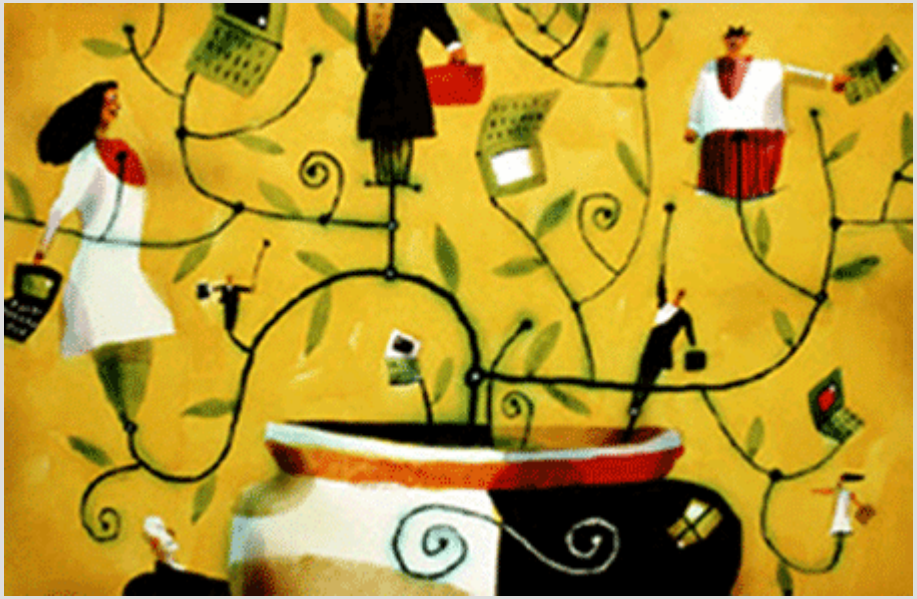
User-Centered Website Development: A Human-Computer Interaction Approach



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PowerPoint slides by Dan McCracken, with thanks to Rosalee Wolfe and S. Jane Fritz, St. Joseph's College

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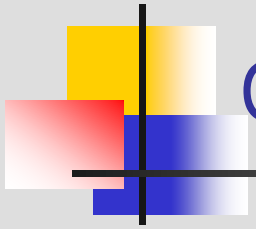

Credits

- Slide 11: Courtesy of Kaboose, Inc.
- Slide 13: Courtesy of Urban Decay Cosmetics.
- Slide 14: Courtesy of the Bank of Montreal.

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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

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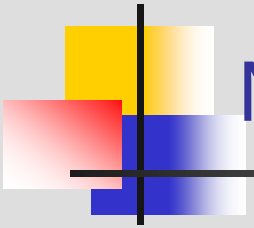

Needs analysis

- Summarizes the nature and purpose of the system
  - Type of system (website, video game, spreadsheet)
  - People it will serve
  - Benefits it will provide

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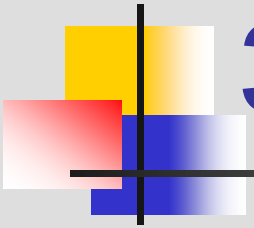

3. Know Thy User

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

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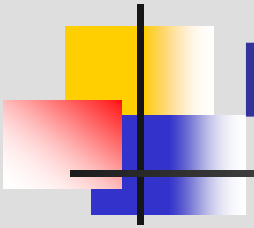
3.2 User Analysis: Why Do We Need To Do It?



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

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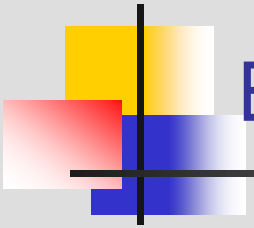

Examples

- 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

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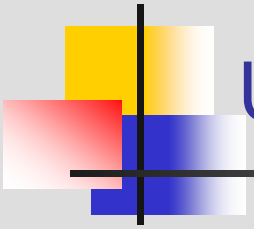

User characteristics: learning style

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

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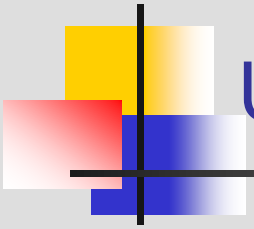

User characteristics: tool preferences

- 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

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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

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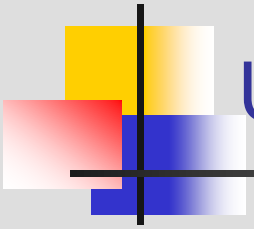

User characteristics: physical differences

- 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

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Big buttons for little people

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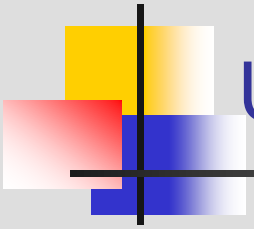

User characteristics: cultural differences

- Education (reading level)
- Profession (specialized vocabularies)
- Corporate style: what are you trying to convey to whom?

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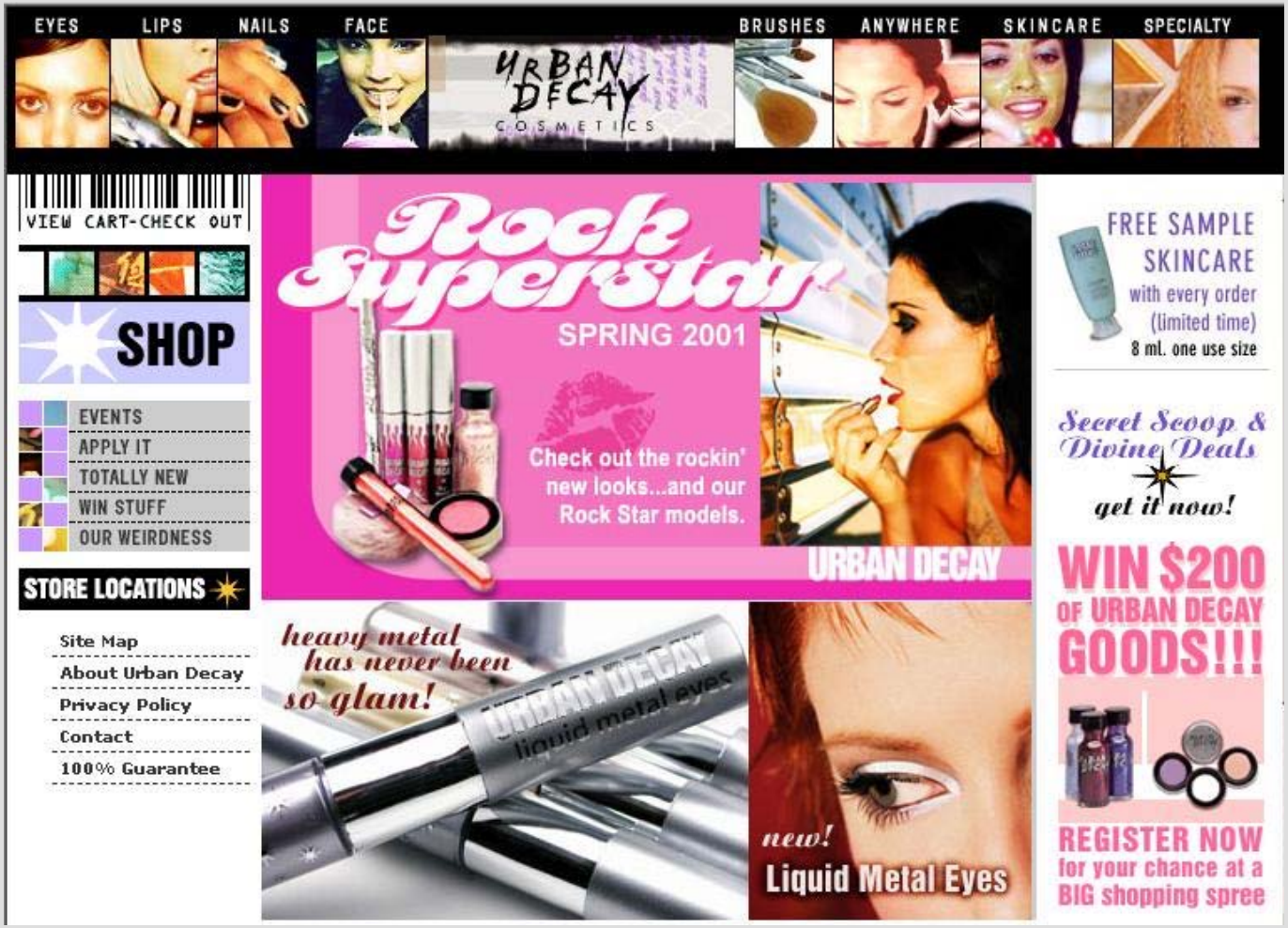
High-fashion cosmetics have a style . . .



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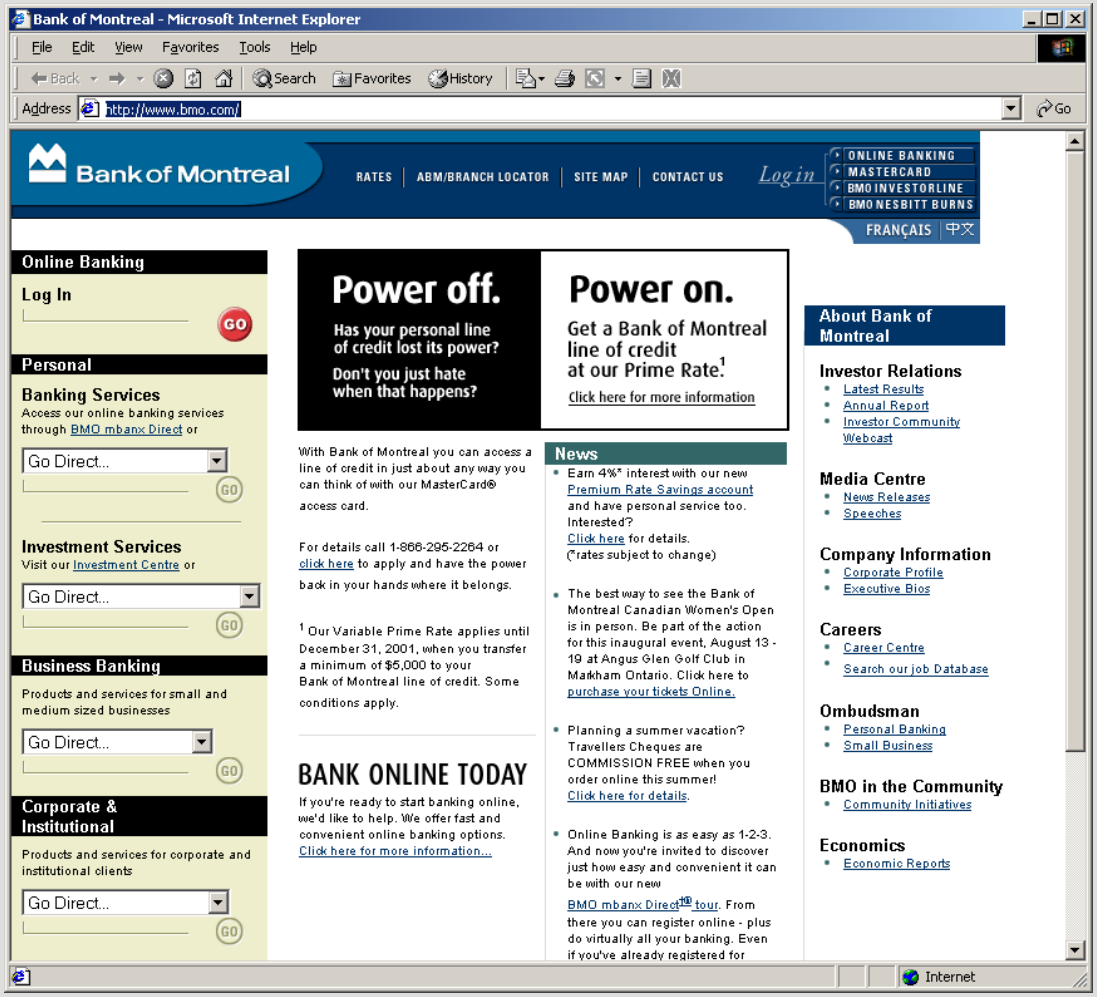
A bank site has a very different style



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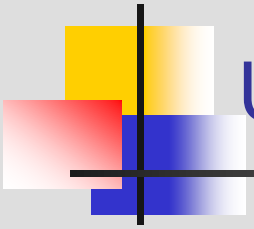

User characteristics: knowledge of job

- 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

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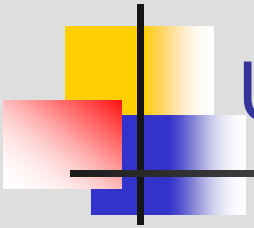

User characteristics: application familiarity

- 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
  - Small group. Can diagnose complex problems. Has a mental model of the application. Not typical users.

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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

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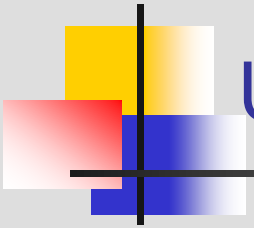

User characteristics: getting information

- 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.

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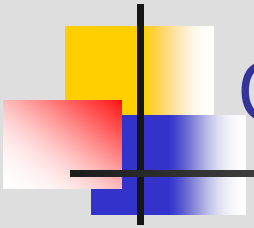

Getting information, continued

Good sources:

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

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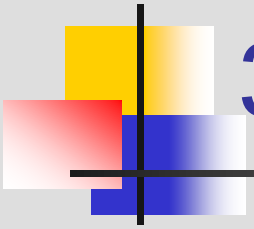

3.3 Task Analysis: Overview

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

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Goals, tasks, and actions

Goal: Get to mountain vacation

Tasks: Rent car, drive, get repairs

Action: Get gas

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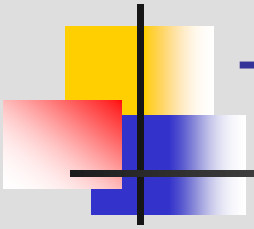

Tasks and actions

- 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

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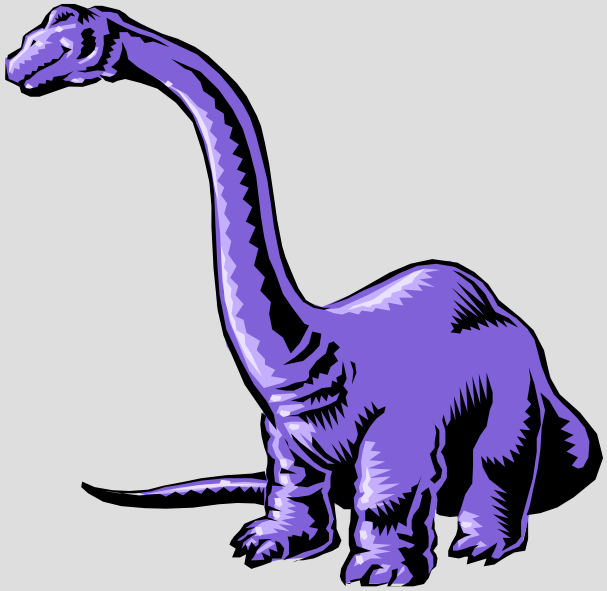
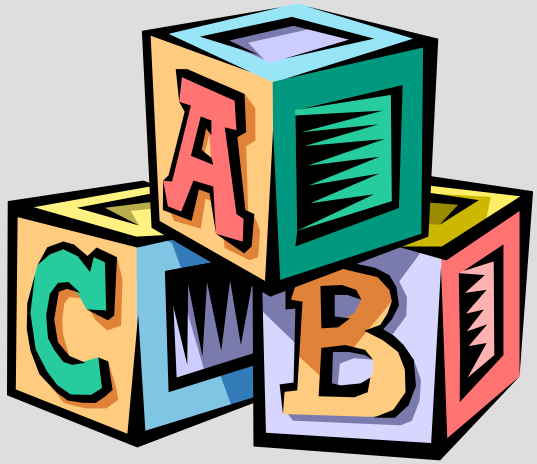
Example: goal, task, and action

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.





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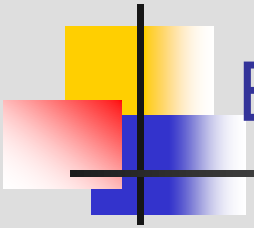

Example, continued

- 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

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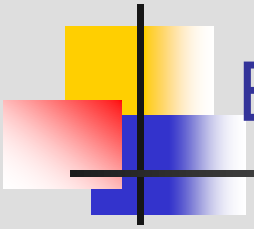

Example, continued

- 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

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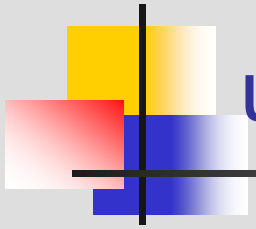
Techniques for observing and listening to users



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

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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?”

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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

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Talk right after

- Sometimes talking while doing the work is not feasible

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Talk right after

- Talking right after may be best alternative to thinking aloud

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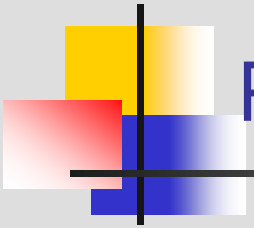

Role playing

- 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

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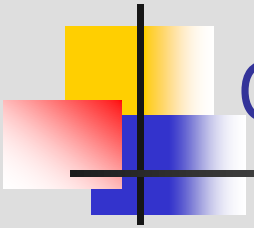

Cueing recall with video

- 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

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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

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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

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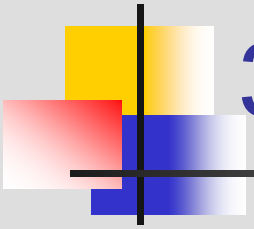

3.4 Environment Analysis

- 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

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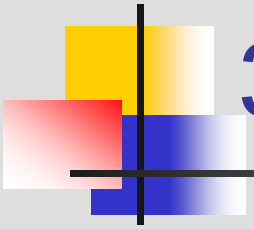

3.5 Recruiting Users

- 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

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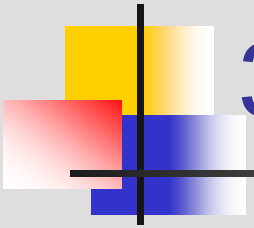

3.6 Usability Specifications

- Performance measures
- Preference measures

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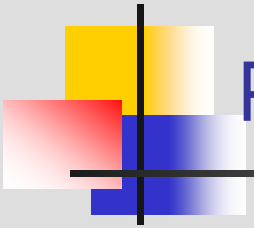

Performance measures: a sampling

- 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.)

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Preference measures

- Often obtained using a *Likert Scale*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
It was easy to find what I wanted					
It was simple to choose size and color					
I could pay for my purchase quickly					

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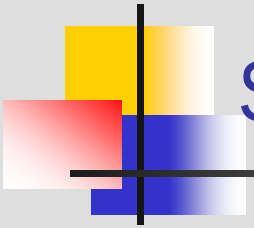

Summary

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

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