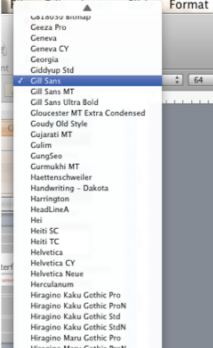


CSI 60: User Interface Design

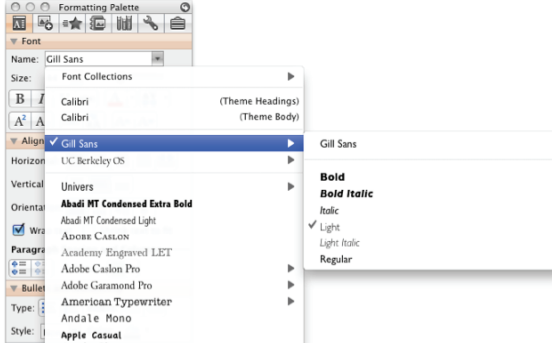
The Design Cycle & Brainstorming 01/25/10

Berkeley
UNIVERSITY OF CALIFORNIA

Font Selection in Keynote '08



Font Selection in PowerPoint 2008

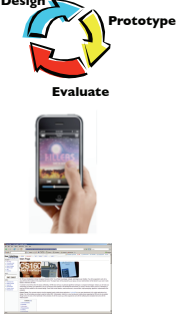


Review

Course overview

Project theme

Course mechanics



Due Last Friday

Wiki account
Course petition

Due Today (before class)

Reading comment

1 per lecture;
cs160/cs160Readings

Due Wednesday

Individual Project Proposal

Bring pen and paper to class

Due Monday Feb 1

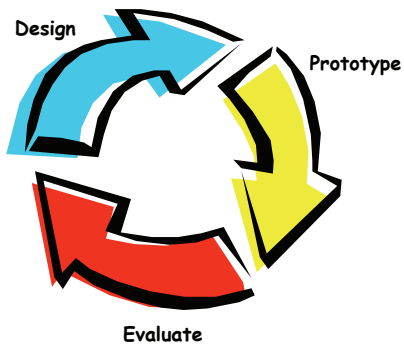
Individual Programming Assignment
Orchard Lab: 9am-4pm Mon



Topics for Today

1. The Design Cycle
2. Brainstorming

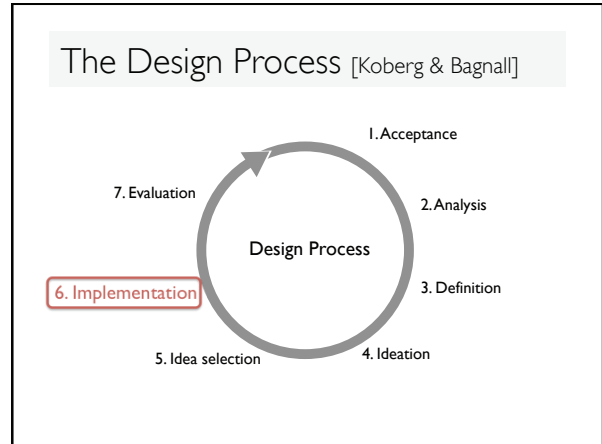
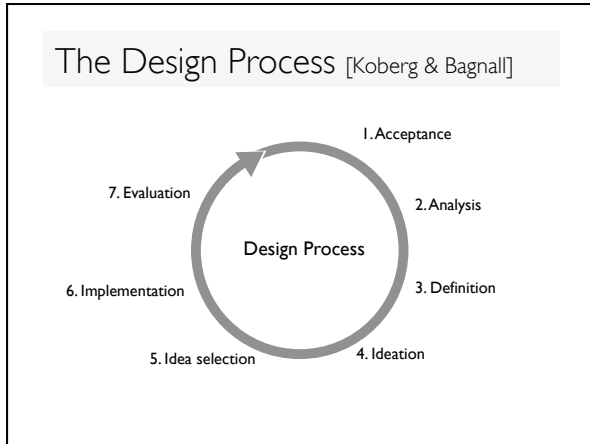
The Design Cycle



The Art of UI Design



A soufflé is eggs, butter, milk & flour, but the difference between soaring and sinking is in the execution.



Acceptance

Getting started
 Because of a deadline
 Because of possible reward
 Because you are forced to

Commitment
 Time
 Resources
 Responsibility

Key is to set motivation


Analysis

Understand Users and Tasks
 Who are the users?
 What are their tasks?
 Observe and test, don't guess

Tools
 Notebook
 Tape recorder
 Camera
 Video camera

Definition

Focus on the problem
Choose appropriate level of detail



Not "bicycle cup-holders" but "helping cyclists to drink coffee without accidents"



Ideation

Brainstorming
Stretch mental muscles
Loosen up with simple games
Do homework
Seed with related ideas/objects

Get physical
Sketch
Make models
Act out

IDEO rules
One conversation at a time
Stay focused
Encourage wild ideas
Defer judgment
Build upon idea from others

Aim for quantity

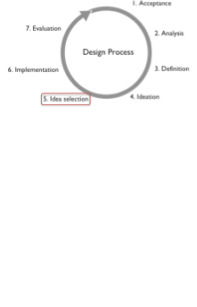



Idea Selection

Define importance of each idea
Does it address problem
Will target users like it
Is hardware available
Is software available
What is the cost
Market window
...

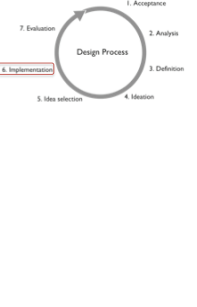
Rank ideas according to your criteria

Pick top N
Choices depend on resources and stage of the project



Implementation

Scale up low → high fidelity



Implementation

Scale up low → high fidelity
Low-fidelity (quick, cheap, dirty)
 sketches, paper models, foam core, ...

Implementation

Scale up low → high fidelity
Low-fidelity (quick, cheap, dirty)
 sketches, paper models, foam core, ...

Medium fidelity (slower, more expensive)
 Flash, JavaScript, AJAX, ...

Implementation

Scale up low → high fidelity
Low-fidelity (quick, cheap, dirty)
 sketches, paper models, foam core, ...

Medium fidelity (slower, more expensive)
 Flash, JavaScript, AJAX, ...

High fidelity (slowest, most expensive)
 The full interface

Implementation Example: Web Design

Sites created at multiple levels of detail
 Sites iteratively refined at all levels of detail
 Iterate quickly to see what works

Site Maps → Storyboards → Schematics → Mock-ups

Evaluation

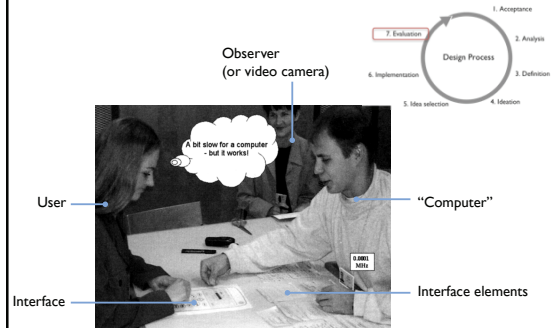
Many types of evaluation:

- Prototype walkthroughs
- Think-aloud studies
- Wizard-of-Oz
- Performance comparisons

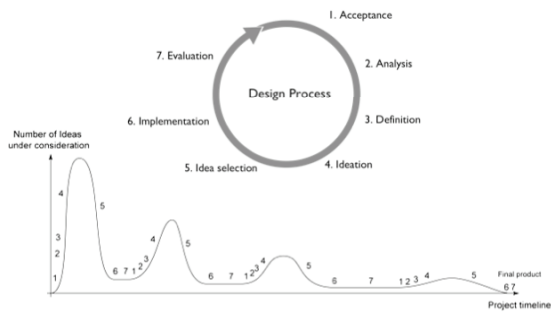
Type of evaluation chosen depends on the level of implementation, etc.



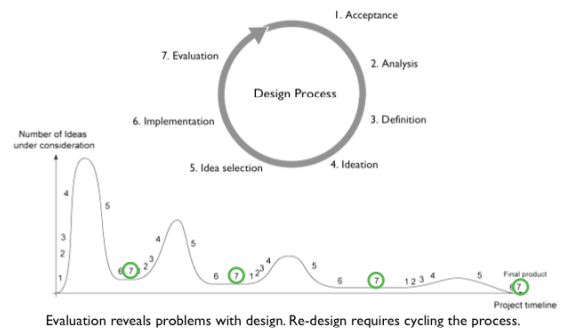
Evaluation Example: Paper Prototype Walkthrough

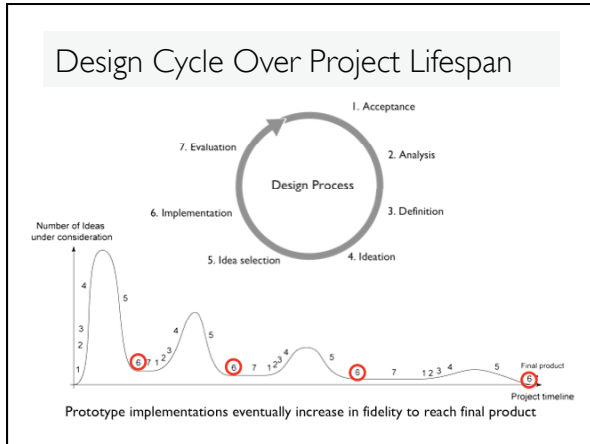


Design Cycle Over Project Lifespan



Design Cycle Over Project Lifespan





Comparison

[Lewis & Rieman]

Who will use?
 What are their tasks?
 Plagiarize
 Rough out a design
 Think about design
 Create a prototype
 Test it with users
 Iterate
 Build a production version
 Track use
 Evolve the design

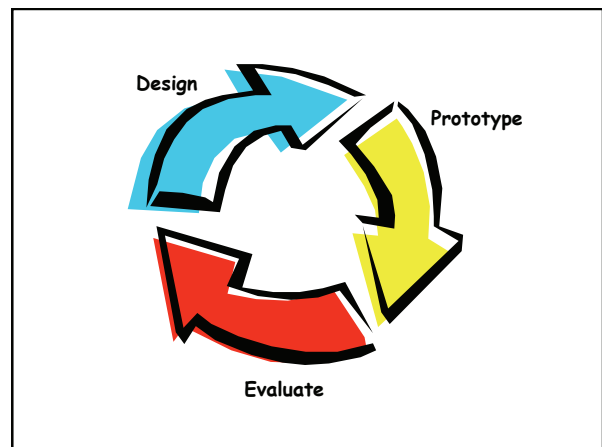
[Koberg & Bagnall]

Comparison

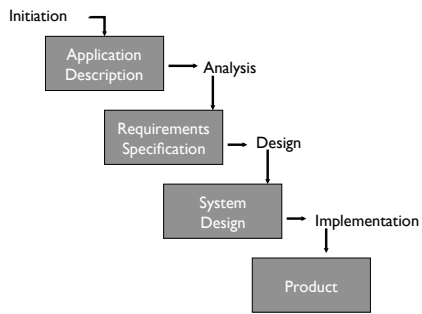
[Lewis & Rieman]

Who will use? [2]
 What are their tasks? [2]
 Plagiarize [4]
 Rough out a design [4,6]
 Think about design [6]
 Create a prototype [6]
 Test it with users [7]
 Iterate [7->1]
 Build a prod. version [6]
 Track use [7]
 Evolve the design [7->1]

[Koberg & Bagnall]



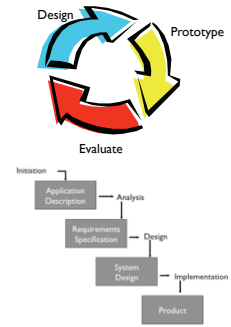
Waterfall Model (Soft. Eng.)



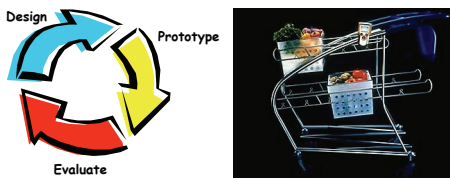
Comparison

Focus differs
WF has no feedback
 High cost of fixing errors:
 increases by 10x at each stage

 Iterative design finds problems
 earlier



Video: The Deep Dive





How well do they follow the cycle?
 What do they do for each step of the cycle?
 How many cycles do you think they went through?

Brainstorming

The Psychology of Creativity

Conformity: the enemy of creativity

Groups and organizations encourage conformity

Part of "brand" or "corporate identity"

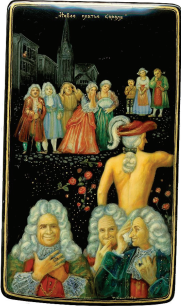
The Psychology of Creativity

Pressure to conform affects judgment and perception:

The emperor's new clothes

McCarthyism: if you're not one of us, you're one of them...

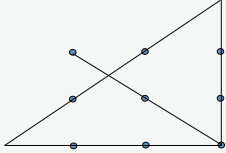
People in minority will adopt majority opinion and even manufacture their own explanation of it.



Enhancing Creativity

Thinking outside the box:

Draw a series of 4 straight lines through all the points below, without lifting pen from paper:

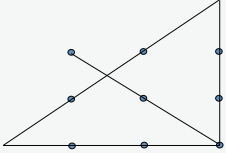


Why Is This Hard?

We adopt expectations about the solution

Based on conventions

Based on what we believe the questioner expects



Creativity and Dissent

Authentic dissenters – people who really disagree with group – can enhance group creativity

Their opinion needn't be right – but they can free the group from stagnant thinking.

The originality of the minority stimulates the majority

STAND UP



Dissent IS Patriotic

Dissent and Authenticity

The benefits of dissent are weakened if

Dissent is not real: A deliberate “devil’s advocate” in the group can actually stifle dissent, because the majority know the opinion is manufactured.

Dissent is not encouraged: Polite or pro-forma acceptance is not enough.

IDEO’s Brainstorming Rules

1. Sharpen the Focus
2. Playful Rules
3. Number your Ideas
4. Build and Jump
5. The Space Remembers
6. Stretch Your Mental Muscles
7. Get Physical



Aim for quantity
Hope for quality

Sharpen the Focus

Posing the right problem is critical neither too narrow, nor too fuzzy

Not “bicycle cup-holders” but “helping cyclists to drink coffee without accidents”



Number Your Ideas

Obvious but very useful

Helps keep track of them when the brainstorm is successful (and 100 or more ideas are in play)

Allows ideas to take on an identity of their own

Build and Jump

Build to keep momentum on an idea:

“shock absorbers are a great idea; what are other ways to reduce coffee spillage on bumps?”

Jump to regain momentum when theme tapers out:

“OK, but what about hands-free solutions?”

Concept Refinement

Premature idea rejection is a serious barrier to good design.

A big differentiator between good designers and great ones is the latter's ability to successfully develop unusual ideas

This requires a strong instinct to be able to distinguish fatal vs. minor flaws in an idea

The Space Remembers

Covering whiteboards or papering walls with text is extremely useful in group work.

It's a very effective form of external (RAM) memory for group

Even better, it's shared RAM. Helps group share understanding



Stretch your Mental Muscles

Warmups: word games, puzzles

Get immersed in the domain:
go visit the toy shop, or the
bicycle shop, phone shop etc...

Bring some examples of the
technology to the brainstorm



Get Physical

Sketch

Make models

Act out



Magregdo: Designing Interactions, p712

Next Time

Lecture Topic: Sketching, Storyboarding & Critique

Bring pen and paper to lecture

Don't forget!

Read, then write a comment on the wiki

Individual Project Proposal, Due Jan 27

Programming Assignment I, Due Feb 1