

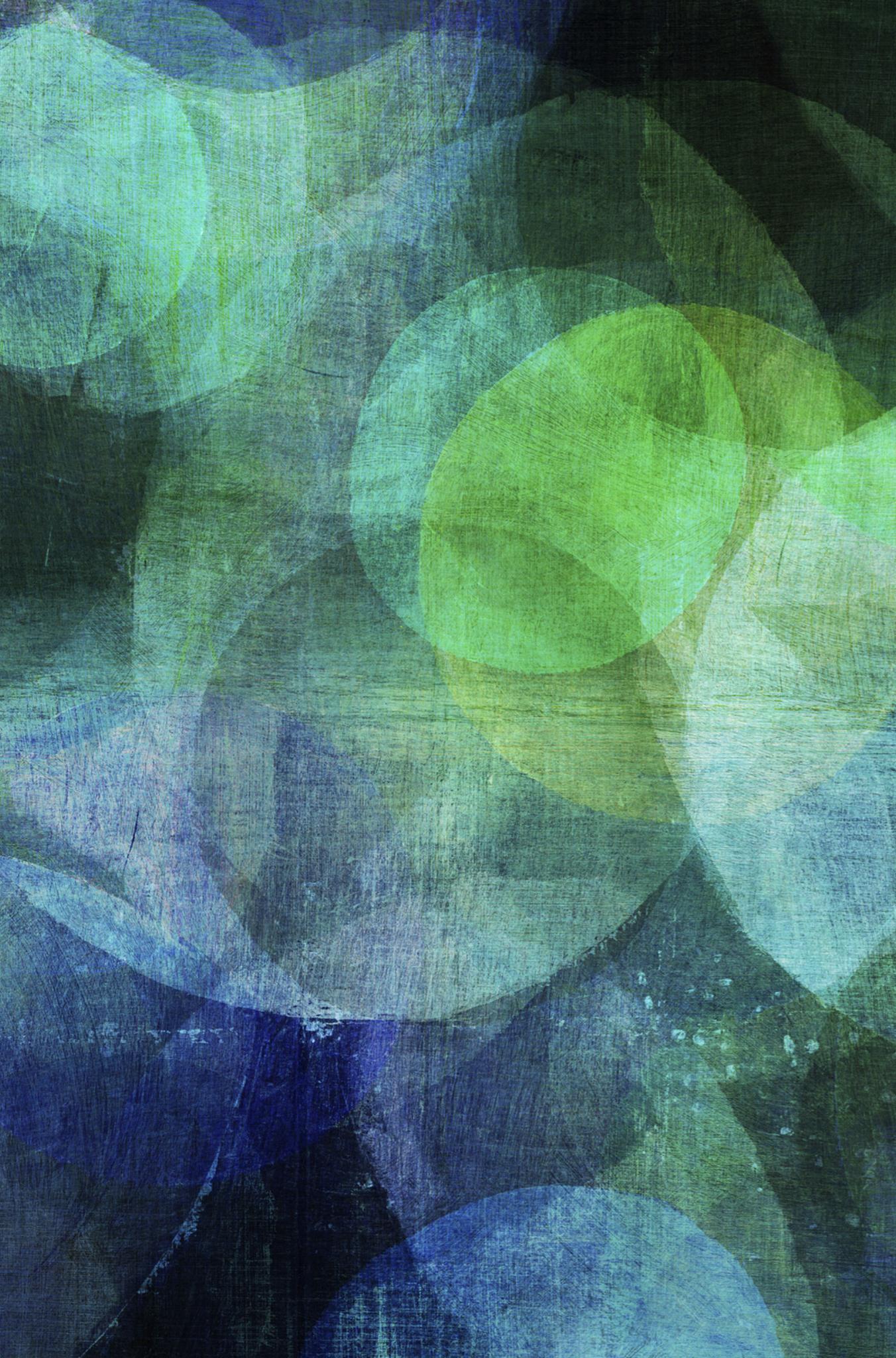
FAST-FOOD KIOSK

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OUTLINE

- Preliminary Design
- Full Design & Specification
- Story board & Paper prototype
- Medium- to High-Fidelity functional prototype



PRELIMINARY DESIGN

- User Analysis
- Task Analysis
- Conceptual Model
- Functionality & Usage Scenarios

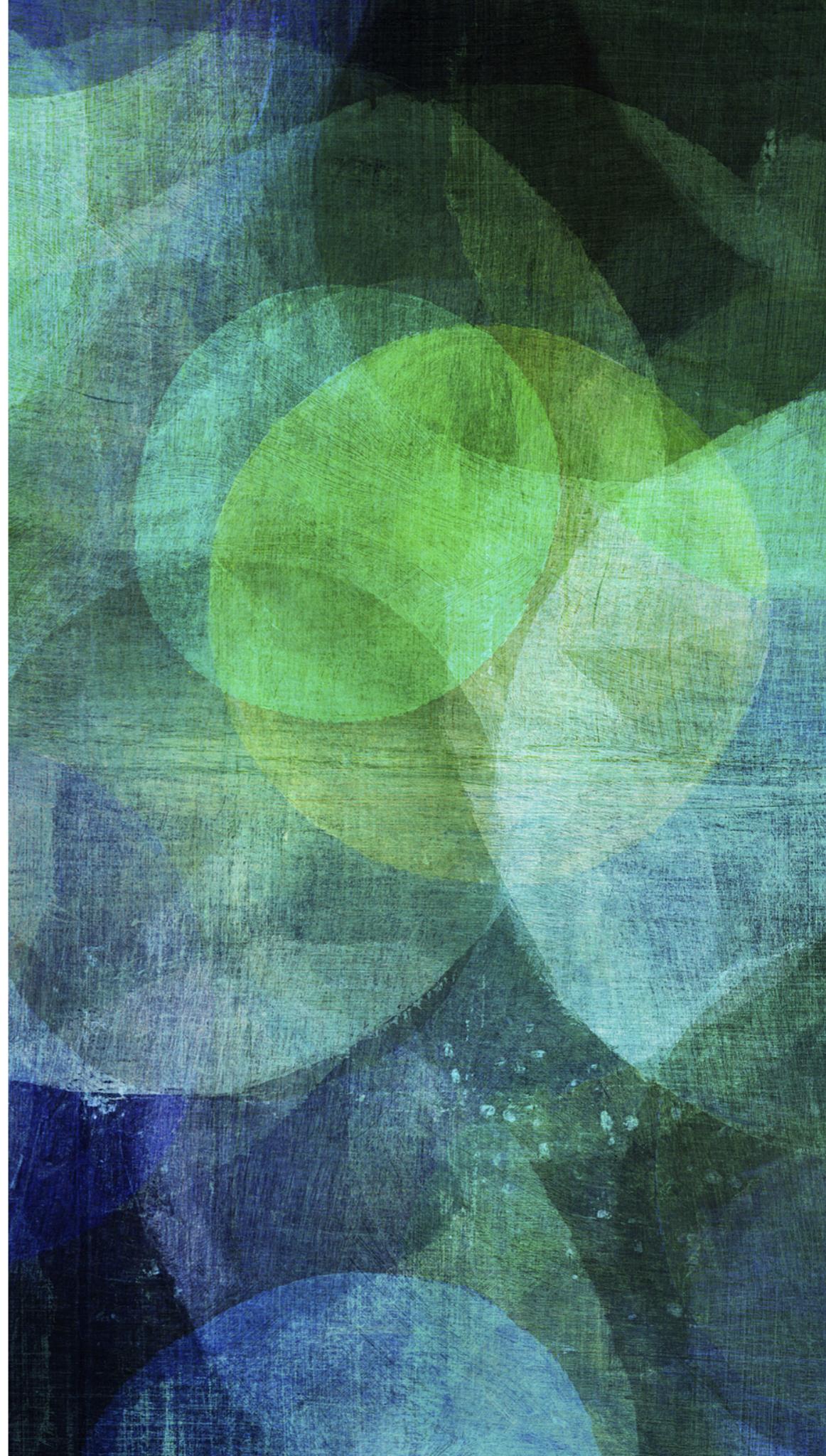
A vertical column on the left side of the slide features a abstract background composed of numerous overlapping squares in various colors, including shades of red, orange, yellow, and pink. The squares are arranged in a way that creates a sense of depth and movement.

USER ANALYSIS

- Skip lines
- Customization
- Easy to use

TASK ANALYSIS

- Browse Menu - Search and Display
- Order Food - Store and Analyze
- Pay - Retrieve and Calculate



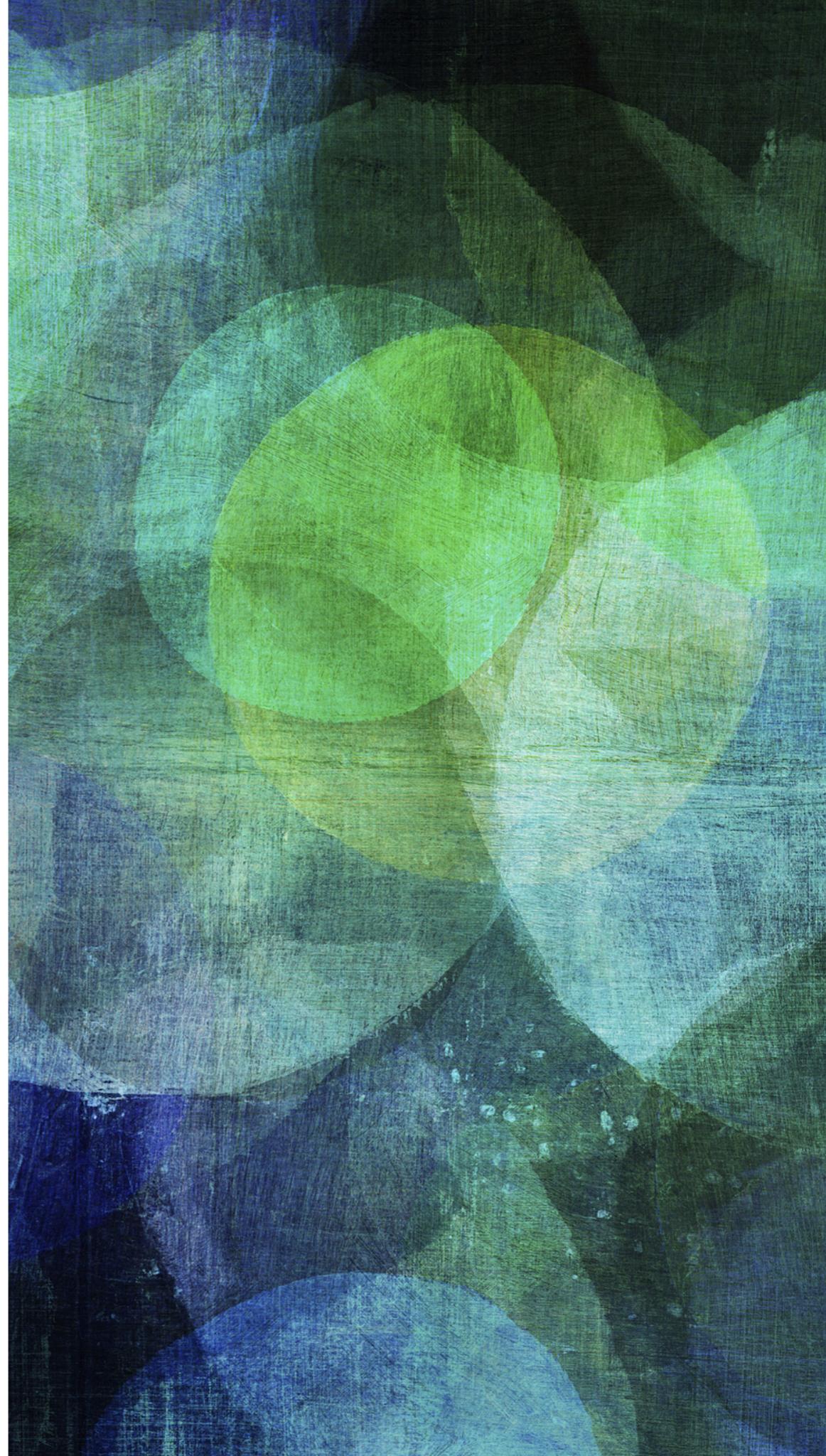


CONCEPTUAL MODEL

- Metaphors: Menu, Shopping Bag
- Concepts: Meal, Burger, Beverage, Desert, Snacks
- Relationships and Mappings

FUNCTIONALITY & USAGE SCENARIOS

- Ordering Feature
- Payment Feature
- Promotion Feature
- Machine Settings





FULL DESIGN & SPECIFICATION

- Semantic Design
- Syntactic Diagram
- Guidelines
- Lexical Model

SEMANTIC LEVEL DESIGN

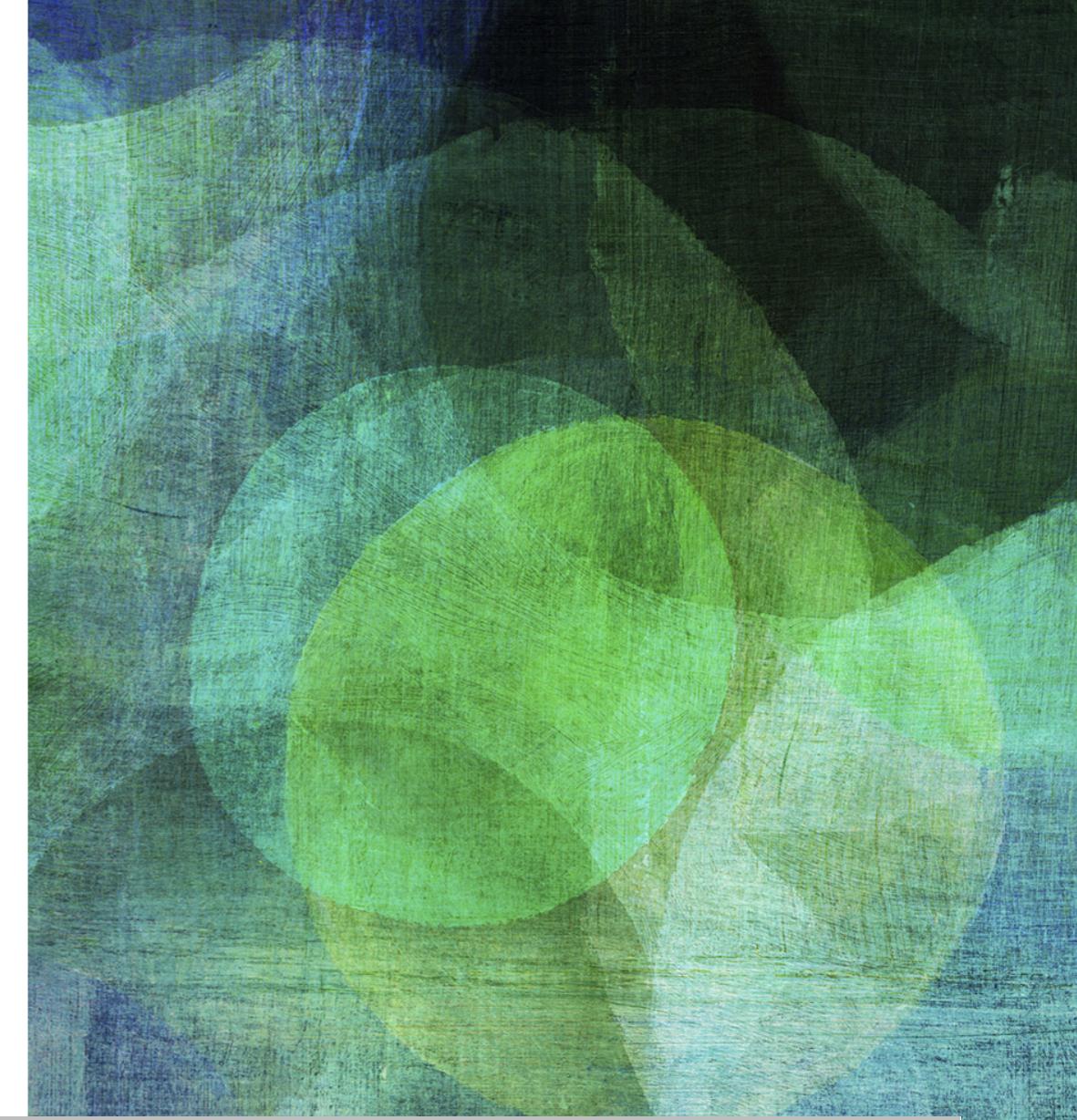
Defined functions

Defined parameters

Described functions

Described feedbacks

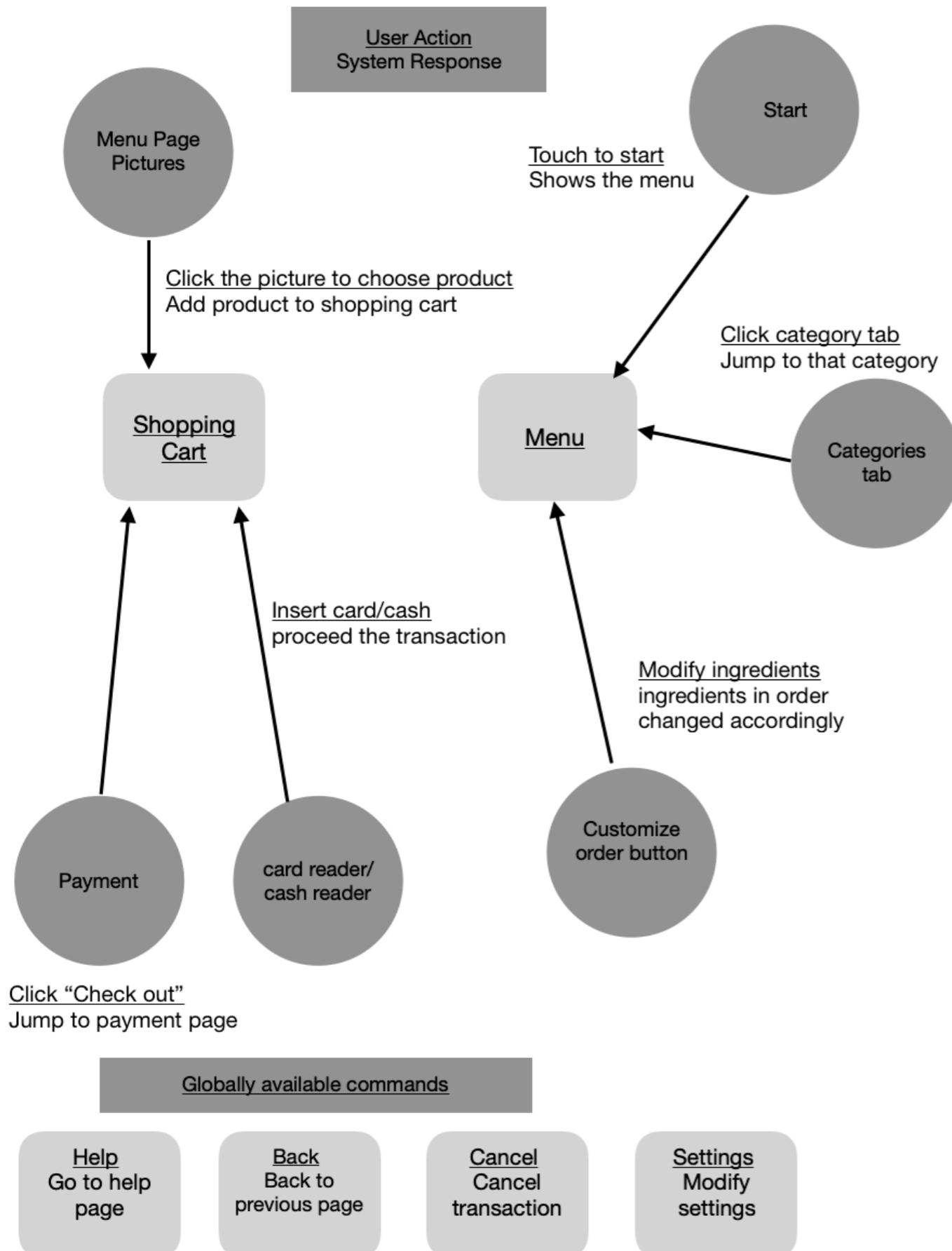
Described errors



Function Name	Parameters (implicit/explicit)	Description	Feedback	Errors
Add product	implicit - name of the product explicit - name of the product	Add food into the shopping bag	A dialog with a "A XX product is in your shopping bag!" Shows up.	If a customer clicks the product more than one time.
Choose different category	implicit & explicit - the category of food	Redirects to the chosen category page	Shows the menu of the chosen category	/
Go back	/	Redirects to previous page	Shows the previous page	/

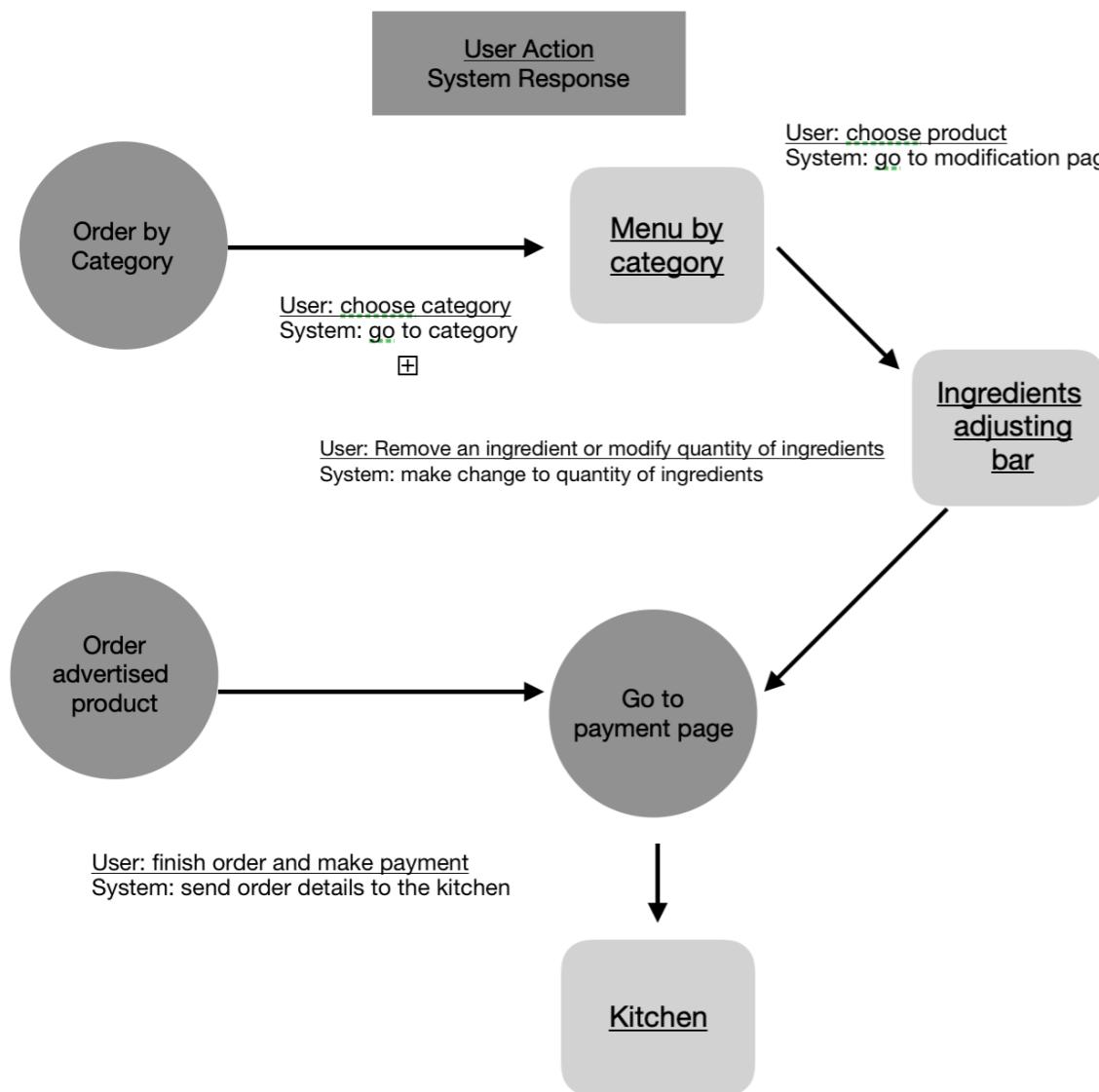
SYNTACTIC DIAGRAM

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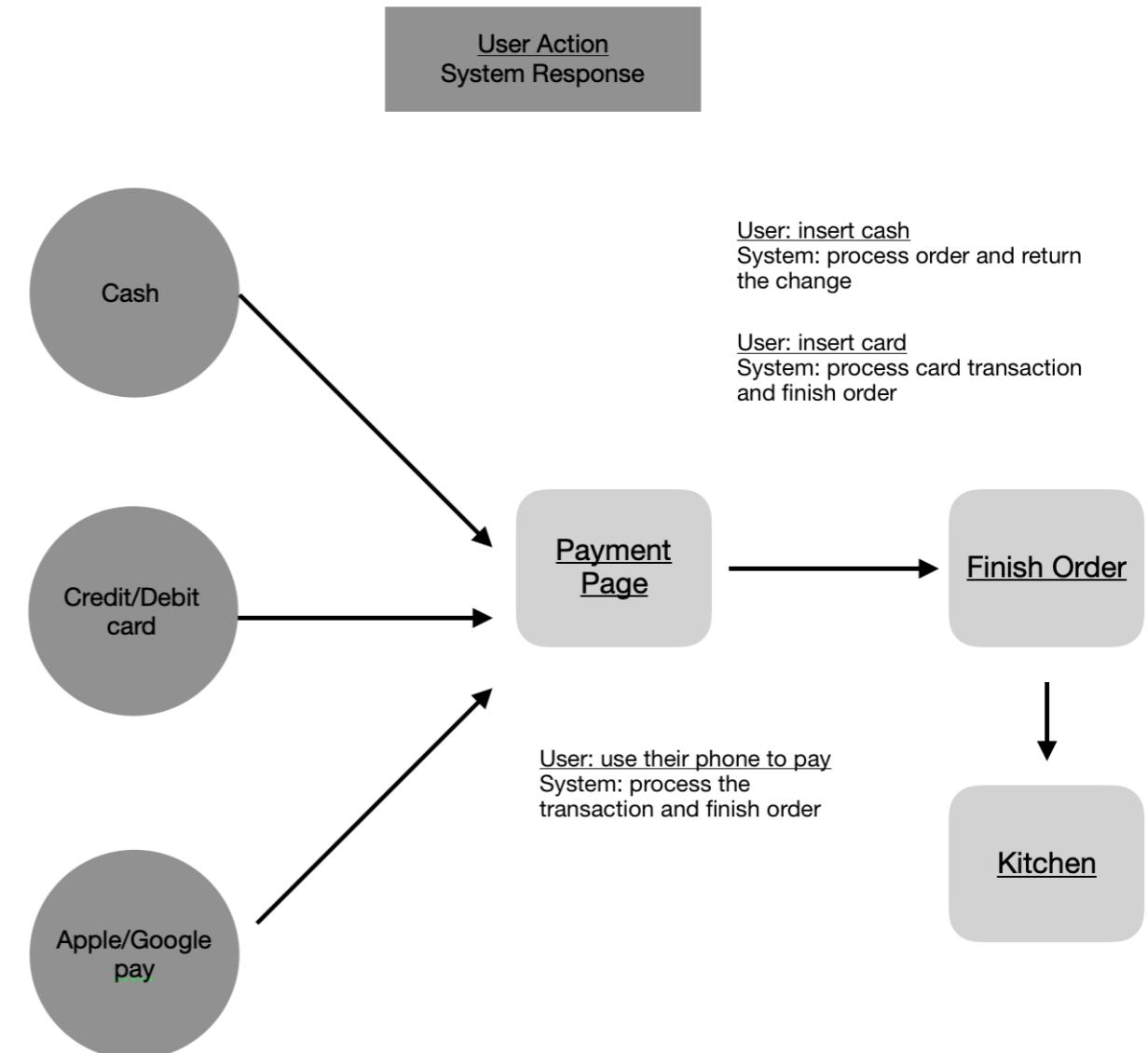


- Overall diagram
- Sub-system diagram
- Order system
- Payment system

ORDER SYSTEM



PAYMENT SYSTEM



LEXICAL MODEL

- Detailed description of user actions highlighted in the diagram
 - Start page
 - Order page
 - Payment page
 - Settings

DOCUMENTATION & GUIDELINES

- Goal
 - Create a user-friendly interface
- Design principles
 - Consistency
 - well-known icons, standard text style and uniform terminology
 - Direct manipulation
 - change content by tabbing icon/options with more details
 - User control
 - adjust options/proceed or cancel anytime/navigate options to control progress
 - Configuration
 - different font size for different messages (errors, warnings, additional information)

Example for settings feature

Jay is a 80 years old closet maker and he cannot read words on screen with normal font size.

When he uses the kiosk, he clicks the doozy setting button and enlarges the font size to start his order.

1. Action sequence

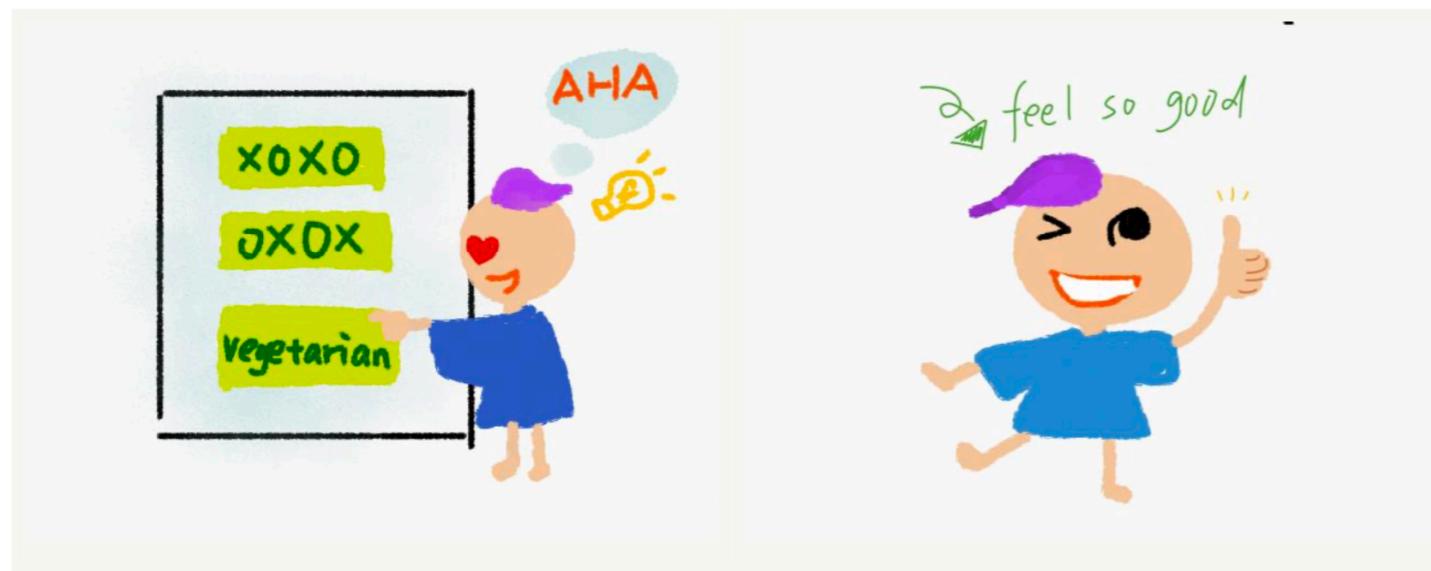
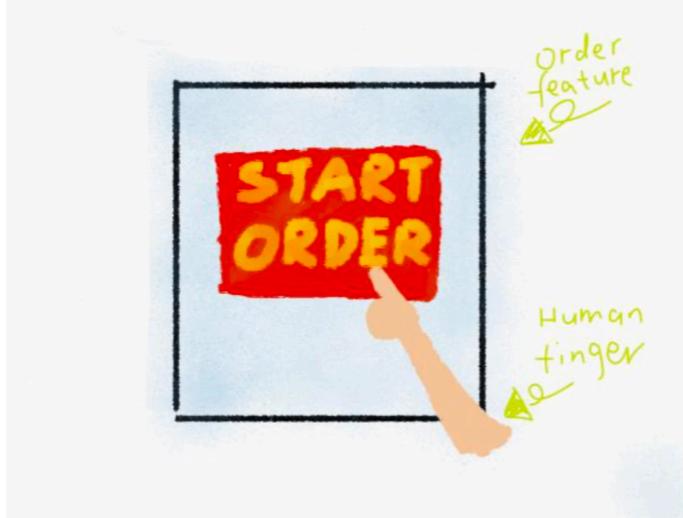
- 1) Find the “Setting” button on the screen M
- 2) Move a finger to the button P
- 3) Tap the button K
- 4) Find the “Zoom in/out” button on the screen M
- 5) Move a finger to the button P
- 6) Tap the button K
- 7) Move a finger to the button P
- 8) Tap the “+/-” button multiple times to adjust the word to proper scale. K (or nK)

$$\text{Total time} = 2M + 3P + 3K = 2*1.2 + 3*1.1 + 3*0.28 = 6.54 \text{ sec}$$

TASK-COMMAND ANALYSIS

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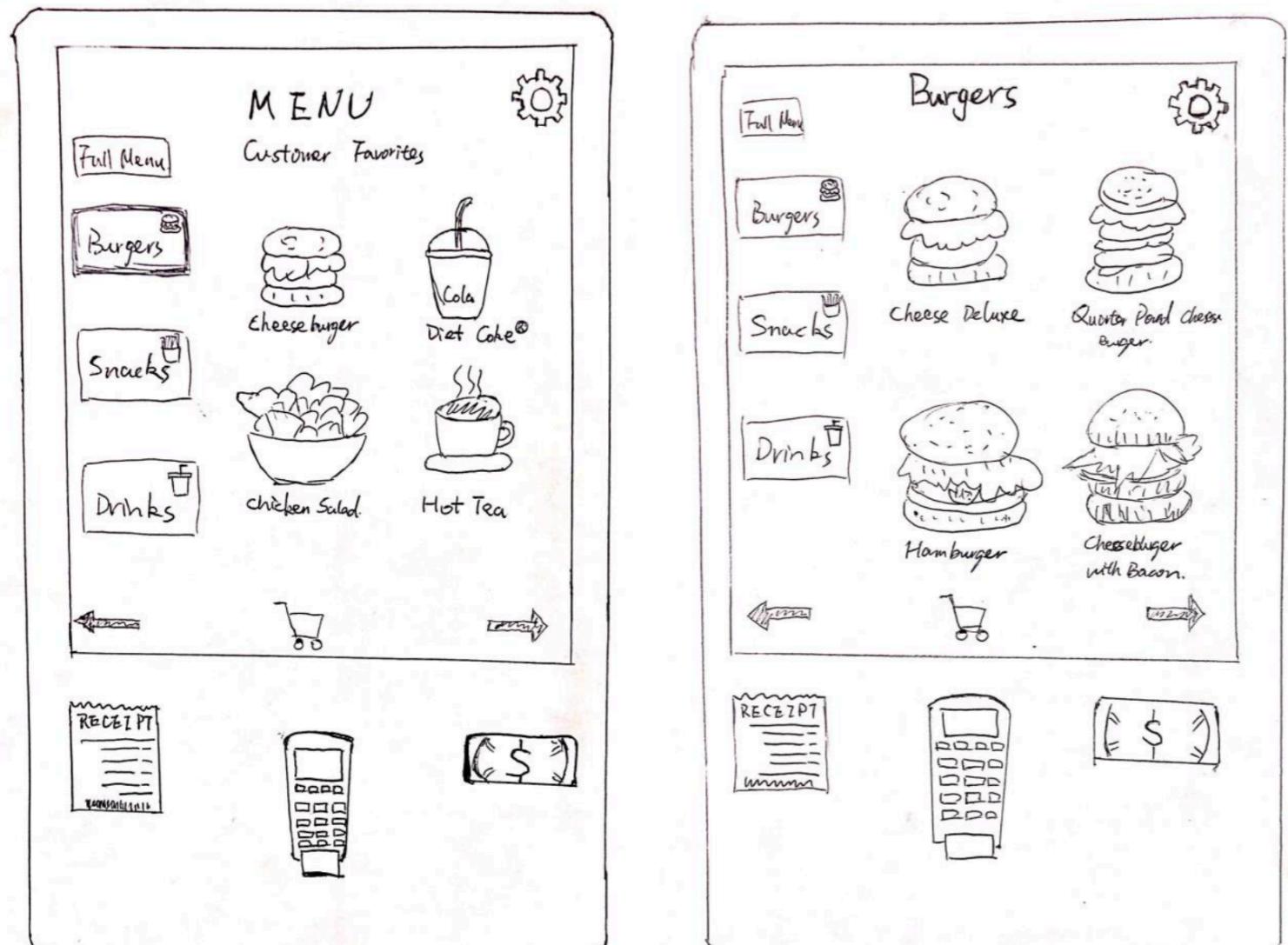
- Used Keystroke-level Model to estimate the execution time of user actions.
- Analyzed 3 scenarios for each features below:
 - Order feature
 - Promotion features
 - Machine Settings feature



StoryBoard Scenario

Andrew may not be very familiar with the food the restaurant provided. Therefore, it is good that we provide a “Vegetarian food” category.

Storyboard Scenario



Paper Prototype Design

On the screen:
Main Menu, Food selections
(Burgers, Snacks, Drinks)

On the Kiosk:
Receipt, Credit card slot,
Cash slot

Paper Prototype Design

TESTING STRATEGIES

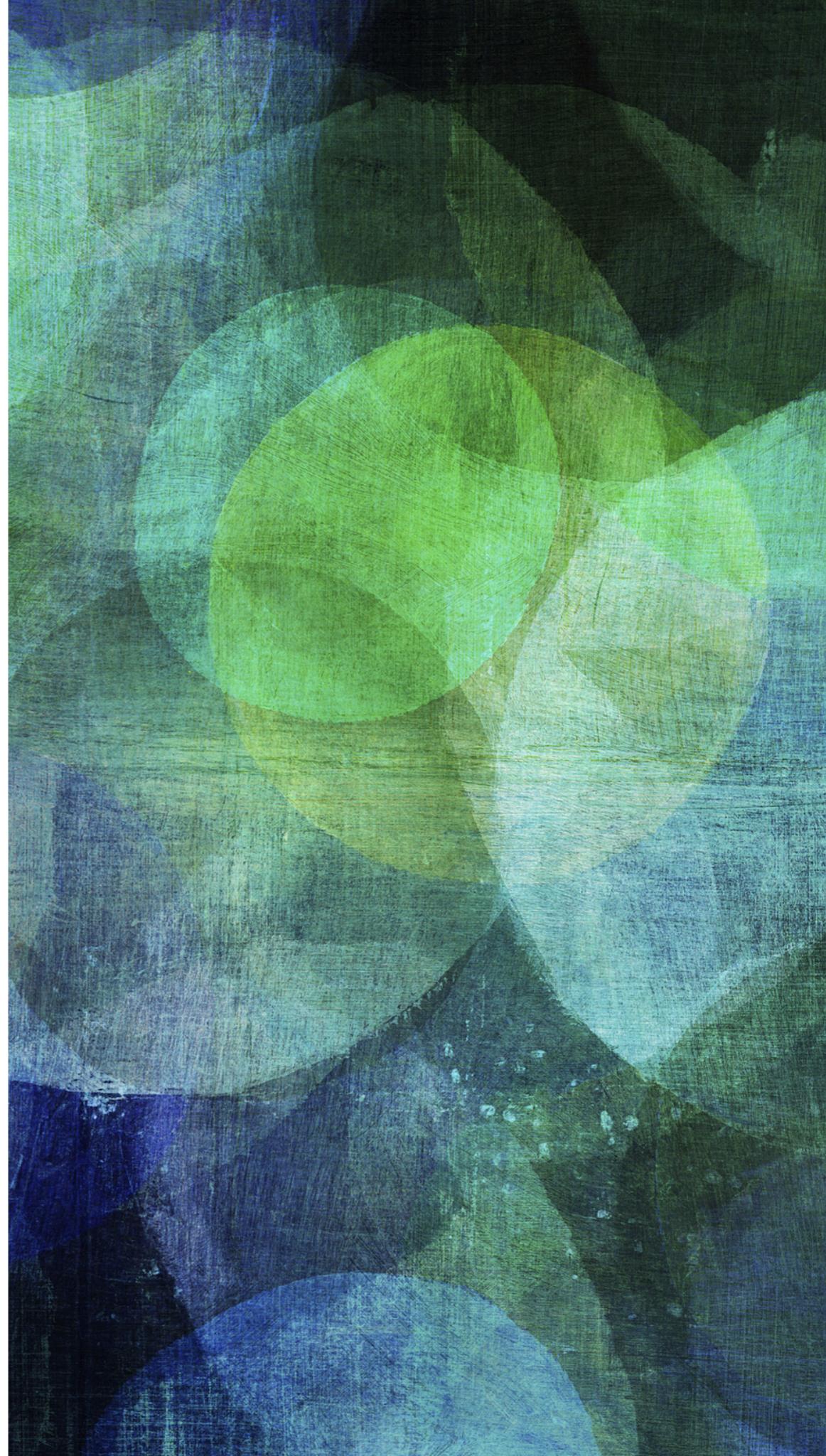
1. Adults: We will test if they can easily order the items from different categories they prefer.
2. Vegetarians: We will go to the vegetarian restaurants and ask customers to do the test. We will test if they can easily find the food they want, and they are able to modify their order to exclude the ingredients they don't want.
3. People who don't speak English: We will test with users who don't speak English. We will see if they can finish the order only based on the structure of the UI and the indications of the icons.
4. Seniors: We will invite seniors to use our machine and see if it is obvious to them that they can modify the picture and font size in the UI, and the brightness of the screen.

METRICS FOR SUCCESS

Efficiency: The time a customer spent on finishing one order with the kiosk should be less than the time they spent ordering with a staff.

Easy to use: The system needs to be very easy to learn and use. The UI must make the functionality and content locatable.

Universal: The system will be understandable to all users regardless of their age, gender, nationality and education background.



DATA TO COLLECT

- The amount of time users spent on finishing one order.
- The number of times each user asking where to find a specific functionality.
- The number of times a user encounters an error.
- The demographic information of the users.
- Previous experience of users with similar system.
- Any suggestions from test users.

Data Collection Survey

Data Collection Form			
Basic information:			
Age range	0 to 18	18 to 45	Above 45
Vegetarian?	Yes	No	
English Speaker?	Yes	No	
person with special needs?	Yes	No	
Quantitative Result:			
Score of satisfaction (from 0 to 10)			
Succeed in completing task?	Yes	No	
Added promoted items?	Yes	No	
Time of completing task			
Received error message?	Yes	No	
Asked moderator for help?	Yes	No	
Qualitative Result:			
Which feature needs improvement?			
What on the page is causing doubts, hesitations, or uncertainties?			
Will the participant use the kiosk frequently	Yes	Maby	No
Does the participant think the system is well integrated	Yes	Maby	No
Does the participant think there was too much inconsistency	Yes	Maby	No
Does the participant find it is easy to learn to use the system	Yes	Maby	No
Customer's Comments:			

PRELIMINARY USABILITY TEST PLAN

-
- Ordering feature:
- Machine setting feature:
Ask participants to change the settings of the kiosks.
- Promotion feature:
Ask participants to read the promotion pages and order the items they require.
- Qualitative test metrics:
 - Customer survey
 1. Which feature needs improvements?
 2. What on the page is causing doubts, hesitations, or uncertainties?
 3. Will the participant use the kiosk frequently?
 4. Does the participant think the system is well integrated?
 5. Does the participant think there was too much inconsistency?
 6. Does the participant find it is easy to learn to use the system?
 - Quantitative test metrics:
 1. Score a satisfaction survey
 2. How many users succeed in completing the task?
 3. Time of completing the task.
 4. How many users chose to add the promoted items to their order?
 5. How many users encountered the “error” message?
 6. How many times one user asked moderator for help?

PILOT USABILITY TEST STUDY

A. What went well with the session:

1. The survey is easy and convenient for the participants to take
2. The roles in the test are sufficient
3. The test includes different kinds of participants.

B. What did not go well or what was unexpected with the session,

1. Some of the participants required a place to input their own comments to the system
2. The trainer received many questions from the participants during the introductory session.

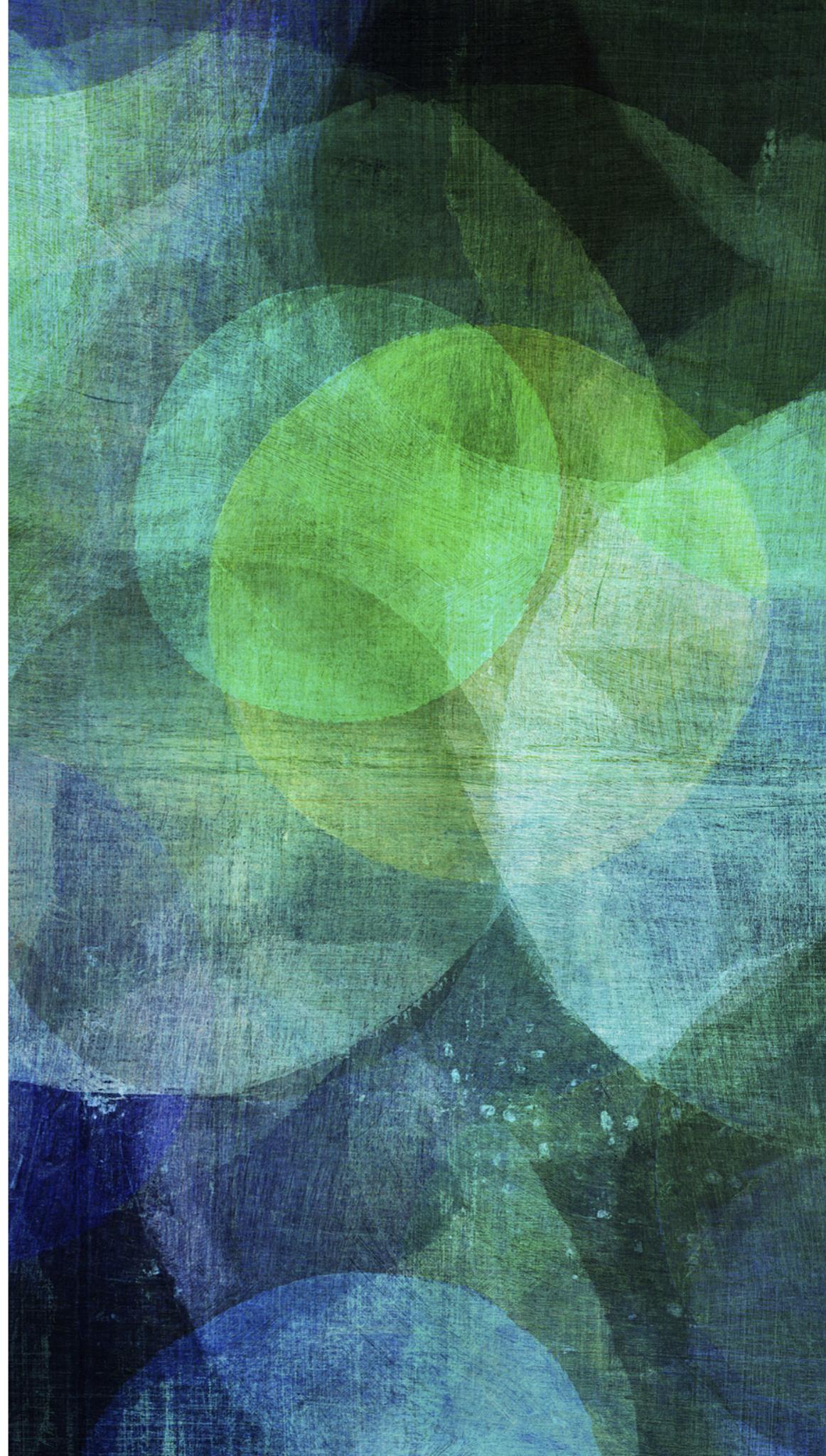
C. What revisions did you make to your usability test plan based on your pilot session

1. On the survey, we added a section that let participants to leave any comments not included in the questions.
2. Based on the questions most frequently asked, we instructed the trainer to address the points for future training.

QUALITATIVE USABILITY STUDY

What we did

- Invited four participants to test our prototype
- Designed four scenarios and tasks
- Tested and recorded
- Summarized and modified



TASKS

- A normal adult user orders a burger, a snack and a drink on the kiosk.
- A vegetarian user orders a burger, a snack and a drink on the kiosk.
- A senior user enlarges the font size on the kiosk.
- A non-English-speaker user switches the language from English to other language.

TEST PROCESS

Script

Hello, my name's Steve, and I'm going to walk you through what we mentioned over email, my team is currently working on a feature that aims to save customer's time waiting in queue and to increase efficiency. Imagine in the future, you no longer have to wait in a queue for 30 minutes, you can finish in 10 minutes. Your suggestions and comments will benefit the future users of our kiosk.

I'd like to begin by thanking you for making time to go through this feedback is valuable and will help us determine if our kiosk needs to be improved. To confirm, our test will last about 30 minutes. If you need more time, please let me know. During this session, I'll start by asking you some questions about information about you. We will not take any information that could identify you. We will make sure that we keep good custody of the records, so there is no chance of personal information leak. I'll also give you some instructions on how to complete the tasks, our staff will record some information while you are completing the tasks. Finally, we will ask you to give a rate of our product and let us know what you think about it.

Please be aware that there are no wrong answers. In fact,

➤ Read the introductory script to each participant about the study

Consent Form (Adult)

I agree to participate in the study conducted by [REDACTED]

I understand that participation in this usability test is voluntary. I can immediately raise any concerns or areas of discomfort with the administrator.

Please sign below to indicate that you have read this form and that any questions you might have have been answered.

Date: _____

Please print your name:

Please sign your name:

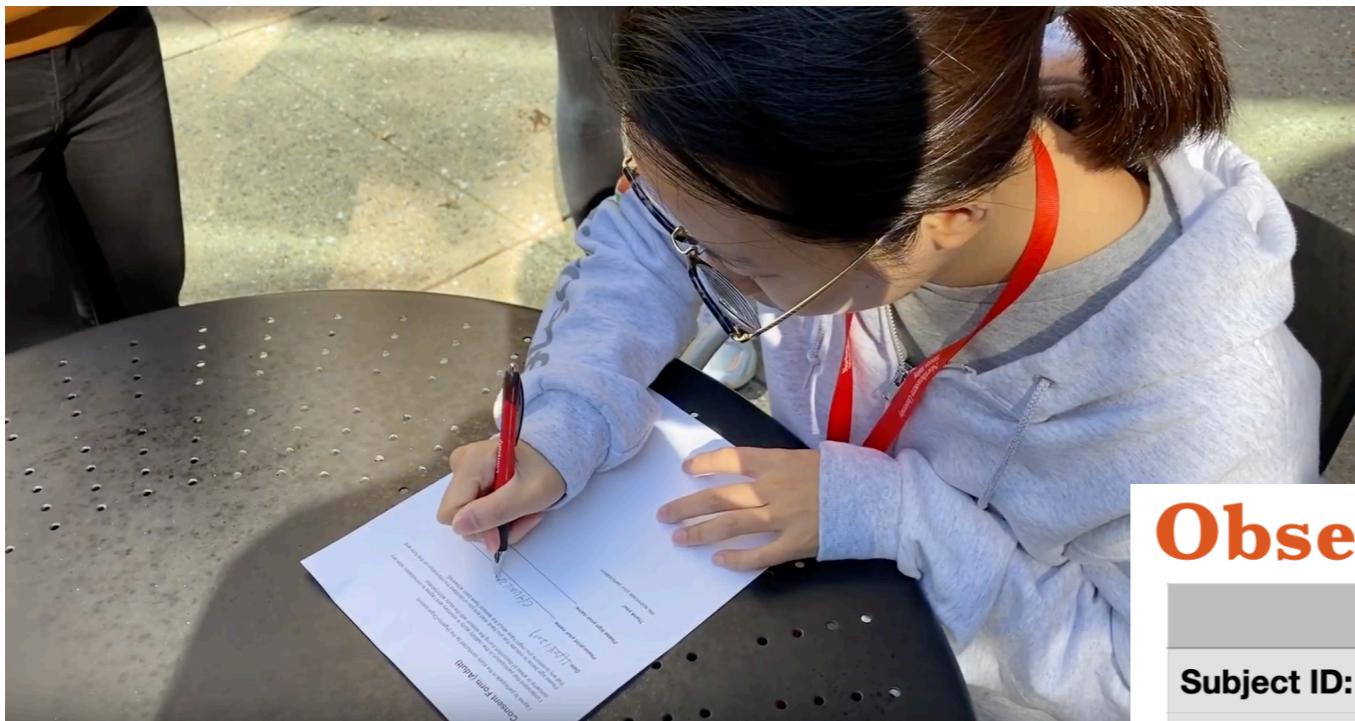
Thank you!

We appreciate your participation.

TEST PROCESS

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- Ask each subject to read and sign the consent form and give a copy of the form to the subject.



Observational Worksheets

Observation Summary				
Subject ID:	S01	S02	S03	S04
Age range	18 to 45	18 to 45	Above 45	18 to 45
Vegetarian?	No	Yes	No	No
English Speaker?	Yes	Yes	Yes	No
Task performed	Order	Order for vegetarian	Setting for font size	Setting for language
Time of completing task	2 min	3 min	2 min	2 min

Started the test and recorded the observations

<https://drive.google.com/file/d/17u9gdkir6Nb9MI-6A3EZ2uoYGCYCal-B/view>

Post-study survey

- Collected the post-study survey

Survey Result				
Subject ID:	S01	S02	S03	S04
On a scale of 1 to 10, how do you think of our kiosk overall?	10	10	8	
I found the system unnecessarily complex	Disagree	Strongly Disagree	Strongly Disagree	Neutral
I would use the kiosk frequently	Agree	Strongly Agree	Strongly Agree	Agree
I think it's easy for me to learn how to use the kiosk	Agree	Strongly Agree	Agree	Disagree
I think the system is well integrated	Agree	Strongly Agree	Strongly Agree	Agree
I think there was too much	Disagree	Strongly	Disagree	Neutral

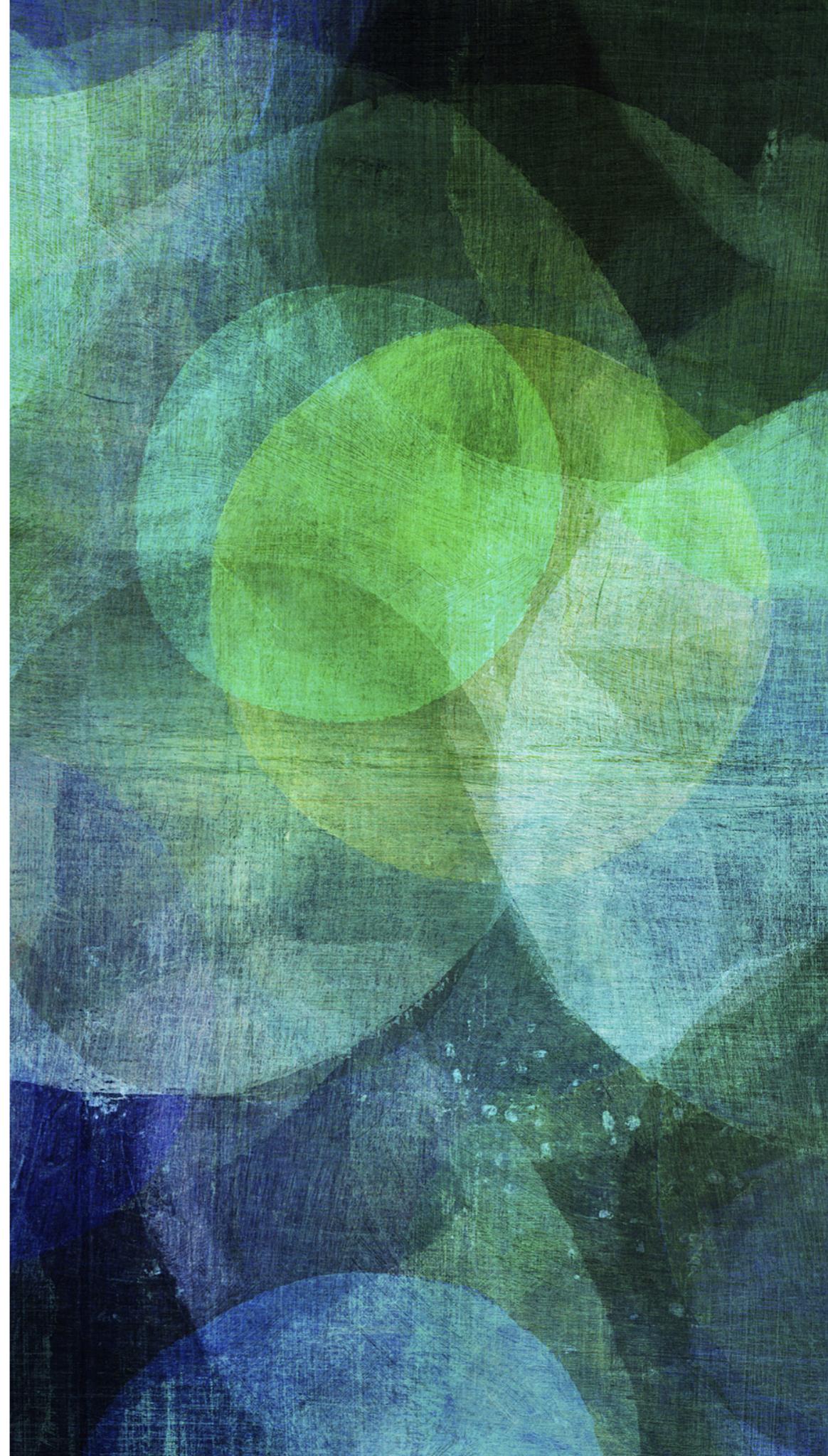
Summary & improvements

- To the product
 - Add a physical button on the kiosk control panel for those users who cannot find the button on the screen.
 - Change the icon of the setting button.
 - Add understandable icons for non-English speaker.
- To the study
 - Offer some small prizes for the participants.
 - Provide the survey and consent form in different languages.

Medium-to High-Fidelity Functional Prototype

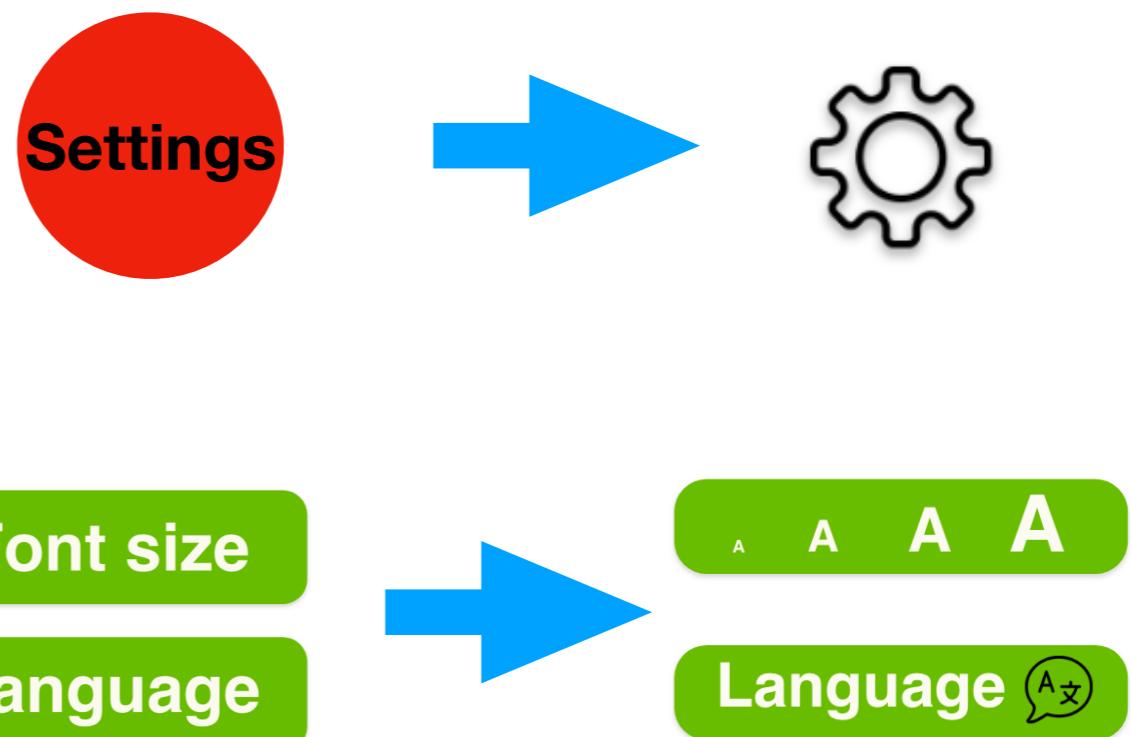
What we did

- Modified and completed a medium- to high- fidelity functional prototype by Adobe XD.
- Tested the prototype in different scenarios.



Improvements of the prototype

- Change the icon of the setting button.
- Add understandable icons for non-English speaker.



WELCOME

Prototype

Let's see how it looks
like!

General

Vegetarian

Kids





Video & Prototype

<https://www.youtube.com/watch?v=tBT1VKuoJuE&feature=youtu.be>

<https://xd.adobe.com/spec/5d9e05e2-2066-4bb0-6df0-23ef71052d28-2baf/>

Thank You!

