

## **Indiana University Address Book Usability Study**

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### **Executive Summary**

The Indiana University (IU) Address Book is a public web application for looking up staff, faculty and students at IU. Our goal for this study was to determine the usefulness and ease of use for the IU Address Book by administering usability tests on users unfamiliar with the application.

All three of the test subjects were able to complete the majority of the tasks we asked them to complete (three out of the five tasks). While all three test subjects had little prior experience using the IU Address Book, they all succeeded in locating people with whom they had some familiarity with. We concluded that the application is easy to learn and use for this particular type of search query.

However, there were a number of problems which all three users experienced while using the system. All three of the users had difficulty interpreting the “Update Address Book Information” link in the IU Address Book. We also noticed that there was no way for users to know that clicking on a searched item would then provide them with more information on that search.

Finally there is a potential problem with international students using the IU Address Book and the search criteria listed as “Last Name”. We recommend that the term “Family Name” be used instead.

We recommend that some minor rewording will help clear up some of these problems. This study also offers some screenshots that contain potential revisions of the application interface. The recommendations include offering more cues to the user to help them narrow down the search query and including more unique information in the results page to help users identify the particular person they are looking for.

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## **Introduction**

The IU Address Book was developed by Indiana University's University Information Technology Services (UITS). Its purpose is to help users look up personal information for IU employees, faculty, and students on all IU campuses. With a campus enrollment of above 98,000 (1), we consider this is a critical application. The current version is available online at <http://www.iub.edu/people/address.shtml>. It is open to the public. The interface was revised recently. Among other changes was the removal of the feature that allowed users to change details of their personal profile, such as their phone numbers. Instead, users now have to leave the application and go to OneStart to manage their personal profiles.

The IU Address Book was tested to determine the usability and usefulness of the current interface. We looked at what the issues were with respect to finding a person with whom you might be familiar with versus a person whom you do not know. We also wanted to find out how usable the interface was under time constraints.

We determined our target user group as anyone (staff, faculty and students) who has not used the Address Book before. We chose this particular target group because they would potentially generate more feedback.

## **Methodology**

### **Testing Setup**

Our testing occurred on Friday, September 15<sup>th</sup> throughout the entire day. Each test took approximately 20-25 minutes to complete and we tested a total of three users. Participants of this study were recruited on campus.

The test setup was a single computer which had a webcam attached as well as recorded audio. We used Camtasia to record clicks while interacting with the application. The webcam was set up to record facial expressions of the user during the test. We also set up a second video camera to help us analyze the results.

Our data logger sat next to the user's left side and the testing facilitator sat on the user's right side. The task list was placed on the table to the right of the user. The technical operator recorded the entire testing space (including the user, data logger, and the facilitator). A layout of the testing room is pictured in Figure 1:



**Fig. 1:** Testing Room Layout from the Perspective of the Technical Operator

Participants were required to fill in a pre-test questionnaire (Appendix 1) gathering demographic data. We used the think-aloud method to gather data regarding the users' experience. The observer also logged information regarding number of attempts to achieve a particular task, number of attempts at refining the search, number of assists needed to complete the search and the time taken to complete each task. General observations were also noted. Data logging sheets are attached as Appendix 2. After the users completed their tasks, a post-test questionnaire (Appendix 3) was administered.

## **Task List**

During the test, each task was read out to the user in addition to having a copy of the task on a sheet next to the keyboard so that the user could refer to it at any time. The tasks were covered with a sheet of blank paper and were revealed as each previous task was completed. Tasks were ordered in predicted difficulty, with the last two being the hardest.

The first three tasks also served as practice tasks for the user to familiarize herself with the interface.

Tasks 2 and 3 were intended to test search efficiency when searching for someone that the user already knows. Tasks 1 and 5 were intended to test search efficiency when searching for someone that the user does not know, or has only limited information about.

The link 'Update Address Book Information' on the search query page does not function as its name might suggest. It presents users with a 600 word Knowledge Base article

informing them how to go about changing their profile. Users then have to leave the Knowledge Base and go to OneStart to complete the task. From our own testing of the system, we found that changing details in one's personal profile was an awkward process. Task #4 is intended to confirm if this was also true within our target user group.

Task #5 was designed to test if the interface accounted for international naming conventions with regard to the order of Last Name and the First Name. In many Asian cultures, a person's given name is presented after the family name. In the United States, however the reverse is usually true. Furthermore, there are also some cultures where there exists no family name or multiple family names (2). While it is possible that most visitors to this country are aware of the naming conventions here, we hypothesized that 'Last' and 'First' Name were vague terms that did not allow for such cultural differences. Since IU is a multi-cultural environment, understanding this as an issue is critical to this application.

Task #5 also incorporates the time constraint factor.

- 1) Locate the contact details for "Martin (Marty) Siegel"
- 2) Think of a student, faculty, or employee that you know at Indiana University (by Name) and use the address book to locate their contact information.
- 3) Think of a student, faculty member, or employee at Indiana University that you know by username and search of them using their username only to locate their contact information.
- 4) Use the IU Address Book system to add a comment about yourself and to make a change to your personal telephone number.
- 5) T, a freshman who lives at Eigenmann Hall has an 8:30 AM appointment with his class instructor from China. His professor calls himself "Li". However, T is not sure if "Li" is the first or last name of the instructor. He vaguely remembers another name which started with a "C" and that his class subject is geology. It is now 8:15 AM and T needs to find his instructor's office so that he can arrive in time. Use the address book to locate T's professor for him.

**Fig 2:** Task List as Presented to Users.

We did not specify behavioral goals for our users. Since there are no previous studies on this application, there was nothing to compare against. Secondly, we focused on finding the problems with the interface more than setting benchmarks for the users. However, since we predicted that Task 4 would be hard to achieve, we set a 4 minute time limit for each task. If the task remained uncompleted after 4 minutes, the facilitator would intervene and request that the user proceed to the next task.

The facilitator also demonstrated how to complete the aborted tasks upon completion of the test and the post-test questionnaire.

## Results and Evaluation

With the utilization of Camtasia and a webcam we were able to record the number of clicks, facial expressions and audio. The data logger kept detailed records on time to complete the given task. The number of attempts at completing the task was recorded during the test and cross-checked with the Camtasia records later. Our goal here was to try to utilize all of the data that was collected as either primary tools of analysis or as supplemental tools of analysis.

Our primary tools were the quantitative data and the secondary tools were the qualitative data. We decided not to use any qualitative data to make any assertions about usability of the IU Address Book, unless it was consistent with the quantitative data and the post test questionnaire.

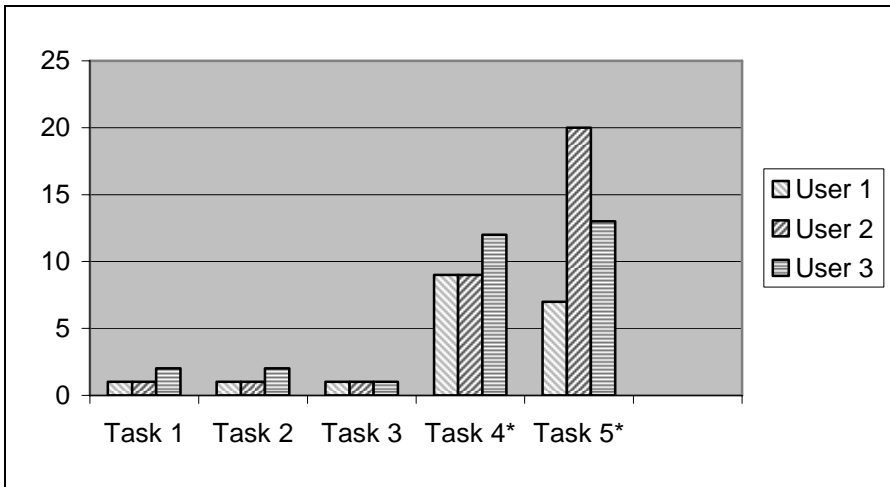
### Quantitative Data

	User 1	User 2	User 3
Age	30-39	18-29	18-29
Gender	F	F	M
Duration at IU	< 2 months	> 6 months	> 6 months
Used IU Address Book?	No	No	No
Used any other IU web tool?	Yes	No	Yes

**Table 1:** Pre-test questionnaire Results showing User demographics and Filter Questions

	User 1	User 2	User 3
Re-use IU Address Book? Level of comfort with IU Address Book? (Likert scale 1- least comfort, 5 – most comfort)	Yes 3 out of 5	No 3 out of 5	Yes 3 out of 5

**Table 2:** Post-test Questionnaire Results showing whether they would use the Address Book again and their evaluation of the Address Book

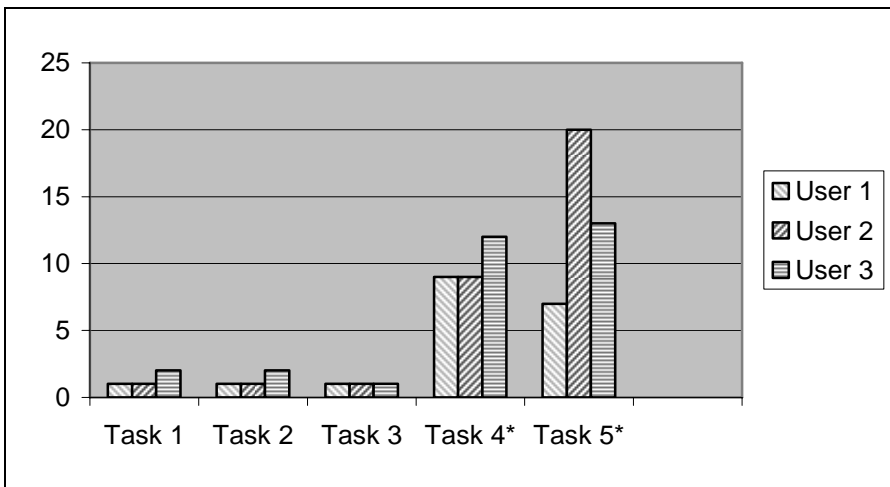


**Figure 3:** Bar Chart showing number of attempts by user and task.

\* Tasks were aborted at 4 minutes, so the number of attempts until the task was aborted is displayed.

	User 1	User 2	User 3	Total Attempts
<b>Task 1</b>	1	1	2	4
<b>Task 2</b>	1	1	2	4
<b>Task 3</b>	1	1	1	3
<b>Task 4</b>	9	9	12	30
<b>Task 5</b>	7	20	13	40

**Table 3:** Number of attempts taken to complete or abort task



**Figure 4:** Bar Chart showing time taken to complete task by user and task.

\* Tasks were aborted at 4 minutes, so time taken to achieve is listed as 4 minutes or 2 minutes 30 seconds, according to Table 4 below.

	User 1	User 2	User 3	Total Time
<b>Task 1</b>	50	30	28	108
<b>Task 2</b>	40	29	32	101
<b>Task 3</b>	10	15	5	30
<b>Task 4</b>	<i>aborted at 4'</i>	<i>aborted at 4'</i>	<i>aborted at 4'</i>	720
<b>Task 5</b>	<i>aborted at 4'</i>	<i>aborted at 4'</i>	<i>aborted at 2'30" due to monitor flicker</i>	630

**Table 4:** Time (in seconds) taken to complete or abort task

We realize that the Likert scale information is qualitative data, but we decided to include it here for ease of presentation.

### Qualitative Data

We viewed the qualitative data as a supplemental part to either reinforce our quantitative data analysis or to query methodology.

#### Webcam Data

User 1 articulated a high degree of frustration with tasks 4 and 5. This was expressed verbally by her constant sighs of confusion and consternation. This was also evident in her facial expressions.

User 2 was also hindered by both tasks 4 and 5 and verbally expressed a higher degree of frustration with design and function of the Address Book interface. User 2's facial expressions were consistent with her verbal expressions. Among her comments were: "This is dumb." Of all the users, User 2 had the most number of utterances with regard to her frustration.

User 3 behaved with confidence and speed at all 5 tasks. He attempted to click and try more things than the previous two test subjects. He exhibited a lesser degree of frustration verbally, but his facial expressions were consistent with frustration.

### **Usability Problems and Recommendations:**

These are the usability problems that we encountered. They are ordered by severity below, with their corresponding recommendations:

#### **1) Updating of User Profile cannot be achieved at all.**

Out of all three users tested, not one person was able to complete Task #4 (change details in your user profile). In Figure 3, we see the number of attempts at completing this task

risers dramatically among all users. It is conceivable that the number of attempts would have been much higher had the researchers not aborted the task at 4 minutes.

From our video data, all users followed the link “Update Address Book Information” but began to be confused once they saw that it brought them to the Knowledge Base article. Users 1 and 2 were switching between the Knowledge Base (KB) window and the Address Book window repeatedly. They did not find the OneStart link in the KB window that allows one to change their personal details in OneStart. User 3 did manage to find the OneStart link, but once in OneStart, was not sure which the correct link to click from there. When that was not successful, User 3 returned to the starting page of the Address Book and searched for information in the navigation bar instead. User 2 commented in the post-test questionnaire that the Address Book was “Too confusing - too many steps to get information.”

The webcam captured substantial frustration for all three users when trying to complete Task 4.

Our interpretation of the data:

- i) Ability for a user to change their own information is extremely difficult and annoying for all user
- ii) Link to Knowledge Base is deceptive. It reads “Update Address Book Information” and it implies ability to update the information immediately
- iii) Users are confused when they are required to update their personal information using a completely different system.
- iv) Information in Knowledge Base is not clear.
- v) Even in OneStart, the link to update one’s personal information is difficult to locate

**Our recommendations:**

- i) Option 1: Change the name of the link to ‘FAQ on updating personal information’. We believe that we cannot change at this time the structure requiring users to change their information in OneStart instead of directly in the Address Book. However, some help on updating information is needed on the page.
- ii) Option 2: Link ‘Update Personal Information’ directly to OneStart. Place the ‘FAQ on updating personal information’ link in the Personal Information window in Onestart.

The screenshot shows the 'IU Address Book' search interface. It includes a search bar with 'Last Name or Family Name' and 'First Name' fields, each with radio buttons for 'starts with' and 'is exactly'. There are dropdown menus for 'IU Status' (set to 'Any') and 'IU Campus' (set to 'Bloomington'). Below these are fields for 'OR search by username' and 'IU Username'. A 'Search' button and a 'Reset' button are at the bottom of the search area. A red oval highlights the search criteria options. Below the search area, there are links for 'Start New Search' and 'FAQ on Updating Personal Information', with the latter also circled in red. A 'NOTICE' section at the bottom states that the IU Address Book and university resources are provided for research, teaching, learning, and service missions, and are not for commercial use.

**Figure 5:** Recommendations for the Main search query

## 2) Users could not efficiently narrow search query.

Figures 3 and 4 show the number of attempts and the time taken to complete each task. Task #5 increased significantly for all users. Again, the users encountered difficulty in completing Task #5. Users 1 and 2 had to have the tasks aborted after 4 minutes. We aborted the task at 2 minutes 30 seconds for User 3 because there were some hardware issues causing the monitor to flicker. It was disrupting the test. Our video data shows that User 3 was encountering the same difficulties as User 1 and 2, and we believe that if given the opportunity to progress would still not have completed the task at 4 minutes.

Users 1 and 2 immediately entered 'Li' in the *Last Name* field. User 3 was not sure which field to enter Li into, but attempted *Last Name* first as well. When the results page was too long, all users returned to the search query to attempt a different permutation of the search query.

All three users attempted at different times to find a field to enter 'Geology' as a department by clicking on the 'IU status' selection box. User 3 suggested in the post-test questionnaire that, when referring to the Results page, he would prefer a "link to the department itself for location information." He also found that the Address Book Entry page (the final page containing the target information) was "too vague".

Department information does not show up in any part of the application until you click on a name in the search results list. User 1 did not seem to realize that she had to click on a name to see department information. User 2 had a long list of search results, and attempted to find the right person by randomly clicking on names in the list. User 2 did not realize that entering 'C' into the *First Name* field would have helped narrow the list of possibilities. User 3 realized that the results list was too long, but could not efficiently

narrow down the list. When faced with a challenge to his understanding of ‘First’ and ‘Last’ name, he repeated attempted different permutations of Li in both fields.

Our interpretation of the data:

- i) The “Too Many Results” error message is not informative. There is no suggestion to refine the search criteria which would be very useful for the user
- ii) It is not clear that clicking on a specific result will then provide the user with more information.
- iii) Finding someone you know is a lot easier than finding a stranger. This might be because the display of the name in the results page includes full names and middle names. This supplies sufficiently specific information to confirm that we have definitely found the right person.
- iv) Main page displays some ethno-centric design
  - (1) There is substantial confusion with regard to the meaning of ‘First Name’ and ‘Last Name’
- v) Each field in the Search page can ‘do’ different things – some are exact searches only, some execute ‘beginning with’ searches. This is not made clear in the interface. Hence, users are not aware that they can use partial name search to help narrow the search field.
- vi) Department information would help users narrow the search query.

## Our Recommendations

**IU Address Book**

382 results found. **Narrow your search?**

Your search has returned too many entries and only the first group of results has been returned. If the information you are looking for is not in the data below, please restrict your search again. For more information on how to restrict your search, please read this KB article. If you continue to experience trouble, please contact your campus Support Center.

Full Name	Campus	Affiliation
<a href="#">Li, Haiyan</a>	Bloomington	Employee
<a href="#">Li, Kaigang</a>	Bloomington	Employee, Student
<a href="#">Li, Richard</a>	Bloomington	Employee
<a href="#">Li, Yongbin</a>	Bloomington	Employee, Student
<a href="#">Liao, Jason</a>	Bloomington	Employee, Student
<a href="#">Liao, Lih Y</a>	Bloomington	Employee
<a href="#">Liao, Yu-Chen</a>	Bloomington	Student
<a href="#">Licini, Luke C</a>	Bloomington, South Bend	Student
<a href="#">Licklitter, Kate A</a>	Bloomington	Employee, Student
<a href="#">Lifer, Sherryl L.</a>	Bloomington	Faculty
<a href="#">Lifshitz, Laura Levitt</a>	Bloomington	Student
<a href="#">Light, Astara Claire</a>	Bloomington	Student
<a href="#">Lightner, Ashley R</a>	Bloomington, Indianapolis	Student
<a href="#">Limbach, Jacob D</a>	Bloomington, New Albany (Southeast)	Student
<a href="#">Lin, Chia-Hui</a>	Bloomington	Student
<a href="#">Lin, Hsiao Shuang</a>	Bloomington	Student
<a href="#">Lin, Raymond Chengwei</a>	Bloomington	Employee, Student
<a href="#">Lin, Tzong-Ching</a>	Bloomington	Affiliate
<a href="#">Lin, Tzong-Yih</a>	Bloomington	Affiliate
<a href="#">Lin, Yu Min</a>	Bloomington	Employee

**Figure 6:** Recommendation to prompt users to narrow query

The “Too Many Results” error message is not informative. There is no suggestion to refine the search criteria which would be very useful for the user. Our suggestion for the redesign is to tell the user how many results they found, and then to give the user the

option of narrowing their search. Clicking on the “Narrow your search” link would take them back to the search page with the fields, yet the fields they had already typed would remain filled in.

In Figure 6 we recommend offering feedback to the user regarding the total number of records. This is particularly important for ambiguous search queries where users have little or sketchy knowledge of the target person. The researchers also recommend prompting the user to return to the search query screen. The original message was only ‘Too Many Results’.

Full Name	Campus	Status	Department
<a href="#">Smith II, John Burnside</a>	Bloomington	Student	Informatics
<a href="#">Smith, John</a>	Bloomington	Affiliate	Informatics
<a href="#">Smith, John David</a>	Bloomington	Student	Informatics
<a href="#">Smith, John Jeremiah</a>	Bloomington	Student	Informatics
<a href="#">Smith, John L.</a>	Bloomington	Affiliate	Informatics
<a href="#">Smith, Johnathan Wayne</a>	Bloomington	Employee, Student	Music

[Start New Search](#) | [Update Address Book Information](#)

NOTICE: The IU Address Book, and University information technology resources, are provided by the University to facilitate the research, teaching, learning, and service missions of the University community. The con information provided in the IU Address Book is NOT intended for use by commercial entities for commercial purposes.

**Figure 7:** Recommendations to increase amount of information in the results page

There is some confusion between “Status” and “Affiliation” in the interface. Furthermore, clicking on someone who is affiliated with a specific department will show that affiliation on their page. We suggest that the department is listed on the results page before having to click on each person to see where their department affiliation lies.

In Figure 7, we recommend that Department information be included in the results page. In this screen, we see results for the search query “Smith, J.” In instances such as these, having the department information included will not compromise user privacy at all. Department information is currently only available from the final search screen (i.e. the target person’s profile page only).

We also noticed that there are some inconsistent naming conventions in the application. The term ‘Status’ should replace the term ‘Affiliation’ in the results page to retain consistency. In conclusion, the IU Address Book (while there were some common errors) is successful in searching for someone whom the user already knows. In the instance where the user doesn’t know exactly who they are searching for, the Address Book has its shortcomings. We also recommend a change to the “Update your Personal Information” link. This link is extremely deceptive and caused major frustration for all of our test subjects.

Overall, the usability testing of this interface was a complete success. Not only did we receive valuable information on usability testing and data analysis, hopefully the Indiana University Address Book can be improved to reflect some of our observations and recommendations.

## **Conclusions**

In conclusion, the IU Address Book (while there were some common errors) is successful in searching for someone whom the user already knows. In the instance where the user doesn't know exactly who they are searching for, the Address Book has its shortcomings. We also recommend a change to the "Update your Personal Information" link. This link is extremely deceptive and caused major frustration for all of our test subjects.

Overall, the usability testing of this interface was a complete success. Not only did we receive valuable information on usability testing and data analysis, hopefully the Indiana University Address Book can be improved to reflect some of our observations and recommendations.

**References:**

- 1) IU Address Book. <http://www.iub.edu/people/address.shtml>
- 2) IU Factbook. <http://factbook.indiana.edu>
- 3) [http://en.wikipedia.org/wiki/Family\\_name](http://en.wikipedia.org/wiki/Family_name)

## **Appendix 1: Pre-test questionnaire**

**(please check ✓)**

1. Age group: (  )18-29 (  )30-39 (  )40-49 (  )above 50

2. Gender: (  )Male (  )Female

3. How long have you been at Indiana University?

(  )less than two months

(  ) 2 to 6 months

(  ) more than 6 months

4. Have you used the IU Addressbook that is available online?

(  )yes. If yes, how many times in the past month? \_\_\_\_\_

(  )no

5. Have you worked on any part of IU web tools before?

(  )yes

(  )no

## Appendix 2: Data Logging sheets

User number: \_\_\_\_

	Number of attempts from main page	Number of attempts at refining search (from results page)	Number of assists	Time taken to accomplish task (or to give up)	observations
Task 1: Martin Siegel.					
Task 2: by name					
Task 3: by username					
Task 4: add a comment about yourself					
Task 5: T, a freshman lives at Eigenmann Hall...					

### Appendix 3: Debriefing Questions

User No. \_\_\_\_\_

Please check

- Prior to this test, how many times had you used the Indiana University Address book to look up someone's information, or change your own personal information?

- never
- about once a month
- about once a week
- more than once a week

- Do you feel that this is a system which you would use in the future to locate someone's personal information?

- Yes
- No

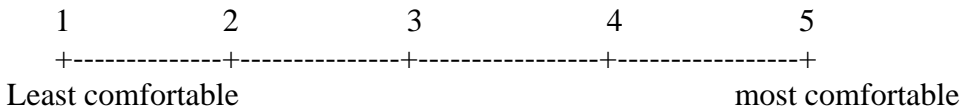
Comments:

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- On a scale of 1-5, with 1 being the least and 5 being the most, how comfortable do you feel using the IU Address book after participating in this usability test?



- Is there anything you wish to be changed regarding the current IU Address Book?

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