

Usability Testing: Effective Methodologies and Practical Applications

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- ▶ **Equipment**
- ▶ **Test Plan**
 - ▶ User profile and recruiting
 - ▶ Test design
 - ▶ Task list for usability tests
 - ▶ Roles and responsibilities
- ▶ **Methodologies**
- ▶ **Data Analysis and Presentation**
- ▶ **Do It!**

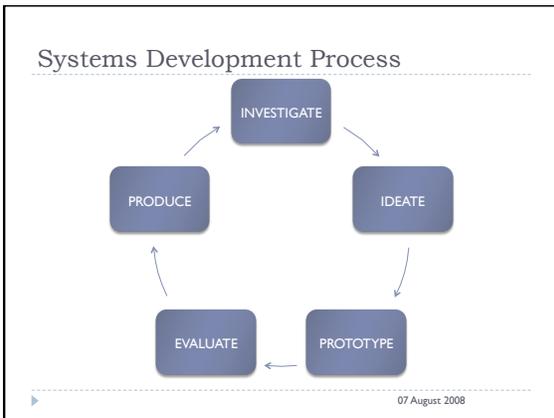
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Equipment

- ▶ Computer; one with audio input is helpful
- ▶ Camtasia, Morae for screen/audio capture
- ▶ WebEx, online meeting applications for remote testing
- ▶ Handheld video camera with tripod and/or web cam on computer
- ▶ Handheld audio recorder
- ▶ Notepaper and pen for taking notes (failsafe backup!)
- ▶ Campus/business labs can be much more elaborate
 - ▶ Two-way mirrors, remote controlled cameras
 - ▶ Scan converters to mix screen + camera input
 - ▶ Soundproof observation space

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Test Plan

- ▶ **Foundation for the entire test: how, when, who, why, and what.**
 - ▶ Excellent reference point when resources (time/\$) get tight
- ▶ **Suggested format:**
 - ▶ Purpose
 - ▶ Problem statement/test objectives
 - ▶ User profile
 - ▶ Method (test design)
 - ▶ Task list
 - ▶ Test environment/equipment
 - ▶ Test monitor role
 - ▶ Evaluation measures/data to be collected
 - ▶ Report contents and presentation

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Test Plan: User Profile & Recruiting

- ▶ Representative of your target user population
 - ▶ Is campus demographic information available?
- ▶ Signage in libraries or campus labs
- ▶ Email to student groups or specific departments
- ▶ Via surveys

- ▶ @UW: Libraries Student Advisory Committee

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Test Plan: User Profile & Recruiting

- ▶ Try to get as much demographic data as you can up front
 - ▶ Makes identifying participants easier
 - ▶ Reduces the amount of in-person time they'll need to spend filling out pre-test forms

- ▶ Incentives = yes!
- ▶ The more we offer, the fewer no shows
- ▶ Timing is everything

- ▶ Students really appreciate being asked to provide input.

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Test Plan: Method (Test Design)

- ▶ Detailed description of how the research will be conducted and how the test session will unfold
- ▶ Helps the observers/notetakers understand what's going on and why
- ▶ Choose the appropriate methodology for what you want to learn

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Test Plan: Task List for a Usability Test

- ▶ **Two stages of development:**
 1. General description so team members can judge whether the tasks are the correct ones and being exercised properly.
 - ▶ "Can the user find the latest edition without knowing in advance the year of that edition?"
 2. Later, expand the tasks into full-blown scenarios which are presented to the participants
 - ▶ "You are looking for the newest edition of *The Geography of the World Economy* by Knox. What is the publication year for the newest edition? Is it available from UW?"

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Test Plan: Task List for a Usability Test

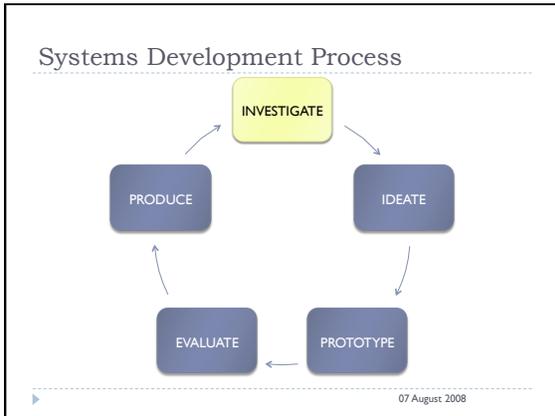
- ▶ **Description of successful completion of the task:**
 - ▶ participant views details display for this work
 - ▶ participant selects editions tab
 - ▶ participant correctly identifies latest (2008) edition
 - ▶ participant reports that UW does not have this edition
- ▶ **Benchmark timings?**

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Roles & Responsibilities

- ▶ **Facilitator**
 - ▶ Responsible for making sure the test is conducted according to plan.
 - ▶ Interacts with participant: greeting, test administration
 - ▶ Definitely a learned skill. Good facilitators know how to elicit the right information from user without telling them everything.
- ▶ **Notetaker**
 - ▶ Optional, but helpful: 2nd set of eyes and ears
 - ▶ Frees the facilitator to focus on the session, not on their notes

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Investigate: Know your users

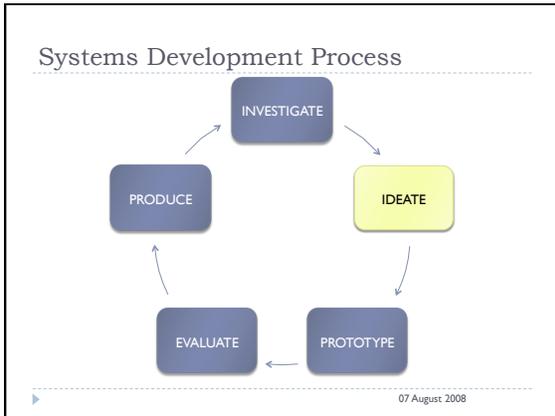
- ▶ It's impossible to create usable systems apart from the world in which your users will live
 - ▶ Identify users
 - ▶ Identify stakeholders
 - ▶ Identify their requirements (not always one and the same!)
 - ▶ How do they do it now?
 - ▶ What do they want?
 - ▶ What do they need?
 - ▶ Is there already another solution?

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Investigate: methodologies

- ▶ **Task analysis**
- ▶ **User surveys**
 - ▶ Can be your own, or come from data elsewhere on campus
 - ▶ Should be local
- ▶ **Focus groups**
- ▶ **Interviews**
- ▶ **Competitive analysis**
 - ▶ Broaden horizons beyond libraries
 - ▶ What are sites/services our users visit on a daily basis doing?
- ▶ **Ethnographic research**
 - ▶ Focus on how users go about getting their job done and the tools they use, not just on the library's role in their life

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- ### Ideate: methodologies
- ▶ Personas
 - ▶ Scenarios
 - ▶ Free-association
 - ▶ Story boarding
 - ▶ Brainstorming
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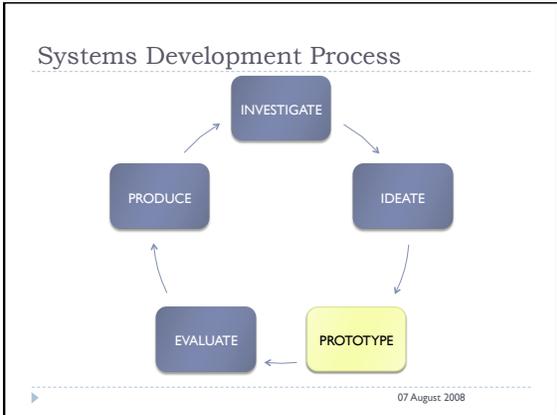
- ### Ideate: methodology > personas
- ▶ **Fictional person who stands in for a major user group of your site**
 - ▶ Based on information gathered during the investigation phase.
 - ▶ Personas have characteristics that are most representative of that group
 - ▶ Frequently includes:
 - ▶ Demographic info: name, age, gender, marital status, education
 - ▶ Technology literacy
 - ▶ Goals and tasks related to your site
 - ▶ Great way to keep the development group focused on the user – “What would Karen do here?”
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Ideate: methodology > brainstorming

- ▶ Be visual
- ▶ Defer judgment
- ▶ Encourage wild ideas
- ▶ Build on others' ideas
- ▶ Go for quantity
- ▶ One conversation at a time
- ▶ Stay focused on the topic

▶ At the end, review your list. Is it based on the data already collected? If you can't tie an idea back to the data, you should remove it from consideration.

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Prototyping

- ▶ Difficult to evaluate something that doesn't exist
 - ▶ Very hard for users to react to abstract concepts
- ▶ Prototyping brings subtleties and nuances to the surface
 - ▶ Once something's on screen or paper, it's easier to see whether it might work
- ▶ Begin to wrestle with the technical constraints

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Prototype: methodology > participatory design

- ▶ Bringing users into the design process
- ▶ Collaboration between users, designers, and developers
- ▶ "White paper" design
 - ▶ The libraries is about to redesign its website and wants to create something that will be perfect for you. What would that page look like?

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Prototype: methodology > parallel design

- ▶ Great way to get a group involved in the process
- ▶ Each voice is heard
- ▶ No co-development
- ▶ Interesting to see common ideas from the different voices

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Prototyping: methodologies

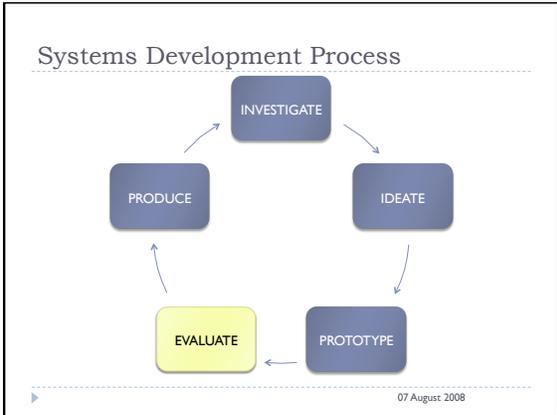
- ▶ Low-fidelity – easy to produce, test broad concepts
 - ▶ Paper prototypes
 - ▶ Some research indicates that users are likely to react more honestly to paper prototypes because of the apparent level of effort required to produce one.
 - ▶ Screen shots
- ▶ High-fidelity – requires more effort, examine usability
 - ▶ HTML/live mockups
- ▶ Site maps
 - ▶ Emphasizes connections between pages
 - ▶ Shows how content relates to each other
 - ▶ Implies both information structure and navigation

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Prototype: methodology > card sorting

- ▶ Great way to better understand how users would organize content/ information on a site
 - ▶ Doesn't take users' tasks into consideration
- ▶ Low-budget/low-tech : index cards and a pen
- ▶ Open Card Sorting
 - ▶ Cards show content, but no pre-established grouping
 - ▶ Sort cards into groups, then describe and label
- ▶ Closed Card Sorting
 - ▶ Cards show content; grouping has already been established
 - ▶ Sort cards into groups
- ▶ Few tools for analyzing the data
- ▶ Sometimes the data doesn't provide a clear next step

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Evaluate

- ▶ Getting feedback on your prototype or product with real people who are representative of your user population
- ▶ Automated procedures can find bugs, but not usability problems.
- ▶ Iteration is impossible without knowing what to fix, leave or remove

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Evaluate: methodology

- ▶ Cognitive walkthrough
- ▶ X's and O's
- ▶ Heuristic evaluation
- ▶ Usability testing
 - ▶ In the lab
 - ▶ In the users' environment
- ▶ Other data sources

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Evaluate: methodology > cognitive walkthrough

- ▶ Can (and should!) happen at any stage in the development cycle
- ▶ Involves one or a group of evaluators inspecting the user interface by going through a set of tasks and evaluating the ease with which the tasks can be completed
 - ▶ Tasks should be representative of what users would really do
 - ▶ If the evaluators can't easily complete a task, then rethink the design

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Evaluate: methodology > X's and O's

- ▶ Determines what is truly important to your various user populations
- ▶ Give the user a printout of a web page and a pen
- ▶ The instructions are simple:
 - ▶ Circle anything that is important and useful to you as you work with the site. Cross out anything that's unimportant/you would never use.
 - ▶ Add anything to the page that we left off

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Evaluate: methodology > heuristic evaluation

- ▶ **Jakob Nielsen's Ten Usability Heuristics**
 - ▶ Visibility of system status
 - ▶ Match between system and the real world
 - ▶ User control and freedom
 - ▶ Consistency and standards
 - ▶ Error prevention
 - ▶ Recognition rather than recall
 - ▶ Flexibility and efficiency of use
 - ▶ Aesthetic and minimalist design
 - ▶ Help users recognize, diagnose, and recover from errors
 - ▶ Help and documentation

http://www.useit.com/papers/heuristic/heuristic_list.html

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Evaluate: methodology > usability testing

- ▶ Can be done with minimal equipment or a full-blown lab
- ▶ Common usability problems are usually discovered with 5-7 users. After that, the ROI is less.
- ▶ Human subjects review, if required by your institution
- ▶ **"Think aloud" protocol**
 - ▶ Can be difficult for non-native speakers, especially if you want to record them.
 - ▶ Not natural and very difficult to keep up

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Usability Testing: Methodologies

- ▶ **Unobtrusive**
 - ▶ Concentrate on observing what the test user does and refrain as much as possible from influencing her/him by explaining the design or asking questions. This is harder than it sounds and it actually takes some tricks to do it well.
- ▶ **Obtrusive**
 - ▶ The facilitator is allowed to explain design decisions, ask questions, or engage the test user in a discussion.
- ▶ **Why choose one method?**
 - ▶ Start each usability test with unobtrusive observation: you observe how users execute the tasks you give them. After that, you reserve some time to ask questions, explain design decisions, and answer the test user's questions.

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Unobtrusive Observation Tips

1. Observe: be quiet, watch, understand.
2. Only help to overcome the limitations of the prototype.
3. First observe, then take notes.
4. Stimulate users to think aloud.
5. Limit the time test users have to execute a task.
6. Elicit detailed information.
7. Answer test user questions with questions.

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Obtrusive Observation Tips

1. Think about what you want to ask before the test.
2. Ask open questions.
3. Don't blame the test user.
4. Don't ask the test user for design solutions.
5. You can do obtrusive observation with groups of test users

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Severity Ratings

- ▶ 0 = this is not a usability problem at all
- ▶ 1 = cosmetic problem only – need not be fixed unless extra time is available on project
- ▶ 2 = minor usability problem – fixing this should be given low priority
- ▶ 3 = major usability problem – important to fix, so should be given high priority
- ▶ 4 = usability catastrophe – imperative to fix this before product can be released

Jakob Nielsen, "Usability Engineering"

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“Typical” usability test

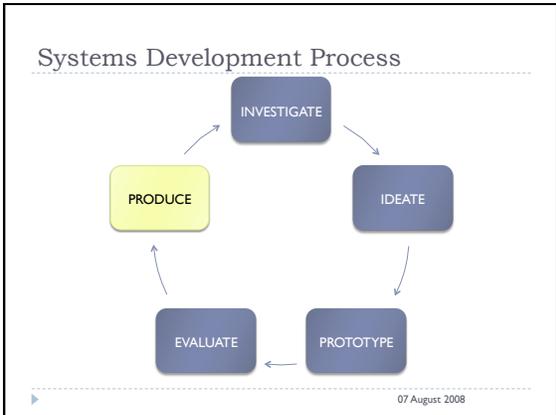
- ▶ Greet user, bring them to lab
- ▶ Facilitator reads from a script letting the participant know how the session will unfold and that they can withdraw at any time
- ▶ Signing consent forms
- ▶ Pre-test survey
- ▶ Participant completes items on task list. Facilitator uses unobtrusive method.
- ▶ Post-test survey
 - ▶ At this point the facilitator can talk with off-site observers to determine follow-up questions
- ▶ Follow-up questions
 - ▶ If no remote observers, notetaker can contribute questions
- ▶ Thank you and provide gift

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Evaluate: methodology > other data sources

- ▶ Web logs
- ▶ Search logs
- ▶ Click-through conversions
- ▶ Help desk/user questions

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Produce & Iterate

- ▶ **Decide which stage to return to in order to fix the problems**
 - ▶ Some may be simple, but some may require a shift in approach to the design, requiring much work.
- ▶ **Each time you iterate, your design will become stronger and more usable**
- ▶ **Subsequent iterations take longer as you get into small refinements rather than fixing major problems**

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Data Analysis & Reporting

- ▶ **Create transcripts if at all possible**
- ▶ **Qualitative and quantitative coding practices**

- ▶ **Report-reading is rare**
- ▶ **Show video of sessions to interested staff so they can see for themselves how the user reacted**

- ▶ **Have to have 'ownership' of problem being tested before findings can be implemented**
 - ▶ Web vs. physical space

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Case studies

- ▶ **Libraries home page redesign 2003-2004**
- ▶ **Intranet project 2006-2007**
- ▶ **Libraries home page redesign 2007-2008**

- ▶ **Wayfinding study**

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Video: The Science and Art of User Experience at Google

<http://www.youtube.com/watch?v=697KX4Ciiws>

Jen Fitzpatrick, one of Google's Engineering Directors, shares examples of how design, usability and engineering come together at Google.

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Thanks!

Questions?

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<http://www.lib.washington.edu/usability/>

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