Slide 1

Advanced Design of Interactive Systems

Lecture 3: Theme and Variations

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ExSitu lab, Inria & Université Paris-Saclay
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Slide 2

Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
		5 Feb 9:00-12:00 Intro EE01-EE02		
10 Feb 9:00-12:00 class EE01-EE02	**11 Feb** 9:00-12:00 class EE01-EE02	**12 Feb** 9:00-12:00 13:30-16:30 class EE01-EE02	**13 Feb** 9:00-12:00 class EE01-EE02	**14 Feb** 13:00-16:00 final presentation

Slide 3

Homework

Slide 4
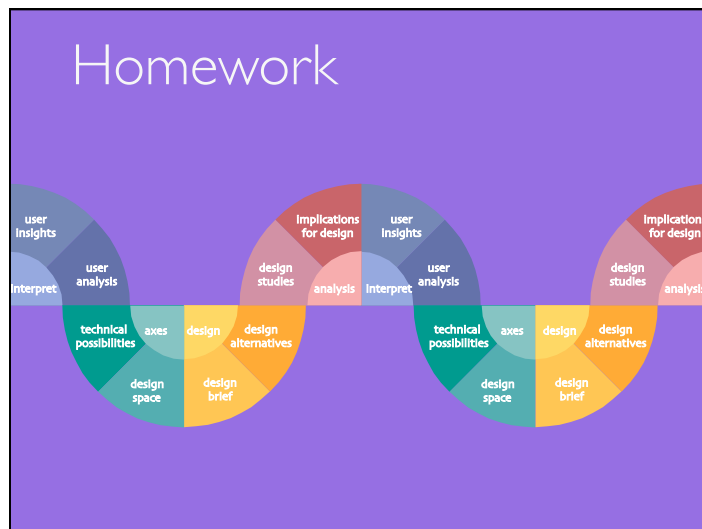
Review: Monday, 10 February

Each group should have:
- Set up your group's Web page
- Conducted (at least) 8 story interviews*
- Collect other types of user information, either from your `client' groups or other users
- Come up with initial ideas for your project

* Interviews are graded individually

Today

Lecture 3:   Theme and Variations
        How do you choose a design method?
Exercise: Methods poster
Exercise: Video Brainstorming

Lecture 4:   Participatory design
Exercise: Open-ended design

Homework: Initial design

THE
DO **DESIGN OF**
IT **INTERACTIVE**
THINGS

Chapter 3: Theme and Variations

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Design methods can:

Gather artifacts:
    stories
    ideas
    designs . . .

Analyze artifacts
    design space
    interaction table
    ...

Produce
    specifics
    generalizations

Theme and Variations

Any design method can be varied

What method variations have we already seen?

Theme and Variations

Questioning users
  interviews, introspection, questionnaires
  stories, tutorials, opinions
  memorable events, objects, daily events

Generating ideas
  regular, video brainstorming
  solo, group, two-phase
  lists, post-its
  words, sketches, videos

Across phases
  current scenario, future scenario

Theme and Variations

How do you choose which variation?

Theme and Variations

How do you choose which variation?

design phase	beginning – middle – end
current needs	generate ideas – refine ideas
resources	supplies – space
opportunities	access to users
audience	you – team – users – stakeholders
resolution	lo fi – hi fi
result	quantitative – qualitative
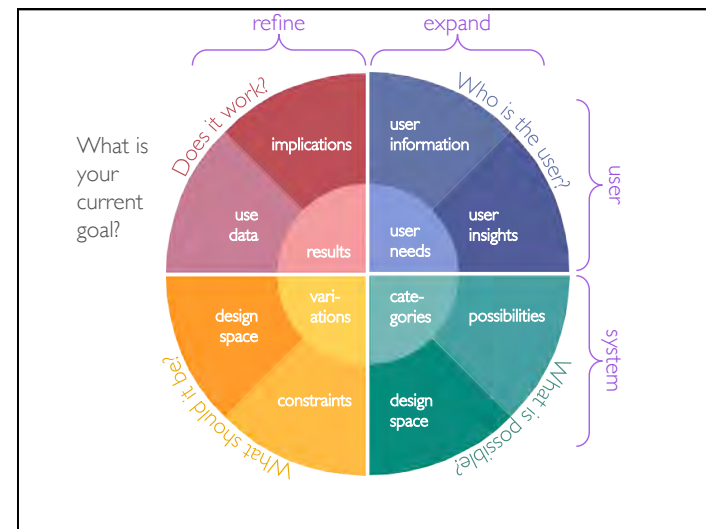
Theme and Variations

Consider trade-offs between methods

Different methods require different
    levels of preparation
    resources
    effort before and during the activity

Theme and Variations

Consider trade-offs between methods
What are the advantages and disadvantages of each?

	Pro:	Con
Wire frames	clarify graphics	static
Paper prototypes	rough graphics	highlight interaction
Solo brainstorm	more ideas	can get stuck
Group brainstorm	solidarity	group think

Theme and Variations

Design artifacts can take different forms
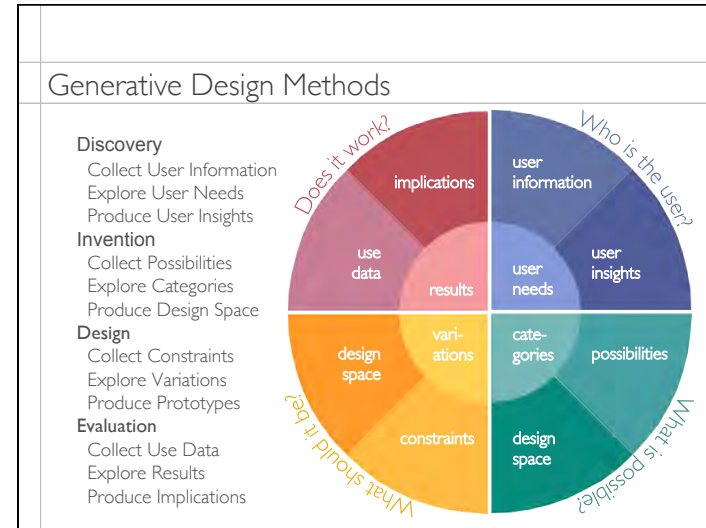   Lists
    Stories
    Abstract summaries
    Sketches
    Paper mockups
   Simulations
    Tables

    etc.

Theme and Variations

Methods vary in terms
of time, people, etc.

Theme and Variations

At each phase of the design process,
ask yourself: "What do I need now?"

Better understand the target audience?
    gather more information: interviews, observation

Refine a design concept?
    select from alternatives

Communicate with users?
    illustrate with a video prototype

Generative Design Methods

Discovery
  Collect User Information
  Explore User Needs
  Produce User Insights
Invention
  Collect Possibilities
  Explore Categories
  Produce Design Space
Design
  Collect Constraints
  Explore Variations
  Produce Prototypes
Evaluation
  Collect Use Data
  Explore Results
  Produce Implications

Vary methods to address different needs

For example:

Storyboards   ➡   Branching storyboards

Breakdown analysis   ➡   Story portraits

Storyboards

Inria & Université Paris-Saclay
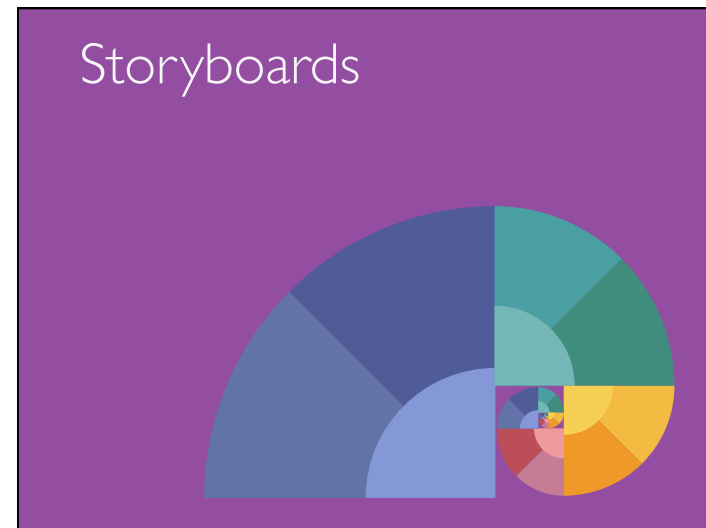
Slide 1: Storyboards

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

THESE ARE THE FIVE ARENAS WHERE YOUR CHOICES CAN MAKE THE DIFFERENCE BETWEEN CLEAR, CONVINCING STORYTELLING AND A CONFUSING MESS.

- CHOICE OF MOMENT
- CHOICE OF FRAME
- CHOICE OF IMAGE
- CHOICE OF WORD
- CHOICE OF FLOW

from Making Comics by Scott McCloud

Slide 2: Regular storyboard

Identify key interaction points
in the scenario

Examine the key ideas from
the design space
(brainstormed ideas)

Illustrate the interaction
between user and
novel system

Describe key issues
on the right

Title
User(s)
Situation

Establishing shot
First interaction

Closeup shot
Second interaction

Mid-range shot
Third interaction

Wide shot
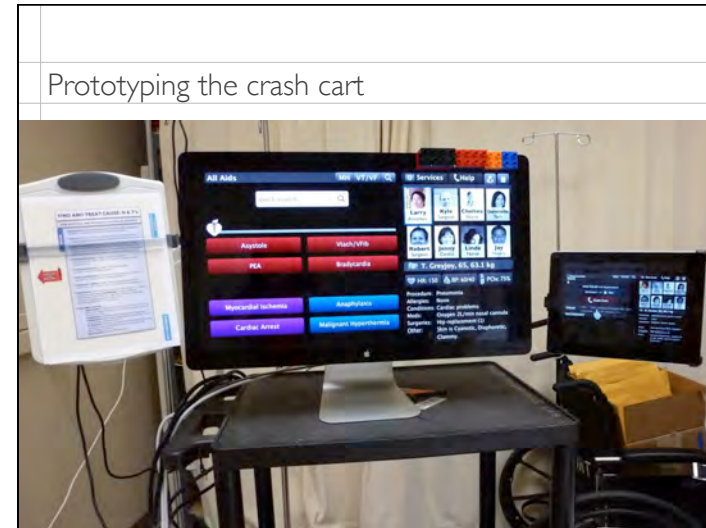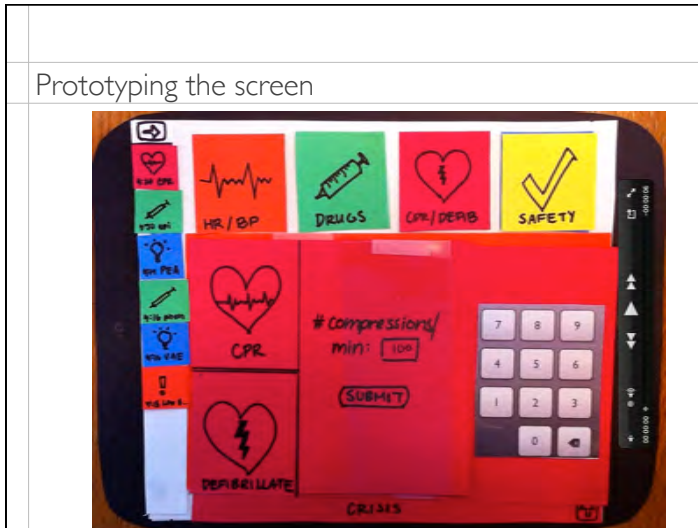Forth interaction

Final credits

Slide 3: Branching Storyboards

Slide 4: 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

Branching 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
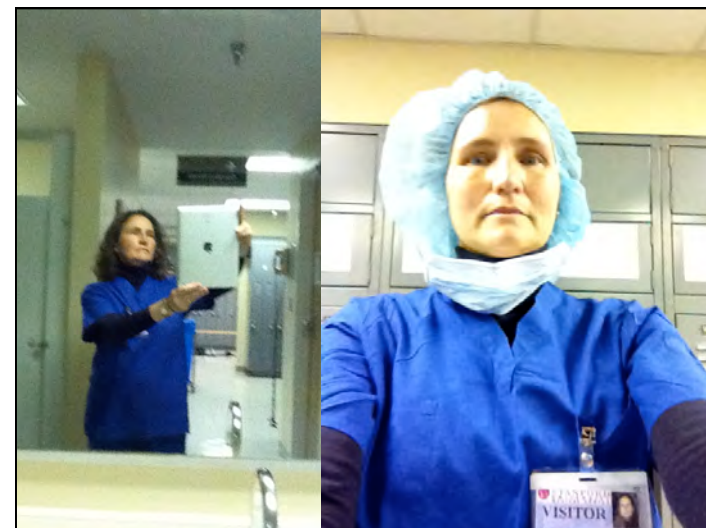
Prototyping the screen

Prototyping the crash cart

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?

Design Space Dimensions

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 x 3 x 4 = 48 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

Did you change your design space?
Can you justify your design choices?

Representing the design processes

How do you capture the key elements of a
creative design process?

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

Representing the design processes

How do you capture the key elements of a
creative design process?

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

Summarize the process with a breakdown analysis
    Identify breakdowns as interaction points
                vs.
Summarize the process with a breakdown analysis
    Identify breakdowns as interaction points

Breakdown Analysis
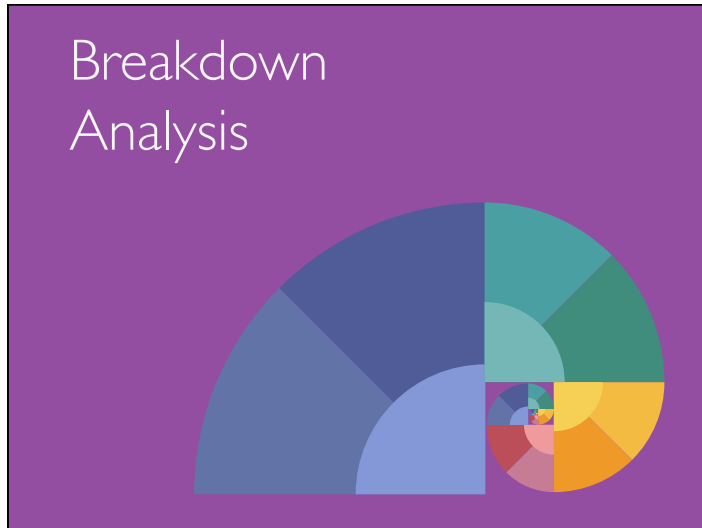
Breakdown analysis

List breakdowns that negatively affect the user's experience
Capture as an interaction point:

Synchronizing with a developer

Developer asked me to specify all the distances between elements

I had to work out every distance individually

Took a lot of time!

Setting up a grid
to synchronize with the developer

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

the second developer asked me which grid I was using

Now we have the same, each one in our tool

it is the basis of our work

he can express dimensions with %

Story Portraits

Representing the design processes

How do you capture the key elements of a
creative design process?

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

Summarize the process as a 'Story Portrait'
  Step-by-step, illustrate the story

Setting up a grid
to synchronize with the developer

An inverted process:
Creating a book about
being strip-searched

Revealing a design process

Over-riding the grid

Over-riding the grid

I have a well defined grid

①

② The text remains inside the grid but changes its orientation

The grid is completely overridden by the "crazy" typography

③

④ the zombie crazyness is contained in a shape

Theme and Variations

Choose a variation for your current needs

Basic Methods	Variations
Generate or Collect resources	
Introspection	Peer introspection
Observation	Video observation, Diary, Log study
Interview	Video or Peer interview
Questionnaire	Story questionnaire
Analyze information	
Breakdown analysis	Interaction points
Thematic analysis	User Space
Produce design resource	
User profile	
Persona	Extreme character
Current scenario	
Story portrait	Themed videos

Discovery: Who is the user?

Basic Methods	Variations
Generate or Collect resources	
C Design brief	
Analyze information	
A Design concept	Design alternatives
A Functional table	
Produce design resources	
P Design diagram	Architecture diagram
P Design scenario	Extreme scenario
P Storyboard	Branching storyboard
P Paper prototypes	Mockups
P Video Prototype	Tutorial video

Design: What should it be?

Basic Methods	Variations
Generate or Collect resources	
Web searches	
Brainstorm	Solo brainstorm, Stickies wall, Creativity
Video brainstorm	Brainstorming variations, Wizard of Oz
Analyze information	
Design dimensions	
Produce design resources	
Design space	
Design requirements	

Invention: What is possible?

Basic Methods	Variations
Generate or Collect resources	
G Experiment	
G User study	
G Field study	
Analyze information	
A Design walkthrough	Heuristic walkthrough
Produce design resources	
P Design implications	
P Breakdown analysis	

Evaluation: Does it work?

Participatory design: Involve users!

Participatory workshops
Interactive thread
Technology probes
Cultural probes

Reuse: Make it better!

Generative walkthroughs
Structured observation