

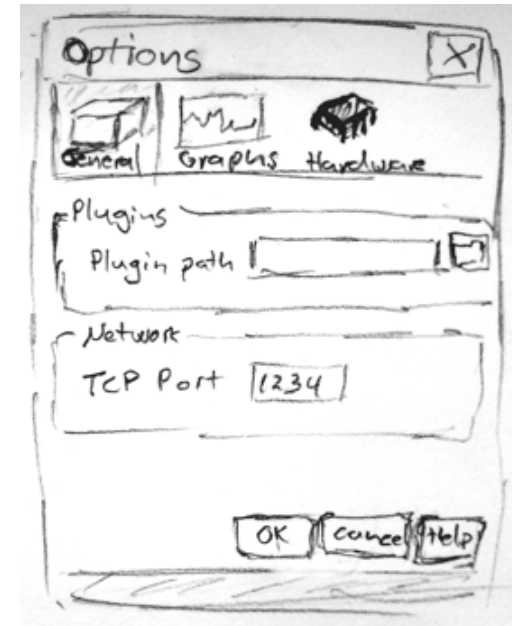
CS 315 – Intro to Human Computer Interaction (HCI)

A decorative graphic consisting of several horizontal lines in shades of blue and white, extending across the width of the slide below the title.

Types of Usability Testing

Paper mockups and prototyping

- Inexpensive, rapid, very productive
- Low fidelity is sometimes better (Snyder, 2003)
- Mythical Man Month – Prototype to throw away



Discount usability testing

- Test early and often (with 3 to 6 testers)
- Pros: Most serious problems can be found with 6 testers. Good for formative evaluation (early)
- Cons: Complex systems can't be tested this way. Not good for summative evaluation (late)

Competitive usability testing

- Compare against prior or competitor's versions
- Experimenter bias, be careful to not “prime the user”
- Within-subjects is preferred

Universal usability testing

- Test with highly diverse
 - Users (experience levels, ability, etc.)
 - Platforms (mac, pc, linux)
 - Hardware (old (how old is old?) -> latest)
 - Networks (dial-up -> broadband)

Field tests and portable labs

- Tests UI in realistic environments
- Beta tests

Remote usability testing (via web)

- Recruited via online communities, email
- Large n
- Difficulty in logging, validating data
- Software can help (NetMeeting, WebEx, Sametime)

Can You Break this Test

- Challenge testers to break a system
- Games, security, public displays (MOSI)

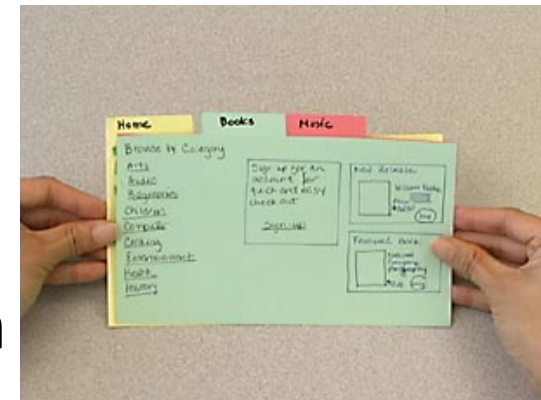
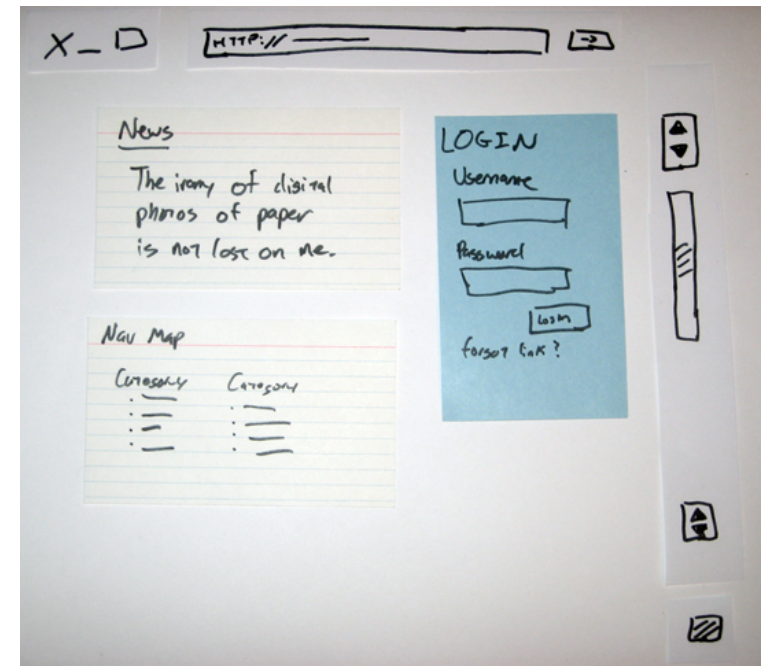
Limitations

- Focuses on first-time users
- Limited coverage of interface features
 - Emergency (military, medical, mission-critical)
 - Rarely used features
- Difficult to simulate realistic conditions
 - Testing mobile devices
 - Signal strength
 - Batteries
 - User focus
- Yet formal studies on user studies have identified
 - Cost savings
 - Return on investment (Sherman 2006, Bias and Mayhew 2005)
- Formal usability test reports

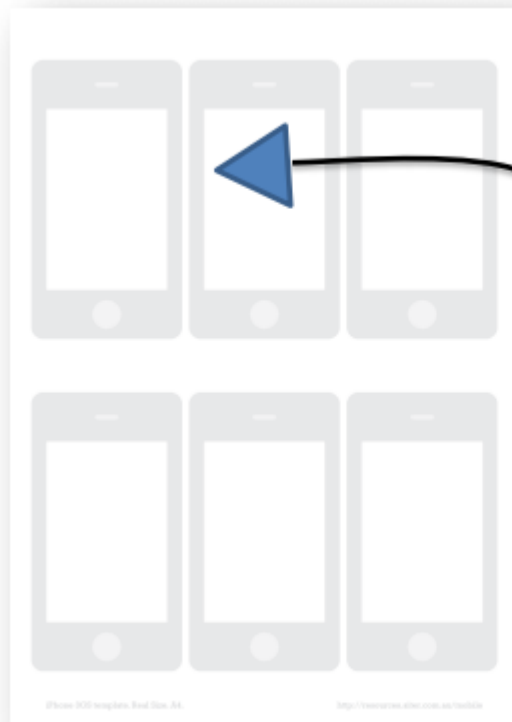
Paper Prototyping

Paper Prototyping

- Low fidelity
- Disposability
- Cost
- Speed
- Ideal for simple user interface design



Paper Prototyping Tools



Yellow marker



Sharpie markers



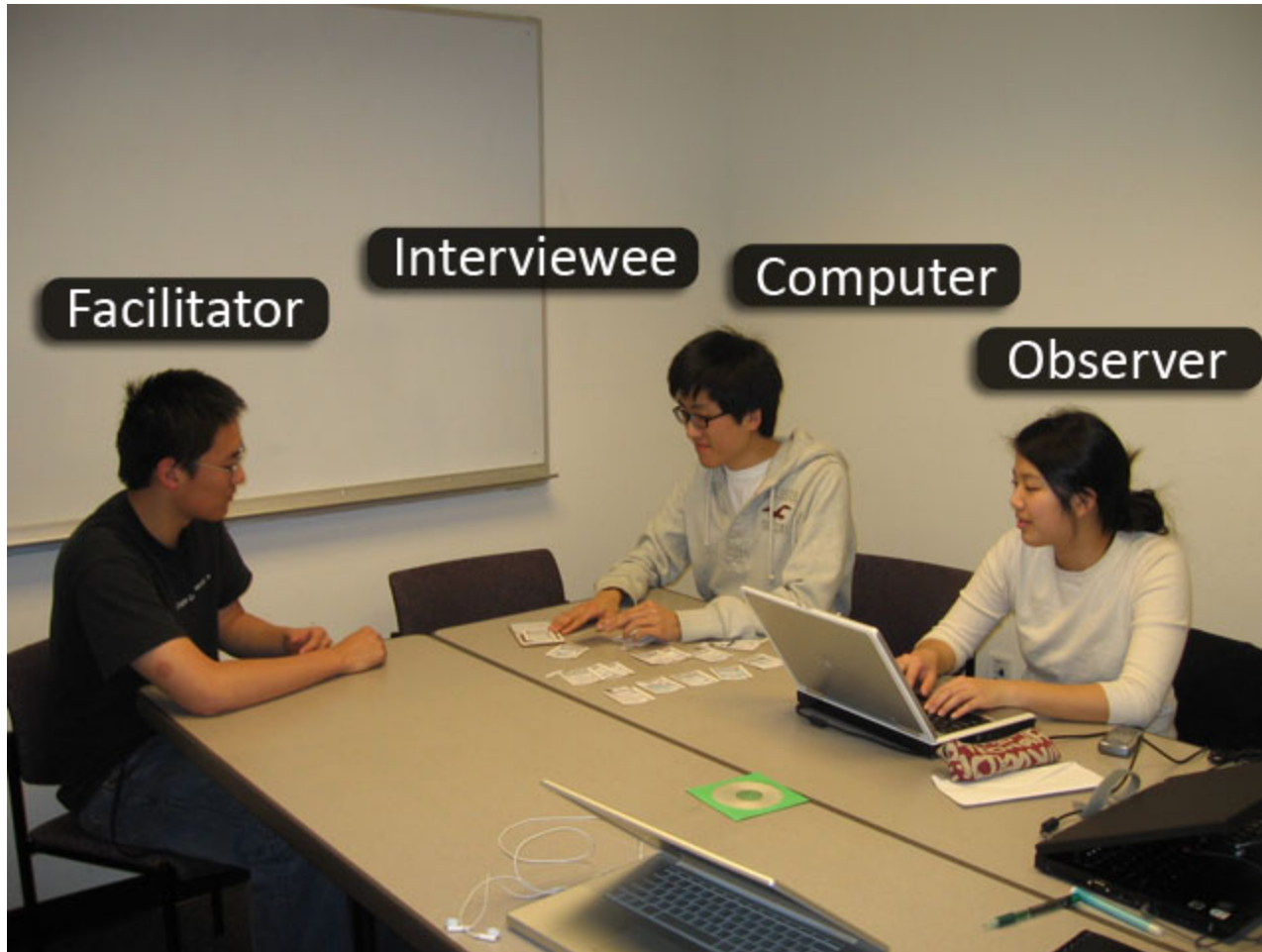
Gray marker



<http://resources.siter.com.au/mobile/>

Roles for design team

- **Computer**
 - Simulates prototype
 - Doesn't give any feedback that the computer wouldn't
- **Facilitator**
 - Presents interface and tasks to the user
 - Encourages user to think aloud by asking questions
 - Keeps user test from getting off track
- **Observer**
 - Keeps mouth shut, sits on hands if necessary
 - Takes copious notes



What should the observer note

- Do the users understand the interface and the functionality?
- Is the purpose of the application served?
- Can users navigate properly?
- Do users understand the labels?

Wizard of Oz

- Wizard of Oz is the “man behind the curtain”.
 - Wizard is the backend, computer presents the front end.
- Wizard simulates the computer’s reaction usually from a hidden location.
 - A wizard can perform a mathematical operation in response to the user’s input and prepare the next page of the application with the result.
- Used to simulate future technology like speech recognition, learning etc.

Paper Prototype

- <http://www.youtube.com/watch?v=9wQkLthhHKA>

Paper Prototype Assignment

Prototype Description

- To build our lo-fi prototype, we used cardboard and paper. Each screen in our prototype was drawn out on a half-sized notecard. Color markers were used to demonstrate what was highlighted and gave the user a better understanding of where the cursor could be. Also, each option menu was drawn on small pieces of paper.

Prototype Description

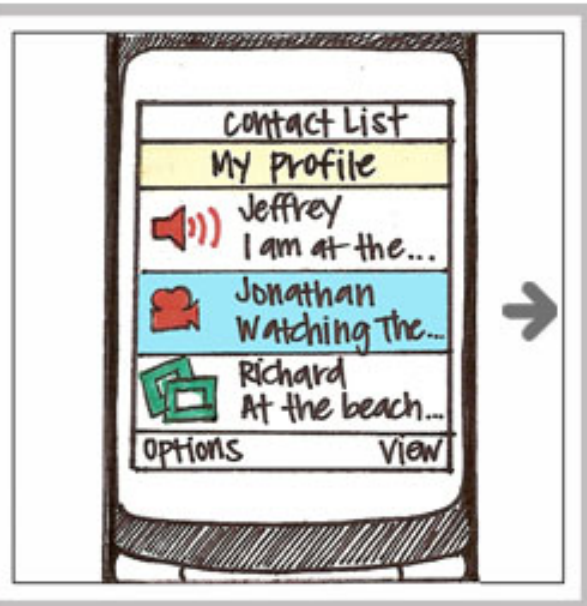
- The user navigates the phone using the 2-D cursor and the "computer" changes the interface to the appropriate screen. When the user presses the menu button, the "computer" overlays the appropriate menu option.
- The cards were numbered to demonstrate the flow of the prototype.

Prototype Description

- **Viewing User Statuses:** Because each user's status is conveniently indicated within one's contact list, one can easily scroll through his or her phone book and identify who is available (green) or unavailable (red) according to the icon next each contact's name. Different icons indicate different types of status messages: a notepad indicates a text status, photographs indicate a picture status, the speaker icon indicates an audio status message, and the video camera indicates a video status message.

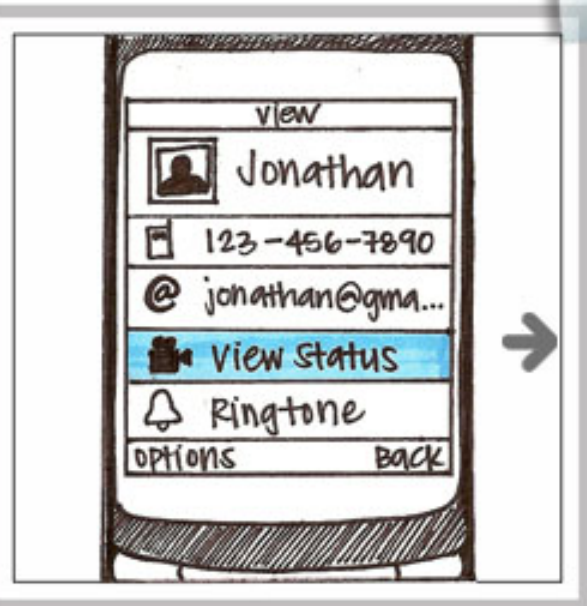
Prototype Description

- As the user scrolls through his or her contact list, each highlighted name will expand upon scroll over. Thus, when we scroll to Jonathan's name, his name will expand in the mobile window, displaying a still of the video he uploaded as well as the caption that will scroll from left to right so we can view his status while we're still in the contact list window. Once we skip past his name to Richard's name, Jonathan's window will immediately collapse back to normal.

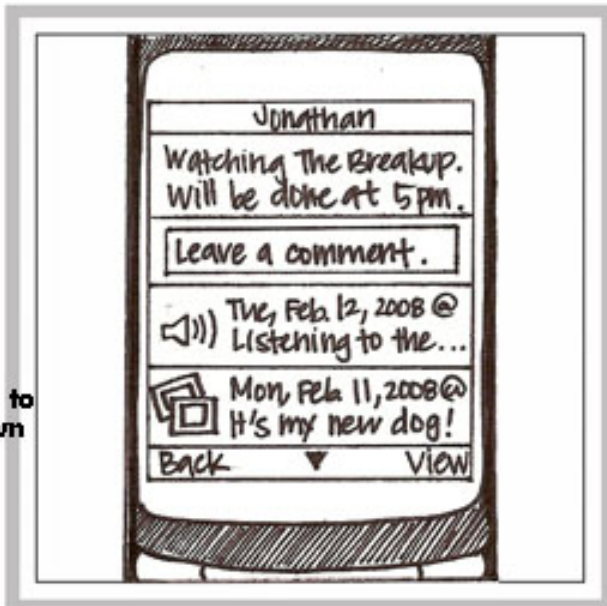


when "View" is selected

when > (the right arrow) is pressed



continuing to scroll down



Participants

- In choosing the participants, we attempted to be unbiased and as random as possible. We were at Unit 1 underground and asked people who were in the area. This is a common place for students of all years to gather. It was important to confirm that all interviewees were comfortable and willing before beginning the interviews.

Participants

- **Interviewee 1** is a fourth year EECS major. His two main areas of studies are computer science and finance. He spends most of his free time on the computer and online. His hobbies include reading finance news and staying connected with world events. Other than using his cell phone for calls, he uses SMS text-messaging.

Environment

- Our environment was a small classroom at Unit 1 underground. The place was a well-lit, clean, and typical room. We felt the interviewees would feel pretty comfortable in such a setting. We also aimed for a place where users would not get distracted by objects in the room. Since our target user group is young adults, specifically college students ages 18-25, we thought a classroom setting would also emulate a possible usage-scenario.

Environment

- The set-up included one large rectangular square table and a chair for each person. The interviewee sat at the far end of the rectangular table. In front of him lay the lo-fi prototype. The prototype involves a piece of cardboard for the phone a bunch of small index cards for the screen that were switched. Also, small pieces of paper were used to demonstrate menus. The facilitator sat directly left of participant, and talked to him along the process. The computer sat directly right of him, within reach of all parts in the lo-fi prototype. The observer sat further back to see the bigger picture of the interview. The observer's line of sight included the prototype, computer, and the actions of the interviewee. The greeter also sat further away, close to the door. A camera was also used from time to time.

Tasks

- To make sure our interviewee felt comfortable, the facilitator first ran through a demo task to give an example of what we would want our interviewee to do. We would say, for example, "Can you view a friend's status that contains a video? Go ahead and try to figure out the application to see how it works."

Tasks

- The following lists are the shortest path to completing the task asked by the facilitator. We determined difficulty by evaluating how many steps each task takes; the harder the task, the more steps are required. We chose these tasks because they involved what we thought would be the most frequently accessed features in our application.

Tasks

- **Demo Task:** Set text status (medium difficulty, completed by the facilitator)
 - Go to "Contacts"
 - Go to "My Profile"
 - Go to "View Status"
 - Go to "Add New Status"
 - Select "Text Status"
 - Select "Write new note"
 - Type in desired text status
 - Select "Confirm"

Procedure

- **Meet & Greet** - The greeter sits the interviewee down. He casually welcomes the user, thanks him for his time, and makes him feel comfortable. He hands out the consent form and assures confidentiality. The greeter puts forth the agenda of the interview and will answer any remaining questions the interviewee might have before beginning the test.

Procedure

- **Description** - Facilitator explains the basic overview of the application. He will remind the user to disclose everything that he is thinking.
- For each of the following tasks, the Facilitator will ask these standard questions:
 - "How do you feel about the interface?"
 - "How would you rate the difficulty of what you have done so far?"
 - "How frequently would you perform this task?"
 - "Would you use this function?"
 - "Any other comments?"

Procedure

- **Demonstrate Demo Task** – The facilitator will interact with the computer to show the interviewee a demo task. This task is different from the following three tasks.
- **Explain Task 1** – Facilitator hands written task to the user and explains it out loud. Task 1 is to check a video status, picture status, audio status, and text status.

Procedure

- **Testing Task 1**
 - Computer places in front of the user the opening screen of the phone.
 - User will start interacting with the Lo-Fi prototype. (see demo script in Appendix A. to describe how prototype works)
 - Computer will respond accordingly to user input.
 - Facilitator questions at every step. Questions may include:
 - “What do you think each of the icons means?”
 - “Did you notice the different colors?”
 - Observer will record user reaction in a detailed manner. The observer will also avoid making any reactions of his own.

Measures

- **Process Data**

- How enthusiastic is this user throughout the process?
- What parts did the user hesitate on?
- Measure moods through changing visual facial expressions.
- Impact – How easy or difficult is it for a user to overcome a problem? 1 – easy, 2 – moderate, 3 – hard
- Rank which features would be the most useful.

Measures

- **Bottom-line Data**

- During what parts of the usability test did the user take longer than normal?
- How frequently would the user use our application?
- How fast does the user interact with the interface near the beginning and end? Measured by time.
- Frequency – How often does a problem occur? Document problem and frequency.
- Severity of usability problems: 1 – I don't agree this is a usability problem, 2 – Cosmetic problem, 3 – Minor usability problem, 4 – Major usability: important to fix, 5. Usability catastrophe: imperative to fix.

Results

- **Interface:** Problems/Comments related to the usability of the interface as well as the process required to achieve each task
 - Users had to be told or shown that the application was in the Contacts List
 - Users could distinguish between text, audio, picture, and video icons, but didn't understand what the colors (red = unavailable, green = available) meant—thought red = “off” or “not enabled”

Results

- **Technology:** Problems/Comments related to the technology featured within the application.
 - Users only want to keep 3-5 status messages in their history; don't care for old status messages
 - Would expect application to be standardized and built-in on all phones

Discussion

- What we learned
- Limitations of prototype
- Modification to application

Appendices

- Demo Script
 - Greeter: Hi! I hope you Let me introduce you ... Do you mind filling out this informed consent ...
- Facilitator
 - Thank you for ...
 - Our program is basically....
 - Let me run you through a demo task... Did that make sense? Any questions?

Appendices

- Task Instructions
 - Descriptions of the tasks you gave to the user
- Post-Interview Questions
 - What were your thoughts about the interview process?
 - What are your thoughts about the interface?
 - What are your thoughts about this application?

Appendices

- Informed Consent Form
 - [See class website](#)
- Raw Observations