

Usability Engineering for the Web

Keith Instone

instone@usableweb.com

Web Usability Consultant

Usable Web

<http://usableweb.com>

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About this Presentation

- Share techniques I use to improve the usability (quality) of web sites
- Not my opinions on good/bad design
- Processes to help you figure out good/bad for your own situation
- Cutting corners

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Overview

- Introduction: Usability and Engineering
- Walk a mile in my users' shoes
- Take a ride on their shoulders
- Embrace the Web
- Do usability sweeps
- Assume I will get it wrong the first time
- Sleep with the technology but do not marry it

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Introduction: Usability and Engineering

- Easy to learn
- Easy to use
- Easy to remember
- Few errors
- Satisfying
- Related: utility
- Engineering: process

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Nielsen's UE Lifecycle

- Know the user: characteristics, tasks
- Competitive analysis
- Usability goals
- Parallel & Participatory design
- Guidelines and heuristic evaluation
- Prototyping
- Empirical testing
- Iterative design
- Feedback from field use

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“Walk a Mile in n Users' Shoes”



- Think like a “normal person” not a developer
- Know your customers
- Lots of testing for the technicalities
- Task-oriented & User-centered

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Shoe Style: Sneakers vs Wing-tips vs Sandals

- Audience analysis
- May want to sell to everyone, but need to understand unique needs
- Broad categories of users (regulars, first-timers, only uses 1 part)

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Shoe Manufacturer: Nike vs Adidas

- Test with various browsers
- Different bandwidths
- “Standard shoe” - HTML validation

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Plan some Hikes

- General scenarios for each user group (“visit the site once a week looking for new things”)
- Specific tasks (“trying to update address”)
- Walkthroughs with prototypes

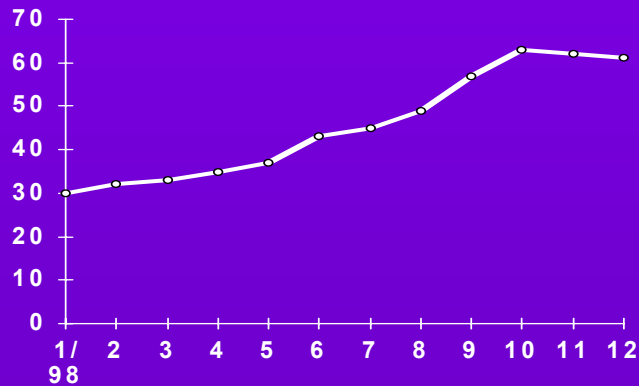
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Look for Footprints

- Log analysis (popularity, location, browser)
- Search strings
- Impact of a redesign
- Strange behavior, incomplete actions

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Mozilla/4 Percentage BGSU COE, 1998



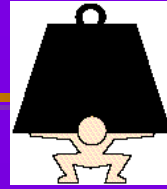
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Listen to their Pain

- Feedback from real users: gold
- “I do not like this...”
- “I cannot find this...”
- Start up a dialog, beta testers

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“Take a Ride on their Shoulders”



- Usability testing
- Watch users try to do something
- Start cheap, invest time only
- Later, spend money
- Not a focus group

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Your First Usability Test

- Know your purpose
- Find ordinary people
- Watch & learn
- Collect the data
- Back to the drawing board

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Know Your Purpose

- Why do people come to your web site?
- What tasks might they try to perform?
- Primary tasks
- Secondary tasks
- Compile list of 4-5 tasks (< 1 hour to complete)

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Find Ordinary People

- People from target audience(s)
- Not programmer from down the hall
- Intranet: new hires work well
- Friends, neighbors, colleagues OK for first test

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Watch & Learn

- Sit back and watch quietly!
- Reassure participants: they are not on trial, the user interface is
- Extremely eye-opening

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Collect the Data

- Take notes
- Focus on the unexpected
- Make page printouts to write on
- Ask follow-up questions

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Back to the Drawing Board

- To-do list: fix the stumbling blocks
- Some simple fixes: better labels
- Harder fixes: major overhaul?

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Getting Serious with Testing

- Get training or hire a consultant
- Set up a lab
- Professional recruiting service
- Do it all of the time

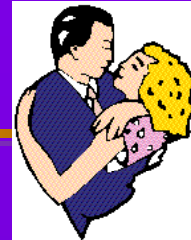
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Really Listen to Jared Spool

- "Pay attention to what *your* users are doing. Do usability testing with your users on your content. Find out who your users are, why they are coming to the site, and which path they would take to find information."
- May 15, 1998, Web Review

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"Embrace the Web"



- Or, The Web: A bug or a feature?
- Take advantage of the features, avoid the bugs
- Design and engineer for this medium
- Usability tradeoffs

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Bugs or Features?

- User control (preferences)
- Navigator / Explorer differences (and more...)
- HTML
- URLs, Domain names
- Browser back buttons (competition)
- Client-side scripting
- Bandwidth
- Email for pushing
- Standards

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Example: Backdoor Access

- Users can jump into middle of a site
- Search engines, bookmarks, links
- Bug or feature?

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Stress Test

- Make each page stand alone somewhat
- Site brand
- “You are Here”
- Descriptive links
- Also good for lost users
- Pick a page and ask some hard questions

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Stress Test Questions

- What site am I at?
- What major section am I in?
- What other major sections are there?
- What is the parent page to this? What is "up" from here?
- How do I get to the top page of this site?
- What other pages are "nearby", in the same section?

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More Stress Test Questions

- What does each link lead to?
- Which links lead to more detailed information (down)?
- Which links stand out the most? Least?
- What does each group of links represent?

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The screenshot shows a web page for the Mercury Villager. At the top, there is a navigation bar with 'Mercury' and 'Showroom' followed by a dropdown menu currently displaying 'Villager'. Below this, the text '98 Villager' is written in a large, stylized font. To the left of a red Mercury Villager minivan image, there is a short paragraph: 'It even handles the unexpected. When you're never sure where you're going, how many are going with you or when you'll be back...this is clearly the way to go.' Below the car image is a horizontal row of seven red buttons with white text: 'Interior', 'Power', 'Ride & Handling', 'Safety & Security', 'Audio', and 'Nautica Edition'. Below this row are three more red buttons: 'Additional Features', 'Paint It', and 'Vehicle Map'. At the bottom of the page, the text 'Imagine yourself in a Mercury' is written in a cursive font, followed by three blue circular icons with white text: 'Dealer Locator', 'Payment Calculator', and 'Great Offers'. At the very bottom, the text 'Showroom Boulevard | Ford Worldwide Connection' is displayed.

Usability Tradeoffs

- Best solutions under current conditions
- Sacrifice usability: cost, time, management
- Bandwidth
- Browsers
- Standards

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Browser Tradeoffs

- Browser and user control
- Bugs
- Incompatibilities

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Standards Tradeoffs

- Variations from standard: opportunity for unusable feature
- Best deviations: good for haves, no effect on have nots
- Spirit of the standards

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“Do Usability Sweeps”



- Easy to forget about usability
- Occasional inspections do not get in the way much
- Expert Evaluation
- Heuristic Evaluation
- Usability Checklists

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Heuristic Evaluation

- 3-5 evaluators (UI experts, usually)
- Look for common problems
- Identify your rules of thumb
- Gather opinions
- Merge/rate problems
- Work towards solutions

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General Heuristics

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, recover from errors
- Help and documentation

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Gather Opinions

- Find evaluators
- Provide basic information about your site (intended audience, purpose)
- Evaluators inspect
- List errors in terms heuristics

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Merge and Rate

- Each error rated in terms of seriousness
- “No problem” to “catastrophe” (0-5)
- Average rankings to prioritize

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Work Towards Solutions

- Solve major problems first
- Solve easy ones first
- Harder ones later
- Maybe focus on specific heuristic earlier next time

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Web-Adapted Heuristics

- System status, Recognition: Where am I?
Where can I go next?
- Match with real world: Labels in users' language
- User control: Forcing font, sizes, widths
- Standards: HTML and web standards
- Error prevention: Forms

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More Web-Adapted Heuristics

- Flexibility: Bookmarkable and linkable
- Minimalist: Progressive detail
- Error recovery: Search
- Help: Embedded documentation

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Usability Checklists

- Check sheet of how to implement
- Specific conventions you come up with
- Fill out checklist for key pages (templates)
- Anyone can do

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Your Own Conventions

- Principles: goals which guide design decisions
- Guidelines: specific to a particular domain of design
- Conventions: specific design decisions you have chosen to follow

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Sample Guidelines

- Animation should not disrupt your reader's concentration (Yale)
- Provide useful content on each page seen by your audience (Sun)
- Use link titles (pop ups) to help users predict where they are going (Nielsen)
- Write in inverted pyramids (Nielsen)
- Your users need to know where they are (IBM)

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Possible Conventions

- Animation must be at top of page so it can be scrolled out of sight
- Navigation pages include a sentence about each link
- Links to a different major section must have link title = the new section
- First paragraph of every page summarizes the entire page
- Site logo and link to home page at top left of every page (except home page)

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“Assume I will get it Wrong the First Time”



- Iterative design
- Integrate usability engineering techniques into your processes
- Paper and computer prototypes
- User-centered design means less wrong, but still...

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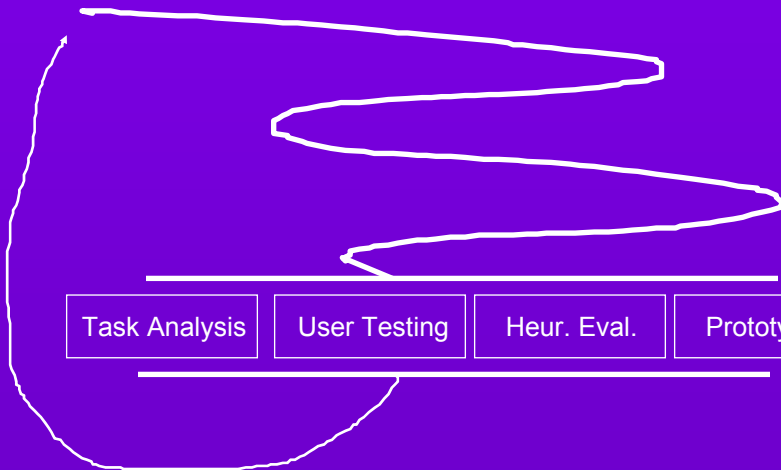
Your Design/Implementation Process



You are here

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Close the Loop Once



Task Analysis

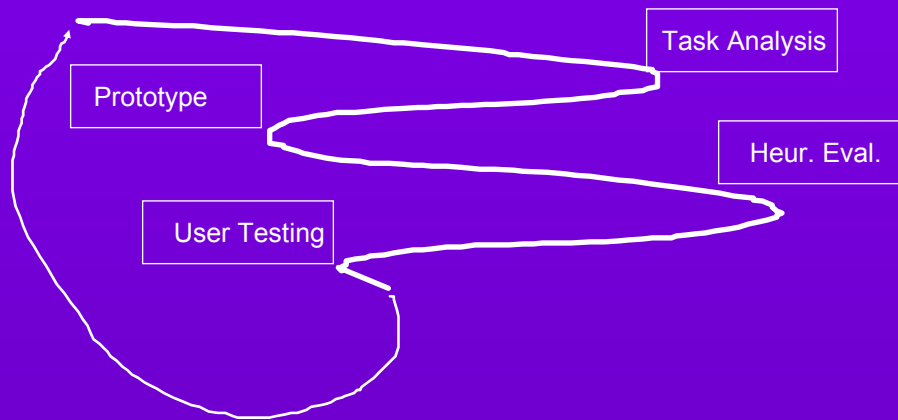
User Testing

Heur. Eval.

Prototype

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Integrate Later



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“Sleep with the Technology but do not Marry it”



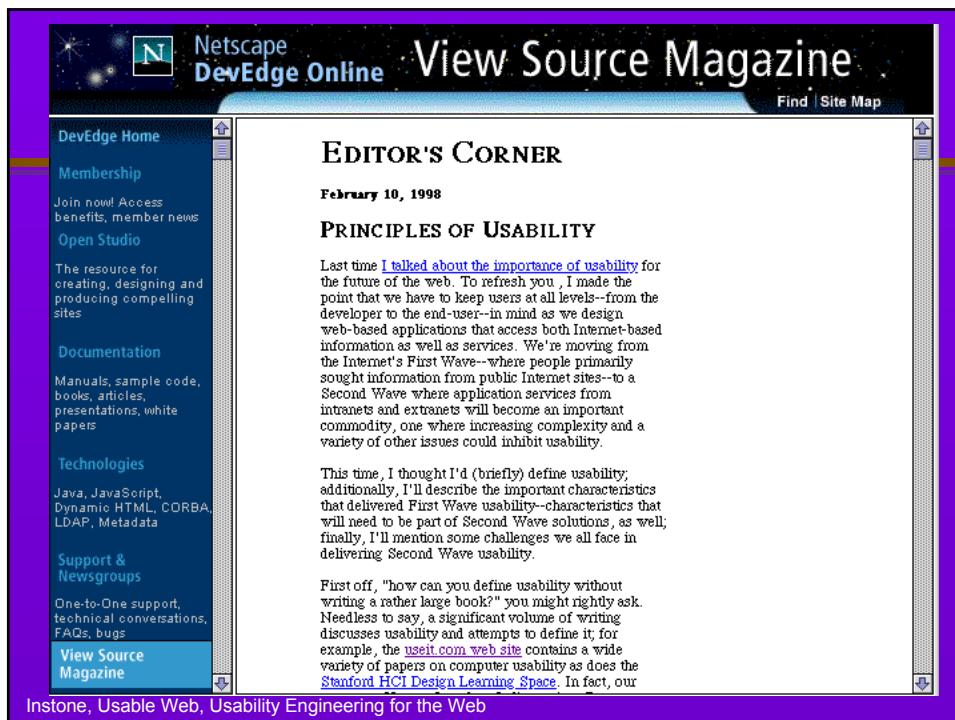
- Understanding the technology crucial for usable implementations
- Too flaky/immature to use for its own sake, however
- Find usability problem first, then pick best technology

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Example: Client- vs Server-side Scripting

- Netscape DevEdge View Source
- Need: direct links into framed articles

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The screenshot shows a framed browser window displaying the Netscape DevEdge Online 'View Source Magazine' page. The page has a dark header with the Netscape logo and navigation links like 'Find' and 'Site Map'. A left sidebar contains a menu with categories such as 'DevEdge Home', 'Membership', 'Documentation', 'Technologies', and 'Support & Newsgroups'. The main content area is titled 'EDITOR'S CORNER' and dated 'February 10, 1998'. It features an article titled 'PRINCIPLES OF USABILITY' with two paragraphs of text. The first paragraph discusses the transition from the First Wave to the Second Wave of the web. The second paragraph defines usability and mentions the author's intention to discuss it. The third paragraph asks how to define usability and mentions a large volume of writing on the topic, including a link to the 'useit.com' website and the 'Stanford HCI Design Learning Space'.

Netscape DevEdge Online View Source Magazine

Find Site Map

DevEdge Home

Membership

Join now! Access benefits, member news

Open Studio

The resource for creating, designing and producing compelling sites

Documentation

Manuals, sample code, books, articles, presentations, white papers

Technologies

Java, JavaScript, Dynamic HTML, CORBA, LDAP, Metadata

Support & Newsgroups

One-to-One support, technical conversations, FAQs, bugs

View Source Magazine

EDITOR'S CORNER

February 10, 1998

PRINCIPLES OF USABILITY

Last time [I talked about the importance of usability](#) for the future of the web. To refresh you, I made the point that we have to keep users at all levels--from the developer to the end-user--in mind as we design web-based applications that access both Internet-based information as well as services. We're moving from the Internet's First Wave--where people primarily sought information from public Internet sites--to a Second Wave where application services from intranets and extranets will become an important commodity, one where increasing complexity and a variety of other issues could inhibit usability.

This time, I thought I'd (briefly) define usability; additionally, I'll describe the important characteristics that delivered First Wave usability--characteristics that will need to be part of Second Wave solutions, as well; finally, I'll mention some challenges we all face in delivering Second Wave usability.

First off, "how can you define usability without writing a rather large book?" you might rightly ask. Needless to say, a significant volume of writing discusses usability and attempts to define it; for example, the [useit.com](#) web site contains a wide variety of papers on computer usability as does the [Stanford HCI Design Learning Space](#). In fact, our

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JavaScript Solution

```
// NOW WRITE OUT THE FRAMESET
writeln ('<FRAMESET ROWS="72,*" BORDER=1>')
writeln ('  <FRAME NAME="banner"
  SRC="/viewsource/banner.html" SCROLLING=no
  BORDERCOLOR="#ffffff">')
writeln ('<FRAMESET COLS="146,*">')
writeln ('  <FRAME NAME="toc" SRC="/viewsource/toc_frame.html"
  BORDERCOLOR="#ffffff">')
writeln ('  <FRAME SRC="" + frameObject[1].link + "" NAME="content"
  SCROLLING=AUTO MARGINHEIGHT=5 MARGINWIDTH=10>')
writeln ('</FRAMESET>')
writeln ('</FRAMESET>')
```

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Perl Solution

```
print <<EOT;
Content-type: text/html
<FRAMESET ROWS="72,*" BORDER=1>
  <FRAME NAME="banner"
  SRC="/viewsource/banner.html"
  BORDERCOLOR="#ffffff">
<FRAMESET COLS="146,*">
  <FRAME NAME="toc"
  SRC="/viewsource/toc_frame.html"
  BORDERCOLOR="#ffffff">
  <FRAME NAME="content"
  SRC="/viewsource/$content"
  MARGINWIDTH=10 MARGINHEIGHT=5 SCROLLING=auto>
</FRAMESET>
</FRAMESET>
```

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Recap

- Walk a mile in my users' shoes
- Take a ride on their shoulders
- Embrace the Web
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Levels of Commitment

- Low: 1-person shop, very limited resources
- Medium: 10 people, limited resources
- Large: 100s of people, business success depends on it

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Where to Cut Corners

	Low	Medium	High
Browser tests	2	5	Separate code
HTML validation	Once	Service	In-house
Log Analysis	Informal	Package	In-house

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Where Else to Cut Corners

	Low	Medium	High
User testing	Friends	Strangers	Lab
Heuristic evaluation	You	Outsider	3-5
Checklists	Informal	Written down	Enforced

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Learning More

- usableweb.com: Links and descriptions of web usability issues, techniques, etc.
- useit.com: Jakob Nielsen's site
- Information Architecture for the World Wide Web by Rosenfeld & Morville
- <http://instone.org/keith/web98sf/> for links to items from this presentation