Cook Guru: Promotes independence in the kitchen for people with MCI



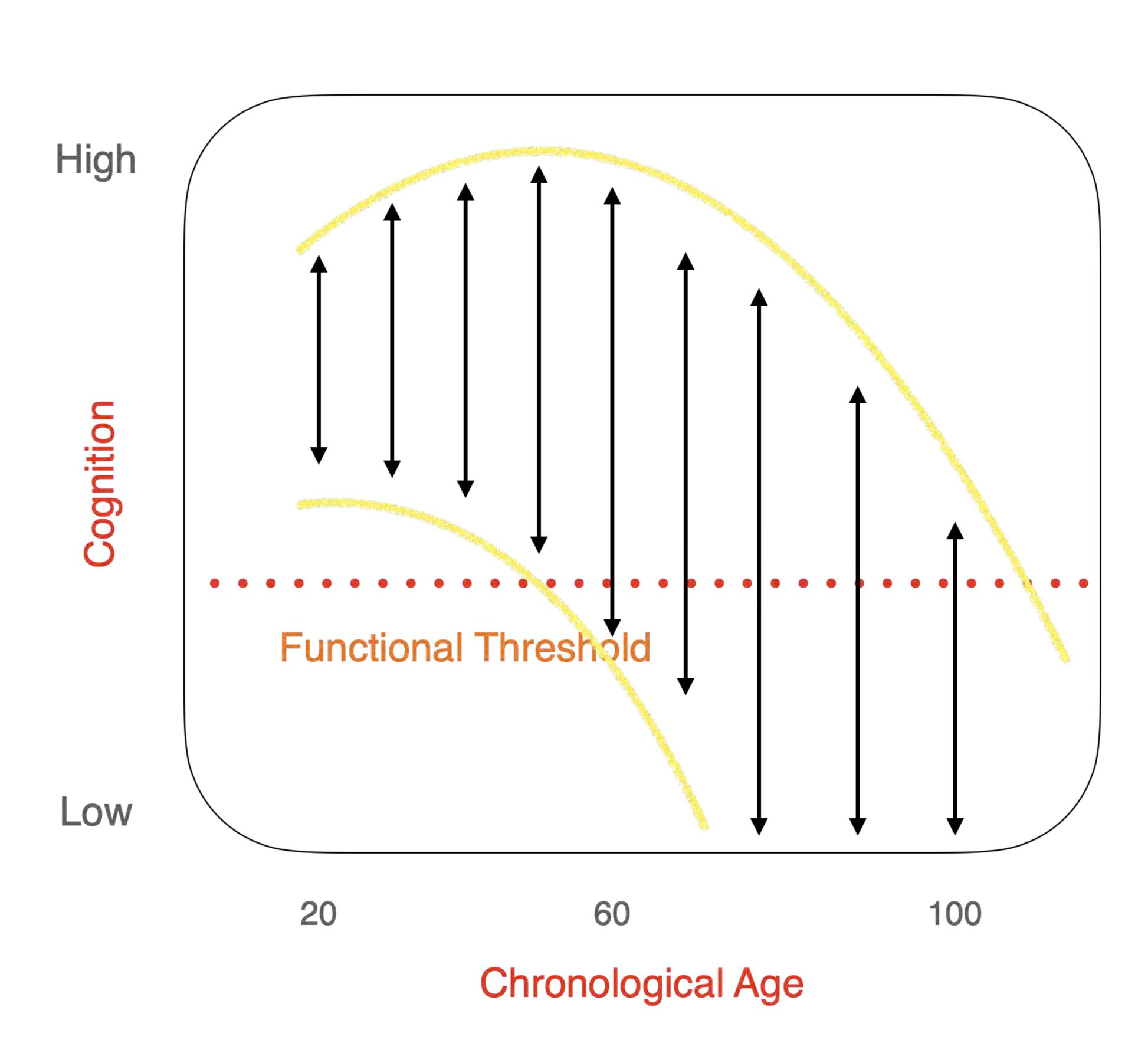
01/Introduction

/What is MCI?

MCI refers to Mild Cognitive Impairment, a stage between the expected cognitive decline of a person with normal aging and the more severe cognitive decline that follows dementia. Often these changes are noticed by the patient themselves and the patient's family and friends, but this MCI patient is still able to maintain basic activities of daily living and mobility.

According to the above findings, MCI patients have difficulty completing complex tasks because their memory and phonological aspects are deteriorating and they may forget their ongoing processes; MCI patients also take more time to make decisions. They may forget to turn off the gas because of memory loss, forget to check the expiration date of food, etc.

People with MCI have difficulty completing tasks, which can lead to a decrease in a person's independence and negatively affect their quality of life. In this context, this study aims to explore the independence of MCI patients to cook their own meals in the kitchen, to find opportunities for design and to make constructive suggestions after fully understanding the process of MCI patients' practices and the problems encountered in between.



MCI can lead to memory loss and difficulties in organising time and completing complex tasks. The aim of this study is to identify and examine the difficulties that people with MCI experience in independent living and to identify design opportunities.

Definition ----- Memory ----- Language ------ ----- Judgment ----- Ages 75–79 (22.5%) demographics ----- Ages 80–84 (40.9%) --- ----- Ages 85+ (60.1%) Symptoms ----- Nonamnestic MCI--------

Mild cognitive impairment (MCI) is the stage between the expected decline in memory and thinking that happens with age and dementia. (Mayo Clinic, 2022)

MCI can lead to memory loss, deterioration of language skills, and difficulty performing difficult tasks.

Meta-analysis estimates (95% CI) of MCI - incidence per 1000 person-years (Gillis C, 2019).

--MCI that primarily affects memory

MCI that affects thinking skills other than memory, ability to make sound decisions, complete a complex task or visual perception)

After a series of discussions and brainstorming sessions, we realised that the kitchen is very important for the independence of people with MCI. Firstly, people need to use the kitchen at least once a day. Secondly, cookies and food affect people's health. People need to do some complex tasks in there to finally get the food they want. Given the frequency of kitchen use, the importance of food for people's health and the complex cooking procedures that people need to perform in the kitchen, we will look for problems that MCI people may encounter in the kitchen and find solutions and design opportunities based on research.

Mark and remind

the location of

utensils

Notify users about

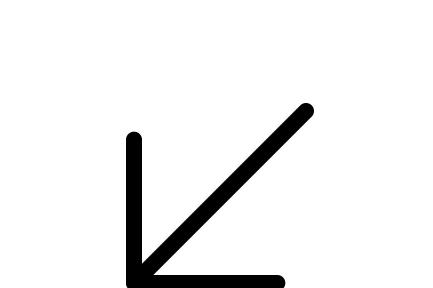
the salmon in the

oven and instruct

to turn off the gas

rice in the

02/Persona



Journey Map & the identified problem space

Journey Map was created to specify the scenario of Mike, who has a MCl and lives alone. He used to love cooking for himself, but as his cognition degenerates due to having MCl, he realizes that the capability of remembering the things to during cooking and completing each task is weaknening.

The scenario is the dinner cooking time for Mike. Mike is cooking Cooked Salmon, Rice and mediterranean salad which are known to be very nutrious for people's brain health and muscle health.

By defining each steps during the cooking along with dedicated location and the environment, we could identify painpoints Mike could experience as a person with MCI. Thus, the journey map has the painpoints listed under each steps in his cooking journey show his frustrations that are resulted from his MCI symptoms.

Give simple,

about the

Design Ideas

Give visual

display of the

amount of

Instruct the user

and remind of the

Inform about the

expiration date and

Detect the

Name: Mike

Bios

Age: 76
Living condition:
Lives alone
Lost spouse 2 years ago

Health Condition:
Mild Cåognitive Impairment

Mark and remind

the location of

knives and cutting

Instruct the user

on how to use the

microwave and

Instruct the user

on how to use the

oven.

Pain points:

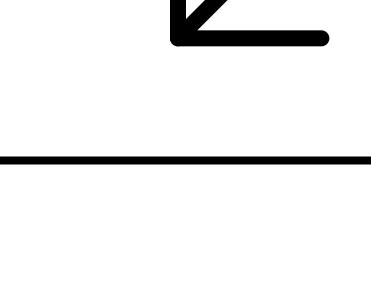
- 1. Forgetfulness
- 2. Not able to follow steps needed
- to complete a complex task

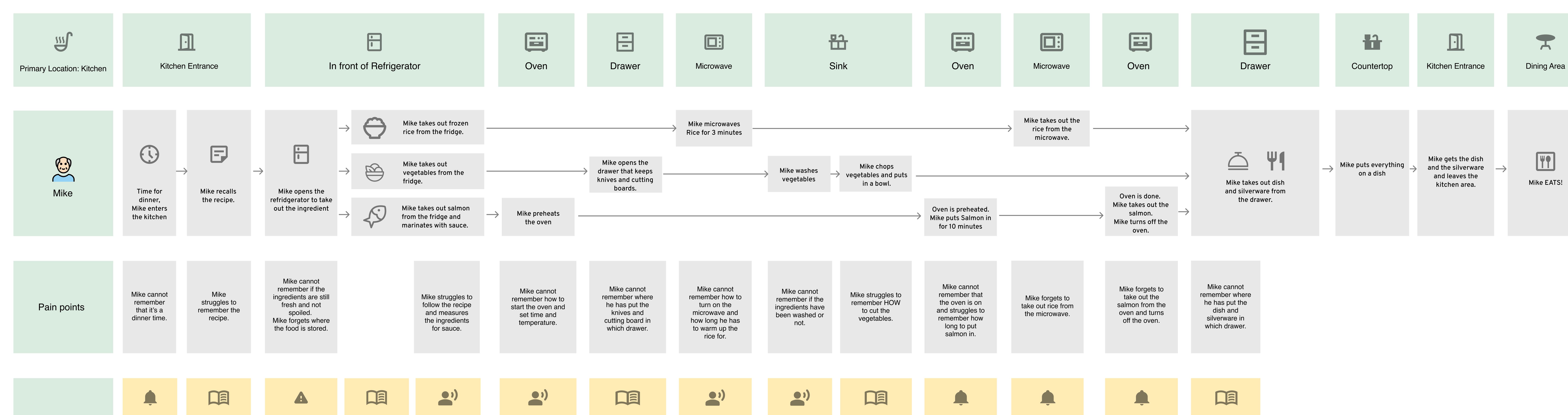
 3. Challenges with concentration
- 4. Decreased work performance

Goals

- 1. Mike wants to be able to cook meals for himself and continue to practice following instructions and recipes.
- 2. Mike wants to be able to remember his meal time to promote his health and maintain the wellbeing.
- 3. Mike wants to be able to choose the meals that are good for his MCI symptoms.

03/User Journey Map & Ideation





how to cut each

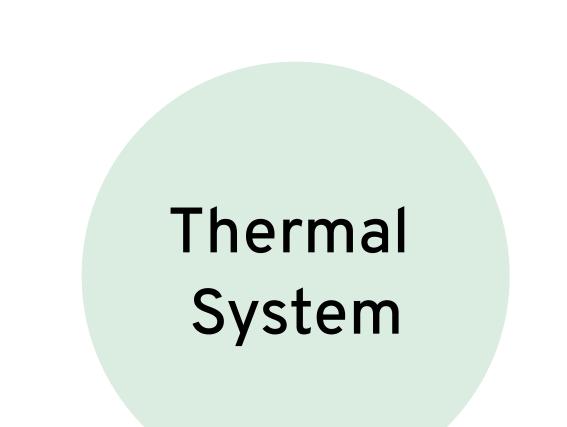
vegetables step

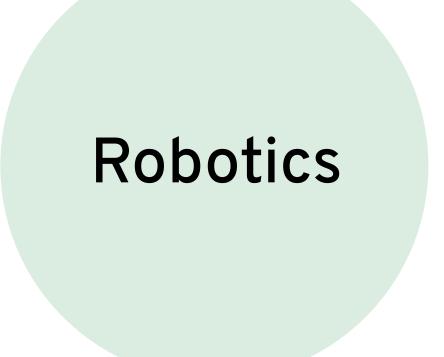
oven and

04/Diagrams of Functions

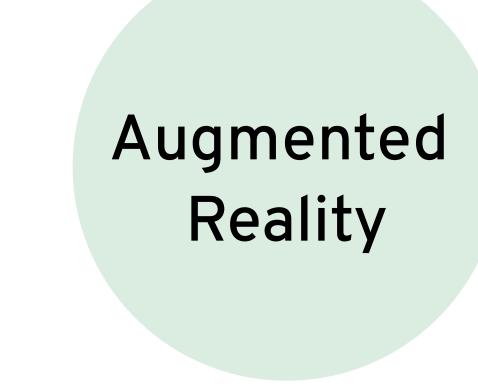
Design Opportunities

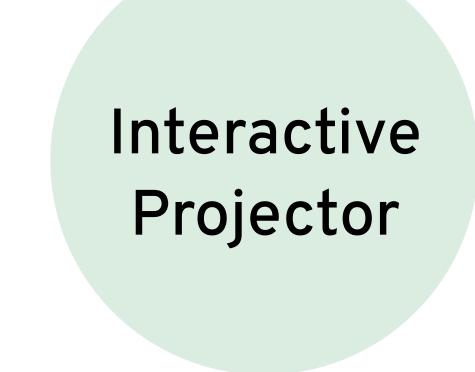
Based on what we learned from the existing systems, we studied the following systems more closely to compare and contrast in order to come up with the right solution.











Three Main Features



Journey Map was created to specify the scenario of Mike, who has a MCI and lives alone. He used to love cooking for himself, but as his cognition degenerates due to

Competitive Analysis

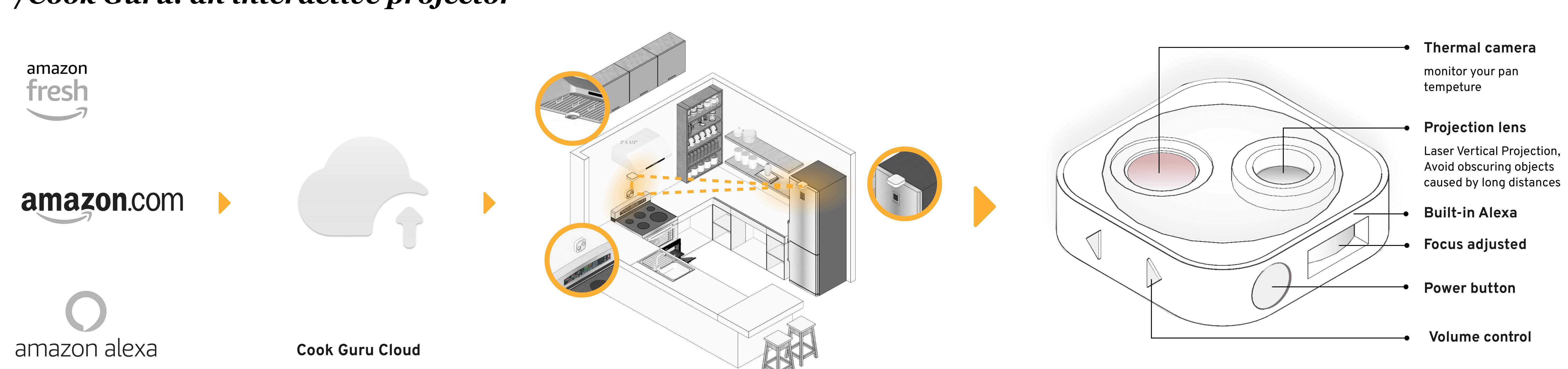
	Voice Assistants	Smart Cooktop	Robotic	Projector	AR Glasses
Feasibility in the kitchen					
Accessibility for user with MCI					
Price	Low	High	High	Low	High

/ Why Projector?

After brainstorming and rigorous research on the existing systems, we ran a competitive analysis of the technologies that could be potential design opportunities for our problem space. We specifically looked at the "Price Range", "Accessibility", and "Feasibility". We decided on the interactive projector as it meets three of our standards.

Also, it is the most ideal solution that intersects both technology and environment (architecture). We wanted to be as creative and as innovative with this design by utilizing our strengths as a group, which are interdisciplinary from HCI, Digital Media, and Architecture, and emphasizes the ubiquitous nature of technology in our environment.

Cook Guru: an interactive projector



05/Prototypes & Usage Scenarios

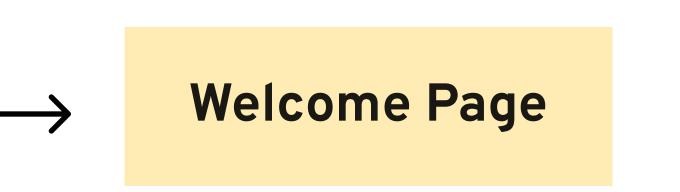
/Ingredients Tracking & Recipe Cecommendations

Above the refrigerator

The main projector will be placed above the refrigerator to display the interactive dashboard on the refrigerator. It has a welcome page where the user can view various information, including the ingredients in the fridge and their expiration date that had been automatically input by online grocery service that the user uses. The visual elements are designed in a way that is accessible for the elderly people and people with MCI. The dashboard also has a "family picture" feature where they can easily remind themselves of people they love and care. If any questions, just call Alexa.



Refrigerator area



Selecting Recipes ---->

Recipes from ingredients

in the refrigerator

Customized Recipes

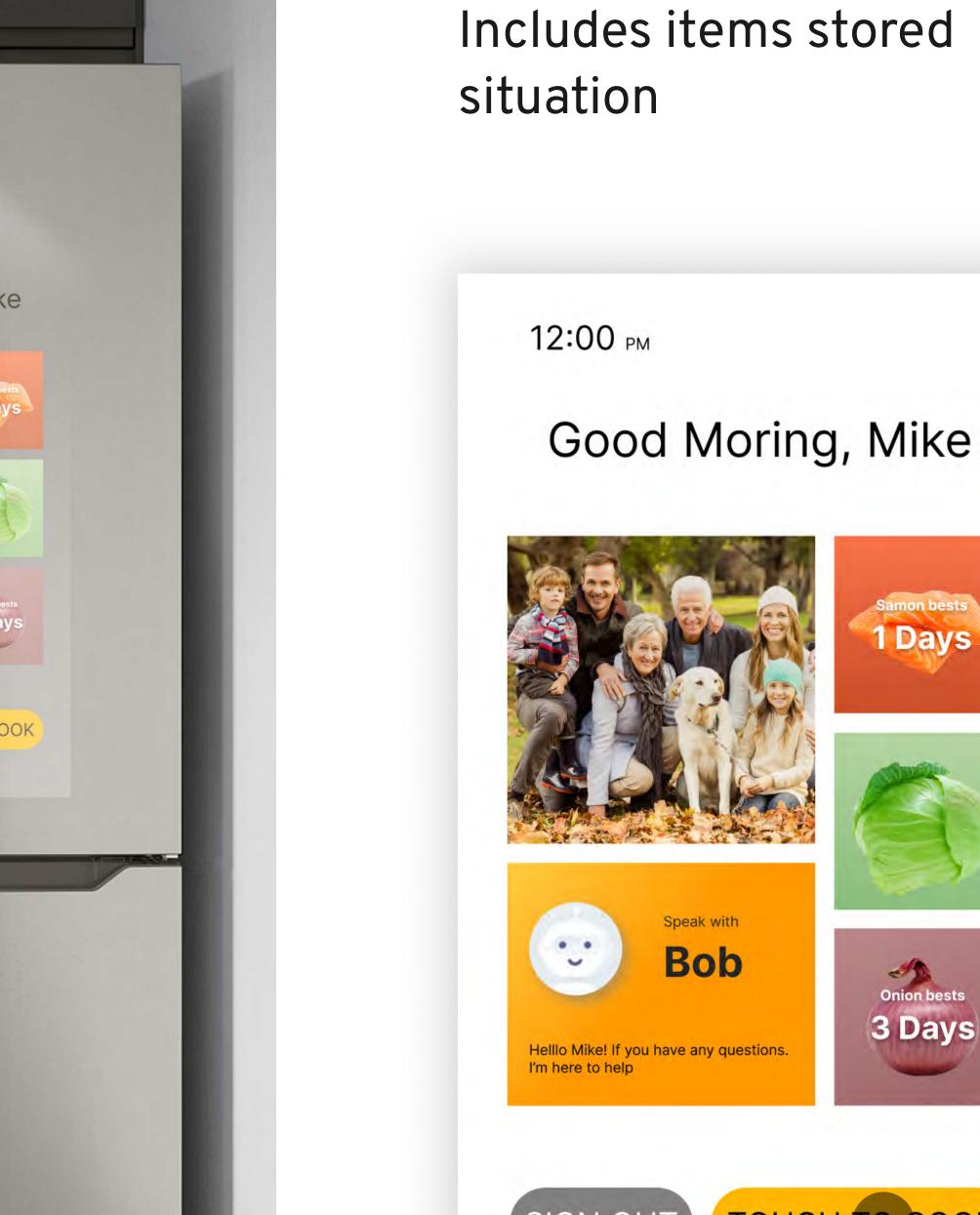
Adjust recipes according

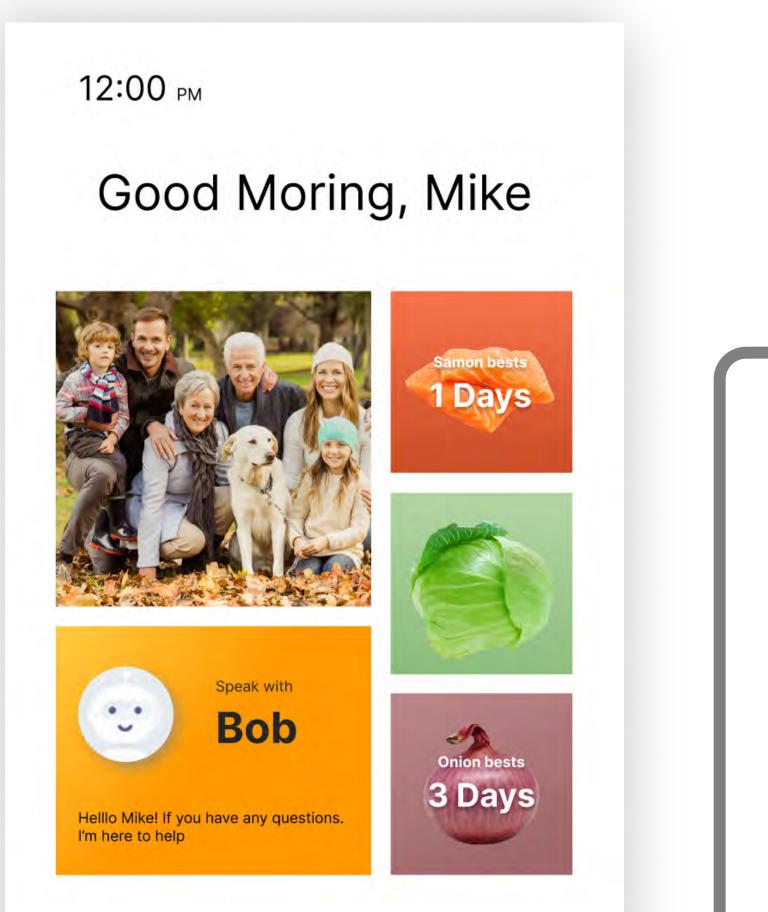
to personal taste

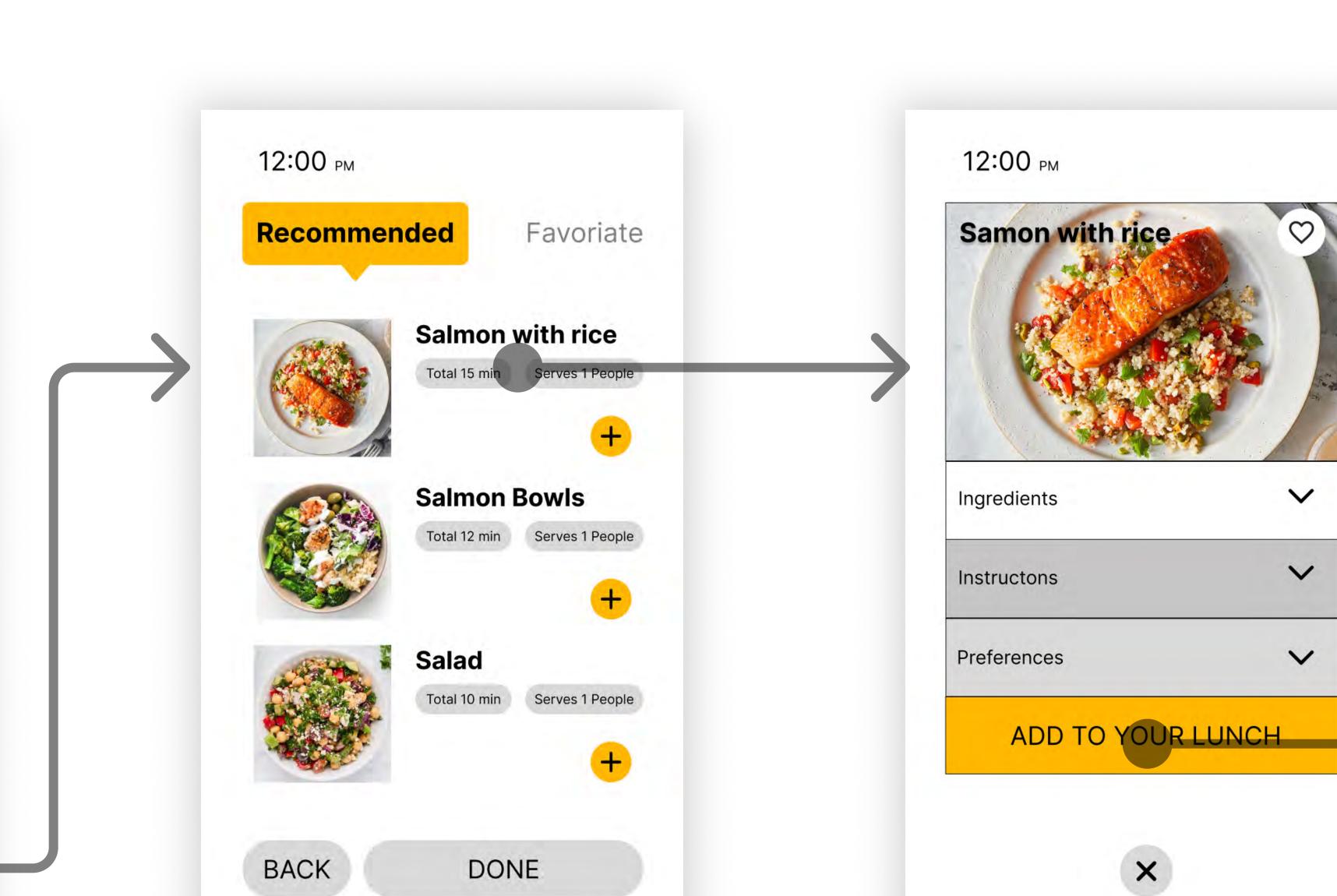
Start Cooking

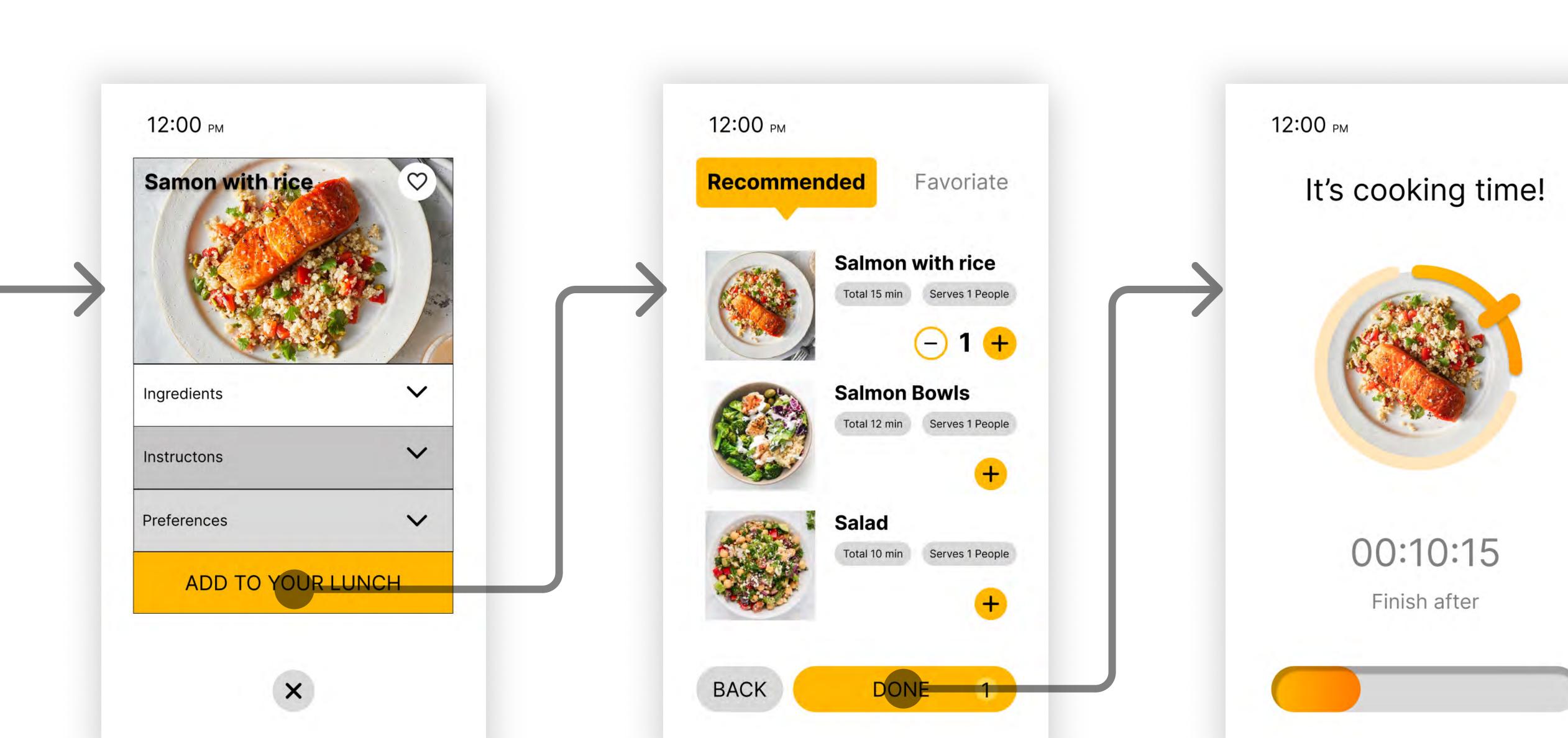
Displays cooking stages

and remaining time









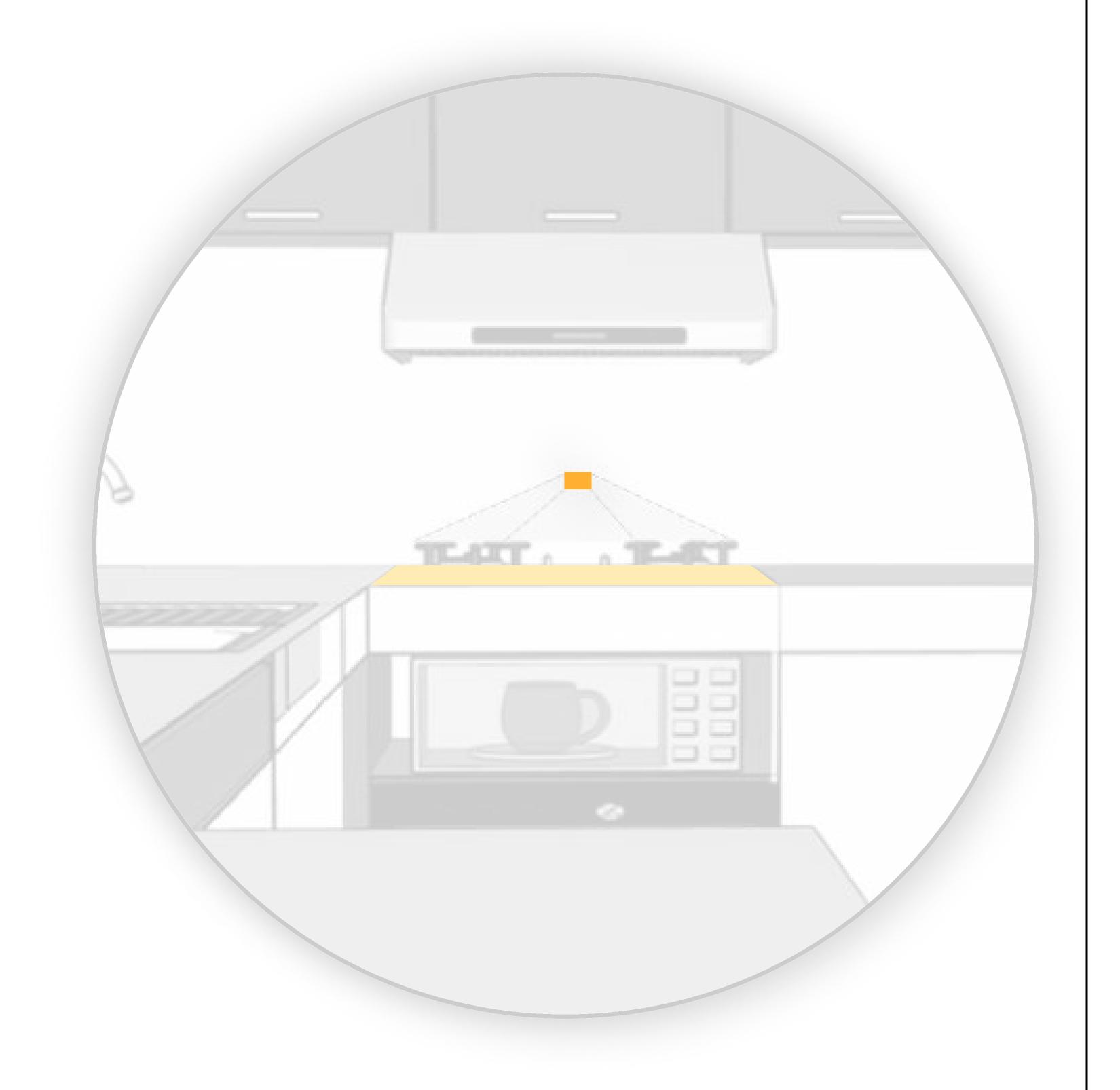
Continue to select /edit

recipes selected

Temperature Detection & Reminders

Above the cooktop

The projector will be placed above the cook top to project the interactive interface on thhe cook top area. It aims to guide and instruct the procedure of cooking to users. It will inform about temperature. If the cooktop is above the temperature that the recipe suggests, the interface will notify the user with the red light and the voice assistant will alert the user about the safety. This projector will also be responsible providing step-by-step instructions of what and how to follow the recipes.



Cooktop area

Cooking alarms

Hi, Mike! Items ordered

from AmzonFresh are

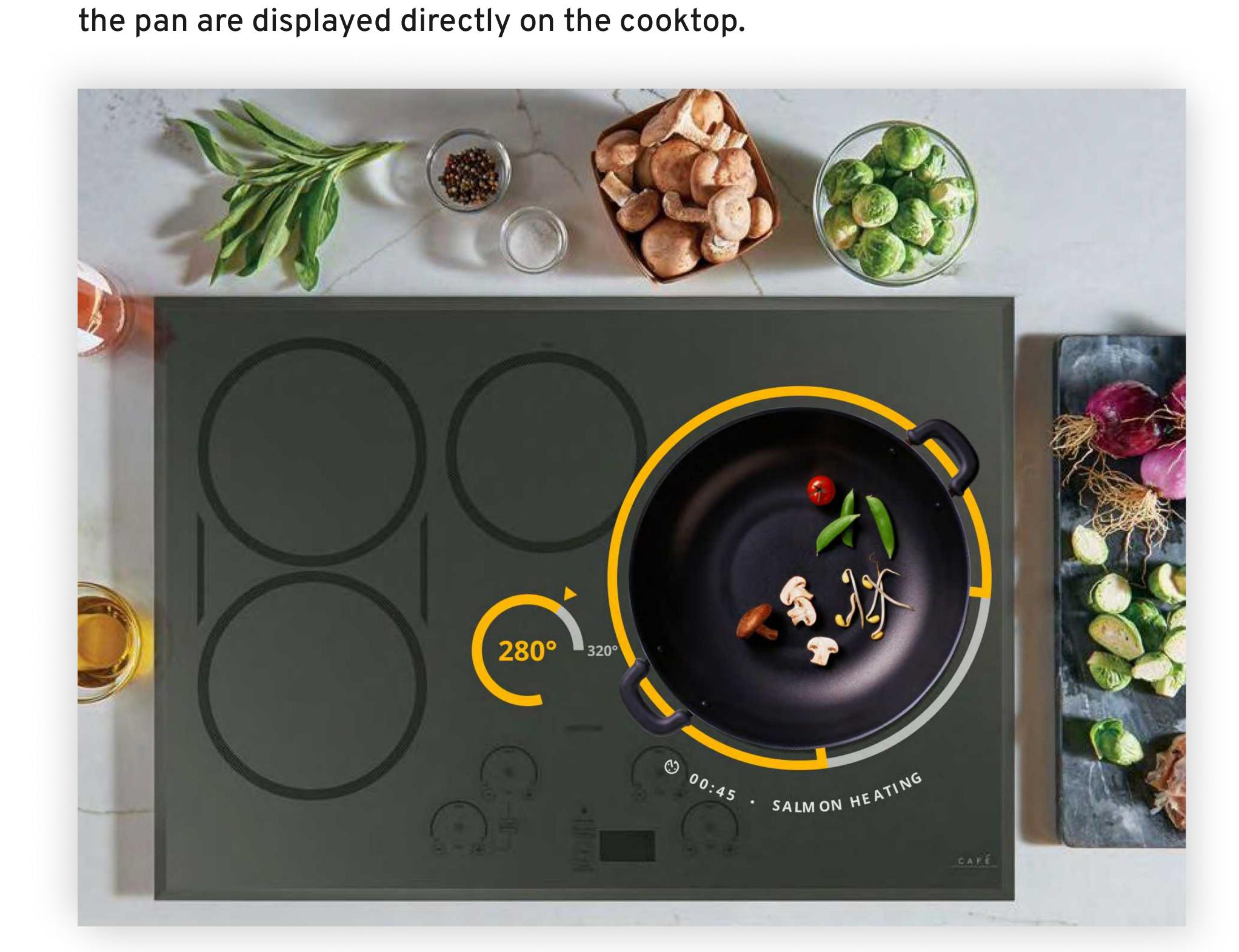
automatically recorded

Temperature Alarm

alert light will appear on the cooktop.

Cooking guides

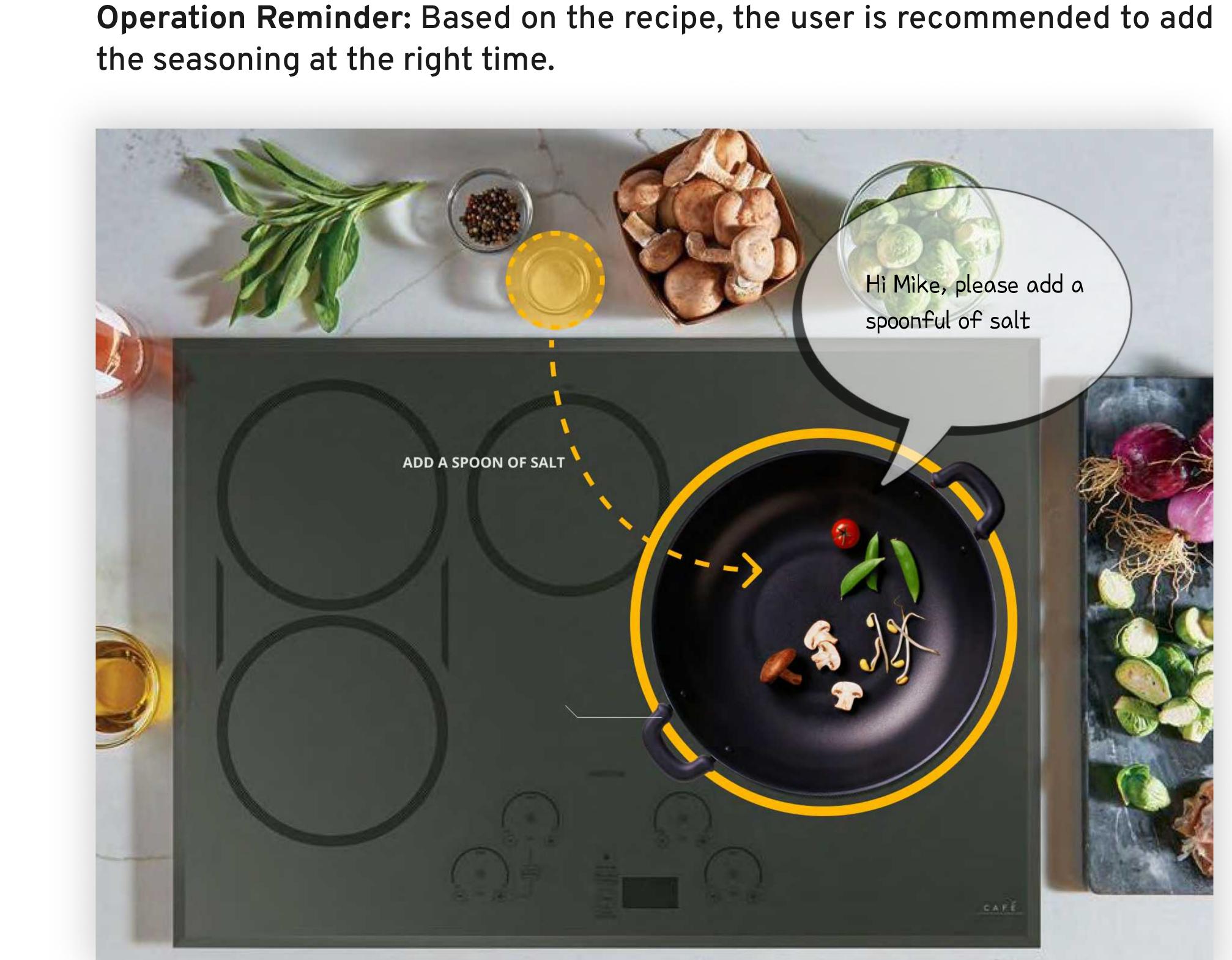
Operation Reminder



Temperature Indicator: The current temperature and target temperature of



Temperature Alarm: When the temperature of the pot is too high, a red



Kitchen wall

Detailed guides

Video guides

Checklist

Cooking Instruction