the Web Wallet prototype (`questionnaires/posttest.doc`).

The code to run the user study is in the `PrivacyGuard` directory. The user study is coded in C#. To run the test, create a directory of `C:\VisualStudio\` and put the `PrivacyGuard` directory under it. The screen resolution is required to be 1024 by 768. The real passwords for all the tested web sites are removed from the code. You can register at the web sites and insert your own set of passwords into the class of `PrivacyGuard.BackEndImp.SecureStorage`. We can then compile the project with Microsoft Visual C# .NET 2003. Both the source code and a compiled binary are included in this kit.

The file `irb-application.doc` is the IRB application for this user study.

The file `consent.doc` is the consent form we used in this study.

Reference:

Min Wu, Robert C. Miller and Greg Little "Web Wallet: Preventing Phishing Attacks by Revealing User Intentions" Symposium on Usable Privacy and Security, 2006.

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Welcome to the user study for Defensive Web Browsing

You are the personal assistant of John Smith. John is on vacation now. During his vacation, he sometimes sends you emails asking you to do some tasks for him online.

Even though John only uses a single password for his login accounts at different web sites, he cares about the security of his accounts very much. And you are required to be careful with John Smith's account information while you are doing tasks for him,



After you visit a web site, you can use the "home" button in the toolbar to go back to your email inbox.

Table 1: The briefing of the study scenario at the beginning of the study

From: John Smith <john_smith_1170@hotmail.com>

Subject: Fwd: Featured Digital Cameras at BestBuy

FYI: Please put the Canon - PowerShot 5.0MP Digital Camera into my wish list. Thanks.

John

From: account@bestbuy.com

To: John Smith <john_smith_1170@hotmail.com>

Subject: Featured Digital Cameras at BestBuy

Dear John Smith:

We are sending you this email to tell you about the featured digital cameras at BestBuy.

- Canon - PowerShot 5.0MP Digital Camera \$299.99
- Sony - Cyber-shot 5.1MP Digital Camera \$399.99

[Click here for more featured digital cameras.](#)

To put an item into your wish list, click on the intended item and then click the "ADD TO WISHLIST" link. You may be asked to login with your email address and password.

To unsubscribe to BestBuy's email notification service, log in and select My Account.

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Table 2: A typical email used in the study