

Vorlesung Advanced Topics in HCI (Mensch-Maschine-Interaktion 2)

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Chapter 1: HCI and the WWW

Table of Content

- Human Computer Interaction (HCI)
 - a quick reminder

- Web Usability
 - Web Technology
 - Web Design
 - Management of Web projects
 - Usability evaluation of Web sites and applications

- Web Accessibility, Universal Access to Information

- Usability Report

Web Error Messages I

- categories of errors (see HTTP)
 - most often : 404 (file not found)
 - 4xx – error on client side
 - 5xx – error on server side
- errors should be intercepted
 - define useful reaction
 - make specific pages for errors
 - e.g. 404 – file not found
 - possible reasons: file does not exist (anymore), typos, ...
 - some possible solutions
 - a) show an error page – tell the user that the page is not available :-)
 - b) show the main page of the server
 - c) show a search page on the server, tell the user to search
 - d) try to find with the filename and the path the page or a related page in the internal search engine and show this page :-)

Web Error Messages II

- errors should be intercepted!
 - e.g. 500 – server error
 - possible reasons: CGI-program crashed, hard drive full, database down, permission changes, gateway not available, ...
 - some possible solutions
 - a) show CGI/Server error messages :-)
 - b) give the user an alternative: e.g.
„Sorry our WWW online ordering system is currently not available. Please print out your order and send us a fax (0815/007007) or order by email (orders@shop.com). The system will be online in a minute. Sorry for any inconvenience.“

```
SoftArtisans.SAFile.1 error '80020009'
```

```
Error occurred when moving cached file to final destination. Please check the NTFS permissions for the directory "C:\WINNT\" and the directory containing the file "D:\CMTLibrary\SIGCHIShort\523_admin.pdf". These directories require Read, Write and Delete permissions by the anonymous user ( NT account: IUSR_computername ) as well as for your authenticated users.  
/sigchishort/PaperEditProcess.asp, line 107
```

Excuse: Web Technology Essentials

- Be aware that
 - That the web is heterogeneous distributed systems
 - Hypertext and Hypermedia allows complex information architecture
 - That any media type can be used, however there is little control how they are handled at the client
 - There is a mixture of code and content
- Try to minimize technical complexity
- Specify technical requirements
 - Minimal setup
 - Anticipated setup
 - Test under these conditions

What is web usability?

- Web usability is not a single issue
- Main characteristics of web usability:
 - Effort for learning
 - Effectiveness and efficiency of use
 - Memorability
 - Error frequency and severity
 - Satisfaction
- Web usability is concerned with
 - Functionality
 - Operation and control
 - Navigation
 - Language
 - Feedback
 - Consistency
 - Error prevention
 - Visual clarity

What are potential problems? (1)

From <http://www.siteusability.com/mistakes.html>

▪ Downright errors:

- Broken links or missing images.
- Firewall errors, server cannot be contacted, directory browsing not allowed (or even worse, allowed?).
- Scripting errors that pop up an error message, make the page unusable, or write strings of gibberish amongst the text.
- HTML coding errors that mean the page doesn't display properly, or at all.

What are potential problems? (2)

From <http://www.siteusability.com/mistakes.html>

▪ Annoying or inaccessible page design:

- An "entrance tunnel" or splash screen - lots of flashy imagery but no real content that requires a click to get to the real home page.
- Pages with such poor contrast between background and text they are hard to read.
- Text in tiny or illegible fonts.
- Pages that take minutes to download (even worse if when they have finished, you weren't interested in the content anyway).
- Content that requires a specialised plug-in to read it.
- Pages that require a specific browser to display nicely.
- Links that lead to "under construction" pages.
- Link colour schemes where you can't tell which ones you have already visited.
- Links with badly-chosen targets that display numerous hidden windows on the desktop, break the Back button, or display pages without the necessary menus to use them properly.
- Forms where you don't know what the site owners want to do with the information you are asked to supply.
- Forms that don't explain properly what you need to enter, or don't let you go back and amend any errors.
- Pages with typographical or grammatical errors, confusing and poorly-written text, or inconsistent terminology.

What are potential problems? (3)

From <http://www.siteusability.com/mistakes.html>

▪ Search engine problems:

- Pages with no links to other pages in the site.
- Pages called "No title", "Untitled", "Insert document title here", and/or with a meaningless abstract, so the user has no idea if the link is relevant or not.
- Pages that no longer exist on your site because you moved or renamed them.
- Pages so poorly designed they will never even appear in a search engine listing.

What are potential problems? (4)

From <http://www.siteusability.com/mistakes.html>

▪ Information architecture problems:

- Pages with different layouts and appearance for the same kind of information.
- Very long pages with no quick way to skip about them.
- Forms that don't work in a comprehensible way, and shopping cart systems that confuse in their complexity.
- Links that lead to mystery destinations (e.g. "click here"), or to other sites without warning.
- Overwhelming numbers of links on the home (or other) page.
- Menu options or navigation bar icons that mean little to the average visitor.
- No consistent way to move around the site on every page.
- No clear distinction between different kinds of information.
- Confusing site structure so the visitor cannot guess where to go for information.

What are potential problems? (5)

From <http://www.siteusability.com/mistakes.html>

- **E-commerce problems:**
 - Potential buyers can't find the product they want because they don't understand the categories you have chosen.
 - Visitors leave without purchasing because they don't want to register.
 - Visitors can't find your returns policy or how their privacy is protected if they buy from you.
 - Buyers have to work out the shipping and handling charges for themselves when viewing an item in your online catalogue.
 - Visitors from overseas don't understand the measurement system you use for sizes or weights.
 - ... the list of potential problems is endless - this just skims the surface for sites selling to the consumer.

How to avoid potential errors?

- Understanding the web (technology and phenomenon)
- Understanding the purpose of a specific web site
- Following a structured design and development process
- Use of web style guides

- Create web sites that are:
 - useful
 - compelling
 - attractive
 - easy to use
 - satisfying

Understanding the Web

- Why are people using the Web
 - Information
 - Entertainment
 - Shopping
 - Communication
 - ...
- Why do people chose one site over another
 - Where do you buy books?
 - Which auctions platform are you using?
 - What search engine is your favorite?
 - ...
- How do people access web pages
 - Technology
 - Context (e.g. social situation, environment)
 - ...

Nielsen Usability Engineering Life Cycle

- Pre-design Phase:
 - Conduct a field study on how users work in their environment.
 - Run a small user test analysis on the old design
 - Make a comparative user test on competing web sites.
- Design Phase:
 - Use parallel design to make simple prototypes of different design approaches.
 - Select the best design from the previous step and develop it further, then do more user testing.
 - Iterate this design as many times as your time and budget allows.
 - Almost finish site and do one market test.
- Post-Design Phase:
 - Get statistics and feedbacks about real use of the web site.
 - Refresh your web site (minor changes).
 - Start planning for the next redesign of the web site

Planning a Web site

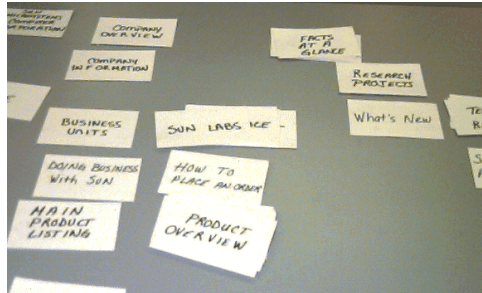
- Identifying goals, objectives, users,...
- Target **audience**
 - Usually multiple groups
- Describe briefly the main **purpose** of the site
 - About one paragraph
- Outline the main **objectives** of the site
 - If possible 5 or less
- Specify the **information** that will be provided on the site
- Define **success criteria** for the web site

Structure the Web site

- Structure the information that will be available
 - Categorize information
 - Identify dependencies in the information
- Relate navigation to the structure of the information

Post-It-Method for the Structural Design

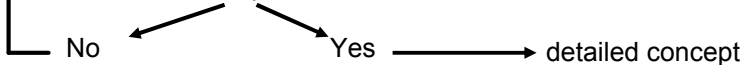
- designing the information & navigational structure of large web site
- with non-technical staff and decision makers
- Post-It Notes with important keywords
- making a "Concept Map" - not a diagram representing the organization!
- designing the structure of the web on a blackboard
- create list of keywords



Evolutionary Method

- „all on one table“ (authors, editors, programmer, designer, manager, decision maker, ...)
- each participant (or teams of 2) make suggestions on paper for the following topics:
 - structure and scale of the web
 - navigation
 - basic design issues and interaction elements
 - technical realization
- short presentation of the ideas
 - up to 5min per participant (everyone the same time)
 - display the ideas on the wall or on a board
 - discussion and evaluation of aspects of the suggestions based on a checklist
- iteration
 - revision of the suggestions
 - Border condition; 30% of the concept must be changes and taken from one of the other suggestions

Is the result acceptable and feasible?



More on methods...

- Participatory Design Workshop
<http://www.infodesign.com.au/ftp/ParticipatoryDesign.pdf>
- Card Sorting
<http://www.infodesign.com.au/ftp/CardSort.pdf>
- Common mistakes
<http://www.infodesign.com.au/ftp/usabilitytestingmistakes.pdf>

Creating a Basic Design

- Identifying the main categories of pages
- Creating a design for each of these categories
 - What is on the page (content, navigation, adverts, ...)
 - Where are elements on the page
- Considering
 - the information architecture
 - The navigational structure
- Example: www.google.com

Usability

- Analyses of use (log files)
- Expert evaluation
- Heuristic evaluation
- User studies

Criteria

- Navigation
- Functionality
- Control
- Language
- Feedback
- Consistency
- Error prevention and correction
- Visual clarity

Information in a Web Server

- what information is available? (e.g. Apache)
 - %...b: Bytes sent, excluding HTTP headers.
 - %...f: Filename
 - %...{**Foo**bar}e: The contents of the environment variable Foo~~bar~~– see CGI Programming
 - %...h: Remote host
 - %...{**Foo**bar}i: The contents of Foo~~bar~~: header line(s) in the request sent to the server.
 - %...l: Remote logname (from identd, if supplied)
 - %...{**Foo**bar}n: The contents of note "Foo~~bar~~"

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Logfiles of Web Servers

- log access
 - common logfile format
 - extended logfile format
 - custom logfile
 - multiple logfiles
- log errors and warnings
 - error logfile
 - for maintenance and monitoring
- cookie logfile, click-stream logfile
 - to analyze user behavior

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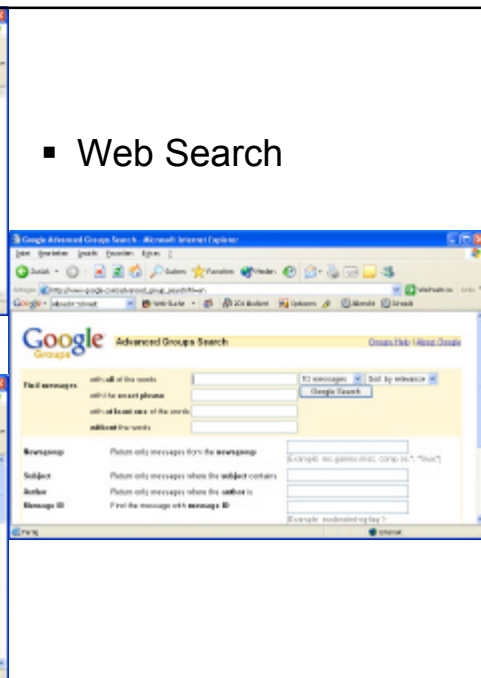
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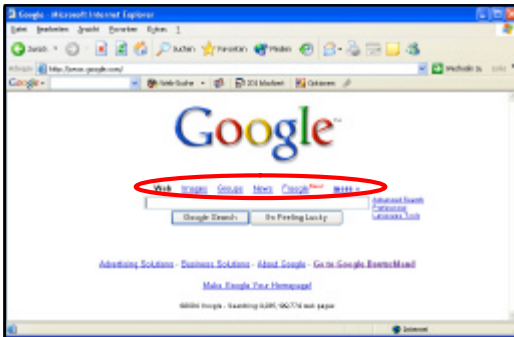
Example Material Usability report

- <http://www.infodesign.com.au/usabilityresources/evaluation/webevaluation.asp>
- <http://www3.sympatico.ca/bkeevil/sigdoc98/>
- <http://mprover.com/sample.htm>
- <http://www.bui.fh-hamburg.de/pers/ursula.schulz/webusability/tipsreport.html>

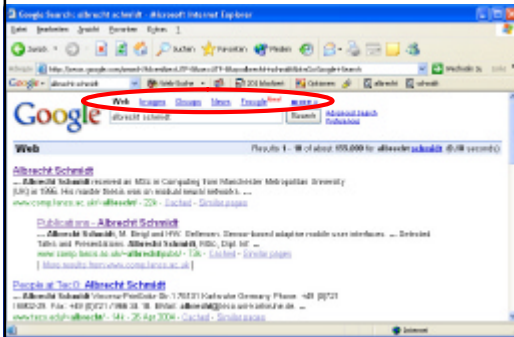


Web Search



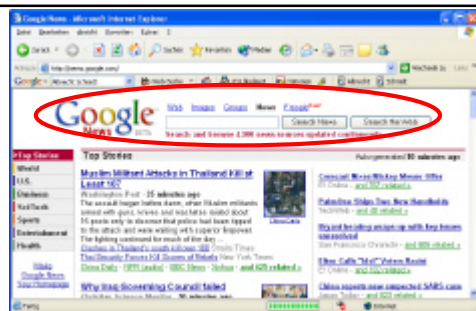
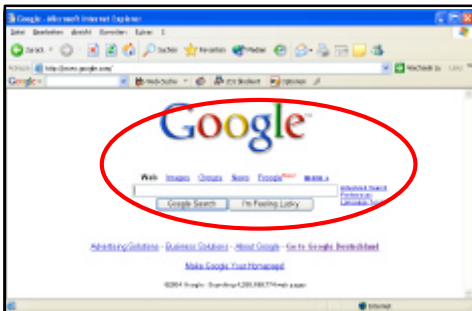


■ Navigation

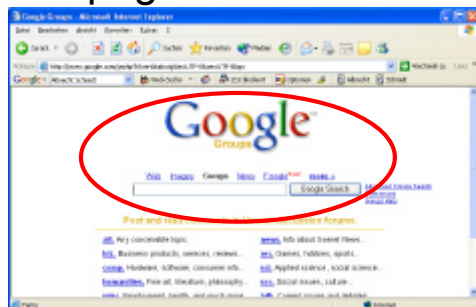
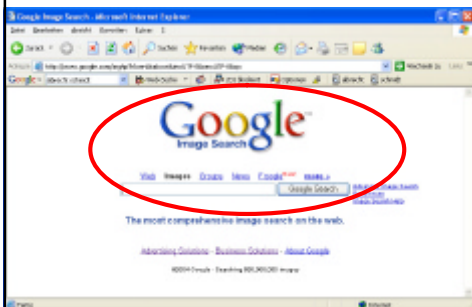


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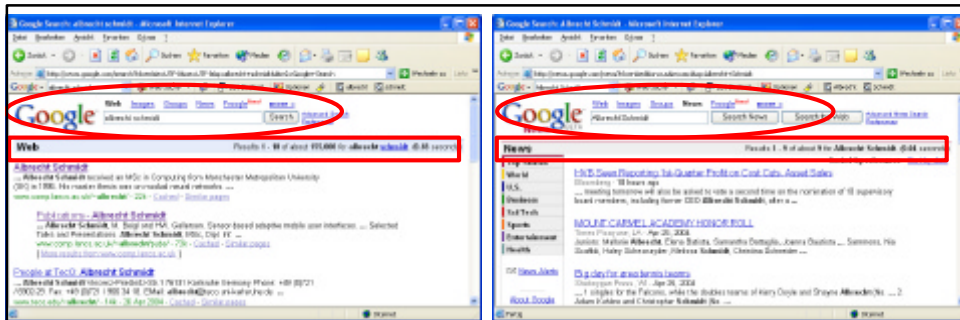


■ Search form pages

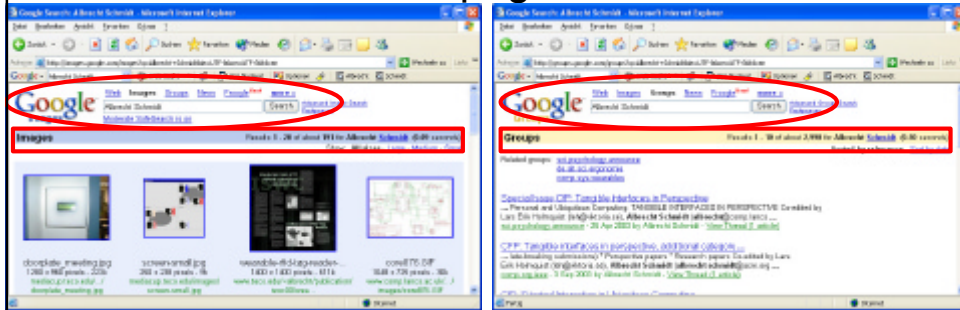


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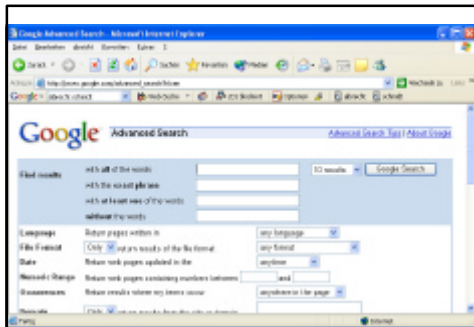
■ Result pages



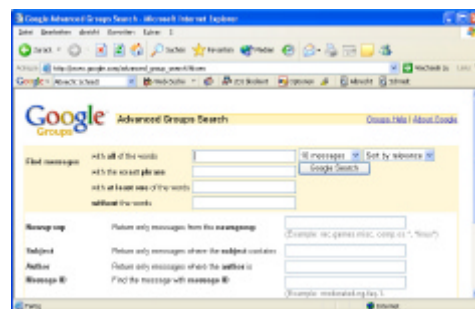
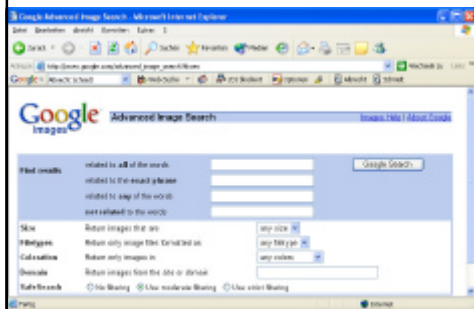
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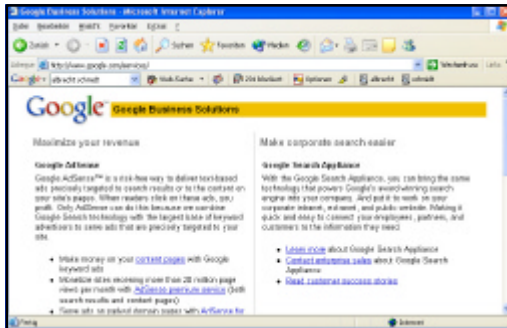
■ Advanced search pages



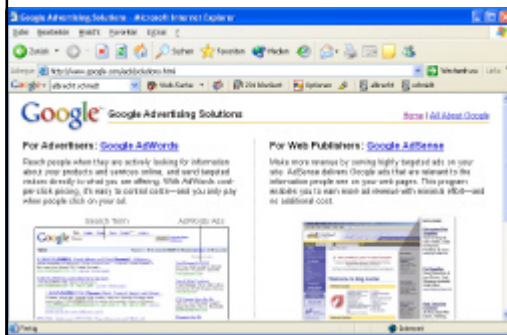
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- Information pages



Web Design

- Many books available,
 - E.g. Mutz et al. Web Creative
 - E.g. Götz, Raster für das Webdesign



More reading...

- Designing for the Color-Challenged: A Challenge
http://www.internettg.org/newsletter/mar99/accessibility_color_challenged.html
- Web Usability, iX
<http://www.heise.de/ix/artikel/2000/12/098/>