

Mensch-Maschine-Interaktion 2

HCI and the Web

Prof. Dr. Andreas Butz, Prof. Dr. Michael Rohs

1 HCI and the Web

1.1 HCI – A Quick Reminder

1.2 Web Technology – A Brief Overview

1.3 Web Usability: How Do We Use the Web?

1.4 Designing Web Sites for Usability

1.5 Web Accessibility

Literature:

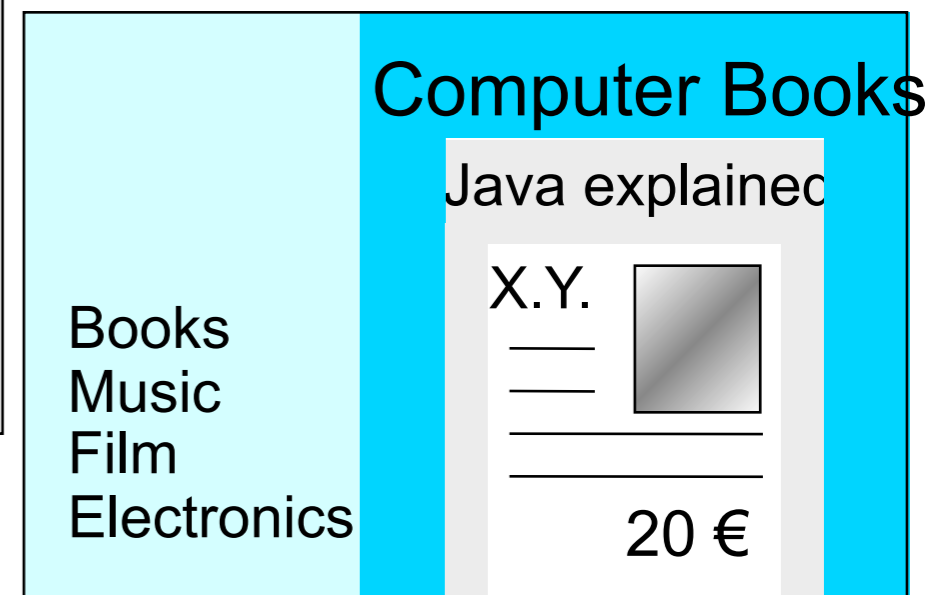
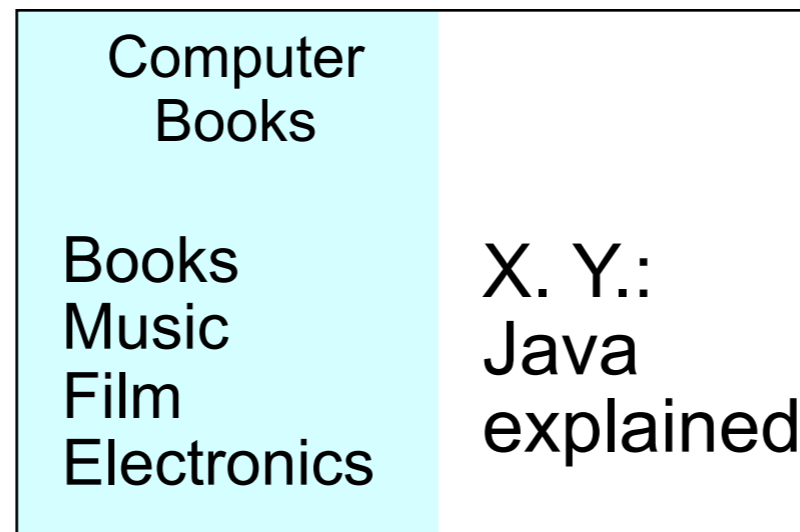
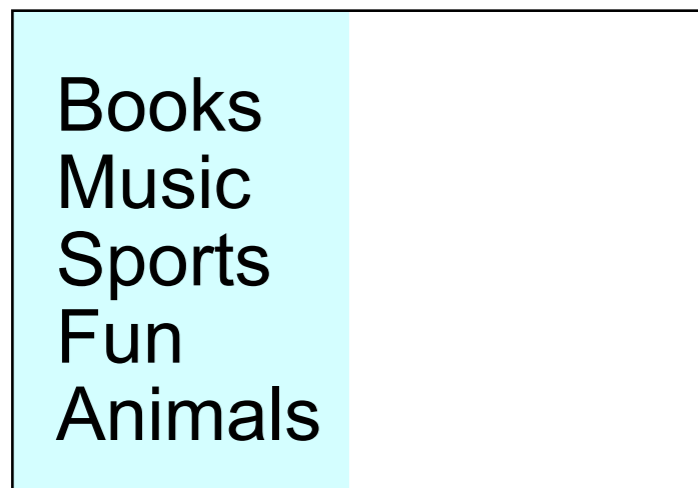
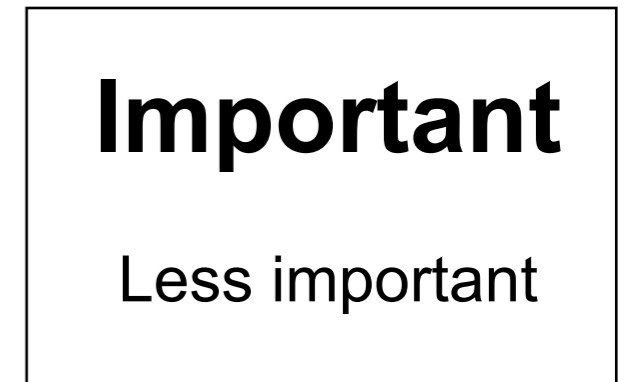
- Jakob Nielsen: Designing Web Usability, New Riders 2000
- Steve Krug: Don't Make Me Think, New Riders 2006 (2nd ed.)

Billboard Design

- S. Krug:
Designing under the assumption “that your users are whizzing by”
- Similar to billboard design
 - Everything simple, large, easy
- Create a clear visual hierarchy
- Take advantage of conventions
- Break pages up into clearly defined areas
- Make it obvious what’s clickable
- Minimize noise

Visual Hierarchy

- The more important, the more (visually) prominent
 - Examples: larger, bolder, contrast color, set off by more white space, nearer the top
- Logically related things are also related visually.
 - Examples: Heading, similar visual style, in a well-defined area
- Things are “nested” visually to show what is part of what.




Conventions

- Example: Reading a newspaper
 - Headline, summary, picture caption, photo credit, author initials
- Every publishing medium develops conventions
- Conventions for the Web
 - Example: Shopping cart
 - Under development, still changing and maturing
- Conventions are helpful
 - Designers are reluctant to use them (“Do not repeat old schemes”)
- Examples for discussion:
 - Conventions for hyperlinks
 - Conventions for search functions



Example: Web Page in Foreign Alphabet



βάλε με στα αγαπημένα σου

Πληροφορίες

Τι είναι το Nylon.gr
Το Blog αυτό λειτουργεί καλύτερα (και δείχνει καλύτερο) όταν το βλέπετε με [Firefox Browser](#).

Εγγραφή



Πάτησε το κουμπί για να λαμβάνεις το NYLON σε RSS Feed.

Το email σου για να έρχεται το NYLON:

Εγγραφή

Επικοινωνία

tips@nylon.gr



Τι θα κάνουμε με τους βαρβάρους?

Ένα κορίτσι 17 ετών από την Κουρδική κοινότητα της Μοσούλης στο Ιράκ αγάπησε ένα Μουσουλμάνο. Αποφάσισε να φύγει από την πόλη της για να τον παντρευτεί.

Μετά από 4 μήνες οι γονείς της την έπεισαν ότι μπορεί να επιστρέψει ασφαλής πίσω γιατί τη συγχώρεσαν για το "λάθος" της.

Την ώρα της επιστροφής είδε στην είσοδο της πόλης να την περιμένει ένας όχλος από 1.000 άνδρες. Τη σκότωσαν με το χειρότερο τρόπο. Την πετροβόλησαν με τεράστιες κοτρώνες χωρίς καμμία λύπηση.

Την ίδια ώρα κατέγραφαν την πράξη τους με κινητά τελευταίας Δυτικής τεχνολογίας. Όσο έκλαιγε και παρακαλούσε για τη ζωή της τόσο δυνατότερα την κλωτσούσαν. Η τοπική αστυνομία ήταν παρούσα, βοηθώντας τους ντόπιους στη δοοφονία.

Όλα τα video [εδώ](#), και [εδώ](#), και [εδώ](#), και [εδώ](#), και [εδώ](#), και [εδώ](#).

Να τα βλέπουμε και να ξέρουμε "τι είναι και πως είναι"....

May 6th, 2007

Κατηγορίες: [ΑΝΘΡΩΠΙΝΑ ΔΙΚΑΙΩΜΑΤΑ](#), [ΠΟΛΙΤΙΣΜΟΣ](#) . Blogger: [Nikos](#) . Σχόλια: [14](#)

[Σχόλια](#)

Δε μασάμε ?

Το [Δε Μασάμε Ρε](#) αναπαράγει ένα μικρό κομμάτι από άρθρο του TIME:

Οι εταιρίες δεν ανησυχούν μόνο για τους πρωινούς τίτλους των ειδήσεων, αλλά και για τα ατέλειωτα κείμενα στα μπλογκς, και στα εκτός ελέγχου video τα οποία μπορούν να παίξουν εικοσιτέσσερις ώρες το εικοσιτετράωρο.

Nick's shared items

- [Plethora of Options for Green Web Hosting](#) from TreeHugger
- [Parents think internet is dangerous for children](#) from Download Squad
- [National Banana - Surely you understand Hollywood...](#) from PodTech Network
- [Planet Earth](#) from Planet Intertwingly
- [Social Media Killed the Video News Release Star](#) from PR 2.0

[Read more...](#)

what am I doing...

National Banana rocks!
<http://www.nationalbanana.com/>

about 10 hours ago

follow drandakis at <http://twitter.com>

Podcasts - Videocasts

- [Art Attack](#)
- [Arxedia Media](#)
- [BONANZA.GR](#)
- [BOOK ATTACK](#)

Ημερολόγιο

May 2007

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

« Apr

gapingvoid.com

Screen Estate

AOL | My AOL | Mail | Make AOL Your Homepage

Search the Web Search

HOME RUNS 0 LONG: 0 FT. S 0 0 0

CLICK HERE TO SWING

Find major getaways at minor prices - GO!

ORBITZ AND GO!

MAPQUEST.

Settings | Help | Business Solutions

Maps Directions Mobile

Printer-Friendly | E-Mail | Link to this Map

★ **Amalienstrasse 17**
München, BAYERN 80333, DE
[Directions To](#) | [Directions From](#) | [Revise](#) | [New Map](#)

Online Offers

- [München Hotels](#)
- [München Insurance](#)
- [Schools in München](#)
- [Homes in München](#)

Online Offers

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- [München Insurance](#)
- [Travel to München](#)
- [Extended Stay Hotels](#)

[200 Hotels in Munich](#)
Good availability and great rates.
Book online now, pay at the hotel!
www.booking.com/Munich

Core content

Navigation

Advertising

The Simplicity Principle

- “Simplicity always wins over complexity” (J. Nielsen)
 - Go through all design elements and remove them one at a time
 - If the design works without an element, kill it!
- Simplicity helps to achieve better performance
- Simplicity for texts:
 - “Omit needless words. Vigorous writing is concise.”
(E.B. White, *The Elements of Style*)
 - “Get rid of half the words on each page, then get rid of half of what’s left.”
(S. Krug’s Third Law of Usability)
 - Reducing the text
 - » reduces the noise level of the page
 - » makes important content more prominent
 - » makes pages shorter, users can see more at a glance
 - Candidates for removal:
 - » “happy talk”, instructions

Example: "Happy Talk"

Hunt Club - Riverside Community Centre

Search HCRCC ?

HOME ABOUT US OUR FACILITY PROGRAMS WHAT'S NEW WHAT'S HAPPENING

HCRCC
Something for everyone!

▶ Download our Spring & Summer 2007 Program!
▶ Welcome - Enjoy our NEW Website!

Facility Rentals
Plan your next event with us!
[click here for more info](#)

QUICK LINKS
▶ Hours of Operation
▶ Halloween Bash
Administration
▶ Submit News

Welcome - Enjoy our NEW Website!
We just recreated our website to bring you a clear new look, with easier ways to find our programs and activities. This site was built for you - so please send us your comments and suggestions. Remember to take our **Opinion Poll!**
At HCRCC, we have programs and activities for everyone, of every age.

LET'S CONNECT
OUR SPONSORS
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Example: Instructions

PICK-UP SERVICES

FROM KYOTO

- Kyoto 1Day
- Kyoto&Nara 1Day
- Kyoto Morning
- Kyoto Afternoon
- Kyoto Morning&Craft
- Nara Afternoon
- Kyoto Special Night
- Kyoto Maiko Night
- Walking in Osaka 1Day
- Walking in Sagano-Arashiyama
- Experience Authentic Japanese Culture in Kyoto

FROM KYOTO / OSAKA

- Miho Museum<Private Tour>
- Hiroshima&Kurashiki 2Days
- Hiroshima&Miyajima 1Day
- Pearl Island & Ise 1Day
- Himeji Castle & Sake Brewery
- Mt.Hiei Enryaku-ji & The experience of Zazen

FROM OSAKA

- Kyoto 1Day from Osaka
- Kyoto & Nara 1Day from Osaka
- Kyoto Morning from Osaka
- Kyoto Afternoon from Osaka
- Nara Afternoon from Osaka
- Walking in Osaka 1Day
- Walking in Osaka Afternoon

FROM HIROSHIMA

- Hiroshima & Miyajima 1Day

PRIVATE TOURS

- FREE PLAN
- TOUR CONDITIONS

CONTACT US

tel: 81-75-341-1413

mail: itdw_sunrise@jtb.jp



Sightseeing Tours 2007

**KYOTO
OSAKA
NARA
HIROSHIMA**

For Reservation & Information
JTB SUNRISE CENTER WESTERN JAPAN
CALL +81(75)341-1413
MON.-SAT. 10:00a.m.-6:00p.m.
110 Watanabe Japan Corp./Licensed Travel Agent, 1-11-1
100-0001 Higashi-Shinjuku 4-chome, Shinjyuku-ku, Tokyo 100-0001

<http://www.jtb.co.jp/shop/itdw/info/>

A certified travel service supervisor is responsible for all details of all transactions conducted at the sales office where your travel arrangements are made. If you have any questions about your agent's experiences concerning your travel contract, please feel to ask the supervisor.
Yoshiko Kato, Certified Travel Service Supervisor

Service Tours are operated by JTB Global Marketing Travel
33-11 Higashi-Shinjuku, Shinjyuku-ku, Tokyo 140-0054 / Licensed Travel Agent No. 1100
Printed in Japan

For Reservation & Information
JTB SUNRISE CENTER WESTERN JAPAN
CALL +81(75)341-1413
MON.-SAT. 10:00a.m.-6:00p.m.
<http://www.jtb.co.jp/shop/itdw/info/>
Tour reservations are necessary in advance.

HOW TO USE DIGITAL PAMPHLET

How to use with mouse



Click the left button of the mouse on a page, and it magnifies the page twice.



Click the right button of the mouse on a page, and it goes to the next page.

How to use with buttons



Goes to the next page



Goes to the previous page



Goes to the last page



Goes to the first page



Magnifies particular area and moves from corner to corner



last next before first zoom

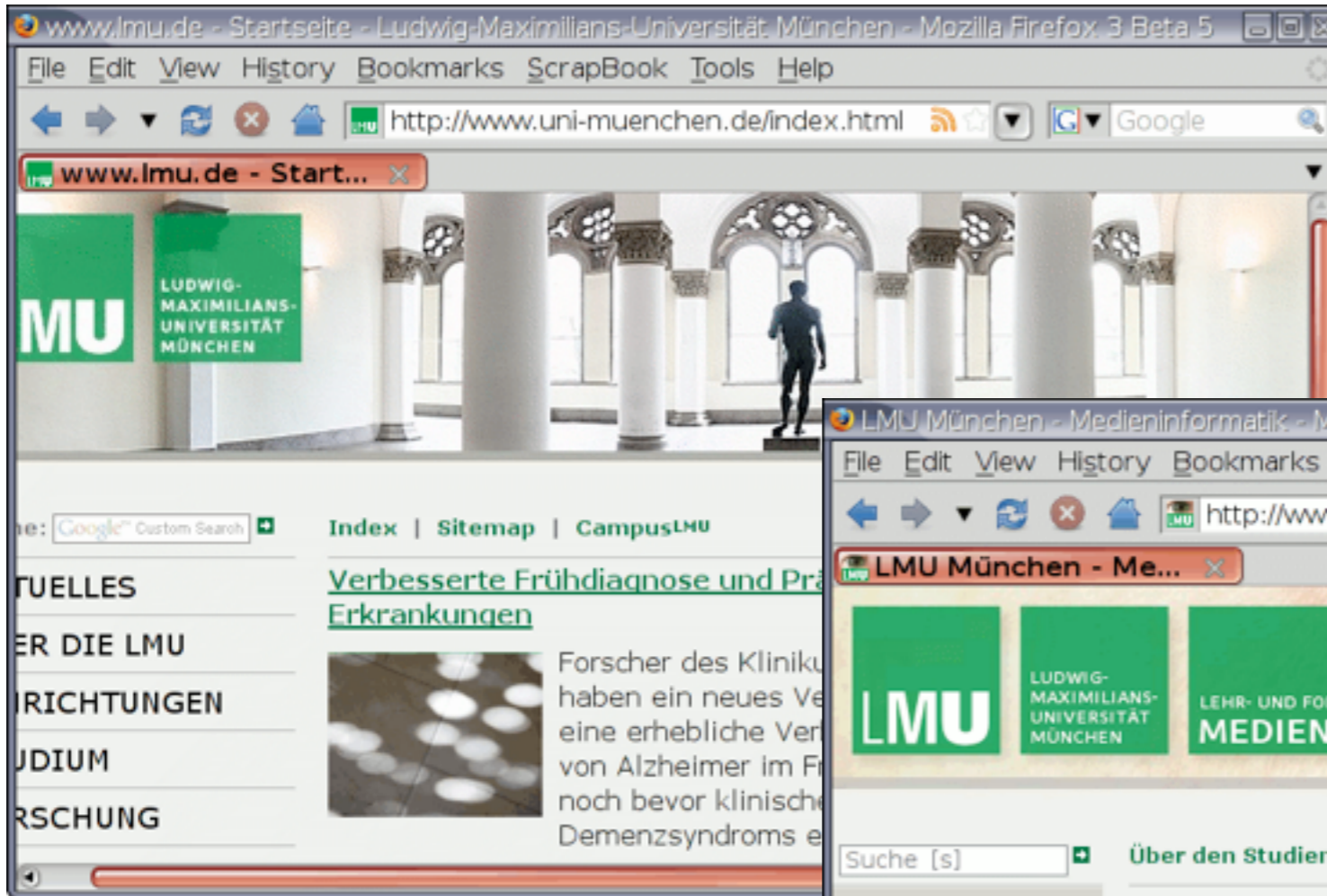
http://d-stand.jtb.co.jp/sunrise11_Japan/#page=1

Cross-Platform Design (1)

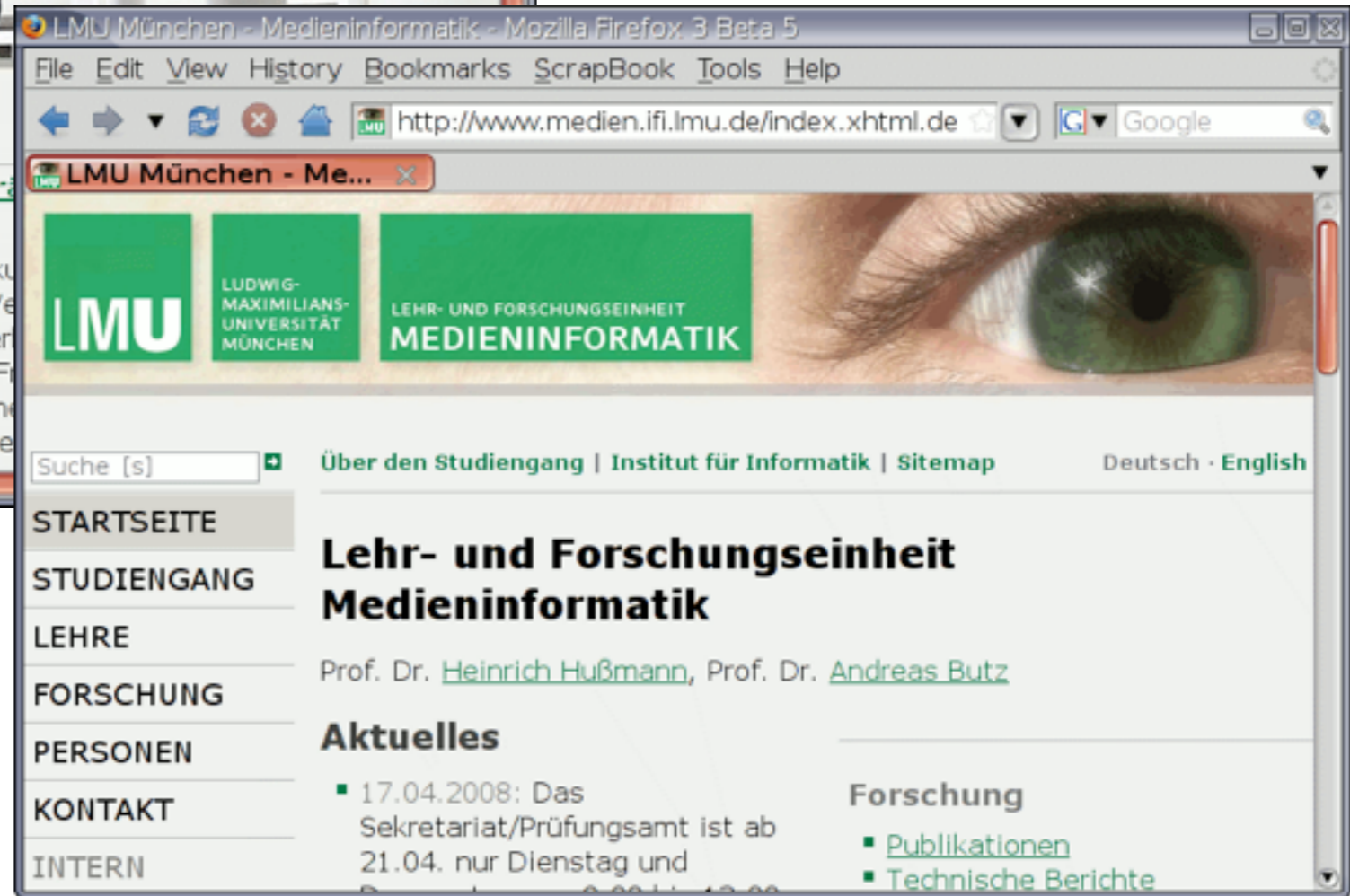
- Screen resolution
 - Actual resolution of user's screen is unknown
 - Too low: Fixed size areas need scrolling
 - Too high:
 - » Fixed sized areas become too small
 - » Empty space may appear
 - Browser window may not be full-screen
- Static vs. Fluid design
 - “Fluid”: Automatic resizing of areas relative to browser window width
 - Trend in CSS community: “Elastic” design; Automatic resizing relative to browser font size, up to a maximum width.
- Practical tests required

Example: Fluid vs. Static Design

www.lmu.de
at 800 x 600



www.medien.lmu.de
at 800 x 600



Cross-Platform Design (2)

- Differences between operating systems

- E.g. colour reproduction, Gamma correction

- Differences between browsers

- HTML versions
- Browser versions
- Different interpretations of HTML

The research, from UK site testing firm SciVisum, was based on tests of 100 leading UK consumer websites. The firm found three percent turned away users of browsers other than Microsoft Internet Explorer, while another seven percent used code that could only be rendered in Explorer.

- Different JavaScript implementations

techworld.com, Jan 2006

- Situation improving rapidly; MSIE more standards-compliant, ACID tests

- Strategic decisions

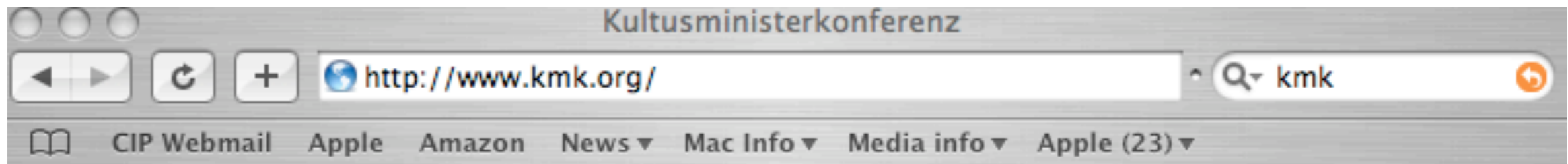
- What to assume at client side

- Installation inertia

- Early browsers: Big step forward with new version
- Currently most used browsers: Little need for upgrade
- Most recent browsers: Automatic upgrades

Related sites (especially CSS-related): quirksmode.org, alistapart.com, 456bereastreet.com, css-discuss.incutio.com, positioniseverything.net

Example (April 2008!!)



Um die volle Funktionalität der Homepage der Kultusministerkonferenz nutzen zu können, benötigen Sie Netscape 4.X (jedoch nicht 6) oder Internet-Explorer ab Version 4.X mit aktiviertem JavaScript.

Wenn Sie einen anderen Browser verwenden wie z.B. Mozilla Firefox können Sie die Version ohne Animation benutzen, die vom Aufbau und Inhalt identisch ist.

[Zur 'einfachen' Version](#)

BTW: siehe auch <http://www.verwaltung.uni-muenchen.de/>

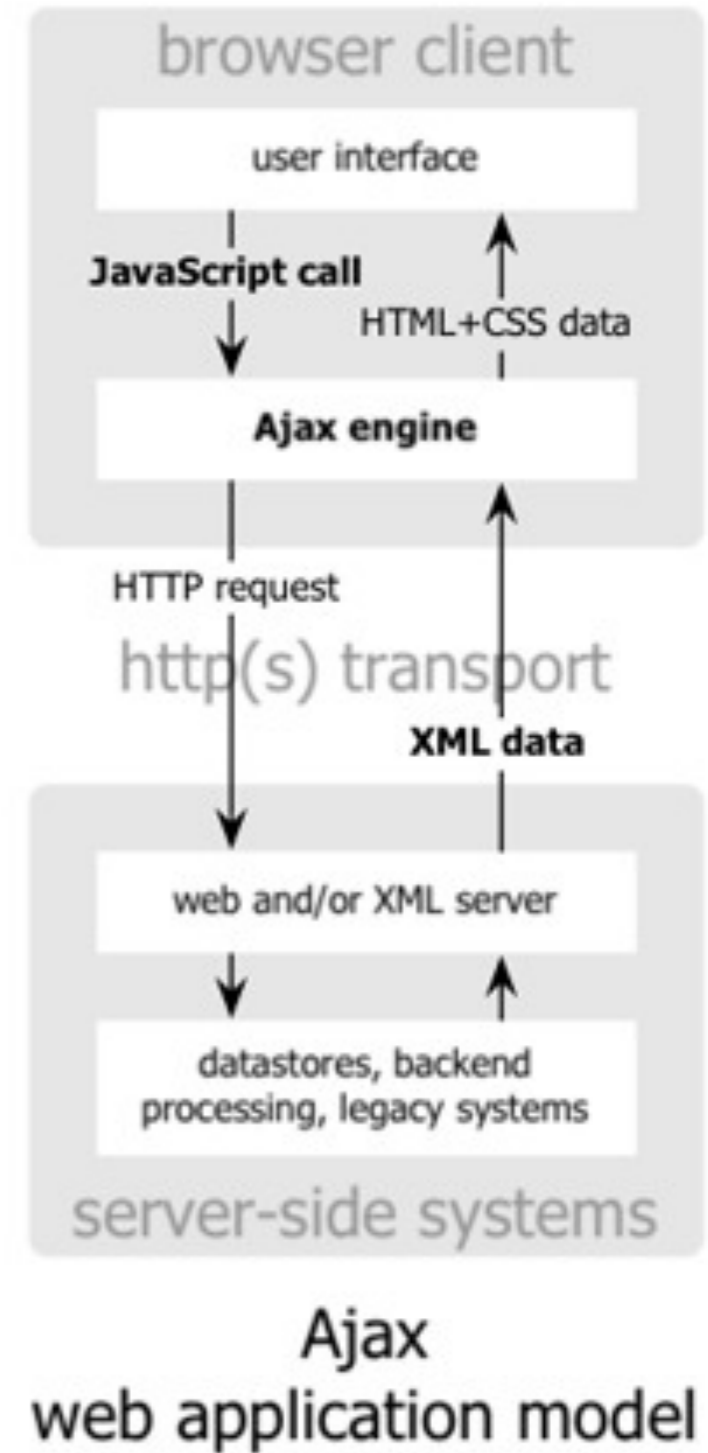
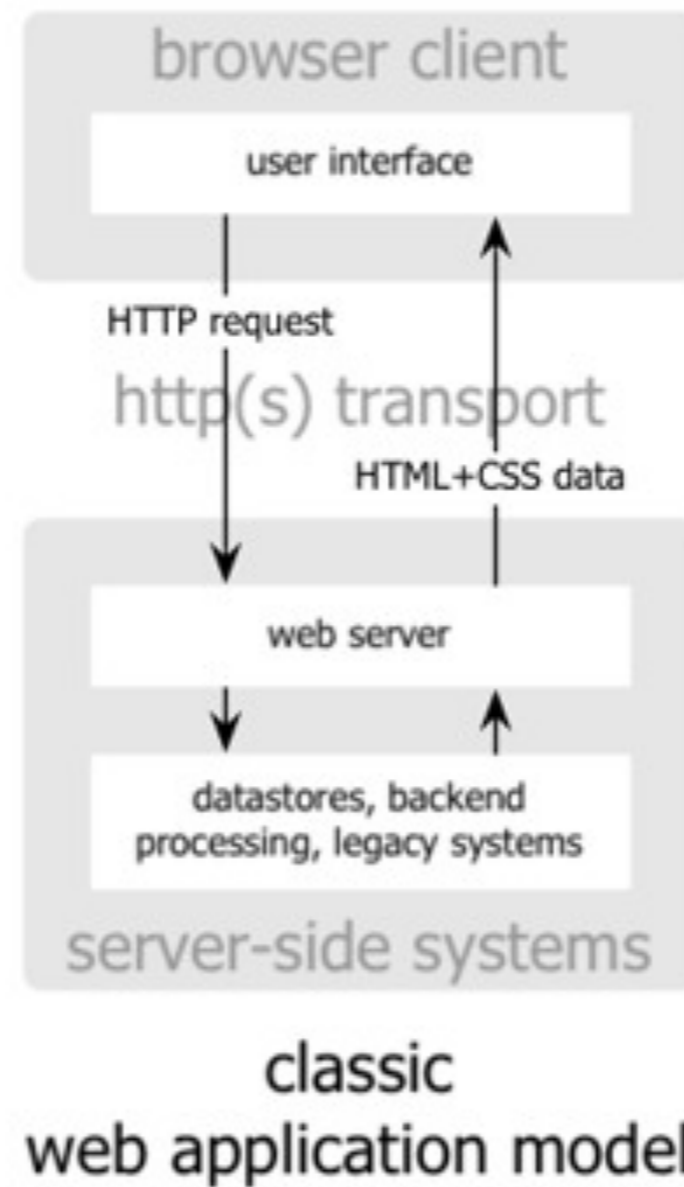
Response Times

- J. Nielsen: “Every web usability study I have conducted since 1994 has shown the same thing: Users beg us to speed up page downloads.”
- Better design or better service do **not** make up for long waiting time!
- Response time classification (Miller 1968):
 - Tenth of second (0.1):
 - User feels the system react instantaneously
 - Required for screen manipulation in real time
 - One second (1.0):
 - Limit for uninterrupted flow of thought
 - Ten seconds (10.0):
 - Limit for keeping user’s attention focused at the dialogue
 - For longer waiting times, users turn to other tasks
- Careful: DHTML “eye candy” can be detrimental for response time
 - UI elements that fade/slide in
 - Effects often require desktop processing power

Technological Advances for Response Times

- General trend towards improvement
 - Network technology, computer technology
- Multimedia content becoming standard
 - Deteriorates situation
 - Practical workarounds:
 - Pre-loading, streaming
 - Indications for loading times
- New generation of Web applications: Rich Internet Applications (RIA)
 - User Interface executes in browser for lower response times (e.g. using JavaScript, Flash)
 - Information is loaded asynchronously in the background
 - Example: “AJAX” technology
 - “Asynchronous JavaScript and XML”

AJAX and Traditional Web Applications



Source:
javalobby.org

Linking

- Main forms of links:
 - Structural navigation links
 - Page-local links (jump within page without reloading)
 - “See also” links
- Link description
 - Should never be “Click here”
 - Should be no more than two or four words long
- Visual formatting of links:
 - Traditional colours: Unvisited = blue, visited = red/purple
 - Traditionally the only underlined text on the page
- New window with link?
 - Disadvantages: Reduced user control, clutters screen, disables back/forward
 - Advice: Consistency, visualize different types of links
 - To be discussed

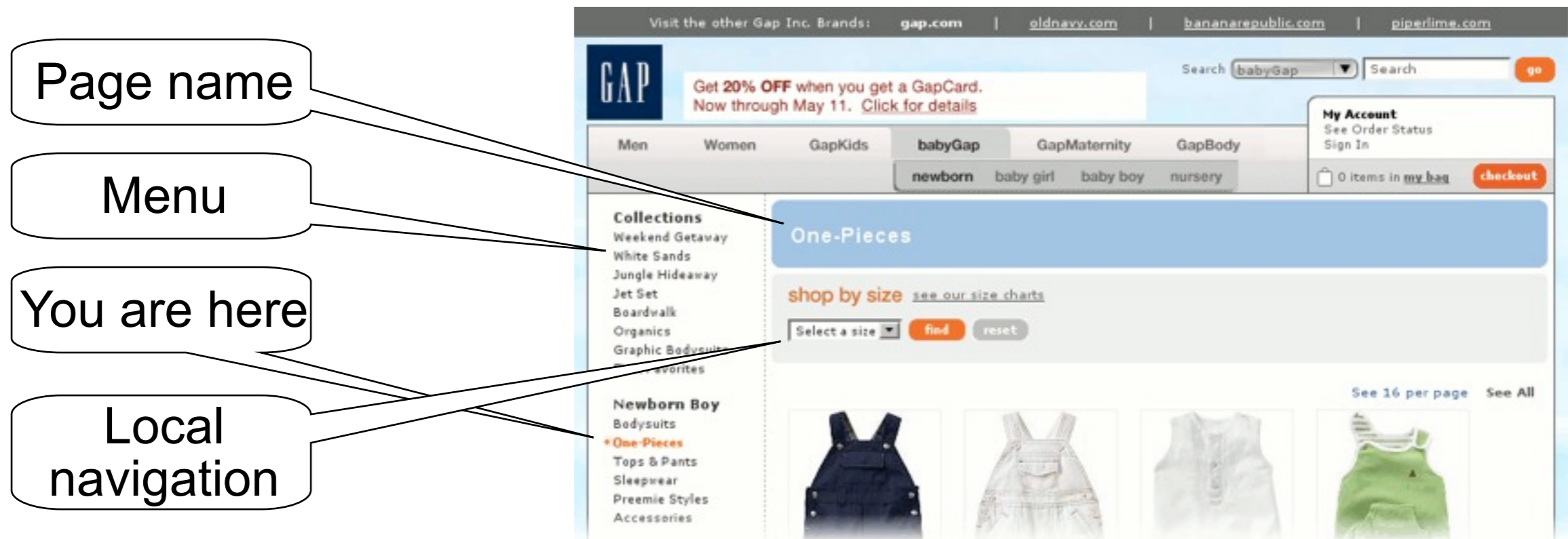
URL Design

- “Good domain names that are easy to remember and easy to spell are the Internet’s equivalent of a Fifth Avenue real estate location in the physical world” (J. Nielsen)
 - Choice of domain name
 - As short as possible
 - Compatible with intellectual property rights and company policies
 - Common words
 - Only lowercase
 - Support of input with and without “www” (How?)
- Archival URLs
 - See e.g. Blogs
- Support of outdated URLs

Navigation

- Why is navigation on the Web so difficult?
 - No sense of scale
 - No sense of direction
 - No sense of location
- First question in navigation:
 - Browse or search?
- Purposes of navigation:
 - Helps us to find things
 - Tells us where we are
 - Gives us something to hold on
 - Tells us what is there

Web Navigation Conventions



Search

- Apparently there are people who like to use search and people who like to browse.
- Use conventions
 - Avoid fancy wording
 - Avoid instructions
- Limiting search scope
 - To be done with greatest care
- Best practice:
 - General-purpose search box (Google-like)
 - Restrictions just optionally
 - Automatic extension of restricted search in case of too few results
- Quality of results should be acceptable (Google's algorithms are very good...)

Example: Confusing Search

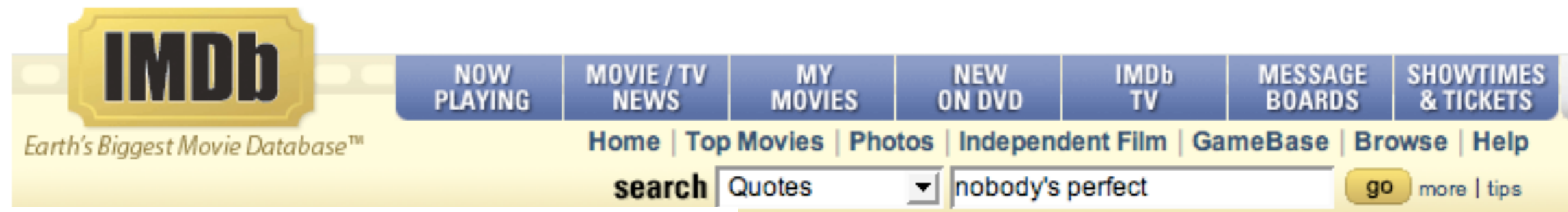


IMDb Search

A search for "nobody's perfect" found the following results:

Titles (Exact Matches) (Displaying 6 Results)

1. [Nobody's Perfect](#) (2004)
2. [Nobody's Perfect](#) (1989)
3. [Nobody's Perfect](#) (1968)
4. ["Nobody's Perfect"](#) (1980/I)
5. ["Nobody's Perfect"](#) (1980/II)
6. [Nobody's Perfect](#) (2002)



29. [Some Like It Hot](#) (1959)

Osgood: Well, nobody's perfect.

Content Design

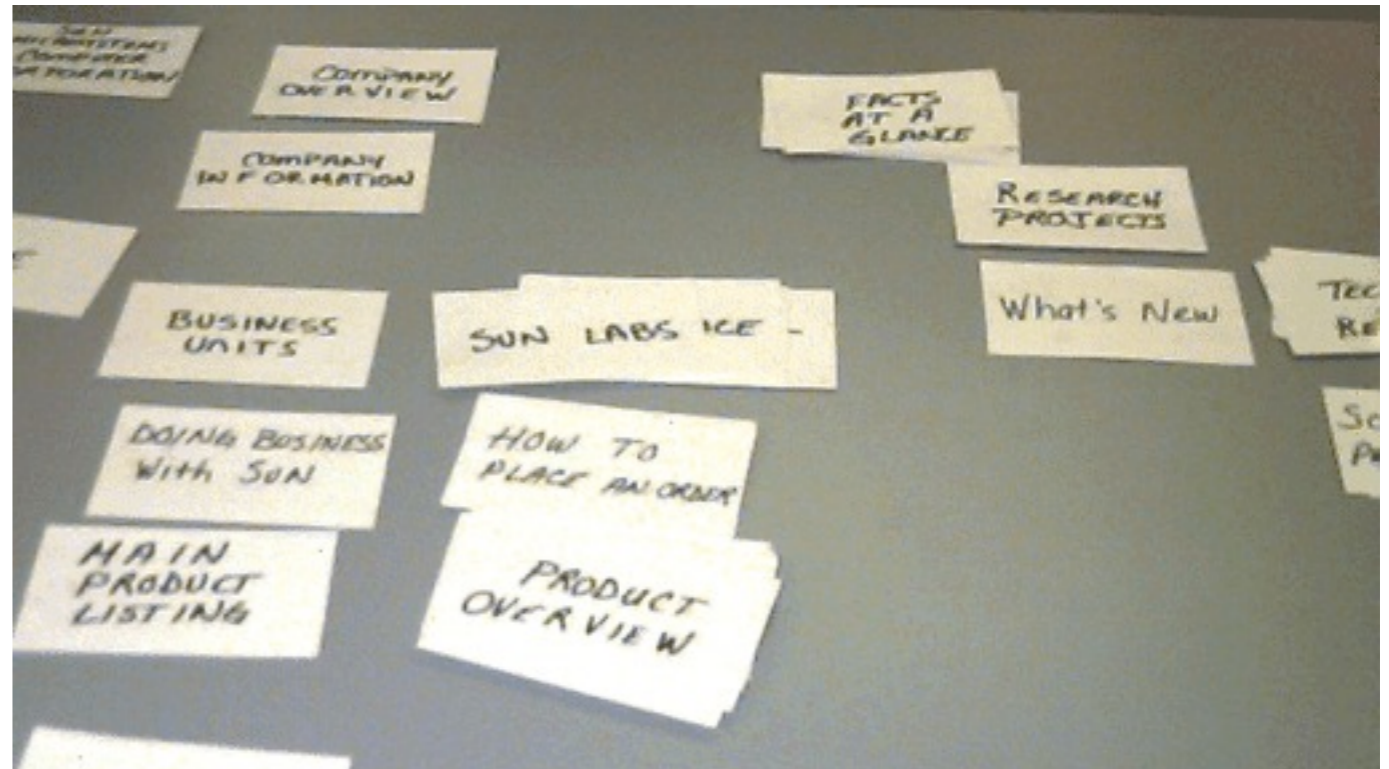
- “When they leave the theater, you want them to be discussing how great the play was and not how great the costumes were.” (J.Nielsen)
- Core point (extremely important!):
 - Design for the end user
 - Ask questions, do not shout messages
 - Hide internal organization and terminology unknown to most users
- Case study (for discussion)
 - There is “LFE Medieninformatik” – an organisational unit
 - There is the study programme “Medieninformatik”
 - How to combine information on the two items?

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

Post-It-Method for the Structural Design

- Designing the information & navigational structure of large web sites
- 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



Card Sorting:

<http://www.infodesign.com.au/ftp/CardSort.pdf>

Structuring Information

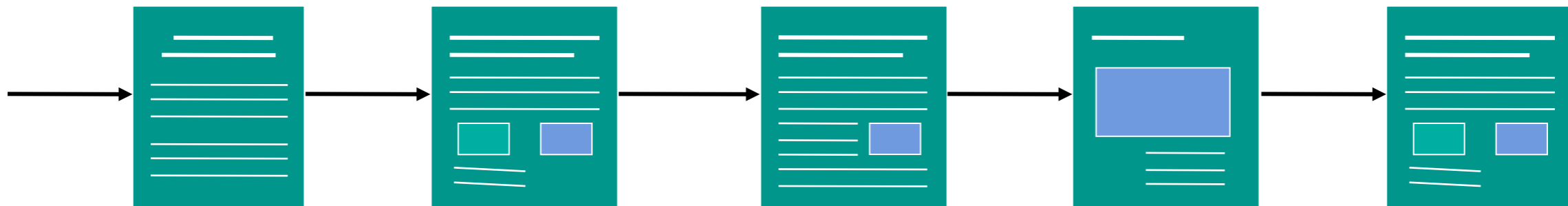
- linear
 - hierarchical
 - grid
 - graph / web
-
- For the overall site
 - For parts of a site (e.g. user registration)

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

Structure is then not fixed in the HTML pages but in the navigation generated.

Linear Structures I

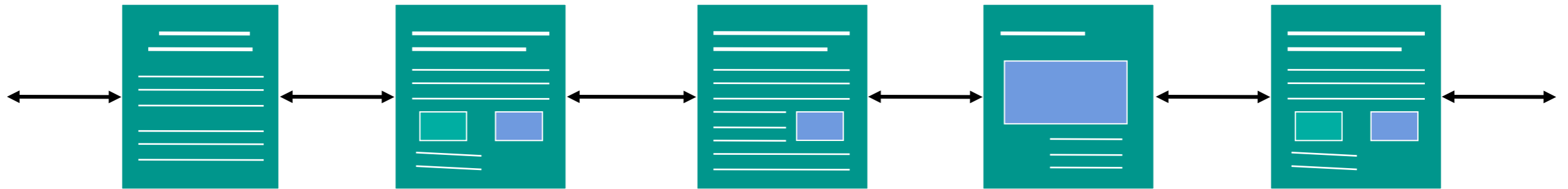
- Purely linear



- Strict guidance (directed)
- Few choices for the user
- Pre-caching possible
- Rarely used in practice

Linear Structures II

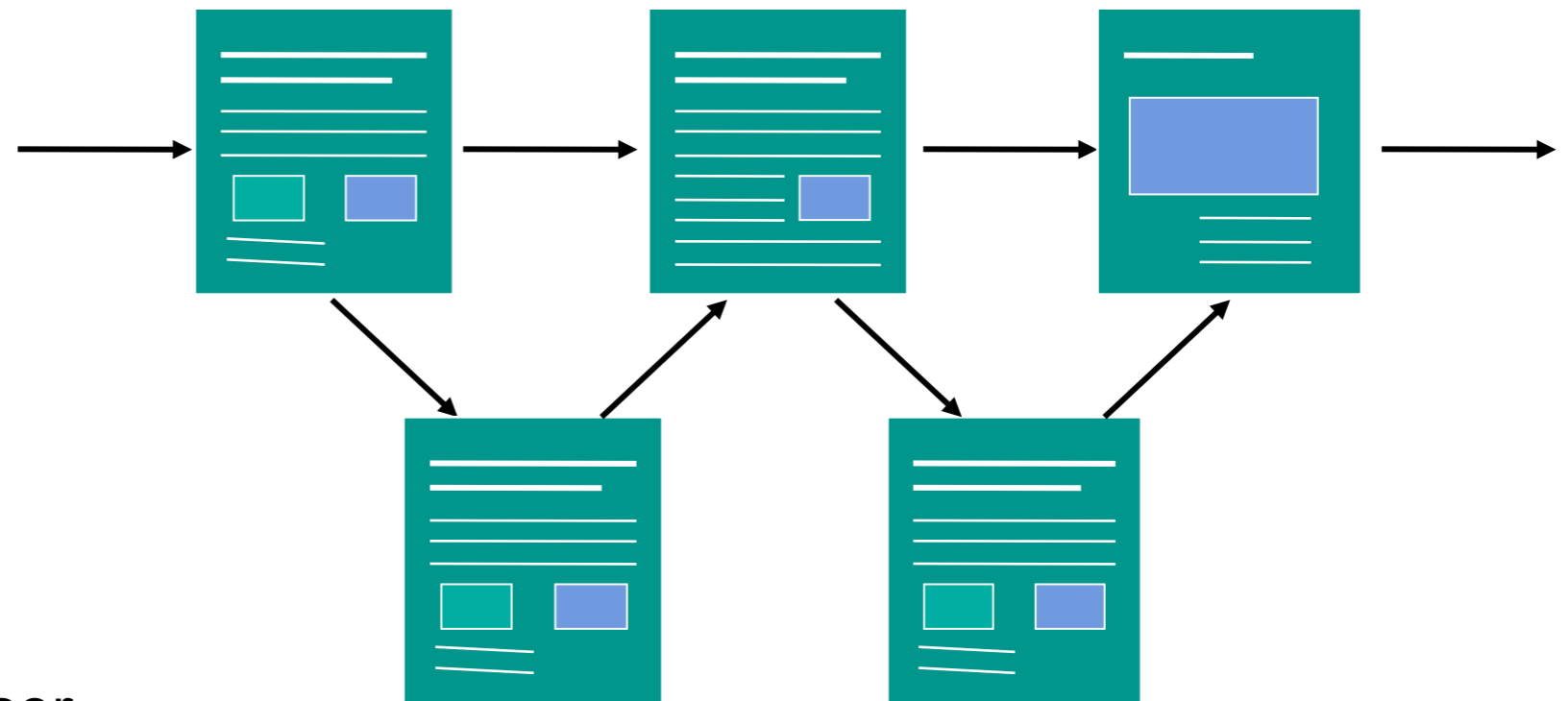
- Purely linear



- Strict guidance
- Few choices for the user
- Pre-caching possible
- Example: E-commerce – checkout and payment

Linear Structures III

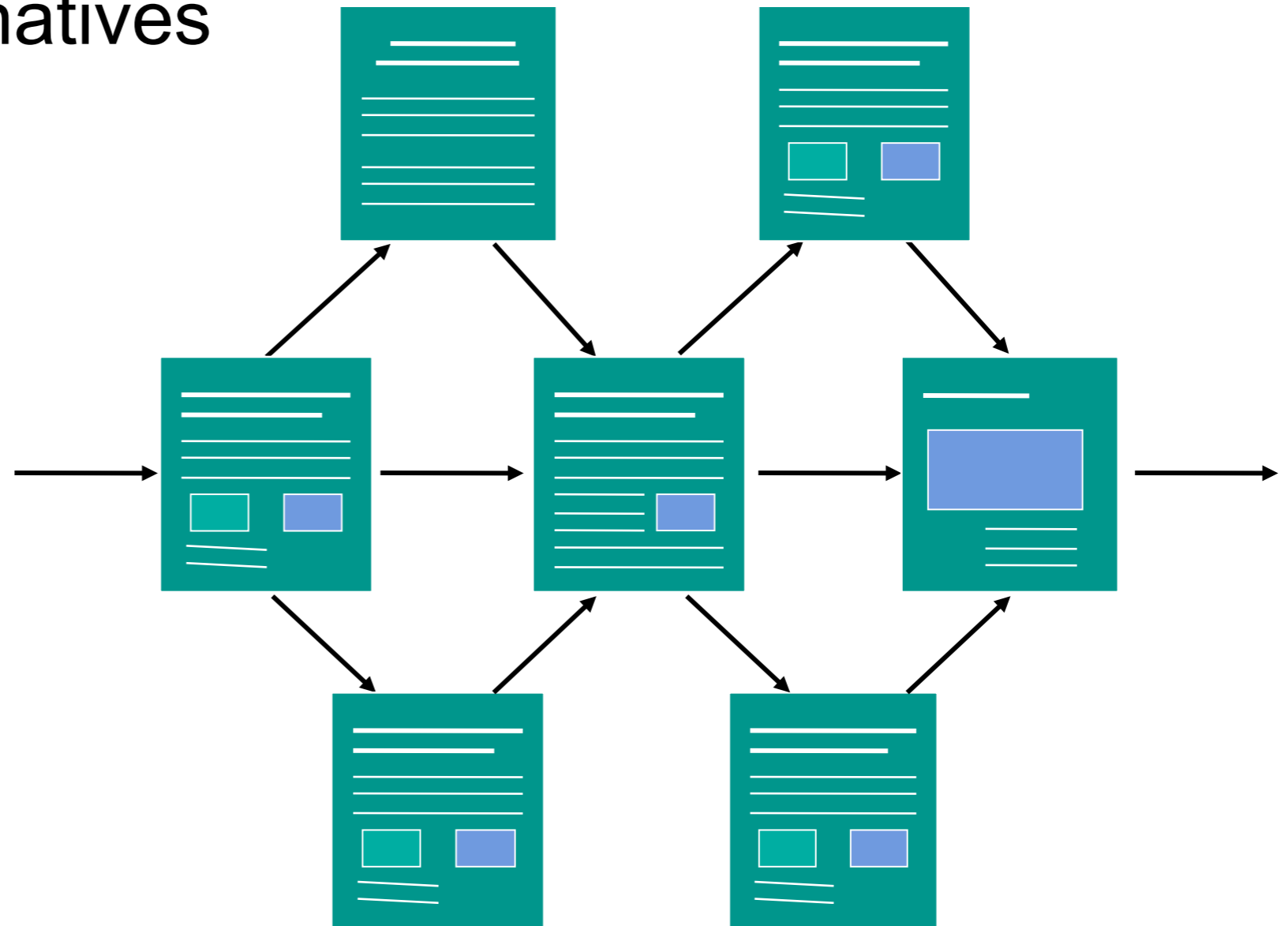
- Linear with options



- Guidance
- Some choices for the user active interaction
- Different levels of detail
- Scenarios: Different level of expertise, profiles

Linear Structures IV

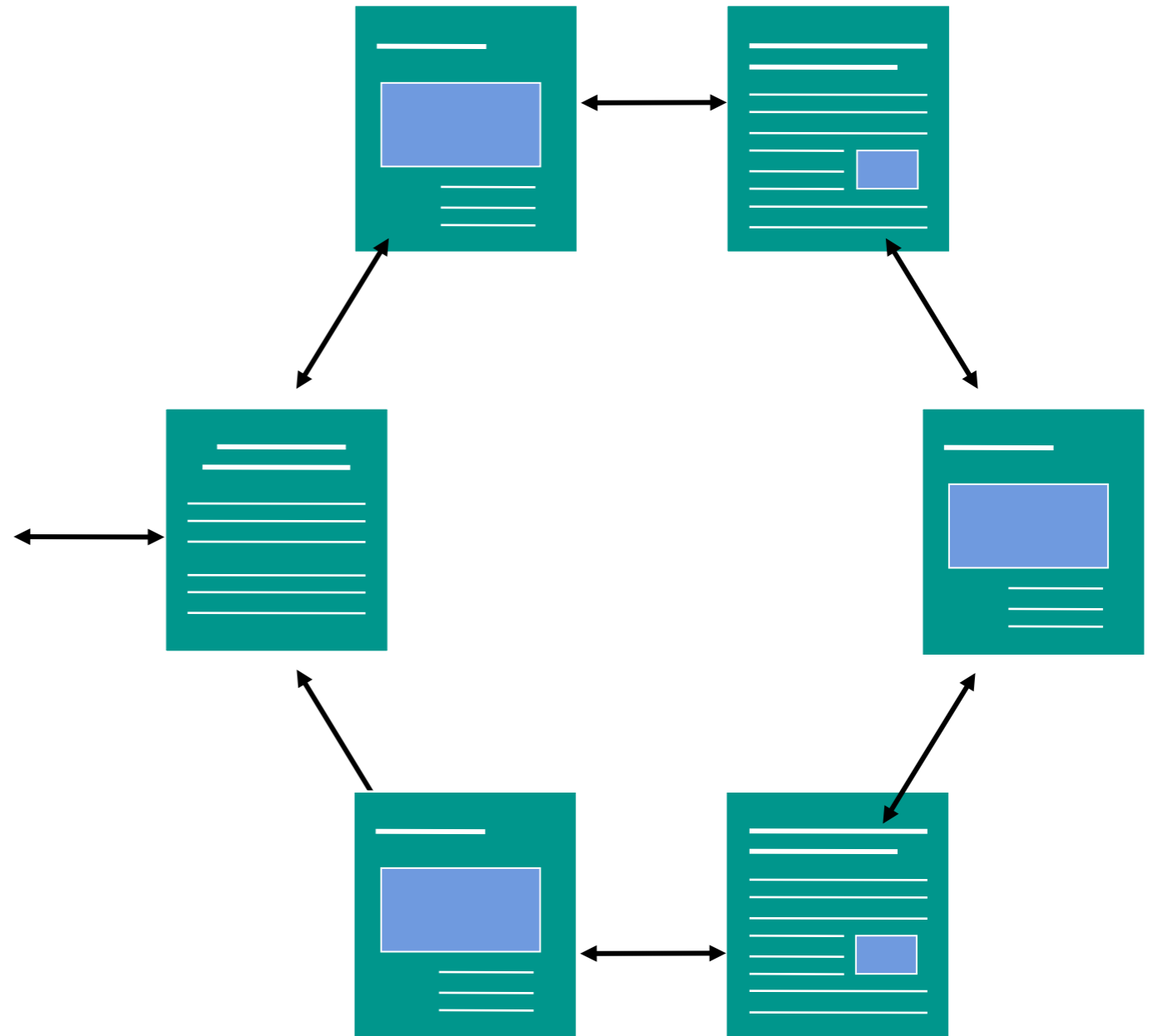
- Linear with alternatives



- Guidance
- Some choices for the user active interaction
- Example: Questionnaires

Circular Structure

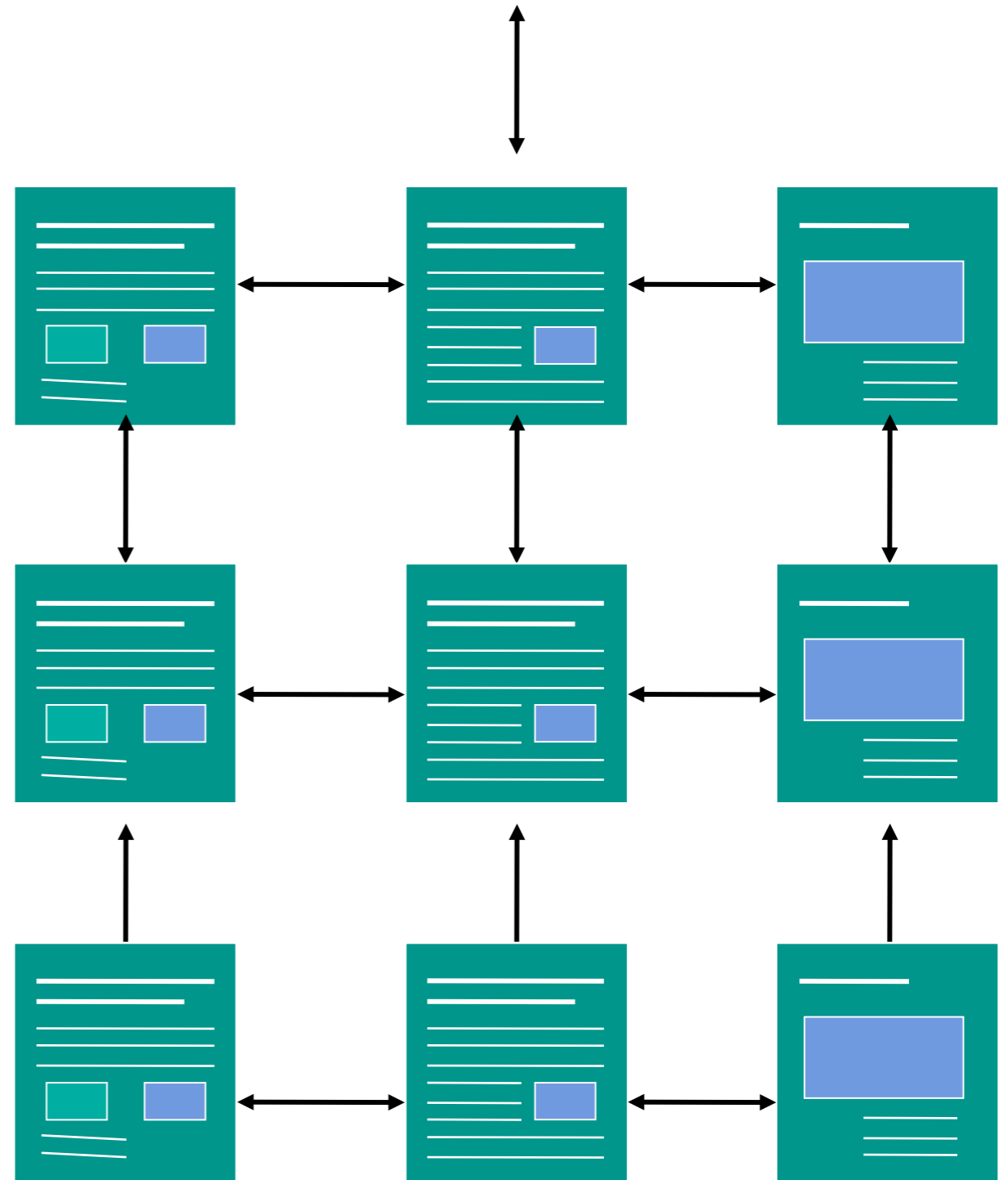
- Closed guided path
- Variants / side paths
- Entry



- Example: Web Rings

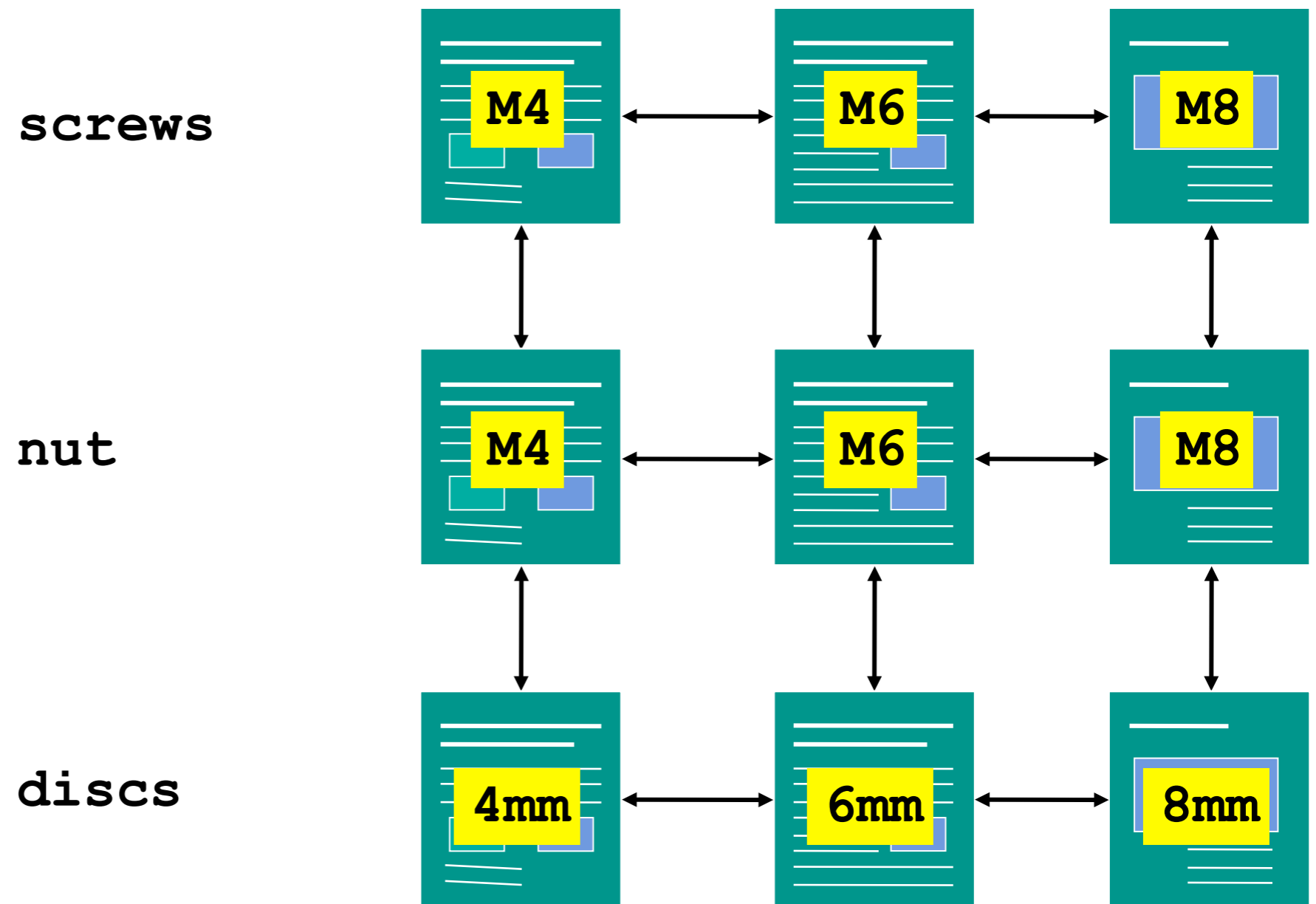
Information Grid

- Ordered on two orthogonal criteria
- User get a “feeling of space“
- Example: Product catalog
- Possible for more dimensions



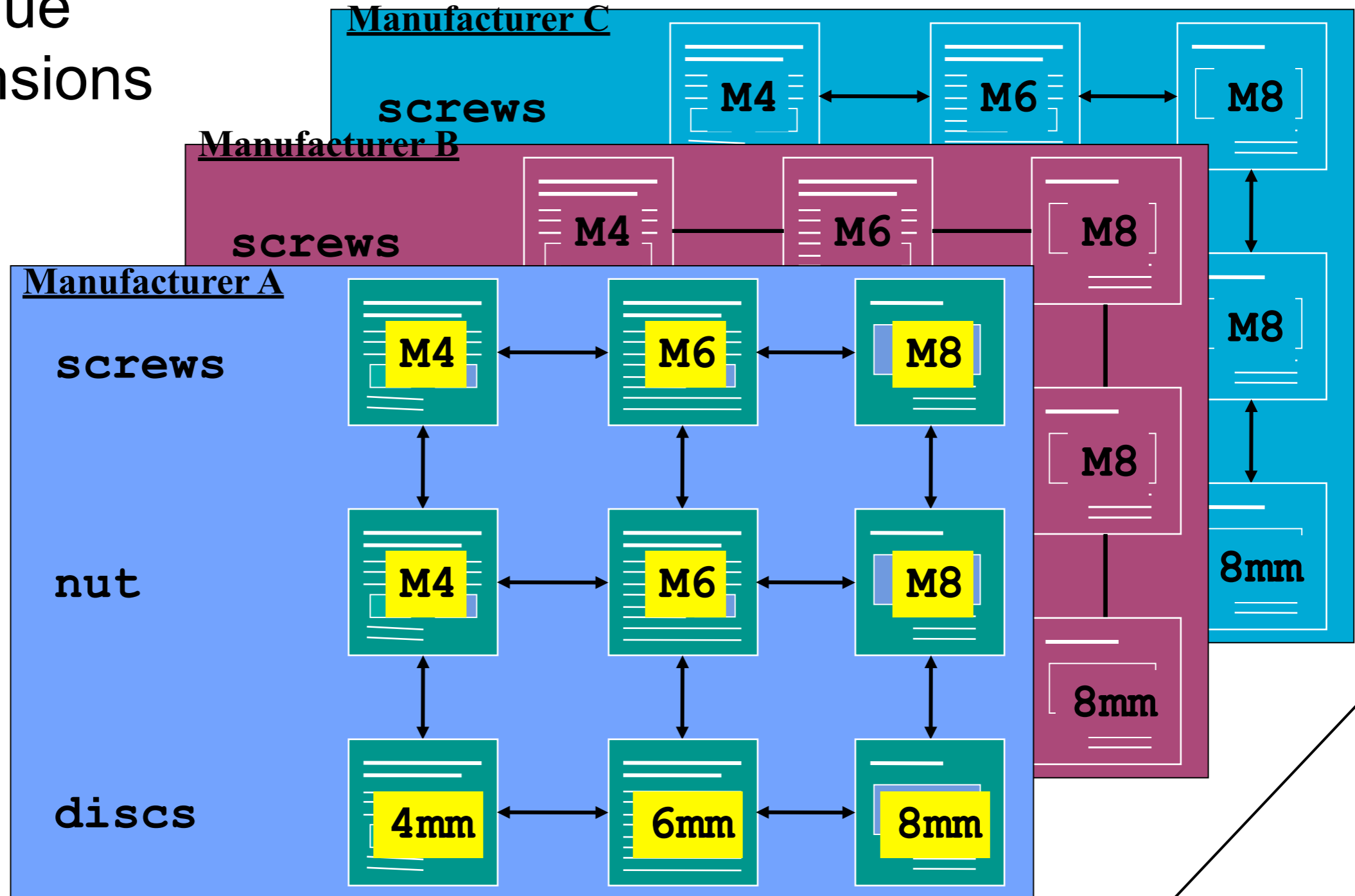
Example: Grid Information Structure I

- Catalogue
2 dimensions



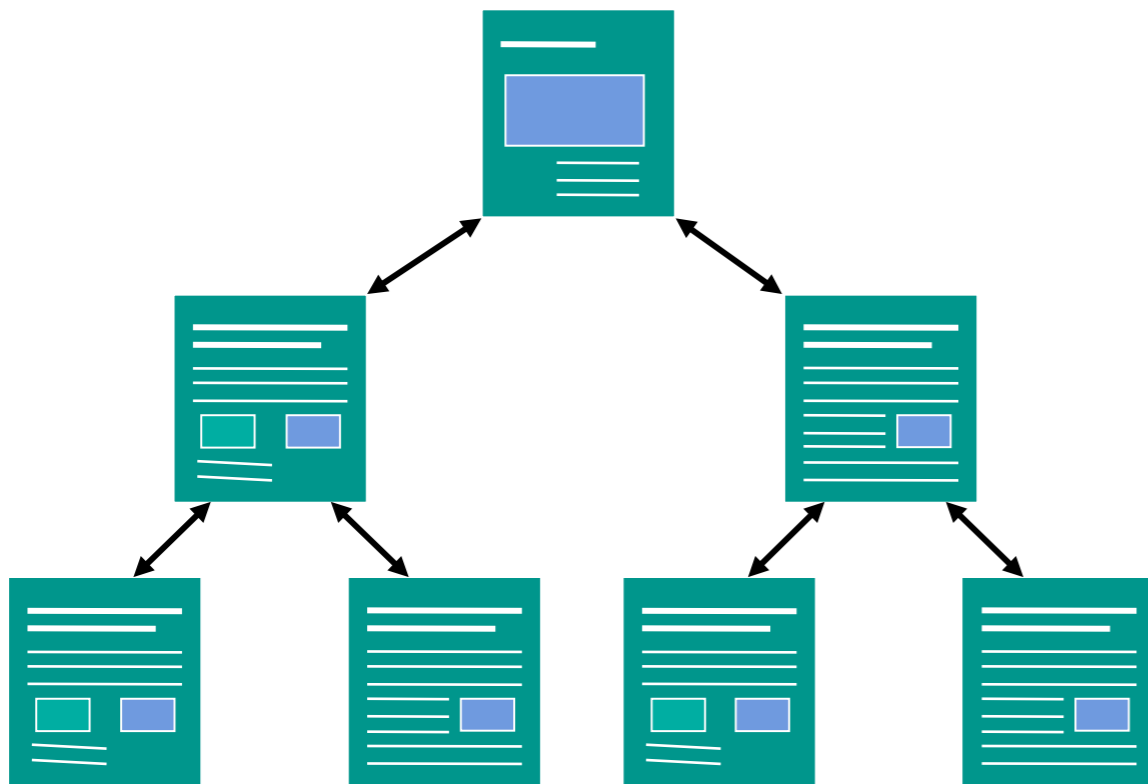
Example: Grid Information Structure II

- Catalogue
3 dimensions



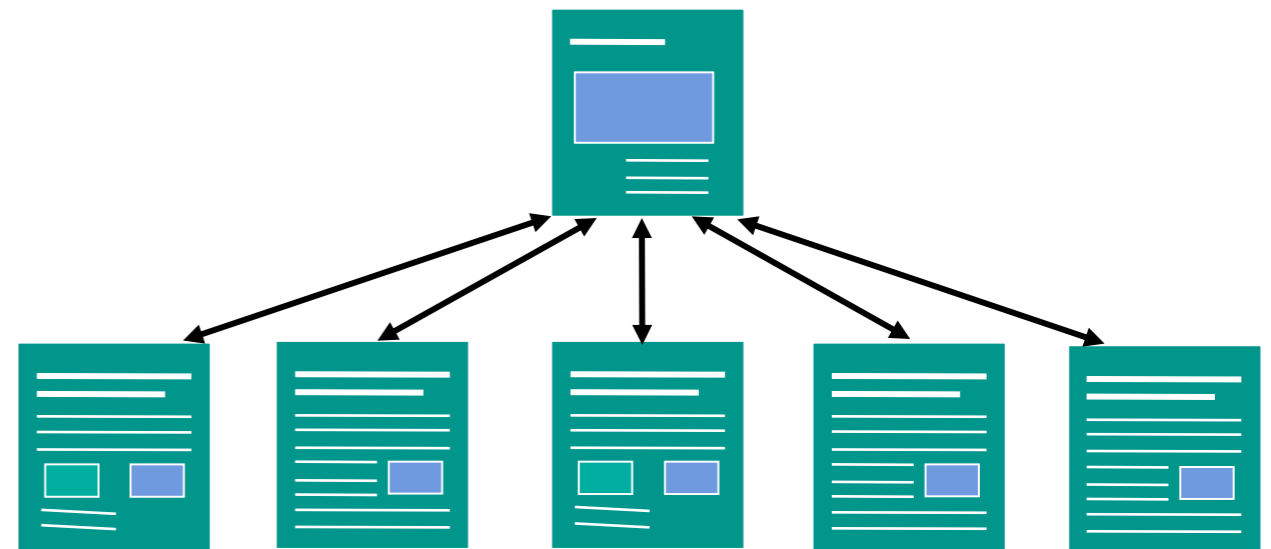
Hierarchical Information Structure

- Deep hierarchy



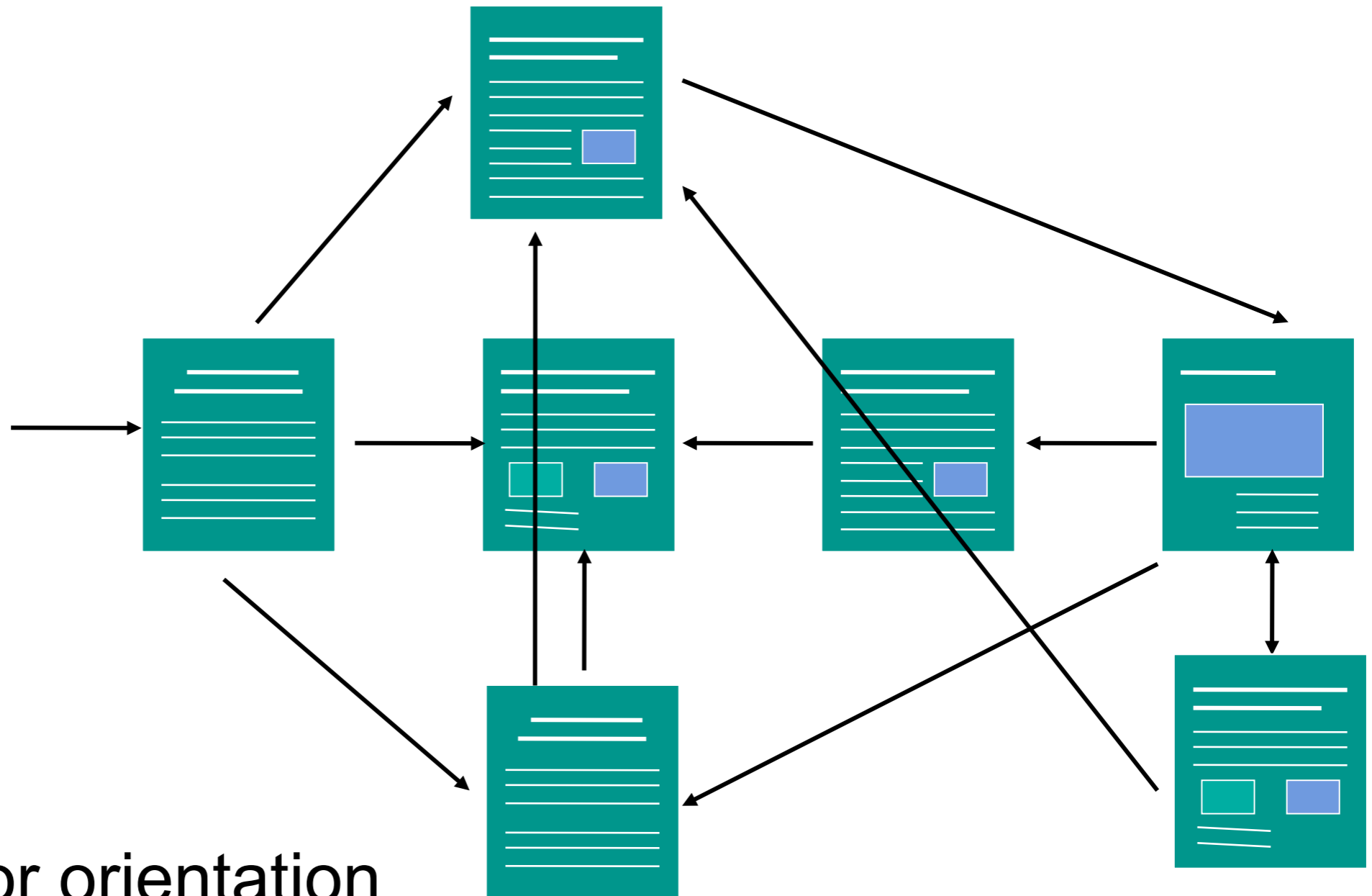
- Flat hierarchy

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



Linked Information Structures

- Pure webs



- Difficult for orientation
- Extremely expressive