Open Source and Usability: towards participatory usability

Michael B Twidale

twidale@uiuc.edu

Department of Computer Science
University of Waikato
Hamilton
New Zealand

Graduate School of Library and Information Science
University of Illinois at Urbana-Champaign
USA
Acknowledgements

• Slides derived from:
  *Proceedings CHINZ'03*, 63-68. Dunedin, New Zealand.
• http://www.cs.waikato.ac.nz/~daven/docs/participatory-usability.pdf
Outline

- Open Source Software Development
- User Frustration
- Usability Practice
- Post-Deployment Usability
- End-user participation
- Case Studies:
  - Mozilla, Safari & Greenstone Prototype
- Conclusions
Open Source Software

- Scratching an itch
- Global development infrastructure
- Works for
  - Functionality
  - Reliability
  - Usability??!
- OSS not renowned for ease of use
  - For end users
- Various reasons
- Hacker culture
  - By hackers for hackers
OSS & Usability: a problem?

- ‘Lusers’ says it all /
- The wrong kind of itch?
- With enough eyeballs all bugs are shallow
- The wrong kind of eyeballs for usability?
- Leave usability as a commercial interface skin?
- Create a usability community in OSS dev?
- Can we apply Usability to existing OSS?
- Can we apply OSS methods to Usability?
User Frustration

- Problem with Shortcut
  - This Internet Shortcut cannot be opened because failed to run.

- Compressed (zipped) Folders Error
  - Nothing to do.

- Error
  - cannot be found.
User Frustration

• Diary-based studies of users:
  – Subjects estimated “one-third to one-half of the time spent in
    front of the computer was lost, due to frustrating experiences”
    • Lazar et al (2003)

• As designers, the question is:
  – What should the computer do at the ‘moment of frustration’?
Reactions to Frustrating Incidents

• Nothing
• Integrated Help
• Affective responses
  – Empathise
• Allow user to modify the application
  – End-user programming
• Open Source Solutions
  – Download source, fix, compile and carry on
    • (and share your fix)
• … Communicate the problem to the developers
Usability

• **Why?**
  – To reduce user frustration, to make better software

• **How?**
  – By predicting problems during usage

• **Guidelines**
  – be consistent

• **Techniques**
  – User-based
    • Testing, observation
  – Non-User based
    • Automated usability evaluation, heuristic evaluation
Usability Methods

• **Most usability methods are pre-deployment**
  – Try to prevent problems before they occur

• **Problems:**
  – ‘ecological gaps’ between the lab and the real world
    • Actual usage is more complex than can be easily predicted
      – Motivation, feedback, tool-task selection, context …
    • ➔ Observational strategies
    • Some usability methods are costly
    • Representative samples are hard to obtain
  – Increasing heterogeneity of computer users
Existing Emphasis
Post-Deployment Usability

• Pre-deployment methods dominate
• Once deployed then software problems are resolved by
  – Integrated help, help lines, colleagues, local tech support etc
• ‘moments of frustration’ don’t find their way back to the developers
  – information about these incidents is lost
  – This is the same information that the pre-deployment usability methods spend time & effort to obtain
    • Not as detailed as video recordings ...
    • ... but is contextual and cheaper
• Cf OSS methods
Crash Reporting

soffice.exe has encountered a problem and needs to close. We are sorry for the inconvenience.

If you were in the middle of something, the information you were working on might be lost.

Please tell Microsoft about this problem.
We have created an error report that you can send to us. We will treat this report as confidential and anonymous.

To see what data this error report contains, click here.

Debug Send Error Report Don't Send
Error signature

AppName: soffice.exe  AppVer: 6.0.7663.500  ModName: smgr.dll
ModVer: 6.0.7663.500  Offset: 00005d71

Reporting details

This error report includes: information regarding the condition of soffice.exe when the problem occurred; the operating system version and computer hardware in use; your Digital Product ID, which could be used to identify your license; and the Internet Protocol (IP) address of your computer.

We do not intentionally collect your files, name, address, email address or any other form of personally identifiable information. However, the error report could contain customer-specific information such as data from open files. While this information could potentially be used to determine your identity, if present, it will not be used.

The data that we collect will only be used to fix the problem. If more information is available, we will tell you when you report the problem. This error report will be sent using a secure connection to a database with limited access and will not be used for marketing purposes.

To view technical information about the error report, click here.
To see our data collection policy on the web, click here.
Crash Reporting

Error Reporting

Thank you for taking the time to report this problem.

Please follow the link below for information which may prevent this problem in the future.

More information

Close
Microsoft error reporting

• 3 types of errors
  – Application Errors
  – Setup Failures
  – Windows Kernel Failures

• e.g.
  – “The process information and kernel context for the thread that stopped. This information identifies registers … and interrupt request levels, and includes pointers to operating system data structures. “
Crash Reporting: www.bugtoaster.com

- Crash Reporting application
- New business model
  - Crashes == money
Download Bugtoaster

Install our free software, send crash reports to our database automatically, and check to see if a fix is known. Join computer users, software developers, and IT professionals from around the world; working together to eliminate computer crashes.

Install Bugtoaster

Zero Defect Advantage - dramatically increase the quality of your software - and ship in less time. Give your customers a better product (and drive your competition crazy).

Cut Costs and Increase Productivity - Corporate IT professional, management service provider, software or hardware vendor, or small business owner - Bugtoaster revolutionizes computer management.

Latest News 4/8/2003 4:22:00 PM

Complete Crash Details are now available to all registered users.

See all the nitty-gritty details that a software developer uses to resolve your crashes. Simply log into 'My Bugtoaster' and drill-down to 'view' the crash details.

More News

Crashes are pervasive. Most computer users simply endure them. Read the technology report

View Crash Stats - take a look at what Bugtoaster's community has contributed to the worldwide knowledge base of crash details.

Crashes reported in the last 24 hours: 247
<table>
<thead>
<tr>
<th>Crashes Recorded</th>
<th>Unique Signatures</th>
<th>Max Crashes/Signature</th>
<th>File Name</th>
<th>Crashes by Version</th>
<th>Crashes by APPs / DLLs</th>
<th>Bugtoaster Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>57682</td>
<td>20730</td>
<td>916</td>
<td>explorer.exe Microsoft Corporation</td>
<td>Version</td>
<td>DLLs</td>
<td>List All</td>
</tr>
<tr>
<td>61157</td>
<td>18565</td>
<td>1266</td>
<td>kernel32.dll Microsoft Corporation</td>
<td>Version</td>
<td>APPs / DLLs</td>
<td>List All</td>
</tr>
<tr>
<td>37271</td>
<td>15745</td>
<td>277</td>
<td>iexplore.exe Microsoft Corporation</td>
<td>Version</td>
<td>DLLs</td>
<td>List All</td>
</tr>
<tr>
<td>22772</td>
<td>6377</td>
<td>553</td>
<td>netscape.exe Netscape Communications Corporation</td>
<td>Version</td>
<td>DLLs</td>
<td>List All</td>
</tr>
<tr>
<td>10619</td>
<td>3377</td>
<td>141</td>
<td>winword.exe Microsoft Corporation</td>
<td>Version</td>
<td>DLLs</td>
<td>List All</td>
</tr>
<tr>
<td>9304</td>
<td>3194</td>
<td>297</td>
<td>msimn.exe Microsoft Corporation</td>
<td>Version</td>
<td>DLLs</td>
<td>List All</td>
</tr>
<tr>
<td>7939</td>
<td>2713</td>
<td>338</td>
<td>outlook.exe Microsoft Corporation</td>
<td>Version</td>
<td>DLLs</td>
<td>List All</td>
</tr>
</tbody>
</table>
Mozilla Crash Reporting

From: Talk Back (talkback@netscape.com)
Subject: Got checks for null pointers/simple crash fixes?
Newsgroups: netscape.public.mozilla.crash-data
Date: 2003-06-21 19:57:24 PST

Sat Jun 21 19:30:00 PDT 2003

Places to go looking for simple one line fixes to crashes
based on /u/talkback/Trunk/tempdata/newTrunkdata.all (Jun 21 - 00:25)

---------

Number of lines or trigger functions to check: 90
Incidents per source file: 327
  54 mozilla/widget/src/windows/nsDragService.cpp
  10 /builds/client/linux22/seammonkey/mozilla/string_obsolete/nsString2.cpp
  9 mozilla/content/html/style/src/nsCSSStyleRule.cpp
  7 mozilla/layout/html/forms/src/nsComboBoxControlFrame.cpp
  7 mozilla/layout/html/base/src/nsBlockFrame.cpp
  7 mozilla/js/src/jsobj.c
  7 mozilla/accessible/src/base/nsAccessible.cpp
Crash Reporting Works Because...

- Low cost to the user
  - Software can be instrumented to report incidents automatically
- Incidents are clearly identifiable
  - “Your program has crashed!”
- Objective data is easily processed
- Clear perceived benefit

- *What would a Global Usability Infrastructure look like?*
Bugzilla

- Web-based bug tracking database for Mozilla
- > 200,000 bug reports
- Registration-based
- Complex
- Enter a new bug via a web form
- Unique URLs
  - http://bugzilla.mozilla.org/show_bug.cgi?id=115513
- Separate from crash reporting database
Bugzilla Bug 115513

not much space at start of text entry fields

Bug List: First Last (This bug is not in your list) Show list Query page Enter new bug

Bug#: 115513 alias: 
Product: Browser 
Component: Editor: Core 
Status: NEW 
Resolution: 
Assigned To: kin@netscape.com 
QA Contact: sujey@netscape.com 
URL: 
Summary: not much space at start of text entry fields 
Status Whiteboard: 
Keywords: polish, testcase 

Hardware: PC 
OS: Windows 98 
Version: Trunk 
Priority: P3 
Severity: normal 
Target Milestone: Future 

Reporter: daven@cs.waikato.ac.nz (Dave Nichols) 
Add CC: 
CC: aha@pinknet.cz 

Remove selected CCs 

Flags: (Help) Requestee: 
blocking 1.4 

Attachment 

<table>
<thead>
<tr>
<th>Type</th>
<th>Created</th>
<th>Flags</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>text field spacing in Moz, IE &amp; NS4</td>
<td>image/gif 2001-12-16 10:53:25</td>
<td>none</td>
<td>Reft</td>
</tr>
<tr>
<td>minimal testcase</td>
<td>text/html 2001-12-20 14:35:25</td>
<td>none</td>
<td>None</td>
</tr>
</tbody>
</table>

Create a New Attachment (proposed patch, testcase, etc.)

Bug 115513 depends on: Show dependency tree
Bug 115513 blocks: Show dependency graph

Votes: 1 Show votes for this bug Vote for this bug
### Search for bugs

**Summary:** contains all of the words/strings

**Product:**
- Browser
- Bugzilla
- Calendar
- Comino
- COK

**Component:**
- Accessibility
- Accessibility APIs
- Account Manager
- Address Book
- Addressbook/LDAP (non-UI)

**Version:**
- 1.0 Branch
- 1.01
- 1.1
- 1.2
- 1.3

**Target:**
- Future
- 3.0
- Jan
- m1

**A Comment:** contains the string

**The URL:** contains all of the words/strings

**Whiteboard:** contains all of the words/strings

**Keywords:** contains all of the keywords

### Status

- UNCONFIRMED
- NEW
- ASSIGNED
- REOPENED
- RESOLVED
- VERIFIED
- CLOSED

### Resolution

- FIXED
- INVALID
- WORKFIX
- DUPLICATE
- WORKSFORME
- MOVED

### Severity

- blocker
- critical
- major
- normal
- minor
- trivial
- enhancement

### Priority

- P1
- P2
- P3
- P4
- P5

### Hardware

- All
- DEC
- HP
- Macintosh
- PC
- SIGI
- Sun

### OS

- All
- Windows 3.1
- Windows 95
- Windows 98
- Windows ME
- Windows 2000
- Windows NT

### Email and Numbering

- Any of:
  - bug owner
  - reporter
  - QA contact
  - CC list member
  - commenter

### Bug Changes

- Only bugs changed in the last __ days
- Only bugs where any of the fields [Bug creation] [Alias] [Assignee] [URL] were changed between __ and __
- (YYYY-MM-DD)
- to this value: (optional)
Safari: Apple’s Web Browser

http://www.apple.com/safari/
Safari
Reporting in Safari

- Restricted to only one aspect of the program
  - HTML rendering
  - No way to comment on other aspects
- ‘Bug’ icon is not that obvious
  - Unless you are the sort of person who installs beta software
- Can’t track what happens to a report
  - Disappears into Apple Inc
- First effort by major manufacturer to incorporate usability(ish) reporting into software
Reporting Requirements

- **Ubiquity**
  - Complain about any part of a system
- **Anonymity**
  - Lowers costs of participation
- **Integration**
  - Access to more data
- **Ease of use**
- **Objective + Subjective Information**
- **Tracking**
  - “What has happened to my report?”
Putting it Together

Usability incidents

Many users

User–developer networked connection

Objective + subjective context capture

Participatory Usability
Greenstone Prototype

- Web-based
  - Not part of an application
- Javascript
- HTTP post
- nzdl.org
About this collection

This is a demonstration collection for the Greenstone digital library software. It contains a small subset (11 documents) of the Humanitarian and Development Library.

How to find information in the greenstone demo collection

There are 5 ways to find information in this collection:

- search for particular words
- access publications by subject
- access publications by title
- access publications by organization
- access publications by "how to" listing

You can search for particular words that appear in the text from the "search" page. This is the first page that comes up when you begin, and can be reached from other pages by pressing the search button.

You can access publications by subject by pressing the subjects button. This brings up a list of subjects, represented by bookshelves.

You can access publications by title by pressing the titles a-z button. This brings up a list of books in alphabetic order.

You can access publications by organisation by pressing the organisations button. This brings up a list of organisations.

You can access publications by "how to" listing by pressing the how to button. This
About this collection

The Humanity Development Library is a large collection of practical information aimed at helping reduce poverty, increasing human potential, and providing a practical and useful education for all. This version, 2.0, contains 1,230 publications—books, reports, and magazines—in various areas of human development, from agricultural practice to economic policies, from water and sanitation to society and culture, from education to manufacturing, from disaster mitigation to micro-enterprises. It contains a total of 100,000 pages and 50,000 images, which if printed would weigh 340 kg and cost US$10,000. It is available on CD-ROM at US$2 for distribution in developing countries.

The objective of the Humanity Libraries Project is to provide all involved in development, well-being, and basic needs with access to a complete library of around 5,000 multi-language books containing practical knowhow and ideas. We invite many more development organizations to share their useful publications, to help distribute these volumes, and to participate in this humanitarian project.

The editors of this collection are Human Info NGO, HumanityCD Ltd, and Participating Organizations. Contact us at HumanInfo Libraries Project, Couterenham 196, B-3000 Antwerp, Belgium, Tel 32-3-448 05 34, Fax 32-3-448 05 74, email humanity@humaninfo.org.

How to find information in the Humanity Development Library collection

There are 5 ways to find information in this collection:

- search for particular words
- access publications by subject
- access publications by title
- access publications by organization
- access publications by "how to" listing

You can search for particular words that appear in the text from the "search" page. This is the first page that comes up when you begin, and can be reached from other pages by pressing the search button.

Greenstone Usability

About Privacy

Sending this report is a way of indicating you have found the web page you were viewing difficult or frustrating. You do not have to fill out the form — any information will help.

Optionally:

More details:

What kind of problem is it? 
How bad is the problem?

The report will contain only information about the Greenstone web page you were viewing, and the technology you were using to view it (plus any optional information you provide). Would you still like to send this report?

View report details

Don't Send
Send
Greenstone Usability

About • Privacy

Sending this report is a way of indicating you have found the web page you were viewing difficult or frustrating. You do not have to fill out the form -- any information will help.

Optionally:

More details:

What kind of problem is it?

How bad is the problem?

The report will contain only information about the Greenstone web page you were viewing, and the technology you were using to view it (plus any optional information you provide). Would you still like to send this report?

View report details

Don’t Send

Send
Next

- Assess usage on nzdl.org
- Incorporate into main Greenstone distribution
- Add to the Librarian Interface
  - Java application for collection management
- Involve student groups in using reports
  - Running studies
    - Federated, combined
  - Designing solutions
Research issues

- Can the OSS model address usability issues better?
- Usability bugs are squishy, contested
- Can we bring in different kinds of people and still keep a successful OSS community?
- How can we support
  - distributed interface problem reporting?
  - Distributed interface report management?
  - Distributed interface design?
  - Radical interface innovation?

- How do we cope with design by committee?
  - Avoiding pork-barrel interface design
Conclusion

- Not just fixing OSS’s usability problems
- Work towards new, better ways of doing HCI
- Usability information is regularly lost
- Global usability infrastructure
- Stop viewing users paternalistically
- How to empower all users to contribute to development
  - Enable greater customer-developer interaction
  - Blur end-user/developer
  - Learn from Participatory Design