

Meal Mate

Companion technology for volunteers and the elderly clients they serve

TEAM

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OVERVIEW: FEEDBACK, CRITIQUES, AND SUMMARY OF CHANGES

Through our research, we explored multiple potential target users in the ecosystem of elderly support services as well as several broad feature sets / usage scenarios. Initially we considered multiple permutations of user profiles accessible to the client, volunteer, and service provider, with features including real-time chat and registration assistance. We interviewed people in various roles: elderly client, service provider, and go-between volunteer, to inform our decision about how to constrain and scope our project. Drawing upon feedback we received in class critiques and through these interviews, we identified limitations in approaches relying on the technological proficiency of individual elderly clients. We resolved these obstacles by selecting a human-facilitated design oriented toward volunteers. This design decision reflects a consistent theme we encountered during research: elderly citizens adopt technology with much greater ease when it is introduced socially.

Due to age and technological competence, volunteers are better suited to take the lead in gathering feedback. However, they are also relatively unequipped, often possessing nothing more than a list of names and addresses. Therefore, our application creates a simple, unified platform for organizing information about elderly clients. Through dialogue and in-person check-ins, volunteers may gather feedback about the quality of service and any changes in medical status, a process facilitated by our application. This remains our first task: it addresses our original goal of empowering elderly citizens, and it enables us to lower a communication barrier and improve quality of life for those with allergies or medical restrictions. Our second task directly reflects our research, which indicated volunteers are often the primary point of social contact for independent elderly citizens receiving meal aid. Therefore, our application also provides volunteers with client profiles containing emergency contact information should an unexpected scenario require the volunteer to provide emergency assistance.

PROBLEM DESCRIPTION

Due to physical and mental limitations which accrue with age, elderly citizens are less capable of self-advocacy than other demographic groups. Many rely on template support services to meet basic needs. Meal delivery is one support service in particular where we observe the opportunity to instrumentalize technology to improve quality of life for the elderly. Clients may feel disempowered by a process over which they have no control, and intimidated by automated systems which are their sole means of communicating with the service provider. These communication barriers produce material consequences for elderly citizens whose diets are constrained by Diabetes, Heart disease, Celiac disease,

or other similar issues. For these citizens, omitting disallowed menu items may cause other nutritional needs to go unsatisfied.

PROPOSED SOLUTION

We believe technology could enable better communication between elderly clients and service providers, allowing clients to indicate custom parameters and provide feedback about the support they receive. Our target users are volunteers who facilitate the feedback-gathering process through routine check-ins and dialogue. The application is flexible: A volunteer may transcribe verbal feedback, assist the client as needed, or merely ask framing questions for the most autonomous clients who wish to enter feedback themselves. Due to the physical presence of the volunteer, our application can meet the needs of clients with varying levels of technological proficiency. The application also provides useful information to volunteers: It associates names with faces and basic profile information which will reduce the learning curve for new volunteers and provide a foundation for volunteers to build rapport with clients.

DESIGN RESEARCH: STAKEHOLDERS, GOALS, AND PARTICIPANTS

We chose to explore the ecosystem of personal care and support services which assists elderly citizens who are restricted (to varying degrees) in their capability to provide for their own basic needs. Stakeholders in this ecosystem may include the elderly, their families, volunteers, and/or support staff, depending on individual circumstances. Unlike many of the people responsible for making design decisions which affect accessibility, elderly stakeholders are often limited by vision, hearing, tactile, and mobility constraints which impair their ability to engage with new technology. They may be unfamiliar with design idioms or software conventions which are second nature to those of us who were exposed to digital artifacts from an early age. Furthermore, due to the neuronal pruning which occurs with age, elderly populations are more prone to rigidity in patterns of thought and behavior which poses a barrier to adopting unfamiliar technology.

Our research process consisted of interviews designed to explore an interactive system from multiple perspectives. We conducted three interviews in total to gather data and understand more about our target users. In selecting candidates to interview, we attempted to cover a broad range of participants in the supportive ecosystem. We sought the perspective of a client, a volunteer, and a service provider, and have made arrangements to conduct further interviews with elderly clients at a local retirement community as the project progresses. Our approach reflected the time restrictions under which we were asked to perform research. Interviews demand less rigorous engagement but still cover multiple domains. Furthermore, they provided the opportunity to direct conversations toward feature proposals which would directly inform our design process.

The elderly client with whom we spoke is a retired engineer, age 94, recently bereaved, who accepted meal aid for a period of at least six months during which he cared for his wife before her passing. His responsibility to attend to her medical needs required that he not leave his home, so he reached out to two organizations for meal support: Jewish Family Services and the local Cleveland Heights meals on wheels chapter.

The interview took place over the phone. We discussed his comfort with mobile and touch-screen technology as well as his perception of technological proliferation in his community. We learned that although he would access web services via a traditional desktop, several surviving women from his couples' lunch group regularly use touch screen devices. We also addressed several dimensions which affected his choice of meal provider, including accessibility, cost, and food quality. We discussed some drawbacks of meal aid programs such as a fixed menu. He noted that meals cost \$9 each, including delivery. We also addressed nutritional and medical requirements which further limit client choice. For this particular client, a limited-salt diet required that he avoid many menu items. The fixed menu meant that he could not make substitutions.

The volunteer we interviewed is a former Meals on Wheels driver, 31, who served elderly citizens in that capacity for approximately two years. Though he no longer works with the organization, he did have an unusually long period doing volunteer work there. The service he worked with was associated with the national organization and operated in Waco, Texas.

This interview took place over video chat. We discussed the ins and outs of working as a volunteer: the daily routine, the clients he worked with, and difficulties he faced getting the meals to these seniors. He specifically noted the trouble that can come with planning a route and finding houses as well as the issue of determining whether the person you are delivering to is truly picking up for the client. He also talked about certain things that come up when specifically serving elderly clients including health, memory, and mobility and many general issues like poverty and miscommunication also affect this process. He did touch on the brief nature of his interactions, even if they were regular. He also recalled that all the systems he interacted with were strictly paper or phone based, with no use of computers or mobile devices.

The resource provider we interviewed is the activities coordinator at a retirement community near the University of Washington. His responsibilities include organizing social events and teaching elderly citizens how to engage technology which facilitates community. He also teaches virtual classes which require VR goggles and provides the resources and training necessary to operate them.

The interview occurred in person in his office. We discussed the orientation of elderly citizens toward technology, which he described as a mix of intrigue and intimidation, and the many complicating factors which constitute barriers to access. He described how nuisances (for the tech-literate) such as pop-up ads and URL redirects are impossibly confusing for elderly citizens. We addressed the need for extensive repetition and written, step-by-step documentation as prerequisites to independent use of technology. Perhaps the greatest takeaway from this portion of the interview was the insight that elderly residents are most receptive to a new technology if the technology is introduced socially.

We also discussed the nature of the retirement community and its clients. The community includes both independent and assisted living residents, with an approximate 70/30 distribution. The activities director explained that this location in particular is home to many citizens who were doctors, lawyers, professors, or who performed other prominent, highly educated roles in their professional careers. He explained the critical importance of maintaining respect and preserving dignity when interacting with these citizens. He cautioned us against impatience and condescending language which would close the door to the interactions we were seeking.

DESIGN RESEARCH AND THEMES

We recognized several common themes. In addition to unfamiliarity with technology, elderly citizens are limited by various age-related obstacles. All three interviews touched on accessibility barriers which complicate the process of learning and adapting to new devices and platforms for communication. A key takeaway from our interviews was the need for external supportive resources: Friends, family, one-on-one guidance, and written instructions create necessary external structure which enable elderly citizens to access the benefits of technology. This sort of personal connection is perhaps necessary when introducing new technology. Both the elderly client and the service provider touched on the benefits of one-on-one interaction as a means to facilitate technological literacy. Human guidance soothes anxieties and eases frustration; it seems critical to reach elderly citizens through a human component instead of a fully automated interface.

Miscommunication was another common theme. Examples include visitors not knowing how to properly interact with the elderly in their place of living as well as a lack of interaction in the first place. As with many nonprofit organizations, meal delivery services rely heavily on the help of volunteers to get everything running. However, many of these volunteers are typically only with the organization for a brief period of time and may not have any sort of long-term relationship with the people who are receiving service. It seems important for both parties to efficiently communicate their needs, even if they might not know one another very well. Just the ability to let one another know of any small changes week to week, like someone new picking up the meal, would be beneficial.

When we consider the relationship between these themes and design decisions, we must maintain an awareness of all the ways in which elderly citizens might be confused or misled by our choices. The activities director emphasized that simplicity is best: A cluttered or complicated interface exacerbates the potential for miscommunication. Similarly, we must keep in mind the vision and tactile constraints which demand large, clear, well-spaced interface elements. The interface is the first surface of interaction with our product. It may intimidate or invite: hopefully it does the latter.

TASK ANALYSIS QUESTIONS

Who is going to use the design?

The elderly who live independently and receive meals from organizations; volunteers who deliver meals to the elderly.

What tasks do they now perform?

Most elderly order their food via phone and receive meals delivered to their home once a day. Volunteers deliver meals to the elderly and help them give feedback of the service and updates of their medical status. Organizations have paper records that they give to volunteers and do have an internal system for routes and meal prep.

What tasks are desired?

We want our target users to be able to order personalized meals and provide feedback about their experience through our mobile application. We hope to ease the process for the volunteers trying to serve these clients as best as possible by interacting with them in a way they find acceptable. We also

want our volunteers to prepare themselves with any emergency which would happen with the elderly. Therefore we provide them with a detailed list of emergency contacts of every client.

How are the tasks learned?

Speaking with elderly people and those who work with them, it became clear that new technology is not something they just pick up on their own. Things like this are best introduced through their social sphere, which can include family, caretakers, and our focus of the volunteers for these organizations themselves. Class and TA feedback is also critical for the changes made for the volunteers and organizations, there is already a mostly paper system in place, so putting analogous features in any type of technology is likely best.

Where are the tasks performed?

The tasks for the elderly should be performed freely throughout the day at time or place, such as at home or at the community house. The tasks for the volunteer should be performed while the food is delivered and anytime emergency happens. Special attention to these tasks would probably come around meal time and delivery time. The volunteers especially would be carrying out their tasks at these times and requesting that the clients perform theirs.

What is the relationship between the person and data?

Elderly people have to give their feedback and update their personal information in order for organizations to customize their meals to meet their nutritional needs and avoid allergies. Various people need access to information about the clients, service, and volunteers, but currently just the service holds most of the data and the methods of receiving it are not by any means efficient.

What other tools does the person have?

The majority of elderly citizens have technology anxiety and therefore our team will design the user interface of our mobile application to be as intuitive and clear as possible. Currently the elderly use phone calls or in-person applications to register for delivering meals, so we recognize an opportunity for our team to introduce a more convenient tool to them.

How do people communicate with each other?

Without Meal Mate, the elderly have difficulties communicating with the organizations about their specific requirements and comments. Our mobile application solves the problem by introducing them with the feedback section and update their medical status right after every delivery. They are able to give feedback about the delivery service and the food.

How often are the tasks performed?

The tasks are performed whenever the elderly order food from the organization, therefore the frequency depends on their individual preferences.

What are the time constraints on the tasks?

The only time constraint is that the delivery service is available during the opening hours of the organization.

What happens when things go wrong?

One problem the elderly usually encounter is anxiety when confronted with new technology. Although many elderly citizens have started to become more comfortable with technology, many citizens still

have trouble figuring out mobile applications. Our first mission is to try our best to comfort them with simple interfaces which mimic real world objects and avoid any conventions which assume prior familiarity, such as context menus and taps/gestures.

PROPOSED DESIGN SKETCHES

Design 1 (Will)

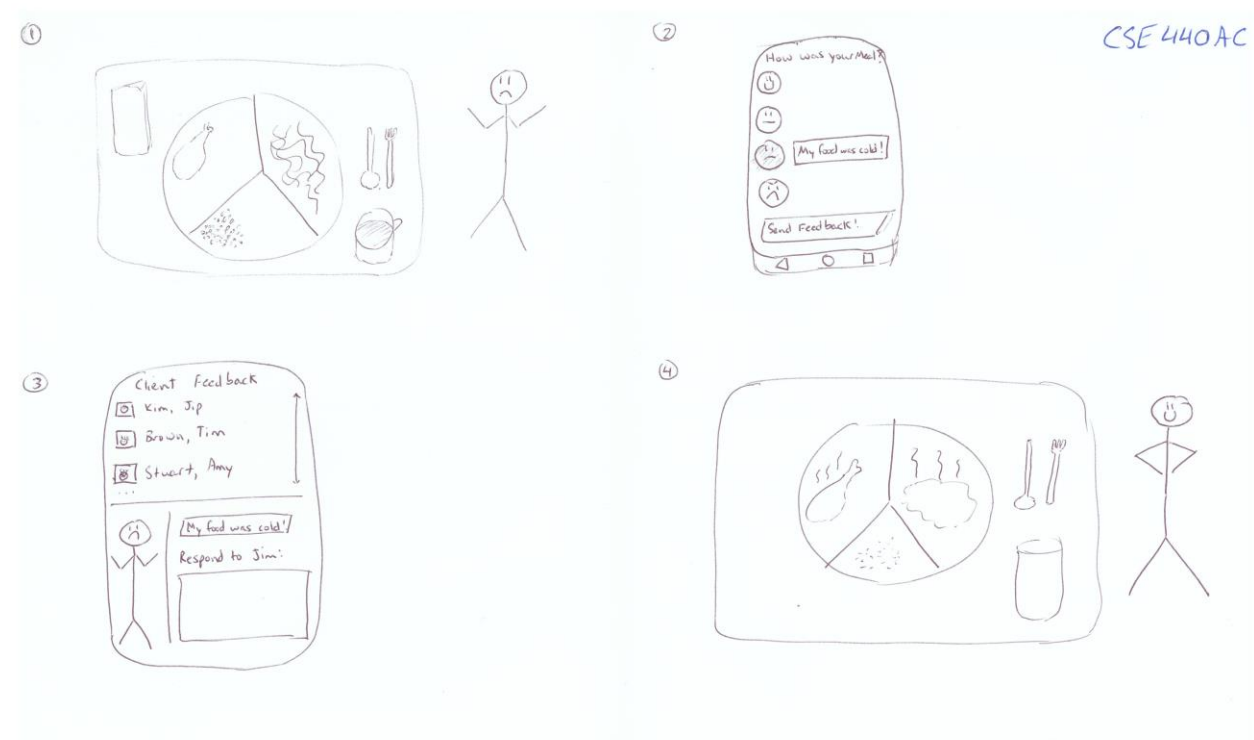


Figure 1: Will's 3x4 task proposal

This design features the following tasks: keeping up to date on client nutritional needs, independent living diet research and accommodation, learning client details for beginning volunteers, and reaching out to emergency contacts for a client in distress (Figure 1). My design provides a view of a client profile and a feedback screen for the volunteer to facilitate. The client is able to indicate a simple emotional response from a minimal set of choices on an uncluttered interface to convey to the service provider a high-level overview of their assessment of the quality of care received. The service provider may view feedback from multiple clients and leave a response with an individual client of their choice. The sketch conveys the relationship between client emotion and the ability to send feedback, which facilitates a positive material outcome for the client. The design also provides volunteers a means to view client profiles and contact emergency services if necessary.

Design 2 (Sofie)

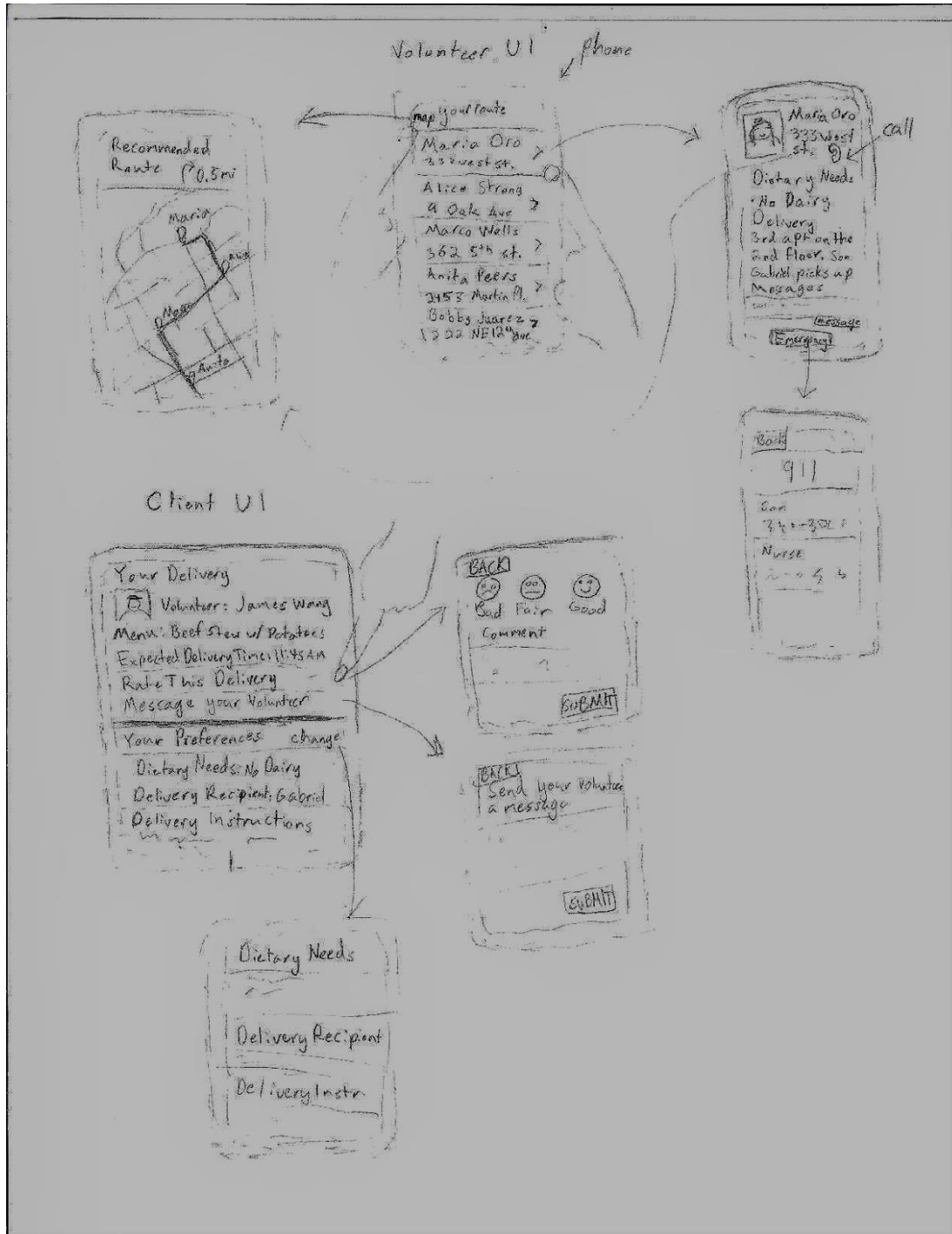


Figure 2: Sofie's 3x4 task proposal

The tasks I allowed include last minute communication between volunteer and client, compiling emergency contacts for a client in case of distress, keeping up to date on nutritional needs of clients, and knowing the ins and outs of every client when starting to volunteer (Figure 2). This design has two sides, a more complex volunteer side which acts as a map and information center for delivery people,

and a more simple client side with one main page with delivery and personal details, with a few single purpose pages containing other features. These are designed with the user bases in mind and are modeled after systems they are hopefully already familiar with. The volunteer side features routing, client profiles and a panic button, the clients, an email-like messaging service and basic review system. My choice of design works on improving the efficiency of the system. It is based around the idea that the volunteer is in the middle of the service-client system and therefore most easily able to smooth the relationship, even if they are only short term. It could also let volunteers collect client feedback on the individual level. We could explore several means of contact between clients and volunteers including phone, email, and integrated messaging.

Design 3 (Carol)

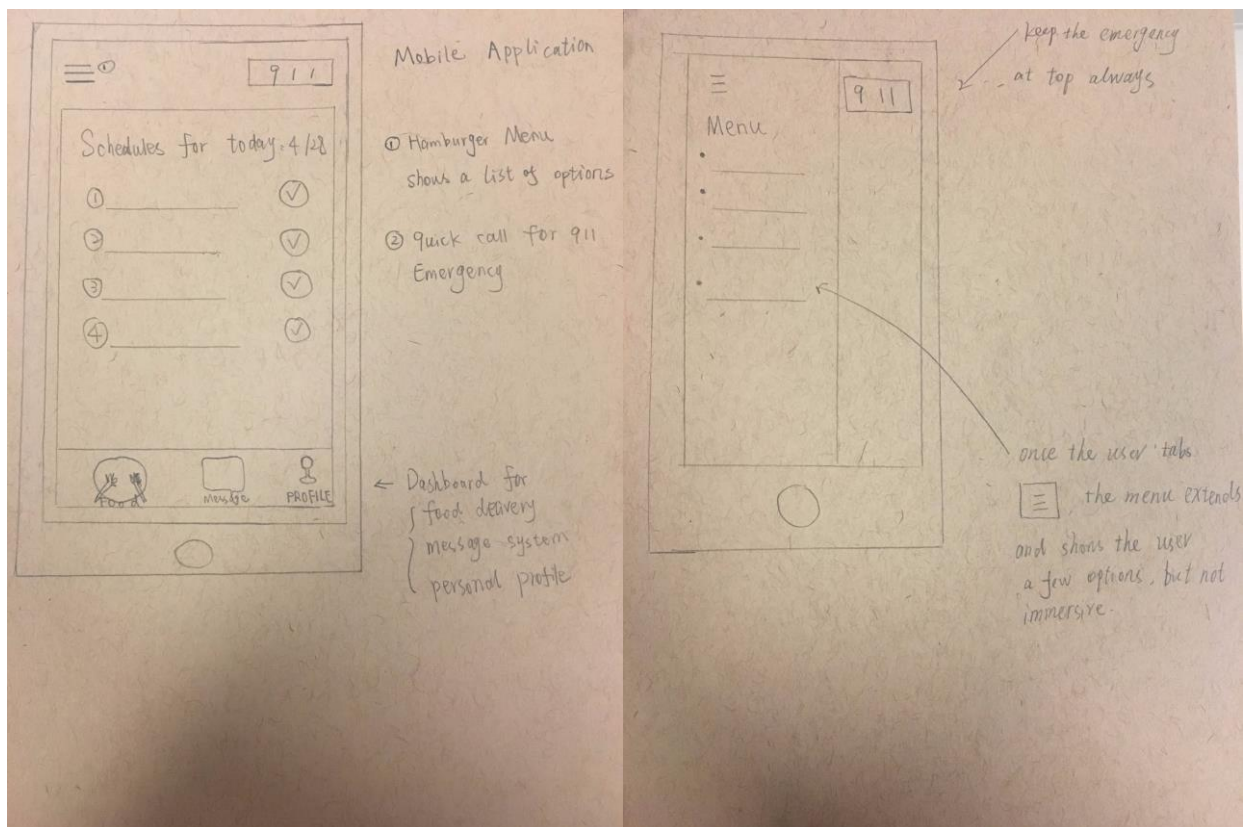


Figure 3: Carol's 3x4 task proposal

The tasks I chose to focus on were food Delivery, food Tracking, communication through Messages, personalized profile and emergency contact (Figure 3). The dashboard is customized to three different sections of our users. This idea is designed for nurses who work at the organizations to take care of the elderly. They could check their daily required schedule through the main page and have more options to complete through the hamburger menu. There is also a navigation bar at the bottom of the interface to navigate through three major tasks: "Food", "Messages", and "Profile". Emergency Contact "911" is always on the top right of the interface for the convenience of the users in case an emergency happens.

Choice of design and tasks

Our group selected two tasks: gathering volunteer-assisted feedback regarding changes in medical status and volunteer emergency response while delivering meals. We chose the first task because receiving feedback from the elderly is one of the most important features to implement: It addresses our original goal. It provides the elderly a direct approach to communicate needs that may not be otherwise met, and connects volunteers to the elderly with more comprehensive information about the people they are serving. After we conducted our user research, we recognized that it is necessary for volunteers who have direct interaction with clients to understand how to conduct some simple emergency responses. Therefore, we chose volunteers responding to unexpected emergency situations while delivering meals as the second design idea to facilitate. Having “911” and clients’ emergency contacts displayed at the top allows volunteers to better assist the elderly if any emergency occurs.

WRITTEN SCENARIOS AND STORYBOARDS

Scenario 1: Gathering volunteer-assisted feedback regarding changes in medical status

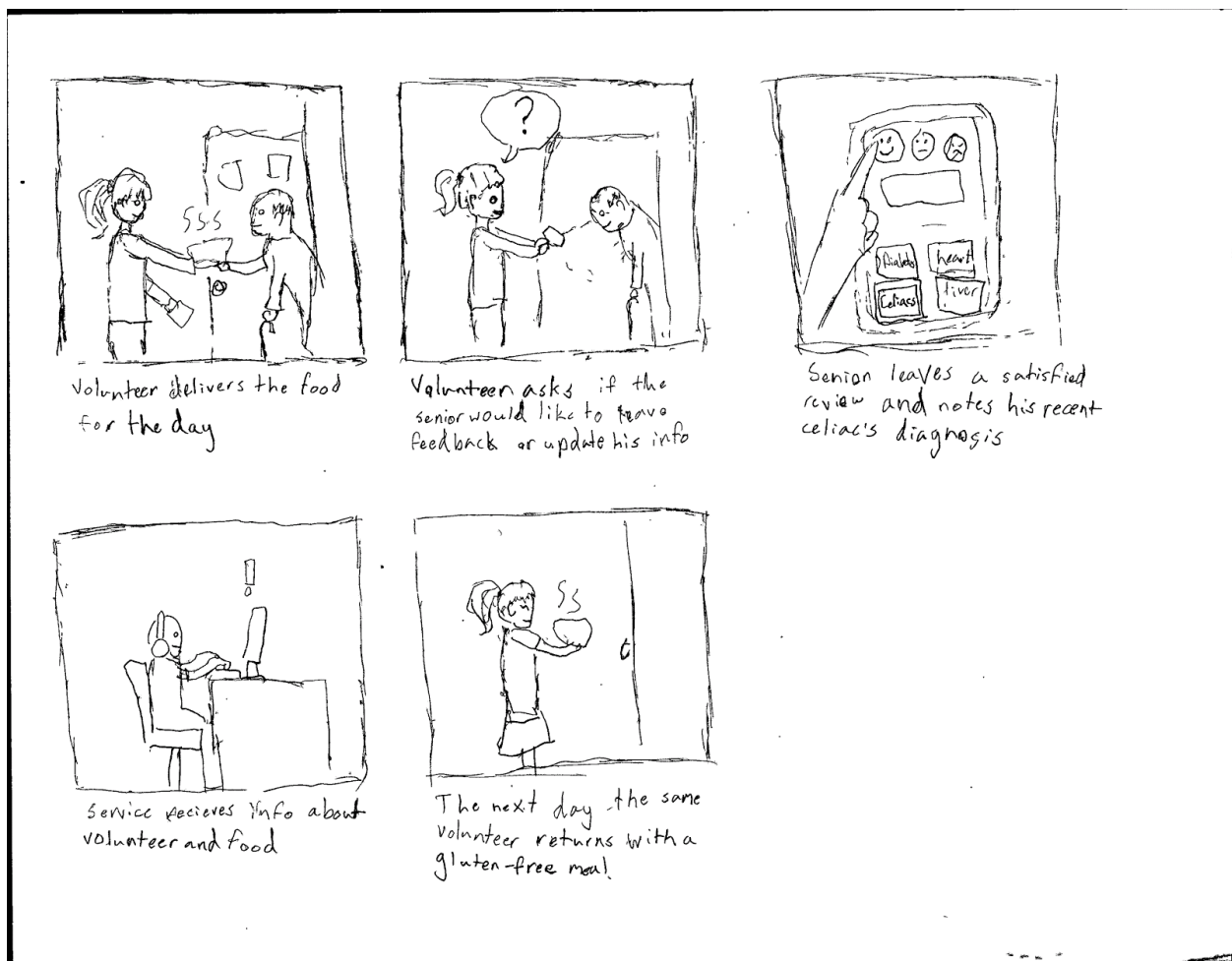


Figure 4: 1x2 storyboard featuring volunteer gathering feedback

June is a volunteer with Meals on Wheels that is going to deliver a roast beef meal to Mr. Craig for the first time today. She approaches the door and knocks, greeting Mr. Craig in a friendly manner. Mr. Craig is happy to get such a nice welcome with his first from June. Mr. Craig takes the food from June and thanks her. They chat for a minute, introducing themselves. June then asks Mr. Craig if he would like to give feedback or change his diet and delivery plan on her smartphone. She says she can enter the information if he would like. He says he's comfortable with the phone and gives the delivery a glowing review and notes his recent celiac diagnosis. The service receives the information and the next time June delivers she comes with a gluten free meal for him (Figure 4).

Scenario 2: Volunteer responding to unexpected emergency situation while delivering meal

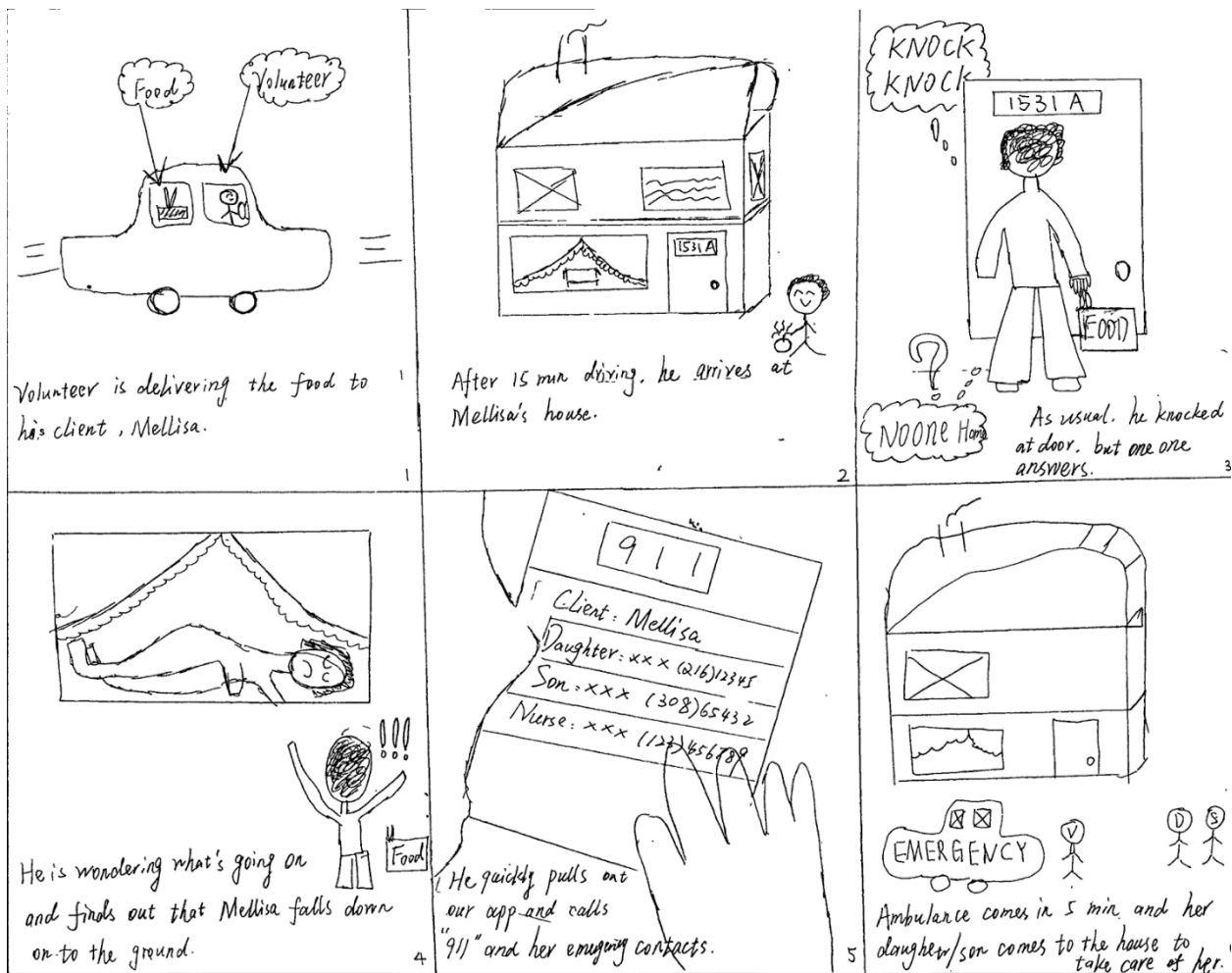


Figure 5: 1x2 storyboard featuring volunteer responding to emergency

On a sunny day in Seattle, Alex is delivering 10 packed meals to 10 different clients' houses as usual. When he arrives at Mrs. Melissa's home, he approaches the door and knocks. However, no one responds to the ring this time. He waits for one more minute and still does not hear anything. He starts to sense that there might be something wrong happens to Mrs. Melissa because before he arrives, he contacts her through phone to double check that she is going to be at home. While Alex is wondering

what might happen to her, he finds out that Mrs. Melissa falls down on the floor and passes out. Instead of panic, Alex knows exactly what to do. He quickly brings up Meal Mate, calls 911 and all the other necessary emergency contact listed under Mrs. Melissa. In 5 minutes, doctors come with ambulance and Mrs. Melissa's daughter come and help the nurses to take care of her mother (Figure 5).