

# Virtual Immersive Experience for Seniors



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# VIRTUAL IMMERSIVE EXPERIENCE FOR SENIORS

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## Background

- There are approximately 431,000 seniors living with dementia in Canada, with more than 200,000 estimated to reside inside the publicly funded long-term care or nursing homes [1]
- 1 in 4 have signs of depression, anxiety, loneliness and stress [1]
- Covid-19 has caused extreme isolation for seniors living in long-term homes
- Drastic isolation in long term care homes measures have worsened seniors' with dementia emotional and mental well being, further developing their dementia symptoms

## Scope

- We aim to improve the emotional and mental well being of seniors with dementia residing in long-term homes by developing an immersive software application to connect them to their loved ones

## User's Needs

- Needs to connect seniors living with dementia to their family members
- Needs to be useable in a COVID-19 environment
- Needs to be user friendly
- Needs to be non-invasive
- Components need to be compact and mobile
- Needs to be simple to set-up

## Device Requirements

- Application should have high resolution and video frame rate chat
  - 720p or 1080p & 1Mbps or 1Gbps
- Application's UI should be simple to use
  - No more than 10 min required to learn how to use application for family member
  - Senior should be directed to video chatting platform in 3 steps/clicks
- Application should contain an immersive environment for the senior
  - Family member should be superimposed onto a scenic background video
- Application should have good sound quality
- Application should safely store all users information
- Application should facilitate the reduction of:
  - Loneliness, depression, anxiety, and stress

## Our Solution

Virtual Immersive Experience for Seniors (VIES) is :

- Ideal for people with dementia due to the simplistic user interface
- Contains a live streaming feature which facilitates social interaction
- Video file sharing capabilities
- Immerses our users in a virtual environment
- Features to protect our users information

## System Flow and Build

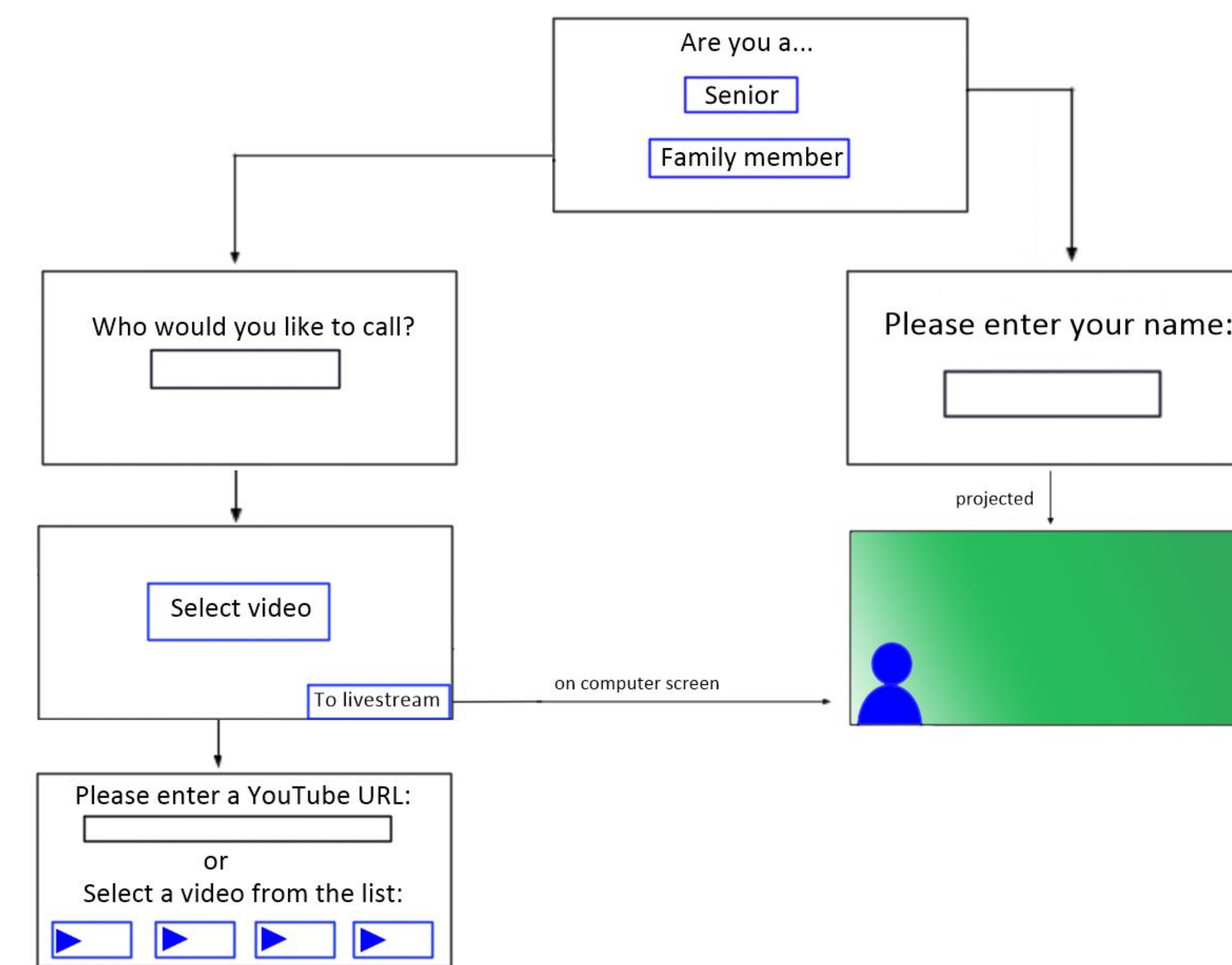


Figure 1. System flow diagram

- Our device aims simplify the senior's experience and allow the family member to create a relaxing environment for the senior
  - The senior is directed to the video chatting platform in 3 steps
  - The senior can verbally request changes to the immersive environment
- Applications is coded in java and GUI programmed using Java Fx

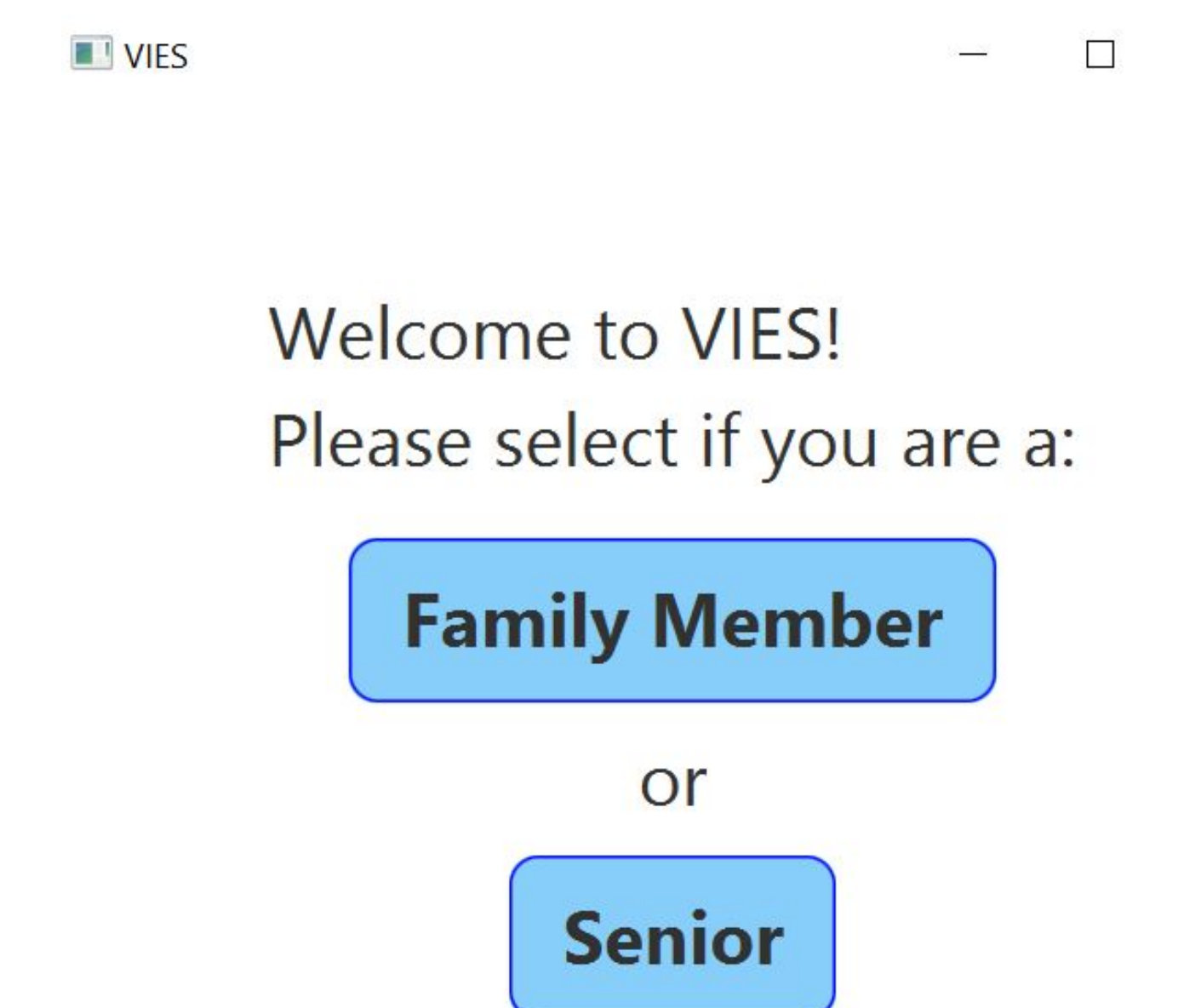


Figure 2. Sample of our solution UI design

## Testing

		Good	Fair	Bad	N/A
Navigation	Menus, buttons or links to different pages are easily visible and consistent on all webpages.	✓			
	Content is legible with no spelling or grammatical errors.	✓			
	Intuitive; little to no learning time required .		✓		
User Interface	Simplistic, visually calming, not overstimulation	✓			
Application	Test requests are sent correctly to the database and output at the user side is displayed correctly.	✓			
Web Server	Web server handles all application requests without any service denial.				✓
Database Server	Make sure queries sent to the database give expected results.	✓			
Response time	Works well in different connection speeds.	✓			
Security	Client information is not stored or shared with other parties.	✓			

## Significance

- Software platforms often fail to take into the account the needs of users with dementia and who are seniors
- A simple way to communicate with loved ones during Covid-19 isolation will help seniors with dementia to reduce stress, loneliness, anxiety and depression

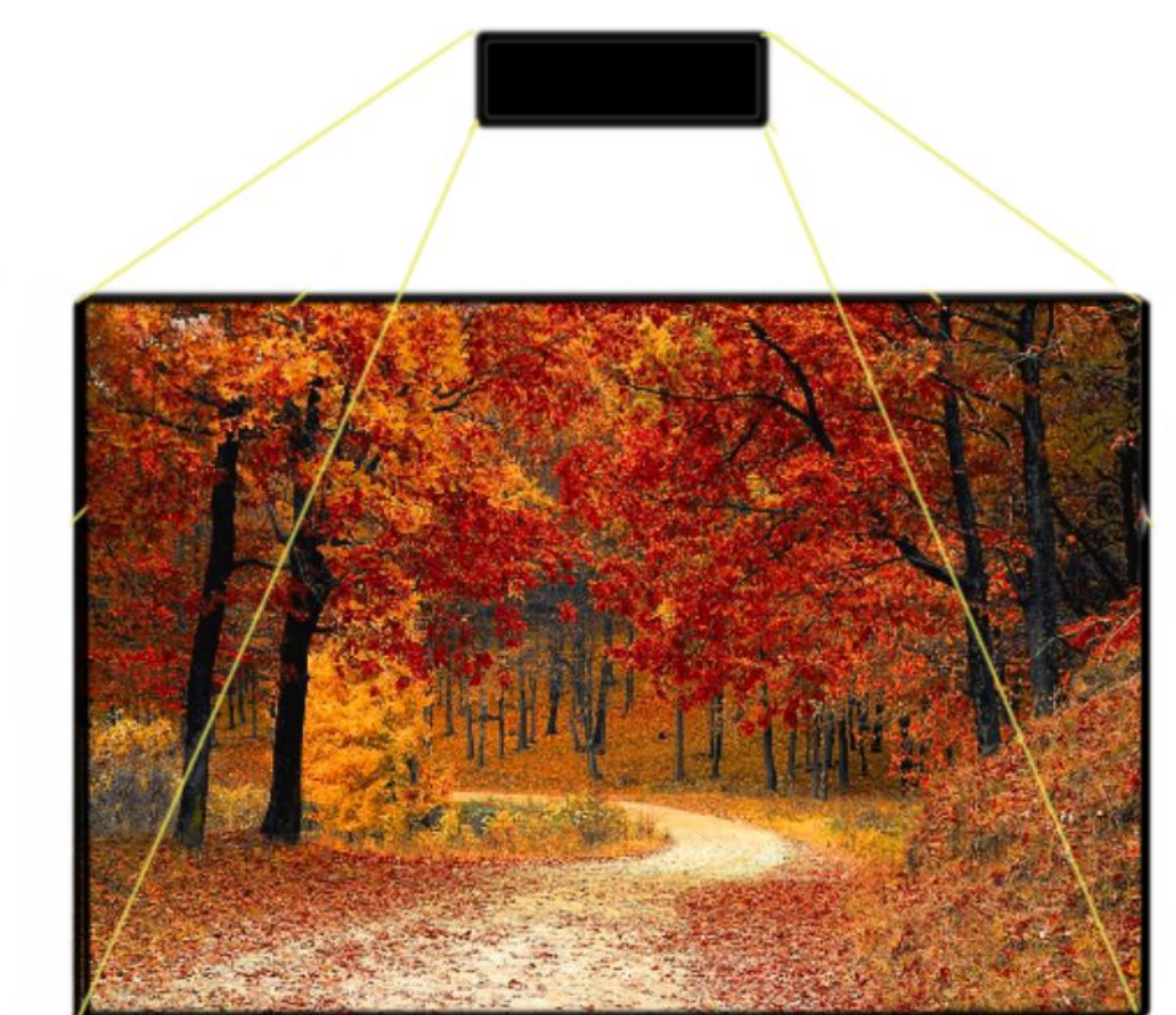


Figure 3. Setup

## Reference

1.Canada E and SD. Government of Canada [Internet]. 2019 [cited 2020Sep23]. Available from: <https://www.canada.ca/en/employment-social-development/programs/seniors-action-report.html>

## Acknowledgement

Team 1 would like to thank our supervisor Dr. Harandi for their continuous support throughout the year. We would also like to thank all of our teaching assistants especially Luke for helping us set up our web application. Thank you to Dr Newell and our peers for giving us constructive feedback during our presentations. A biggest thank you to Dr Lillian Hung for trusting us with your idea. Last but not least thank you to our family partners : Mario, Jim and Neil for taking the time out of your days to talks to us about your experiences and helping guide the design of our application.

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