Advanced Design of Interactive Systems

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ExSitu lab, Inria & Univ. Paris-Sud  
14-22 February 2018
Storyboards
Scenario ➔ Storyboard ➔ Video Prototype

**Design scenarios** use words to describe situations
Create multiple paragraphs to explore options

**Storyboards** break up the action and illustrate it
forcing you to think more deeply about interaction
They take more time, so select options carefully

**Video prototypes** are dynamic sketches of interaction
Acting out the interaction
enhances thinking deeply,
remembering ideas
sharing with users, designers, management, stakeholders
deciding what to program or test
### Regular storyboard

<table>
<thead>
<tr>
<th>Title</th>
<th>User(s)</th>
<th>Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify key interaction points in the scenario</td>
<td>Establishing shot</td>
<td>First interaction</td>
</tr>
<tr>
<td>Examine the key ideas from the design space (brainstormed ideas)</td>
<td>Closeup shot</td>
<td>Second interaction</td>
</tr>
<tr>
<td>Illustrate the interaction between user and novel system</td>
<td>Mid-range shot</td>
<td>Third interaction</td>
</tr>
<tr>
<td>Describe key issues on the right</td>
<td>Wide shot</td>
<td>Forth interaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final credits</td>
</tr>
</tbody>
</table>
Storyboard structure

**Buena Vista CommApp**

- **System title**
  - Group

- **Ann and Pierre are engaged, but live in different towns. He's in a meeting…**
  - **intertitre**
  - explain the situation

- **establishing shot**
  - show the situation

- **mid-shot**
  - show Pierre and the technology

- **Pierre leaves a message**
  - **intertitle**
  - continue the story

- **close-up**
  - show the interaction

**Group members**

- Anne Dubois
- Bob Martin
- Charles Smith

**credits**

Group members
Storyboards

**Moment**  Highlight what matters, omit the rest

*Interaction points*

**Frame**  Sense of place, position & focus

*Start with overview, then show details*

*Intertitles, wide shots, close-ups*

**Image**  Evoke characters, objects, environments

*Focus on the user’s interaction*

*Use simple special effects*

**Words**  Communicate ideas, voices

*Intertitle (silent film)*

*voice-over (narrated), dialogue*

**Flow**  Guide reader

*Linear or branching*
Branching
Storyboards
Create a storyboard

Write a tiny, branching one-act play,
   sub-divided into one-paragraph micro scenes
   that describes the interaction
Create one or more characters, each with:
   name, age, gender, motivation
   usually with a profession, expertise
   usually with a goal or motivation
Create one or more realistic setting(s):
   date, time, place, context
Identify a series of events over a period of time
Create a branching storyboard

The first set of interaction points represent how people *currently* interact with an existing system.

Create a use scenario, composed of these interaction points, then suggest design alternatives in a branching storyboard.
Create a branching storyboard

The first set of interaction points represent how people currently interact with an existing system.

Create a use scenario, composed of these interaction points then suggest design alternatives in a branching storyboard.
Revisit your design dimensions:
   How can you systematically explore alternatives along several dimensions?

For example: Remote communication

*Shared data (4):*
   - activity level, text, photo, video

*Synchronicity (3):*
   - live synchronous, back&forth, asynchronous

*Access control (4):*
   - sender, recipient, shared, system

Creates a combinatorial explosion of possibilities:

\[ 4 \times 3 \times 4 = 48 \text{ possibilities} \]
Latin Square example

Shared data:
- activity level, text, photo, video

Synchronicity:
- live synchronous, back&forth, asynchronous, live synchronous

Access control:
- sender, recipient, shared, system

Combine alternatives, one per category:
- shared activity level, live synchronous, sender control
- shared text, back & forth, recipient control
- shared photo, asynchronous, shared control
- shared video, live synchronous, system control

Use combinations for the branching storyboard
Branching storyboard

At each interaction point, consider:
- alternative ideas
- extreme uses
- effects of different situations
- breakdowns

Create an instrument
- explore new options

Did you change your design space?
Can you justify your design choices?
Stanford – Cognitive Aids in the Operating Room

Provide cognitive aids to doctors in crisis situations

Observational studies and interviews in real operating rooms
Observational and controlled experiments in OR simulator
Participatory design workshops to create prototypes

Shift from “cognitive aids” and “checklists”
to resource management for people, data, processes

CURUS, 2011
Prototyping the screen
Prototyping the crash cart
Exercise: Storyboard

Convert your design scenario into a storyboard to illustrate the key aspects of your design concept

Goal
Illustrate the design scenario, emphasizing interaction

Procedure
Divide the design scenario into a series of interaction points
Create a series of images and text to illustrate each point
Exercise: Branching Storyboard

Begin with your storyboard
   Identify a set of interaction points
   Create at least one instrument

Examine your design space dimensions
   Update it as necessary to match the current design
   Generate 3 interaction methods per design dimension

Use a latin square approach to recombine the interaction points along multiple dimensions

Record your storyboard on the interaction point forms
Story
Portraits
Representing a story or process

How do you capture the key elements of a story, activity or process?

Start with critical object or incident interviews to elicit stories:
  Capture images, audio, video, hand-written notes

Summarize the process as a ‘Story Portrait’
  Step-by-step, illustrate the story with sketches
Story portraits

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I worked with two developers on this project

(1)  (2)

the first one asked me to specify everything

so we lost a lot of time

for example, all the distances between elements

I wasn’t using any at that time so I set up one:

- 12 columns
- gutter size
- max: 1200px

it is the basis of our work

the second developer asked me which grid I was using

he can express dimensions with %
I have a well defined grid.

The grid is completely overridden by the "crazy" typography.

1. Overriding the grid
2. The text remains inside the grid but changes its orientation.
3. The zombie craziness is contained in a shape.
Shades of yellow

to reveal my process

I didn’t want to go far away from white but I wanted another color with subtle boundaries.

I made different shades of yellow.

I used colors to reveal the process underneath and the time spent on it.

I pour some.

and then respect it to have only a very thin layer.
An inverted process: Creating a book about being strip-searched

You have to rip apart the book, page by page, to read it.

When designing the book, I had to imagine what it was going to look like.

I see the book as an architecture, the structure is at the object level.

The [redacted] document was just a set of A4 pages, it made no sense.

Bind it

Print it

Fold it
Story Portraits

Ask users to respond to them and give feedback
Over-riding the grid

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Design Walkthrough
Design Walkthrough

Based on Structured Walkthroughs (Yourdon, 1979)

Goal: Find bugs in code
Technique: Systematic step-by-step analysis of a document by a small group
Principles: Line-by-line analysis
Constructive criticism
Limited time
Design Walkthrough

Step-by-step evaluation of sequential material
to identify as many problems as possible at each step

Similar to brainstorming:
  Goal is to identify maximum quantity of problems
Contrast with brainstorming:
  Do not defer judgement
Design Walkthrough

Types of comments:
- Focus on material, not author
- Constructive not destructive
- Specific, not general
- Problems then questions then suggestions

Examples:
- “The text is too small to read”
- “The user can’t see where to change the setting”
- “That task takes four steps”

Authors: Accept the problems, but do not discuss solutions!
Try to find as many issues as possible – don't solve them.
Design Walkthrough

Appropriate for many types of material

Originally for programmers and their code

However it works well for:

Text documents:
  *articles, manuals, specifications, reports*

Design resources:
  *design scenarios, storyboards, paper prototypes, video prototypes*
Design Walkthrough

Group characteristics:
- peers: bosses should do other types of evaluations
- small: 4-8 works well
- diverse: include diverse perspectives

In addition to your personal opinion adopt specific roles:
- technical: Is there an error or problem?
- user: Is it hard to do?
- manager: Is this function necessary?

or apply a set of design rules, principles or perspectives:
- Norman’s rules
- Shneidermans’ rules
- others…
Design Walkthrough Roles

Each group evaluates and is evaluated by another group

When your group is evaluated:
  Choose a moderator who:
    ensures everyone in both groups participate
    stops discussions
  Choose a scribe who:
    takes notes

Everyone, in both groups, contributes critiques and suggestions
Design Walkthrough

Group A presents their video prototype to Group B
Group A: Choose a moderator and a scribe
Show the full video
Show each interaction point
- Any critiques?
- Any suggestions?

Remember:

DO NOT DISCUSS: clarifications only
DO NOT DEFEND: just note problems

Goal: Group A gets as many critiques as possible
Group A decides which, if any, to implement