CSE 440: Introduction to HCI
User Interface Design, Prototyping, and Evaluation

Lecture 07: Storyboarding and Video Prototyping

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Tuesday / Thursday
10:30 to 11:50
Tasks in Your Projects

Say what is accomplished, not how

Real tasks that people currently encounter, or new tasks your design will enable

Reasonable coverage of the interesting aspects of your problem and your design space

Range of difficulty and complexity

- Park at the zoo on a weekday
- Park Friday night in Ballard business district
- Park at the airport
Combine with Other Methods

Personas
Concept Mapping
Competitive Analysis

“If you want to create a product that satisfies a broad audience ..., logic will tell you to make it as broad in its functionality as possible to accommodate the most people. Logic is Wrong.”
Combine with Other Methods

Personas
Concept Mapping
Competitive Analysis

Example Personae:
Parent concerned about safety
Carpenter transporting tools
Executive wants a sporty car

More specific is effective
Give the person detail
Give them a name
Make it believable

Careful of stereotyping
Web littered with examples
Combine with Other Methods

Personas
Concept Mapping
Competitive Analysis
Combine with Other Methods

Personas
Concept Mapping
Competitive Analysis

Method 16
Combine with Other Methods

Personas
Concept Mapping
Competitive Analysis
Using Tasks in Design

Write up a description of tasks
formally or informally
run by people and rest of the design team
get more information where needed

Manny is in the city at a restaurant and would like to call his friend Sherry to see when she will be arriving. She called from a friend’s house while he was in the bus tunnel, so he missed her call. He would like to check his missed calls and find the number to call her back.
Using Tasks in Design

Rough out an interface design
discard features that do not support your tasks
or add a real task that exercises that feature
major elements and functions, not too detailed
hand sketched

Produce scenarios for each task
what person does and what they see
step-by-step performance of task
illustrate using storyboards
Scenarios are design specific, tasks are not.

Scenarios force us to show how things work together, fill in details with examples.

But these are only examples, and we may need to look beyond early flaws.

Convey design in storyboards.
Tasks, Personas, and Scenarios

**Task**: a design-agnostic objective

**Persona**: a fictional person with a backstory

**Scenario**: narrative that demonstrates a persona completing a task using a particular design

**Use Case**: in software engineering, describes requirements using one or more scenarios
Project Status

Looking Forward

2e: Task Review due this Friday 1/27
2f: Design Check-In (3x4) Due Tuesday 1/31
2g: Design Review (1x2) Due Friday 2/3
2h: “Getting the Right Design” Report due 2/6
Presentations in lecture 2/9 and section 2/10

Other Assignments

Reading 2 Due this Friday 1/27
Tasks in Sketching and Design

Tasks guide your exploration of a design

Creating scenarios for each task illustrates

what a person does
what they see
step-by-step performance of task with a design
Sketching

Theater: Shattuck Cinemas
Phone: (510) 665-1342 Dist. 1-5 mi
Address: 2122 Shattuck Ave
Berkeley, 94709
Cost: $8.50 normal, $6.00 senior, $4.00 matinee

Art of War ★★★★
(10:00) - (1:00) 4:00 - 7:00 - 10:00
Bittersweet Motel ★★★★★
(11:00) - (1:30) 4:00 - 6:30 - 9:00
Godzilla ★★★
(10:30) - (2:00) 5:30 - 9:00
The Cell ★★★★★
(11:00) - (1:00) 3:00 - 5:00 - 7:00 - 9:00

Store for the Style-Challenged

As it should be...
 outf1#1  outf1#2  outf1#3

(pre-scripted to watch so you don't have to choose.)
Sketching

MAP SHOWING PARKING AVAILABILITY BASED ON INPUTTED DATA, INPUTTED ON MAP

- Different colors
- Highlights availability
# Sketching and Tasks

## Attendance List

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>SID #</th>
<th>Enrollment</th>
<th>Section</th>
<th>Major</th>
<th>Level</th>
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<tbody>
<tr>
<td>Lee</td>
<td>Benjamin</td>
<td>12345678</td>
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<td>Santos</td>
<td>Allen</td>
<td>23456789</td>
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<td>Vermette</td>
<td>Joshua</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

- **38 Present, 2 Absent**
- **Done**
- **Take Attendance**
- **Look Up: Sc**
- **Highlights student**
- **Refresh w/new info**
- **Send to main menu**

- **Send to Attendance View**
Sketching and Tasks

Scenario 1: "I want to listen to alternative music"
Sketching and Tasks
Sketching and Tasks
Sketching and Tasks
Illustrating Time

Storyboards come from film and animation

Give a “script” of important events

leave out the details

concentrate on the important interactions
Storyboards

Can be used to explore

Much faster and less expensive to produce

Can therefore explore more potential approaches

Notes help fill in missing pieces of the proposal

Relative to film, these function as sketches
Storyboards

Can be used to convey

Effective storyboards can quickly convey information that would be difficult to understand in text

Imagine explaining this in text, for various audiences
Storyboards

Can illustrate key requirements and leave open less important details of design
Basic Storyboard
Storytelling

Stories have an audience

Other designers, clients, potential end-users, stakeholders, managers, funding agencies

Stories need to match audience and purpose
Potential Purpose of a Story

Purpose allows choosing effective details

Stories have a purpose

Share information about people, tasks, goals
Giving insight into people who are not like us, convey details that might be lost in generalities
Put a human face on analytic data
Spark design concepts and encourage innovation
Share ideas and persuade on potential value

Quesenberg and Brooks
Stories Provide Context

Characters
  Who is involved

Setting
  Environment

Sequence
  What task is illustrated
  What leads a person to use a design
  What steps are involved

Satisfaction
  What is the motivation
  What is the end result
  What need is satisfied

Details of interface features and components are not necessarily surfaced, they can often be developed and conveyed more effectively with other methods.

Can help surface details that might otherwise be ignored.

Grocery store application:
  - use with one hand while pushing a shopping cart
  - privacy of speech input
  - split attention

Amal Dar Aziz
Amal’s Guide to Storyboarding

Don’t use this to illustrate all the UI features & components.

*This is what paper prototyping is for!

Red & Sean were bored after going to the Bluegrass Festival, & decided to find out what else they could do...

Dude, what do we do?!

Let me use your phone!

Instead, show why & when features would be used.
Amal’s Guide to Storyboarding

Let’s try out Burmese superstar. Amal rated it, & it sounds cool!

Sure!

Show satisfactions & finally, be creative! You don’t need to be an artist to get a point across.

Kid
Let's try out Burmese superstar. Amal rated it, & it sounds cool!

Sure.

Show satisfactions.

& finally, be creative! You don't need to be an artist to get a point across.
Storytelling

Good stories

Understand audience
Provide context of use
Are well-motivated
Memorable
Evokes a reaction
Evokes empathy
Illustrate experience
Convey emotions
Short and to-the-point

Bad stories

Do not account for audience
Boring or un-engaging
Fantastical or unrealistic
Wrong story for purpose
Too long to hold attention

tl;dr
Elements of a Storyboard

Visual storytelling

5 visual elements

- Level of detail
- Inclusion of text
- Inclusion of people and emotions
- Number of frames
- Portrayal of time

To better characterize design intuitions:

- Gather and analyze artifacts
- Semi-structured interviews
- Survey focused on identified elements

Truong et al, 2006
1. How Much Detail?

Guideline: too much detail can lose universality

Scott McCloud
1. How Much Detail?

Sketching People

Star people by Bill Verplank

(c) 2009 SACHA CHUA

Keith Haring
1. How Much Detail?
1. How Much Detail?

Unnecessary details distract from the story.
2. Use of Text

Guideline: It is often necessary, but keep it short
2. Use of Text

Guideline: It is often necessary, but keep it short

1. At home, Mary checks her blood pressure.
2. After a few simple key presses, her blood pressure readings get sent to a clinic.
3. The information is made available to her doctor.

Short text is more effective, less likely to over-explain
Watch for cases where text induces weird biases
3. Include People and Emotions

Guideline: Include people experiencing the design and their reactions to it (good or bad)

Remember, the point of storyboards is to convey the experience of using the system
4. How Many Frames?

Guideline: 4-6 frames is ideal for end-users

- Less work to illustrate
- Must be able to succinctly tell story
- Potentially longer for design clients

More is not always better

- May lose focus of story
- May lose attention
4. How many frames?
4. How many frames?

People found the extra panels were not needed
5. Passage of Time

Guideline: Only use if necessary to understand
5. Passage of Time

Guideline: Only use if necessary to understand

Inclusion of the clock distracts
Storyboards for Comparing Ideas

**Authoritative**

- Trainer: Hey! You need to exercise at least 20 days a month.
- Cell phone is used to keep track of one's fitness goal.

**Supportive**

- Cell phone is used to keep track of one's fitness goal.
- Support: Hey! I will keep a record of days you exercise.
- Okay! Let's do it.
- Good job! You've exercised more than 20 days a month!
Storyboards for Comparing Ideas

Cooperative

Let's use our cell phones to keep a record of the number of days that we exercise.

1st Week

2nd Week

Yeah! We are almost there. Good job!

Okay! Let's work together to meet a goal of exercising for at least 2 weeks.

Competitive

Let's compete to see who exercises more.

1st Week

2nd Week

Yeah! I win this week! Let's see who wins next week.

Okay, let's do it!
Storyboards for Comparing Ideas

**Negative Reinforcement**

I'm going to use my phone to keep track of my fitness goals.

Oh no! My virtual garden on my phone is ugly. I need to exercise to keep the flowers alive!

Now I have lots of flowers in my garden!

**Positive Reinforcement**

I'm going to use my phone to keep track of my fitness goals.

Each time I exercise, I will get another item added to my garden.

Now I have a full garden!
Examples and Tricks in Storyboarding

This is also the focus of Reading 2

Due Friday night
(not needed for Friday section)

Will go over these quickly, especially the videos

You then view them outside of class
Drawing is Hard

Will a picture work instead?

It is so dark Jane can hardly read her book.

She gestures in front of her special pendant to turn on the lights.

The lights turn on!

Finally, she can read happily.
Existing Images from Other Sources

http://designcomics.org/

http://www.pdclipart.org/
Blur Out Distracting Details

Using image editing software to simplify photos into sketches
Tracing Photos

Baudisch and Chu, 2009
Mapping the Space of Interaction
Comic Presentation

Thought bubbles argue for the design

Gukeisen et al, 2007

Field trial participants not only reported changing their behavior — reducing single occupant trips by around 10% — but they also told us about encouraging their peers and colleagues to do the same during and after the field trial.
Selective Use of Color

An F?! But I studied for hours yesterday!!

YESTERDAY
- Productive: 20%
- Distracted: 80%

3:30am - 5pm
Facebook

Recommendation: Use Facebook blocker

Recommendation: Use Facebook blocker
Route Maps

You... Central Park
2 hours until dinner with Simon
What to do?

You enable geocaching mode on your phone and spend the next two hours exploring

Dinner!
Route Maps

The movie is over and you are hungry, but you don’t know the area...

... eventually settling on a diner and getting directions through your phone.

You check your phone for a list of places people often go from here...

and discuss the food options with your friends...
Value of Animation or Video

Can illustrate critical timing

Can be more engaging than written or storyboard

Can help convey emotion (e.g., voice, music)

Can show interactive elements more clearly

Can be self-explanatory

If done well, can be an effective pitch

But you need to keep it quick and effective
Most Important Trick: Stop Motion

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Mackay-StopAction.mp4
Most Important Trick: Stop Motion

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Mackay-StopActionResult.mp4
Video Prototypes

May build upon paper prototypes, existing software, and images of real settings

Narration optional

Narrator explains, actors move or illustrate interaction

Actors perform movements and viewer expected to understand without voice-over
Steps to Create a Video Prototype

Review field data

Review ideas from brainstorm

Create text for usage scenarios

Develop storyboard, with each scene on a card, illustrating each action/event with annotations explaining what is happening
Steps to Create a Video Prototype
Steps to Create a Video Prototype

Shoot a video clip for each storyboard card
   Avoid editing in the camera, just shoot scenes

Use titles to separate clips
   Like a silent movie

Digital changes these tradeoffs, but respect the spirit of doing this quickly to get point across
   If you make an error, just reshoot it
Prototyping Microsoft Surface

Prototyping Microsoft Surface

Lessons from Prior Video Prototypes

Narration, Pace, and Flair

Three versions of “Don’t Forget”

Using Projectors and Simple Props

“Buddy Map”

Watch for Pace and Scene Relevance

“Consumester”
Narration, Pace, and Flair

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Don't-Forget-1.mp4
Narration, Pace, and Flair

Don't Forget!

Video Prototype

1 February 2007

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Don't-Forget-2.mp4
Narration, Pace, and Flair

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Don't-Forget-3.mp4
Using Projectors and Simple Props

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Buddy-Map-Backcountry.mp4
Watch for Pace and Scene Relevance

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Consumester.mp4
Lessons from Prior Video Prototypes

Split Presentation, Simple Effects

“PickUp”

Still-Frame, More Effects

“Graffiti Karma”
Split Presentation, Simple Effects

Daniel Swisher
Ian Crofoot

Mitchell Ishimitsu
Sunil Garg

PickUp
It's more than a game it's a community

CSE 440 Video Prototype

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Pickup.mp4
Still-Frame, More Effects

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Graffiti.mp4
Lessons from Prior Video Prototypes

Scenario with a Contrast

“ParkSmart” (note that screens are static images)

Playful while Keeping Pace

“Plantr”
Scenario with a Contrast

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Parksmart.mp4

But watch for pace and scene relevance
Playful while Keeping Pace

http://courses.cs.washington.edu/courses/cse440/videos/prototyping/Plantr.mp4
Reminder on Fidelity

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Mug-Sketch.mp4
http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Mug-HiFi.mp4
Fidelity Takes Time: Stay Low Fidelity

If you need a video, do you really need footage?

If you need an animation, do you really need Flash?

If you need a photo, do you really need to shoot?

Completely made-up bar length
But it is probably at least this bad
Range of Purposes

Illustrating Low-Level Techniques
  Microsoft Surface examples convey timing

Illustrate Designs
  Focus in this course

High-Level Visions
  StarFire
  Knowledge Navigator
  A Day Made of Glass
Sun’s “Starfire” (1994)

http://courses.cs.washington.edu/courses/cse440/videos/videoprototyping/Vision-Sun-Starfire.mp4
Apple’s “Knowledge Navigator” (1987)

Corning’s “A Day Made of Glass” (2011)

Summary

Think about your audience
Think about your time constraints
Think about the purpose of your story

Think about options for effective presentation