User Interface
Software Project

Asst. Professor Donald J. Patterson
INF 134 Winter 2011
Interactive Paper Interfaces

Content derived from Buxton, Sketching User Experiences/
Interactive Paper Interfaces

• It is a part of a participatory design process

• General Goal:
  • Use rapid prototyping to explore the design space
  • Works well with brainstorming

• Important that it be sketched

• Sketched is not just about drawing, it’s also an attitude
Why sketching?

- Quick
- Timely
- Inexpensive
- Disposable
- Plentiful
- Clear Vocabulary
- Distinct Gesture
- Minimal Detail
- Appropriate degree of refinement
- Suggest and explore, not confirm
- Ambiguity

Quick to make (at least after some practice)
Interactive Paper Interfaces

- Why sketching?
  - **Quick**
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

Quick to make (at least after some practice)
Interactive Paper Interfaces

• Why sketching?
  • Quick
  • Timely
  • Inexpensive
  • Disposable
  • Plentiful
  • Clear Vocabulary
  • Distinct Gesture
  • Minimal Detail
  • Appropriate degree of refinement
  • Suggest and explore, not confirm
  • Ambiguity

Can be provided when needed
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - **Timely**
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

Can be provided when needed
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

A sketch is cheap. High cost inhibits design (early in the process)
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - **Inexpensive**
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

A sketch is cheap. High cost inhibits design (early in the process)
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

If you can’t afford to throw it away it probably isn’t a sketch. The investment is in the concept, not the art. It’s value depends on its disposability.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

If you can’t afford to throw it away it probably isn’t a sketch. The investment is in the concept, not the art. It’s value depends on its disposability.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

Sketched interfaces tend to work best as a series, in context with many other sketches.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - **Plentiful**
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

Sketched interfaces tend to work best as a series, in context with many other sketches.
Why sketching?

- Quick
- Timely
- Inexpensive
- Disposable
- Plentiful
- Clear Vocabulary
- Distinct Gesture
- Minimal Detail
- Appropriate degree of refinement
- Suggest and explore, not confirm
- Ambiguity

The way a sketch is drawn distinguishes it from other ways of rendering. The style signifies to its viewers that it’s “just a sketch”
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

The way a sketch is drawn distinguishes it from other ways of rendering. The style signifies to its viewers that it’s “just a sketch”
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

There is a fluidity to sketches that gives them a sense of openness and freedom. They are not precise like a blueprint or engineering drawing.
Interactive Paper Interfaces

• Why sketching?
  • Quick
  • Timely
  • Inexpensive
  • Disposable
  • Plentiful
  • Clear Vocabulary
  • Distinct Gesture
  • Minimal Detail
  • Appropriate degree of refinement
  • Suggest and explore, not confirm
  • Ambiguity

There is a fluidity to sketches that gives them a sense of openness and freedom. They are not precise like a blueprint or engineering drawing.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

They include only what is necessary to communicate the concept. Extra detail is distracting. Going beyond “good enough” is a bad thing with sketching.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - **Minimal Detail**
    - Appropriate degree of refinement
    - Suggest and explore, not confirm
    - Ambiguity

They include only what is necessary to communicate the concept. Extra detail is distracting. Going beyond “good enough” is a bad thing with sketching.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

A sketch is helpful because it suggests only a level of precision that corresponds to the level of certainty in the designer’s minds at the time.
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - **Appropriate degree of refinement**
  - Suggest and explore, not confirm
  - Ambiguity

A sketch is helpful because it suggests only a level of precision that corresponds to the level of certainty in the designer’s minds at the time.
Why sketching?
- Quick
- Timely
- Inexpensive
- Disposable
- Plentiful
- Clear Vocabulary
- Distinct Gesture
- Minimal Detail
- Appropriate degree of refinement
- Suggest and explore, not confirm
- Ambiguity

Sketches don’t “tell” they “suggest”. Their value lies not in the drawing, but in its ability to provide a catalyst to the desired and appropriate behavior, conversations, and interactions.
Why sketching?

- Quick
- Timely
- Inexpensive
- Disposable
- Plentiful
- Clear Vocabulary
- Distinct Gesture
- Minimal Detail
- Appropriate degree of refinement

Sketches don’t “tell” they “suggest”. Their value lies not in the drawing, but in its ability to provide a catalyst to the desired and appropriate behavior, conversations, and interactions.

- Suggest and explore, not confirm
- Ambiguity
Interactive Paper Interfaces

- Why sketching?
  - Quick
  - Timely
  - Inexpensive
  - Disposable
  - Plentiful
  - Clear Vocabulary
  - Distinct Gesture
  - Minimal Detail
  - Appropriate degree of refinement
  - Suggest and explore, not confirm
  - Ambiguity

Sketches are intentionally ambiguous. They can be interpreted in different ways. Unexpected relationships emerge from viewing them, even for the sketcher.
Why sketching?
- Quick
- Timely
- Inexpensive
- Disposable
- Plentiful
- Clear Vocabulary
- Distinct Gesture
- Minimal Detail
- Appropriate degree of refinement
- Suggest and explore, not confirm
- Ambiguity

Interactive Paper Interfaces

Sketches are intentionally ambiguous. They can be interpreted in different ways. Unexpected relationships emerge from viewing them, even for the sketcher.
Interactive Paper Interfaces

• Protocol
  • One person sketches and operates the sketch
  • One person is the user
  • Both are important
  • Both talk the whole time the interface is tested.
    • Sketcher explains the task
    • User verbalizes what they are thinking, looking for, expecting
Interactive Paper Interfaces

• Protocol
  • Operating the sketch means:
    • Presenting views of the interface to the user
    • Replacing views as the user interacts.
  • Being a user means
    • Using your hands to point and click
    • Verbalizing what’s going on in your head
## Interactive Paper Interfaces

<table>
<thead>
<tr>
<th>Facilitator</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Start: Sketch 1.a in front of user.) The sketch in front of you shows the</td>
<td>Okay. I assume that you want me to send a message to Mary Ford, since she is my 10:00 am appointment. So I will touch her name.</td>
</tr>
<tr>
<td>screen of your PDA. I want you to send a message to your 10:00 am appointment. For this exercise, to do anything, just touch what you think is appropriate on the screen, and tell me what you are doing or thinking as you go along.</td>
<td></td>
</tr>
<tr>
<td>(Facilitator replaces sketch 1.a with 2.b)</td>
<td>Now I see a menu that lets me either call her or message her.</td>
</tr>
<tr>
<td>(Facilitator replaces sketch 2.b with 4.a)</td>
<td>So, what I will now do is touch “message” on the menu.</td>
</tr>
<tr>
<td>(Facilitator replaces sketch 2.b with 4.a)</td>
<td>Okay. I now see a screen that lets me send a message to Mary Ford. What now?</td>
</tr>
</tbody>
</table>
Interactive Paper Interfaces

• What are possible outcomes?
  • Insight into the task
  • New ideas of how to implement it differently
  • Expose design errors (obvious in hindsight)
  • Insight into the user’s expectations
  • A video capture to be sent to remote collaborators
  • An analysis of the sketched interface
Interactive Paper Interfaces

- Two ways of thinking of this task
  
  - Design
  - “Sketching”
  
  - Usability Engineering
  - “Paper Prototyping”

Wednesday, January 19, 2011
• The role of design is to find the best design
• The role of usability engineering is to help make that design the best
Interactive Paper Interfaces

- Paper Interfaces in the wild
  - Designing an oscilloscope
  - Textronix only iterated in paper

- This example shows that poor keyboard design was discovered.

- Notice the way the user’s unconsciously put their fingers in the right position to manipulate the dials as if they were physical
Interactive Paper Interfaces

- Paper Interfaces in the wild
- tektronix
Interactive Paper Interfaces

- Try it

- Create an interface with two buttons
  - “Touch”
  - “Do not touch”

- Create a landing page for each
  - With a back button for “Do not touch”

- Test it with a partner
Interactive Paper Interfaces

- Turning it into a video example
- Post it note example video
Interactive Paper Interfaces

- iPhone example
  - Notice how a cut-away can be used
  - http://www.youtube.com/watch?v=6TbyXq3XHSc

- Physical example
  - Notice how an entire kiosk can be “sketched”
  - http://www.youtube.com/watch?v=jkvqLd-CMyY