

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

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LFE Medieninformatik
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SS2005
<http://www.medien.ifi.lmu.de/>

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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



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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?

No → Yes → detailed concept

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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>

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- Excuse: Web Log Files
- Slides for reference – was discussed during the exercises

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Analyzing Server Logfiles

- Evaluate how a site is used
- What are visitors interested in?
- Who is using the site?
- What technology visitors are using?
- How they got there?
- How do they get around?
- What is going wrong?

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Information in a Web Server

- what information is available? (e.g. Apache)
 - %...b: Bytes sent, excluding HTTP headers.
 - %...f: Filename
 - %...(Foobar): The contents of the environment variable Foobar—see CGI Programming
 - %...h: Remote host
 - %...(Foobar): The contents of Foobar: header line(s) in the request sent to the server.
 - %...l: Remote logname (from ident, if supplied)
 - %...(Foobar)n: The contents of note "Foobar" from another module.
 - %...(Foobar)o: The contents of Foobar: header line(s) in the reply.
 - %...p: The port the request was served to
 - %...P: The process ID of the child that serviced the request.
 - %...r: First line of request
 - %...s: Status. For requests that got internally redirected, this is status of the "original" request ---
 - %...s for the last. %...t: Time, in common log format time format
 - %...(format)t: The time, in the form given by format, which should be in strftime(3) format.
 - %...T: The time taken to serve the request, in seconds.
 - %...u: Remote user (from auth; may be bogus if return status (%s) is 401) %...U: The URL path requested.
 - %...v: The name of the server (i.e. which virtual host?)
- examples
 - %h %e %s %b ... Hostname First-line-of-request Status Bytes-sent
 - %t200,304,%02{Referer}i ... If the State is 200, 302 or 304 then log the Referer

http://httpd.apache.org/docs/mod/mod_log_config.html

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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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Server configuration

```
# specify where the error log is stored
ErrorLog /var/log/apache/error.log

# The following directives define some format nicknames for use
with
# a CustomLog directive (see below).
#
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"" combined
LogFormat "%h %l %u %t \"%r\" %>s %b" common

# for cookies you need to include "mod_usertrack" and to specify
the directive "CookieTracking On"
LogFormat "%Cookie:%{Cookie}n # %{Referer}i # %U # %t # %l %u"
click_stream

# specify where the combine log is stored
CustomLog /var/log/apache/access.log combined

# log cookies...
CustomLog /var/log/apache/clickstream.log click_stream
```

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Example Entries - Extended Logfile

- user-0cdf324.cable.mindspring.com - -
[02/May/2004:16:25:57 +0100]
"GET /-albrecht/sw/terminal/serialterm.exe HTTP/1.1"
200 163930
"http://www.comp.lancs.ac.uk/~albrecht/sw/terminal/"
"Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)"
- cache1-cdif.server.ntli.net - -
[02/May/2004:21:57:49 +0100]
"GET /-albrecht/phone/Questionnaire-en.pdf HTTP/1.1"
200 40612
"http://www.google.co.uk/search?q=a+questionnaire+abo
ut+using+mobile+phones&hl=en&lr=&ie=UTF-8&oe=UTF-
8&start=70&sa=N"
"Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)"

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Example Entries - Extended Logfile

```
Who user-0cdf324.cable.mindspring.com - -
When [02/May/2004:16:25:57 +0100]
What "GET /-albrecht/sw/terminal/serialterm.exe HTTP/1.1"
Server response 200 163930
Last URL "http://www.comp.lancs.ac.uk/~albrecht/sw/terminal/"
Browser/OS "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)"
```

```
Who cache1-cdif.server.ntli.net - -
When [02/May/2004:21:57:49 +0100]
What "GET /-albrecht/phone/Questionnaire-en.pdf HTTP/1.1"
Server response 200 40612
Last URL "http://www.google.co.uk/search?q=a+questionnaire+about+us
ing+mobile+phones&hl=en&lr=&ie=UTF-8&oe=UTF-8&sa=N"
Browser/OS "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)"
```

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Error Logfile

- [Sat May 1 12:58:29 2004]
[error] [client 213.100.44.108]
Directory index forbidden by rule:
/home/albrecht/public_html/pubs/pdf/
- [Sun May 2 20:22:31 2004]
[error] [client 141.84.26.70]
File does not exist:
/home/albrecht/public_html/pubs/.com

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Clickstream Log

- Includes a session ID

```

Id      Cookie:62.245.209.183.116681074114569160 #
Referrer http://www.ifi.lmu.de/~pm/Login.html?Id=3 #
Request /~pm/images/PassPics/pic42.jpg #
When   [14/Jan/2004:22:10:00 +0100] # - -
    
```

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Analysis Tools

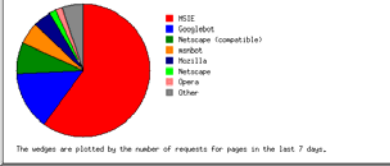
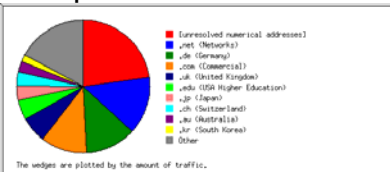
- Looking at single entries not manageable at site with real traffic
- Condensing Data
 - Provide overview
 - Accumulate Logfile Data
- Examples
 - Analog (<http://www.analog.cx>)
 - Webalizer (<http://www.mrunix.net/webalizer/>)

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Samples

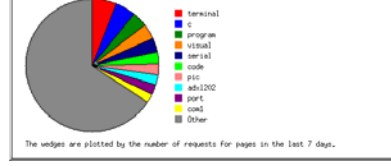
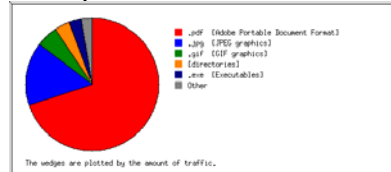


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Samples



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Usability

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

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Criteria

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

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Example Material Usability report

- <http://www.infodesign.com.au/usabilityresources/evaluation/webevaluation.asp>
- Common Industry Format for Usability Test Reports <http://zing.ncsl.nist.gov/iusr/documents/cifv1.1b.htm>
- <http://www3.sympatico.ca/bkeevil/siqdoc98/>
- <http://mprover.com/sample.htm>
- <http://www.bui.fh-hamburg.de/pers/ursula.schulz/webusability/tipsreport.html>

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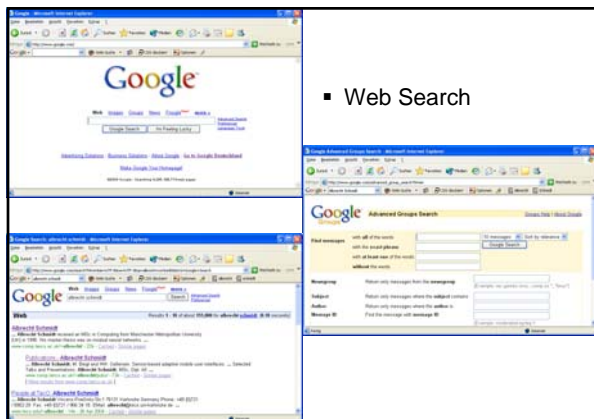
Creating a Basic Design

- 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

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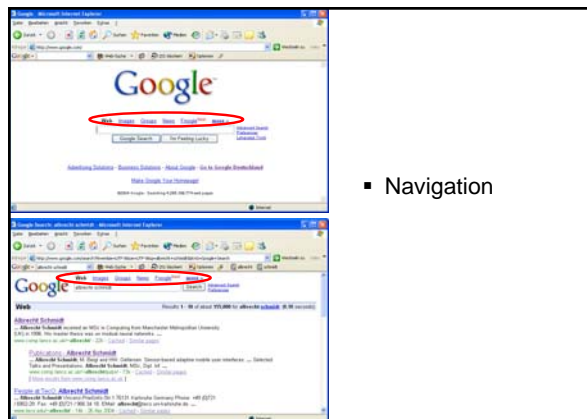


▪ Web Search

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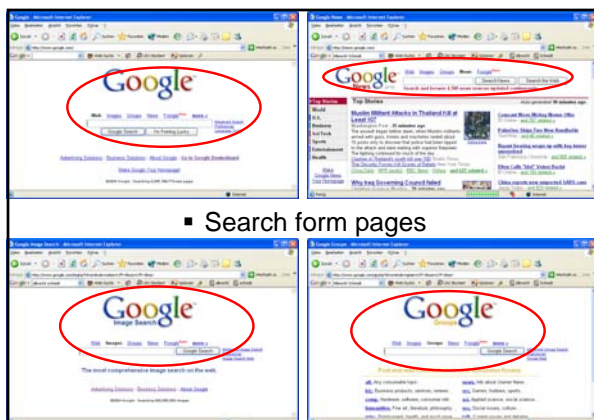


▪ Navigation

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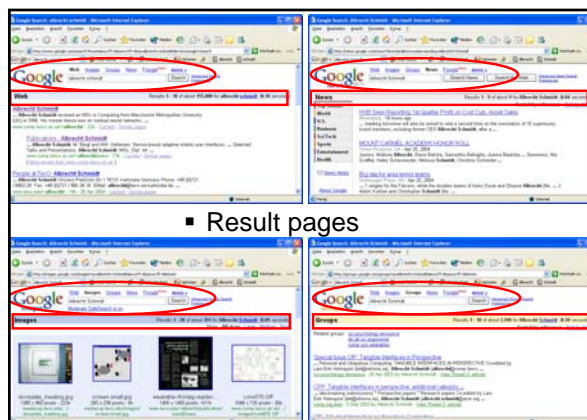


▪ Search form pages

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▪ Result pages

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Advanced search pages

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Information pages

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Web Design

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

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More reading...

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

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SWOT Analysis

general approach – not just for the web presentations

- Access factors in a competitive environment
 - external factor
 - Internal factors
- Find out about
 - Strengths
 - Weaknesses
 - Opportunities
 - Threats

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SWOT Analysis

in the web context

- Strengths
 - What strength does a web presence have?
- Weaknesses
 - What disadvantages are created by a web presence?
 - Which information can not be mapped to the web?
- Opportunities
 - What new opportunities are there for the company because of the web?
- Threats
 - What risks will the company face due to the web presence?

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SWOT / TOWS Matrix

	Strengths	Weaknesses
Opportunities	S-O strategies use strengths and take advantages of opportunities	W-O strategies overcome weaknesses and take advantage of opportunities
Threats	S-T strategies identify ways to use strengths to reduce the risks by external threats.	W-T strategies Defensive tactics to prevent the risk of external threads which are due to weaknesses

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Structuring Information

- linear
- hierarchical
- grid
- graph / web

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Linear Structures I

- pure linear



- strict guidance (directed)
- little choices for the user
- pre-caching possible

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Linear Structures II

- pure linear



- strict guidance
- little choices for the user
- pre-caching possible

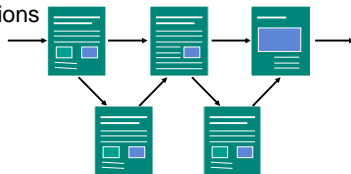
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Linear Structures III

- linear with options



- guidance
- some choices for the user active interaction
- different levels of detail
- scenarios: different level of expertise, profiles

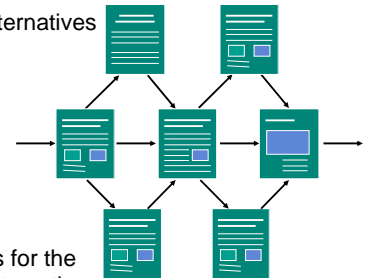
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Linear Structures IV

- linear with alternatives



- guidance
- some choices for the user active interaction
- scenarios: questionnaires

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Linear Structures V

- linear with side branches

- additional information on side path
- guidance on main path

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Circular Structure

- closed guided path
- variants / side paths
- entry

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Information Grid

- ordered on two orthogonal criteria
- user get a „feeling of space“
- e.g. product catalog
- possible for more dimensions

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Example Grid Information Structure I

- catalog 2 dimensions

screws	M4	M6	M8
nut	M4	M6	M8
discs	4mm	6mm	8mm

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Example Grid Information Structure II

- catalog 3 dimensions

Manufacturer C	screws	M4	M6	M8
Manufacturer B	screws	M4	M6	M8
Manufacturer A	screws	M4	M6	M8
	nut	M4	M6	M8
	discs	4mm	6mm	8mm

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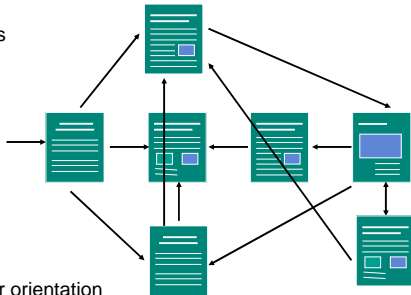
Hierarchical Information Structure

- deep hierarchy
- flat hierarchy
 - Lookup table (A-Z)
 - 6-10 is reasonable (cognitive psychology)

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Linked Information Structures

- pure webs



- difficult for orientation
- extremely expressive

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Web Concept (1)

- Identify starting point
 - As-is analysis
 - SWOT
 - benchmark
- Define goals
 - Short term, medium term, long term
 - target group
- Specify the main message
 - Main purpose of the site
 - Benefit for users in the target group
- Creative design brief
 - Storyboard, structure, visitors path
 - Layout basics, sample screen designs
 - Text concept, text samples

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Web Concept (2)

- Content creation and update
 - How is content created and updated (or is the site fix)
 - What interfaces are available
- Technical requirements and infrastructure
 - Server, programming, database
 - network
 - End user side
- Marketing issues
 - Search engine strategy
 - advertisement
- Success measure
 - E.g. number of users, sales, reducing support requests
- Project management issues
 - Project plan, timing, milestones, dependencies
 - Budget
 - Migration strategy (from development to operation)

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Quick tour of basic design guidelines (1)

- Text
 - Scannable (users mainly scan new pages on the web)
 - highlight keywords
 - headings and subheadings
 - bulleted lists
 - Structure and white space
- Writing
 - Inverted Pyramid (conclusion at the beginning)
 - Use shorter text than in paper writing (e.g. 50%)
 - Write in the users' language
- Graphics
 - Use where appropriate
 - Consider size

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Quick tour of basic design guidelines (2)

- Navigation
 - Consistent control over the whole site
 - Keep browser functions (back, forward)
 - text menus
- Context
 - Site maps
 - Context of page within site
 - previous / next page buttons
 - navigation
 - table of contents
 - breadcrumb trail
- Links
 - what the web is all about
 - no dead end pages

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Web design guides

- Not just one ...
- Example: <http://www.webstyleguide.com/>

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The site development process

<http://www.webstyleguide.com>

- Every significant Web project poses unique challenges, but the overall process of developing a complex Web site generally follows six major stages:

1. Site definition and planning
2. Information architecture
3. Site design
4. Site construction
5. Site marketing
6. Tracking, evaluation, and maintenance

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Information architecture

<http://www.webstyleguide.com>

Typical results or contract deliverables at the end of this stage could include:

- Detailed site design specification
- Detailed description of site content
- Site maps, thumbnails, outlines, table of contents
- Detailed technical support specification
- Browser technology supported
- Connection speed supported
- Web server and server resources
- Proposals to create programming or technology to support specific features of the site
- A schedule for implementing the site design and construction
- One or more site prototypes of multiple pages
- Multiple graphic design and interface design sketches or roughs

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Design

<http://www.webstyleguide.com>

Typical results at the end of this stage could include:

Content components, detailed organization and assembly

- Text, edited and proofread
- Graphic design specifications for all page types
 - Finished interface graphics for page templates
 - Header and footer graphics, logos, buttons, backgrounds
- Detailed page comps or finished examples of key pages
 - Site graphic standards manual for large, complex sites
- Interface design and master page grid templates completed
- Illustrations, Photography

Functional and logic components

- JavaScript scripts, Java applets designed
- Database tables and programming, interaction prototypes completed
- Search engine designed and tested

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Site Construction

<http://www.webstyleguide.com>

Typical results at the end of this stage could include:

- Finished HTML for all Web pages, all page content in place
- Finished navigation link structure
- All programming in place and linked to pages, ready for beta testing
- All database components in place and linked to site pages
- All graphic design, illustration, and photography in place
- Final proofreading of all site content
- Detailed testing of database and programming functionality
- Testing and verification of database reporting features
- Testing of site reader support procedures, answering email, etc.
- Archives of all site content components, HTML code, programming code, and any other site development materials

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Site Marketing

<http://www.webstyleguide.com>

Your home page URL could appear in:

- Print advertisements
- Radio and television advertisements
- Lobby kiosks in high-traffic areas of your enterprise or in local libraries, schools, or other suitable venues
- Direct mail campaigns
- Business cards
- Stationery
- Bills and statements
- Product manuals and product packaging
- Response cards and warrantee cards
- Publications and promotional materials
- Press releases
- Posters and billboards

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Typography on the Web some issues

- Books have about 1200dpi screens have about 100dpi
- Very few fonts are commonly installed!
- Justification is often poor with current browser



Justification and "rivers"
The relatively primitive text justification available today on the Web creates word-space problems that result in "rivers" of white space that occur to run down the page.

<http://www.webstyleguide.com>

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Some rules of thumb for text layout

- Column width about 365 pixels for a 12-point font
- About 8 to 10 words per line (in English)
- Increase line spacing (e.g. 16 points for a 12 point font)
- Separate paragraphs by at least an empty line
- Use typeface that is easily readable on screen resolution, use fonts designed for use on screens, e.g. Times New Roman for body text and Verdana for headings
- Use CSS and specify alternatives, e.g.


```
P {font-family: "Times New Roman", Georgia, Times, serif }
```
- Don't use capitals only


<http://www.webstyleguide.com>

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About Texts and Links

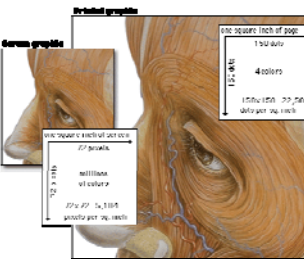
- Be short and precise
- Page titles should include important information
 - They are used in bookmarks and search engines
- Think global – people may come from everywhere
- Make useful link text – not “click here”
- It may be useful to discriminate links
 - Navigational links
 - Content base links
 - External links
- Placing links into written paragraphs can be contra-productive – people are invited to leave to another page while reading a sentence...

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Graphics



- Screen size
- Screen resolution
- Color resolution
- Gamma
- Download time

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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

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Organizing Information

<http://www.webstyleguide.com>

There are five basic steps in organizing your information:

1. Divide your content into logical units
2. Establish a hierarchy of importance among the units
3. Use the hierarchy to structure relations among units
4. Build a site that closely follows your information structure
5. Analyze the functional and aesthetic success of your system

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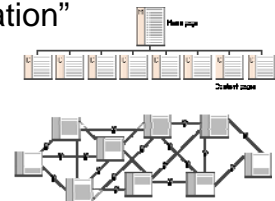
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“Chunking Information”

<http://www.webstyleguide.com>

- Hierarchy of importance
- Relations
- Functions



- The most important step in planning your site is to organize your information!

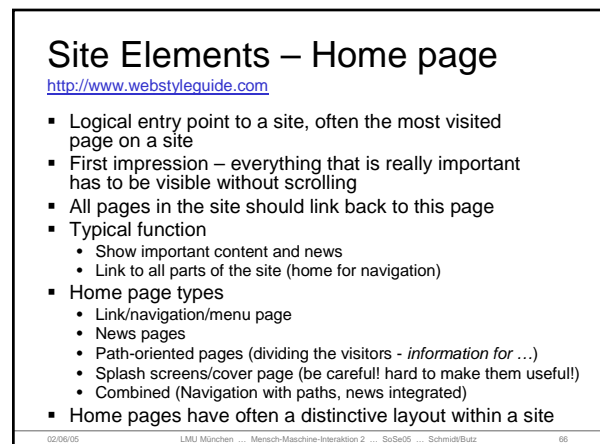
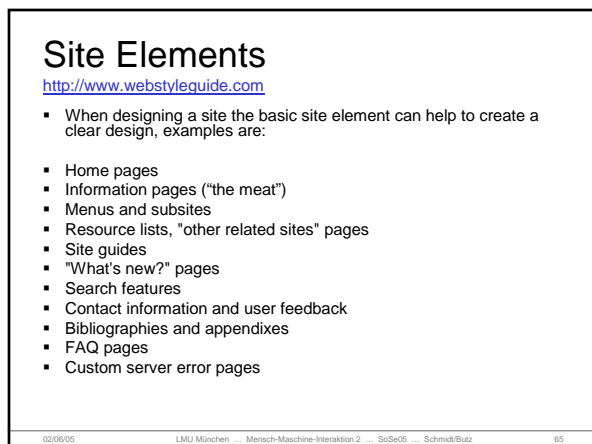
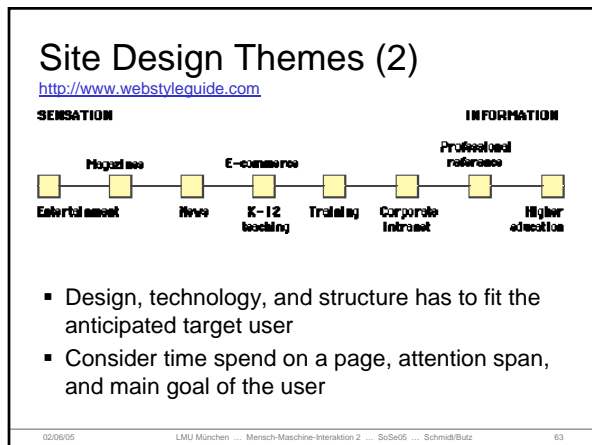
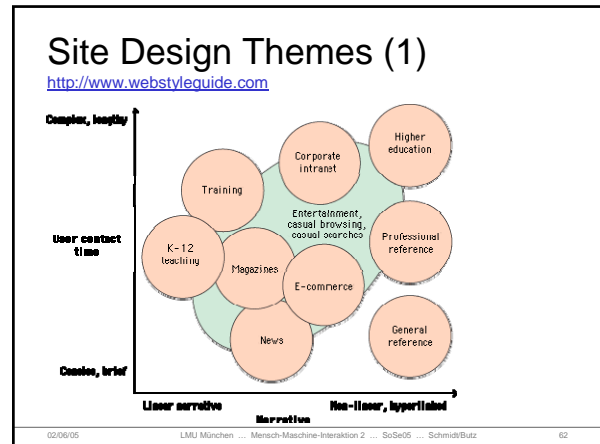
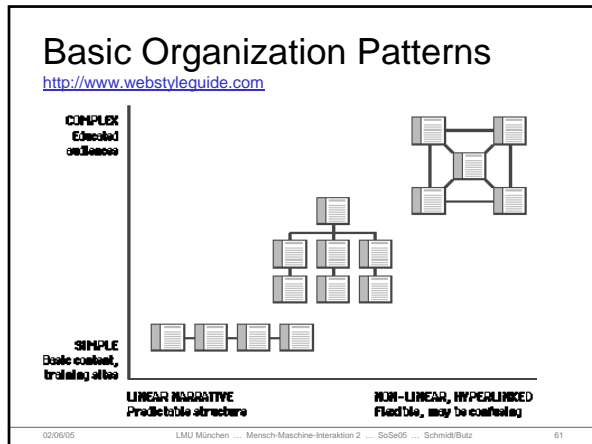


- Examples of extreme structures

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