User-Centered Website Development: A Human-Computer Interaction Approach
Credits

- Slide 11: Courtesy of Kaboose, Inc.
- Slide 13: Courtesy of Urban Decay Cosmetics.
- Slide 14: Courtesy of the Bank of Montreal.
The stages of user-centered development

- Needs analysis (Ch. 1)
- **User and task analysis (Ch 3)**
- Functional analysis
- Requirements analysis
- Setting usability specifications
- Design
- Prototyping
- Evaluation
Needs analysis

🌿 Summarizes the nature and purpose of the system

✦ Type of system (website, video game, spreadsheet)
✦ People it will serve
✦ Benefits it will provide
3. Know Thy User

In this chapter you will learn about:
- User Analysis: what do you need to know about the users?
- Task Analysis: What are the user’s goals? What tasks do they perform?
- Environment analysis: What are the user’s surroundings and what effect do they have on performing a task?
- Recruiting users: where you can find them
- What usability specifications you will choose for rating your site/software
3.2 User Analysis: Why Do We Need To Do It?

- Reduce development and maintenance costs
- Keep customers
- Increase sales
Examples

- Redesign of an IBM site increased sales 400% within the first month
- IBM site: 84% reduction in use of Help button, meaning users were not lost as often
- Frugal Fun: 1400% increase in sales after website redesign
- Dell: reduced calls to (very expensive) telephone support
User characteristics: learning style

- Do-then-read (an active user believes that only wimps read manuals)
- Read-then-do (what manual writers seem to assume)
User characteristics: tool preferences

- Do your users know drop-down menus?
- Do they prefer mouse or keyboard? (Some advanced users hate the mouse: it slows them down.)
- Do they know frames? Popup windows? Search?
- You won’t believe how different new users are, compared to you, until you watch them
So watch them

Sit and observe in an Intro to Computing lab

Teach your grandmother how to use e-mail

From a discreet distance, observe behavior at an ATM: super-efficient, plodding, befuddled, enraged
User characteristics: physical differences

- **Age**: (use larger fonts for older people)
- **Sex**: (consider your target group: e.g., more women than men buy lipstick)
- **Vision limitations, such as color blindness**
- **Other physical limitations that might restrict movement** (See Chapter 12)
- **Small children don’t have good fine-muscle control**: see big buttons on next slide
Big buttons for little people
User characteristics: cultural differences

- Education (reading level)
- Profession (specialized vocabularies)
- Corporate style: what are you trying to convey to whom?
High-fashion cosmetics have a style . . .
A bank site has a very different style
User characteristics: knowledge of job

- Is your site used daily on the job, or it is used at home for recreation or a hobby?
- Is there a specialized vocabulary?
- If in an office, how does work on your site fit in with other activities? Could your user answer that question?
- Does your user do the same job all day? Bored?
- If for personal use, what is the purpose?
  - To inform
  - To entertain
  - To sell
User characteristics: application familiarity

- **Novice**
  - Faces a frightening unknown; timid, nervous, in no mood to explore your goodies

- **Advanced Beginner**
  - Less fear: knows basics; still impatient at having to learn how to do tasks.

- **Competent Performer**
  - Can diagnose simple problems and can perform a complex series of tasks

- **Expert**
User characteristics: primary and secondary users

- **Primary user**: the person who actively uses the site:
  - Airline reservation clerk
  - Help desk staff

- **Secondary user**: the person being served by a primary user:
  - Airline passenger
  - Customer who called the support line
User characteristics: getting information

- How can you learn the characteristics of your users?
- *Not managers.* Managers are not users. They may think they know users, but they aren’t users.
- *Not developers.* The worst. *Of course* they can see that button the users can’t see: they put it there.
Getting information, continued

Good sources:

- Users themselves, preferably in their workplace. The Gold Standard.
- Customer service and technical support. They deal with users as their job.
3.3 Task Analysis: Overview

- Goals, tasks, and actions
- Workflow Analysis
- Job analysis
- Task list
- Task sequence
- Task hierarchies
- Procedural analysis
- Techniques for observing and listening to users
Goals, tasks, and actions

Goal: Get to mountain vacation

Tasks: Rent car, drive, get repairs

Action: Get gas
Tasks and actions

- Why is getting repairs a task, but getting gas an action?
- Because *at this level of granularity*, getting gas cannot be broken down into smaller components.
- But if you are getting gas at a self-service station, and you’ve never done it before, and the instructions are hopeless . . . well, sure, for you that’s a task.
- The goal/task/action distinction is useful, but should not be applied rigidly.
Example: goal, task, and action

Goal: on the Internet, buy either a purple stuffed dinosaur or a set of blocks for your two-year-old niece. Your sister says either would be fine.
Example, continued

- Task 1: Choose between a stuffed toy and a set of building blocks
  - Action 1: Check several Web sites for purple stuffed dinosaurs
  - Action 2: Check on the availability of the new TalkingBlox building blocks set
  - Action 3: Decide on one of these, based on price, availability, delivery, and option of gift wrap
Example, continued

- Task 2: Buy chosen toy
  - Action 1: Put toy into website’s shopping cart
  - Action 2: Fill out billing and shipping information, making sure to check “gift wrap”

- Task 3: Call sister; tell her that a present is on its way
Techniques for observing and listening to users

- Think aloud: talk while doing the job
- Talk right after
- Role playing
- Cueing recall with videotape
- Focus groups
- Mailed surveys
Think aloud: the Gold Standard

- Samples of facilitating remarks:
  - “Could you tell me what options you are considering?”
  - “Is anything in particular puzzling you?”
  - “What might you do next?”
Think aloud: the Gold Standard

- BUT: No feedback, positive or negative
- No answers or hints
- If users get stuck, have them go on
- Neutral demeanor at all times
Talk right after

Sometimes talking while doing the work is not feasible
Talk right after

- Talking right after may be best alternative to thinking aloud
Role playing

- Some things happen so infrequently that there is no way to observe the user
- Some one may be able to play the role of a user in that situation
Cueing recall with video

- After getting written permissions, tape the user at work
- This records the user interacting with others in a normal work setting
- Later, play the tape and have the user explain what was going on
Focus group: good if you can make it work, but has problems

- Requires a skilled and experienced leader
- One or two people may dominate
- Some people may get into side conversations
- May work if very well done
Mailed survey: good if you can make it work, but has problems

- Very difficult to write good questions
- Choice of mail list can bias results
- A return rate of 10% is extremely good; 1-2% is typical
- May report on what people think they do, not what they actually do
- And inexpensive
3.4 Environment Analysis

- Where do people use your interface? Many variations:
  - An outdoor ATM in a cold location where people wear gloves while using it (need huge buttons)
  - On a combination cell phone/wireless browser, with a tiny display (need tiny fingers!)
  - In a location where direct sun can hit your display, making it hard to read
  - In an extremely noisy factory, where any sound you add would be impossible to understand

- Observe your users in their own setting
3.5 Recruiting Users

- If product is in use, test with real current users:
  - Employees
  - Customers

- Temp agencies

- In college, post notice or ask a professor to announce

- Provide incentives:
  - Coffee mugs, T-shirts
  - $$$

- Not family or friends: they won’t be critical enough
3.6 Usability Specifications

- Performance measures
- Preference measures
Performance measures: a sampling

- Time to locate a book at the Barnes & Noble website
- Time to fill in customer information and place order
- Number of times the Back Button is used, indicating that user cannot find desired information
- Number of clicks to find the time of a TV show
- Percentage of tasks completed correctly
- Number of calls to support line
- Number of complaints, negative facial expressions, or regressive behaviors (screaming at monitor, etc.)
## Preference measures

- Often obtained using a *Likert Scale*

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<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was easy to find what I wanted</td>
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<tr>
<td>It was simple to choose size and color</td>
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<tr>
<td>I could pay for my purchase quickly</td>
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Summary

In this chapter you have learned that:

- It is hard to over-emphasize the importance of a user-centric approach to website development
- Usability can be quantified and measured (key idea)
- There is no good substitute for watching, interviewing, or videotaping real users, in their place of work
- Usability specifications should be set at the beginning of the project
- There is a fundamental difference between performance measures and preference measures
- It is crucial to observe users in their own environment