
Will Automatically Importing User Data Help Overcome the Blank Slate Problem?

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Abstract

The 'blank slate problem' - the difficulty of initial use upon using a new program - is a common user experience problem. In this paper, we explore one solution: importing data from a similar product. Our team created a feature for our browser onboarding process that automatically imports data from the user's pre-existing browser. We then conducted remote, unmoderated usability studies and quantitative experiments. Our initial findings show that autoimport can solve the blank slate problem by getting users started quickly with the browser, but introduces issues related to perceived privacy and performance. We provide recommendations that can impact design decisions related to user data and user perceptions of their privacy, particularly as it relates to tech proficiency.

ACM Classification Keywords

H.5.2. [User Interfaces]: User-centered design

Author Keywords

onboarding; software onboarding; import; automatic import; user data; perceived privacy

Introduction

This paper focuses on the issue of importing user data into a newly downloaded web browser. Internet usage and desktop/laptop ownership are widespread. As of November

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2016, 88% of U.S. Americans access the internet [3] and 74% of U.S. Americans own a desktop or laptop computer [4]. If someone owns a laptop, they access the internet using a web browser (i.e. Microsoft Edge, Google Chrome, or Mozilla Firefox).

We sought to understand the following: “**Can we provide immediate value to users when using a new browser by automatically importing data from a previous browser?**” In the remainder of the paper, we refer to this feature as *autoimport*.

Much research on user onboarding is focused on software learnability [7] - that is, how quickly can a user learn to use a tool and find it valuable. Our work is novel, in that it does not focus on learnability, but rather getting a user started quickly. Web browsers, a mature product with a well-understood interaction pattern, are easy to learn, but become more valuable over time as more user data is collected and presented back to users in the form of navigation shortcuts, memory triggers, and pre-populated information. We wanted to understand if importing data from another browser would make our browser more usable and more useful in less time.

Related Systems

Recommendation systems and health software are relevant to our work because they are also systems that rely on user data to be useful.

An example of a recommendation system is YouTube video recommendations. Davidson et al. [5] mitigated privacy concerns by adding *why* a video was recommended and allowing users to choose *where* and *how many* recommendations appear on the page. Lui et al. explore a mobile application recommendation system that is privacy-aware [8]. Similarly, McSherry and Mirinov [9]

developed a method to build privacy into the Netflix recommendation system.

An example of health software is diabetes management mobile applications. Arsand et al. [1] recommend that such applications should *automatically* import glucose levels from glucose monitor devices.

Why we built autoimport

This paper focuses on the following use case: A user has a web browser (i.e. Google Chrome or Microsoft Edge) on their computer and has saved history, passwords, and/or bookmarks over time. The user installs a new web browser, Firefox, on the same computer.

In the current onboarding flow, the user is presented with the option to import data from another browser at the end of the installation process.

From prior internal research, we found that most users decide NOT to import their data because they either wanted to try out the browser first, they wanted a ‘fresh start’, or they were unclear how import worked and how long it would take. Users who do not import data may later encounter frustrations like forgetting a password because they did not import it to their new browser.

We thought that if we removed the import dialog step (see Figure 1) from the installation process and imported data automatically (while also giving the user the option to immediately undo the action), users would experience less friction in the onboarding process and find value in having their data in the product from first use.

How autoimport works

The user downloads and installs Firefox. Upon installation, the autoimport process starts, and detects the user’s default

Sidebar 1. Studies Timeline
 Dec '16 - Design 1 Copy Test
 Jan '17 - Design 1 Prototype
 Feb '17 - Design 2 Prototype
 Feb '17 - Design 1 Quant (fail)
 Feb '17 - Design 1 Live
 April '17 - Design 3 Prototype
 May '17 - Design 1 2nd Quant

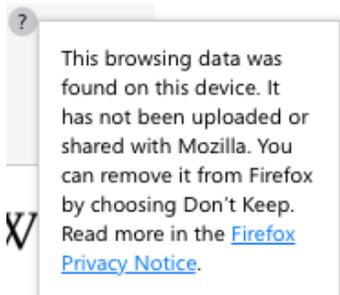


Figure 3: Autoimport Tooltip.

Sidebar 2. Discoverability
 Only 22 of 67 participants discovered the autoimport message on their own. In Design 1, this may be due in part to banner blindness [2]. Discoverability improved with Design 2, when the autoimport message was moved above the “Top Sites” section.

Study	% (#)
Design 1 - Copy	16% (6)
Design 1 - Proto.	55% (6)
Design 1 - Live	33% (1)
Design 2	100% (6)
Design 3	30% (3)

Table 1: Percentage and number of participants who discovered autoimport.

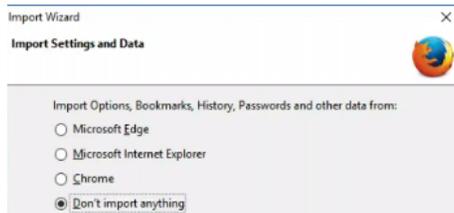


Figure 1: Import Dialog Box.

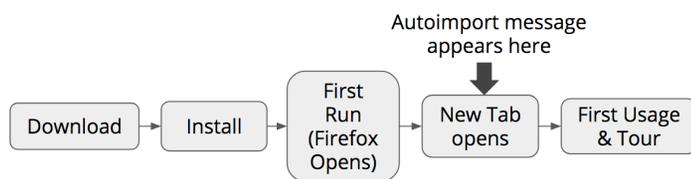


Figure 2: Download, Install, and Autoimport Process.

browser. Then, autoimport identifies the folder on the user’s computer that stores browser data. The folder includes some combination of browsing history, bookmarks, and saved passwords. If the folder is identified, the data in that folder is imported to Firefox. Firefox starts, shows a New Tab page to start browsing, and shows a message to confirm the import of their data, with an option to undo the import. Per Firefox’s Privacy Notice [6], the imported data (history, bookmarks and saved passwords) are not shared with Mozilla. See Figure 2 for a diagram of the download, install, and autoimport process.

Method

We conducted an iterative design process (see timeline in **Sidebar 1**). Each of our 3 high-fidelity interactive HTML prototypes were qualitatively tested with users to inform the next design. In parallel, we ran experiments on Design 1.

We performed 5 qualitative remote, unmoderated usability studies on the interactive prototypes via usertesting.com. Each of the qualitative studies varied in number of participants (total n = 67) and length, but covered the following topics: discoverability, understandability, perceived benefits, perceived concerns, and user actions. Thematic analysis was conducted to group reactions and behaviors.

Two *in situ* quantitative experiments tested usage across control groups (without autoimport) and treatment groups (with autoimport - option 4 of Figure 5). A quasi-poisson regression was conducted to determine impact to usage.

Iterative Design

Design 1. Below URL Bar Message

Design 1 was a message that appeared under the web browser URL bar (see Figure 4, Design 1). Next we conducted a copy test to determine which message to use (see Figure 5). After that, we conducted qualitative and quantitative studies with the design (see **Sidebar 1**).

After a qualitative study of the Design 1 prototype, we found that there was low discoverability of the autoimport message, minor misunderstandings of the “Top Sites” source, and some privacy concerns.

Design 2. Above Top Sites Message

To increase discoverability, the autoimport message appeared on the body section of the New Tab page, and included a star icon to draw the user’s eye toward it (see Figure 4, Design 2). To address Design 1 misunderstandings, the message was moved to be closer in proximity to “Top Sites”, to encourage the user to realize Top Sites were sourced from their browsing history.

After conducting a qualitative study of Design 2, we found privacy concerns again.

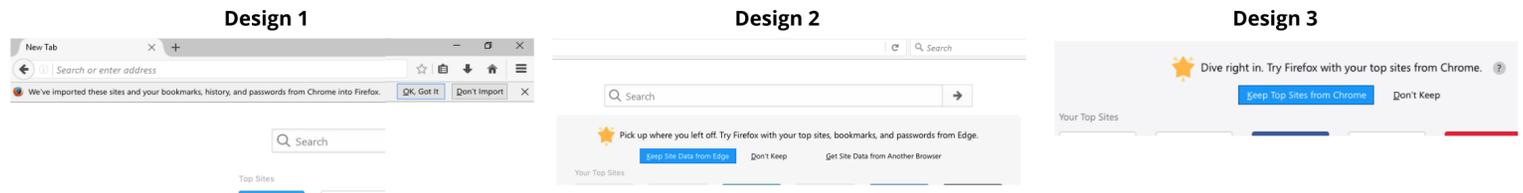


Figure 4: Autoimport Message Designs.

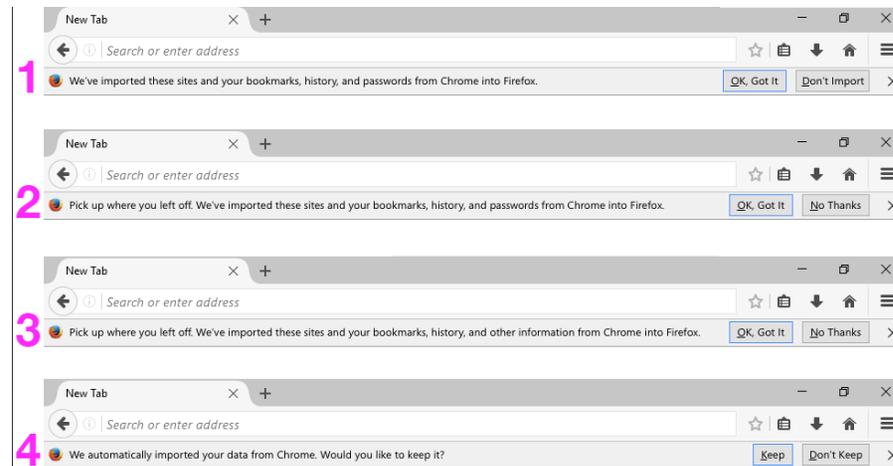


Figure 5: Variations of Design 1.

Sidebar 3. Understandability

Participants understood the autoimport feature. One participant explained, “Loaded up or recognized or copied what my top sites, bookmarks, and history from Chrome. Basically imported.” In the Design 1 Copy Testing Study, participants rated their understanding 4.7 on average (on a scale from 1 to 5 where 5 represented full understanding).

Sidebar 4. Benefits

Participants identified benefits of autoimport. For example, one participant said, “Hopefully this will be easier for me in my life. I don’t have to go re-bookmark everything as I find it.”

Study	% (#)
Design 1 - Copy	14% (5)
Design 1 - Proto.	36% (4)
Design 1 - Live	67% (2)
Design 2	33% (2)
Design 3	40% (4)

Table 2: Percentage and number of participants with privacy concerns by study.

Action	# of Participants
Don't Keep	4
Keep	13

Table 3: Concerned participants' actions.

Design 3. Revised New Tab Message

The message also appeared in the body section of the New Tab page but included an informational tooltip to assuage privacy concerns (see Figure 4, Design 3). When a user hovered over the tooltip, an explanation of autoimport appeared (Figure 3). In the qualitative study of Design 3, we found privacy concerns yet again.

Results

Autoimport had low discoverability (Sidebar 2, Table 1) but high understandability (Sidebar 3) and identification of benefits (Sidebar 4). Other results are detailed below.

Privacy concerns with autoimport

Some participants (see Table 2) expressed concerns with their privacy and consent. Specifically, participants had concerns with “how they knew about me” (privacy), “you can pull my passwords” from another browser (privacy), that “they” imported data “without asking me” (consent). At the end of the Design 1 - Copy Test study, we asked a question from Staddon et al. [10] about concern with their privacy on the internet. We then ran a Pearson-Moment Correlation to compare that rating with their comfort rating with autoimport, and it yielded no linear correlation ($r = .20$). Given the lack of correlation, the concerns with autoimport spanned many types of participants, and did not just impact those who were more privacy-conscious.

Benefits seem to outweigh the concerns

If participants were uncomfortable with autoimport, we would expect them to undo autoimport. However, 13 of 17 concerned participants chose to keep the imported data (see Table 3). Overall, the vast majority of participants (57 of 67) would keep their imported data.

An information tip may appease some discomfort

All participants who experienced Design 3 kept their imported data which may be due to the introduction of an informational tooltip (Figure 3). The tooltip appeased some concern with privacy; one participant stated, “It’s useful. It was found on this device. It wasn’t shared with Mozilla.”

A slow import negatively impacts usage

In each of the two *in situ* experiments, 1% of the population received the new version of Firefox that had autoimport. We compared this subset with another group who did not receive autoimport. The first experiment failed because importing data from Chrome sometimes results in crashing Firefox. The second experiment ran after the bug was fixed. Controlling for the different groups, the log of the observed jank (lag in page load), and the log of maximum import time, the number of sessions after install is negatively associated with increased import time ($\alpha=1\%$, $p=0.00127$, $\beta=-0.00804$). In other words, we found that when there is a longer import time (with both manual and autoimport), there is a slight decrease in usage.

The decision to hold off on autoimport

As of the writing of this paper, we have decided against including autoimport for two main reasons: 1) some users were concerned with control over their private data, and 2) import is not always fast enough.

Our next step is redesigning the import dialog to encourage users to *choose* to import their data.

Recommendations for designers

Carefully consider any design decisions if user data is involved. If an application requires user data to become more useful, carefully consider how the data is retrieved. If the data is sensitive, such as an individual’s browsing

history or passwords, expect to treat the data with extreme care as privacy concerns will crop up.

Design for privacy-concerned yet average

tech-proficient users. Participants did not understand that by answering ‘yes’ to the User Access Control prompt (appears when downloading software), that the software has access to the data on their machine. They also did not realize that bookmarks, browsing history, and saved passwords are saved on their machine. This misunderstanding contributed to privacy concerns.

Expect a tension between perceived privacy and usability. Privacy violations, even if just perceived, will be at odds with the design principle of reducing friction.

Conclusion

Participants identified the benefit of autoimport in solving the blank slate problem, however the feature introduced problems related to perceived privacy and performance. After multiple design iterations of an autoimport feature, we have two paths forward: improve the performance of importing data, whether automatic or not, and do more user research on the manual import option. This paper cautions designers to carefully consider design decisions that involve user data.

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