



Deliverable A04
Final Submission

Mohd Nawaz Hussain - A00428036
Ashwin Sivaraman - A00426488
Caner Adil Irfanoglu - A00425840
Parijat Bandyopadhyay - A00430847
Rishab Gupta - A00429019

Table of Contents

ROLES AND TASKS.....	4
PROBLEMS/ISSUES ADDRESSED.....	5
A BRIEF DESCRIPTION OF THE PROBLEM AND ISSUES OBSERVED	5
INTERVIEW/QUESTIONNAIRE COLLECTION AND DETAILS	6
GATHERED REQUIREMENTS	7
DESIGNS (SAMPLES OF THE DESIGN PROGRESSION)	9
USABILITY STUDY	13
DESCRIPTION OF PARTICIPANTS	13
EQUIPMENT/ INSTRUMENTS USED AND ENVIRONMENT.....	14
<i>Summary of the UI and how they are used:</i>	14
<i>Recording Equipment and Methodology Used</i>	16
LOCATION OF THE STUDY	17
DATES OF THE STUDY	17
USABILITY TESTING DESIGN GROUP WORKSHEET	18
A. GOALS OF THE STUDY	18
1. <i>Issues to be addressed</i>	18
2. <i>Detailed addressing of the issues</i>	18
3. <i>Understanding based on testing phase</i>	18
4. <i>Usability components measured</i>	19
5. <i>Quantitative data collection methodology</i>	19
B. FORMULATION OF HYPOTHESIS	19
1. <i>Reasons For Study</i>	20
2. <i>Derived Hypothesis</i>	20
C. SELECTING THE EVALUATION PARADIGM AND TECHNIQUES.....	20
1. <i>Methodology used to measure the dependent variable</i>	20
2. <i>Equipment required</i>	20
D. PRACTICAL ISSUES AND DESIGN TYPICAL TASKS IDENTIFIED	21
1. <i>Issues Faced by User</i>	22
2. <i>UI Components Involved For Above Steps</i>	22
3. <i>Location of the tested tasks in the application</i>	23
4. <i>Specific Tasks Performed By Participants</i>	23
5. <i>Dependent and Independent Variables for the above tasks</i>	24
E. ETHICAL ISSUES	25
F. EVALUATE, ANALYZE, AND PRESENTATION OF THE DATA	25
1. <i>Expected Data</i>	25
2. <i>Data Analysis</i>	26
3. <i>Expected results of the hypothesis.</i>	26
PROCEDURE	27
A. <i>Script</i>	27
1. <i>Analysis of the results</i>	28
a. <i>Feedback from professional caregiver</i>	28
b. <i>Feedback from group interview</i>	28
2. <i>Acceptance/Rejection of Hypothesis</i>	29
DISCUSSION OF THE RESULTS	30
FUTURE WORKS	31

INTEGRATE A NON-INTRUSIVE LIFELINE MOVEMENT TRACKER BASED ON DAILY ROUTINE TO APPLICATION.....	31
REDESIGN THE TAB BAR TO BE MORE VISIBLE	31
MAKE THE MEDICATION FEATURE OPTIONAL.....	31
DECLUTTER THE MEAL PAGE.....	31
APPENDIX.....	32
APPLICATION PAGES FINAL VERSION	32

Roles and Tasks

Task	Parijat	Ashwin	Caner	Rishab	Nawaz
Created Persona	✓	✓	✓	✓	✓
Project Proposal	✓	✓	✓	✓	✓
Survey/Interview Preperation	✓	✓	✓	✓	✓
Conducting Caregiver Interview			✓	✓	
Assisting Caregiver Interview	✓	✓			✓
Design Thinking Process	✓	✓	✓	✓	✓
Initial Design Sketches	✓	✓	✓	✓	✓
Heuristic Evaluation	✓	✓	✓	✓	✓
Initial Design Prototype	✓	✓	✓	✓	✓
Conducted Usability Study		✓	✓		
Assisted Usability Study	✓			✓	✓
Incorporation of usability feedback	✓	✓	✓	✓	✓

Table 1: Roles and Tasks of Group Members

Problems/issues addressed

Our app will help the caregiver monitor the patient's behavior and keep track of his meals, prescriptions, sleep activity and physical well-being. The app also furnishes the caregiver with the real-time location of his patient (say if the patient steps outside his house), along with an option to receive and send the emergency alerts if needed. Also, the app will be tracking past data and offer the caregivers statistics for the above-mentioned features, hence helping caregiver better and easier monitor the patients' status.

A brief description of the problem and issues observed

After conducting research, our team members concluded that the caregivers are usually the overlooked entities and have numerous problems. These problems can be listed as follows:

- Difficulty monitoring daily nutrition requirement of the patient
- Difficulty monitoring daily medicinal schedule of the patient
- Short-term memory problems make daily chores more challenging
- Problems with the abnormal patient behavior
- Not being able to effectively track general caregiving tasks
- The patient wandering dangerously on their own, when caregiver is away
- Tracking the sleep pattern and behavior of the patient
- Emergency respondents notifying the caregiver
- The caregiver has multiple patients to address

Interview/Questionnaire collection and details

The first interview was conducted with a faculty member experienced with caregiving non-professionally upon following the lead provided by Dr. Yasushi Akiyama. This interview provided the group an extensive feedback about how the initial features of the application aligns with the patients' needs and how they can be tailored better. It also helped modifying the first version of the questionnaires.

Since the application is targeted toward individual caregivers (i.e caregivers taking care of a family member with memory loss issues) and professional caregivers, the questionnaires' are filled out by each group. Individual caregiver feedback and questionnaire is gathered in a casual dining environment providing the caregiver a soothing atmosphere to think and address the issues accurately. Later, the professional caregiver feedback and questionnaire is gathered by scheduling a visit to Bayshore Home Health in Halifax. This visit provided the team feedback about the current application features and prototype design.

User interaction with the prototype is observed and noted for participants including the target users of the application as well as other users who are accustomed to user interface design and capable of providing valuable feedback. The engagement of users is observed for 5 participants with one of them being a target user.

Gathered requirements

1. Visibility of system status

- Add loading symbol each time there is loading
- Add pie chart for countdown for medicine tracking
- Add complimentary sounds to processes

2. Match between system and the real world

- User Friendly language on statistics
- Use icons instead of text for feature tabs

3. User control and freedom

- Quick access day – week – month on stats
- Put icon for undo also swiping back should do the same

4. Consistency and standards

- Dark and Light mode options
- Different Themes with different fonts and layout

5. Error prevention

- Username – Password specifications indicated before submission
- Warn users about missing data such as dosage for a medicine
- Warn users about inconsistent selections with patients' meal plan

6. Recognition rather than recall

- Auto complete medication / meal input*
- Dropdown select medicine dosage / meal calories*
- Remember password

7. Flexibility and efficiency of use

- Remember frequently created events / meal selection*
- Allow users to edit which features to use actively from settings*

8. Aesthetic and minimalist design

- The team was passionate about providing the users of the application a minimalistic experience.

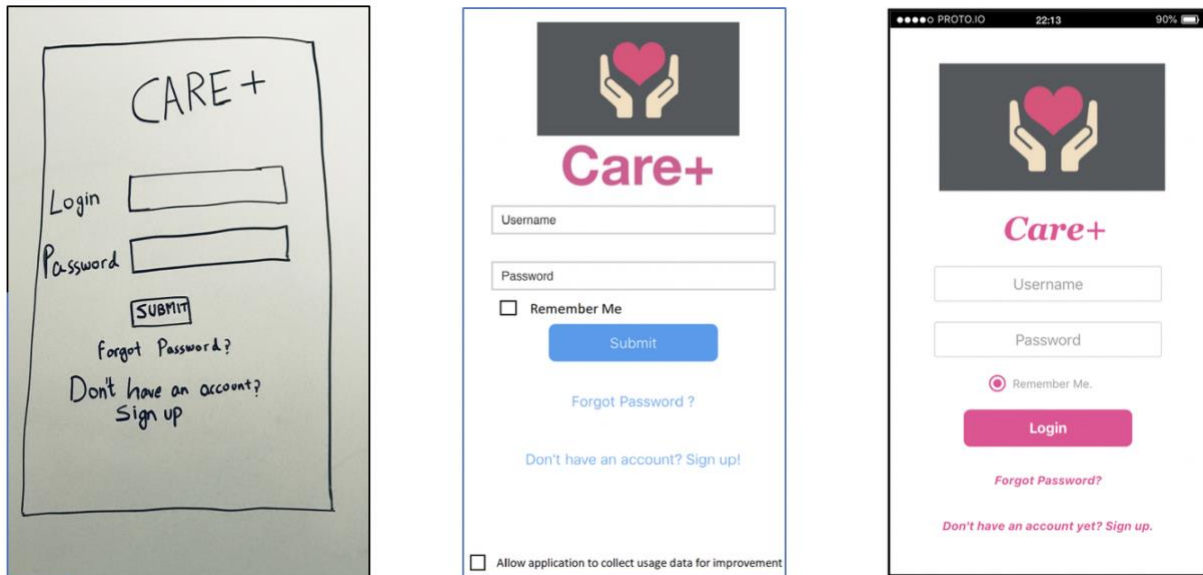
9. Help users recognize, diagnose, and recover from errors

- Username – Password specifications indicated before submission*
- Warn users about missing data such as dosage for a medicine*
- Warn users about inconsistent selections with patients' meal plan*
- Ask for permission of collecting user data for future improvements

10. Help and documentation

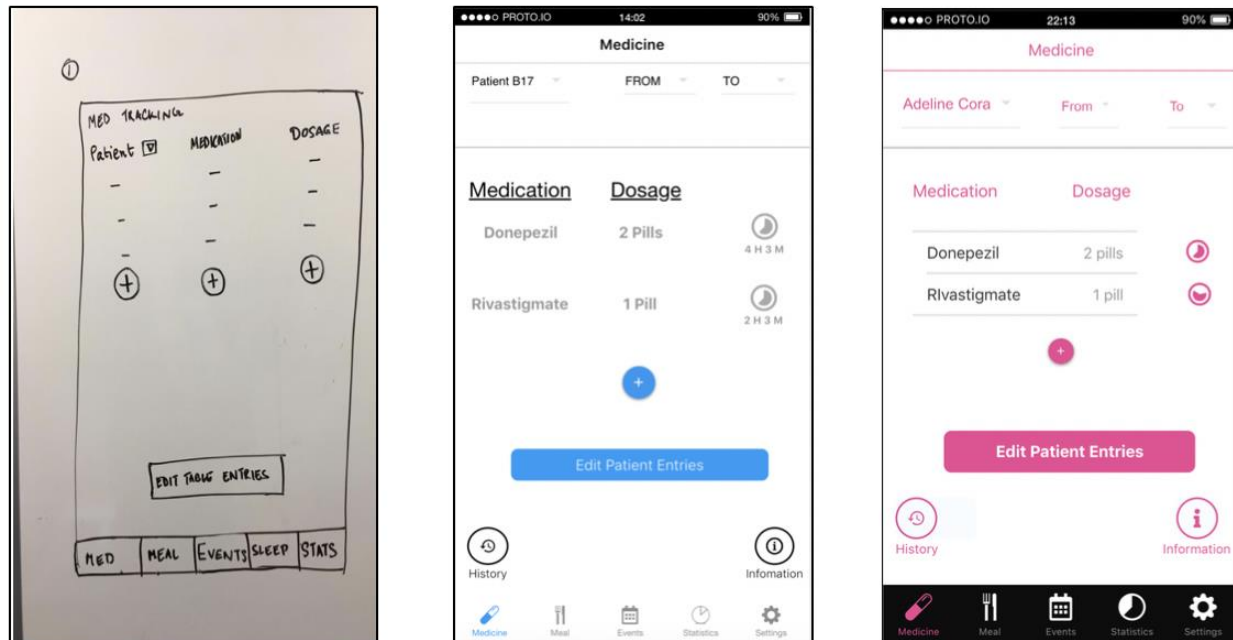
- Adding FAQ for troubleshooting
- Adding ((i) button – tooltip) for statistics
- Option to report feedback and bugs

Designs (Samples of the Design Progression)



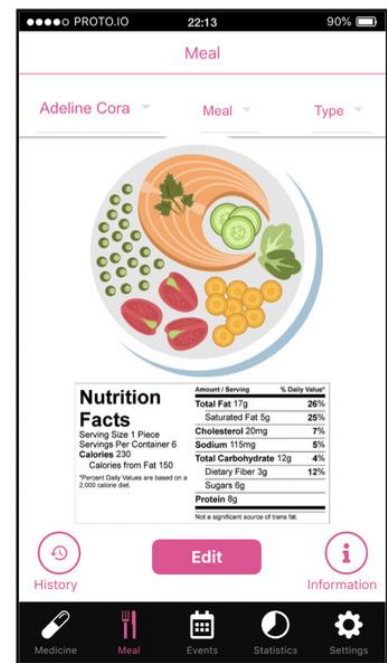
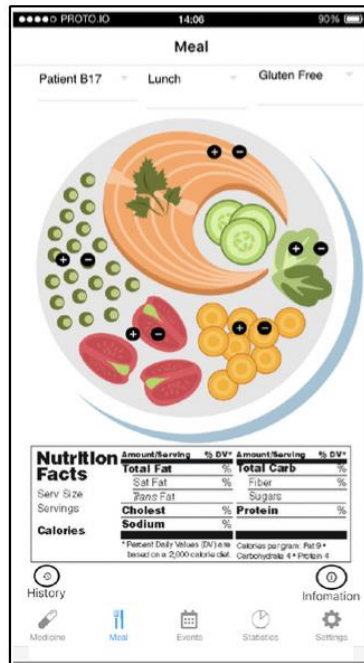
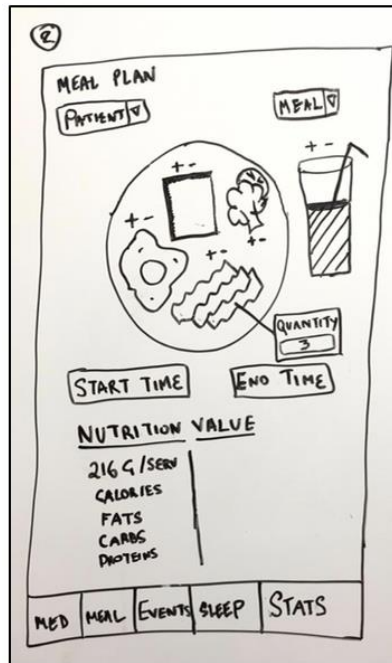
1. Evolution of Care+ Login Page from A02(Initial Sketch) to A04 (Prototype)

- The initial sketch did not have the remember me feature
- The prototype has elements more evenly spaced out
- The initial and prototype versions do not have usage data collection as we scrapped the idea due to privacy issues at the prototype stage
- Prototype has final theme colors incorporated (pink, black and white)



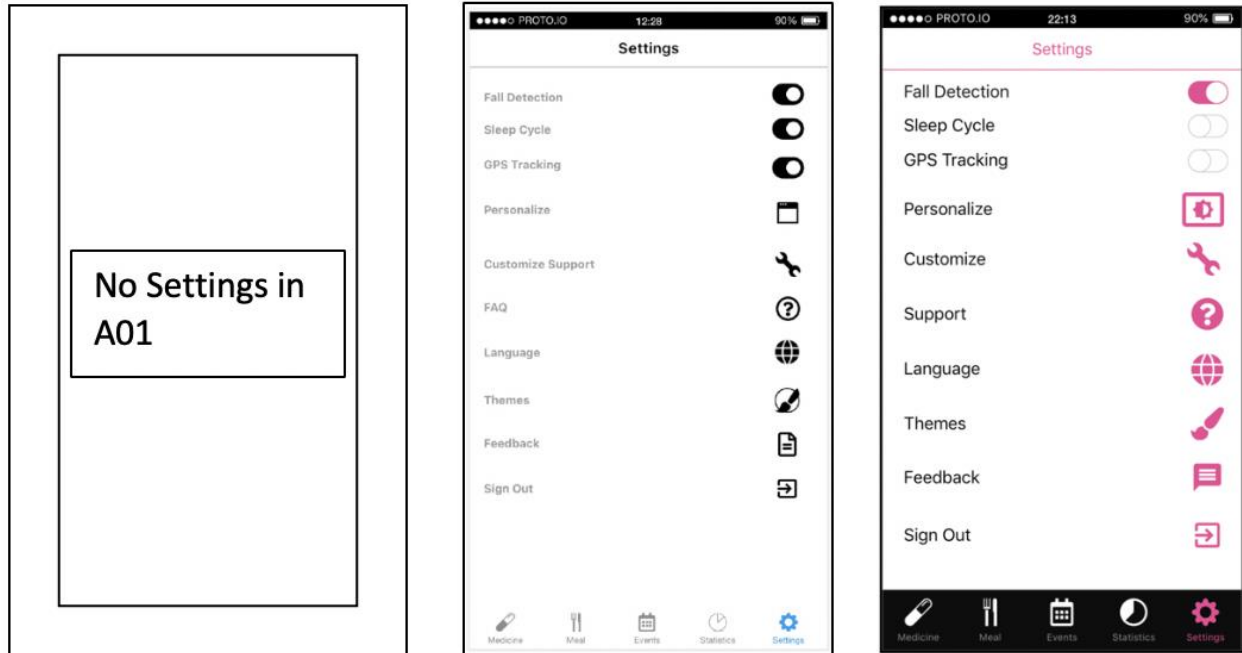
2. Evolution of Care+ Medicine Page from A02(Initial Sketch) to A04 (Prototype)

- Changed from having individual addition of Patient, medication and dosage to a single record format in the next two iterations
- Added history of medication and information help after initial sketch
- Added icons to the tab bar after the initial sketch instead of only texts
- Changed the sleep tab to statistics which includes more features that also include the sleep page and its contents
- Patient name added to the drop down instead of patient code



3. Evolution of Care+ Meal Page from A02(Initial Sketch) to A04 (Prototype)

- The add/remove (plus and minus symbols) only appear in the prototype when edit is clicked
- On the initial and second stage, they were always present
- The nutrition facts are made smaller and better aesthetically in the prototype
- History and information are added in the second and prototype iterations
- Patient name added to the drop down instead of patient code



4. Evolution of Care+ Settings Page from A02(Initial Sketch) to A04 (Prototype)

- Settings was not considered in initial sketch and was added to the next two iterations
- FAQ was added inside the Support as a subpage in the settings page of the prototype

Usability Study

Description of Participants

Participant 1 was a faculty member of Math and CS department from Saint Mary's University. The participant was interested in our study and reviewed the features we had for the application. Then, the participant introduced daily life challenges faced as a caregiver and what kind of functionality would be helpful to alleviate them.

Participant 2 was a lady working in a small restaurant in Dartmouth, Nova Scotia. She had a very kind attitude. She was in early 50s, well-educated and living with her father for the last 32 years. After we informed her about our study, she confirmed that she is taking care of her father who is in his 70s and facing mild memory loss issues.

Participant 3 was a seasoned professional caregiver with over 15 years of experience. She was in her 50s and possessing a post-secondary school diploma. After we introduced her the project in hand, she agreed to participate and share her valuable opinion about our studies. She filled out the research survey as well as giving feedback about the prototype we have. We asked her to perform certain tasks in prototype. While she was performing, we carefully observed and took notes regarding to her engagement. Finally, she directed us to Caregivers of Nova Scotia for further research and suggested useful features for the future releases of the Care+ application.

Next 4 participants were interviewed as a group. The contributors were international students in MSCDA cohort, September 2018 batch. In a casual class setting we asked them for their feedback about the prototype in hand. We inquired them to perform tasks like viewing the medicinal history of a certain patient or going to the settings page and turning on/off the GPS tracking feature. While they were performing those tasks, we took notes about their interaction with the application flow and whether they can perform these tasks within a reasonable time frame, ease and no intervention by us.

Equipment/ Instruments used and environment

Summary of the UI and how they are used:

Our idea focuses on the mobile application for the caregivers to manage their patients through variety of functionalities. The major components of the application include managing medications, meal tracking and organizing, event tracking, sleep tracking, real time patient geolocation signaling and fall detection. Users of the application will fall into 2 categories: Professional caregivers and non-professional caregivers. Since significant portion of the users of the application will be professionals in a hospital setting, emphasis is laid on the app being non-intrusive to the patients and the medical staff.

Summary of the UI:

1. On the start of the application, the application name and logo is displayed while the interface loads in the backend.
2. A login page is displayed allowing the user to log into his profile. If the user is a first-time user, he can sign up using a social network or with email.
3. The application has a checkbox asking the user if they permit the application to collect usage data for improvement.
4. From the bottom navigation bar, the user can select one of the available options:
 - Medicine
 - Meal
 - Events
 - Statistics
 - Settings
5. Each tab has an “information” button which can be used at times if the user is unable to understand a feature.
6. By default, the new user is taken to the Medicine page. An existing user is taken to the page they customized in the Settings tab.
7. On the Medicine tab:
 - The user can track the medication of different patient’s by selecting the patient’s name and time of medication from the dropdown.
 - The application has an “add” button to add new medication and an “edit” button to edit the existing medication.

- The user can see the history of the patient's medication from the history button e.g. what dosage was being given to the patient a month ago.

8. On the Meal tab:

- The user can track the meals of different patient's by selecting the patient's name and meal time and meal type from the dropdowns available at the top
- The user can add, edit or delete a meal for the patient using the + - buttons
- The application displays the nutritional facts of each meal being given to the patient
- The user can see the history of patient's meals by clicking the history button e.g. what meal was being given to the patient a month ago.

9. On the Events tab:

- The interface shows a calendar with the current date highlighted and a dot under the dates for which the event is set
- The user can switch to their calendar and their patient's calendar using the tabs available at the top
- User's calendar:
 - The user can use the reminder button to add reminders for some event e.g. talk to patient ABC because he seemed despondent
 - The user can use the goals button to add goals that they wish to achieve
 - If the user senses some unusual patient behavior, they can add a record under the behavior section using the behavior button
- Patient's calendar:
 - The user can select the patient's name from the dropdown to see their recorded events/reminders
 - The patient can use their smart watch voice feature to add an event or a reminder to the calendar
 - The user will be alerted on their smart watch on the date and time of the event

10. On the Statistics tab:

- The user can track the statistics of different patients by selecting patient's name and duration for the statistics from the dropdowns available at the top
- The user has quick access buttons for 3-time intervals e.g. statistics for one day, one week or one month
- This tab displays the statistics of the following:
 - Sleep – this will navigate the user to the page where they will see the graph of the sleep pattern of their patient. It would also tell, how long did the patient sleep last, time to fall asleep and patient's sleep efficiency
 - GPS – this will navigate the user to the page where the user can see their patient's current location and the graph manifesting the history of patient's location

- Meal – this will navigate the user to the statistics page of the meal selections for the patient
- Medicine – this button will navigate the user to the statistics page of the patients' medicinal history
- Fall – this will navigate the user to the page where they can check how frequently the patient falls and assign extra monitoring
- Behavior – this button will navigate the user to the statistics of the behavior the user recorded in the Events tab.

11. On the Setting tab:

- There is a toggle button to turn on/off the Fall Detection feature
- There is a toggle button to turn on/off the Sleep Cycle feature
- There is a toggle button to turn on/off the GPS Tracking feature
- The Personalize button to allow the user to personalize their profile
- Customize button to give the user the flexibility to disable some functionalities which they think are not required
- Support button will allow the user to get in touch with the customer support and have access to the FAQs
- Language button to change the application language to the language the user is comfortable in
- Theme button to change the application theme to dark/light mode
- Feedback button so the user can talk about their experience with the application and how it can be improved
- Sign out button to sign the user out of their account

Recording Equipment and Methodology Used

- Smartphone with the prototype of the application installed on it
- A notebook and pencil for note-taking was used
- Wristwatch used to keep track of time

Location Of The Study

The study was conducted in various locations across the province of Nova Scotia. Halifax being the primary focus of the study. The ideation and analysis of the study were carried out in S216D, Science Building, St. Mary's University in Halifax, Nova Scotia.

Some interviews and surveys were guided for the completeness of the application. The location details of the interviews are as follow:

- Interview with a faculty member with non-professional caregiving experience was conducted in McNally Building, St. Mary's University in Halifax, Nova Scotia.
- Interview with non-professional caregiver was conducted in a restaurant in Dartmouth, Nova Scotia
- Interview with a professional caregiver was conducted in Bayshore Home Health in Halifax, Nova Scotia

Dates Of The Study

The team started the research on the idea on 20th September 2018 at 20:00.

Before the approval from the Ethics Board, some casual cognitive walkthroughs were conducted with the students of MSCDA cohort, September 2018 batch.

Upon approval from the Ethics Board on 22nd October 2018 at 15:06, we mailed the caregiving facilities requesting to book an appointment with the caregivers to conduct the interviews for our study.

The first interview was conducted with the faculty member on 29th October 2018 at 14:30.

Interview with non-professional caregiver was conducted on 1st November 2018 at 16:30

Some feedback interviews were conducted with the students of MSCDA cohort, September 2018 batch in the month of November to get better insights on the application design and features.

Feedback interview with the professional caregiver was conducted on 27th November 2018 at 14:00

Usability Testing Design Group Worksheet

A. Goals of the study

1. Issues to be addressed

- Users are not comfortable moving through different pages of the application
- Users should log in their credentials every time they open the application, which can be frustrating
- Patient selection is based on patient number. Sometimes users are not able to match the Id with the actual patient
- Meals page is too cluttered for users to digest information easily

2. Detailed addressing of the issues

Making the tab bar larger and the icons bolder because this will increase the visibility in contrast to the content of the page

- Including a “Remember Me” option on the login page
- Trying if the drop-down for the patient selection is more informative by displaying patient names (instead of patient number)
- Try resizing nutrition facts section in the meal page for users to understand the information better

3. Understanding based on testing phase

- Finding out the optimum icon sizes and the tab width for navigation bar
- If the users will find the “Remember Me” box useful
- If the users anticipate the correct patient selection faster
- Finding out the best representation of nutrition facts section

4. Usability components measured

- Ease of use
- Visibility
- Match between system and real world
- Recognition rather than recall
- Flexibility and efficiency of use

5. Quantitative data collection methodology

- Lower than 1 second for proceeding to the next tab as per need
- More than 95% of returning users pass the login page and land on medicine page
- Identify patient when selecting with 100% accuracy
- Comprehending nutrition information in less than 15 seconds

B. Formulation of Hypothesis

The following is our Hypothesis

Hypothesis: The user is capable of successfully completing the tasks given.

The following is the discussion of hypothesis formulation

1. Reasons For Study

- Is the user able to switch between tabs immediately?
- Is there any users not able pass logging in phase?
- Does the user able to recall and select details for a specific patient?
- Is the user capable of understanding the nutrition information?

2. Derived Hypothesis

The users will intuitively navigate through the different features of the application and complete the requested actions under targeted times.

C. Selecting the Evaluation Paradigm And Techniques

1. Methodology used to measure the dependent variable

The dependent variables were measured by observing the users as they navigated through the user interface of the app and performed certain scenarios. One team member was assigned the task of walking the user through the process and telling them what to do while another team member was assigned the task of critically observing the user while he performed the above action and note-taking.

2. Equipment required

- A phone with the prototype of the application installed on it
- A notebook and pencil for note-taking are needed.

D. Practical issues and design typical tasks identified

a. Navigating through apps

1. User opens the application
2. User successfully logs in
3. User selects a patient
4. User specifies date interval to a month
5. User views the history
6. User tries to see medicine related statistics

b. Logging in fast and easy

1. User opens the app
2. User credentials are filled automatically
3. User hits login

c. Nutrition Information

1. User opens the app
2. User successfully logs in
3. User switches from medicine tab to meal tab
4. User selects patient name
5. User selects meal of the day (eg. Breakfast, Lunch etc.)
6. User selects special dietary requirement
7. User edits meal as per preference of patient
8. User views Nutrition Facts

d. Patient name

1. User opens the app
2. User successfully logs in
3. User clicks the patient icon
4. User views a list of patient IDs and cannot recall the various patients

1. Issues Faced by User

a. Navigating through apps

User had trouble finding where the statistics page is in the application.

b. Logging in fast and easy

User gets frustrated requiring to type user name and password every time they try to log in.

c. Nutrition Information

The process of remembering the patient identification numbers relied too heavily on recall over recognition.

d. Patient Name

When the user views nutrition facts, the user may face confusion due to an overload of information on the page.

2. UI Components Involved For Above Steps

a. Navigating through apps: For each page in application namely, medicine, meal, events, statistics and settings.

b. Logging in fast and easy: On the log in page

c. Nutrition information: Meal page

d. Patient Name: Medicine, Meal and Statistics pages

3. Location of the tested tasks in the application

Navigating through apps: For each page in application namely, medicine, meal, events, statistics and settings.

Logging in fast and easy: On the log in page

Nutrition information: Meal page

Patient Name: Medicine, Meal and Statistics pages

4. Specific Tasks Performed By Participants

a. Navigating through apps: It is desired to have user navigate through different pages of the application comfortably

b. Logging in fast and easy: It is desired for the application users to easily land into the main page of the application

c. Nutrition information: It is desired for users to quickly specify the meal plan. After doing so, they should be comfortably comprehending the information once they get used to the feature.

d. Patient Name: It is required for users of the application to filter out the information in the medicine, meal and statistics pages for a desired patient.

5. Dependent and Independent Variables for the above tasks

Independent: a type of UI (2 UIs) Dependent: time to complete all the tasks)

Task #	Independent (and Levels)	Dependent
1	Tab-bar (GUI)	Few seconds to navigate between features
2	Screen-lock (Log-in)	User successfully logs into application in under 2 attempts
3	Table (Database)	Yes/No (Performed or not) within 60 seconds
4	Drop-Down	Yes/No (Performed or not)

E. Ethical issues

- Make sure not to push the participant to do the task that they are not comfortable with
- Make sure the participant is comfortable answering the survey and interview questions
- Make sure we do not dictate the instructions to participants during the prototype testing

F. Evaluate, analyze, and presentation of the data

1. Expected Data

Task #	Data
1	What was the average time that the user took to perform certain scenarios specified by the team?
2	Could the user successfully customize features of the application?
3	Did the user understand the role of different statistics?
4	Is the user comfortable with the bar/line graphs?

2. Data Analysis

Task #	Data
1	Shall we add more colour contrast to the images and text, so that it is easily readable
2	Should certain user actions be made more intuitive? Was the user interface too bloated due to the number of features offered?
3	Shall we add text below the bar/line graphs briefly describing the chart?
4	Was customizing the features of the app transparent enough for the user?

3. Expected results of the hypothesis.

Task #	Data
1	With the larger bottom bar and bolder text, the user will not have to stress his eyes to navigate. This will enrich the experience of elderly caregivers
2	A redesigned tab bar would help in better feature selection
3	The charts were easily understood by user
4	User was able to customize features comfortably

Procedure

In order to carry out the usability study research, our application was tested by caregivers (the target end user) who were asked to evaluate the application by performing tasks such as navigating through the user interface of the application while being observed by team members. The team members would note areas in which the user interface may be lacking by observing user functions that the caregivers faced confusion in performing and the caregiver's feedback is taken. Direct feedback from the target audience was helpful in resolving internal debates within the project team and potential problems in future phases of the applications were highlighted by our usability study research. Usability testing of our application allowed for an increase in likelihood of adoption of our application by caregivers and differences in requirements and usage of the application by professional and family caregivers were noted which improved the business prospect of the application while minimizing risk. However, it is also noted that the small sample size of caregivers who participated in the usability studies may not be completely representative of all caregivers and that the results of the studies may be skewed.

A. Script

Hello, my name is (team member name) and I would like to know if you would possibly be open to the idea of participating in a usability testing study that will be used towards my team's research at Saint Mary's University with regard to aiding in accessibility for individuals suffering from memory loss.

We have obtained the necessary permissions in order to conduct this study and have a consent form for you to sign along with a questionnaire that we would like you to fill.

As you navigate through the application, you are encouraged to think out loud as far as possible as it will aid us greatly in following your train of thoughts and applying your input to our research. If you wouldn't mind, my colleague will be observing your interactions with the application and taking notes.

Thank you for your time. Here is your copy of the consent form for your perusal.

Result of the Usability Study

1. Analysis of the results

a. Feedback from professional caregiver

The participant was a professional caregiver with over 15 years of experience. After we introduced her the project in hand, she agreed to participate and share her valuable opinion about our studies. We asked her to perform certain tasks in prototype. While she was performing, we carefully observed and took notes regarding her engagement.

- She had difficulty navigating through the pages of the application
- She seemed to be at ease filtering out a specific patient with the name and date
- She seemed to be at ease with the task including customization by toggling the settings
- She was capable to comprehend with the information provided in the statistics page
- She pointed out that most of the professional caregivers are not actively involved in administering the patient medicine
- She suggested a lifeline feature for tracking body movement habits of the patient for any inconsistencies
- She was excited about the behavior page. This directed us to expand on the content for this part for the future releases
- She pointed out there might be a significant number of patients who would not be comfortable a smart watch

Finally, she directed us to Caregivers of Nova Scotia for further research and suggested useful features for the future releases of the Care+ application.

b. Feedback from group interview

Four participants were interviewed as a group. The contributors were international students in MSCDA cohort, September 2018 batch. While they were performing tasks, we took notes about their interaction with the application flow and whether they can perform these tasks within a reasonable time frame, with ease and no intervention by us. The findings can be listed as follows:

- They had difficulty navigating through the pages of the application
- They pointed out that the information in nutrition info was too cluttered
- They seemed to be at ease with engaging with the statistical information
- They were quick to customize the settings as per requested
- They hinted some tips for utilizing the smart watch better. By making use of the body sensor data, we can create new features in the future. For instance, monitoring blood pressure of the patients over time can help track the patients' well-being more effectively

2. Acceptance/Rejection of Hypothesis

Hypothesis: The caregivers would successfully complete the user tasks given without any assistance from project members

The hypothesis defined by the team is accepted since our research validates the necessary requirements to not reject the hypothesis. Iterative improvements that were added to the design documents with each phase of the project increased the degree of user acceptance and efforts were undertaken to build the application around requirements specific to the caregiving community as ascertained from extensive questionnaires and usability testing performed on the target group.

Discussion of the Results

After using basic pen and paper for our initial sketches, we upgraded to proto.io for our iteration two and final prototype. After conducting interviews, surveys and secondary research online, we conclude that our application can be used by caregivers to improve their efficiency and take better care of themselves. However, we also feel that there is a lot of room for improvement. These can be implemented further down the road, with more testing to ensure our application can be a caregiver's best friend.

Future Works

Integrate a non-intrusive lifeline movement tracker based on daily routine to application

One of the inputs we got from an interviewee was the usage of a simple mechanism to track the daily routine of the patient. If the patient deviates away from this, the caregiver will get a notification. The people who are affected by memory loss to the extent they require a caregiver are usually old and therefore have a very ingrained routine in their lives. If they do something that is not usual, for instance not waking up in the time frame they usually do, the caregiver should be notified something is wrong. We have found some companies have already implemented such technologies and we too could in future iterations of the application. For instance, Canary Care uses battery-powered wireless sensors throughout the house or room of the patient and can track their movements using these and notify the loved one if something is amiss.

Redesign the tab bar to be more visible

The tap bar needs to be redesigned as it has too many options. The tap bar should have less options (ideally three) to give the users more ease of access. Redundant tab like the settings can be moved elsewhere as the users would not be accessing it as much as other tabs. Incorporation of the statistics into the tab bar directly would allow the caregiver to access them quicker as it is an essential feature of our application which is now inside each page.

Make the medication feature optional

One of our interviewees suggested us to make the medication feature optional for two main reasons. Firstly, not all professional caregivers are authorized to give medication. Therefore, this makes the feature invalid for them, and is more centred towards non-professional caregivers who are taking care of their family members for instance. Also, caregivers are usually very strict with their medication and timing for those they are caring for, and this makes them use this feature unlikely. We have considered this input with much thought and have decided to put it as an optional feature in our next iteration.

Declutter the meal page

From our investigation, we feel the meal plan is too cluttered, especially the nutrition facts. There is too much information in a very small space and this is confusing for the users to understand what is where. Furthermore, the drop-down menu above can be designed more aesthetically pleasing to keep to our minimalistic design approach.

APPENDIX

Application Pages Final Version



Care+

☒ Remember Me.

Login

Forgot Password?

Don't have an account yet? Sign up.

Medicine

Adeline Cora ▾

From ▾

To ▾

Medication

Dosage

Donepezil

2 pills



Rivastigmate

1 pill



Edit Patient Entries



History



Information



Medicine



Meal



Events



Statistics



Settings



Medicine History

Patient B17 ▼

Medication	Dosage	Date
Rivastigmate	6 mg	2pm 23-10-18
Donepezil	10 mg	8am 23-10-18
Razadyne 18	15 mg	4pm 22-10-18
Galantamine	8 mg	10am 22-10-18
Galantamine 18	12 mg	2pm 21-10-18
Donepezil 18	23 mg	2pm 20-10-18
Rivastigmate	3 mg	8am 20-10-18
Donepezil 18	10 mg	4pm 19-10-18
Razadyne 18	15 mg	12am 19-10-18
Rivastigmate	6 mg	2pm 18-10-18
Razadyne 18	15 mg	12am 19-10-18

Meal

Adeline Cora ▾

Meal ▾

Type ▾



Nutrition Facts

Serving Size 1 Piece
Servings Per Container 6
Calories 230
Calories from Fat 150

*Percent Daily Values are based on a 2,000 calorie diet.

Amount / Serving	% Daily Value*
Total Fat 17g	26%
Saturated Fat 5g	25%
Cholesterol 20mg	7%
Sodium 115mg	5%
Total Carbohydrate 12g	4%
Dietary Fiber 3g	12%
Sugars 6g	
Protein 8g	
Not a significant source of trans fat.	



History

Edit



Information



Medicine



Meal



Events



Statistics



Settings

Events



Susan McCormack



Adeline Cora

Nov

1

2

3

4

5

6

7

8

9

10



11

12

13

14

15

16

17



18

19

20

21

22

23

24



25

26

27

28

29

30

Reminders

Goals

Behaviour



Medicine



Meal



Events



Statistics



Settings

Statistics

Adeline Cora ▾

From ▾

To ▾

ONE DAY**ONE WEEK****ONE MONTH**

SLEEP



GPS



MEAL



MEDICINE



FALL



BEHAVIOR



History



Information



Medicine



Meal



Events



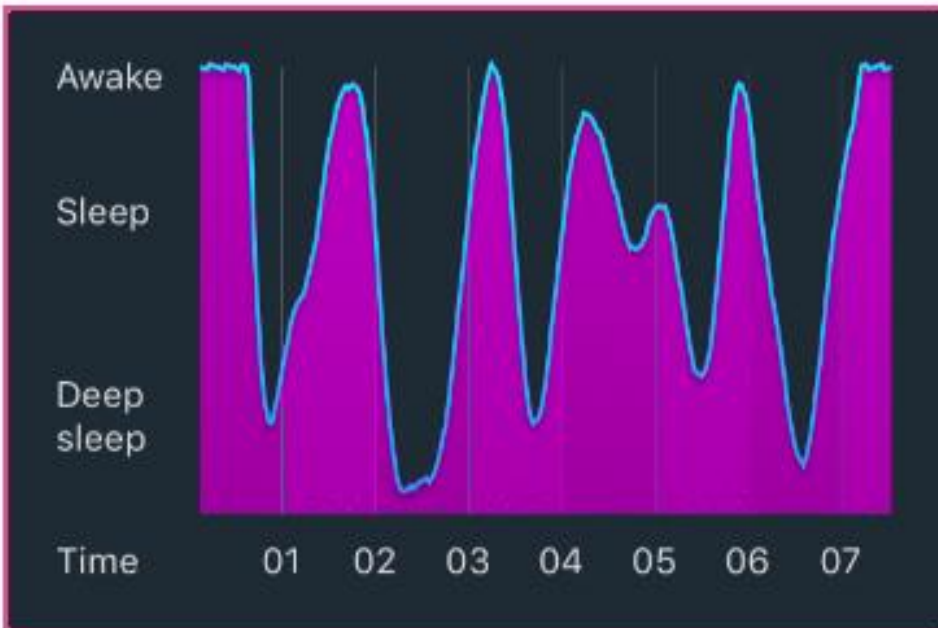
Statistics



Settings



Sleep Statistics



Average Sleep Duration	8H 14M
------------------------	--------

Time To Fall Asleep	0H 29M
---------------------	--------

Sleep Efficiency	67%
------------------	-----

Settings

Fall Detection



Sleep Cycle



GPS Tracking



Personalize



Customize



Support



Language



Themes



Feedback



Sign Out



Medicine



Meal



Events



Statistics



Settings

