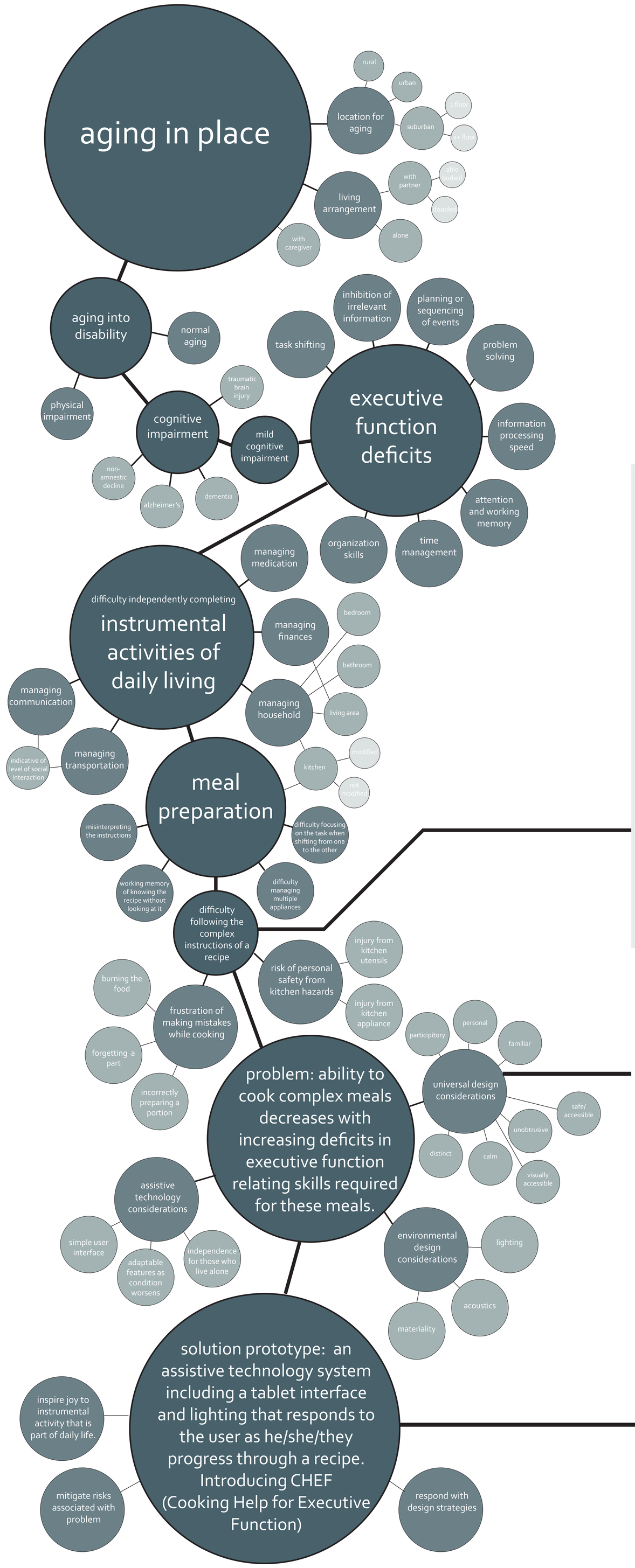
CHEF SYSTEM

Cooking Help for Executive Functioning

ANNIE YINING CHEN, SARAH GRUNERT, RYAN STODDARD, ALEXANDRA RACHMAN, DOUGLAS DILLMAN
INSTRUCTOR: YOUSEF BUSHEHRI



Cooking and Aging into Cognitive Decline

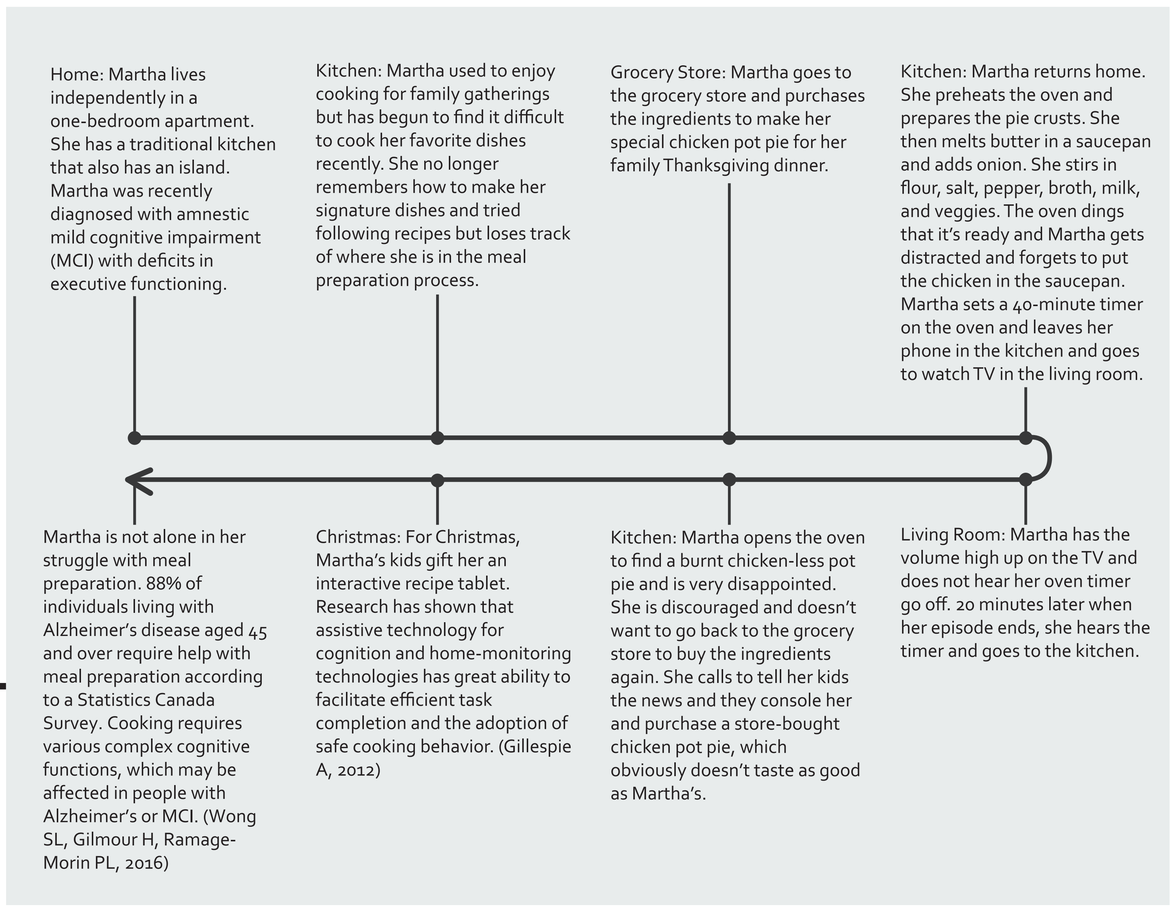
Many adults that wish to age in their homes are aging into disability. Instrumental activities of daily living can be difficult to independently complete when an individual has cognitive disabilities that present declining executive functioning overtime. Most of these activities require at least one type of executive function to independently complete. Within the kitchen, cooking a meal presents many person-environment interactions that are impacted by executive function decline (Marsden et al., 2001). Cooking is considered a joyous part of life, and cognitive decline can make it impossible to do independently (Reitman Centre Team, 2020). Accross the majority of cognitively declinging individuals, the ability to use executive function to follow the complex instructions of a recipe makes the type of meals possible to cook simple (Johanasson et al., 2011). We want to propose a solution that allows the individual to cook even with EF deficits, not only for mitigating the risks associated with the IADL, but inspiring joy to the activity. We are proposing an user interface that acts as an interactive recipe book that is connected to additive lights that connect through bluetooth. Essentially, a device that is specific to the kitchen that you input the directions to your recipes and enter which appliance corresponds to each light. The interface at each step would allow you to read the task (or hear it if you have acoustic needs), select the appliance used (which turns on the corresponding light), and begin the task which starts the timer. This system allows you to break down a recipe by step in a way that printing it does not, since it isolates each task.

Through literature review, we found design principles that encompass assistive technology, environmental design and universal design as a response to cognitive decline in aging adults. CHEF System addresses each one (Grey et. al, 2015):

1. Participatory Design: CHEF System encourages the user to adjust the interface to their needs, and allows the user to add their recipes.
2. Familiar Design: An interface with colors, fonts, and icons that are easy to recognize.
3. Personalization: CHEF allows you to develop a user bio, have favorite recipes, and personalize the accessiblity features.
4. An Environment that is Easy to interpret/Calm: CHEF System allows you to walk through the recipe one step at a time, highlights the space you should be in through the lights, and engages you in the process of cooking.
5. Visual Access to Key Areas/Objects: The additive lights act as guides to where you are in the recipe, as it is controlled by the recipe.
6. Unobtrusive Safety Measures: Providing Assistive Technology System that controls the environment of your cooking experience at your own pace.
7. Distinct/Legible: Distinguishes the different areas of the kitchen with lights.

Journey map scenario

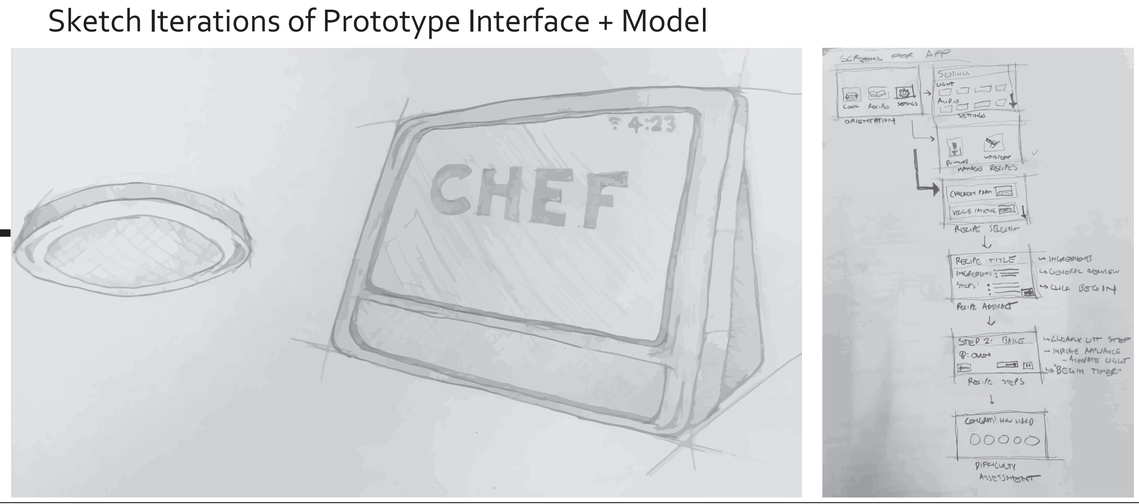
This scenario follows the journey of woman that embodies a portion of the target population that CHEF addresses.



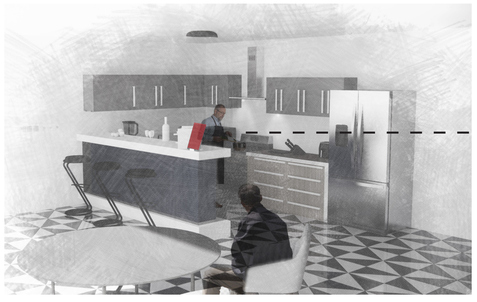
Interventions: Universal Design, Environmental Design, + Assistive Technology

Understanding the deficits of ADLs and IADLs can inform where the emphasis is placed when designing for their executive functioning (Zilm, 2014). A guide to Universal Design for Dementia-friendly dwellings has already been published in Ireland, establishing guidelines that allow people living with dementia to stay in their homes and community while supporting their cognitive function (Grey et al., 2015). The guide empowers individuals with dementia with spaces that promote personal identity, high self-esteem, personal autonomy, and meaningful activities. In the context of cooking a meal in the kitchen, these strategies can be applied not only to aid in the instrumental activity, but to inspire joy that cooking brings to many lives. Principles that encompass these ideas are listed in the diagram (Grey et al, 2015).

Sketch Iterations of Prototype Interface + Model



USER INTERFACE DESIGN



The Tablet

The dimenson of the tablet is 9.7 x 6.9 inches. The tablet is portable- it could be either vertically placed on the tables or be carried by the users.

Home Screen

This screen is where you orient to settings, recipe book, begin cook and user profile. A clear font, selection of distinct icons, and layout is used for simple, readable interface.

Settings Screen

The settings screen allows the user to name each light, which come numbered and paired as L1, L2, L3, etc. How they name them is based on where they put them. Assibility features such as font, voice assist, and ambience of light can adapt to disability over time.

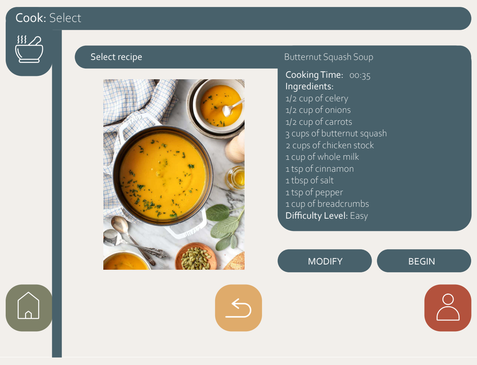
User Profile Screen

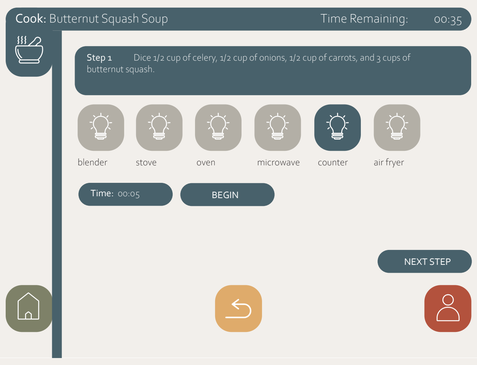
The user profile screen is where the user can add personal information and make the device/system their own. This further engages the user in the design of their system.

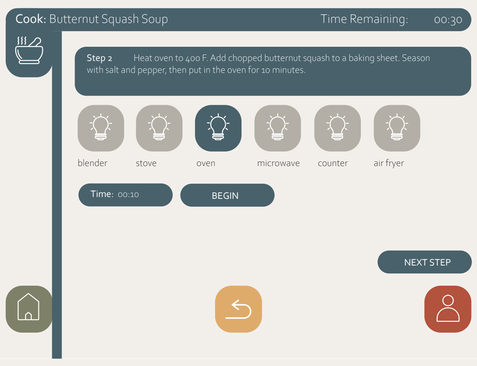
Recipe Book Screen

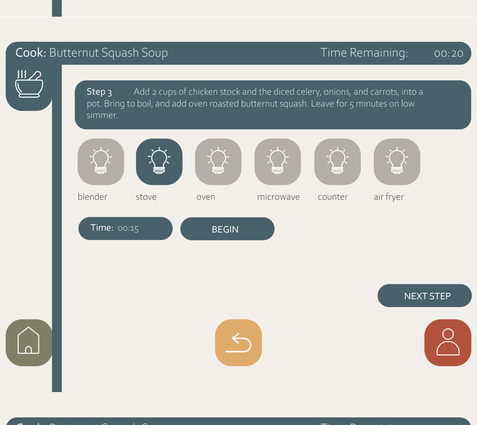
Family Recipes, Recipes online, and meals that the user made up as they cooked can be programmed into the recipe book. The user can chronicle important details from the cooking process in these pages.

SCENARIO 1



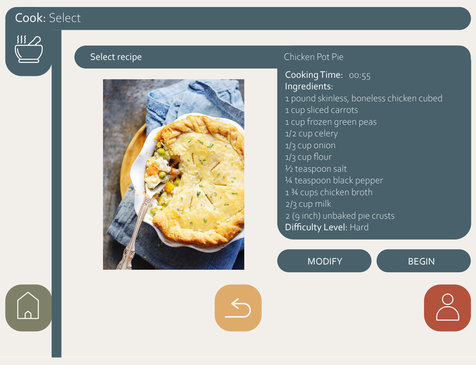


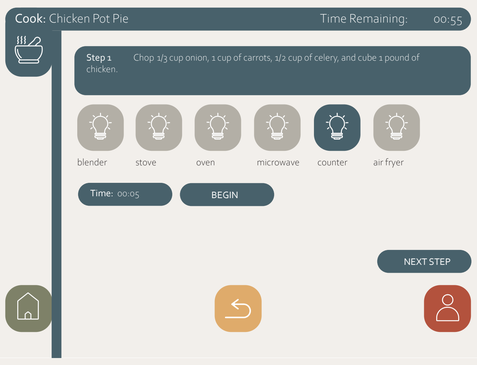


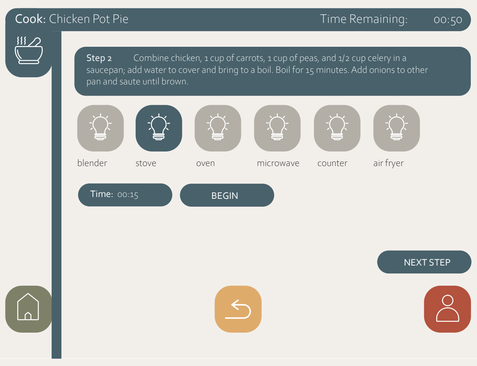


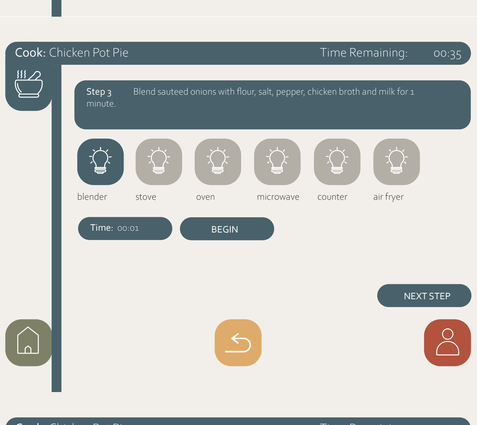
KITCHEN LIGHTING STATUS

SCENARIO 2









KITCHEN LIGHTING STATUS

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