




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

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SS2006
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Structure

- Chapter 1:
HCI and the WWW 
- Chapter 2:
Information Visualization 
- Chapter 3:
Mobile and Ubiquitous User Interfaces 

Chapter 1: HCI and the WWW

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1.2 Web Usability

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

1.3 Web Accessibility, Universal Access to Information

1.4 Usability Report

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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

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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 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)
 - ...

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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

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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

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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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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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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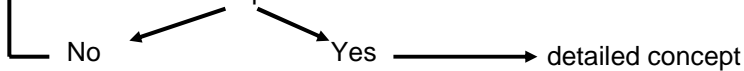
Card sorting

- Article to read...

Evolutionary Method

- „all at 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?



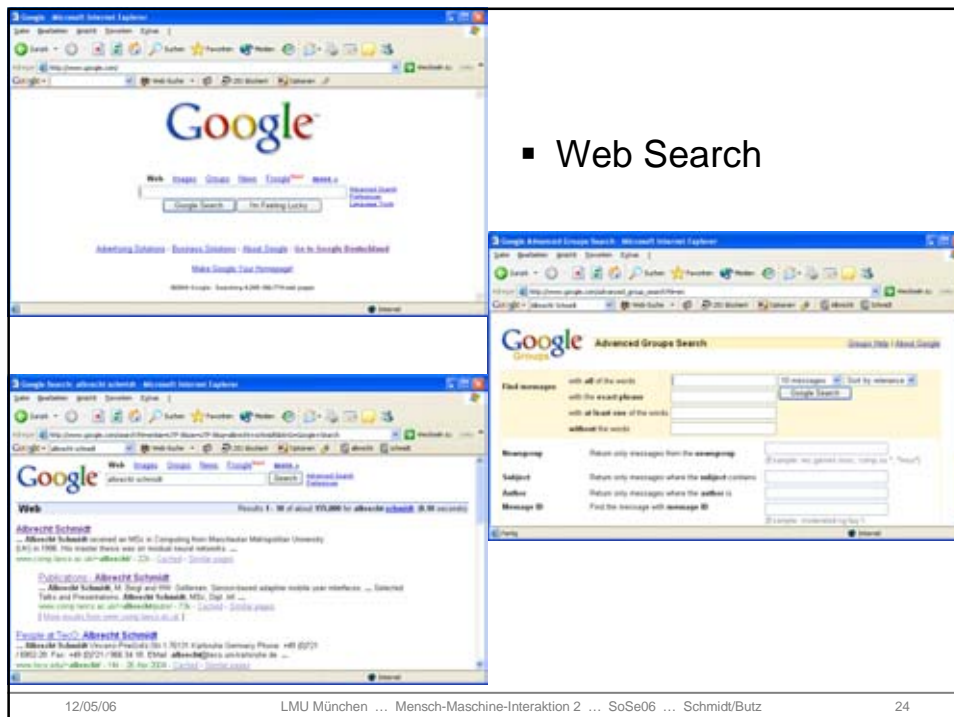
Creating a Basic Design

- 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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The image displays four screenshots of a Microsoft Internet Explorer browser window. The top-left screenshot shows the Google homepage with the search bar and navigation links. The top-right screenshot shows the Google Advanced Groups Search interface with various search filters. The bottom-left screenshot shows search results for 'Albrecht Schmidt' on the web, listing his biography and publications. The bottom-right screenshot shows search results for 'Albrecht Schmidt' on Twitter, listing tweets and user information.

- Web Search

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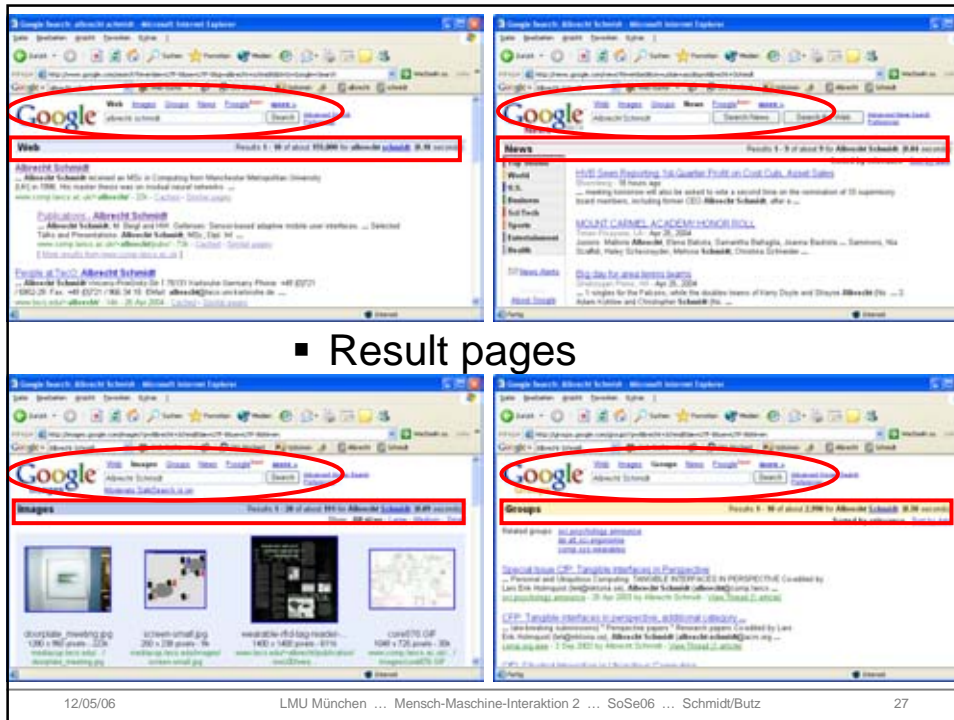
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Navigation

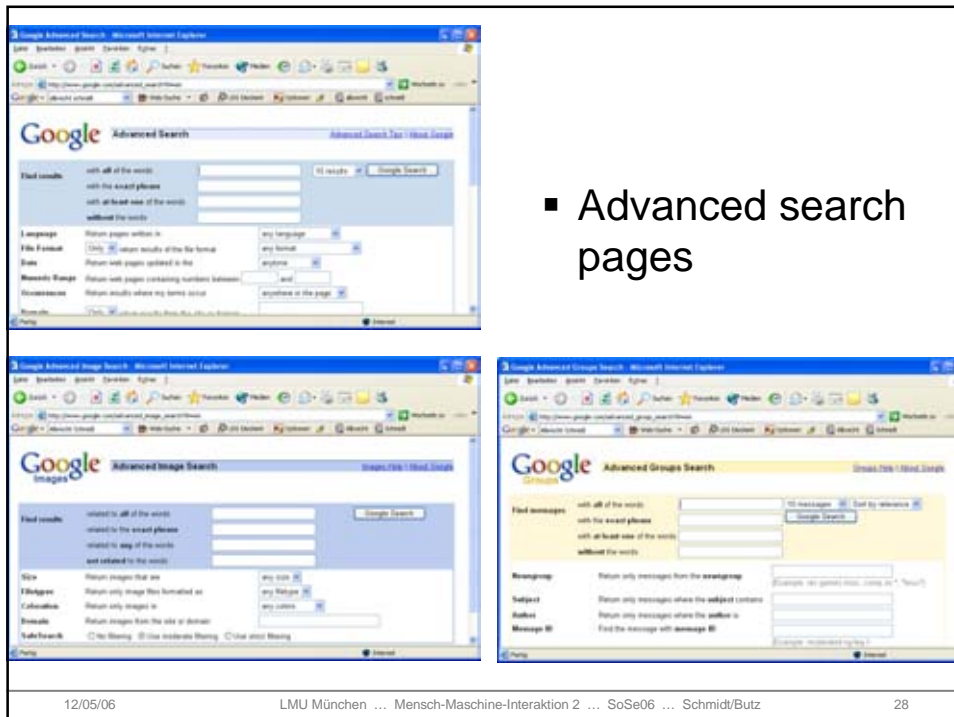
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Search form pages

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Result pages



Advanced search pages



- Information pages

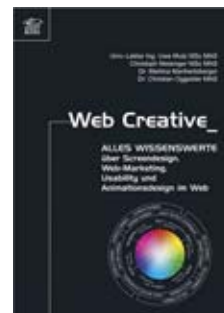
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Web Design

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



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Structuring Information

- linear
- hierarchical
- grid
- graph / web

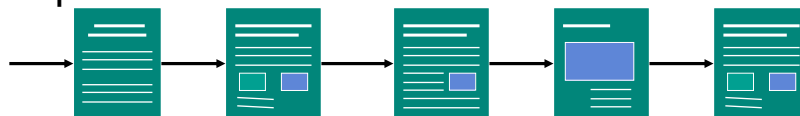
- For the overall site
- For parts of a site (e.g. user registration)

If a web is dynamically generated a structure is still needed!

Structure is then not fix in the html pages but in the navigation generated.

Linear Structures I

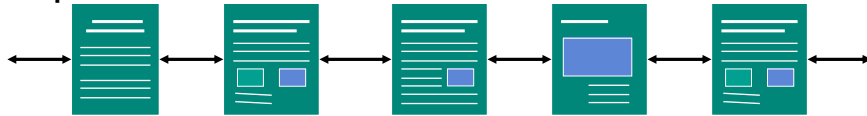
- pure linear



- 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

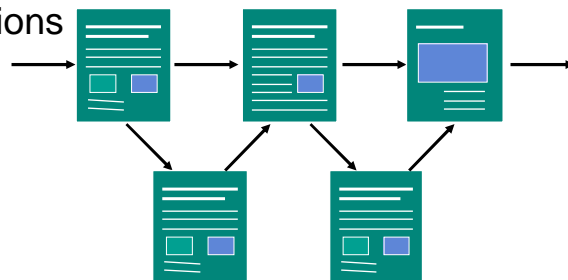
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Linear Structures III

- linear with options



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

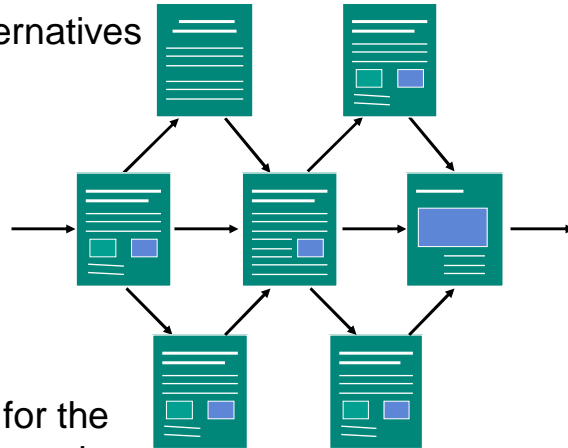
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Linear Structures IV

- linear with alternatives



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

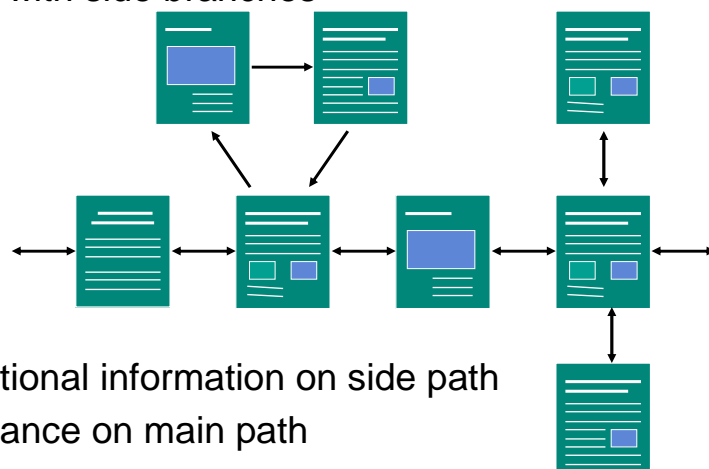
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Linear Structures V

- linear with side branches



- additional information on side path
- guidance on main path

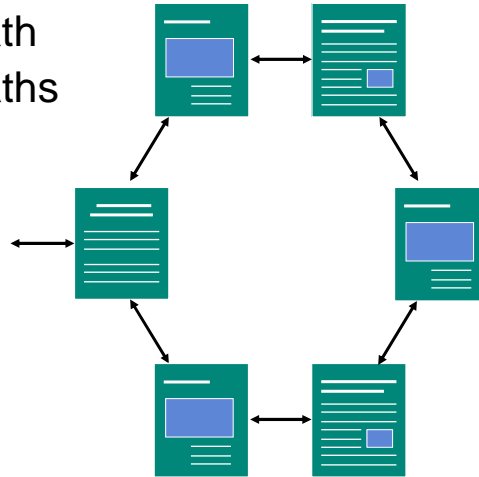
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Circular Structure

- closed guided path
- variants / side paths
- entry



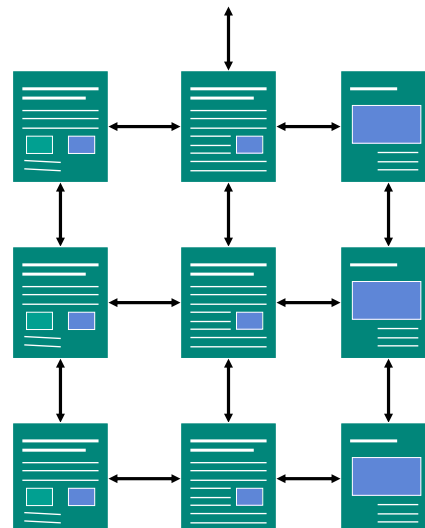
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Information Grid

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



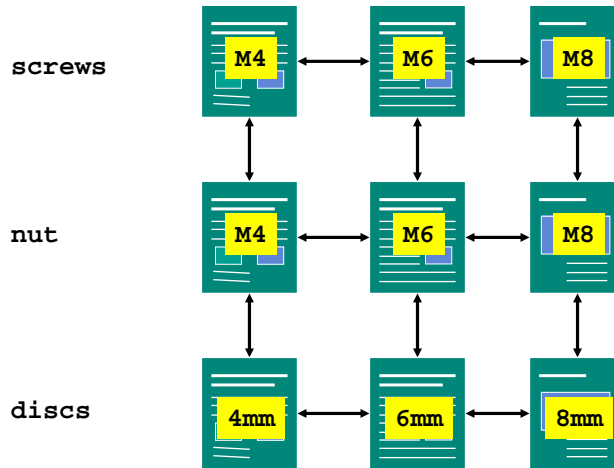
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Example Grid Information Structure I

- catalog
2 dimensions



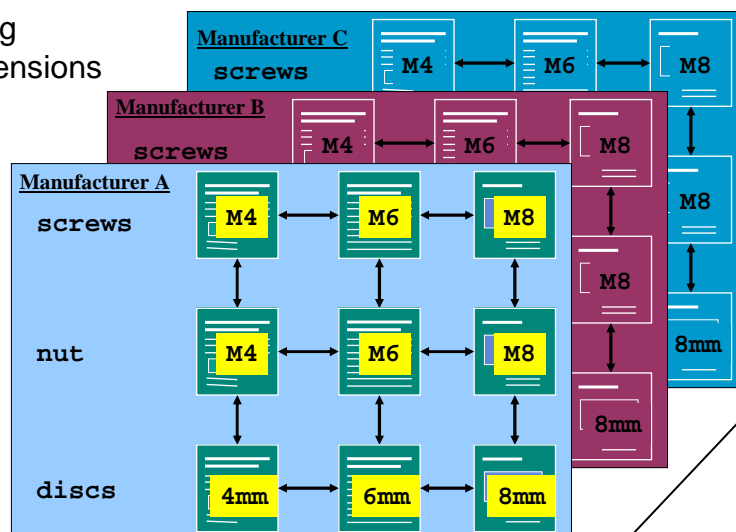
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Example Grid Information Structure II

- catalog
3 dimensions



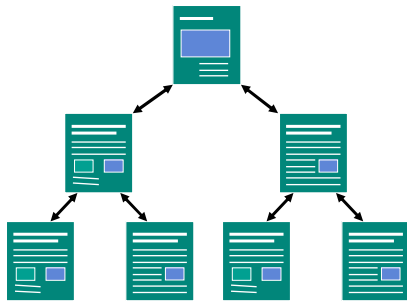
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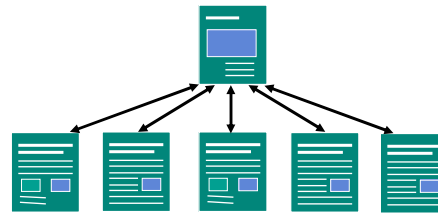
Hierarchical Information Structure

- deep hierarchy



- flat hierarchy

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



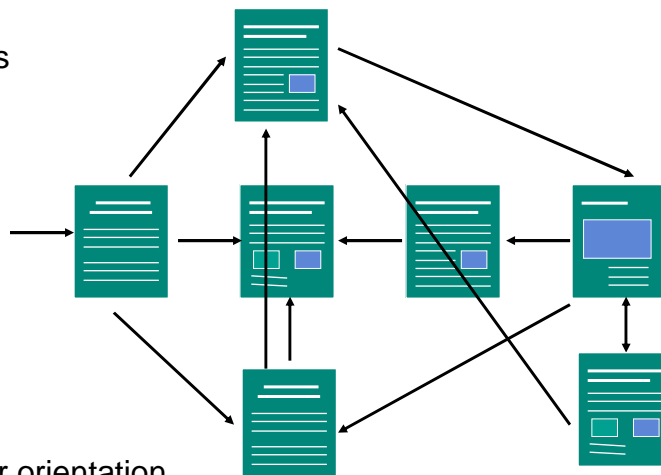
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Linked Information Structures

- pure webs



- difficult for orientation
- extremely expressive

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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>

Usability

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

References

- ACM SIGCHI Curricula for Human-Computer Interaction
<http://www.acm.org/sigchi/cdg/>
- Blockvorlesung "Web-Technologien"
<http://www.medien.ifi.lmu.de/lehre/ws0506/pwt.html>
(login and password on request)