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

Ludwig-Maximilians-Universität München
LFE Medieninformatik
Heinrich Hußmann & Albrecht Schmidt
WS2003/2004
http://www.medien.informatik.uni-muenchen.de/

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

- Excurse: Web Log Files

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?

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
```


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+about+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)"

Example Entries - Extended Logfile

Who
When
What
	`user-0cdf324.cable.mindspring.com - -`
	`[02/May/2004:16:25:57 +0100]`
	`"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
When
What
	`cache1-cdif.server.ntli.net - -`
	`[02/May/2004:21:57:49 +0100]`
	`"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+using+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)"`

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**

Clickstream Log

- Includes a session ID

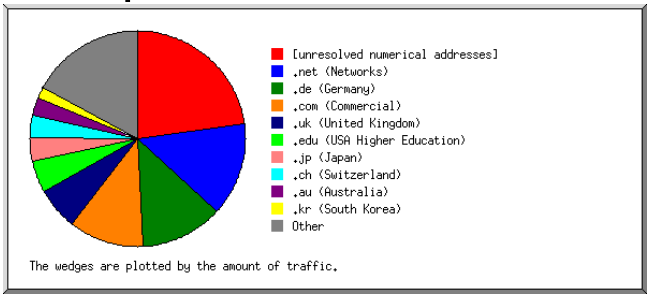
Id	`Cookie:62.245.209.183.116681074114569160 #`
Referrer	`http://www.ifi.lmu.de/~pm/Login.html?Id=3 #`
Request	`/~pm/images/PassPics/pic42.jpg #`
When	`[14/Jan/2004:22:10:00 +0100] # - -`

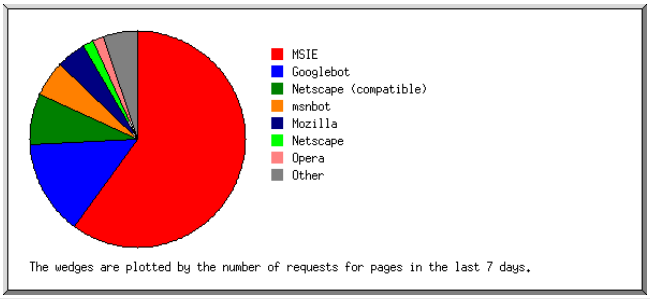
Analysis Tools

- Looking at single entries not manageable at site with real traffic
- Condensing Data
  - Provide overview
  - Accumulate Logfile Data
- E.g. Analog (http://www.analog.cx)

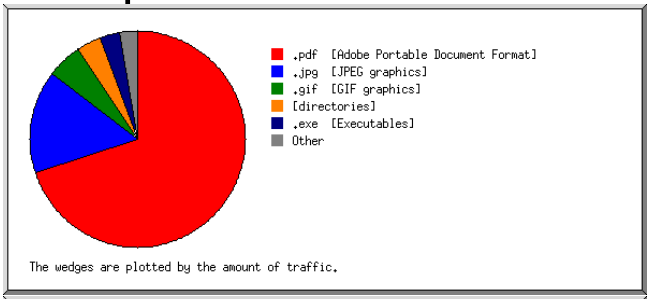
→ show example report

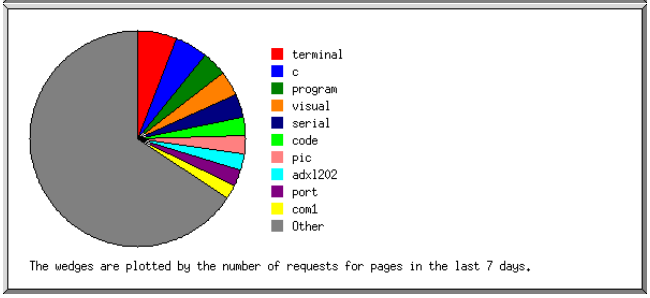
Samples





Samples





- …Back to the process of creating a web site

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

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?

SWOT / TOWS Matrix

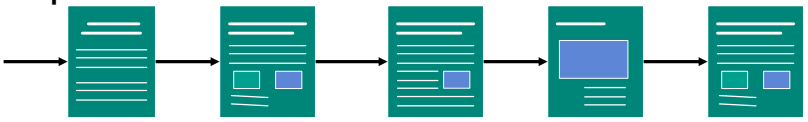
	Strengths	**Weaknesses**
Opportunities	S-O strategies use strengths and take advantages of opportunities	W-O strategies overcome weaknesses and take advantage of opportunities
Threats	S-T strategies identify ways to use strengths to reduce the risks by external threats.	W-T strategies Defensive tactics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

Structuring Information

- linear
- hierarchical
- grid
- graph / web

Linear Structures I

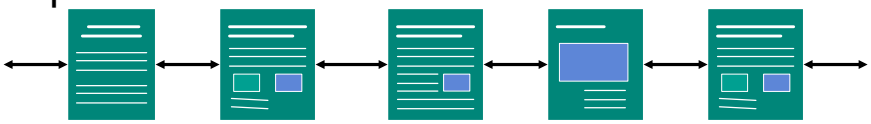
- pure linear



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

Linear Structures II

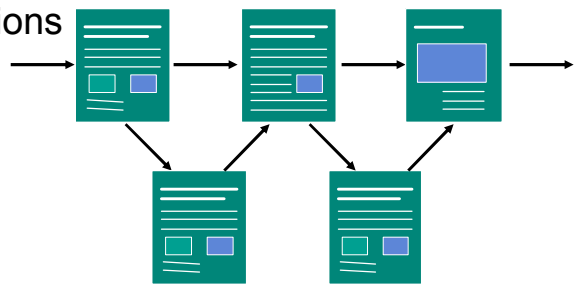
- pure linear



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

Linear Structures III

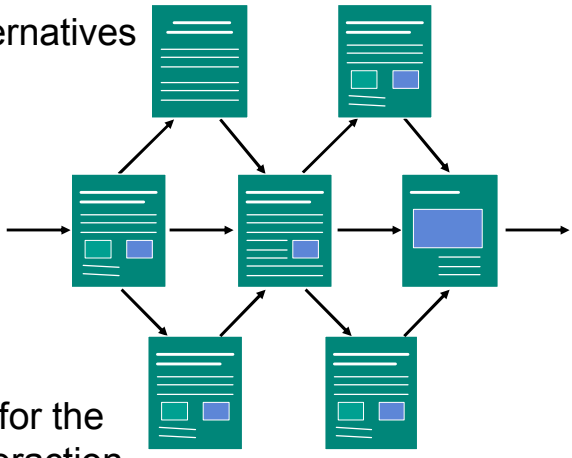
- linear with options



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

Linear Structures IV

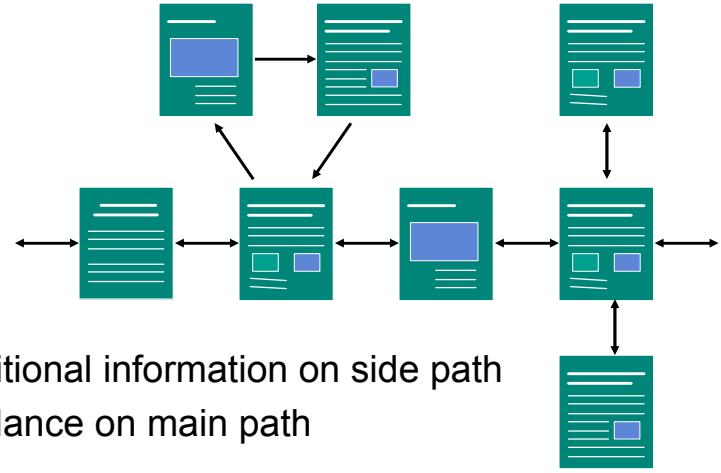
- linear with alternatives



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

Linear Structures V

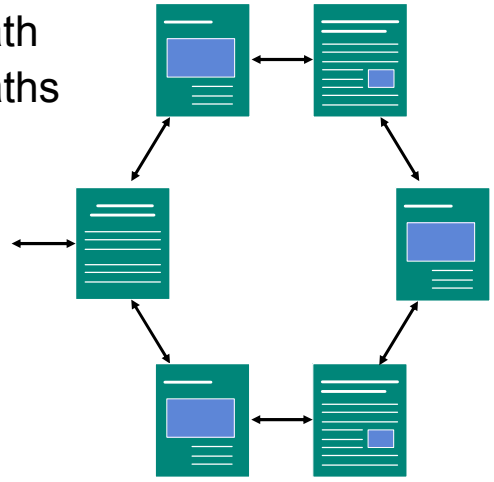
- linear with side branches



- additional information on side path
- guidance on main path

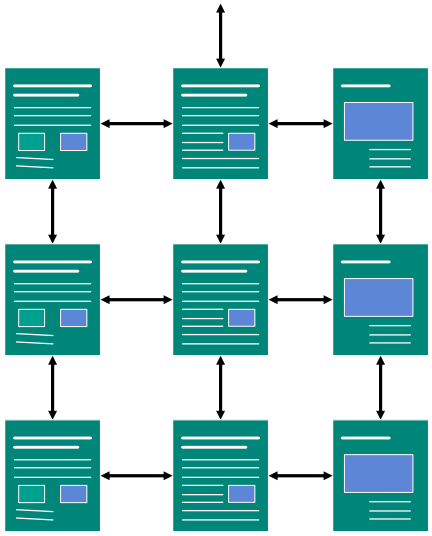
Circular Structure

- closed guided path
- variants / side paths
- entry



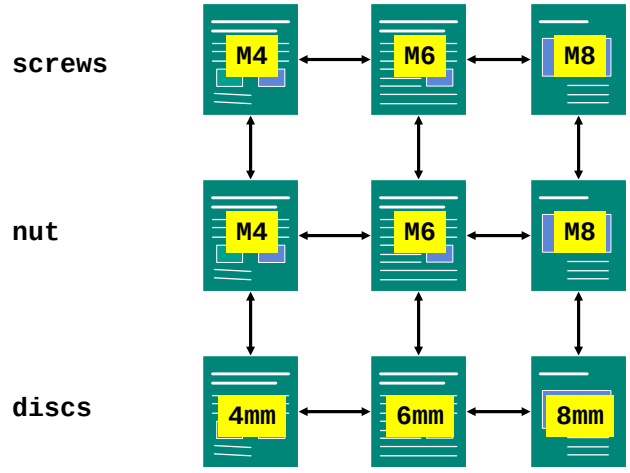
Information Grid

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



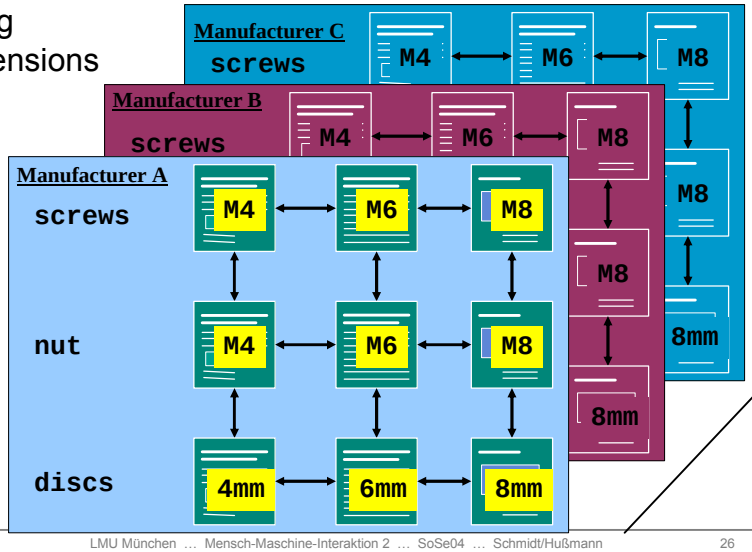
Example
Grid Information Structure I

- catalog
  2 dimensions



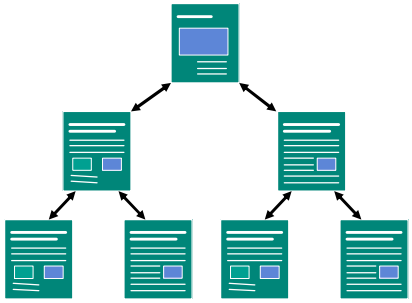
Example
Grid Information Structure II

- catalog
  3 dimensions



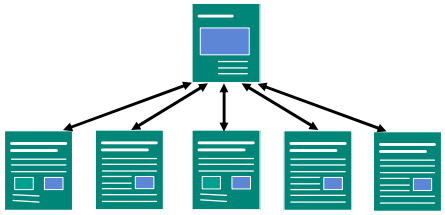
Hierarchical Information Structure

- deep hierarchy



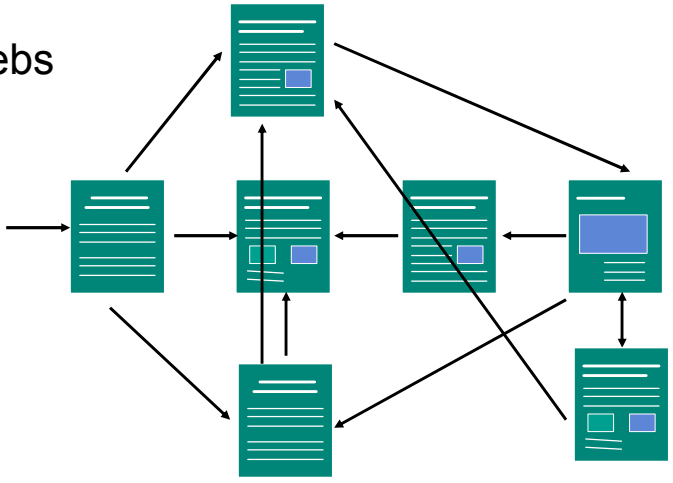
- flat hierarchy
  - Lookup table (A-Z)
  - 6-10 is reasonable

    (cognitive psychology)



Linked Information Structures

- pure webs



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

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)

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

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

useit.com → Alertbox → July 2000 WAP Backlash

- Links
  - what the web is all about
  - no dead end pages

Web design guides

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

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

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

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

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

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

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 seem to run down the page.

http://www.webstyleguide.com

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

MONOTONOUS RECTANGLES

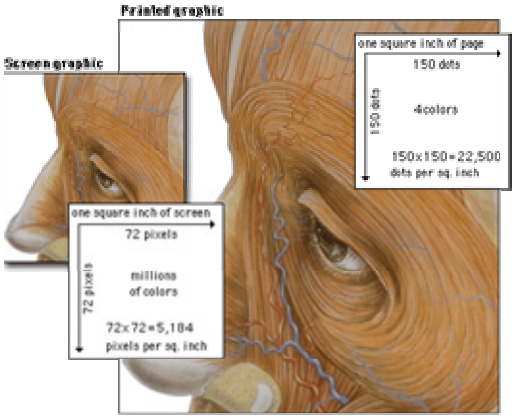
Monotonous rectangles

http://www.webstyleguide.com

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…

Graphics



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

Web Design

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

References

- Web Style Guide
  http://www.webstyleguide.com/