IPM Usability Test Results

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September 18, 2002

Subject: IP Manager (IPM) Paper Prototypes
Test Participants: Wendi Powers, Neil Norman, and Randy Manning
Test Dates: September 13 and 17
Design Team: Olivier LeRoux, Chris Alexander, Chris Jackson

Summary

Using the IPM use-case model, the design team performed task analysis, constructed abstract models, drafted paper prototypes, and performed usability testing for several generations of the paper prototype with three participants: two from Customer Support and one from NOC.

The final version of the prototype organizes the main parts of the software into two modes: Search and Add:

- Search mode is what is displayed when the user logs on to IPM. Search mode contains a navigation area with three tabs: Sites, Pools, and Advanced Search. The user can drill down through search results to find any and all information about pools and assignments.
    - The Sites tab contains a tree menu of all of the sites in the database. When the user selects a site, all assignments for that site are displayed in a results table to the right of the navigation area. The user can click any of the assignments to view and edit assignment information.
    - The Pools tab contains a tree menu of the pools as they have been created in IPM. When the user selects a pool, information for that pool is displayed. The user can click a Show Details button to view additional information about the pool.
      NOTE: The reason the additional information is not displayed initially is that the design team is concerned about the amount of time it would take to display detailed information for a very large pool. The developer is looking into this.
    - The Advanced Search tab contains a radio group at the top: Assignments and Pools. The user can search either assignments or pools; the fields that are displayed depend on which radio button the user selects. The user can enter information in one or more fields and perform a search. Results are listed in a table to the right of the navigation area. The search fields retain the input data, so the user can refine his or her search.
- When the user clicks the Add tab, two sub-tabs are displayed: Assignment (default) and Pool. The user clicks the Pool tab to add a pool and the Assignment tab to add an assignment. When the user clicks Save in either tab, a confirmation message appears at the top of the tab and the fields go blank so he or she can add another assignment or pool.

This version of the prototype addresses the usability issues listed below.

Terminology

Pool: A group of IP addresses with a name and a range defined by Engineering.

Site: An LEA office or school.

Assignment: A range of IP addresses assigned to a site, either as reserved or allocated.

Available: A range of unassigned IP addresses.

Reserved: An assigned range of IP addresses that has not yet been allocated.

Allocated: An assigned range of IP addresses that has been distributed for use to an LEA office or school.

Interface Issues

Usability testing found the following issues with the IPM interface:

Module	Issue	Action
Navigation	The design team noticed that the participant had trouble navigating between task modes ("How do I get back to Search?").	Replace the taxonomic top-level navigation (Pools/Assignments) with a task-based top-level navigation (Search/Add).
Search > Pools	When the participant first entered the Search > Pools screen, she tried to search using the display-only fields in the main screen.	While this issue should be cleared up when the interface is online (unavailable fields will be grayed out), the design team decided to make the default main screen (to the right of the navigation area) for Sites, Pools, and Advanced Search tabs display only help text (e.g., "Select a site to view assignment information for that site"), rather than have the screens default to information for the root items.
Pool Information	The participant asked if she could view range information from the Pool Information screen.	It'll be easy to add this functionality: Just make the data in the Range column hyperlink to the Range Information screens.
Range Information	The participant discussed a tool she uses to translate between different ways of describing IP addresses. She said that she would like to see that.	Rather than just translating a requested range to one format or another, it would be easy to display the different ways each range can be expressed: as CIDR, as Subnet, and as the actual range.

Module	Issue	Action
Add > Assignment	The participant remarked that she might like to look up information about a pool while she was creating a range.	The design team discussed several ways of accomplishing this. We initially thought we would be able to tab between Search and Add modes, saving the state of each screen so that the user could flip back and forth. But then we realized that there needed to be a warning notice when the user was leaving a screen with unsaved data (e.g., "You haven't saved the data. Are you sure you want to leave this screen?"). The system has no way of knowing whether the user is leaving the screen for good or with a plan to return. So, the user cannot leave a screen without saving or not saving data. So, the user cannot toggle back and forth while working. There are two workarounds for viewing existing data while adding new data: Use the Back button in the user's browser, or open a new browser window.
Add > Assignment	Participant was not sure what format to use when entering a requested range size.	Add "Use CIDR or Subnet" help text for the Size field on Add and Edit screens.
Search > Pools	The design team noticed that the Pools tab label was missing an "s."	Add the "s." Also, the Assignment and Pool labels for the Add sub-tabs should be singular, not plural.
Add > Assignment	The participant asked about a Refresh button on certain screens, to make sure that a range was still available when he paused while creating an assignment.	The displayed range data can be verified by clicking the Find or Check buttons. There is also the browser's Refresh button (not shown in the prototype). Field data is also verified when the user clicks Save. We do not feel the need to add a Refresh button.
Search	The participant went to the Advanced Search tab when using the Sites or Pools tab would have been more efficient.	The design team discussed this and determined that there is a certain amount of interface paradigm that users have to learn. We expect that when users being to use the actual application (onscreen, with full functionality), they will understand

Module	Issue	Action
		the functionality of the Sites and Pools tabs and use those tabs advantageously.
All	We forgot to mark which fields are required.	Using information from the Software Licensing System design process, we have added asterisks to left of labels for required fields.
Edit Screens	For both the Edit Assignment and Edit Pool screens, view-only information is displayed about who created the item and when. The participant remarked that he'd like to be able to know when the item was last modified.	The design team changed the labels to "Modified by" and "Modified on." These fields will display only the information for last create/edit session. For information going further back, the user will have to make a request to the database team. We could include this functionality in a future version, but it is beyond the scope of the requirements. The design team also doubts how much change log information would actually be used.
Search > Advanced Search	The participant wasn't sure how to clear the information in the Advanced Search tab fields.	Add a Clear button to the lower left corner of the Advanced Search tab. Move the Find button to the lower right corner (to cut down on mis-clicking).
Edit Assignment	The participant wasn't sure what the Sites tree was for and how it functioned.	The first design had a Pools tree on the left and a Sites tree on the right; the user picked one item from each column to determine the pool and site for the assignment. This was confusing. The design team came up with the idea of replacing the always-present trees with dropdown versions of the tree: Now the information is more logically placed on the screen, as part of the sequence of steps. There are some questions about creating this mechanism in VB.NET, which the developer is looking into.