

Rapid Prototyping

Dimensions and terminology

Non-computer methods

Computer methods

Poster session preview

Exam recap

Design Artifacts

- **How do we express early design ideas?**

- No software coding at this stage

- **Key notions**

- Make it fast!!!
- Allow lots of flexibility for radically different designs
- Make it cheap
- Promote valuable feedback

***** Facilitate iterative design and evaluation *****

Dilemma

You can't evaluate design
until it's built

but...

After building, changes to the
design are difficult

The solution ...

Simulate the design,
in low-cost manner

Prototyping Dimensions

1. Representation

- How is the design depicted or represented?
- Can be just textual description or can be visuals and diagrams

2. Scope

- Is it just the interface (mock-up) or does it include some computational component?

3. Executability

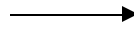
- Can the prototype be “run”?
- If coding, there will be periods when it can't

4. Maturation

- What are the stages of the product as it comes along?
 - Revolutionary - Throw out old one
 - Evolutionary - Keep changing previous design

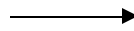
Rapid Prototyping Methods

Non-computer
(Typically earlier in process)



VS

computer-based
(Typically later in process)



Non-Computer Methods

- Goal: Want to express design ideas and get quick & cheap opinions on system
- Methods?



Design Description

- Can simply have a textual description of a system design
 - Obvious weakness is that it's so far from eventual system
 - Doesn't do a good job representing visual aspects of interface

Sketches, Mock-ups

- Paper-based “drawings” of interfaces
- Good for brainstorming
- Focuses people on high-level design notions
- Not so good for illustrating flow and the details
- Quick and cheap -> helpful feedback

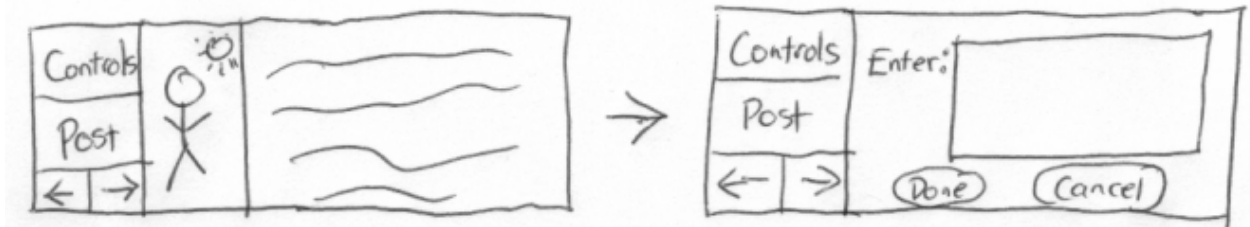


Storyboarding

- **Pencil and paper simulation or walkthrough of system look and functionality**
 - Use sequence of diagrams/drawings
 - Show key snap shots
 - Quick & easy



- **Example**



Scenarios

- Hypothetical or fictional situations of use
 - Typically involving some person, event, situation and environment
 - Provide context of operation
 - Often in narrative form, but can also be sketches or even videos

Scenario Utility

- Engaging and interesting
- Allows designer to look at problem from another person's point of view
- Facilitates feedback and opinions
- Can be very futuristic and creative

Other Techniques

- **Tutorials & Manuals**
 - Maybe write them out ahead of time to flesh out functionality
 - Forces designer to be explicit about decisions
 - Putting it on paper is valuable

Computer Methods

- **Simulate more of system functionality**
 - Usually just some features or aspects
 - Can focus on more of details
 - Typically engaging
 - Danger: Users are more reluctant to suggest changes once they see more realistic prototype

Terminology

- **Horizontal prototype**
 - Very broad, does or shows much of the interface, but does this in a shallow manner
- **Vertical prototype**
 - Fewer features or aspects of the interface simulated, but done in great detail
- Early prototyping
- Late prototyping
- Low-fidelity prototype
- High-fidelity prototype

Prototyping Tools

1. Draw/Paint programs

- Ex. Photoshop, CorelDraw

2. Scripted simulations/slide shows

- Ex. PowerPoint, Hypercard, Macromedia Director, HTML

3. Interface Builders

- Ex. Visual Basic, Delphi, UIMX
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Prototyping Tools

1. Draw/Paint programs

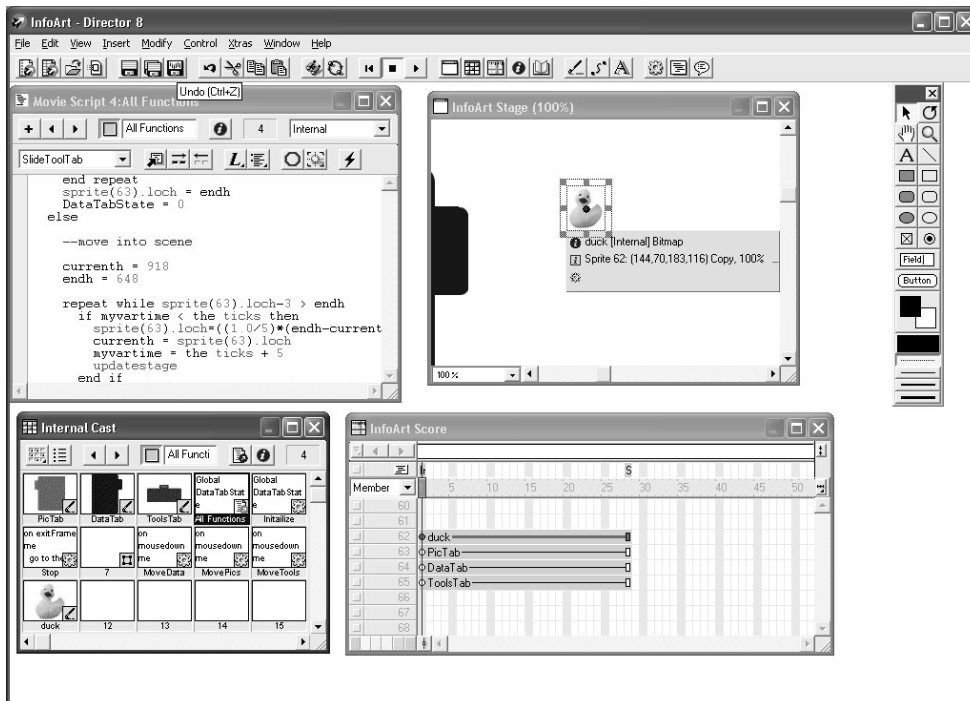
- Draw each screen, good for look
- Thin, Horizontal Prototype
- Adobe Photoshop



Prototyping Tools

2. Scripted Simulations / Slide show

- Put storyboard-like views down with (animated) transitions between them
- Can give user very specific script to follow
- Often called *chauffeured prototyping*
- Macromedia Director



Prototyping Tools

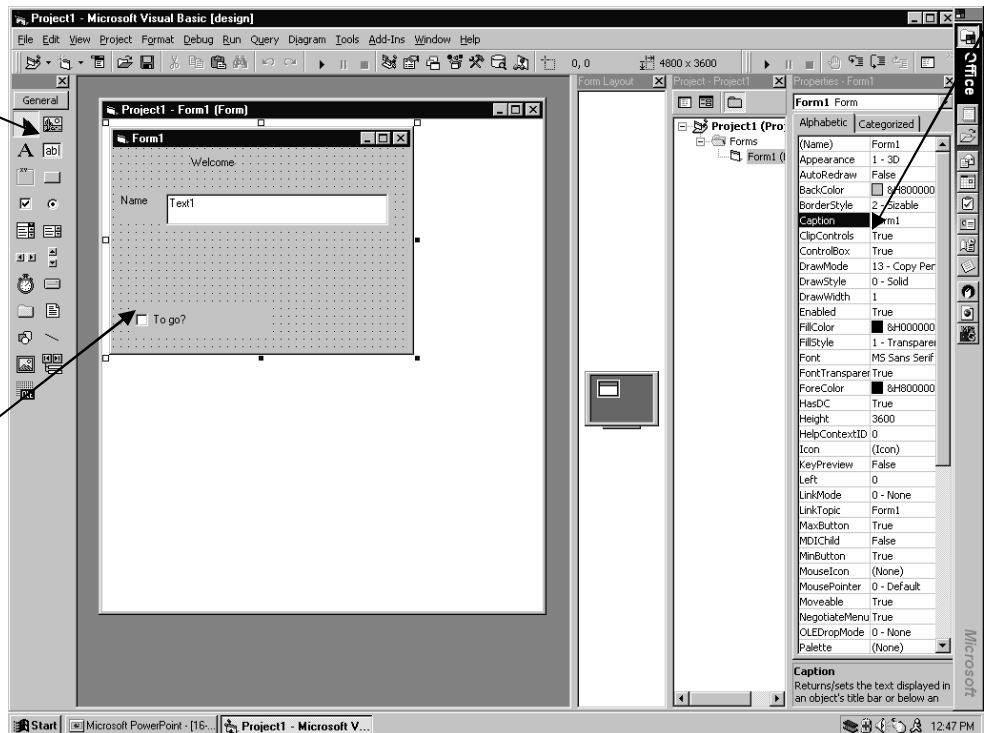
3. Interface Builders

- **Tools for laying out windows, controls, etc. of interface**
 - **Have build and test modes that are good for exhibiting look and feel**
 - **Generate code to which back-end functionality can be added through programming**

Control properties

UI Controls

Design area



Prototyping Tools

- **Good features**
 - **Easy to develop & modify screens**
 - **Supports type of interface you are developing**
 - **Supports variety I/O devices**
 - **Easy to link screens and modify links**
 - **Allows calling external procedures & program**
 - **Allows importing text, graphics, other media**
 - **Easy to learn and use**
 - **Good support from vendor**

Prototyping

Early

Low-fidelity

Sketches,
mock-ups

Scenarios

Storyboards

Slide shows

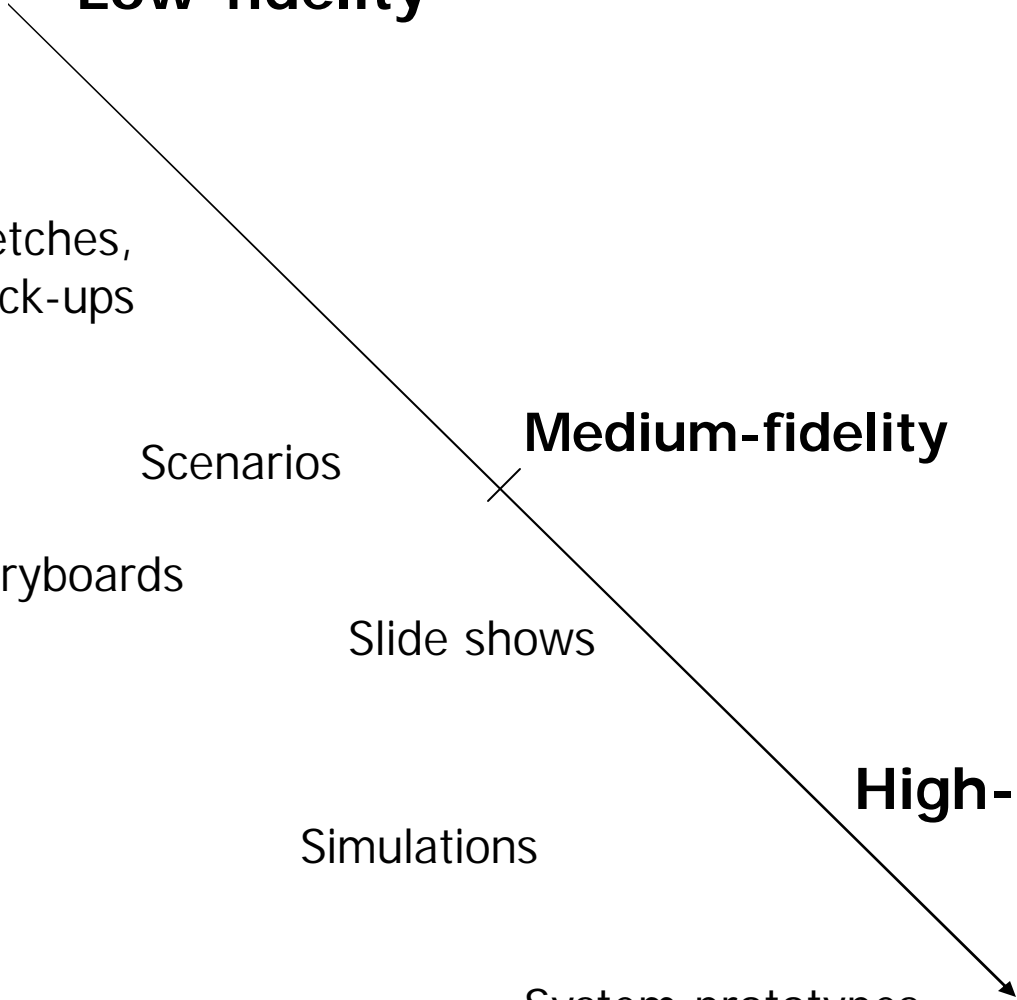
Medium-fidelity

Simulations

High-fidelity

System prototypes

Late



Prototyping Technique

- **Wizard of Oz** - Person simulates and controls system from “behind the scenes”
 - Use mock interface and interact with users
 - Good for simulating system that would be difficult to build



Can be either computer-based or not