



Using Prototypes and Storyboards

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Overview

- Introduce storyboards and prototypes
- Discuss high- and low-fidelity prototyping
- Describe the development process



What are prototypes?

- Prototypes are incomplete representations of a target system for testing and design purposes.
- Prototyping is an essential element of an iterative design process.

logo

home help

time date

Search

- Assets
- Work Orders
 - Service Request
 - Emergencies
 - Preventative
 - Close
- Inventory
- Administration
- Accounts
- Reports

Work Order

work order Number

Description

status
Date Needed
Code
Requestor

Est. Hours

Team

Shift



What are storyboards?

- Storyboards are a series of illustrations that represent a process, product, or idea.
- Storyboards are used for multimedia and movie development.

Client:

Project:

Version:

Date:

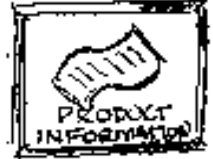
Hayes ALL ABOUT HAYES



ONLINE DOCUMENTATION



Hayes News Newsletter



PRODUCT INFORMATION



Advertising

EMBOSSED GROBE

Script:

Graphics:

Audio:

Interaction:



What are animatics?

- Animatics are moving storyboards.
- Used for *Star Wars*, *Raiders of the Lost Ark*, *Titanic*, *The Perfect Storm*, *X-Men**, *Clerks**, *Jurassic Park**, and *Dragonheart**

* included on DVD



Why create prototypes or storyboards?

- Fast, cheap, and easy
- Settle disputes
- Try out alternate designs
- Focus on the user
- Provoke innovation
- Provide common point of reference



Recommended by ISO 13407

Four essential user-centered design activities:

- understand and specify the context of use
- specify the user and organizational requirements
- produce designs and prototypes
- carry out user-based assessment

ISO 13407 is the standard for Human-Centered Design Processes for Interactive Systems.



Save money

100x savings when a software problem is found and fixed in the design phase versus after delivery.

- Boehm, B. 1987. "Industrial software metrics top 10 list." *IEEE Software*, 4(5), 84-85.



Reduce code

Prototyping reduces code by 40%.

- Boehm, B., Gray, T. W., Seewaldt, T. 1984. "Prototyping versus specifying: A multiproject experiment." *IEEE Transactions on Software Engineering.*, 10(3), 290-303.



Prototyping will answer these questions...

- How much will fit on a screen?
- How do we handle navigation?
- How can we accommodate different user skill levels?
- Are the buttons and icons intuitive?
- Does the design match the users' expectations?



Low-fidelity prototypes

- Represent planned designs
- Can be created with paper, pencil, transparencies, and screenshots
- Often used for early design testing and validation



Advantages of low-fidelity prototypes

- Less intimidating to users
- Easy to modify
- Keep people focused on tasks and issues rather than "superficial" things
- No bugs
- Low cost
- Can evaluate multiple concepts



Disadvantages of low-fidelity prototypes

- Limited error checking
- Poor detail
- Facilitator driven
- Navigation and flow limitations
- Not effective for time on task or aesthetics (fonts, colors, etc.)



High-fidelity prototypes

- Mimic the actual product as closely as possible
- Can be created with Director, Authorware, Visio, Toolbook, VB, or HTML tools
- Often used to fine-tune designs and for functional testing



Advantages of high-fidelity prototypes

- More functionality
- User driven
- Look and feel issues can be addressed
- Marketing and sales tool

High-fidelity prototyping was used to design Space Station Freedom.



Disadvantages of high-fidelity prototypes

- Can be expensive
- Time-consuming to create



Ten steps to a successful prototype

- 1 Obtain buy-in from upper-level management.
- 2 Have decision makers sign off on the prototype.
- 3 Start early.
- 4 Be realistic.
- 5 Know the competition.
- 6 Keep to the schedule.



Ten steps to a successful prototype (cont)

- 7 Share the prototypes with everyone on the team.
- 8 Be flexible.
- 9 Be ready to make changes.
- 10 Keep your prototypes as a product history (and as evidence...).



Keep to the schedule

It will be "wrong" so don't obsess:

- "The prototype will be done by 5:00 this afternoon."
- "Tomorrow at 10:00 we will demo the prototype."



Prototyping supplies

- Paper and note cards
- Scissors
- Rulers
- Colored pencils and pens
- Highlighters
- Post-it glue
- Transparencies
- Correction tape



How to create prototypes

- Create a template.
- Focus on movement and placement rather than detail.
- Keep it simple.
- Number the pages.



Design sessions

- Be creative and have fun.
- Identify alternatives.
- Identify potential problems and limitations.
- Take advantages of opportunities.
- Construct models, not illustrations.



Testing methods

- Think-aloud protocol
- Point-and-describe
 - Pretend that the paper prototype really works, then describe what you think will happen as you click. For example, where you will go when you click "View Report"?
- Wizard of Oz



Test checklist

- Objectives
- List of questions
- List of tasks and/or scenarios
- Non-disclosure agreement
- Facilitator script
- Prototypes, backups, and supplies
- Refreshments (and payment)



Roles - Facilitator

- Welcomes users and puts them at ease
- Has users fill out forms
- Explains and runs the test
- Encourages users to express their thoughts
- Makes sure the test runs on time



Roles - "Computer"

- Runs the computer
- Moves the model in response to user's "actions"
- Makes sounds/special effects as needed (sound of hard drive, etc)



Roles - Observer

- Takes notes
- Try writing one observation per index card



Testing tips

- Provide different pointers to make it fun and because a finger is too big (magic wand, etc.)
- Ask user to "voice the click" — say "click the send button"
- Let the users write on the prototype and interact with it as needed



What to look and listen for

Places where users:

- ask questions
- seem confused or frustrated
- appear hesitant
- make a navigational “wrong turn”
- do not understand messages



Exercise

Order-taking screen for “Pizza Nut”

- pizza toppings and 3 pizza sizes
- drinks



Recommended resources

- *Human Factors for Technical Communicators*
by Marlana Coe
- *Film Directing Shot by Shot*
by Steven Katz
- “Prototyping for Tiny Fingers”
in *Communications of the ACM* 4/94
by Mark Rettig
- “Low vs. High--Prototyping Debate”
in *Interactions* 1/96
by Jim Rudd, Kenneth Stern, Scott Isensee



Conclusion

“When I am working on a problem I never think about beauty. I only think about how to solve the problem. But when I have finished, if the solution is not beautiful, I know it is wrong.”

- Buckminster Fuller (1895-1983)



Questions?

Feel free to call or e-mail me. Or,
catch me later at the conference!

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Please fill out
the eval form.
Thanks!

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