Interactive Elevator

Proposal Report

Team CDI

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INTERACTIVE ELEVATOR

CDI

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THE TEAM DOMAIN (CONCEPT/CONTEXT/PROBLEM SPACE):

The team domain that CDI is working within is the topic of Enhanced Mundane Spaces. The domain is about spaces that people find dull and boring that have no real purpose or ultimately just lack excitement. Some obvious examples of mundane spaces include: buses, classrooms, buses, elevators, waiting rooms or just being in a car stuck in traffic. Most of these places you will see people on their phones or just staring blankly into space waiting to get out of the place. The focus of our team's project is to solve this problem of low levels of interactivity and engagement in these places in the hopes of hopefully getting people off their phones and getting them to do something, whether that be them learning something, improving a skill or simply just providing them with enjoyment.

Response to Feedback

Originally, the idea that our team had come up with was Dancing Elevator. Our idea hoped to eradicate all those awkward moments in elevators by forcing you to participate in an absolutely embarrassing yet effective manner. It required the person wanting to use the elevator to participate in a series of dance moves (different footing positions similar to a dance dance revolution map for context) to allow the elevator move. If the user dances the sequence incorrectly then the elevator will only take them half way up and require them to walk up the rest of the way thus promoting them to engage in physical activity.

After the presentation, our peers insightfully gaver us their feedback for our original proposal to enhance a mundane space. From the feedback given in the team's pitch, it was highlighted that an elevator wouldn't be the best possible space to do the team's concept. This being the space is too small to perform something like a dance if there are too many people inside of it at any one time. Instead some suggestions were given such as having the experience been done outside the elevator, rather than inside of it. Another idea from a particular critique was instead of using an elevator, a horizontal escalator such as the ones at the airport could be used as a joint effort to make it move faster and would look like a neat line dance for everyone else watching. Another concern that was outlined was the number of people in the elevator space and if this got too high, an opportunity to dance in a small space like an elevator wouldn't be feasible. As previously mentioned, the team originally made this concept so that one person could interact with it, however the feedback given suggested that using this as a collaboration tool for others to interact together in that space.

From this feedback, the team decided to go in a different direction and instead of doing something as physically demanding as dancing and walking flights of stairs. This first iteration of our proposal was going to be something such as a brain training situation that uses voice recognition to make users select a category for them to participate in a rapid fire word game where users would need to say something in relation to the genre selected (e.g if animal was chosen one user says fish, the other continues the game by saying elephant) However, This was reconsidered due to the lack of a physical interaction.

Instead, after communicating through numerous avenues, the team decided to split the interactions with a single person vs several people interaction with the elevator. To add a physical factor, for the single person, the elevator gives the user an image of a human silhouette posing. To continue, the user must pose the same for the elevator to move. This is similar to what an xbox kinect would entail in their interactions. For several people in the elevator, the elevator gives one person a charade topic then the person then acts out the charade topic and the other people have to guess what that user is acting out. After one person correctly guesses the charade topic, the elevator verfies and starts moving to the selected floors.

Related Work

To find out more about the problem space we are investigating, thorough research had to be completed in order for the team to fully understand what needs to be done to make the proof of concept prototype the most realistic and accurate experience.

Experiments that were conducted in elevators were researched to see the type of experiences this space conveyed. An experiment done by the University of Wisconsin-Madison was done on conformity within an elevator. In the experiment, a person was to graffiti inside the elevator and as the elevator rose up, more and more people entered to see how many people it would take for someone to speak up. From this they found that as more people enter the elevator with you, your perceived responsibility decreases. That is, with more bystanders to the graffiti, the less likely individuals are to exert social control. (Gavac, Murrar and Brauer, 2014). This is important to our concept as we could see how many people could engage in our experience without conforming to one majority's answer to a task.

A research study was done on the user experience of elevators by Rebekah Rousi in the Swedish Design Research Journal. It involved two high rise office buildings in Adelaide, Australia. Building 1 consisted of 31 floors (135 meters) and Building 2 consisted of 26 floors (103 meters). Both were refurbished in 2007-08, including the fitting of new elevators from the same company and of similar style. (Rousi, 2016) Elevator users included government and commercial office employees, legal practitioners, onsite maintenance, cleaning and security staff as well as couriers, visitors and commercial clients. In the study, three topics were covered. The first related to user characteristics: background (age, gender, language and cultural background) and mental factors (thinker type and emotional state). The second was linked to the elevator design itself, how the user evaluated it and suggestions for improvement. The third related to psychological and behavioural factors represented in attitudes towards security and safety, and habits users were consciously aware of. (Rousi, 2016) From this, participants were most satisfied with the locations of the elevators, the control buttons, the speed and the space. They were least satisfied with the colours and the sounds. (Rousi, 2016) From looking into this study, it is imperative that the team will need to design the prototypes to a particular elevator's preference and try to make sure that the sounds and colours conveyed will be positively impacted to the user itself.

Another research study was done on mobile interactions in elevators. This was done to support people flow in complex built environments. To evaluate this, they developed a mobile prototype that measured the user experience and outlined any potential usability problems. The prototype was a basic mobile elevator call control system that informs the application which of the several elevators has been allocated to the user. (Turunen and Kuoppala, 2013) Users are able to define and name their own 'favorite' floors and store these in the application, which facilitates the quick selection of departure and destination floors. From conducting evaluations on the testing of this prototype, it was concluded that there needed to be three user experience requirements:

ensure reliability of control; offer real value to users; and provide status information on the elevator system. (Turunen and Kuoppala, 2013) This means our proof of concept will need to be reliable, offer the right information and offer real value.

There are also inventions that have been done in 2002 that a creator designed an interactive elevator communication system and applied for a US patent. The problem spaces work on is how to change the award space during riding the elevator in a short ride. Therefore they have done research which they found out most people feel uncomfortable during inside the elevator and there are close bodily contact which makes the user award. So they have created an idea that the elevator installed a computer device and the device is configured with peripheral devices to display audio and visual information to the elevator user. It reduces the stress reward by providing a live, prominent presentation of information. Beside that the system can also connect to the elevator controller so that the device can present the information of the current or future destinations floors. Although the system seems outdated right now however it was created in 2002 the research it has done gave a lot of inspiration to the team when we design our own product.

Charades has been used before as a tool to help individuals with probable Alzhemier's disease, it was used as a way to display the use of gestures as a way of communication(Seifert, L.S., 2000). They went to several retirement villages and would collect data on patients with probable alzhiemers by testing their skills and abilities to play charades. The results from this testing indicated that participants were satisfied with charades indicating their willingness to play was satisfied. Not only was their initial willingness to play but every user asked to play next session was willing to play again. Based on this information, users' willingness to participate in a charade game should be very high, but given that our users aren't Alzheimer's patients should be considered.

From the above research conducted, it is clear that some considerations and ramifications for the design need to be made in order for this experience to be the best possible to suit several target audiences.

Audience & Intended Experience:

An elevator is not some place that you go everyday yet every single person would have been in an elevator at least once at some point. This is shown by the unbelievable statistics on elevator use in the world. Here are a few to put the use into context:

- 900,000 elevators operating today
- Average person takes 4 trips per day
- 325 million trips everyday
- Each elevator carries 20,000 per year
- All elevators carry Earth's population in 3 days

(T,. Schwartz 2020)

To say the elevator's are used by lots of people very often is an understatement.

This shows how important audience targeting is for this project but also that it caters for all different users even if they are someone who might only use them once a year at a holiday hotel for example.

The current system is designed to produce both audio and visuals from Aeries, a virtual assistant like siri, alexa, cortana and google assistant. As elevators are used as an alternative to stairs for many people who are elderly or disabled there must be a seamless information transfer to the users so that regardless of their disability the interactive nature of the system can still occur. For example, if there were two people who entered the elevator - one who is deaf and the other who is blind, the goal is they should still be able to collaborate with one another through the system to reach their floor destination.

Due to the nature of elevators and how common they are it is very hard to narrow down the specific audience type and demographic. More research will need to take place to specify these people, however, it is usually the building type that dictates the users rather than the users age, gender, background, likes/dislikes that dictate whether or not an elevator is something they use.

Scenario 1 (Collaborative):
It is 8:30am on Monday in Brisbane and everyone is heading to the city to start their work week. Carl is doing the same. He works in one of the tallest buildings in the city at a firm called Queensland Investment Corporation (QIC). He works on the 27th floor and gets there by taking the elevator everyday.

He gets into the elevator and says hello to 2 other work associates, Emma and Daniel who also work on his floor, as well as his "drinking" buddy Justin who works in his building on the 14th floor.

The 4 of them all get in the elevator together, Carl presses the 14th floor button for Justin and the 27th floor for himself and his work colleagues. There are 4 people in the elevator.

Once the buttons have been pressed the screen within the elevator lights up and Aeries talks to them saying “Your word is Lion, act out the word so the others can guess it to begin your journey in the elevator”.
Carl and Justin are very competitive with one another and like brain games. Whereas Emma and Daniel usually just check emails on their phones. Carl starts by acting out being a lion - as the game allows voice (as long as it isn’t directly the name of the ‘thing’), Justin gets it very quickly and the elevator starts to move. Then there begins a countdown from 10 for Justin to act out his word which is “dog”. Carl guesses “Dog” which also is a correct answer. As these answers have both been correct the elevator has kept travelling up to the 14th floor. One more correct answer from Justin with “Snake” gets them to the 14th floor which is where Justin gets out. The other 3 still need to reach the 27th floor and the only way to do so is to continue engaging in this game with the elevator. Now that Justin has left the elevator someone else must step up to the plate and contribute in order to get the elevator moving again.

Emma, although hesitant at first steps up to the plate to contribute to getting the elevator moving. The game starts again after the pause for Justin to get out. Aeries begins a fresh category and word which is “Baseball”. Unfortunately she doesn’t manage to get the word in the 10 second time limit and the elevator stops. Aeries says incorrect answers/out of time and then a new category is announced. The new category is “Fish”. Both of the players keep guessing correct answers until they reach the 27th floor where all patrons leave the elevator.

Scenario 2 (Solo):

It's 9:30pm on Monday and Carl is only just leaving the office after an absolutely massive work day where he was smashed with jobs to do. He presses the elevator button to take him to the ground floor. He gets in the elevator and Aeries announces a pose that the user must do as he is the only one in the elevator and cannot play the collaborative game with anyone else. Once he gets the pose correct it automatically goes to his chosen floor without the need for doing any other poses. As the game really isn’t as interactive and collaborative with one person the system is limited so that it doesn’t become an unnecessary annoyance to the user who just wants to get to their destination.

Currently more investigation needs to take place on how an individual would interact with the system without other people to collaborate with.
The intended experience of the interaction is primarily to have a fun and engaging way of riding the elevator rather than the standard, boring experience, where you just spend time looking at your phone. This will be done by hopefully creating a few laughs from the funny different charades that people must perform. It may even open people up to making friends that last longer than just the elevator ride. This is usually the case when it comes to playing games and relaxing. Another side goal is that people get woken up for the day especially in the context of office workers or people using elevators in the morning.

Relevance to Theme:

Interactive elevators address the issue of having a mundane space that people use everyday. Following the criteria to design a playful and open-ended prototype with the intent of a physical interaction in everyday life, elevators become a very appealing aspect for Team CDI. With the idea to enhance a mundane space , team CDI was left with endless possibilities but chose to enhance an elevator as this area has been left very untouched. There were several ideas that could have been sought out to enhance the experience for using an elevator. Elevators are a boring place yet are essential to many people all over the world. Without them we wouldn't be able to reach some of the highest places on Earth and there would no doubt be some very unhappy office workers if they had to walk all 20+ floors to reach their floor (not to mention very sweaty and smelly!). By creating our prototype we are maintaining the intended use of the elevator ,while creating an environment that is playful, fun and hopefully will provide a bit of different ways of thinking to wake you up and keep users stimulated throughout the day.

Individual Sections

Dimitri Filippakis

Introduction to you

I'm in my final semester of Uni (4th year) studying a bachelors of I.T. majoring in User Experience and Information Systems. I have a wide variety of skills within the Industry, so comes in handy when working in projects. Being a UX and Information systems major, I'm able to focus on both the front and back end of a project so am very flexible with what work I must accomplish. I have worked in both teams and individual projects where I've been hired as an IT consultant to create applications, thus I have practice in different development methods.

Your Focus

To enhance a mundane space, Team CDI has focused on Elevators and their surrounding space to improve the dull space that we all know of. The original idea that was selected by the team was a dance-like game within the elevator that required the user to dance to specific moves to reach the designated floor. After feedback from our peers we ultimately changed our idea to accommodate for the lacking space within the elevator to both a physical and mental charade game that allows the elevator to move. My focus specifically is looking into how residential people access and use elevators on a day to day basis. As residents of a highrise use an elevator every day, my focus is to find out how i can make this mundane space a more exhilarating and unique elevator journey. I want to be able to find out if these users are willing to move away from their comfort zone, and participate in something that could be potentially embarrassing. This will make residents feel obligated to get to know each other and even find themselves feeling a bit safer knowing who lives in their building. Being in an elevator it will be interesting to see what tasks users would complete to go to their apartment quicker.

Discovery

For my ideal prototype to develop, there are several factors that need to be considered before any more work is completed. Firstly, it is to research users and to find out how they interact with elevators on a day to day basis. This research will hopefully answer several questions. First being, how much time they spend in an elevator on every day, how much more time they are willing to spend in an elevator. Second is to find out how comfortable users can be with their neighbours in elevators, whether they're able to have conversations or if they find themselves awkwardly standing next to each other. Depending on their feedback, it would also be important to find out how far one is willing to go to get to their apartment floor (whether that be drop everything they are holding or not comply at all). To seek the answers for these questions, there are several user-based researches that can be done. This being observations where I can note how a user interacts within an elevator, note what actions have been completed. Interviews with the user, where I found out specific questions with the user (qualitative and controlled feedback). Questionnaires can be sent out to users for their feedback (this can be useful for evaluation of research with a TAM or SUS). Lastly if there are no users, (due to COVID-19) a heuristic evolution by experts or a theoretical model can be done.

Some other factors that need to be considered are that I shouldn't be fixated on the product and need to focus on how the prototype interacts with the user and how they come away from the experience. I mustn't let development get in the way of what I'm trying to achieve, I need to be able to focus on what the prototype is trying to teach.

In prototyping I need to be able to place the prototype in front of users and they have enough experience to understand the concept. In allowing for the user to understand the concept, further target audience research needs to be completed to accommodate my specific users.

Lastly due to the team members doing a similar basic prototype on different user groups, it is important for all of us to differentiate the specific functions that are specified for our end-users.

Project Constraints

This project has many constraints that can and will limit the creation. The first being due to the spread of COVID-19 has limited the access to the intended audience, thus more research will need to be conducted to be able to capture the essence of the user. To rectify this, a public announcement online will need to be conducted to be able to find willing users to receive feedback on questions made in regards to elevators within their residential living. The next major constraint for this project is the inability to go to university and use the inducted areas for us to create our prototypes within. Alongside this restraint on moving out into public, not living within an apartment makes finding an elevator and testing said prototype has been left to the imagination to simulate an elevator experience at home. Furthermore, the restraints on the collaboration and communication with other team members might be strained as well as potential users.

A Plan for the Completion of the Project

For the project to be completed on time, weekly milestones need to be met so that it is completed on time. These weekly milestones outlined below does not include team based appraisals and individual milestones. These milestones below are specific for the project and the completion of the project along with what needs to be done so that the work is completed for that week.

Milestone	Due Date	Task	Required to Complete	Estimated Hours
Finalising Idea for prototype (in terms of creation)	13/04/2020	Research an alternative solution for the specified target audience	Time	10
Collecting Initial materials for prototype	16/04/2020	Decide what is needed for the prototype. What the prototype will look like	Money and resources	3

Begin Functionality for prototype	19/04/20	Begin Coding for the Arduino and create prototype within a virtual world	Time	25
Begin Physically build for prototype	26/04/2020	From the virtual prototype, create it in real life and start testing with Arduino code	Time/More resources need be	20
Demonstration of prototype through video	4/05/2020	Write code for the Arduino and create a video that demonstrates the prototype	Time + Create Video	10
Begin Portfolio for end of semester	11/05/2020	Start Developing portfolio for the end of the semester	Time	25
Iteration of prototype after feedback	18/05/2020	Change anything in the prototype regarding feedback from the video	Time	15
Develop team report	25/05/2020	Gather all teams' findings and summarise into one report	Time	20
Virtual Exhibit	9/06/2020	Create a final video that demonstrates the final prototype	Time	15
Deliver Final Prototype	12/06/2020	Finalise the prototype and create a website to demonstrate the prototype	Time	15

Seamus Nash

Introduction to you

I have experience working in design and development teams to produce proof of concept prototypes and agile software development teams to produce concepts and client-based projects. I have strengths in some software development and coding such as React Native, C# and using prototyping design tools such as Figma. The main weaknesses I would have in this project would be the lack of exposure to working with tools and physically building devices. Also as Arduino has become more of a prevalent area in this project, I haven't done many complex Arduino projects.

Your Focus

The focus will be investigating how office workers can access and use elevators in a more engaging and enhanced way. As office workers in buildings use elevators frequently, it would be interesting to see how they could all collaborate to reach a goal or task as a team. As waiting in an elevator to get to a desired floor is quite a fast experience, it would also be interesting to investigate the types of quick fire tasks that users could perform to make the mundane experience more enhanced. This investigation will benefit the team domain as office workers are one of the most, if not, the most frequent users of an elevator thus this investigation and design considerations found will be imperative to the team's overall domain and design space.

Discovery

For this focus to develop further, there are some key questions that need to be addressed and answered. The first question that will need to be answered is to see what office workers think of elevator rides and how awkward and mundane they may be. Another question that needs to be investigated is to do some research into experiences that are super fast and can also challenge users. Another question that needs to be addressed is how my prototype is going to differ from that of my other team mates. Will it be similar but change slightly to suit my audience? Will it be a different experience? i.e. will my prototype involve doing a different task or goal?

To find the answer to these questions, certain inquiry methods must be done in order to gain insight in how to approach these questions. The first method of inquiry that will be done will be to conduct online interviews/questionnaires focusing on typical office workers working in buildings that involve frequent elevator rides and seeing what they find boring/mundane about elevator ride. Also within these, asking them what they may like to experience to make the ride not as awkward. Then from this maybe to create TAM and SUS evaluations from the questionnaires to gain some insights on how they accept a technology and if it is usable. This will hopefully manifest what they may want in an elevator ride and also provide an in-depth discussion on what makes an elevator ride mundane to a typical office worker. To try and answer the questions to do with the proof of concept prototype, communication between teammates will be essential in order to fully decide what specific experience my prototype will take. Also more in depth, specific research on the audience as well as the development of the

prototype needs to be done to see how my prototype could look and how I can suit the audience to do that.

Project Constraints

This focused project will have some constraints that need to be discussed. The first constraint that this concept will have is that for the evaluation of the prototype, the intended audience will not be able to be accessed. Due to this, more research into the intended audience will be done and assumptions will have to be made. Another constraint that this project will encounter will be as COVID-19 pandemic, collaboration and communication with other team members as well as potential users will be very difficult. To rectify this, set times to communicate with these people must be made in order to get the information and resources required,

A Plan for the Completion of the Project

To complete this project in the allotted time frame, some milestones need to be met at certain dates so that it can be completed on time. These milestones are outlined in the table below.

Milestone	Due Date	Key Steps	Resources	Hours (estimate)
Identify what the prototype's functional requirements will be	10/04/2020	Research potential solutions Identify specific solutions within the audience selected Begin to figure out all the basic functions	Time	10
Collect all resources needed	12/04/2020	Decide what resources are needed If needed, go and purchase resources unable to be found at home	Cash for the resources (if needed)	2
Begin basic functionality for prototype	19/04/2020	Do basic programming in Arduino for the early stages Test/debug code for issues and test cases	Time	20
Develop hardware solution to basic prototype	26/04/2020	Build basic hardware with arduino Build physical aspect of prototype using resources collected	Time/ help to build hardware (if required)	20
Demonstration of basic functionality of prototype and critique other prototypes	8/05/2020	Write code and test/debug Make sure functionality works Test against multiple cases Make sure hardware is fine	Time + create video	10
Clean up any issues	11/05/2020	Identify the crux of issues	Time	5

arisen in demonstration		Develop possible solutions Test/debug these solutions		
Add more functionality/make prototype more aesthetic (if required)	18/05/2020	See what functions could be added Attempt to add these Test/debug these with hardware	Time	15
Develop and collaborate on team report	25/05/2020	Gather all team findings Split up headings communicate with team using zoom and other	Time	20
Develop portfolio for process	12/06/2020	Use journals (ongoing through all milestones) for documentation of work develop website	Time	30
Deliver final solution	9/06/2020	Make sure all functions work and are succinct Make sure all supporting material is also completed i.e. video	Time	15

Anson Cheung

Introduction to you

I am experienced working on UI design and design evaluation during the whole project development. Most of the courses I worked before were using agile development methods to create client-based projects and group projects. I have basic knowledge of Java, python and html these front-end coding languages however I am not good at coding at all. I am also familiar with working at online prototype design tools to use for testing. The main things I want to learn and explore is how I can physically build a product or prototype using the tools in the lab and UQ innovate because I have never experienced it before. Beside that I will also do more UI design to train my skill to prepare for the future challenge.

Your Focus

My focus on this project is to understand how different age groups of users interact with the elevator. As the core concepts are main design just for office workers, I would like to explore more on other user groups such as students or young children who use the product. Can they collaborate and finish the task as a team? Secondly, this concept can be learned with the young kids learning tools too , they can learn a lot of new words by speaking loudly to make the elevator move.

Discovery

For the discovery of the focus, we need to understand a different combination of age group users. Is it going to affect the outcome of the task or goal, is it going to be very slow progress if there is a kid inside the elevator. If there is a huge gap between adults and kids, some rules or concepts must change to adapt the different combination otherwise the elevator will never go up. To test this, it can be easy or hard using a simulated prototype to test out different combinations that should give us most of the data. Beside that I should fount out some academic research should older people adapt to this kind interactive product , if they do not like it or familiar in prototype testing what has to be changed to meet the need.

Most of the discovery work is to find out if elder or young kids using the core concept product have disadvantage or unfamiliar experiences from those feedback or research. I should redesign a product that fits with them and stick with the original problem space.

Project Constraints

Due to the course change to an online teaching style, there are a lot of constraints added into the project. First thing first when building the prototype, we need testing and obviously we also need testers to evaluate our idea. Due to the government restrictions we might not get enough data to evaluate the product during the testing. Beside that , all conversations of the team have changed to online zoom. The team has to chat more otherwise there will be overlap of the work.

Thirdly as we can't access the UQ innovate therefore we can't use some tools to build the physical product.

A Plan for the Completion of the Project

Milestone	Due Date	Key Steps	Resources	Hours (estimate)
Draft design the prototype / building paper prototype	10/04/2020	Research and design the prototype function , make changes from the core idea	Time	12
Collect all resources needed	12/04/2020	Decided what form of the prototype will be like and what resources I need to use like arduino	Arduino. cardboard	1
Start building a functioning prototype	19/04/2020	Start building a arduino prototype , and prepare for the testing section	Time	20
Develop hardware solution to basic prototype	26/04/2020	Build basic hardware with arduino Build physical aspect of prototype using resources collected	Time/ help to build hardware (if required)	20
Demonstration of basic functionality of prototype and critique other prototypes	8/05/2020	Present the prototype making video. Prepare questionnaire or interview from other in order to evaluate the prototype	Time + create video	10
Summarise the feedback and evaluate	11/05/2020	getting feedback from the presentation and summarise the useful idea , base on those evaluate the prototype	Time	5
Add more functionality / debug from the coding	18/05/2020	seeking ideas/ thinking any function could be add to make the prototype more useful and stick to the idea	Time	15
Develop and collaborate on team report	25/05/2020	Gather all team findings Split up headings communicate with team using zoom and other	Time	20

Develop portfolio for process	12/06/2020	Summarise the work done in the semester base on the journals and reflect what I learn and what decision I have made	Time	30
Deliver final solution	9/06/2020	Make sure everything work and ready to present	Time	15

Alistair Harris

Introduction to you

I'm a fifth year Commerce (Major: Finance) and Information Technology (Major: UX Design) student who is experienced with working in team environments to design, iterate and produce projects. Being a design major, the UX is my primary strength when conducting these projects but if I am able to lend a hand in any other way such as the programming, user testing, coordination of tasks then I will do so to the best of my ability. I am really looking forward to taking advantage of my last opportunity at university to develop a working product by undertaking all the design and development principles that I have learnt over the last five years.

Your Focus

My focus in this project is to understand how all different people can collaborate in the elevator together to achieve the same goal of reaching their desired floor. The natural part about elevators is that they aren't really user specific rather than goal oriented in reaching a destination so every person needs them at some point. I want to focus on the system being able to cater for any types of disabilities to still be able to use the system and collaborate with other people. This will make them feel included in the overall "elevator goal" and also provide them with an interactive experience.

Discovery

My focus is to provide a great interactive experience to the disability user group and to do this there needs to be a few questions asked. Firstly, I need to investigate how long I will have to provide them with the experience from start to finish of their use of the elevator. This is difficult because the time will vary based on how far they are travelling so this must adapt and either shorten or lengthen. It would be beneficial to investigate other interactions that currently exist that happen very quickly in a short span of time. As elevators will be going all day, it needs to adjust to suit the mood they are in based on the time of use. For example if they are using the elevator at 7am, they will want to wake up but still don't want to be annoyed in a loud jump kind of way. The same goes for when they are very tired at the end of the day, having to do an excess amount of work or use their brain too much will be frustrating especially if they get an answer wrong and get punished for that.

With all our team members doing roughly the same idea except focussing on different user groups it will be extremely important to differentiate and specify their individual needs as much as possible. This will ensure that our ideas and research is broad rather than just tiny little spinoffs of each other team members.

With Covid-19 restrictions in place we will have to do our best to find the answers to these questions and get as specific as possible. Approaches like online interviews and recorded trials of them using the product will need to be utilized so we can get results as close as possible to seeing it live. Questionnaires might also be a useful method to narrow down what their purpose is in the elevator, whether they don't want to use the stairs or physically can't etc.

Also more in depth, specific research on the audience as well as the development of the prototype needs to be done to see how my prototype can adapt to fit the specific needs of my audience type.

Project Constraints

Obviously with the Covid-19 virus spreading rapidly around the world at this time, being able to collaborate with my group members will be more challenging than originally anticipated. This can still be done through Zoom but everyone needs to be really focussed to make sure we are getting tangible work done rather than just discussing and brainstorming all the time. This will be made more clear when it comes to physically building the system. Another constraint is when building the project we need to ensure that there is no overlap between people's work. Without a google doc where we can see exactly what other team members have done there will need to be full debriefs about what you have done and what you intend to do on the project.

A Plan for the Completion of the Project

These milestones are very much a guide because with any design project it is hard to say exactly how long each section will take. Some sections will take less time and some will take more but ultimately it will be finished by the end of the semester.

Milestone	Due Date	Key Steps	Resources	Hours (estimate)
Develop a strong idea and create the proposal report (including background research)	10/04/2020	Confirm the elevator as the Mundane Space and research similar solutions. Develop an understanding of how the user might interact with the system.	Time Research	25
Create a list of parts/what is required to build the prototype then buy	13/04/2020	As a team construct a list of items needed to build the prototype	Time Money (<$150 ea)	5
Learn how the Arduino works & watch some video tutorials to know the best way to go about building the prototype	20/04/2020	Refresh coding skills required for the development of the prototype. Youtube videos + Coding Forums and Codeacademy will be utilized here	Time Coding Resources	20-50 hours depending on difficulty
Start programming the basic functionalities and putting the pieces together	26/04/2020	Build basic hardware with arduino Build physical aspect of prototype using resources collected	Time/ help to build (if required)	40

Testing a demonstration of core functionality and have people critique the product	8/05/2020	Debug and fix any issues Iterate and test against class members Receive critique and adapt to this critique	Time	15
Make the changes and brainstorm any issues that need solutions	11/05/2020	Identify the crux of issues Develop possible solutions Test/debug these solutions	Time	20
Focus on the UX and visual of the product to make it look more aesthetic and presentable	18/05/2020	See what functions could be added Attempt to add these Test/debug these with hardware Test out some design ideas	Time	15
Create the report	25/05/2020	Everyone responsible for different parts of the report (divide tasks evenly)	Time	20
Create website and portfolio of work	12/06/2020	Use journals (ongoing through all milestones) for documentation of work develop website	Time	30
Deliver final solution	9/06/2020	Final check of product Any debugging Testing Final touches	Time	50

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