

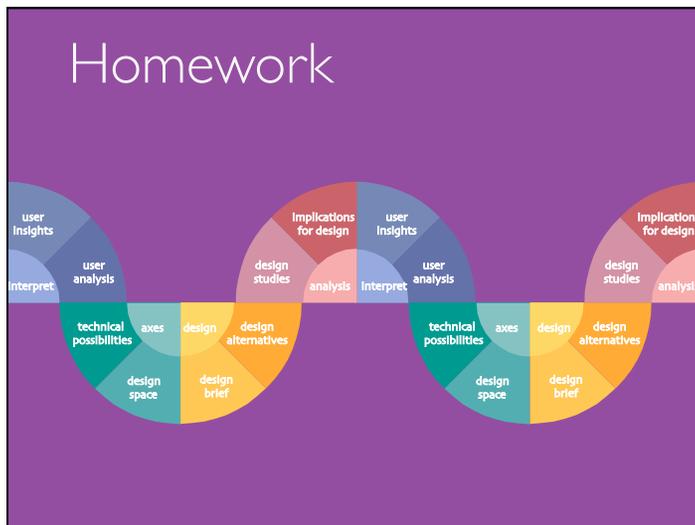
**Advanced Design
of Interactive Systems**

Lecture 7: Generative Walkthroughs

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ExSitu lab, Inria & Université Paris-Saclay
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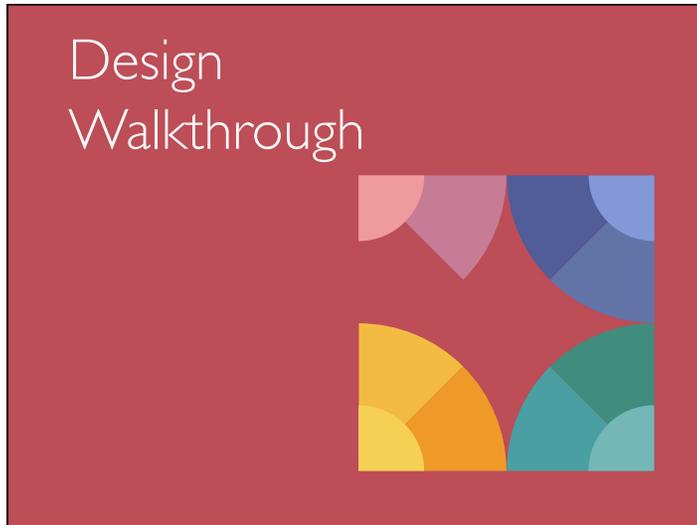
Schedule				
Monday	Tuesday	Wednesday	Thursday	Friday
		5 Feb 9:00-12:00 Intro EE01-EE02		
10 Feb 9:00-12:00 class EE01-EE02	11 Feb 9:00-12:00 class EE01-EE02	12 Feb 9:00-12:00 13:30-16:30 class EE01-EE02	13 Feb 9:00-12:00 class EE01-EE02	14 Feb 13:00-16:00 final presentation



Review Thursday, 13 February

Each group should have:

- completed video prototype
- results from participatory design workshop



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	Structured Walkthroughs Yourdon, '77
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 .	

<h3>Design Walkthrough</h3> <p>Appropriate for many types of material</p> <p>Originally for programmers and their code</p> <p>However it works well for:</p> <p>Text documents: <i>articles, manuals, specifications, reports</i></p> <p>Design resources: <i>design scenarios, storyboards, paper prototypes, video prototypes</i></p>

<h3>Design Walkthrough</h3> <p>Group characteristics:</p> <table border="0"> <tr> <td>peers</td> <td>bosses should do other types of evaluations</td> </tr> <tr> <td>small</td> <td>4-8 works well</td> </tr> <tr> <td>diverse</td> <td>include diverse perspectives</td> </tr> </table> <p>In addition to your personal opinion adopt specific roles:</p> <table border="0"> <tr> <td>technical</td> <td>Is there an error or problem?</td> </tr> <tr> <td>user</td> <td>Is it hard to do?</td> </tr> <tr> <td>manager</td> <td>Is this function necessary?</td> </tr> </table> <p>or apply a set of design rules, principles or perspectives:</p> <ul style="list-style-type: none"> Norman's rules Shneidermans' rules others... 	peers	bosses should do other types of evaluations	small	4-8 works well	diverse	include diverse perspectives	technical	Is there an error or problem?	user	Is it hard to do?	manager	Is this function necessary?
peers	bosses should do other types of evaluations											
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technical	Is there an error or problem?											
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manager	Is this function necessary?											

<h3>Design Walkthrough Roles</h3> <p>Each group evaluates and isevaluated by another group</p> <p>When your group is evaluated:</p> <p>Choose a moderator who:</p> <ul style="list-style-type: none"> ensures everyone in both groups participate stops discussions <p>Choose a scribe who:</p> <ul style="list-style-type: none"> takes notes <p>Everyone, in both groups, contributes critiques and suggestions</p>
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<h3>Design Walkthrough</h3> <p>Group A presents their video prototype to Group B</p> <p>Group A: Choose a moderator and a scribe</p> <p>Show the full video</p> <p>Show each interaction point</p> <ul style="list-style-type: none"> - Any critiques? - Any suggestions? <p>Remember:</p> <table border="0"> <tr> <td>DO NOT DISCUSS:</td> <td>clarifications only</td> </tr> <tr> <td>DO NOT DEFEND:</td> <td>just note problems</td> </tr> </table> <p>Goal: Group A gets as many critiques as possible</p> <p>Group A decides which, if any, to implement</p>	DO NOT DISCUSS:	clarifications only	DO NOT DEFEND:	just note problems
DO NOT DISCUSS:	clarifications only			
DO NOT DEFEND:	just note problems			



What are socio-technical principles ?

Social scientists conduct extensive field studies and provide deep insights in the form of **socio-technical principles** about how people interact with technology in context

But
it is difficult to translate these principles into specific designs

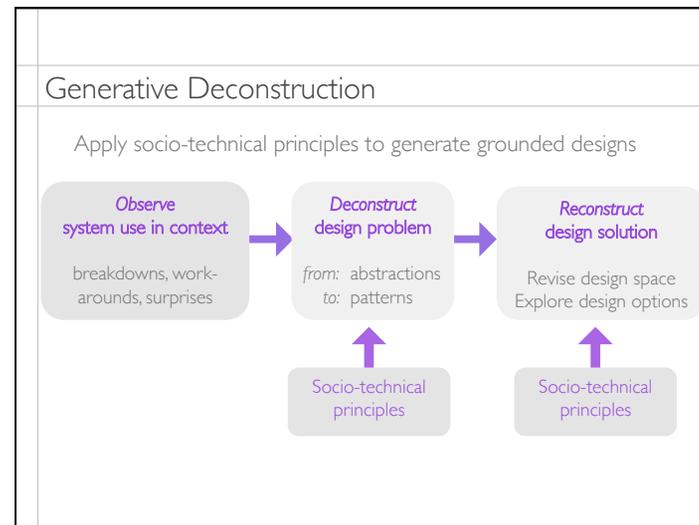
Generative Deconstruction & Reconstruction

Create a scenario-based artifact that captures current user behavior -- or -- illustrates what has been designed

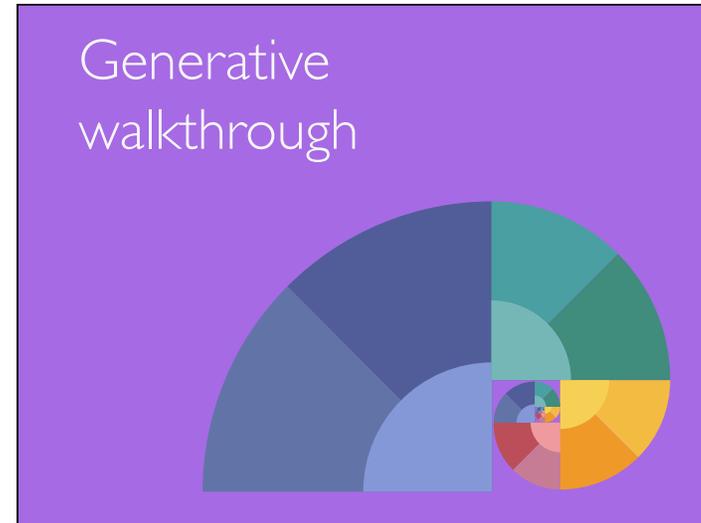
First **deconstruct** what is going on:

- Who is the user?
- What is the technology?
- What is the user's context?
- What is the interaction like?

Then **reconstruct** the design using socio-technical principles to design a new technology or to fix an existing one



Examples: Socio-technical Principles	
Situated Action <i>beyond planning</i>	Go beyond planned activities; Users decide how to act in unforeseen circumstances
Rhythms & routines <i>identify use patterns</i>	Build upon routine activities and spatial patterns; Users integrate systems into their daily lives
Peripheral awareness <i>design the periphery</i>	Design for both focus and periphery; Users vary degree of engagement
Co-adaptation <i>re-interpret use</i>	Expect users to re-interpret and customize; Enable capture and sharing of customizations
Distributed cognition <i>"outside the head"</i>	Let objects and other people reduce cognitive load for memory or communication tasks



So ...

How do we incorporate socio-technical principles into the design process?

Generative Walkthroughs: Creative redesign



Structured walkthroughs
Systematic critique of design artifacts, such as scenarios & storyboards

Generative Walkthroughs: Creative redesign



Structured walkthroughs
Systematic critique of design artifacts, such as scenarios & storyboards

plus



Focused brainstorming
Generation of novel ideas, based on socio-technical principles

Exercise: Generative Walkthrough

Goal Deconstruct your system based on socio-technical design principles, then reconstruct it, using them to generate new ideas for improving the system

Procedure

- Choose one of the principles (or assign a principle to different team members)
- Reread the storyboard out loud
- Go through the storyboard, step-by-step, examining each interaction point
- Generate at least six *ideas* inspired by *one of the principles* to improve the system from the user's perspective

Exercise: Generative Walkthroughs

Analyze your storyboard or video prototype

scenario or storyboard	situated action	rhythms & routines	peripheral awareness	co-adaptive systems	distributed cognition
					
					
					
					

Instrumental Interaction

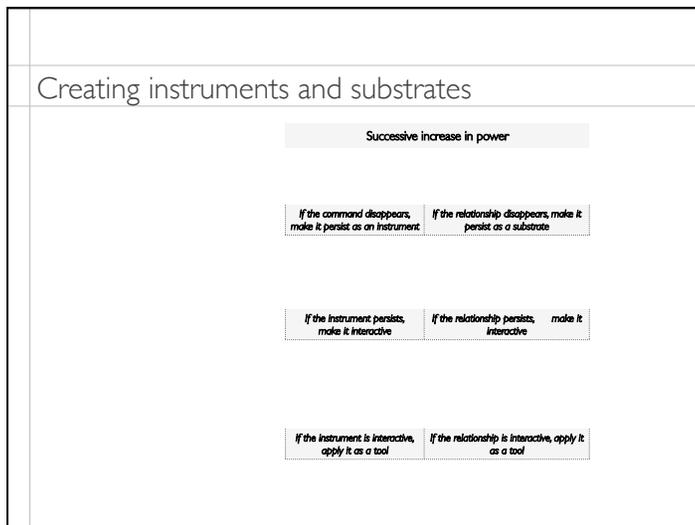
Class exercise

Convert commands into instruments and substrates

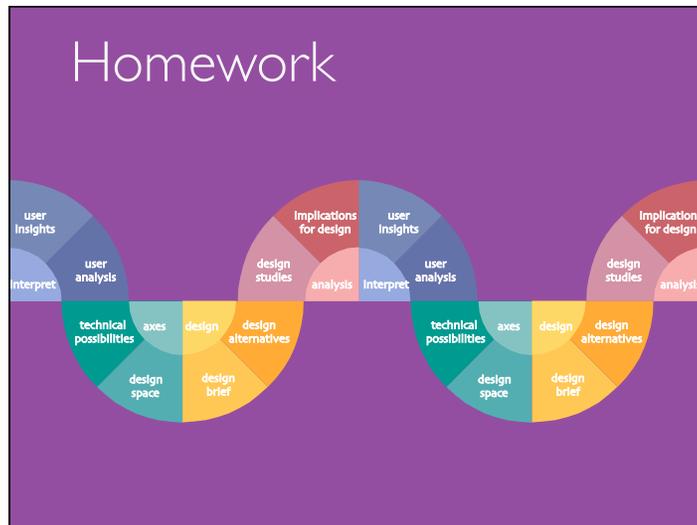
	Input	Output
	Turn commands into instruments	Turn relationships created by commands into substrates
Reification	<i>If the command disappears, make a persistent object</i>	<i>If the relationship disappears, make a persistent substrate</i>
"send" command	"send" sends an image to Nicolas	creates a Wendy - Nicolas channel
"set portions" command	"set portions" associates a portion number with a food item	creates an ordered list of numbers and food items
Polymorphism	Handle multiple types of objects	Handle multiple types of relationships
"send"	accepts images, text, videos, code, etc.	creates a bi-directional W-N channel
"set portions"	handles food, spices, chemical compositions	accepts different orders: linear, random, hierarchical
Reuse	Reuse user input	Reuse resulting relationship
"send"	forward parts of conversation	Add Y1 to the channel
"set portions"	reuses portions in a new recipe	reuse order in a different recipe

Creating instruments and substrates

	Instruments: Input	Substrates: Output
	Turn commands into instruments	Turn relationships created by commands into substrates
Reification	<i>If the command disappears, turn it into an object</i> scroll bar criticism count	<i>If the relationship disappears, make it persist</i> magnetic guidelines semantic pointing
Polymorphism	<i>Make the instrument handle multiple types of objects</i> Stickylnes handle shapes, text, images	<i>Make the substrate handle multiple types of relationships</i> Stickylnes handle both alignment & distribution
Reuse	<i>Make the user's input persist as persistent, reusable objects</i> macro Photoshop history	<i>Make the user's output persist as persistent, interactive objects</i> copy-paste scroller with history



- ### Exercise: Generative Walkthrough
1. Read your storyboard out loud
 2. At each interaction point:
 - Identify examples of reification, polymorphism, reuse
 - Identify any existing socio-technical principles
 3. Generate ideas for improving the scenario
 - you must use at least two principles
- Goal: Improve your scenario so that you have at least six new interaction points that illustrate socio-technical principles



Final Presentation	
Friday 13:00	Here
10-minute presentation per group plus 5-minute discussion All members of the group participate in the presentation	
Introduction	Project name and design concept: Problem to solve? Solution?
Methods	Which methods did you choose? Why?
Story	Illustrate the design concept
Instruments	What did you use and why?
Conclusion	What worked? What didn't? Future?

Grading
Jury will judge on:
Creativity
Design principles
Relationship with user studies
Justification
Tell a story that illustrates how your design concept is used
Avoid making a "How to" tutorial or a marketing video!

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