Prototyping

Unit 4

Learning outcomes

- Understand the uses of different types of prototypes for different kinds/stages of design and be able to choose appropriately
- Know the basic techniques for low-fidelity prototyping
- Choose and apply the relevant techniques for your project

What is a prototype?

- A representation of a design before the final artifacts exist
  - Conceptual design → physical design
- To evoke reactions from stakeholders in the design process
  - Designers
    - Encourage communication and reflection
    - Answer questions and choose between alternatives
  - Users
    - Collect requirements, evaluate ideas
- A prototype is a model *not* a refined and finished product

- “…Prototypes provide the means for examining design problems and evaluating solutions. Selecting the focus of a prototype is the art of identifying the most important open design questions.”

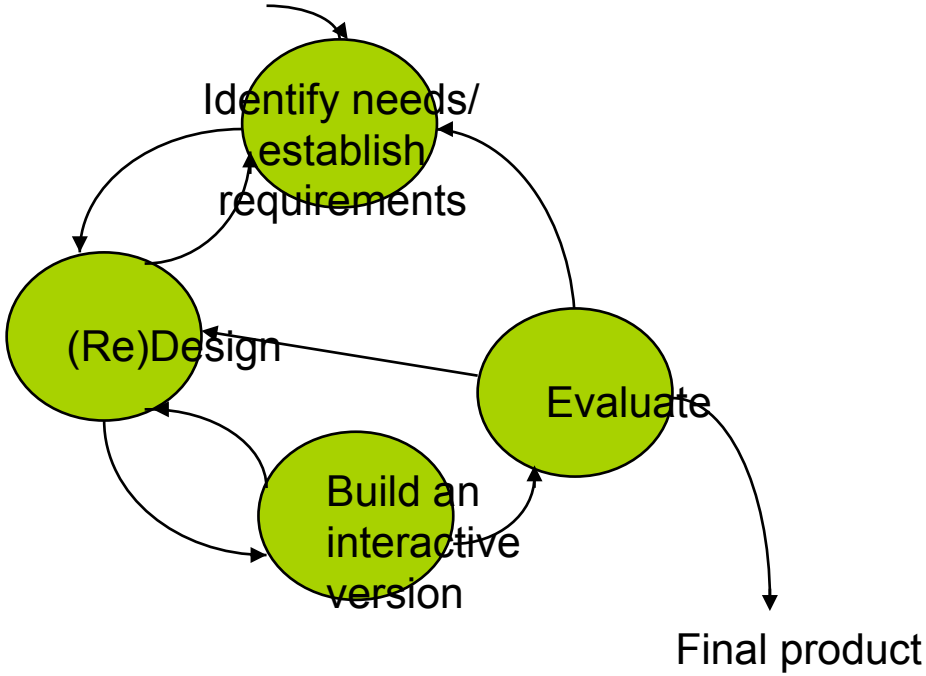
- Houde and Hill – What do Prototypes Prototype?
- http://www.viktoria.se/fal/kurser/winograd2004/Prototypes.pdf#search='Houde%20and%20hill%20prototype'

What are prototypes used for

- Design by doing
  - Clarify goals and requirements
  - “Reflective conversation with the materials”
- Give users the experience of use
  - Look and feel
- Test specific aspects
  - Compare alternatives
  - Make changes
- Show feasibility for buy-in
  - Proof of concept
  - Manage expectations

Iterations

- Quality is a function of the number of iterations and refinements a design undergoes



What can be a prototype?

- Every form of representation
  - Sketches
  - Graphics
  - Power-point slides
  - Role Play, Acting
  - Video
  - Diagrams & Frameworks
  - Hand Made Constructions
  - Machined Constructions
  - Virtual Models
  - Packaging
  - Spaces
  - • …

- WORK LIKE
- LOOK LIKE
- EXPERIENCE LIKE

Prototype fidelity

- we talk about the *fidelity* of user interface prototypes: a continuum

Low fidelity — High Fidelity

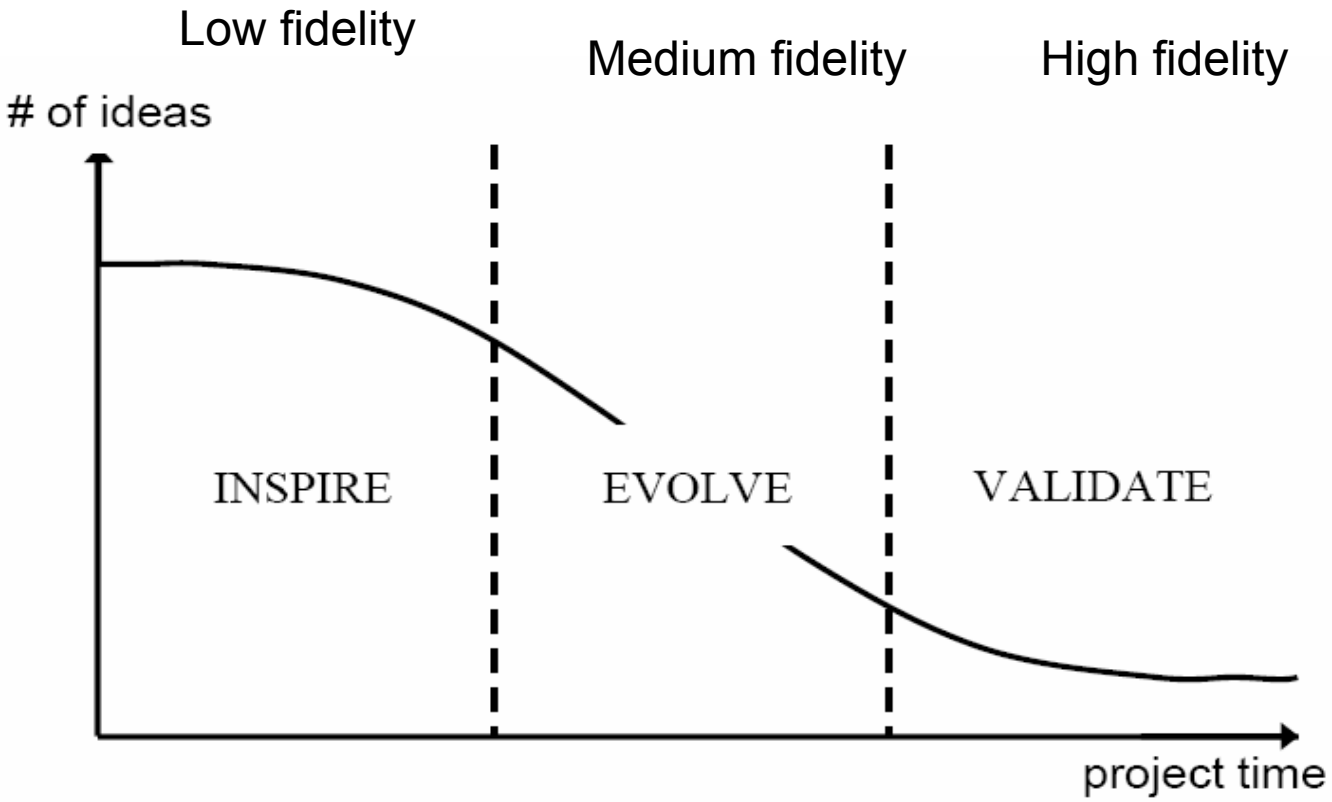
e.g. hand-drawn pencil sketches

e.g. Macromedia Director

start of design process

end of design

Prototype evolution



Low-fidelity prototype

- Purpose
  - depicts concepts NOT details
  - present design alternatives
  - suggest screen layouts, general look and feel of UI
  - find out usability issues as early as possible
- Form
  - quick, cheap and easily changed
  - Uses a medium which is unlike the final medium, e.g. paper, cardboard, post-it notes, story-board, wizard of Oz
  - sketches of screens, task sequences, etc
  - non-functional
- Use
  - design team can reason about the design
  - can be presented to sample users, although require a facilitator

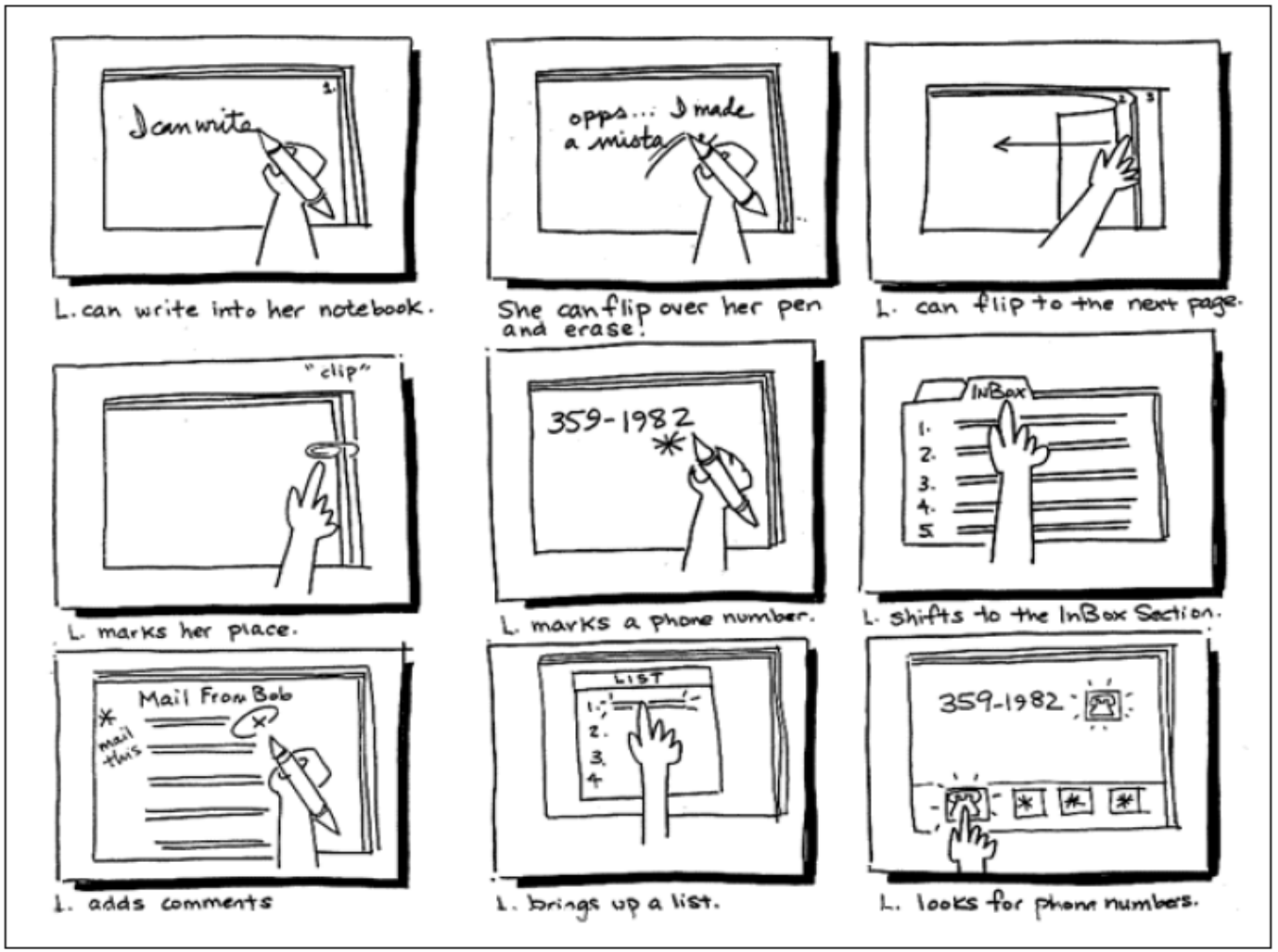
Benefits

- Support exploration and discussion of contexts, needs and requirements of new interactive systems.
- Set the basis for the overall design and facilitate co-operation and communication within a multidisciplinary-team by building a shared understanding of the type of system being developed.

Story-board

- It is a series of sketches showing how a user might progress through a task using the device
- sequences of activity in the Interface
  - they indicate the flow from one state or screen to the next
  - to begin with they may not include much detail of the interface
- Often used with scenarios, bringing more detail, and a chance to role play
- Used early in design

Story-board - example



Sketching

- Sketching is important to low-fidelity prototyping
- Do not be inhibited if you cannot design
  - Use simple and clear symbol
- overview of the layout without much details
- – numerous alternatives can be quickly created
- – should be produced in pencil (easily changed)
- – should be hand-drawn (rulers take too much effort)

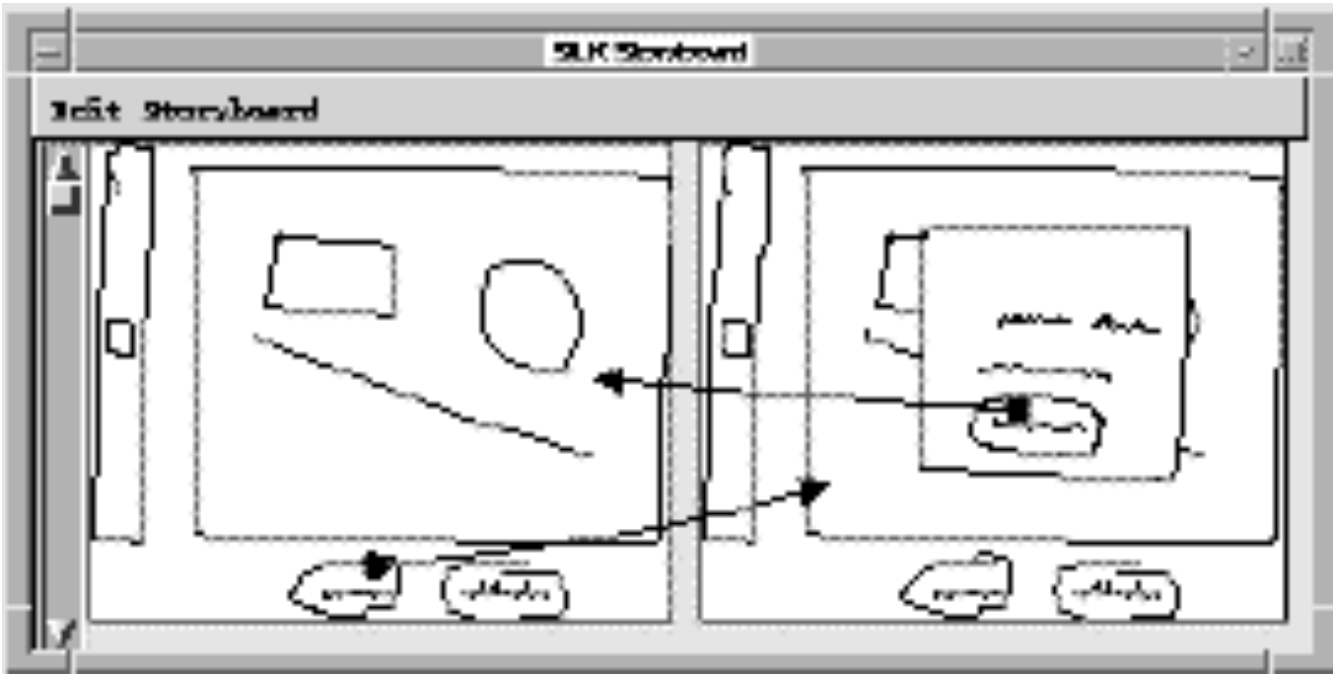
Figure 1 "Soft" model with replaceable Post-It note screens

Pool: Which one is better?

A

B

Electronic Sketches



http://dub.washington.edu/denim/

Pictive

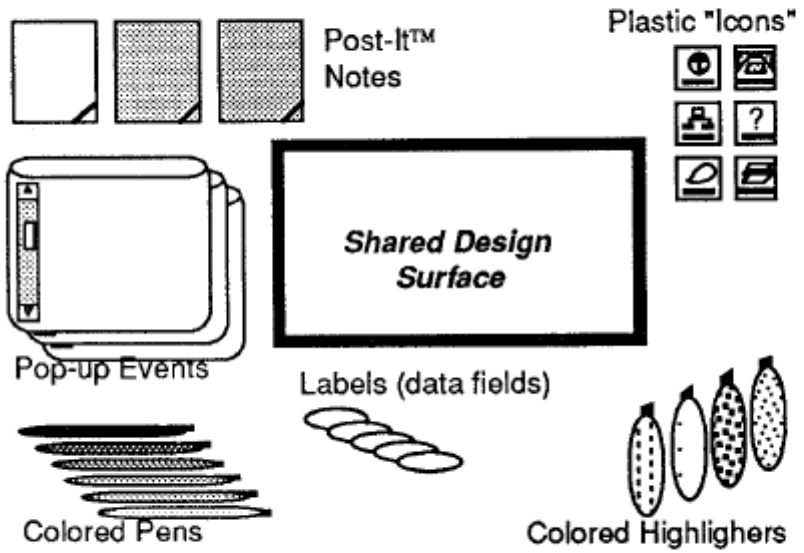


Figure 1. PICTIVE design objects.

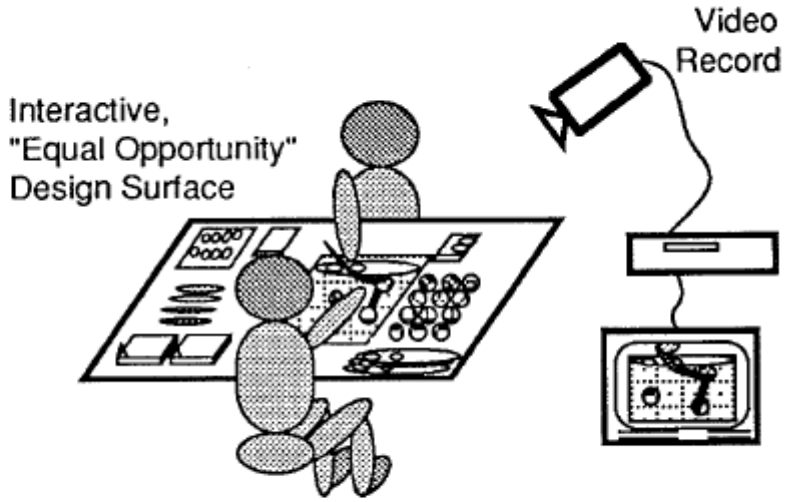
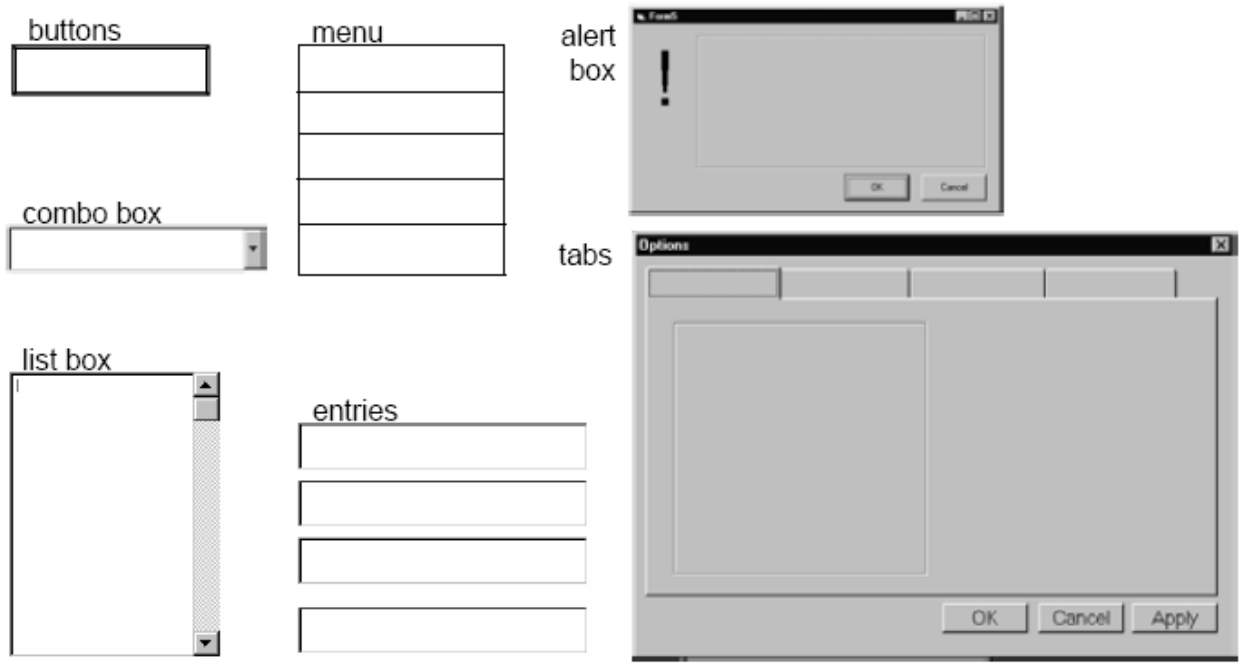


Figure 2. PICTIVE setting.

Pictive

Can pre-make paper interface components



Experience prototyping

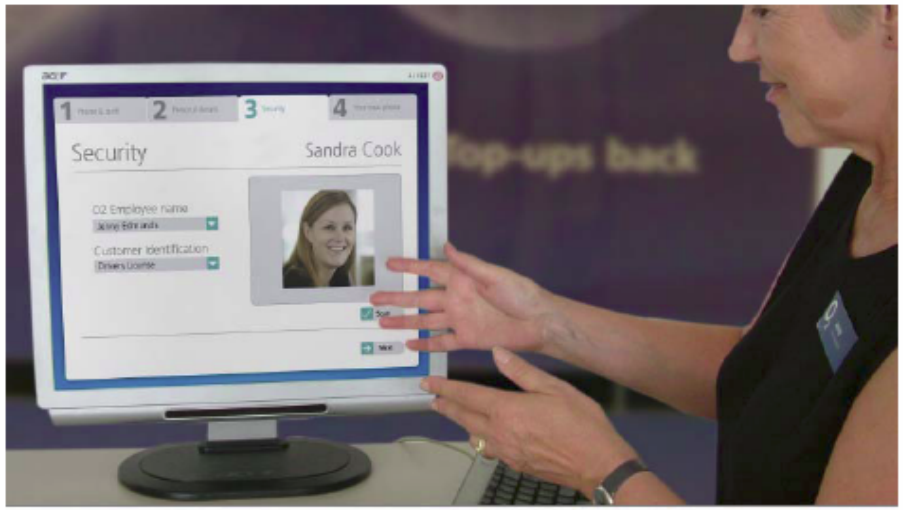
Figure 4: Bodystorming layouts for an airplane interior.

Jane Fulton Suri - IDEO

Role play

Meet Sandra. She's fed up with her telecom service and in search of a new mobile and a better deal. She heads over to O2, not knowing much about them, but the store looks inviting. It's her lunch break, so time is tight.

Jenny gives a 'Demo to Die For' with the actual model handset Sandra has chosen, showing off the latest *iMode* features. Sandra is particularly excited about being able to book cinema tickets directly. She's an avid movie buff.



No photocopying. No checking with managers. None of the typical delays associated with the approval process. From here on, Sandra's photo ID will confirm [illegible]ty on-screen.

Before she goes, Jenny packs the pouch, box, charger, dongle and manual into an O2 bag...

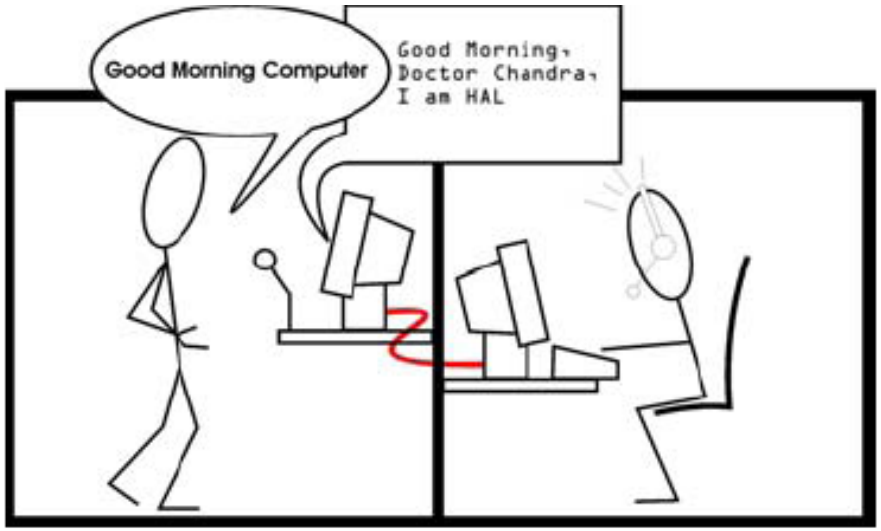
...and adds a refreshing bottle of O2 water to top off the experience.

Sandra leaves, smiling and satisfied.

Medium fidelity prototyping

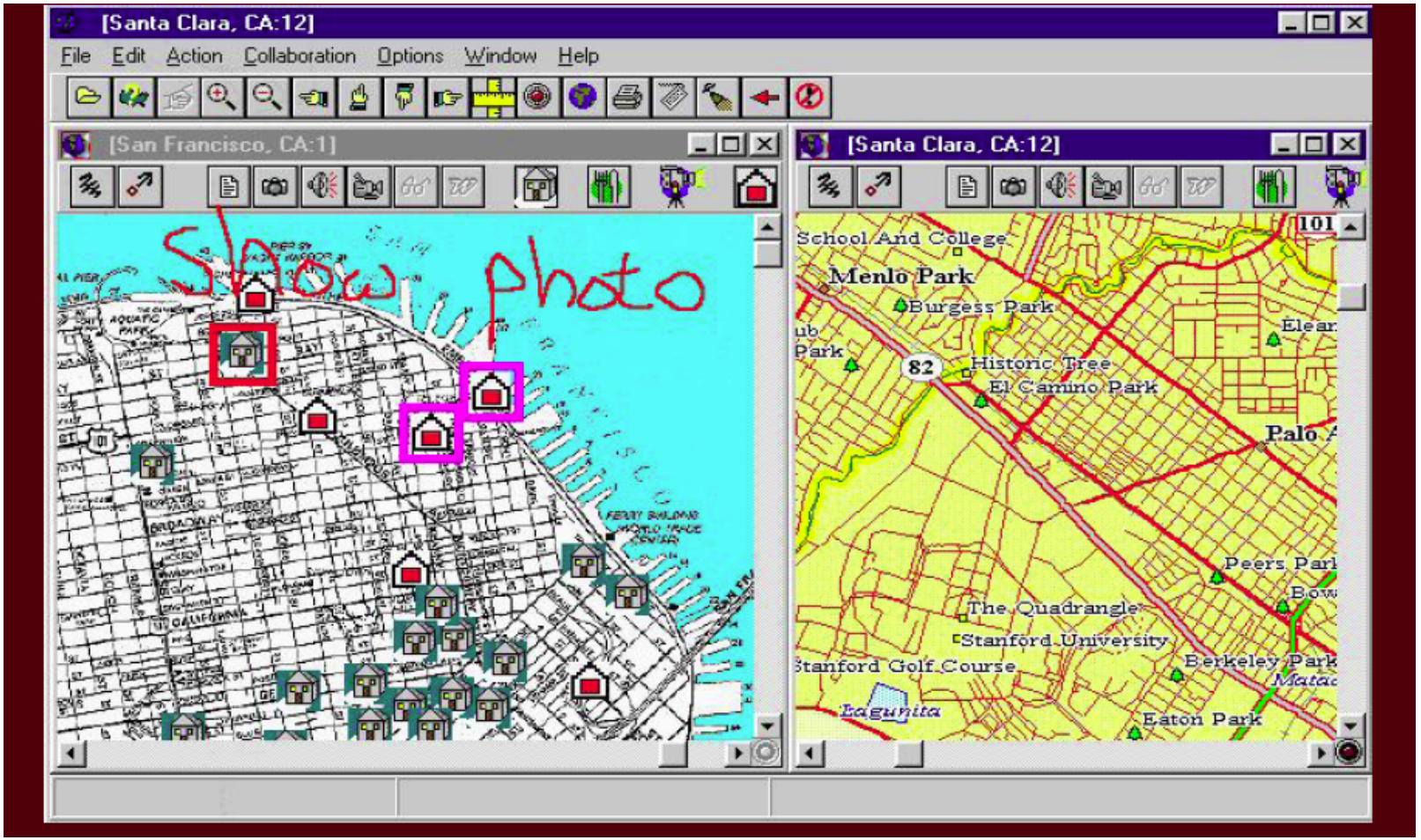
- Cleaned up – but not decorated
- Power-point
- Photoshop

Wizard-of OZ



- Some aspects of interface are implemented
  - Operation requires processing that is actually done by a human not visible to the user
  - The “wizard” intervention needs to be believable

Woz for multimodal design



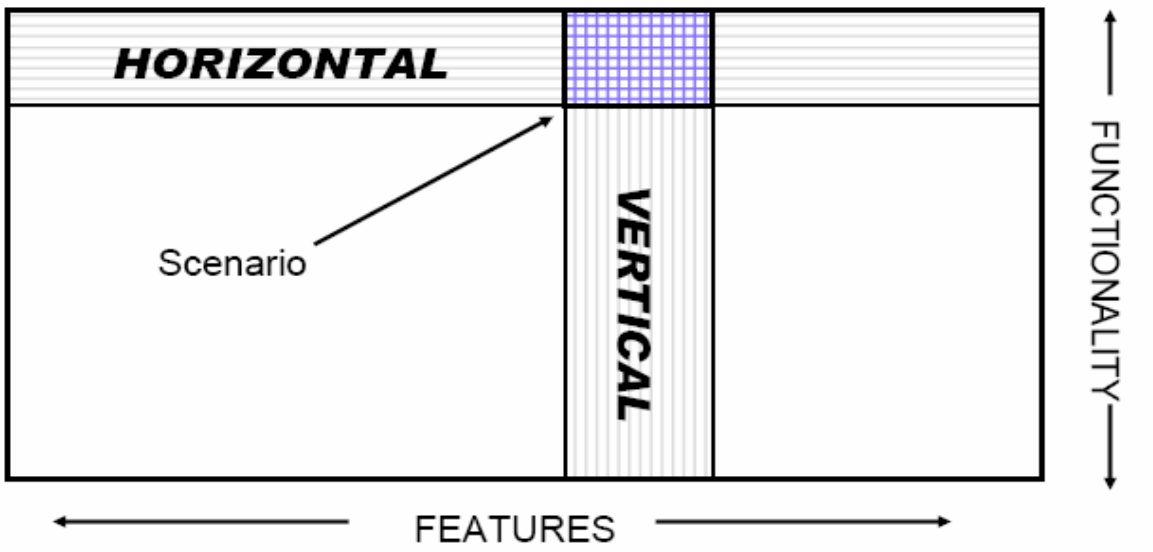
High fidelity prototypes

- Uses materials that you would expect to be in the final product.
- Prototype looks more like the final system than a low-fidelity version.
- Common environments include Macromedia Director, Visual Basic, and Smalltalk.
- Danger that users think they have a full system…….

Compromise

Two common types of compromise

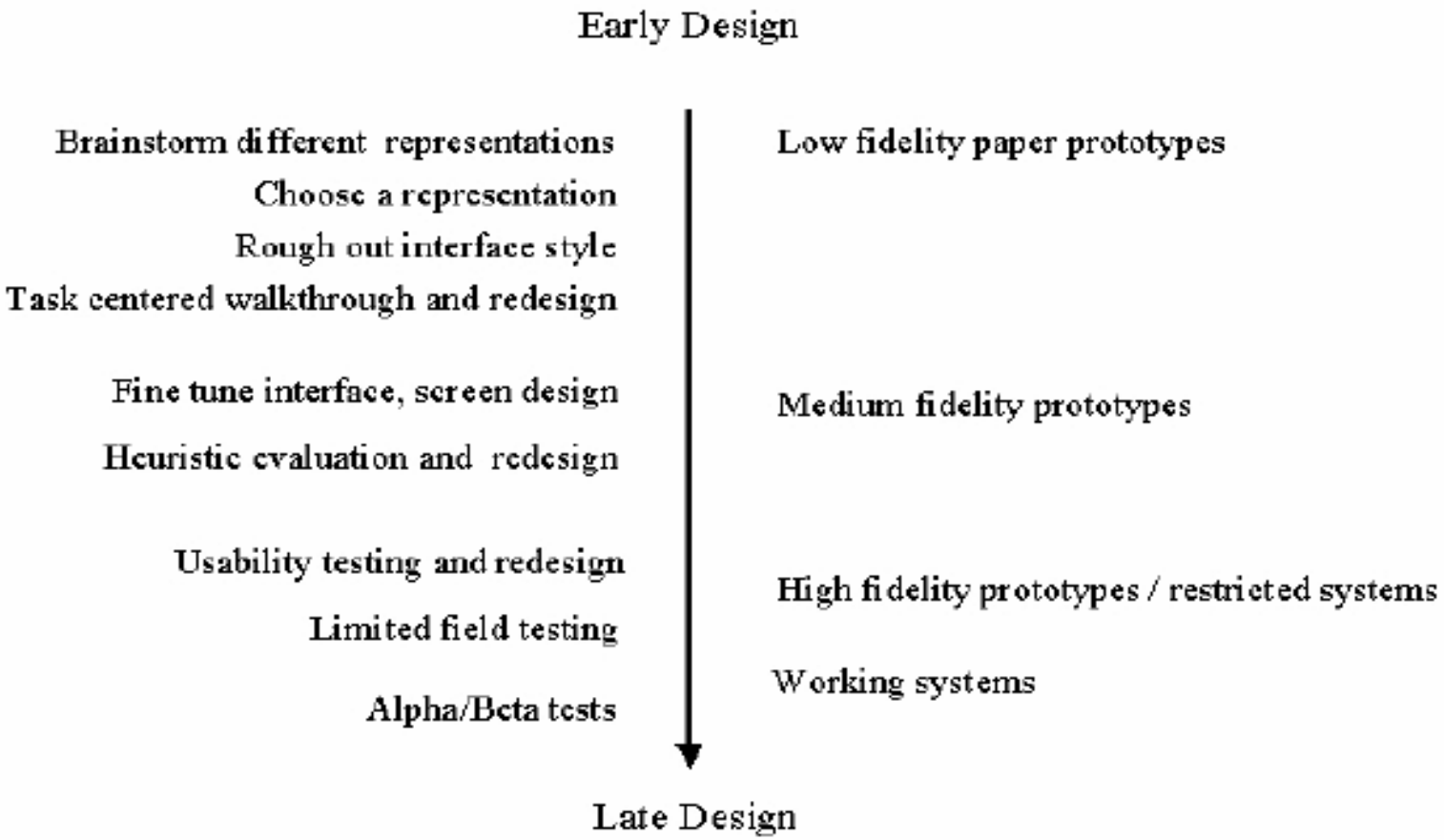
- ‘horizontal’ prototype: provide a wide range of functions, but with little detail
- ‘vertical’ prototype: provide a lot of detail for only a few functions



Construction

- Taking the prototypes (or learning from them) and creating a whole
- Quality must be attended to: usability,, reliability, robustness, maintainability, integrity, portability, efficiency, etc
- Product must be engineered
  - Evolutionary prototyping
  - ‘Throw-away’ prototyping

When to use them



Summary points

- Different kinds of prototyping are used for different purposes and at different stages
- Prototypes answer questions, so prototype appropriately
- Construction: the final product must be engineered appropriately
- Prototypes and scenarios are used throughout design

Reading

- Preece et al. Interaction design. Chapter 11 (2nd edition)

- http://balsamiq.com/