Freie Universität Berlin

From data to design

«UCD: User-Centered Software Development»

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May 4, 2015

From data to design

Introduction

Context for today

Last week

User Groups & Personas

Scenario & Task Analysis

This week

Define the underlying structure of your software
(how to guide users through the interface)

- For content-centered applications: information architecture
- For task-centered applications: interaction design

How to use research data for design?

Outline

1. Primary Noun Analysis
2. Content-centered applications vs. task-centered applications
3. Information Architecture and Interaction Design
4. Navigation Design

Learning goals for today

- Know how to come from task analysis to a navigation model
- Know the navigation models and systems
- Understand the difference between content-centered applications vs. task-centered applications
- Know the meaning of Interaction Design and Information Architecture

What do we have so far?

From user research to design

Persona

WHO
is doing what with the product?

Scenarios

WHAT
do users with the product?

Tasks

HOW
users solve specific problems

From data to design

Primary Noun Analysis

Identify relevant objects and actions

Find out „things“ the user is fiddling around with.

Primary Nouns

Find out what the user does with this „things“.

Actions

Primary Nouns

- Have to be easily recognizable on the screen

- Relevant aspects per primary noun:
  - How many *View Modes* (usually one view mode is one screen) are needed?
  - Which actions (usually an action brings the user from one screen to another) are required?
  - What are important attributes?

- Procedure:
  - Find all possible primary nouns per task-subset
  - Reduce list of all primary nouns found to most important ones on the highest level

Primary Noun Analysis

Example 1: Purchase Office Supplies

Primary Nouns: nouns or "things" in the user task flow

1. Search or browse for products.
    1. Option to view items in "Favorites" list.
    2. Option to view a list of previous orders.
2. Add selected items in "Shopping Card"
    1. Option to add items to "Favorites" list (Note: this step can happen multiple times)
3. View contents of "Shopping Card"
    1. Option to revise contents of "Shopping Card"
4. Proceed to "Checkout"
5. Enter payment information
    1. Option lo login to site
    2. Option to create a new account
    3. Option to view details of existing account
6. Confirm transaction

Primary Nouns: nouns or "things" in the user task flow

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    1. Option to view items in "**Favorites**" list.
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2. Add selected items in "**Shopping Card**"
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    1. Option lo login to site
    2. Option to create a new **account**
    3. Option to view details of existing account
6. Confirm **transaction**

Primary noun candidates list and selection

Primary Noun Candidates	Primary Nouns
– Customer – ***Order*** – *Checkout* – ***Products*** – ***Account*** – Order History – Inventory – *Payment Information* – Credit Card – ***Shopping Card*** – Items – ***Favorites*** – *Transaction*	– **Orders** – **Products** – **Account** – **Shopping Card** – **Favorites**

Relevant aspects for each primary nouns

Primary Noun	Count	Attributes	Actions	Views
Orders	Hundreds	Date Total $$ Payment Method	New Open Edit	List Detail
Products	Thousands	Name Price Description	Open Add to Card Add to Favorites Search	List Detail Photo Search
Account	One	Name Address Account #	Open	Detail
Shopping Card	One	Item Total $$ # of items	Open Clear	Detail
Favorites	Hundreds	Items Price Last ordered	Open Clear	List Detail

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Which users interact with which primary nouns

Primary Noun	Customer Service Representative	Customer	Administrator
Orders	x	x	
Products	x	x	
Account	x	x	x
Shopping Cart		x	
Favorites		x	

- Map Primary Noun views to views (pages) the user can to navigate to
- In most cases, a view of a Primary Noun corresponds to a screen or page
- An action therefore often results in navigating to a new screen or page

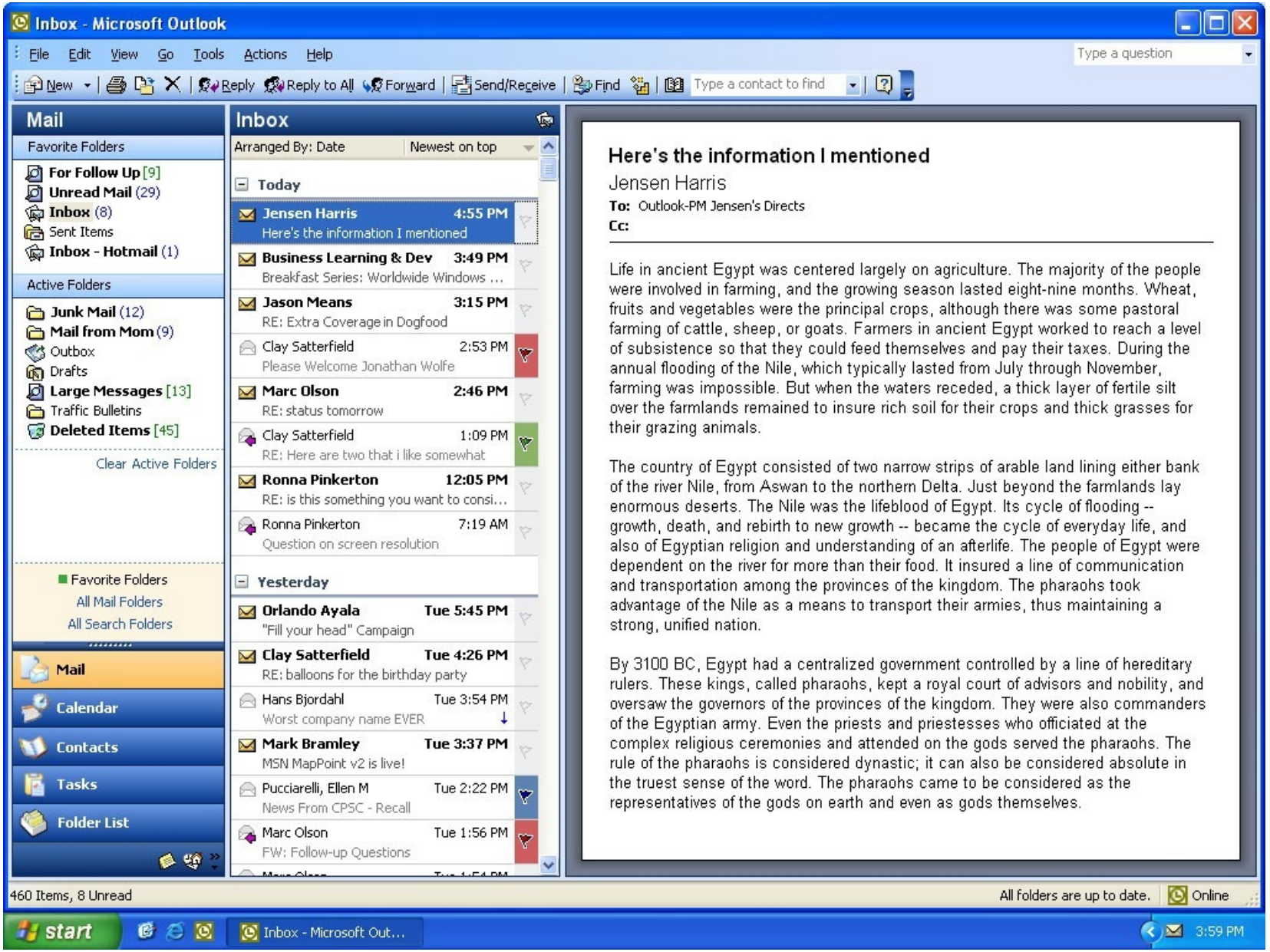
Primary Noun Analysis

Example 2: Microsoft Outlook

Identifying primary nouns, actions, and views

Depending on the kind of objects and the tasks the user is performing, adequate views on the objects have to be available.

Primary nouns	Actions	Views
Email	view (all, one), read, reply, new	list, detail
Appointment	view, new, edit, invite others, search date and time,	list (time span), detail
Calendar	view day, view week, view month, view specific time span	day view, (work) week, month, time span
Contact	view, call, edit, new, assign group	list, detail



http://www.microsoft.com/presspass/images/features/2002/07-15exchangeqa_l.jpg

Hands-On: Primary Noun Analysis

Single person working (10 minutes)

- Create a primary noun candidates list by finding all possible primary nouns you think are needed for your application.

Hands-On: Primary Noun Analysis

Team working (20 minutes)

- Compare and discuss your defined primary nouns
- Create one list and identify all relevant ones - write them one the provided paper and keep them for later
- Reduce the list of all primary nouns candidates to most important ones on the highest level
- List per primary noun the following information
  - how many
  - view modes
  - actions
  - attributes
- Create a table that describes which user group and persona interacts with which primary noun

PAUSE

15 Minuten

From data to design

How can we use these insights?

Analyzing your data..

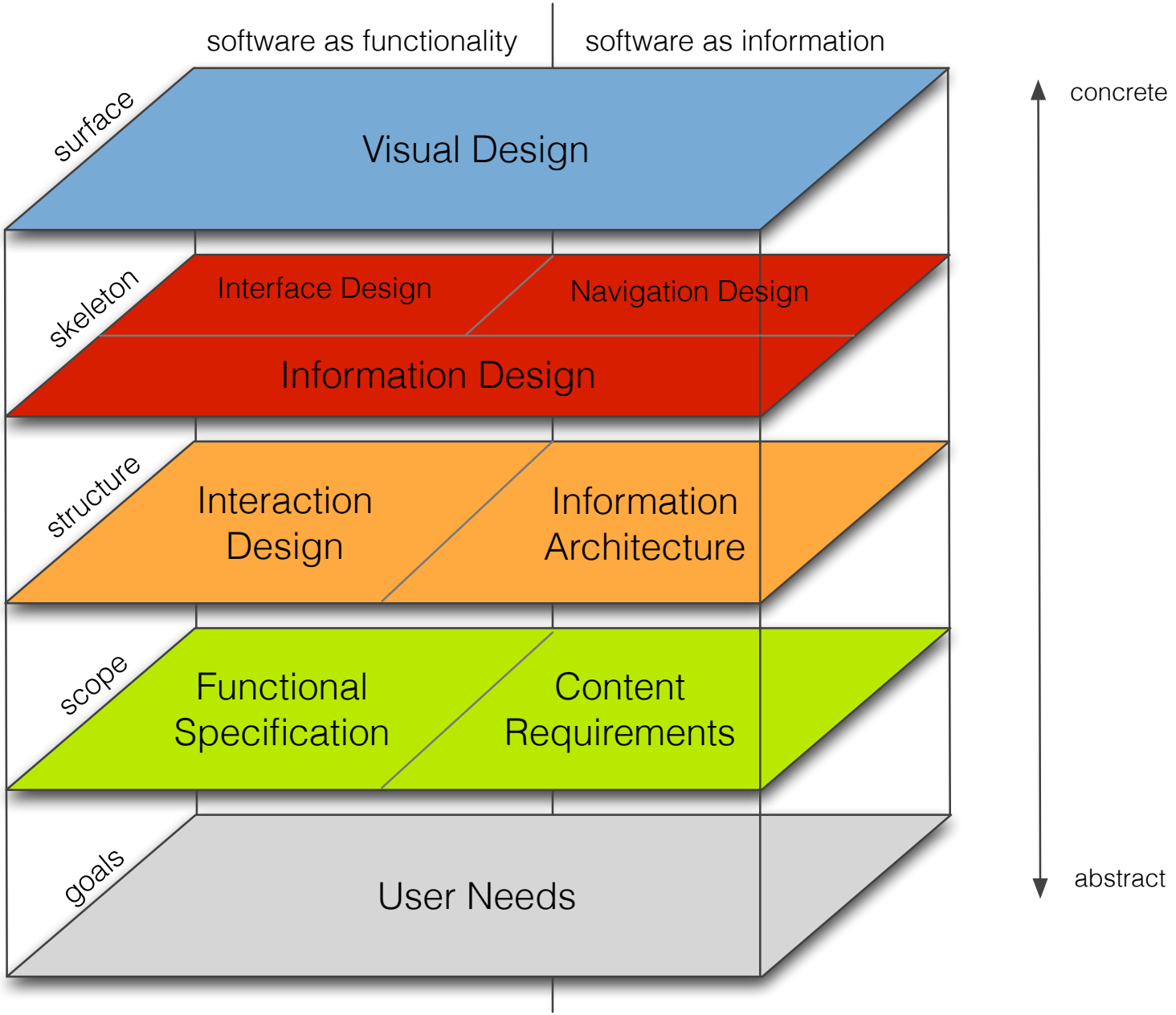
Determine user groups

Defining a persona

Describing a scenario

Constructing major task flows

Defining data elements by primary nouns

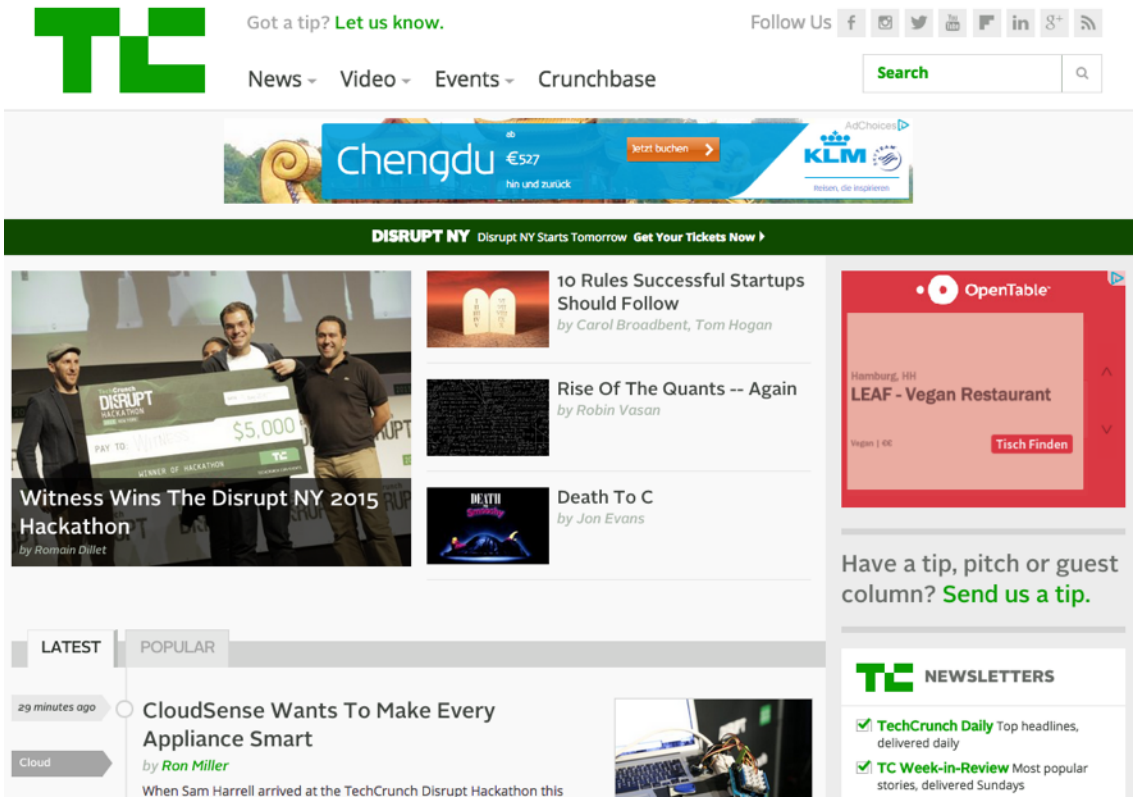

software as functionality
software as information
surface
Visual Design
skeleton
Interface Design
Navigation Design
Information Design
structure
Interaction Design
Information Architecture
scope
Functional Specification
Content Requirements
goals
User Needs
concrete
abstract

From data to design

Content-centered applications vs. task-centered applications

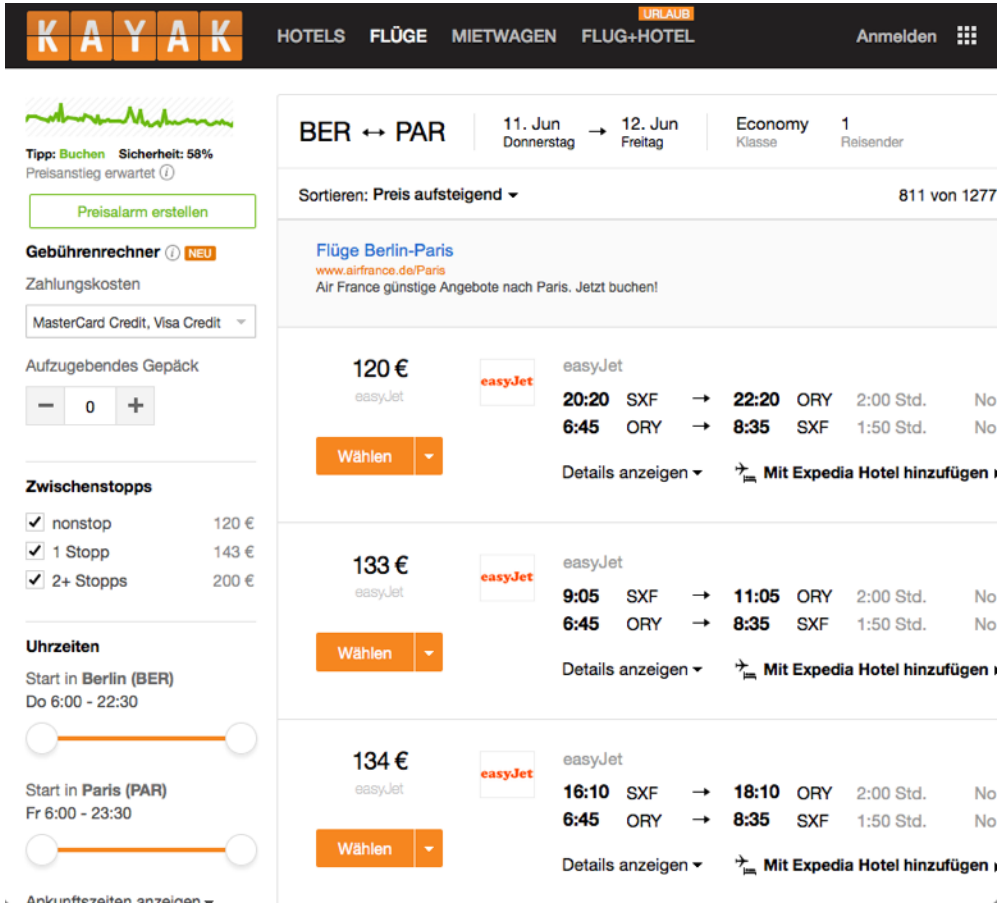
User needs in content-centered applications

- Provide information
- User
  - „passive“ consumer
  - navigates on objects (nouns)

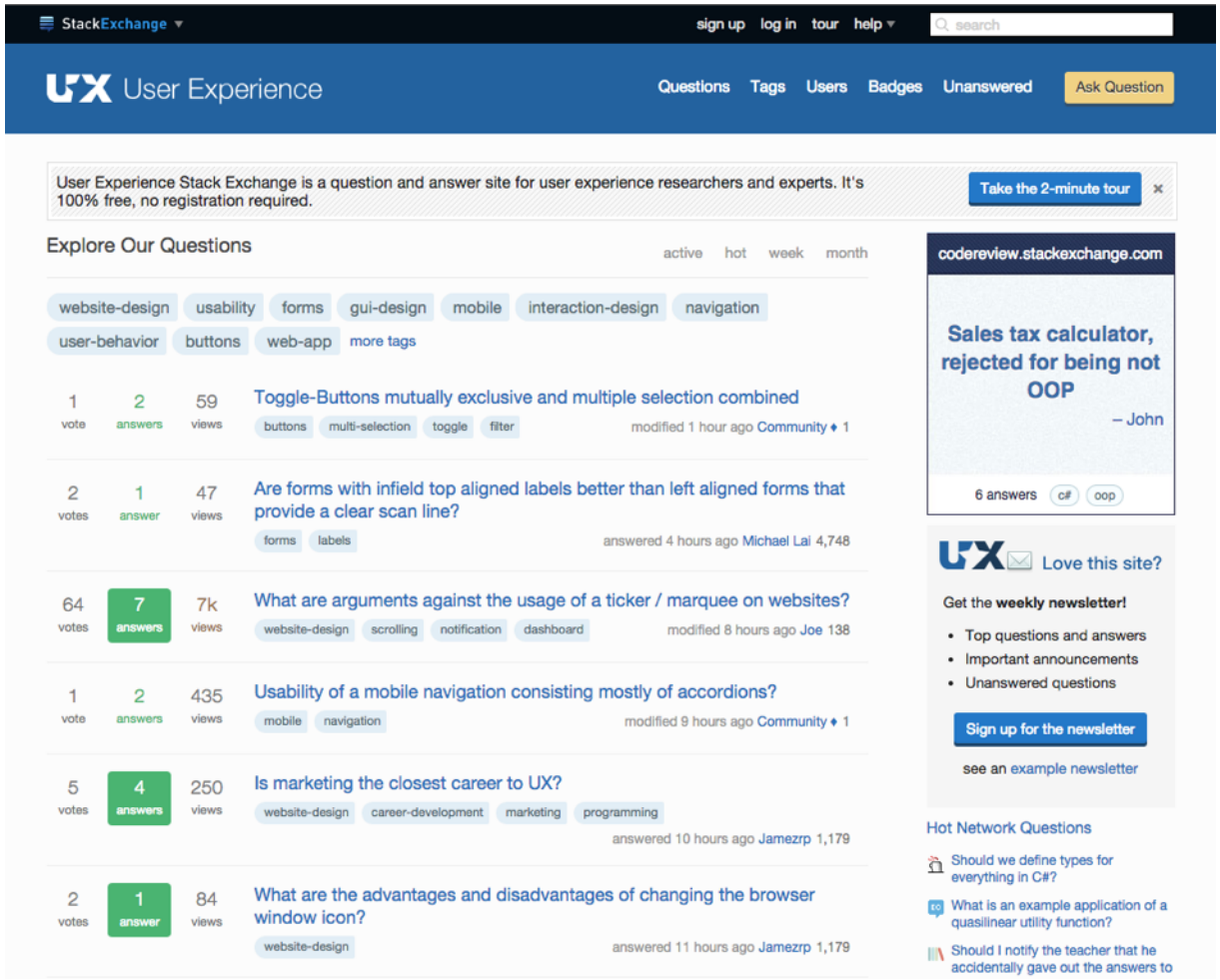


User needs in task-centered applications

- Get things done
- User
  - active actor
  - doing something (verbs) with something (nouns)



Is this a content- or task-centered application?



User needs (*cont.*)

Task-centered applications

Objects have to be

- structured
- presented
- interlinked with each other
- actionable

Information Architecture

Information Design

Navigation Design

Interaction Design

Content-centered applications

Objects have to be

- structured
- presented
- interlinked with each other

Structural pane

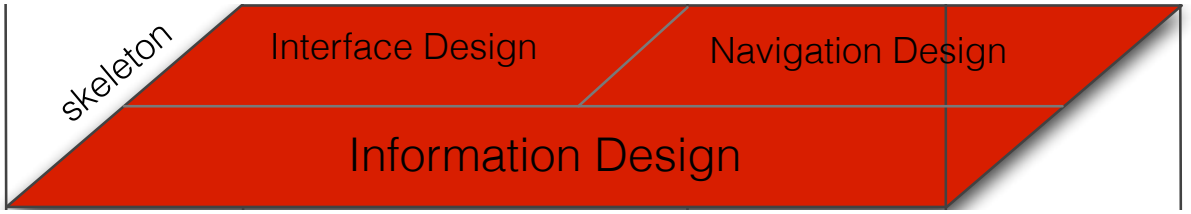
Interaction Design

- Developing application flows to facilitate user tasks
- Defining how the user interacts with site functionality

Information Architecture

- Structural design of the information space to facilitate intuitive access to content

Skeleton pane



Information Design

- Designing the presentation of information to facilitate understanding

Interface Design

- Designing interface elements to facilitate user interaction with functionality

Navigation Design

- Designing interface elements to facilitate the user's movement through the information architecture

From data to design

Information Architecture and Interaction Design

Information Architecture & Interaction Design

The user is not Cinderella!

Do not throw all information and functionality in the bucket (interface), all at once, and let the user select which ones are the „good“ (relevant) ones (for the current task).

(Garrett, 2012)

Information Architecture & Interaction Design

Reduce complexity and facilitate understanding

- Reduce visual and intellect burden by
  - only facing the user with relevant information and functionality for the respective moment (i.e. current task)

- Support the user to gain information. → **information architecture**
  - options to convey information to the user, i.e. name, organize, and interlink objects (contents) in away that they match the user‘s mental model

- Support the users to perform and complete their tasks → **interaction design**
  - define how the system responses to the user, i.e. sequences of options and available functionality

(Garrett, 2012)

Information Architecture and Interaction Design

Information Architecture

Three Dimensions of Information Architecture

Organizing contents

- Classification of objects
- Aspect of grouping

Presenting Information Spaces

- Accessibility of contents
- Navigation systems

Structuring contents

- Logical structure of contents
- Navigational model

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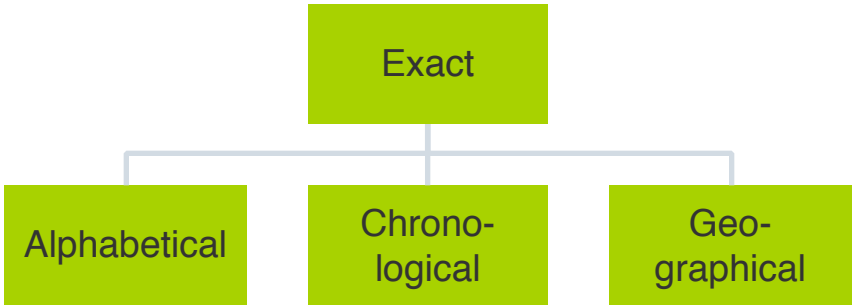
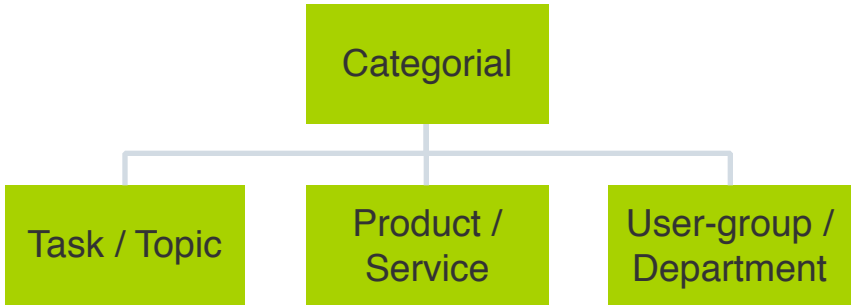
Organizing Contents





Suitable if you are sure that the user knows exactly she is looking for.

Suitable if user wants to „look around“.

- Categories are not orthogonal
- Naming of categories is challenging:
  - speak the user‘s language
  - match the users mental model

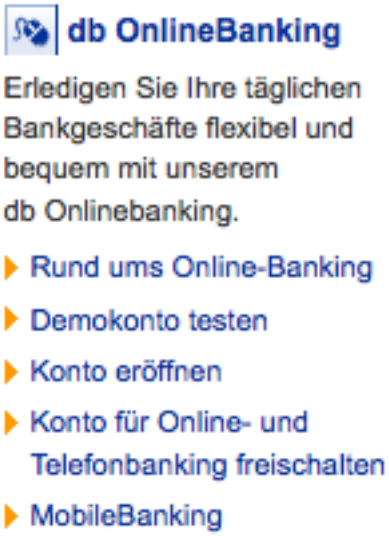
Content Categorization

by Topic

- Content-oriented application
- Tried and tested for content sites
- Hard to develop correct grouping of information

by Task

- Task-oriented applications



Organization of Contents

by Audience (User Group, Department)

- Are you sure that each user can classify himself easily into one category?
- Are you sure that each user does not need information from other user group?
  - Dell.com: To which audience does a computer scientist or computer gamer belong to? Does he may want information from other audience areas?

Organization of Content

by User Product / Service

- Well known and intuitive if done the right way.
- Hard to develop correct categories with correct wording to match the users mental model
  - Example Amazon.de: Where to search for a vacuum cleaner?

Home, Garden & Tools

Home
Kitchen & Dining
Furniture & Décor
Bedding & Bath
Appliances
Patio, Lawn & Garden
Fine Art
Arts, Crafts & Sewing
Pet Supplies
Wedding Registry
Home Improvement
Power & Hand Tools
Lamps & Light Fixtures
Kitchen & Bath Fixtures
Hardware
Home Automation

Beauty, Health & Grocery

All Beauty
Luxury Beauty
Men's Grooming
Health, Household & Baby Care
Grocery & Gourmet Food
Specialty Diets
Wine
AmazonFresh
Subscribe & Save
Prime Pantry
Amazon Elements

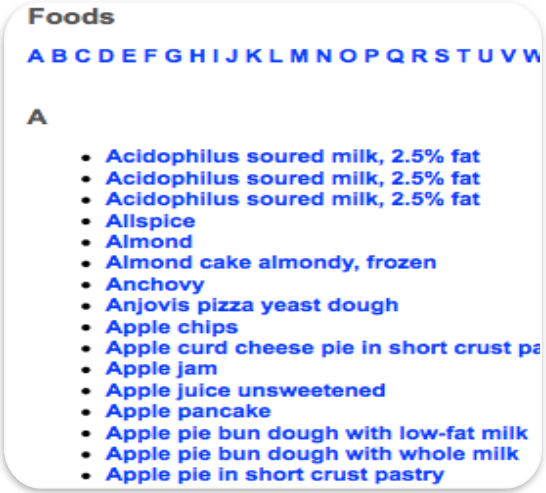
Toys, Kids & Baby

Toys & Games
Baby
Video Games for Kids
Amazon Mom
Baby Registry
Kids' Birthdays
For Girls
For Boys
For Baby

Organization of Contents

Chronological

- order contents by centuries, year, month, etc.
- suitable if latest information is important for users



Alphabetical

- order contents by initials

Geographical

- order contents by location, e.g. countries, states, districts
- suitable for global users

Hybrid Organization Schemes

- Usually large sites
  - provide information, products and/or functionality
  - do not strictly implement one organization scheme
  - provide a mixture of different organization schemes

- **Hybrid Schemes can be confusing**
  - Mashups of multiple schemes makes it difficult for the user to
    - understand the information
    - form a consistent mental model of the site‘s organization → memory load

- **Hybrid Schemes can be clear if**
  - there are not too much of them on one site
  - they are clearly grouped

Invariants for good navigation

Where am I right now?

Where can I go?

How to find the way back?

How to get there?

Three Dimensions of Information Architecture

Organizing contents

- Classification of objects
- Aspect of grouping

Presenting Information Spaces

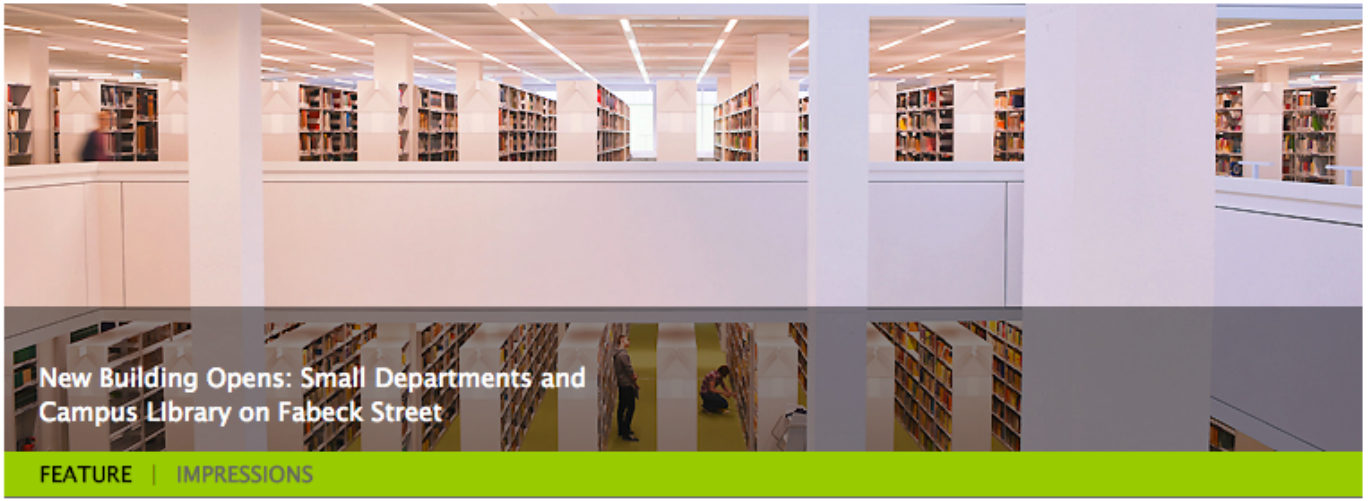
- Accessibility of contents
- Navigation systems

Structuring contents

- Logical structure of contents
- Navigational model

Information Architecture

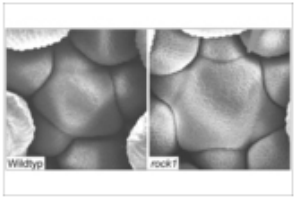
Example: Homepage FU Berlin



GATEWAYS FOR

- » Alumni and Supporters
- » Children and Teachers
- » Doctorate / Postdocs
- » Employees
- » Entrepreneurs
- » Journalists
- » Professionals
- » Prospective Students
- » Students
- » Visitors

RESEARCH NEWS



A Sweet Kind of Control

Plant biologists from Freie Universität have discovered how a nucleotide sugar transporter affects the growth of plants.

» More Research News

HEADLINES

- » New Building for Small Departments: Freie Universität Berlin Opens New Building with Integrated Library
- » Double Degree Master's Program in International Media and Communication Offered in Berlin and St. Petersburg / Application Deadline: June 15, 2015
- » Interviews with Survivors of Genocide in Armenia Accessible in Visual History Archive
- » Islamic Art in the 21st Century: Lecture and Discussion Series to Start May 5
- » New Findings: Variability Helps Mammals to Become Invasive

» More Headlines

INTERNATIONAL

in Education and Research

» Meet the World in Berlin

INFO-SERVICE STUDIUM

What Distinguishes Us

Hands-On: Accessibility of contents

Team working (10 minutes)

Browse the FU Homepage and identify the different navigation systems

- How can the user find the needed information?
- What different ways of accessing the content exist?
- What navigation system help the user to orientate?

Primary Navigation Systems

Global Navigation

- persistent and consistent on each view
- entry points to main sections
- entry points to main functionality

Direct Access (Search)

- entry points via direct access to contents based on keyword(s)

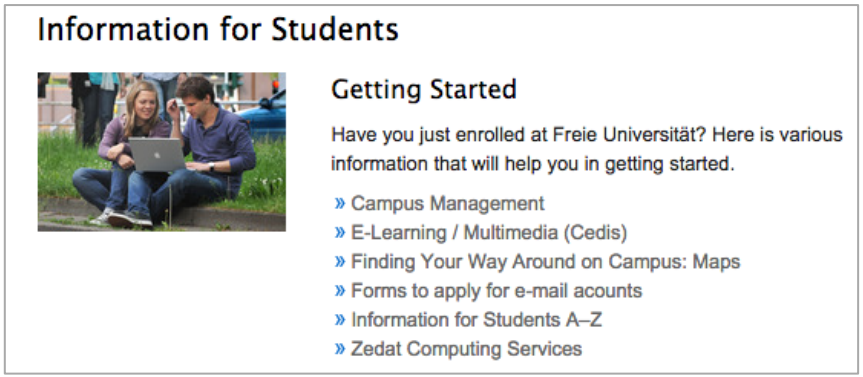
Primary Navigation Systems

Utility Navigation

- links and tools related to non content aspects
- sign-in, help, print, settings Editors, language tools

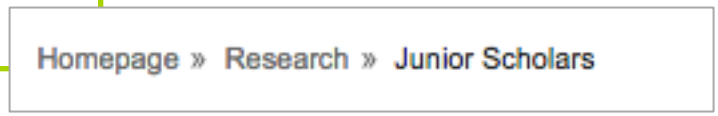
Associative Navigation

- links in or near the actual content
- They tie content together thematically
- Related articles, tags (user-defined and system-defined)

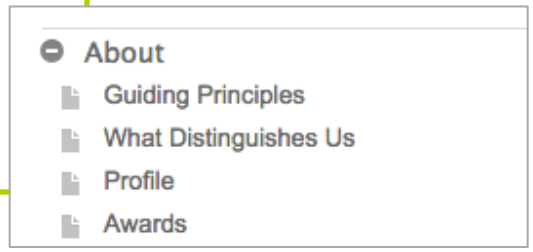


Supplemental Navigation Systems

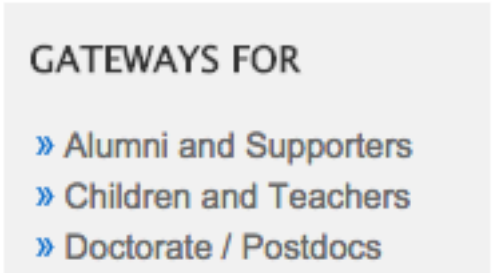
Breadcrumbs



Index Pages



Quick Links



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Hands-On: Structuring contents

Team working (10 minutes)

Prepare a card sorting.

Open Card Sort: Participants are asked to organize topics from content within your website into groups that make sense to them and then name each group they created in a way that they feel accurately describes the content. Use an open card sort to learn how users group content and the terms or labels they give each category.

Method: One on Ones are in-person sessions with an observer. Participants think aloud while sorting, giving a clearer picture of their reactions and thought processes.

Data: Use the prepared cards from the last hands-on session

Hands-On: Structuring contents

Team working (15 minutes)

Each team sends out one “user” to another group.

Carry out card sorting.

Hands-On: Structuring contents

Audience (5 minutes)

Reflect on results.

Thank You!