



Applications Accounts Management Services
Starter Kit

Owners Heather DeMoss

Date July 22-23

Activity Heuristic Evaluation _____
Usability Testing

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Participants	Roles and Ages	IU	
		Affiliate	Non-IU Affiliate
	Incoming Freshman (ages 16)		3
	Current Student (ages 20-28)	3	1
	Former Student (ages 24 and 33)		2
	Senior Citizen (ages 60 +)		2
	TOTAL	3	8

Executive summary

Usability testing of the Accounts Management Services and Starter Kit prototypes was conducted with eleven participants during the month of July 2002. The purpose of this study was to identify usability problems with both application designs. A range of participants performed five different tasks during a 45-minute session in the UITS usability lab at Indiana University.

Results of the study revealed that both the Accounts Management Services (AMS) and Starter Kit worked well in several areas. Most tasks involving the AMS were completed without difficulty. Barring technical issues, all participants were all able to create their accounts using the starter kit. In general, difficulties experienced had to do with a lack of helpful description about computer systems and how to access them. The Starter Kit did not provide adequate closure to the accounts creation process and guidance about how to proceed to access accounts. Participants who were not familiar with the IU computing environment expressed uncertainty about how to access the accounts they had created. A detailed summary of the results is provided in this report, including observations made during the participant sessions and 26 recommendations for the design team to consider as they proceed with their next iteration.

Purpose of Study

The purpose of this round of usability testing was to identify areas of difficulty for users within the Accounts Management Services (AMS) and Starter Kit systems. In collaboration with the AMS team, design recommendations were made to be implemented before the system was released.

Method

Usability testing methodology¹ was used to evaluate both systems. This approach involved having authentic users perform authentic tasks using the system, while evaluators observed and recorded their actions and comments. Users were asked to perform a think-aloud protocol² to help the evaluators understand their behaviors and gain insight into the design of the website. Sessions were performed on an individual basis with each session lasting approximately 45 minutes. Based on patterns identified from the first eight users, a few design alterations were made to how the accounts were displayed under the *Create an account* option in the AMS system. These alterations were then tested with the final three users. Following the last session, qualitative and quantitative data were analyzed and summarized and recommendations for redesign were made. Users were rewarded with a water bottle or CD case in return for their participation.

Participants

Participants for the study were identified and recruited by the Usability Consulting Services and the AMS development team. A significant effort was made to include a range of users that enroll in the eight IU campuses across the state. Individuals who participated in the study were from the following subcategories: incoming freshman (n= 3), current college students (n= 4), and adults and

seniors likely to return to school (n= 4). There was a wide range of web experience across the different subcategories. Current students rated their level of web experience as intermediate to advanced. Incoming freshman and former students tended to rate their experience with the web as intermediate, while both seniors rated themselves as beginners.

Eight of the eleven users had not affiliation to Indiana University and had never created IU computing accounts.

Procedures

Participants were read an introductory protocol and asked to complete a demographic survey to begin the session. In the protocol, users were asked to assume the role of a newly admitted student. Tasks were completed one at a time and were recorded as either 1) success with ease, 2) success with difficulty, or 3) failure to complete the task. Following the final task, participants were asked to complete a short questionnaire on user satisfaction and comment on one thing they would change about each system. One user performed the session at 800 by 600 with a mouse speed set to slow. All sessions were performed using Internet Explorer 5.5 on the Windows 2000 operating system.

Tasks

The AMS and Usability Consulting Services teams collaborated on the development and refinement of the tasks used for the study. The tasks developed were based on the functionality of the applications and written as scenarios. In testing the Starter Kit two users' names were entered incorrectly into the database to see how they would maneuver through the name correction display. Task 1b was given to users who experienced the incorrect name scenario.

Following the pilot session, a couple of tasks were re-worded slightly due to confusion expressed by the user. The final version of the task list is presented in the Results section that follows.

¹ Dumas, J. S., & Redish, J. C. (1993). *A practical guide to usability testing*. Norwood, NJ: Ablex.

² Ericsson, K. A., & Simon, H. A. (1993). *Protocol analysis: Verbal reports as data* (Revised ed.). Cambridge, MA: MIT Press.

Task	Success Easy	Success Difficult	Failure
1. Use the starter kit to create your accounts.	6	2	3*
2. Create the necessary account to publish a personal homepage at IU.	1	4	5
3. Forward your mail to your hotmail account.	9	0	1
4. Check the status of your CFS account.	7	2	1
5. Change your password	10**	0	0

*Three users could not proceed due to technical issues rather than usability problems.
 **The password maintenance section was not setup for data validation. Therefore, some users may have struggled with the system had normal password restrictions been in place.

Users were largely successful with systems tested. The only exception was task 2. Nearly everyone experienced difficulty completing this task because the information they needed was not available at the surface level. Instead, users had to click into the site to retrieve this information. By the time they typically reached the correct screen, they had given up on reading the descriptions because they hadn't found the content helpful.

While task completion rates were high, some users who were unfamiliar with the IU computing environment indicated that they would like to know more about the systems mentioned in the Starter Kit. Participants representing incoming freshmen seemed to have the most concern regarding this information. Given incoming students' levels of anxiety, providing added information in the form of a glossary or resource page would help to increase users' level of confidence as they go on to use IU computing systems.

Satisfaction

After completing the tasks, participants completed the Survey of User Satisfaction (Digital Equipment Corporation) to rate their experience using the systems (see Appendix I). Despite some difficulties with task 2, participant rated the systems positively. It is encouraging that participants did not believe they would need outside help in using the system (see Appendix I, Item 4). This suggests that the majority of new students will feel comfortable using the system.

The mean composite score for the system was (73.5 out of 100) which is fairly good for applications we have tested. We believe the recommendations below will further improve user performance and satisfaction.

Results

The following table presents the observations, interpretations, and recommendations for redesign. These data are organized into two major categories loosely based on a usability problem taxonomy³:

- *Task Problems* include those problems related to the effective mapping and facilitation of tasks by the system (e.g. navigation, process flow).
- *Artifact Problems* include those usability problems associated with individual interface objects (e.g. visual design, language, interactions with screen objects).

³ Keenan, S.L., *Usability Problem Taxonomy*

Starter Kit

Content & Presentation		
<p>After setting up their accounts in the <i>Starter Kit</i>, users could describe the services they had been given access to, but were uncertain about how to proceed to access those services. “I know my email is on the Shakespeare system, but I’m not sure what that means.”</p>	<p>This application does not currently provide guidance to new users as to how to proceed. Since many <i>Starter Kit</i> users will receive little assistance in getting started with computing at IU, new users may require more information to proceed to use the services available to them.</p>	<ol style="list-style-type: none"> 1. Modify the <i>Starter Kit</i> accounts confirmation screen to reduce information, while providing guidance to users (Appendix II). 2. Add <i>Print</i> button to confirmation screen so that users can easily refer to this information.
<p>After requesting their accounts and viewing the confirmation screen, users spent a significant amount of time reading the information on the page. One user suggested moving the non-critical information to another screen for those who want to read more.</p> <p>Users tended to focus on account information in the table rather than their .username and password confirmation.</p>	<p>Some of the information on the <i>Starter Kit</i> confirmation screen may be unnecessary.</p>	<ol style="list-style-type: none"> 3. Modify this screen to give focus to the <i>Username</i>, and <i>Email</i> items by displaying this information in a table. 4. Reduce the amount of description of the systems in the <i>You Can Now Access...</i> area. 5. Let this screen be the final screen to exit the system (as if it were the end result of a <i>Wizard</i> approach).
<p>Users had significant difficulty interpreting the password rules. 4 of 8 users made errors when inventing a password.</p>	<p>These rules are numerous and require concentration in order to be understood. Complex content such as this should be presented as consistently and concisely as possible to minimize effort on the part of the user.</p>	<ol style="list-style-type: none"> 6. Clarify password rules so that there are no inconsistencies (See Appendix III).
<p>Users were mixed in their reactions to the presentation of the <i>Usage Agreement</i> on many screens. Some said they would be more likely to read the information presented in this manner. Others scanned the material without appearing to give it serious consideration (10-15 seconds per screen).</p>	<p>Many users will not read the usage agreement unless forced to do so. It will be difficult to get users to understand the agreement short of quizzing them on it afterward.</p>	<ol style="list-style-type: none"> 7. No Changes.
<p>1 of 2 users did not notice that her name was misspelled after setting up the account.</p>	<p>Users do not expect for their names to be misspelled by the system, so they are not watching closely for this error. The font size may have been too small for the user to notice at a glance that her name was misspelled.</p>	<ol style="list-style-type: none"> 8. Increase the font size so that the user’s name stands out and is noticeable at a glance.

Observation	Interpretation	Recommendation for redesign
Interaction with Objects & Features		
When exiting the system, several users hesitated before clicking the <i>Exit</i> Button.	The <i>Exit</i> button doesn't fully describe the action associated with it. Users were uncertain whether the system will save their work upon clicking <i>Exit</i> and may have been looking for clues to make sure that <i>Exit</i> was the right choice.	9. Change button label on the password screen from <i>Continue</i> to <i>Create Accounts Now</i> to give closure to the confirmation screen. This will make the system seem more like a <i>Wizard</i> approach, which users are likely to be familiar with.
While users were able to correct their authentication information (birthrate) errors based on system feedback, the system forced them to make corrections one at a time.	Feedback worked well to alert people to mistakes in their passwords. However, users may expect the error report to address all the errors in their password selection.	10. Design the validation system such that it validates all fields before displaying the error message. Display all errors at the same time so that the user can make corrections in one pass. 11. Display error information next to the fields it refers to.
Upon being requested to enter personal information in the <i>Starter Kit</i> , one user indicated that he didn't feel comfortable giving this information because he didn't think the site was secure.	Some users are particularly sensitive to security issues and want to know that their personal information is being protected.	12. Display an icon with text indicating a secure connection.
Language Used		
Users were unfamiliar with certain terminology in the usage agreement and instruction (e.g. <i>Network ID</i> , <i>Dial-in Connect Time</i> , and <i>Radio Button</i>).	Many people are unfamiliar with conventional names for interface items and computer terminology. The current system presupposes knowledge of the IU computing environment. If users are to truly agree to the terms of use, then they must understand what those terms are.	13. Consider adding content that provides general information about the IU computing systems (perhaps in the form of pop-up windows with definitions of terms, or a <i>Glossary</i> section). 14. Substitute <i>Select [Item]</i> for items that have radio buttons for <i>Click the radio button...</i>
After setting up his account in the <i>Starter Kit</i> , one user noted that the system messages were in conflict. At the top of the page, it said that his accounts had been <i>created</i> , while it said that his accounts had been <i>requested</i> in the table below	The word <i>Requested</i> may lead users to believe they have to wait some period of time before they can use their accounts or that there are more steps yet to be completed in order to receive their accounts.	15. In order to simplify matters for the user, consider removing the distinction between <i>Created</i> and <i>Requested</i> for this system.

Accounts Management Service

Content & Presentation		
<p>When looking for the correct account to set up a personal homepage, users indicated that they were guessing between <i>Unix</i> and <i>Storage</i> even after descriptors to these were added for the final three users. (“I need more information to make a decision”).</p> <p>When creating a Steel account to host a webpage, some participants commented that they were not sure they had created the correct account. One user created four accounts without realizing that he had done so.</p>	<p>Users need to already know what kind of system they want in order to make a decision at the top level. There was no information present for users to compare the systems in order to make an informed decision.</p>	<p>16. Below the headers <i>Unix</i> and <i>Storage</i>, present specific accounts (<i>Steel</i>, <i>Ships</i>, <i>CFS</i>) with radio buttons to select them and a brief (3 – 5 word) description of what these accounts are used for. (see Appendix IV)</p> <p>17. In the description, note only the things that set each system apart from the others in order to facilitate decision-making.</p>
<p>One the <i>View Current Accounts</i> screen, users gave different responses regarding what the date meant. Some said it was the date the account was created, while others suggested that it might be the date last visited.</p>	<p>Since there was no header presented, users had to guess what the date referred to.</p>	<p>18. Add a <i>Created</i> and <i>Status</i> column header to the table on the <i>View Current Accounts</i> screen.</p>
Interaction with Objects & Features		
<p>After creating their accounts, nearly all users indicated that the account description information was not helpful to them.</p>	<p>Users are primarily concerned with what the account will allow them to do, not with the hardware specs of the computer.</p>	<p>19. On the confirmation screen, change the <i>System Information</i> to indicate what functionality or specifications are unique to each system to aid the user making a decision.</p>
<p>Users tended not to click the links around account types (such as <i>Unix</i> or <i>Storage</i>), which caused them added effort in completing their tasks.</p>	<p>When radio buttons are placed next to the links, it is more difficult for users to notice the link.</p>	<p>20. Present accounts as plain text instead of links and add a <i>More Info</i> link next to the account description. (see Appendix IV)</p>
<p>Several users mentioned that they would like a <i>Home</i> button to get back to the main page of AMS.</p>	<p>The AMS main page provides additional descriptions of menu items, which may be helpful to users. Providing <i>Home</i> link will complete the navigation.</p>	<p>21. Add <i>Home</i> link in navigation menu.</p>

Observation	Interpretation	Recommendation for redesign
Language Used		
Some users indicated that they felt <i>View Current Accounts</i> would provide a list of all available accounts at IU as opposed to the user's personal accounts.	For some users, the term <i>current</i> is not specific enough to indicate that it refers to an individual's specific accounts.	22. Change <i>View Current Accounts</i> to <i>View My Accounts</i> .
Several users perceived inconsistencies on the <i>Password Maintenance</i> screen. (e.g. says, Most Accounts / All Accounts, Do not change password while logged in)	Users may have mistaken the bulleted items for instructions rather than what the maintenance page allows you to do. In this case, the information would have seemed contradictory.	23. Display <i>You Can</i> directly above the bullets instead of in the paragraph body above them.
Several users commented on the terminology used on the <i>Password Maintenance</i> screen. The phrase <i>Set Passwords To</i> was confusing for some users. One user wondered why 'passwords' was plural. Two users suggested using <i>Change</i> or <i>New</i> in place of the term <i>Set</i> . They referenced the parenthetical text to the right of the field when making this suggestion.	Users are likely to be familiar with the words 'Change' or 'New' in regards to passwords. For some users, the term 'Set' is perceived as more of a technical term.	24. Change the text field label from <i>Set Passwords to</i> to read either <i>New Password</i> or <i>Change Password to</i> .
Visual Design		
On <i>Password Maintenance</i> page, the password rules are displayed at the bottom of the page. Users must scroll to see them.	Novice and intermediate users may need to refer to the instructions to change their passwords correctly. Many user rarely change their passwords and will not remember the rules.	25. Display the password requirements above the password entry fields.
Although no users verbally commented on the issue, there was no visual cue on the menu bar to indicate to a user where they were in the navigational structure.	Adding a visual cue to the navigation bar will provide added clarity to the interface.	26. Retain the arrow visual cue found in the first prototype (see http://gullwing.itpo.iu.edu/prototype/v1/2pswd_setupid_agree.php)

Conclusion

Users' success rates with the Starter Kit were high. The three of eleven users who were not successful experienced technical difficulties that prohibited them from continuing. This indicates that provided these technical issues are resolved, first-time users of the system should have little difficulty setting up their initial accounts.

Users did indicate that the information provided in the Starter Kit was not sufficient to let the user know how to proceed to access the accounts created in the process. Participants representing incoming freshmen seemed to have the most concern regarding this information. Given incoming students' levels of anxiety, providing added information in the form of a glossary or resource page would help to increase users' level of confidence as they go on to use IU computing systems.

Users were very successful with the Accounts Management Service. Difficulties did arise when users had to figure out which system to create an account on to host their personal webpage. The information on the initial *Create Accounts* screen was found to be insufficient.

The recommendations contained here stress making relevant information readily available, designing the interactions to emphasize task closure, and removing unnecessary information.

Appendix I Satisfaction Data

Satisfaction User Survey (by question)	1 strongly disagree	5 strongly agree	Median	Mean
1. I think that I would like to use this system frequently.	2	3 4 2 5 4 3 3 4 4	3.5	3.4
2. I found the system more complex than necessary	4	2 2 1 1 2 3 2 3 2	2	2.2
3. I thought the system was easy to use.	3	4 4 4 5 4 2 4 4 5	4	3.9
4. I think that I would need the support of an experienced person to be able to use this system.	1	2 1 1 1 1 4 2 2 1	1	1.6
5. I found the system visually appealing	5	2 3 4 1 5 5 2 5 4	4	3.6
6. I thought there was too much inconsistency in this system.	4	2 1 2 1 1 2 3 1 1	1.5	1.8
7. I would imagine that most people would learn to use this system very quickly.	2	4 5 4 5 4 2 4 5 4	4	3.9
8. I found the system very cumbersome to use.	4	2 1 1 1 1 2 2 2 2	2	1.8
9. I felt very confident using the system.	5	4 5 4 3 4 3 4 4 4	4	4
10. I needed to learn a lot of things before I could get going with this system.	1	1 1 2 1 1 3 5 3 2	1.5	2
Satisfaction User Survey (Total SUS by participant)	SUS (0-100)			
Pilot	57.5			
User 1	70			
User 2	87.5			
User 3	77.5			
User 4	85			
User 5	87.5			
User 6	52.5			
User 7	NA			
User 8	57.5			
User 9	77.5			
User 10	82.5			
Average:	73.5			

Appendix II Starter Kit Final Screen



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Review Account Information

Congratulations, you have successfully created your computing accounts. Carefully review and write down the account information below. If you have problems with any of your accounts, contact your campus Support Center or Help Desk.
To create more computing accounts at IU visit <http://accountingmgmt.iu.edu>.

Account Information:

Your IU username is **mathayes**.
Your email address is **mathayes@indiana.edu**.

The following accounts have been requested for you.

Account	Information
Email	Pine mail on the Shakespeare system is a text-based email system. You can use Pine on the Shakespeare system at any UITS public computing site or from any network connected computer. From home you can also use Pine if your computer has an internet connection.
Network ID	Kerberos is the University Network ID authentication service.
ADS	An Active Directory Service account is required in order to log on to most Microsoft Windows workstations, and to use Microsoft services such as Exchange email and file sharing.

Now You Can Access:

Email

Include a brief, single-sentence description here. [Find out more.](#)

University Computing Facilities

Include a brief, single-sentence description here. [Find out more.](#)

Account Management Services

Include a brief, single-sentence description here. [Find out more.](#)

OnCourse

Include a brief, single-sentence description here. [Find out more.](#)

OneStart

Include a brief, single-sentence description here. [Find out more.](#)

IU Ware

Include a brief, single-sentence description here. [Find out more.](#)

Print Page

I'm Finished

Appendix III Password Screen



Step 9 of 11: Choose a Password

It is very important to protect your computing accounts with a secure password. Never write your password down on paper or share it with anyone.

Remember, you will use your password on all IU computers and many other online IU services. The frequency at which you will use your password will help you quickly memorize it. Review IU's password guidelines, enter your new password, and click continue.

Passwords **MUST** contain at least:

- Eight to fourteen characters (letters, numbers, symbols)
- Two numbers or symbols in the first eight characters
- Five different characters

Passwords must **NOT** contain:

- The following symbols: @, #, &
- Doubled numbers or symbols (e.g., 99 or %%)
- Words or names spelled forwards, backwards, or in a foreign language
- A Social Security number in the first nine characters of the password
- Words constructed with similar-looking number substitutions (e.g., 0 for O, 3 for S, 1 for l), as in: capt@nkr1kr or m5p0ck

Enter Password:

Re-enter for verification:

Create Accounts

Cancel

Review IU's password guidelines, enter your new password and click continue.



Select a service:

- [change current password](#)
- [create more accounts](#)
- [forward your e-mail](#)
- [view current accounts](#)

Step 1 of 3

Select type of account

Jennifer Sweeny our records indicate you are entitled to create accounts and use the systems listed below. Note that this list does not include accounts that you already have. To create an account, select radio button next to it and click Continue.

Unix Accounts

What you can do:

- | | | |
|---|--|------------------------------------|
| <input checked="" type="radio"/> Steel | Host personal web pages | more detailed info |
| <input type="radio"/> Ships | Work from SGI workstations | more detailed info |
| <input type="radio"/> Nations | Use C, C++, Pascal, Fortran 77 and 90, and the Java Development Kit. | more detailed info |

Storage Accounts

- | | | |
|---|---|------------------------------------|
| <input type="radio"/> Common Files System (CFS) | Store a modest amount of files on IU servers. | more detailed info |
| <input type="radio"/> Andrew Filing System (AFS) | Blah, Blah, Blah | more detailed info |