Early Stage Prototyping

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Interface Hall of Shame or Fame?

• Amtrak Web Site (US trains)

Interface Hall of Fame/Shame!

• Amtrak Web Site
  • Good
    – tells you what’s wrong
    – gets your attention
  • Bad
    – doesn’t label where to fix
    – tells you that you made an error, because you didn’t know their codes

Outline

• Review
• Types of Prototypes
• Video Brainstorming
• Forms of Video Prototyping
• Steps to Create Video Prototypes
• Go over Task Analysis assignment (#3)
• Low-fi prototyping
• Wizard of Oz technique
• Informal UI prototyping tools

Types of Prototypes

• Prototypes are concrete representations of a design
• Prototype dimensions
  – representation: form of the prototype
    • off-line (paper) or on-line (software)
  – precision: level of detail (e.g., informal or polished)
  – interactivity: watch-only vs. fully interactive
    • fixed prototype (video clips)
    • fixed-path prototype (each step triggered by specified actions)
    • at extreme could be 1 path or possibly more open (e.g., Denim)
  – open prototype (real, but limited error handling or performance)
  – evolution: expected life cycle of prototype
    • e.g., throw away or iterative
Video Brainstorming

- Participants act ideas out in front of a video camera
- Goal is to create as many new ideas as possible
  - each should take 2-5 minutes to generate & capture
  - run standard brainstorming session first for ideas
- Advantages
  - video easier to understand later than notes
  - participants actively experience interaction & preserve record of the idea

Video Prototyping

- Illustrate how users will interact w/ system
- Unlike brainstorming, video prototyping contracts the design space
- Quick to build
- Inexpensive
- Forces designers to consider details of how users will react to the design
- May better illustrate context of use

Forms of Video Prototypes

- May build upon paper prototypes or use existing software & images of real settings
- Narration optional
  - narrator explains events & others move images/illustrate interaction
  - actors perform movements & viewer expected to understand w/o voice-over
- Usually fixed prototypes, but can also use in open prototypes
  - live video as a Wizard of Oz tool & 2nd camera to capture
- If have good storyboards, should be able to create video prototype in 1 hour

Steps to Create a Video Prototype

1) Review field data about users & work practices
2) Review ideas from video brainstorm
3) Create use scenario in words
4) Develop storyboard of each action/event w/ annotations explaining what is happening in scene. Put each element on a card.
Steps to Create a Video Prototype

1. Review field data about users & work practices
2. Review ideas from video brainstorm
3. Create use scenario in words
4. Develop storyboard of each action/event w/ annotations explaining what is happening in scene. Put each element on a card.
5. Shoot a video clip for each storyboard card
   - avoid editing in the camera – just shoot in storyboard order
6. Use title cards to separate clips (like a silent movie)
   - if you make an error, rewind to last title card & reshoot

Example Videos

• TripMe
• What’s Happening
• GreenBean
• BikeNav

• We will put links online to these today. Watch them!

Video Prototyping Tutorial
by Wendy Mackay

Please watch this at home

The complete set of 90 minute videos & printable material is at http://www.lri.fr/~mackay/VideoForDesign/


Tips & Tricks

• Add structure to better explain context
  - begin with a title
  - follow with an "establishing shot"
  - shows user in context defined by the scenario
  - create series of closeup & mid-range shots, interspersed with title cards to tell the story
  - place a final card with credits at the end
• Use colored paper for title cards to make easy to find when editing/searching video
• “Time-lapse photography" lets images appear & disappear based on user interaction
  - e.g., illustrate pop-up menu by recording clip of user pressing button, pause camera, add menu, restart camera
• Be careful about taking video out of the original design setting for ethical reasons (context matters)

High Quality Video Prototypes

By Pedro Andrade, CIID
Task Analysis Assignment

- Due: Tue. 1/24
- Presentation by 1 team member
- A good report from prior offering of this course (UW CSE 440, Wi2008)
  - Green Bean
- Questions?

Fidelity in Prototyping

- Fidelity refers to the level of detail
  - High fidelity?
    - prototypes look like the final product
  - Low fidelity?
    - artists renditions with many details missing

Why Use Low-fi Prototypes?

- Traditional methods take too long
  - sketches → prototype → evaluate → iterate
- Can instead simulate the prototype
  - sketches → evaluate → iterate
  - sketches act as prototypes
    - designer “plays computer”
    - other design team members observe & record
- Kindergarten implementation skills
  - allows non-programmers to participate

Hi-fi Prototypes Warp

- Perceptions of the tester/reviewer
  - representation communicates “finished”
    - comments focus on color, fonts, & alignment
- Time
  - encourage precision
    - specifying details takes more time
- Creativity
  - lose track of the big picture

The Basic Materials

- Large, heavy, white paper (A3 or 11x17)
- 5x8 in./A5/A6 index cards
- Post-its
- Tape, stick glue, correction tape
- Pens & markers (many colors & sizes)
- Overhead transparencies
- Scissors, X-acto knives, etc.
Constructing the Model

- Set a deadline
  - don’t think too long - build it!
- Draw a window frame on large paper
- Put different screen regions on cards
  - anything that moves, changes, appears/disappears
- Ready response for any user action
  - e.g., have those pull-down menus already made
- Use photocopier to make many versions
Constructing the Model

Preparing for a Test

- Select your “customers”
  - understand background of intended users
  - use a questionnaire to get the people you need
  - don’t use friends or family
    - I think existing “customers” are OK (Rettig disagrees)
- Prepare scenarios that are
  - typical of the product during actual use
  - make prototype support these (small, yet broad)
- Practice to avoid “bugs”

Conducting a Test

- Four roles
  - greeter – puts users at ease & gets data
  - facilitator – only team member who speaks
    - gives instructions & encourages thoughts, opinions
  - computer – knows application logic & controls it
    - always simulates the response, w/o explanation
  - observers – take notes & recommendations
- Typical session is 1 hour
  - preparation, the test, debriefing
- Read the Gommol paper (1 page) for details on conducting a test
Evaluating Results

- Sort & prioritize observations
  - what was important?
  - lots of problems in the same area?
- Create a written report on findings
  - gives agenda for meeting on design changes
- Make changes & iterate

Advantages of Low-fi Prototyping

- Takes only a few hours
  - no expensive equipment needed
- Can test multiple alternatives
  - fast iterations
  - number of iterations is tied to final quality
- Almost all interaction can be faked

Wizard of Oz Technique

- Faking the interaction. Comes from?
  - the film “The Wizard of OZ”
    - “the man behind the curtain”
- Long tradition in computer industry
  - e.g., prototype of a PC w/ a DEC VAX behind the curtain
- Much more important for hard to implement features
  - speech & handwriting recognition

Problems with Low-fi Prototypes

- “Computer” inherently buggy
- Slow compared to real app
  - timings not accurate
- Hard to implement some functionality
  - pulldowns, feedback, drag, viz ...
- Won’t look like final product
  - sometimes hard to recognize widgets
- End-users can’t use by themselves
  - not in context of user’s work environment

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
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

DENIM:
Designing Web Sites by Sketching

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

Low-fi Prototyping & Testing

Travelshare
Summary

- Video prototypes allow us to quickly communicate how a user will use a design
- Low-fi testing allows us to quickly iterate – get feedback from users & change right away
- Informal prototyping tools bridge the gap between paper & high-fi tools

Further Reading

Prototyping

- Books
  - Paper Prototyping: The Fast and Easy Way to Design and Refine User Interfaces, by Carolyn Snyder, Morgan Kaufmann, 2003
- Articles
  - "Prototyping for Tiny Fingers" by Marc Rettig, in Communications of the ACM, 1994
- Web Sites
  - dub Group web site, for DENIM & SUEDE downloads, http://dub.washington.edu

Next Time

- Lecture on Conceptual Models & Interface Metaphors
- Reading
  - Norman Ch. 1 (subset)