

## C.1 - Conceptual Design

### Introduction:

This project deliverable outlines our group's progress towards completing multiple prototypes for Design Day. The deliverable is split into three parts, with C.1 demonstrating our conceptual design for the project. Based on our first client meeting, we established the most critical client needs regarding the VR experience itself, which includes interactivity, story depth, and educational significance. Each team member created three storylines and voted for the top two storylines that deliver the strongest educational and empathic immersive experiences to the player.

### C.1 Point #1

*"Based on customer needs, clarify core functionality by breaking down required product functions (functional decomposition) into smaller basic sub-functions, identifying external sub-system boundaries."*

Product functions:

- Audio and captions built into the experience (accessibility)
- Compatible with the HTC Vive and Oculus Rift virtual reality headsets
- Able to run on a monitor and keyboard interface
- Can be loaded onto SideQuest
- Total running length is 5-10 minutes
  - Include 2-3 simulations
  - Each simulation has a running time of 3-5 minutes
- The experience should be interactive (allow the user to make choices that will affect the story)
  - The choices that the user makes should not affect the entirety of the simulation, rather it should affect a character's response
  - Each simulation should include 1-3 choices for the user
- Insert 2-3 statistics into each simulation during certain scenes to enrich the learning experience

### C.1 Point #2

*“Start from your functional decomposition/use case diagram, provide product concepts for a sub system or the entire system. Provide a minimum of 3 product concepts per team member (clearly identify each concept’s creator). A concept may be for a subsystem or a global concept.”*

Jimmy’s Concept Ideas:

1. Idea #1

- Our character just woke up from a nightmare of drowning
- There are some text prompts on the wall for users to follow
- The character starts to talk to the fish and tries to feed the fish with fish food floating in the air.
  - While feeding the fish, the fish convinced our character to be one of them.
  - After feeding the fish our character decides to face the fear of water to take a bath.
  - Then he thought he had overcome it already, and he paint his room into blue.
  - Blaming from mother, and he decided to follow the fish into the ocean.
  - Drown himself in water

2. Idea #2:

- Our character was bullied by her husband and her husband left her when she was pregnant.
- The character is a mother of 2 kids, and she believed that the baby father is a celebrity.
- Then after her kids asked her questions about father, she decided to pretend to be a journalist to approach him.
  - Choices of answers to the questions the security asked
  - Interview questions user can choice
  - Two endings:
    - Asked about one night stand and admit it as the partner. Setting him into a tailwind.
    - Lose control when the celebrity mention family

3. Idea #3:

- A teenager thought Trump wants to kill him and his family.

- Planning to kill the president
- Choices about guns, locations and timing
- Got caught by the bodyguards

Samuel's Concept Ideas:

1. Idea #1:

- Our character is walking on a sidewalk when a stranger asks him/her for directions.
  - The stranger asks, and then our user is given the choice of picking a response
  - After the user picks a response, it comes out mangled and distorted.
  - The stranger doesn't understand
  - The user is given a choice of three other choices for responses, picks one
  - The character (our user) again, mangles what they're trying to say (unaware that it's mangled)
  - Annoyed, the stranger curses them off and walks away
  - Confused as to why the stranger walked away, a deep sadness overcomes the character
  - Our character sits down on the curb and puts their hands over their eyes so all they see is black
    - The user starts hearing murmurs telling them what a disappointment they are
    - After around 5 seconds of that the user abruptly removes their hands from their face and continues walking down the sidewalk

2. Idea #2:

- Our character wakes up in the morning and gets out of bed
- The character heads to their washroom (connected to their room) and looks into the mirror, not seeing their reflection
- Confused, the character goes back to bed and sleeps
- The character wakes up this time and walks to their washroom, now seeing their reflection
- The character leaves their room and heads over to the kitchen to make some breakfast

- As the character is grabbing the milk, a voice in the character's head murmurs something incomprehensible
- The character pauses, and continues preparing breakfast
- The character sits down at their dining table and starts making a bowl of cereal
- Our character looks down to pour their cereal, and when they raise their head, they see a fuzzy image of an old lady in front of their table
- The lady stands motionless, but our character gets up from the table and heads back to their room and locks the door
- 10 seconds later the character opens the door slightly open and sees the old lady right in front of the door
- Frightened, the character runs to their washroom and checks the mirror, seeing no reflection
- The character heads back to bed and falls asleep

### 3. Idea #3:

- Late at night, our character walks through a dark, narrow alleyway
- Suddenly, our character hears a crack behind him
- Our character turns and checks, yet sees nothing there
- 10 seconds later, our character hears a voice quietly telling them someone's following them
- Our character turns around this time and sees a silhouette against a wall
- Confused and scared, our character begins walking faster
- Another 10 seconds later, our character hears a voice screaming at them that the stalker is approaching
- Our character turns around and sees a mangled face on the alleyway wall
- Our character begins sprinting down the alleyway with murmuring voices in their head telling them to get home
- The voices abruptly stop as our character leaves the dark alleyway and enters into a well-lit street
- Our character turns back and looks at the alleyway, seeing just a plain old dark alleyway

Zakaria's Concept Ideas:

### 1. Idea #1:

- The character is an extroverted teenager
- The character goes to a trip with his parents for a football match, and he has a strong connection with them.
- However, on his way back home he starts ignoring and avoiding them.
  - He starts complaining to his parents about the smallest things
  - His mom calls him so that she can take him to school, but he continuously ignores until she forces him out of his room
- He goes back to school and stops socializing with his friends
  - Whenever they would approach him, he wouldn't say a word and would only nod when asked a question.
  - If he is asked a question, he would give one-worded answers.
- He stops paying attention in class and his grades drop drastically.
- He loses his lack of motivation and is always in a depressed mood
- He also has trouble sleeping

### 2. Idea #2:

- The character is having a conversation with his friends when suddenly, he starts acting abnormally.
- He doesn't have the same sense of humor as he had before. He would usually be the person making jokes, but he stops communicating with his friends.
- Occasionally, he would make terrible jokes and would start laughing hysterically, in which his friends thought was very weird of him.
- One of his best friends approaches him and asks if he is going through anything or if he is facing any problems, to which he agitatedly replies "NO" and walks away.
- His friend then confronts him with the fact that he might have a mental disorder and that he should get some help.
- The character knows that his best friend wouldn't tell him such a thing unless if he really believes it. Which makes him worried.
- He starts going through self-conflict and worries about the fact that he might be going through a mental disorder. As he thinks about this more, he starts to get more and more depressed.

### 3. Idea #3:

- The character is informed that his mother would die in 3 days.
- The character is stunned and starts shedding tears. He doesn't do anything but cry in his room for a whole day.
- The next day he starts blaming people because they didn't take good care of her, he starts cursing the doctors and is in complete panic. He also starts to think that he is being harmed or harassed and everything is directed towards him.

#### Maria's Concept Ideas:

##### 1. Idea #1

- Symptom of schizophrenia: hallucinations. We can play distorted audio of voices, so it sounds like it is only audible to the player (echoes).
- User wakes up, everything is all dark
- Give the player a choice to brush teeth or (something else). The player will get a glimpse of the cluttered bathroom and the user in the mirror
- Walks around the room to give the player an idea of what it is like to live with schizophrenia (piles of laundry, trash on the floor, etc.)
- Taking medication. User feels drowsy afterwards? Show the side effects

##### 2. Idea #2:

- User goes downstairs to see family, skips breakfast, very irritable and agitated by loud noise
- Parents mention how the user is failing tests and doing poorly in school
- User can be walking and quickly turn around in fear and yell because they thought someone was going to come from behind and harm them, but maybe it could just be someone walking their dog or going for a jog
- Mother can pull her child closer to her in fear as the user walks by
- The user enters class, sits in the back all alone
- Students make fun and all the user hears is loud laughter and insults in their head

##### 3. Idea #3:

- Simulation can follow a teenager first experiencing the symptoms of schizophrenia
- User talks to friends in a monotone, starts to focus on something in the background (hallucination of something else)

- Mumbles replies to friends during conversations
- Player can be given a choice to pursue the figment (if the player chooses no, then the user will continue focusing on it either way)
  - If the player chooses to pursue the figment, the voices will get louder (voices will add to paranoia, they say discouraging things)
- User becomes disoriented

#### Annika's Concept Ideas:

##### 1. Idea #1

- The user is having a conversation with someone else
- The user avoids making eye contact with the other individual throughout the conversation
  - As the user is listening to the other individual speak, the user can hear another similar voice adding to the conversation
  - There can be an option for the user to choose what they heard the voice tell them; this will affect the user reaction to the conversation (confusion, anger, sadness...)

##### 2. Idea #2

- The user is taking the train home after a day at work
- While sitting on the train, the user notices a mother and a 5-year-old child
- The young child notices that a seat is empty next to the user and begins walking towards the seat
  - The user begins to worry since he fears that the child is going to try to steal from his bag
  - As the child approaches the user, the user tightens his grip on his bag and hears a voice in his head which causes him to panic more

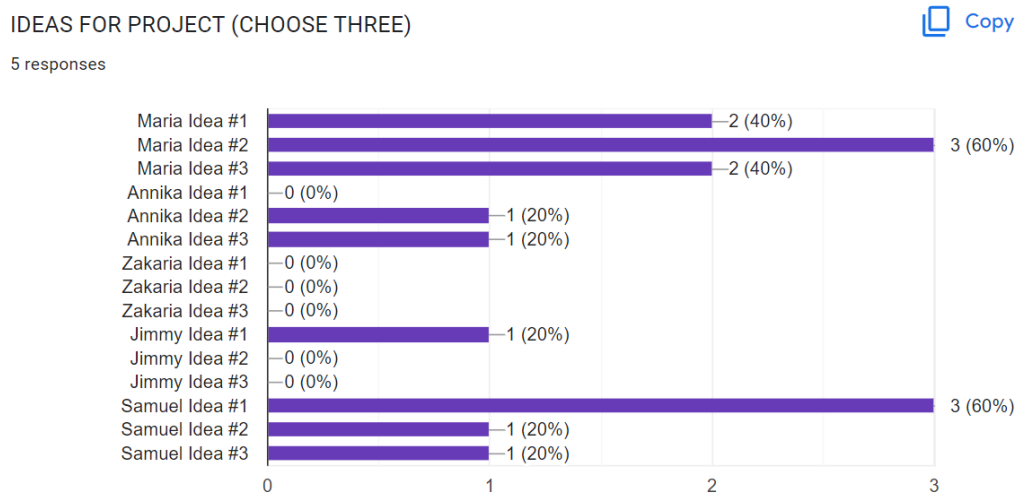
##### 3. Idea #3

- The user is meeting a few friends for a movie night
- When the user arrives, his friends question him about where he has been these past few weeks
  - The user hasn't been answering his friends' texts and calls
  - The user answers his friends with statements that are completely unrelated to the line of questioning and begins to question his friends' motives for inviting him over.

## C.1 Point #3

*“Analyze and evaluate all concepts provided by each team member based on the target specifications of Project Deliverable B. Use simple calculations and/or simulations to make decisions. Justify the process and methods used for analysis and evaluation.”*

The method in which our group chose to decide which of our concepts was the most widely preferred was to conduct a survey. This survey gave each member of the team three votes they could use to choose their favorite concepts. The survey results came out to be the following:



As such, the two most widely preferred concepts turned out to be Maria’s second idea and Samuel’s first idea. Each team member used the target specifications from PDB as a foundation to decide which of the available concepts were their favorite. These two concepts were ultimately chosen for best fulfilling the following target specifications:

- A strong storyline. Both ideas deliver simple, yet profound messages. Both concepts are set in common contexts, helping to really push the immersive, realistic experience our project’s aiming to deliver.
- Empathic. Both concepts give the user a sense of empathy and understanding for the schizophrenic character. In Samuel’s first idea, the user watches how the stranger reacts and interacts with the schizophrenic person, and how negative and de-humanizing someone can be if they don’t have a full understanding of the situation. In Maria’s second idea, the user experiences the constant uncontrollable stress and humiliation the schizophrenic experiences in their daily life.



- Don't have a "game-y" feel. Neither concept attempts to game-ify the schizophrenic experience, which can be interpreted as incredibly disrespectful to those who live with the disorder.

## C.1 Point #4

*"Choose one or a few promising solutions you wish to develop further based on your evaluation."*

Based on the evaluation of each concept by the members of our team, we have decided to further develop Maria's second idea and Samuel's first idea. We have chosen to further develop these ideas since we feel that they best meet the target specifications as well we believe that they will provide an accurate and well-rounded experience to help the users better understand and empathize with people with schizophrenia.

## C.1 Point #5

*"Develop a group design concept which is either an integration or modification of the promising concepts chosen in the previous step, or a brand-new concept created from these ideas. Justify your approach."*

As our first simulation, we have voted on Maria's second story, which follows the character through their day inside the house and in high school. The character is living with schizophrenia and is not diagnosed, as shown by the character's disordered thinking and speech. Throughout the simulation, the player will experience these symptoms and be able to make choices that affect the character's dialogue or actions. When the character goes downstairs, distorted voices will be heard by the player. These voices come from the character's family, and they will sound loud and incoherent to the character. The parents will make comments on the character's grades to give the player a better understanding of the symptoms of schizophrenia. Then, the character starts walking to school and shouts and turns around in fear since they think someone is going to harm them; however, the character realizes that it was merely someone walking their dog. After witnessing the encounter, a mother pulls her child away from the character in fear. Once the character arrives at school, the character sits alone at the back of the class. The students start laughing at the character's behavior and the character hears insults and degrading comments for the duration of the class.

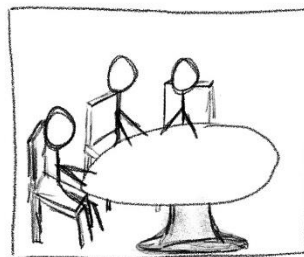
In the second concept that we have chosen to develop, the user will be walking down the sidewalk. This concept will focus on the user's interaction with a stranger. As the user is walking down the sidewalk, the stranger will approach him to ask for directions. The user will be given the opportunity to pick their response. No matter which response the user chooses, when it's spoken it will come out mangled and distorted. For this reason, the stranger won't be able to understand the user's directions. When the user

tries to repeat their response, it will be without success since it will again come out mangled. The user does not understand why the stranger cannot understand their instructions which confuses and annoys the stranger and causes him to walk away visibly angry with the user. As the stranger walks away, the user becomes confused and saddened by the stranger's unanticipated anger. The user will then sit down on the curb to calm themselves and cover their eyes with their hands when they begin to hear slight murmurs. The voices slowly become more audible, and the user begins to hear them saying they are a disappointment. The voices continue until the user abruptly stands up and continues their walk down the sidewalk.

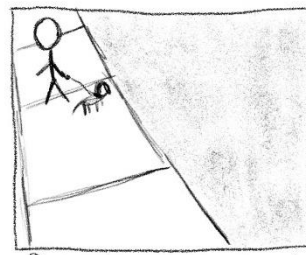
## C.1 Point #6

*"Visually represent (sketch, diagram, CAD model, etc.) your group concept."*

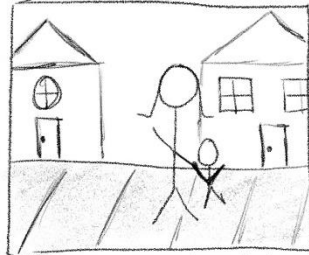
Physical Sketch of Concept 1:



① The user sees their family in the morning and is very irritable. Their parents mention their poor grades at school.



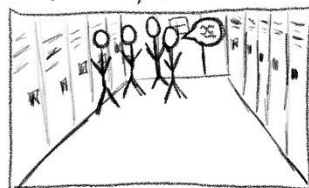
③ When the user is walking to school, they fear that someone is going to harm them. They turn around and yell in fear, but it was only someone walking their dog.



② Later the user notices that a mother pulls her child closer to her in fear when they walk by the user.



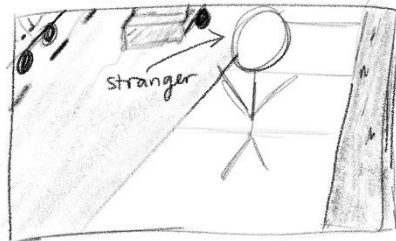
④ When the user arrives at school, they sit alone at the back of the class.



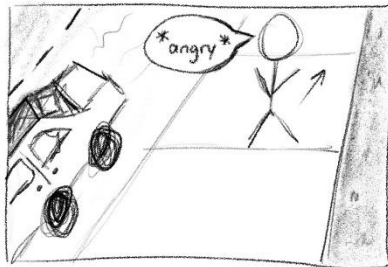
⑤ The other students at school often laugh at the user, but it often becomes distorted and the laugh and insults become louder and repeat themselves in the users head.

\* these sketches are from the users point of view

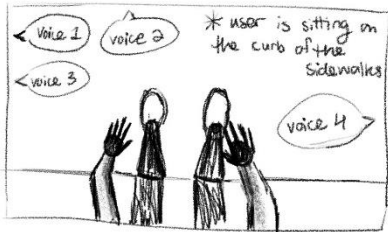
## Physical Sketch of Concept 2:



① The user is walking down the sidewalk when a stranger approaches them to ask for directions.



② The user gives the directions to the stranger but they come out all mangled. This confuses and angers the stranger. So he walks away.



③ The user becomes sad and confused, so they sit on the sidewalk. They begin to hear murmurs telling them that they are a disappointment.

④ When the user stands up, the voices stop and the user continues to walk down the sidewalk.

\* these sketches are from the user's point of view

## C.1 Point #7

"Provide a few lines explaining your concept's relationship to the target specifications, as well as its benefits and drawbacks. Your target specs can evolve from PDB."

### Benefits:

- The moderate story length gives the users an efficient experience.
- Easy interaction in game plays makes the application suitable for all kinds of users.
- The use of music, sound effects and voices lead to the most immersive experience.
- Small memory of the application creates multi-platform possibilities

### Drawbacks:

- The stories focusing on daily life instead of a bigger event might lack depth.

- The requirement of VR (Virtual Reality) headset might be an obstacle for generality.
- Multiple choice process in VR experience might be a little bit tedious.

## Conclusion:

In this deliverable, our group created and evaluated story concepts from each team member and chose the most well-rounded storylines that allow the player to empathize with people with schizophrenia. Since the main objective of the project is empathy, we ensured that the chosen storylines have this target specification. After sketching the story concepts, our team can begin the first prototype of our product. In addition, the report outlines the concept's drawbacks which include the requirement of a VR headset. However, our team is presently searching for accessible headsets from the uOttawa MakerSpace and we anticipate that they will give the player a higher level of interactivity.