Usability Testing
Of Sirsi Unicorn / WebCat

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Poster session, American Library Association Conference, July 9, 2000
ABSTRACT

Carnegie Mellon University Libraries conducted research for Sirsi that exemplifies how a partnership between libraries and vendors can improve software.

The Libraries conducted research and recommended changes to the Unicorn user interfaces. Sirsi revised the software based on the results of the initial phase of research. The Libraries then tested the new version of the software using the same research instruments to determine whether usability was improved.

The initial phase of testing revealed problems in the design and performance of Unicorn. For example, users complained that WebCat and the Unicorn staff modules were slow, difficult to navigate and provided inadequate onscreen instructions and error messages. The second phase of testing revealed improvements in interface design and functionality. Users still experienced some problems, but they were more satisfied with system speed and navigation. The University Libraries also used the research results to further customize WebCat.

PROBLEM

Systems designed with thorough knowledge of the tasks the software is to perform but without thorough knowledge of how users interact with the software are bound to have problems in the interface between human and computer.

OBJECTIVES

- To identify areas for improvement in the Unicorn staff and public user interfaces
- To make recommendations for enhancements

RESEARCH

1995
- Summer: Circulation GUI protocols & survey
- Summer: Acquisitions GUI protocols & survey
- Summer: GUI & CHUI interface survey
- Fall: Windows OPAC protocols & survey

1996
- Winter: Macintosh OPAC protocols & survey
- Spring: OPAC focus groups
- Fall: Serials GUI protocols & survey

1997
- Spring: Cataloging GUI protocols & survey
- Summer: Recommendations Report
- Fall: WebCat protocols & survey

1998
- Spring/Fall: System performance tests
- Fall: WebCat protocols & survey
- Winter: GUI & WebCat interface survey

1999
- Spring: Workflows Circulation protocols & survey
- Fall: Focus groups

2000
- Winter: Workflows Cataloging protocols & survey
CONCLUSIONS

Research & development take longer than expected.

*Interface Design & Functionality*

Reduce clutter

- Remove or gray-out inactive options & buttons
- Remove the scroll bar when it is inactive
- Simplify & shrink the icons

Change colors

- Use soft blues, greens, grays, yellows
- Avoid putting difficult-to-discern colors together

Improve readability

- Use upper- & lower-case letters on buttons & menus

Simplify navigation

- Provide keyboard shortcuts for often used options
- Enable the Page Up, Page Down & Arrow keys
- Enable the scroll bar when it is visible

Provide

- Visible, explanatory, enduring & consistently formatted error messages & system feedback
- Onscreen examples of data-entry formats
- Onscreen indicators of required data-entry fields
- Onscreen instructions to press Return
- Contextual cues to indicate where users are
- Vocabulary that matches user expectations
- Better context-sensitive online help

Enable users to

- Cancel searches in progress
- Return to their previous result set after doing a hypertext search
- View, navigate & submit as a query a list of marked items
- Save, mail & print result sets, a list of marked items, single records without marking them, & multiple (marked) records at once
Other

- Protect users from common trivial errors
- Integrate Unicorn authentication with Kerberos
- Make date limits & sorting results easier to do
- Make the reserves functions easier to use

Performance

Spring 1998 baseline test

DEC AlphaServer (single 200 MHz processor, 256 MB memory, SCSI-2 disk controller, Digital Unix v2.0, 10 Megabit per second connection to the campus network), CERN web server, & Digital 486/33, Digital 586/133 & Dell Pentium 166 client PCs

- The number of records retrieved did not affect system load or the speed with which results were delivered
- Other Unicorn functions running at the same time (e.g., reports) did affect server load & the speed with which results were delivered
- WebCat searches were slower than GUI searches for the same or similar client hardware

Fall 1998 follow-up test

DEC AlphaServer (dual 400 MHz processor, 512 MB memory, SCSI-2 Ultra disk controller, Digital Unix v4.0, 100 Megabit per second connection to the campus network), Apache web server, & Dell Pentium II/233 client PCs

- WebCat searches were not slower than GUI searches and consumed identical amounts of system resources
- Other Unicorn functions running at the same time (e.g., reports) did not affect server load & the speed with which results were delivered
- A dual processor machine becomes bottlenecked when the load average (the number of processes waiting to run because the CPU is busy) is 2.0

SIGNIFICANCE

Libraries can improve automated systems by

- Conducting research & applying the results to interface design & functionality
- Working closely with vendors to serve users

Libraries can improve system performance by providing

- Better server & client equipment
- A higher-speed network connection
Task Analysis
1995 Windows OPAC Problems & Failure Rate

Problem occurrences

Different problems

Failure rate

21 subjects (undergraduates, graduates, faculty, staff)

Login Search subject Check status Check overdues Change PIN Limit by date Mark & print Display record Browse author Find reserves Send comment Quit

Design

Navigation

Functionality

Other
1996 Macintosh OPAC Problems & Failure Rate

Problem occurrences
Different problems
Failure rate

20 subjects (undergraduates, graduates, staff)

0% 25% 50% 75% 100%

Design
Navigation
Functionality
Other
1996 Serials GUI Problems & Failure Rate

Problem occurrences

Different problems

Failure rate

0% 25% 50% 75% 100%

10 subjects (staff)

Functionality

Other

Design

Navigation
Usability
Figuring out how or where to enter information

Figuring out how to correct errors

Spending too much time correcting errors
User Satisfaction
Visual Clarity

- Acquisitions GUI
- Serials GUI
- Cataloging GUI
- Circulation GUI
- Circulation Workflows
- OPAC Windows
- OPAC Macintosh
- WebCat Customized

Visual Clarity Levels:
- Very poor
- Poor
- Neutral
- Good
- Very good
Feedback

Acquisitions GUI
Serials GUI
Cataloging GUI
Circulation GUI
Circulation Workflows
OPAC Windows
OPAC Macintosh
WebCat Customized

Very poor
Poor
Neutral
Good
Very good
Responses are concise & not condescending

Responses are appropriate

The system indicates when actions are completed
Error Handling

Very poor
Poor
Neutral
Good
Very good
Error messages are clear & prompt

Errors can be reversed or canceled

Errors are easy to correct
The system protects against trivial errors

The system is free of errors & malfunctions