User Interface Design, Prototyping, and Evaluation
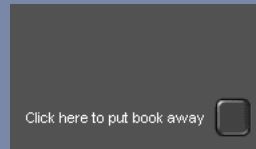
Design Sketching

* slides marked Buxton are courtesy of Bill Buxton, from his talk "Why I Love the iPod, iPhone, Wii and Google", remix uk, 18-19 Sept. 2008, Brighton

Prof. James A. Landay
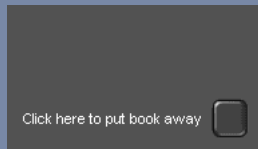**University of Washington**
Autumn 2008

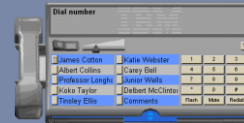**October 9, 2008**

Interface Hall of Shame or Fame?

Click here to put book away

- **From IBM's RealCD**
  - prompt
  - button

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Interface Hall of Shame!

Click here to put book away

- **From IBM's RealCD**
  - prompt
  - button
- **Black on black???**
  - cool!
  - but you can't see it
  - "click here" shouldn't be necessary
    - like a door that has a sign telling you to push

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Misused Metaphors

Dial number

James Cotton | Katie Webster
Albert Collins | Carey Bell
Professor Longhair | Junior Wells
Koko Taylor | Delbert McClinton
Tinsley Ellis | Comments

RAPID REWARDS DOUBLE CREDIT

SOUTHWEST AIRLINES

Southwest Airlines Home Gate
The Home of Southwest Airlines on the World Wide Web

- **Direct translations**
  - software telephony solution that requires the user to dial a number by clicking on a simulated keypad
  - software CD player that requires turning volume knob with the mouse
  - airline web site that simulates a ticket counter!

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User Interface Design, Prototyping, and Evaluation

Design Sketching

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Prof. James A. Landay
University of Washington
Autumn 2008

October 9, 2008

Outline

- **Review task analysis**
- **Teams vs. Groups**
- **Sketching user experiences**
- **Informal UI prototyping tools**

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Task Analysis Review

- **Task Analysis questions** ?
  - **Who is going to use the system?**
  - **What tasks do they now perform?**
  - **What tasks are desired?**
  - **How are the tasks learned?**
  - **Where are the tasks performed?**
  - **What's the relationship between customer & data?**
  - **What other tools does the customer have?**
  - **How do users communicate with each other?**
  - **How often are the tasks performed?**
  - **What are the time constraints on the tasks?**
  - **What happens when things go wrong?**
- **Selecting tasks** ?
  - **real tasks with reasonable functionality coverage**
  - **complete, specific tasks of what customer wants to do**

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Teams vs. Groups

- **Teams & good performance are inseparable**
  - **a team is more than the sum of its parts**

Groups	**Teams**
strong leader	**shared leadership**
individual accountability	**individual & mutual accountability**
organizational purpose	**specific team purpose**
individual work products	**collective work products**
efficient meetings	**open-ended meetings**
measures performance by influence on others	**measures performance from work products**
delegates work	**does real work together**

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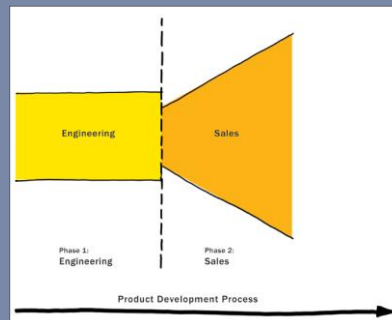
Keys to Team Success

- **Common commitment**
  - **requires a purpose in which team members believe**
    - **"prove that all children can learn", "revolutionizing X…"**
- **Specific performance goals**
  - **comes directly from the common purpose**
    - **"increasing the scores of graduates form 40% to 95%"**
  - **helps maintain focus – start w/ something achievable**
- **A right mix of skills**
  - **technical/functional expertise (programming/design/writing)**
  - **problem-solving & decision-making skills**
  - **interpersonal skills**
- **Agreement**
  - **who will do particular jobs, when to meet & work, schedules**

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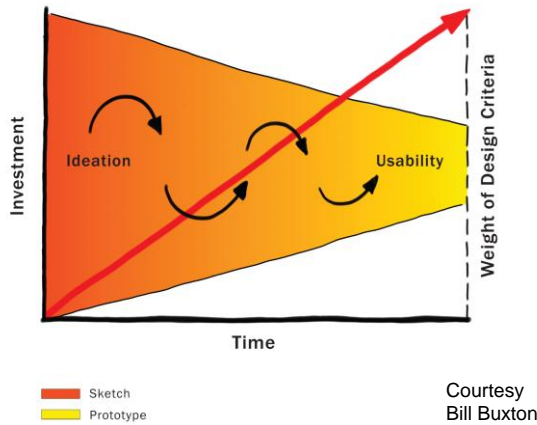
Team Action Items

- **Keep meeting & get used to each other**
- **Figure out strengths of team members**
- **Assign each person a role**
  - **responsible for seeing work is organized & done**
  - **not responsible for doing it themselves**
- **Names/roles listed on next assign. turned in**
- **Roles**
  - **group manager (coordinate - big picture)**
  - **documentation (writing)**
  - **design (visual/interaction)**
  - **user testing**

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A Quintessential Activity of Design

Courtesy
Bill Buxton

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The Problem with the SW Industry

Courtesy
Bill Buxton

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Adding Design…

Phase 0: Design
Phase 1: Engineering
Phase 2: Sales

Product Development Process

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Courtesy
Bill Buxton

Planning = Design?
Concept - Blueprint

Entry Floor Plan

OMA - Seattle Public Library

Planning

Model Dec1999

Open Jul 2004

Design

Construction

Call Nov1998
Award May1999
Construction Mar 2002

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The Anatomy of Sketching

- **Quick / Timely**
- **Inexpensive / Disposable**
- **Plentiful**
- **Clear vocabulary. You know that it is a sketch (lines extend through endpoints, …)**
- **No higher resolution than required to communicate the intended purpose/concept**
- **Resolution of the rendering does not suggest a degree of refinement of the concept that exceeds its actual state**
- **Ambiguous**

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If you want to get the most out of a sketch, you need to leave big enough holes.

There has to be enough room for the imagination.

Courtesy
Bill Buxton

Sketching in Interaction Design

- **Analogous to traditional sketching**
- **Shares all of the same key attributes**
- **More feel than look**
- **Must accommodate time & dynamics**
- **Phrasing**

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Courtesy
Bill Buxton

From Sketch to Prototype

Courtesy
Bill Buxton

Tactics

- **Design as choice**
- **Two openings for creativity**
  1. **Palette of choices**
 2. **Heuristics used to choose**

Courtesy
Bill Buxton

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Design as Choice

Elaboration   **Reduction**
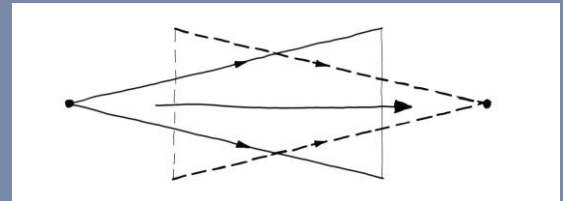
Courtesy
Bill Buxton

Laseau (1980)

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The Converging Path

Courtesy
Bill Buxton
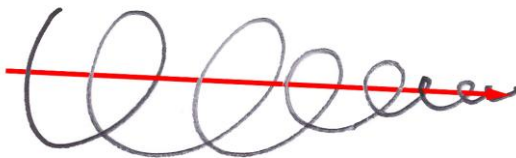
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Exploration of Alternatives

… a designer that pitched three ideas would probably be fired. I'd say 5 is an entry point for an early formal review (distilled from 100's). … if you are pushing one you will be found out, and also fired. … it is about open mindedness, humility, discovery, and learning. If you aren't authentically dedicated to that approach you are just doing it wrong!

Alistair Hamilton
VP Design
Symbol Technologies

Courtesy
Bill Buxton

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Courtesy Bill Buxton

Experience Design

- **Draw my phone**
- **Draw my phone's interface**
- **Draw the experience of using my phone**

- **Which is the true object of design?**

Courtesy
Bill Buxton

Sketches & Storyboards
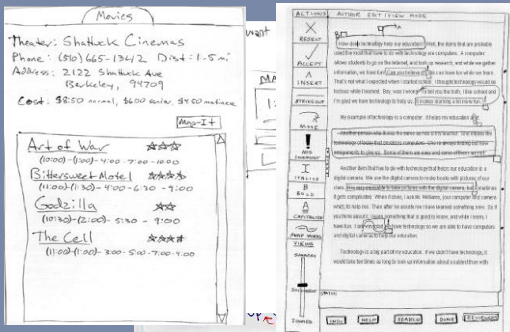
Sketches & Storyboards

HE ALWAYS STORYBOARDS
THE HUNT FIRST.

- **Where do storyboards come from?**
  – **film & animation**
- **Give you a "script" of important events**
  – **leave out the details**
  – **concentrate on the important interactions**
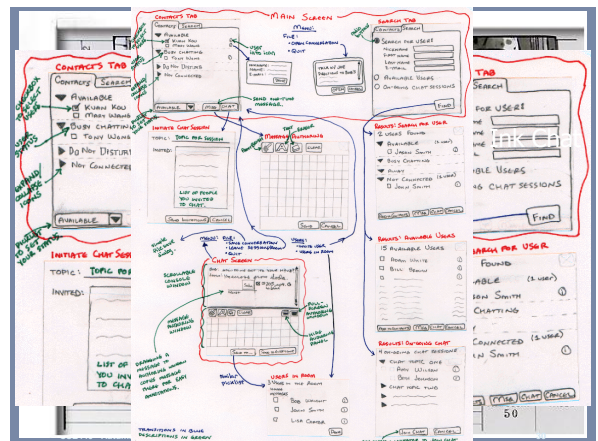
Picturing Time
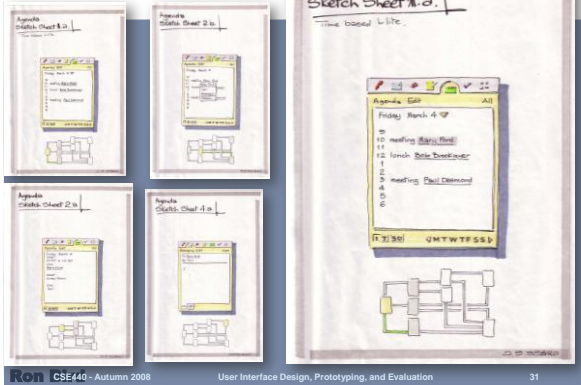
LucidMug Sketch

Informal UI Prototyping Tools

Outpost   Denim   Suede

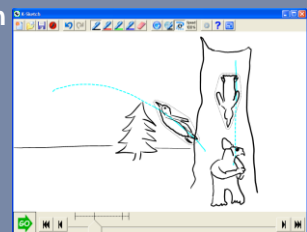Topiary   SketchWizard
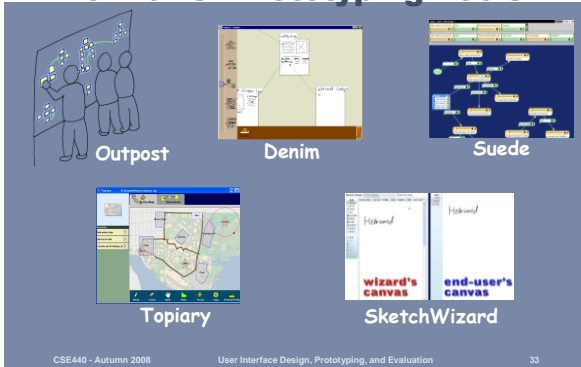
How Would a Teacher Create This?
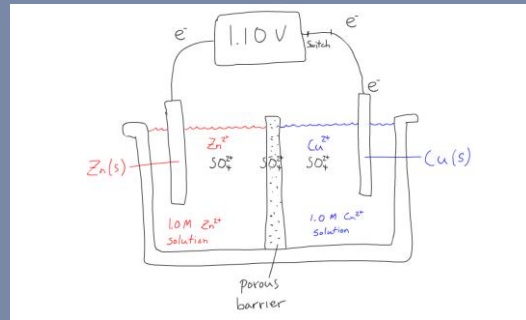
How Would a Teacher Create This?
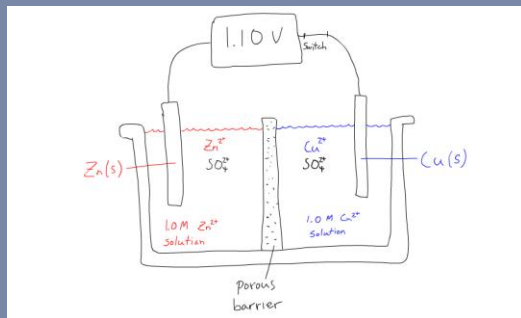
K-Sketch:
Rough Animation for Novices

- **Create an animation in 1-2 minutes**
- **properties of paper**
  - *Fast:* **Express ideas quickly**
  - *Simple:* **Learn fast, focus on high-level task**
 - *Powerful:* **Handle most rough jobs**

Informal UI Prototyping Tools

- **Support advantages of low-fi paper prototypes**
  - **brainstorming**
    - **consider different ideas rapidly**
    - **do not require specification of details**
  - **incomplete designs**
    - **need not cover all cases, just illustrate important examples**
- **Add advantages of electronic tools**
  - **evolve easily**
  - **support for "design memory"**
  - **transition to other electronic tools**
  - **allow end-user interaction**
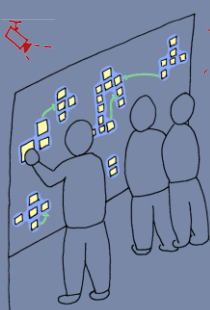
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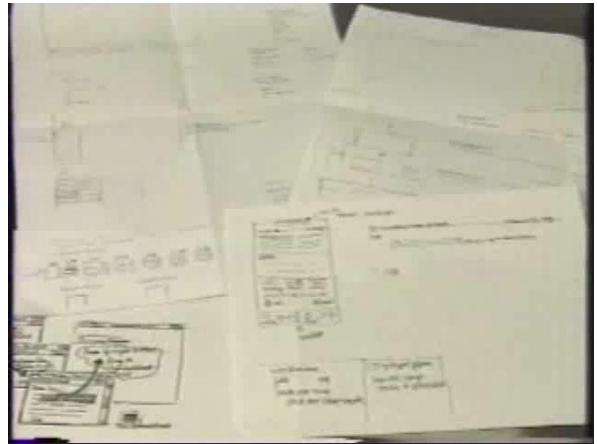
Designers' Outpost:
A Tangible Interface for Designing Information Architectures

- **Combines physical & virtual**
  - **physical post-its, virtual feedback**
- **Supports existing practice**
  - **affordances of paper**
  - **collaboration**
  - **large, persistent representation**
- **Adds advantages of e-media**
  - **editing, reuse, distribution**
  - **hand-off later to other tools**

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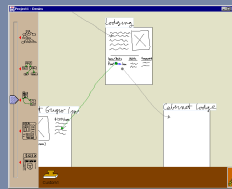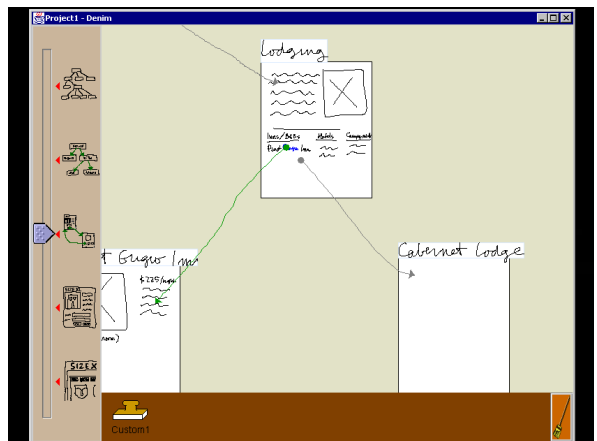

DENIM:
Designing Web Sites by Sketching

- **Early-phase navigation & interaction design**
- **Integrates multiple views**
  - **site map – storyboard – page sketch**

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Low-fi Prototyping & Testing

Travelshare

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SUEDE:
Informal Prototyping for Speech-based UIs

- **Support design practice**
  - **example scripts**
  - **Wizard of Oz (WoZ)**
  - **built-in iterative design**
    - **design – test – analysis**
- **Fast & fluid design**
  - **no speech recognition or synthesis**
  - **need not be programmer**

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GUIR
Group for User Interface Research
University of California at Berkeley

TOPIARY:
Informal Prototyping for Location-enhanced UIs

- **Create location-based scenarios**
  - **place people, places, & things on map**
- **Use scenarios as conditions on storyboard transitions**
- **Iterative design**
  - **Wizard of Oz (WoZ)**
  - **Place Lab Wi-fi location sensor**
- **Fast & fluid design**
  - **no GPS or other special hardware required**
  - **need not be programmer**

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Topiary
A Tool for Prototyping Location-Enhanced Applications

Yang Li   **James A. Landay**
Jason I. Hong

Computer Science Division   DUB Group
EECS Department   Computer Science & Engineering
University of California at Berkeley   University of Washington

SketchWizard:
Informal Prototyping for Pen-based UIs

- **Create pen-based UIs without needing recognizers in place**
- **Iterative design**
  - **Wizard of Oz (WoZ)**
- **Fast & fluid design**
  - **tools to support quick replacement of objects/reco results**

wizard's canvas   end-user's canvas

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SketchWizard: Wizard of Oz Prototyping of Pen-based User Interfaces

Richard C. Davis
U.C. Berkeley

T. Scott Saponas
U. of Washington

Michael Shilman
ChatterPop, Inc.

James A Landay
U. of Washington
Intel Research Seattle

Summary

- **Sketching allows exploration of many concepts in the very early stages of design**
- **As investment goes up, need to use more and more formal criteria for evaluation**
- **Informal prototyping tools bridge the gap between paper & high-fi tools**

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Next Time

- **Video Prototyping**
- **Reading**
  - **Beaudouin-Lafon & MacKay, pp. 1-22**

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