PACT Analysis, Personas, Tasks

George Ibrahim	**1211182762**	**gpibrahi@asu.edu**
Duc Quang Tran	**1224271022**	**dtran44@asu.edu**
Minh Khang Nguyen	**1223701063**	**mnguye83@asu.edu**
Priyadarshini Ramakrishnan	**1225407339**	**pramak10@asu.edu**
Sangeeth Santhosh	**1229583214**	**ssantho9@asu.edu**

1. **Problem statement**

   The current state of health management is marked by fragmentation, lack of integration, inefficiencies, and limited AI capabilities. Users rely on multiple disjointed apps for tracking various aspects of their well-being, leading to challenges in combining and understanding data from different sources. Existing platforms often neglect the crucial connection between physical and mental wellness, resulting in an incomplete picture of overall health. Inefficiencies arise from disparate digital apps, contributing to challenges in data consistency and overall insights. The existing AI capabilities in health apps may not be sufficient for providing accurate and personalized health advice based on integrated data. HealthTrack aims to simplify this by providing an integrated mobile application that consolidates various aspects of well-being.

2. **People**

   The people who mainly use the health tracker system could be divided into three main categories:

   A. Primary Users - These are users who are highly health-conscious and utilize the app daily for their health and well-being. The users could be from any age group.

   B. Secondary Users - These are users that use health tracking apps intermittently, but do not need it all the time. This category could include professionals like doctors, nutritionists as well as elderly people.

   C. Tertiary Users - These users are those who do not directly interact with the app, but could benefit from or influence its use through the health data of primary users. This category could include users like family members or caregivers.

- The physical, social and cultural characteristics that are necessary to consider when designing the health tracker system could be described as follows:

A. Physical Characteristics - The system should accommodate users of all abilities - having different levels of vision and hearing. Different users could have different levels of sensory and motor abilities.

B. Cultural Characteristics - The system should be designed in such a manner that it is inclusive to all. It should respect diverse health management practices, different cuisines and languages across user demographics.

C. Social Characteristics - The system should be designed such that they motivate users through community support and challenges, addressing varying levels of motivation and engagement.

3. **Activities**

People currently engage in disjointed techniques for health management, using multiple smartphone apps for tracking nutrition, exercise, and maintaining medical records. These activities include manually entering data related to daily nutrition, exercise routines, mental well-being practices, and monitoring fitness metrics through various devices. Users also navigate between different apps to access medical records, creating a fragmented view of their overall health. These activities are often individual-centric and lack integration, leading to challenges in combining and understanding data from different sources.

System-supported activities:

- Progress Monitoring:
    + Interaction: Users regularly input data on their physical and mental well-being, including exercise, nutrition, and mental health indicators.
    + Purpose: To track and visualize personal progress towards health goals.
    + Satisfaction: Primarily hedonic, as it provides a sense of achievement and motivation.
    + Temporal: Regular, continuous engagement for short intervals.
    + Cooperation: Individual activity, no collaboration with others.
    + Complexity: Well-defined, as users follow a structured process for data input.
    + Safety Critical: Not safety-critical.
    + Impact of Error: Minor impact, as errors may affect personal data accuracy but not safety.
- Trend Analysis:
    + Interaction: Users explore visualizations and insights derived from their historical health data.
    + Purpose: To gain a deeper understanding of long-term health patterns and trends.
    + Satisfaction: Primarily hedonic, offering insights for personal growth and improvement.
    + Temporal: Infrequent, users may engage in trend analysis periodically.
    + Cooperation: Individual activity, no collaboration with others.
    + Complexity: Vague, as users explore patterns that may not have well-defined structures.
    + Safety Critical: Not safety-critical.
    + Impact of Error: Minor impact, as errors may lead to misinterpretation but not safety issues.
- Integration of Diverse Health Data:

    + Interaction: Users connect external devices or apps to integrate data from various health sources.
    + Purpose: To consolidate diverse health data into one platform for comprehensive analysis.
    + Satisfaction: Primarily pragmatic, serving an organizational purpose.
    + Temporal: Occasional, during the setup phase or when incorporating new data sources.
    + Cooperation: Individual activity, no collaboration with others.
    + Complexity: Well-defined, as users follow a structured process for integration.
    + Safety Critical: Not safety-critical.
    + Impact of Error: Minor impact, as errors may affect data integration but not safety.
- Customization based on Health Goals:
    + Interaction: Users set and adjust personal health goals, customizing the system to align with their objectives.
    + Purpose: To tailor the system to individual preferences and aspirations.
    + Satisfaction: Primarily hedonic, as it allows users to shape their health management experience.
    + Temporal: Occasional, during the goal-setting phase or when adjusting objectives.
    + Cooperation: Individual activity, no collaboration with others.
    + Complexity: Well-defined, as users follow a structured process for goal customization.
    + Safety Critical: Not safety-critical.
    + Impact of Error: Minor impact, as errors may affect goal tracking but not safety.

4. **Contexts**

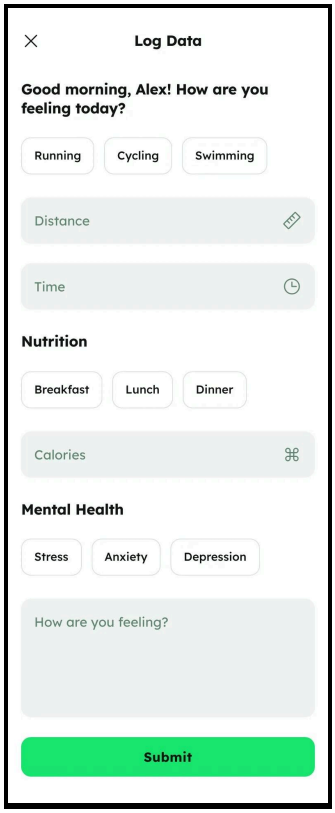
- Physical environment:
    + Mobile Devices: HealthTrack operates primarily on mobile devices (smartphones, smartwatches, and tablets). Users interact with the app at home, work, or when they are moving.
    + Busy Public Area: Some users might use it during their daily commute on public transportation, their work hours at the office, or their walking on the street.
    + Quiet Home Setting: Some users may use the app to check their health in a calm, distraction-free environment.
- Social Environment:
    + Individual: Users will primarily use the system individually, focusing on their personal health goals and needs.
    + Family members or friends who track the health of their loved ones.
    + Doctors, nurses, and specialists who interact with patient data.
    + Community: The community health tracking feature encourages social interaction and support among users.
- Organizational Environment:
    + Hospitals: HealthTrack aims to reduce readmissions
    + Pharmaceutical Companies: Encouraging medication adherence.

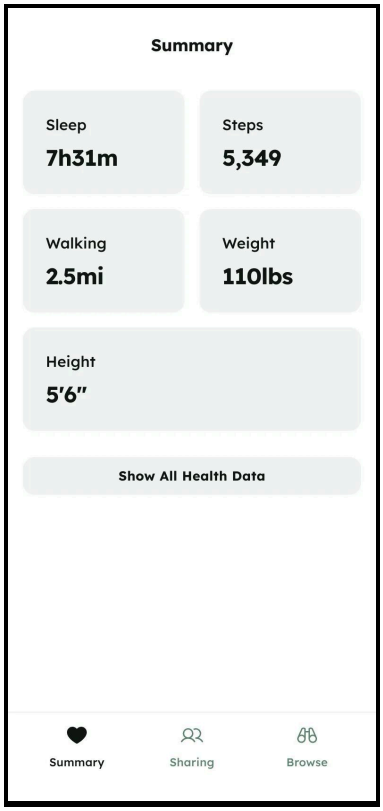
    + Workplace: Some users may incorporate HealthTrack into their workplace wellness programs.
- Other Circumstances:
    + Time Pressure:
        - In some cases, users need quick access to health data during emergencies.
        - Users may have limited time to engage with the system, especially if they lead busy lifestyles or have demanding schedules.
    + Location:
        - HealthTrack can be accessible anywhere in the world.
        - Different time zones affect usage patterns.
    + Time of Day:
        - Users can use the app throughout the day.
        - Usage peaks during morning, meal times, and bedtime.
    + Privacy Concerns:
        - Ensuring data security and confidentiality.
        - Ensure the balance between personalized recommendations and user privacy.

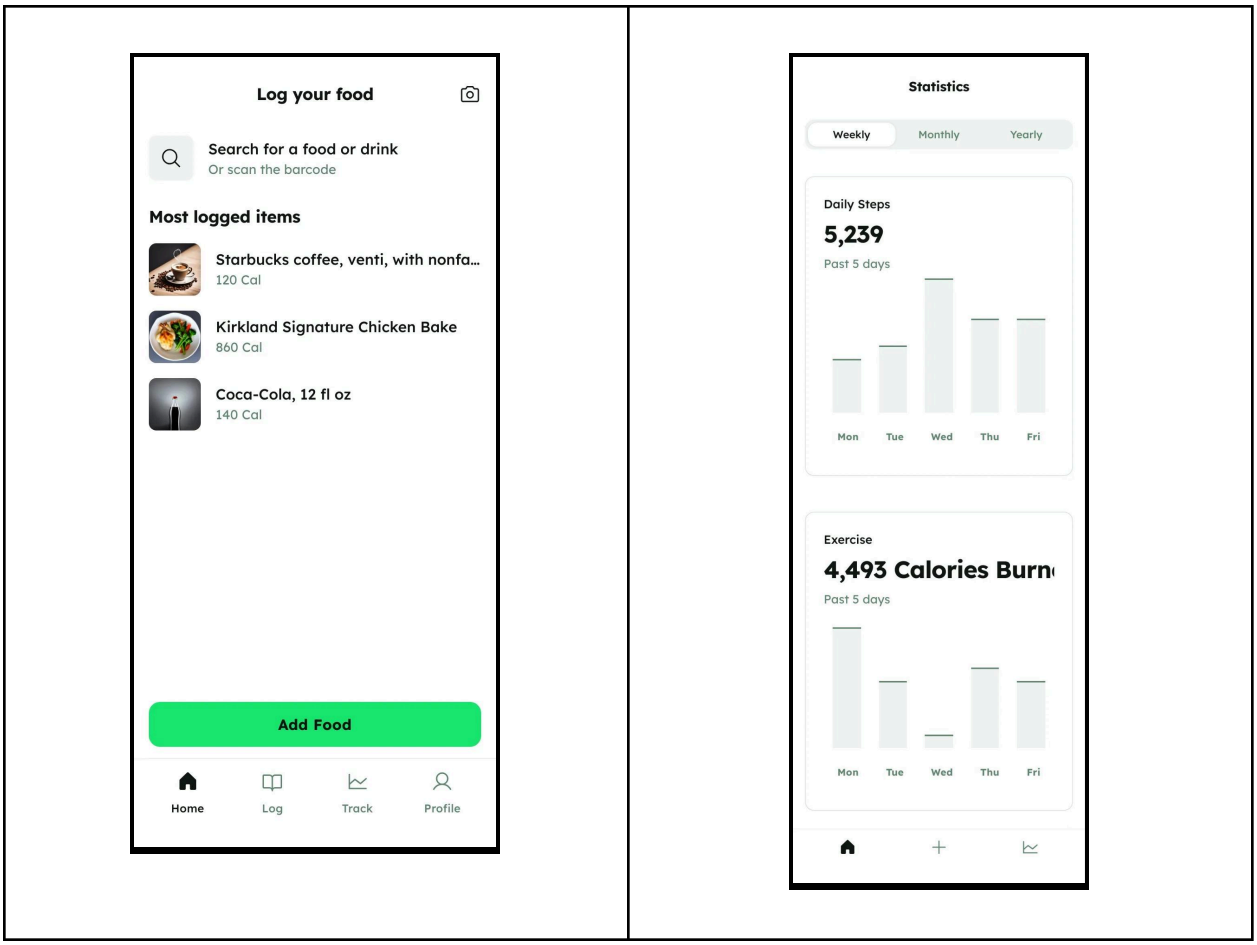
5. **Technologies.**

Input Interface

Swift-UI coded based for the proposal UI of Health-Tracking app







Output

Communication between people and devices

- For the first page, we will have people enter their mode of activity by using 3 “unique” buttons, along with the text-fields to enter distance and length they’ve done with the activity. After that, we’ll have them enter What kind of nutrition intake using the same input interfaces above and then 3 “unique” buttons to select their mental state and a text-area to describe it.
- On Second page, the summary details should be grasped from the recorded data about necessary information of sleep hours, steps walked with the set.
- The 3rd featured dashboard is about giving the history of food choice by giving a search bar and “Add Food” button which would be helpful to save the favored food, beverages. This can be called a personalized way of designing food intakes and balanced calories calculations.
- The last possible UI that should be included in the app such as giving a visual representation about all the data including activities and calories consumed to exploit health improving motivations.

Size of the screen: Most suitable UI screen should be fitable and sizable to IOS and Android users. In swift-ui code for the app, the UI should include proper padding.

Sound: Optional depending on the personalized features of the users.

6. **Different combinations of P, A, C, and Ts**.

Technological Needs:

- Feature Depth (P v. A, C): Primary users invest in daily health tracking, and crave comprehensive features like progress monitoring, diverse data entry, etc. However, secondary/tertiary users operate differently.
- Accessibility (P v C, T): The system should cater to users with diverse abilities (vision, hearing, etc.) through features like text-to-speech, voice commands, etc. Social features should cater to varying motivation levels and encourage inclusivity through language options, culturally relevant challenges, and diverse community representation.
- Amenity Requirements (A v T): Progress monitoring necessitates clear visualizations and intuitive data representation. Data entry needs efficiency and minimal disruption to users' routines. Trend analysis requires powerful algorithms to uncover meaningful patterns. Data integration demands secure protocols and seamless connection with diverse devices. Customization empowers users to tailor the app to their specific goals and preferences.

Trade-Offs:

- Feature Depth: Balancing a level of feature depth between primary and nonprimary users when it comes to the feature depth. A middle ground could be a “lite” (simple, easy) version.
- Accessibility: Balancing accessibility features with visual appeal and information clarity might involve offering multiple interface options. Cultural sensitivity requires ongoing research and iteration to adapt to diverse user groups. Social features might need to balance individual privacy with the benefits of community engagement.
- Amenity Requirements: Striking a balance between offering robust functionalities for each activity and maintaining a user-friendly interface might involve prioritizing essential features based on user feedback and data usage patterns. We need to consider offering advanced options within sub-menus for activities like trend analysis.

Tasks, personas, Prioritization

7. **Interviews with 4 users**

To gather insights for the PACT analysis, we conducted interviews with four users, ensuring diversity in their profiles. Two interviews were conducted in person, and two were carried out through Zoom, allowing for a mix of perspectives. A common questionnaire was prepared for the

three primary users, while a separate set of questions was tailored for the healthcare professional, a secondary user.

The procedure involved creating a comfortable environment for the users, emphasizing the confidentiality of their information, and obtaining their consent.

The questions were designed to explore users' current health management practices, pain points, preferences, and expectations from an integrated system like HealthTrack. For primary users, the questions delved into their daily health activities, app usage patterns, and challenges faced. The healthcare professional was asked about their expectations from a health tracking system, potential collaboration opportunities, and the integration of such systems into their workflow.

Responses were documented in real-time during the in-person interviews and also the audio was recorded through zoom for proof and meeting was recorded digitally through Zoom for the remote sessions. The combination of in-person and virtual interviews allowed for a broader understanding of user experiences and preferences, while the structured questionnaire facilitated consistent data collection. Overall, this approach aimed to capture a comprehensive view of user tasks and requirements to inform the design and development of the HealthTrack system.

8. **Task descriptions**

Task 1: Mike, a 30-year-old IT professional, navigates a work-from-home lifestyle, balancing his comfort with a growing desire for a healthier routine. His typical day consists of remote work, interspersed with occasional bursts of running or exercise, though his efforts lack consistent tracking. To monitor his health, he relies on a smartwatch integrated with a trio of apps: Fitbit, Google Fit, and the native Fitbit app. Currently, he tracks his calorie intake by meticulously logging every bite and beverage in a dedicated notepad. Additionally, he uses the trusty weighing scale to track his progress, seeking valuable data points to guide his journey. Mike prioritizes personalization and data-driven insights, searching for a health management tool that caters to his unique needs and empowers him to take charge of his well-being.

Discussion: Mike’s observations underscore the need for a health management system tailored for professionals. It should integrate wearables, offer personalized feedback, and minimize manual input, reflecting a broader demand for simple, all-in-one health solutions, indicating a large market potential for user-friendly health management platforms.

Task 2: Maria, a 51-year-old homemaker, prioritizes well-being without relying on digital tools. Her routine includes household tasks, regular walks, social outings, and devotional practices. Concerns about data security limit her smartwatch use, emphasizing her preference for privacy. Despite owning a smartwatch, concerns over data security prevent her from using its health features extensively, signaling her interest in a health management approach that prioritizes privacy and simplicity, particularly one that leverages voice commands to enhance accessibility and ease of use.

Discussion: Maria's routine highlights the need for health apps to combine functionality, security, and ease of use, with a focus on voice activation for accessibility. This indicates a shift towards designs that prioritize user-friendliness, especially for older users, in future health platforms.

Task 3: Dr. Emily, who is a second-year resident in Cardiology and was a General Practitioner for two years before this, collects patient data through comprehensive questionnaires that include physical activity, eating habits, and cardiovascular health indicators. She engages with patients to gain insights into their daily routines and health choices. Dr. Emily integrates various health management apps into her practice, like HeartHealth, using features for risk assessments, health calculations, and continuous monitoring. She pays particular attention to patient-generated data from wearables, analyzing heart rate variability, exercise intensity, and signs of conditions like hypertension and arrhythmia. Beyond traditional office visits, she maintains patient communication through calls, messaging apps, and video conferencing to provide consistent support and guidance between consultations.

Discussion: Dr. Emily's approach highlights the benefits and challenges of incorporating health apps in patient care, underlining the importance of secure and effective data exchange to improve preventive measures and achieve a comprehensive understanding of patient cardiovascular health.

Task 4: John, a 26-year-old student, actively incorporates a range of tasks into his routine to manage his health and fitness. His day begins with logging his breakfast calories through an app, ensuring he starts with a balanced intake. Before heading to his classes, John hydrates, tracking his water intake on his smartwatch. Post-lectures, he hits the gym, where his workout data from various equipment syncs directly to his health app, allowing him to monitor his progress seamlessly. Throughout the day, John adjusts his meal plans based on the app's adaptive notifications, which suggest calorie intake adjustments based on his activity levels. His routine closes with a review of his daily health metrics, ensuring he meets his fitness goals while maintaining a keen eye on data security and privacy settings within the app.

Discussion: John's tech-based health management highlights key user demands for health apps: seamless data integration, personalized experiences, privacy, and ease of use. His approach reflects a trend towards tools that not only collect but intelligently analyze health data to provide tailored health advice.

Prioritize your users and tasks

I. Users:

Absolutely must include:

- **John:** Represents the core user persona seeking comprehensive health management with wearable device integration.
- **Mike:** Share essential traits with John regarding tech-savviness and data-driven insights.

Should include, if possible:

- **Maria:** Represents a growing segment interested in well-being with specific needs (voice controls, data privacy). Her inclusion expands the app's reach.
- **Dr. Emily:** Her focus on patient data protection and complex integration requires further expansion of the app's features.

II. Tasks:

Absolutely must include:

- **Real-time data tracking:** Essential for John and Mark's desired comprehensive health management.
- **Integration with wearable devices:** Crucial for John's efficient workout adjustments based on real-time data.
- **Personalized feedback:** Important for both John and Mark to achieve individual health goals.
- **User-friendly interface:** Critical for all user types, including Maria.

Should include, if possible:

- **Voice commands:** Important for Maria's accessibility preference.
- **Strong data security and encryption:** Crucial for all user types, especially Dr. Emily and Maria.
- **Automatic data collection:** Reduces manual input for John and Mark, enhancing user experience.

Could include (considering feasibility):

- **Integration with medical apps:** Valuable for John, but its complexity requires further exploration.

Rationale:

- The "Absolutely must include" categories represent foundational elements crucial for the app's core functionality and target audience.
- The "Should include if possible" categories address important needs for wider audience reach and improved user experience.
- The "Could include" category acknowledges valuable but more complex requirements that need further exploration to determine feasibility.

9. **Two realistic Personas**

- Absolutely Must Include: **(Direct link: Absolutely must include persona)**

Mark

Job Title

Software Engineer

Age

31

Highest Level of Education

Bachelor's degree (e.g. BA, E

Social Networks

Industry

Technology

Organization Size

10,001+ employees

Background

Data Engineer, Assessments of engineering leaders Predictability of task completion successful test cases and Numbers of defects Cycle times. Generally, his daily tasks include integrating software components into a fully operational software system, creating software verification strategies and quality assurance methods and document and preserve software functionality. Troubleshooting, debugging, and upgrading existing systems. Schedule: working 6-7 days per week.

Daily Routines

- Relying on a smartwatch integrated with Fitbit, supports Google Fit and Fitbit apps.
- Exercising occasionally, not stressed, engages in leisure activities like watching YouTube, playing games, and listening to music.
- Trying to keep track of calories, engages in physical activities.

Goals or Objectives

- The weighing scale and the motivation of seeing weight reduction
- Keeping track of calories intake and burnt and checkups from time to time.
- Reducing stress.

Settings of using Health app

- Gym
- Regular workplace

Expected feature on the app

- Convenient, user-friendly app
- Accucate details about needed water, food intake, calories, nutritional benefits
- Reminders or alerts for necessary nutrient deficiencies based on diet
- Notifications and feedback that are personalized.

Personal Informatioon

Gender: Male
Weight: 177.4 lbs
Height: 6"5

Biggest Challenges

- Finding time is limited for keep track of daily healthcare
- Lack of knowledge about calories balance
- Unsure about healthy and suitable food choices.
- Losing weight
- Relying mostly on fastfood
- Find a good health-tracking app

Privacy concerns of health data

- Data privacy is highest priority
- Not willing to share and publish data in collaboration features.

- Should include if possible: directs: **should include if possible**

Dr. Roberte

Job Title

Anesthesia Resident

Age

26

Highest Level of Education

Professional degree (e.g. MD

Social Networks

Background

Dr. Robert, a second-year Anaesthesia resident and a former General Practitioner. His work is to obtain data about steps walking, dietary, and BMI by interviewing patients to understand their lifestyle and apply proper tools to measure. Patient data, especially from smartwatches, helps assess sleep and activity patterns. He keeps in touch with patients by text messages and online to follow up with the next appointments.

Daily Activities

- BMI measurements, fat composition he applies for medical assesments by using medical apps and tools for computations, diagnoses.
- Working mostly in anesthesia hospital.
- Preparing procedures by evaluating patient data.
- Encouraging patients to use health apps to a focus on sleep heabits, exercises, and weight tracking.

Privacy concerns on accurate health data

- Potential misuse of lifestyle behaviors, highlights the need for end-to-end encryption and regulatory oversight.
- Suggests end-to-end encryption, legislation governing apps, and involvement of ethics committees.
- Predictable outcomes with patients being careless and healthcare practitioners not taking data entry seriously.

Expected feature on the app

- Highlights the importance of wristwatch data including tracked sleep patterns, physical activity, and conditions such as snoring and sleep apnea.
- Illistrate of sleep and exercise records.
- Collects details on step walking, eating behaviors, and body mass index.

Settings of using Health app

- Hospital
- Anaesthesia area

10. **Verify task descriptions**

Task 1 and 4: Persona 1 Mark - Verified with a STEM Major (23 years old)

The STEM major found the tasks one and four realistic and the persona representative of his daily actvities and himself. He emphasized the app's convenience, efficiency, and ease of use. Though not a current app user, he acknowledged its usefulness for daily tracking. He typically uses notes on his smartphone for tracking, making him appreciate the potential convenience of the app. His input confirmed the tasks' clarity and relevance, emphasizing its alignment with his daily routine.

Task 2: Maria - Verified with a Homemaker (Age 64, Retired War Veteran)

The 64-year-old homemaker verified the tasks as realistic and representative, expressing the need for detailed steps and tracking of non-exercise activities like gardening. His goal of losing weight for a summer vacation aligned with the tasks, suggesting relevance. Clear understanding was affirmed, and the only addition suggested was calorie counting, a valuable insight for task enhancement.

Task 3: Persona 2 Dr. Robert - Verified with a Radiology Resident (PGY1)

The Radiology resident, PGY1, verified the tasks' realism and persona's representation, emphasizing the relevance of health management apps in radiology. Additional tasks related to image sharing, analysis, and managing appointments were suggested, enhancing alignment with the unique responsibilities of a Radiology resident. This feedback aimed to make the scenarios more applicable to the field and the professional's goals.

Group contribution Norms

For teamwork, **Sangeeth** is in charge of people aspect under PACT analysis, writing task descriptions for users, conducting interview for a user that falls under primary category. **Duc Quang** is assigned to work on file format, Technologies of the proposed system (UI) and creating two persona(s) that should be relative to the characteristics of the specific groups. **Priyadarshini** worked on the interviews, recording responses, writing task descriptions and activities of the system. While **Khang** is responsible for the context analysis and prioritizing the users and tasks. Finally, **George Ibrahim** finished the "Different combinations of P, A, C, and Ts" and the "Verify Task Descriptions" sections of the assignment.

Revised Proposal - Project Proposal.docx.pdf