

DESIGN OF INTERACTIVE SYSTEMS +TER

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WELCOME

DESIGN OF INTERACTIVE SYSTEMS + TER

Lectures

Tuesday 13:45 - 17:15

Room D101

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Friday 13:30 - 17:00

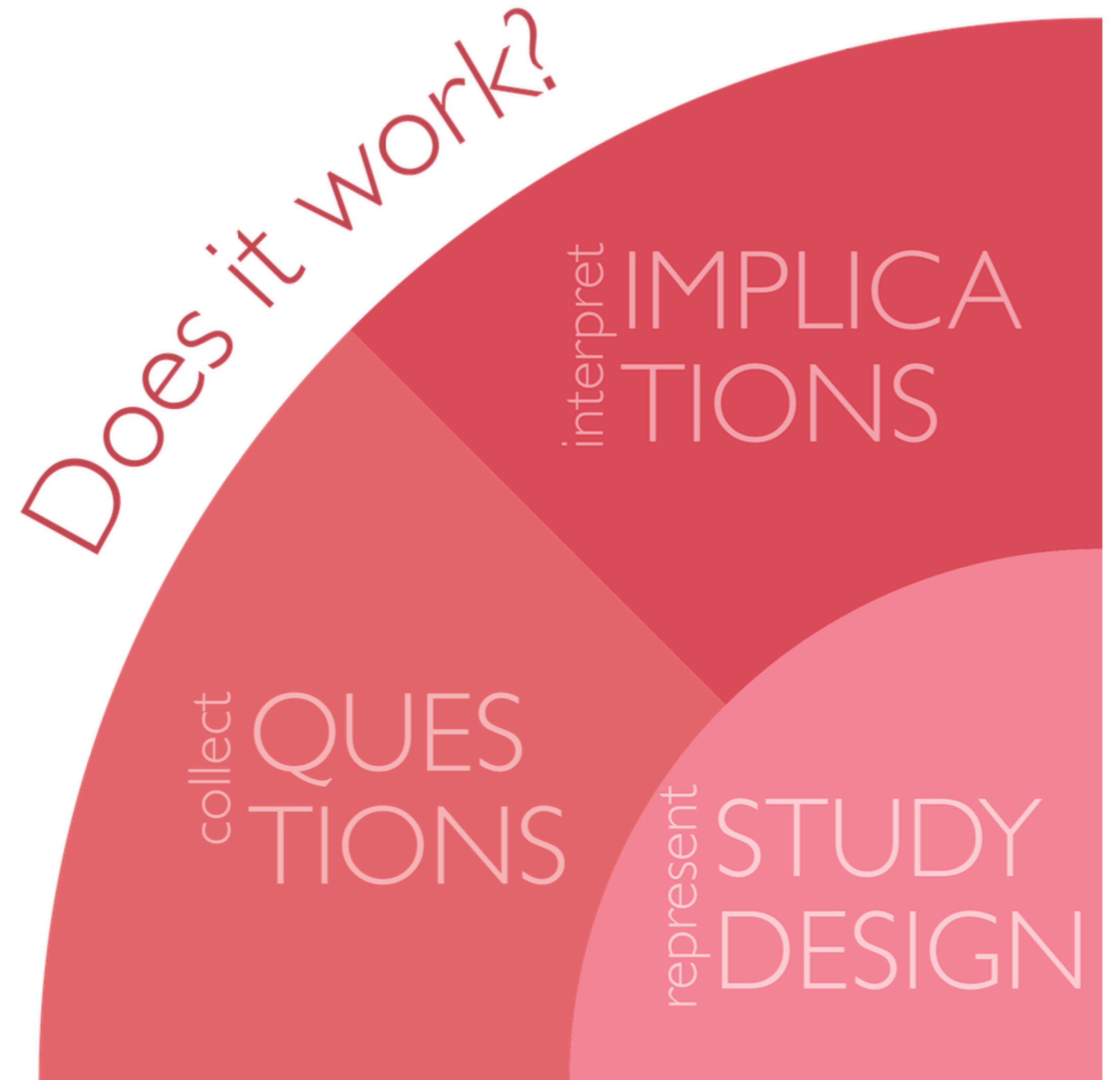
Room E212

LECTURES 8

OVERVIEW

Category	Activity	Duration (min)	Start	End
Homework	Review Questionnaire + Experimental Design	15	13:45	14:00
Recap	Recap Redesign + Concept	5	14:00	14:05
Exercise	Concept 2	20	14:05	14:25
Recap	Recap Representing Design	5	14:25	14:30
Exercise	Represent Concept	20	14:30	14:50
	BREAK	15	14:50	15:05
Lecture	Future Scenario	20	15:05	15:25
Exercise	Revise Future Scenario	30	15:25	15:55
Exercise	Revise Storyboard	30	15:55	16:25
Homework	Revise Storyboard	5	16:25	16:30

EVALUATING DESIGN



EVALUATION

FINDING PROBLEMS

Finding Problems	System	Action	Story
Collect	Research questions Study questions	DEFINE	User contexts User activities
Represent	Questionnaire User study Controlled experiment Field study	ASK CONDUCT	Interview Design walkthrough Structured observation Diary study
Interpret	Descriptive statistics Inferential statistics Design requirements	ANALYZE	Thematic analysis Mind Map Design implications

REVIEW HOMEWORK

HOMEWORK
QUESTIONNAIRE _____

Questionnaire

Complete your team’s questionnaire with up to 8 questions

Distribute it to users and
Bring the results next class

Questionnaire

Discover Users Worksheet

ACTIVITY Develop a set of fixed-response questions that elicit facts to inform the design.

Question type	
Question	
Question type	
Question	
Question type	
Question	
Question type	
Question	
Question type	

HOMEWORK

EXPERIMENT

Choose a single interaction snippet Identify
at least two additional alternative forms of interaction

- Specify:
- Independent variables
 - Dependent variables
 - Null Hypothesis
 - Prediction

Experiment

Evaluate Systems Worksheet

ACTIVITY Ask users to perform specific tasks according to comparable factors and measure which is better.

Specify three interaction techniques to compare					
1.		2.		3.	
Describe the advantages of each					
1.		2.		3.	
Describe the disadvantages of each					
1.		2.		3.	
Specify factors (independent variables). Include "interaction techniques"					
Specify measures (dependent variables) of user behavior					

HOMEWORK IMPROVEMENTS_____

Reread the design walkthrough results

Assess your concept:

How can you improve it?

Identify 3 new breakdowns

Suggest possible solutions

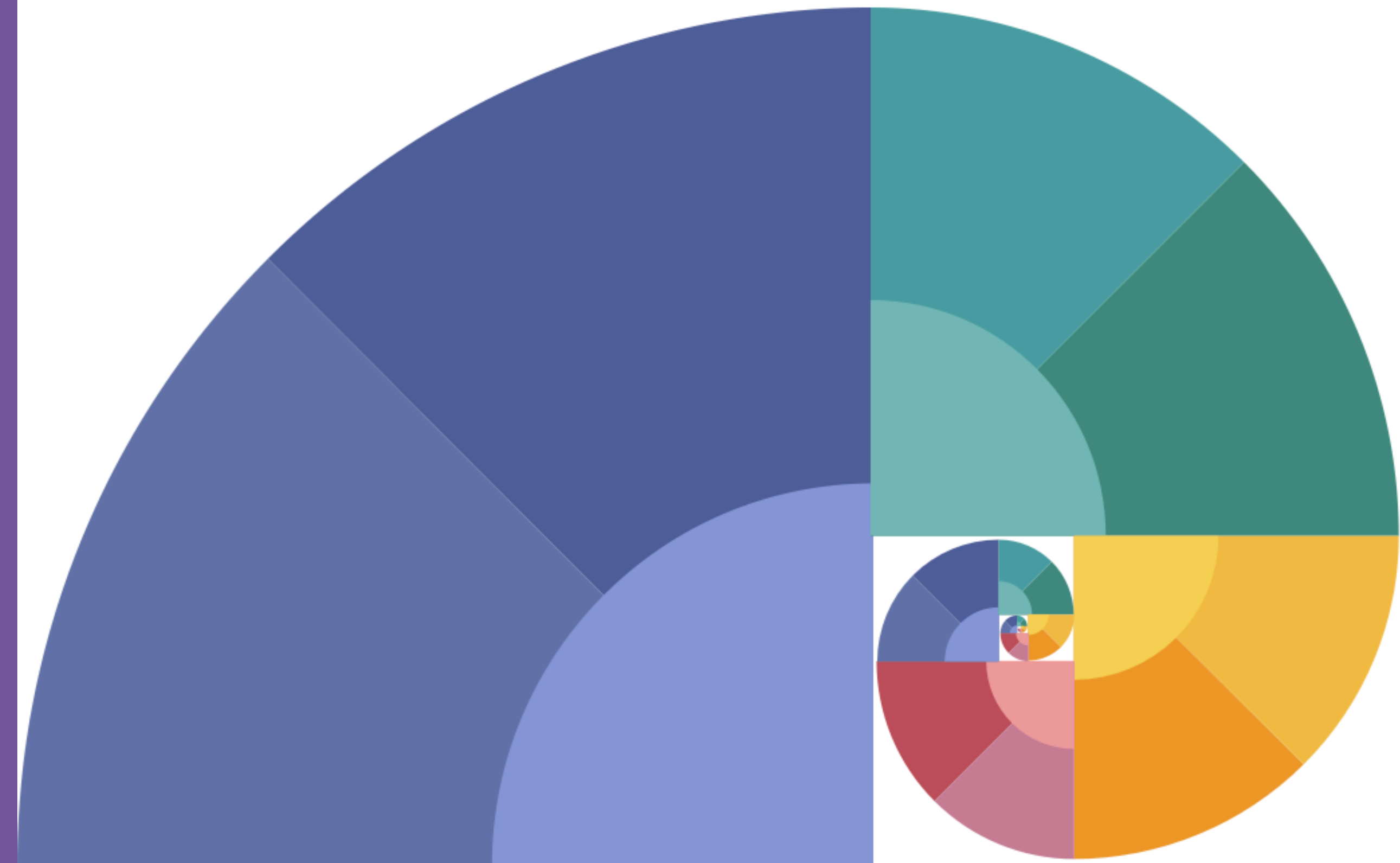
Modify your design with the revised concept

Include at least 3 new interaction snippets

Show how to address breakdowns



REDESIGN



Make it better!

Refine your design concept:

more interactive easier to manipulate
more powerful more functionality

Then ...

Update the scenario and storyboard

Shoot an **improved** video prototype

**REVISED
CONCEPT**

Make it better!

Reassess your **users**

what new situations or
problems do they have?

Reassess your **ideas**

how will you handle breakdowns?

Reassess your **design space**

can you push the limits or find new gaps?

Reassess your **system**

can you make it simpler or more powerful
... or both?

REVISED
CONCEPT

Guiding principles for your design

Reassess your first design

Who is it really for?

Can you be more specific?

What should it do?

Is there an overall design angle?

State the concept in one sentence:

What is the user's problem and
what is your original solution?

**REVISED
DESIGN
CONCEPT**

EXERCISE REVISE CONCEPT____

Identify the **objects**:

What does the user want to manipulate?

Identify the **operations**:

What does the user want to do with these objects?

Identify the **commands**:

How can the user can activate these operations?

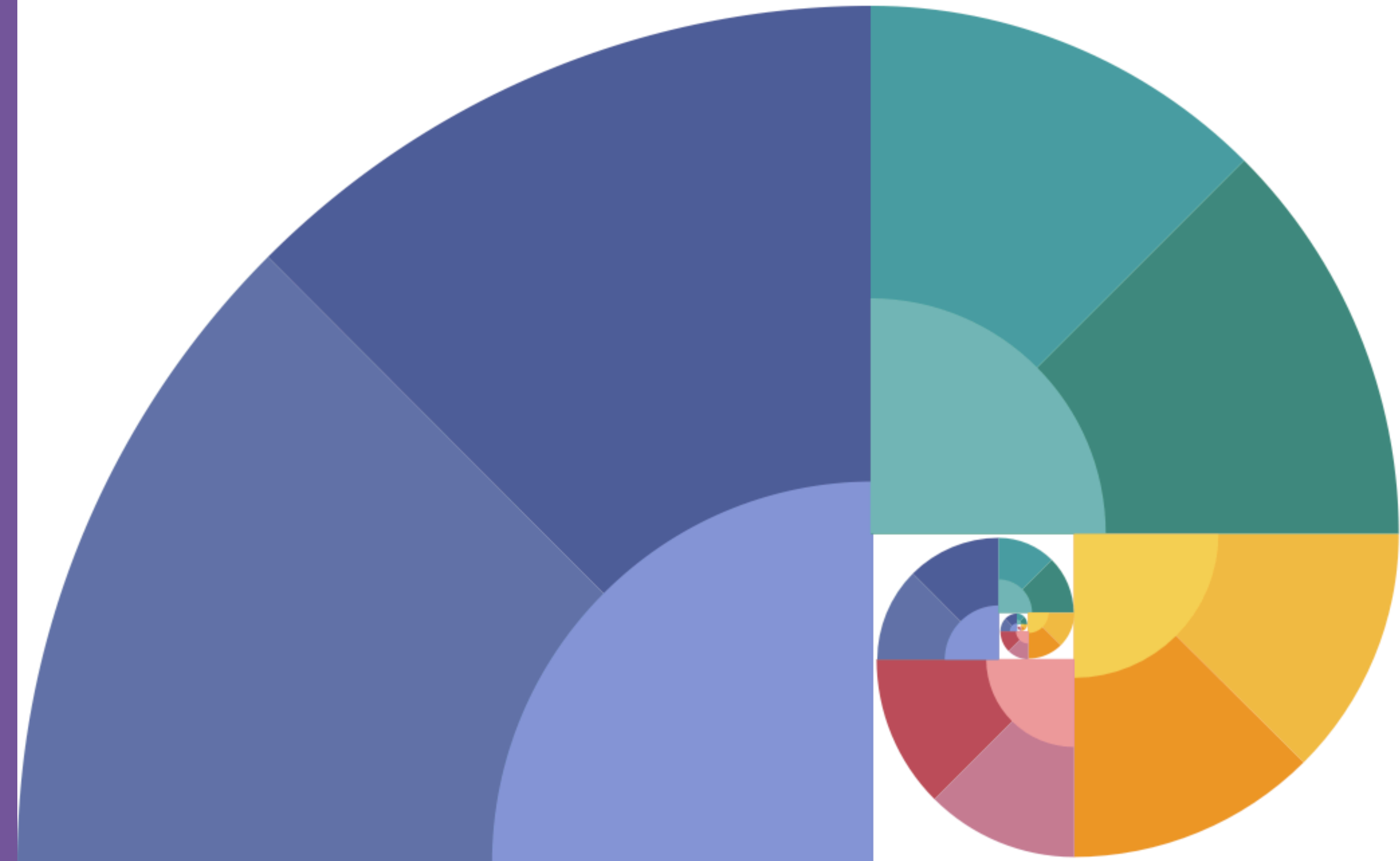
Justification

What are the alternatives?

What are the advantages and disadvantages?



DESIGN DIAGRAM



Advice

Choose a frame structure

Choose a point of view

Create sub-frames

Define relationship among elements

Pre-process photographs

**DESIGN
DIAGRAM**

Antoine et al. (CHI 2021): Interaction Illustration Taxonomy: Classification of Styles and Techniques for Visually Representing Interaction Scenarios (<https://dl.acm.org/doi/abs/10.1145/3411764.3445586>)

Advice

Define the interactive space

Highlight interactive elements

Represent frame dynamics

Highlight user actions

Illustrate non-visual feedback

**DESIGN
DIAGRAM**

Antoine et al. (CHI 2021): Interaction Illustration Taxonomy: Classification of Styles and Techniques for Visually Representing Interaction Scenarios (<https://dl.acm.org/doi/abs/10.1145/3411764.3445586>)

EXERCISE REPRESENT CONCEPT

Create a **design diagram** that
capture the essence of your design
and how users will interact with it

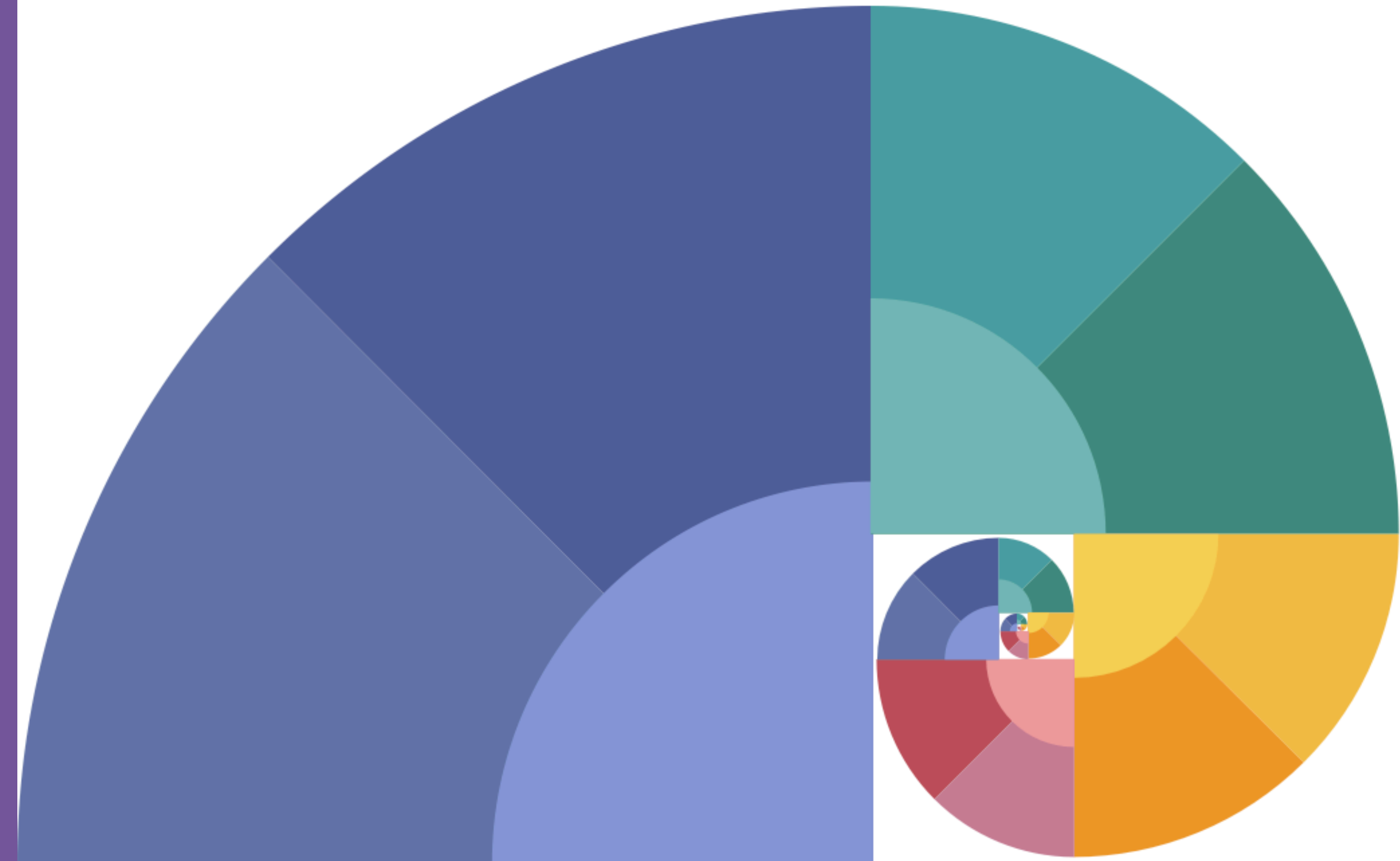
Comment examples:

- focus + context diagram
- process diagram with arrows
- exploded diagram with key functions



BREAK

FUTURE SCENARIO



REVISED FUTURE SCENARIO

Consider breakdowns

Think of breakdowns as a design tool

You do not have to fix all breakdowns now

But you **do** have to think about
what **might** go wrong

Consider how to change the design
in future design iterations

REVISED FUTURE SCENARIO

How does your concept empower the user?

Does your scenario reveal the system
in a real-world context?

Did you avoid a “how-to” tutorial
and create a real story of future use?

REVISED FUTURE SCENARIO

How does your concept work in context?

Set up

When does it occur?

How long does it take?

What do users have to know?

Preferences

Can users personalize it?

Can users save preferences?

Breakdowns

Can users detect what is wrong?

Can users fix problems?

Repetitions

Are they tedious and slow?

Can users create short cuts?

REVISED FUTURE SCENARIO

What is missing?

Breakdown?

Unanticipated behavior?

Repeated activity?

Combined features?

New personas?

New situations?

Set up process?

Personalization?

BEWARE REPETITIVE TASKS!
ONE CUMBERSOME TASK IS OK
20 IN A ROW IS TORTURE

REVISED FUTURE SCENARIO

Who is the audience for your scenario?

Users

Clarify design problem

Identify design opportunities

Bottom-up, contextual descriptions

Management

Describe design solutions

Justifying design solutions

Top-down, abstract descriptions

Team members

Revealing design problems

Exploring design solutions

Both top-down and bottom-up

REVISED FUTURE SCENARIO

Design in the real world

You would:

- Create additional scenarios

- Consider new personas,
new situations, new designs

- Create branching scenarios

- Compare design alternatives in context

REVISED FUTURE SCENARIO

Revisions

Add at least three new interaction snippets

Consider new events and
new design possibilities

Include breakdowns

Fix some

Leave the rest for future consideration

Consider surprises and alternatives

REVISED FUTURE SCENARIO

What to avoid

No single-feature systems

You must have a concept

No auditory or haptic alarms

Do not create an 'electronic nag'

No "artificial intelligence magic"

Let the user explore with the tool

Avoid automatic solutions

No hardware-only solutions

Focus on user interaction with the software

REVISED FUTURE SCENARIO

Reassess your concept

Is it an interactive tool?

(or just a set of buttons and menus?)

How can you make the tool
more **powerful**?
simpler to use?

EXERCISE

FUTURE SCENARIO 2

- Revise the future scenario
- to incorporate the revised concept
- Did you make the interaction simpler?
- more powerful?
- Add at least three new interaction snippets
- Do they show off the new concept?
- Add three new breakdowns
- What happens under extreme circumstances?
- Fix at least one breakdown

Future scenario

Design Prototypes Worksheet

ACTIVITY Describe a story of how one or more users would interact with the new design in a realistic setting.

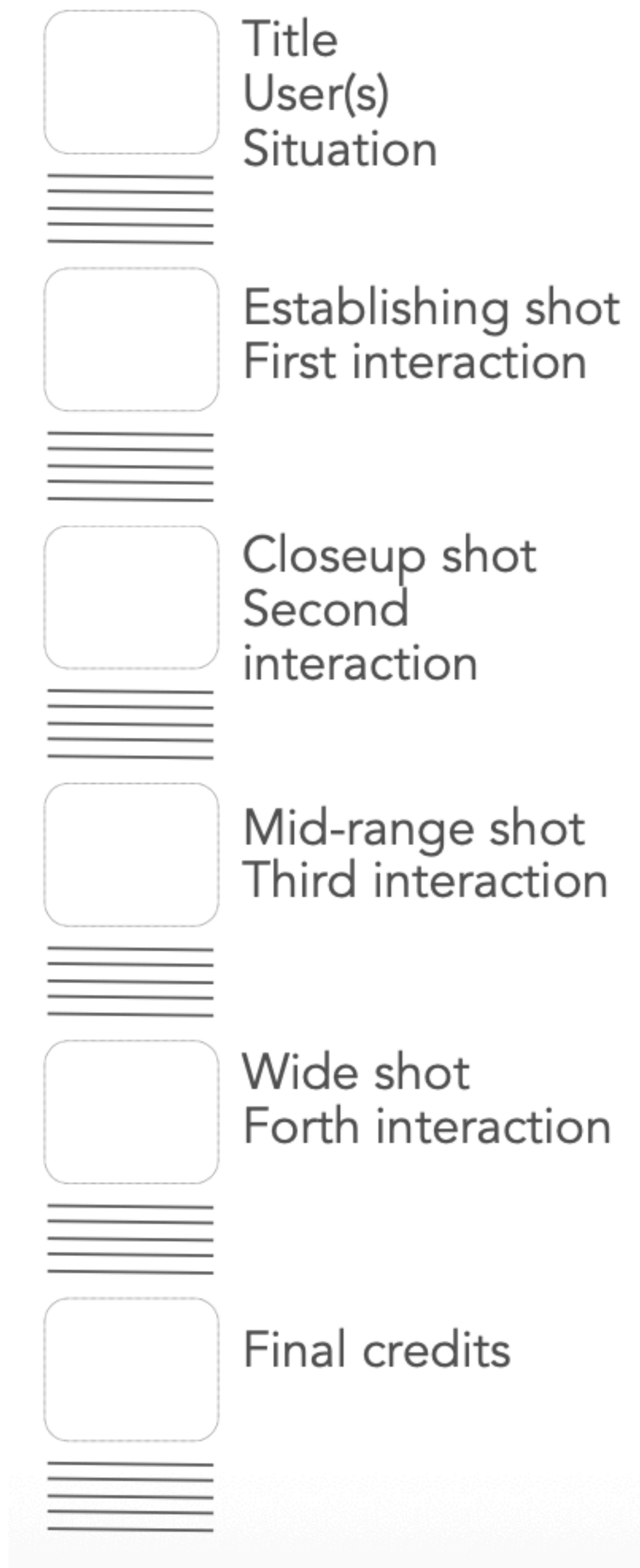
Persona 1		Persona 2		Extreme character	
Date:		Time:		Setting:	
Specific Context					
1.					
2.					

Guide to Shoot Video

Create a scenario with
interaction snippets
Illustrate the interaction
between the user(s)
and the system

Tell the story with
titlecards

Describe issues and
guide video shoot



STORYBOARD

EXERCISE/HOMEWORK

STORYBOARD 2

Revise your storyboard
so that you can update / reshoot
your video prototype in two weeks...

Storyboard

Design Prototypes Worksheet

Name		Team		Due	
Main title	Sketch or titlecard	Story description	Shooting instructions		
Personas	Sketch or titlecard	Story description	Shooting instructions		

