

# M2M

MUSIC 2 MOVEMENT



Music 2 Movement is a branch of UBC BEST (Biomedical Engineering Student Team) that is creating a biomedical music device for rehabilitation patients. They consist of undergrads from multiple facilities: engineering, business, kinesiology, and medicine. M2M's project is a set of musical instrument/device that enhance the recovery process of patients with brain or chronic injuries who suffered damage to their motor functions.

M2M MEMBERS WORKING ON THE HARDWARE

WEEK 2

## ETHNOGRAPHY & INITIAL DESIGN FOCUS

In the first few weeks of on-site visits to the M2M working space, we observed and interviewed M2M members and the project lead and discovered that the software development was a major pain point. With a newly-formed and understaffed software team without a defined scope and having changing expectations for the software, the development felt daunting to complete with repetitive iterations. While the hardware aesthetics were quite developed and sleek, some design opportunities may have been there for us to jump in. In addition, while members met weekly, we noticed minimal communication outside of their weekly meeting and a long onboarding period for new members.

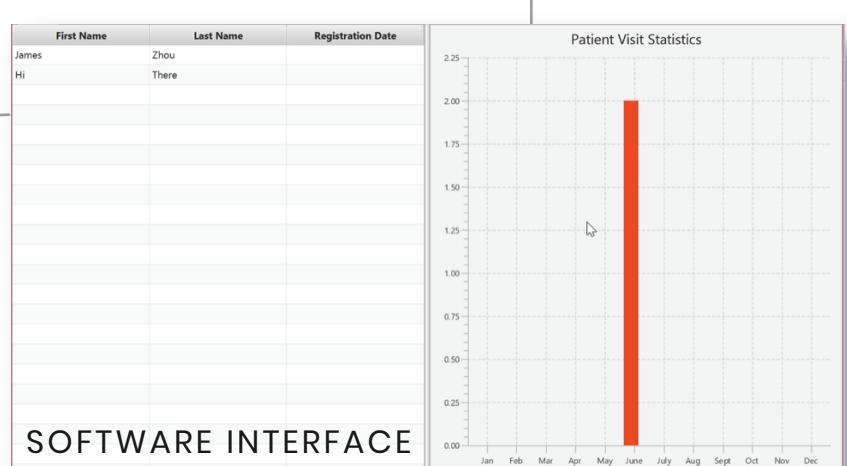


WEEK 3

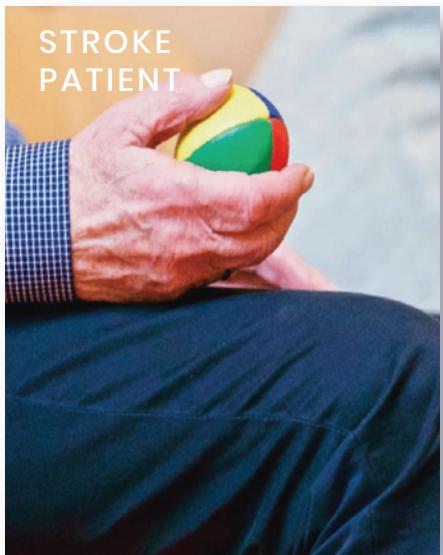
(Due to their request, we can not show photos of their current prototype)



M2M MEMBERS



SOFTWARE INTERFACE



## PERSONAS

After learning more about the development process we created 3 personas based on our targeted audience; The computer engineer, the music therapist and stroke survivor. Our primary target audience was the computer engineer which represented M2M's team where we saw them as students who worked when they had time outside of school, which limited the workload. When we looked at the music therapist, we found that they spend around one hour preparing for every hour spent with the patient. With the patient we noticed that they didn't like to be treated differently and were always challenging themselves. From the personas we were able to understand each part in more depth. We saw the communication between the development team and therapist was finite and we also saw limitations with the patients as we didn't have direct access to them, and therefore we were able to narrow down our scope.

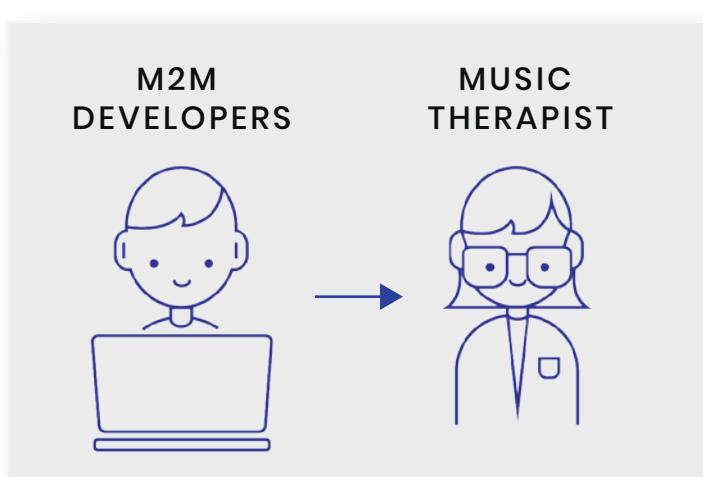
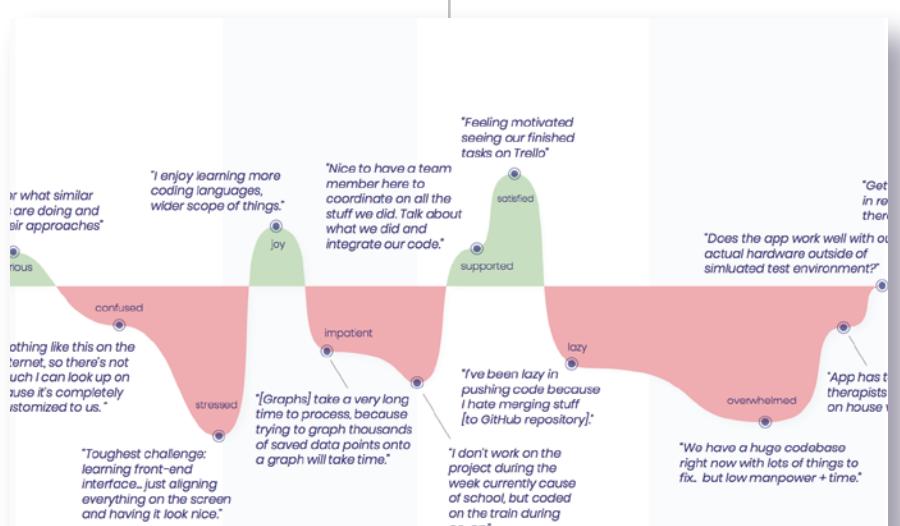
## CULTURAL PROBES

For our cultural probe, we created several activities for the M2M group to acquire data that focused on specific areas regarding the M2M software such as how people perceived certain aspects of the interface, what still needs to be improved upon and be implemented, and how the M2M group can collaborate better to improve the development process. From our results, we were able to learn that many of the members had suggestions regarding how the interface could be improved upon, which indicates that there is much more flexibility for us as designers to explore various options to update the interface. We are also able to acquire data on what type of content the audience values in an interface design in order for us to understand how to organize the content of the software in a hierarchical manner.



## JOURNEY MAP

Our journey map focuses solely on the user flow of the existing M2M software as well as the M2M software development process where we analyze each process to discover any design opportunities through pain points that may occur to the targeted audience. From evaluating the M2M software using heuristic evaluation, we were able to identify there were still many areas within the software where usability could be improved. Since our targeted audience, therapists, are not very tech savvy, some examples of improvement include making system statuses more visible, to show better feedback and help users indicate actions, microinteractions to help prevent errors, and animations to suggest progress and much more.

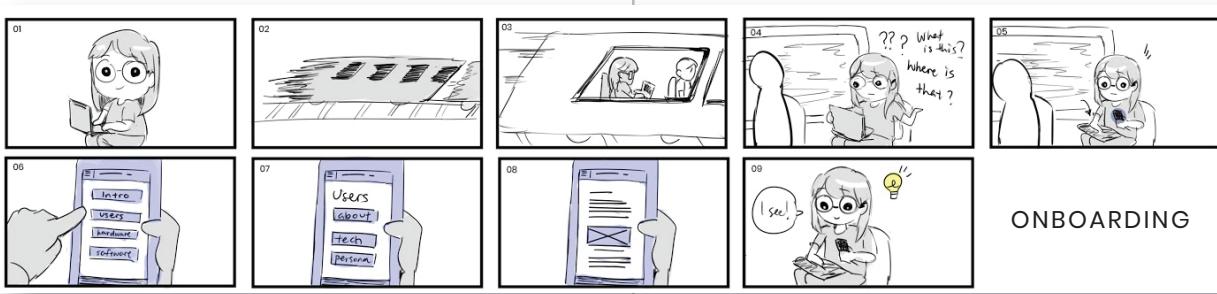


## CHANGE OF AUDIENCE

Through our research we have done thus far, our group was able to validate that among all the different opportunities, our biggest opportunities for M2M was redesigning their M2M software. The change that we proceeded with was to shift our focus away from the software engineers to focus solely on the musical therapist and discover more about them in depth. The reason being is that therapists are the users for the software, and without more data on them, we are unable to validate the decisions behind our interface design.

## THERAPISTS WORKSHOP

With our shift from M2M software developers to the busy music therapists, we were only able to conduct a short 10 minute workshop with the 2 therapists consulting together. Data collected focused on planned feature ranking, system data storing expectations, and session data that therapists' usually record on paper. During this process, we were able to uncover their feature preferences where security, tutorial, and progress tracking took precedence over freeplay mode, graphing, personalization, and database management. Incidentally, game mode which was initially planned by developers and mentioned in our Journey Map weren't as desired as we originally thought.



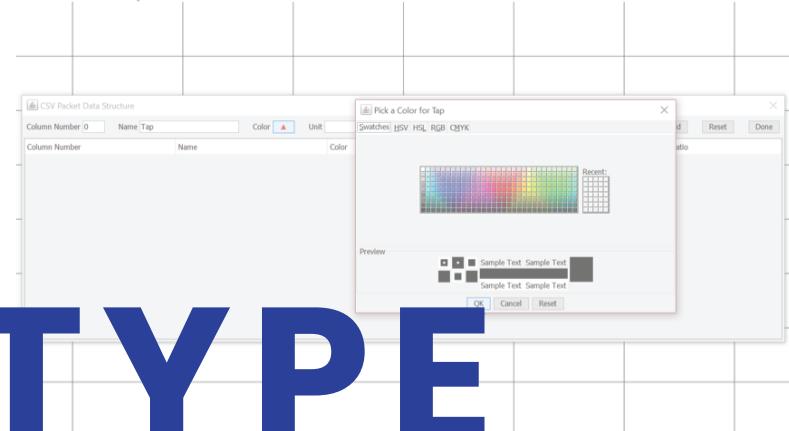
## CONCEPT BOARDS



From the data we collected, we devised 3 concept storyboards directed for our 3 different personas, which were a project onboarding app for M2M members, an interactive display for the patients, and a redesign of the current software system geared for the less tech-savvy music therapists. However, as we didn't have direct access to the patients but only a secondary caretaker of a stroke patient, there wasn't enough data behind the interactive display project. Similarly, the onboarding app did not have strong data from M2M members showing a substantial need for it, which left us with the interface redesign that we had started to shift our focus towards.

# FINAL PROTOTYPE

M2M SOFTWARE



**Graph**

R. NUNIS A2

A3 TEST

Chart type: Statistics

Hardware devices: Tap Device (Piano), Squeeze Device (Piano), Twist Device (Xylophone)

Instrument sound: Piano

Colours: Thresholds

Pressure Threshold: 49

Session Duration: 49

Devices: Tap, Squeeze

High-point: 59.35

Notes achieved: 6

Low-point: 24.35

**WK4**  
PRELIMINARY

**WK7**  
JOURNEY MAPS

**WK8**  
THERAPIST WORKSHOP

## INTERFACE DESIGN

12 weeks of ethnographic research and dialogues between M2M and professional musical therapists culminated in an interactive software prototype to showcase a new interface design.

As we transitioned our research focus, the data influential to our design became more rooted in the skills, experiences, environmental contexts, pains or needs, and goals of the therapists.

A high level of visual fidelity was a necessary contrast since we learned from Week 4 and 7 that, because of their technological inexpertise, therapists responded more intuitively to casual and digestible visuals or aesthetics consistent with the technology they use every day, as opposed to M2M's old extremely functional information layout.

Changes in navigation and separating graphs into tabs worked towards emulating familiar programs like web browsers. We explored tutorials, warning boxes, and more feedback to make it more friendly for novice users.

Through a participatory workshop in Week 8, we also delved into their preferences and needs for features, which helped establish specific areas to focus on for our design.

## Delete Patient

Are you sure you want to delete **Rebecca Nunis**?  
All records for this patient will be removed from the database.  
Warning: This change is irreversible!

CANCEL

DELETE

## Help ?

Need a refresher? Click a tutorial to learn how to use each feature.

### PATIENTS

View and manage your list of patients and see session history. Patient profile information is stored here.



### GRAPH

With the M2M devices linked, display realtime data for a session in a customizable graph.



### HARDWARE SETUP

### INSTRUMENT SOUNDS

## M2M & THERAPIST FEEDBACK

In our final week, we were able to conduct a usability research session with the musical therapists and some of the M2M members to get their feedback on the interface design we had created. Based on our results and observations, the overall feedback was fairly positive about the redesigned interface, but there were still opportunities to improve the usability which arose that we plan on addressing in the future.

From our observation we were able to indicate that many participants still had issues identifying what actions they had previously taken. For example, when a user has signed in, there is not enough indication that tells them they are currently a logged in user.

Some future goals could include improving recognition rather than recall by providing better feedback to the user on what action has taken place, or implementing animations to show progression rather than sudden changes on screen.

