

PolarDevs

ARC



3DC

"Together We Thrive"

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Background

- Improve communication of designs within the construction industry using a AR capable 3d model viewing software
- Help reduce 3D to 2D translation errors
- Develop means for project feedback, to help identify errors more quickly



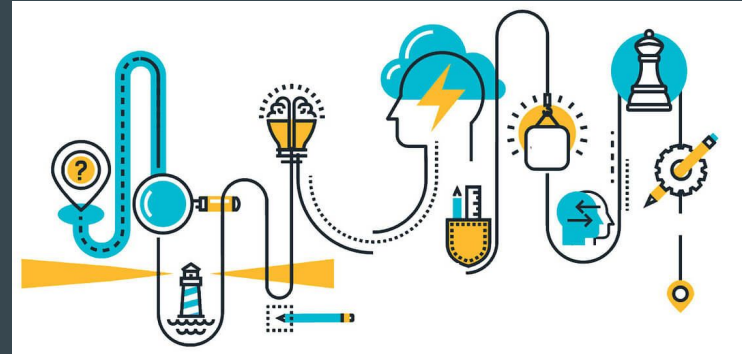
Our Challenge

Providing a more efficient and effective means of communicating designs



Cursory Process Overview

1. Customer Needs and Identification
2. Benchmarking
3. Conceptual Design
4. Prototype 1
5. Prototype 2
6. Prototype 3



Customer Needs and Identification

“Phone or Tablet Compatible”

“Has to have methods of changing floors”

“Able to view different components of the structure (mechanical, electrical, structural)”

“Access Anywhere”

1. Problem Statement:
 - I. The clients drive to innovate and modernise the construction industry to make up for a technological lag that has developed..
 - II. How this might help to streamline the work of skilled laborers, supervisors, forepersons, engineers and to reduce errors during implementation.
 - III. The client would like to develop and maintain a leading edge on any competition.
 - IV. Construction startups have started to see an increase in funding
 - V. Skilled labour shortage in progress
 - VI. Increased project complexity
 - VII. Disruptive technologies
2. Requirements:
 - I. View Existing models(structural, Mechanical, and/or Electrical) using AR or VR.
 - II. Phone or Tablet compatible
 - III. Access Anywhere
 - IV. Offline mode
 - V. 2D drawing access (I'm thinking an overlay on the floor)
 - VI. Stationary and site location based navigation/orientation
 - VII. Will have to have methods of changing floors (button on screen or prompt with gesture)
 - VIII. Safety Compliant (user needs to be able to maintain situational awareness, possibly have a warning when exiting the building)
 - IX. Comprehensive guide/Tutorial
 - X. Multiple devices can access the models simultaneously
 - XI. Budget of \$100
3. Wants
 - I. Ability to annotate**
 - II. Headset independent**
 - III. View Extended properties(material type, pipe sizes cable sizes etc. <<not terribly important>>

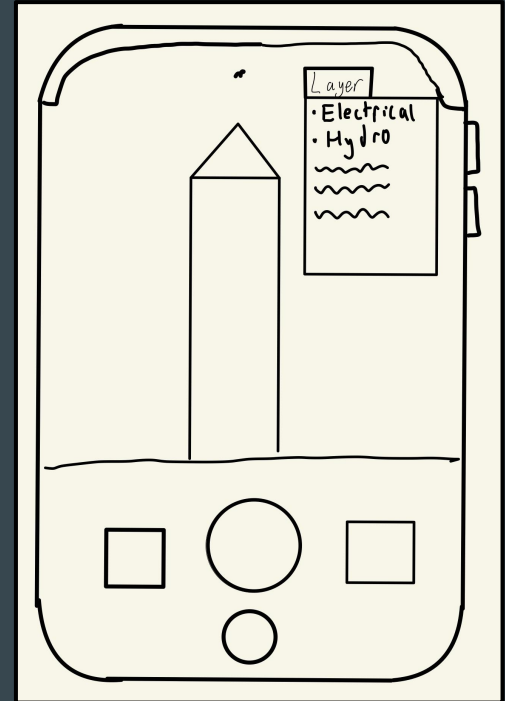
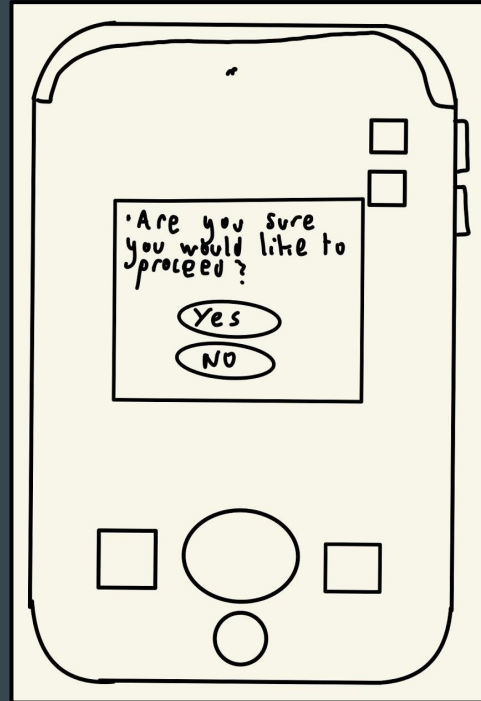
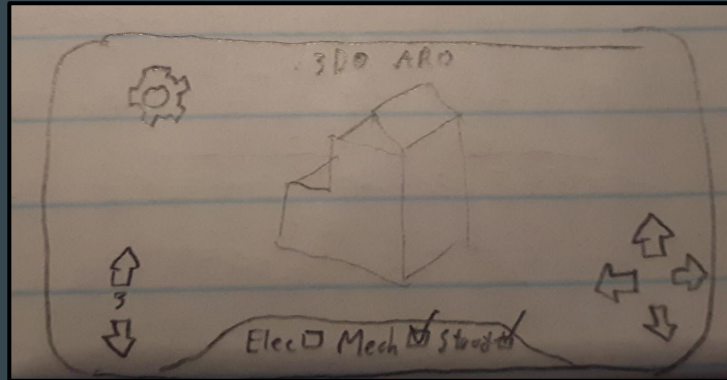
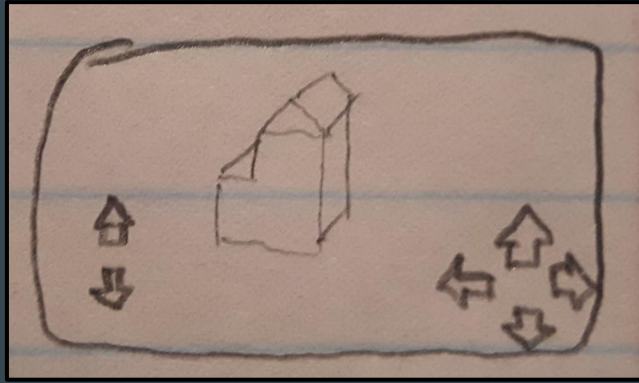
Benchmarking



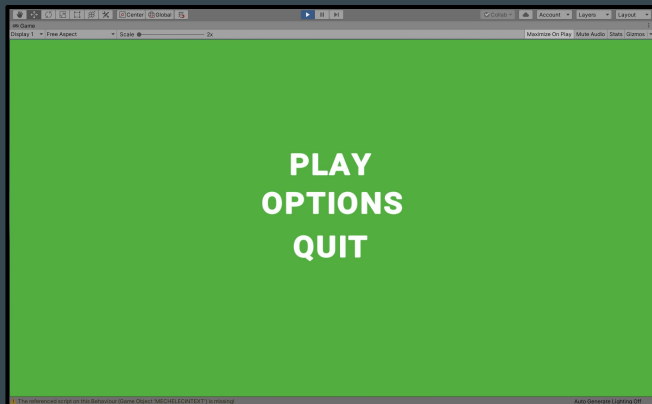
GAMMA AR



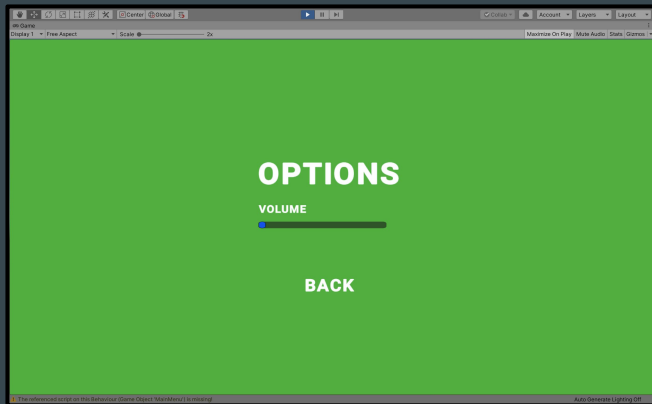
Conceptual Design



Prototype 1 Main Menu

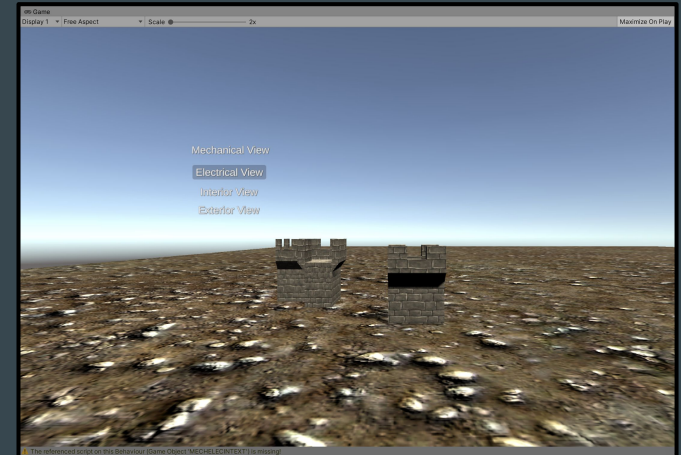
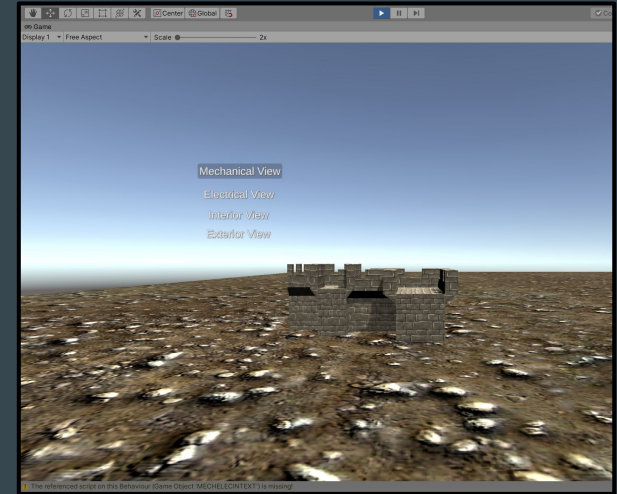


- Very basic functional menu
- Options button brought user to the option menu
- Quit button allows user to exit the app



Prototype 1 Switch Layers

- Ability to switch views on the models
- Purpose was to see the different components of the structure



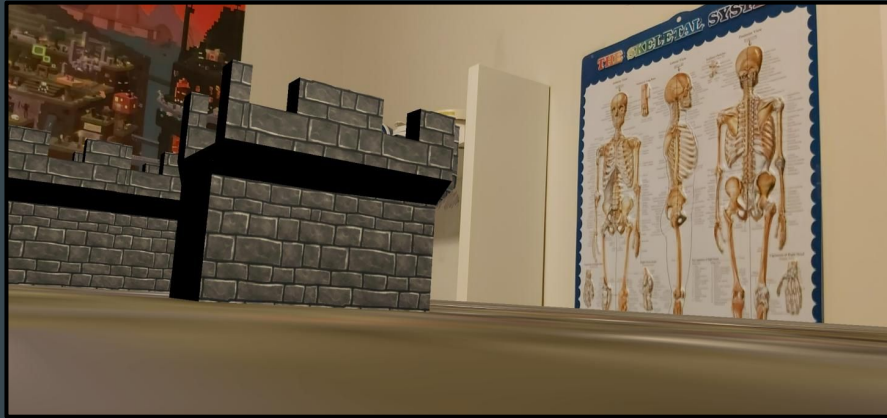
Prototype 1 Save Models

- Ability to save whichever model you want
- Ability to access any model



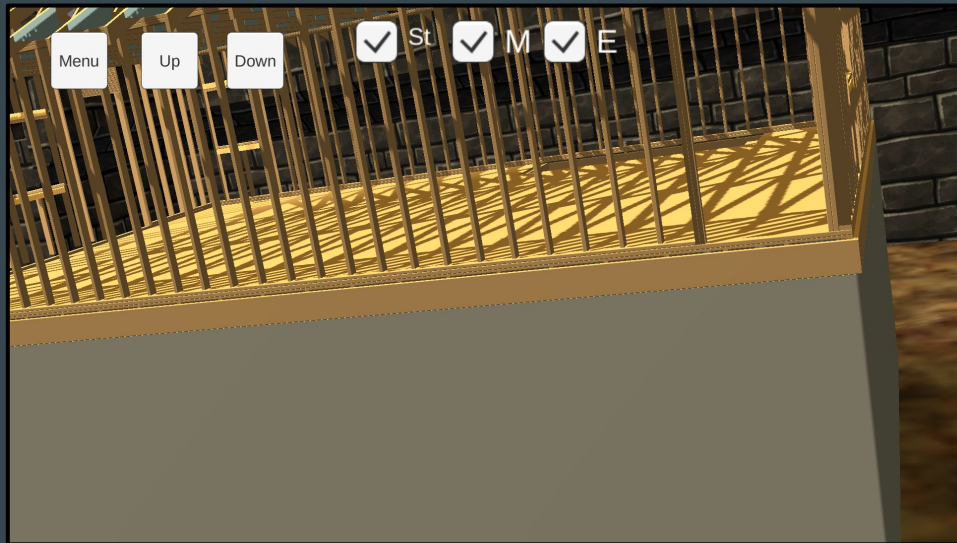
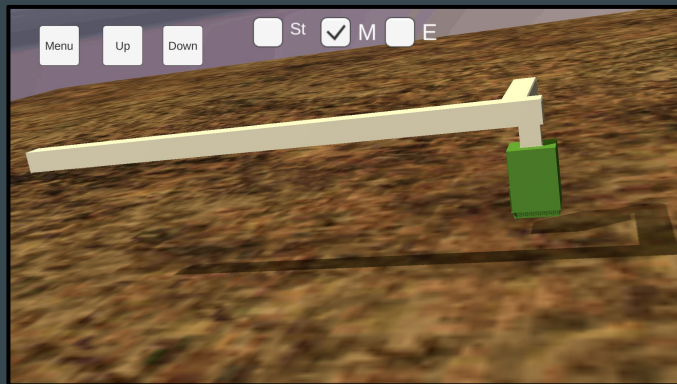
Prototype 2 3D/AR Display

- Ability to view the model in an AR view
- User is able to use the app to navigate and examine the 3D model within the real world



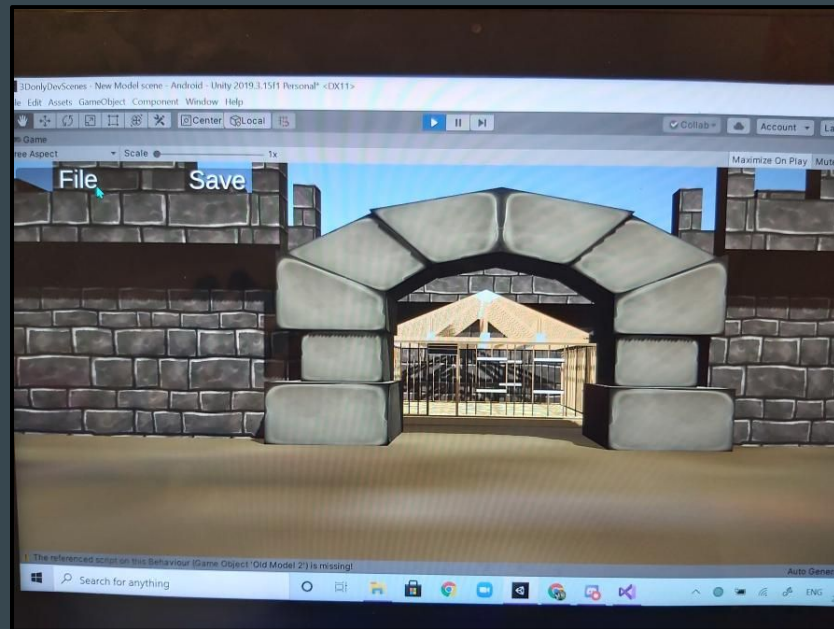
Prototype 2 Intuitive Interface

- Our new first interface
- Easy to access and understand
- Updated switch layers



Prototype 2 Save models

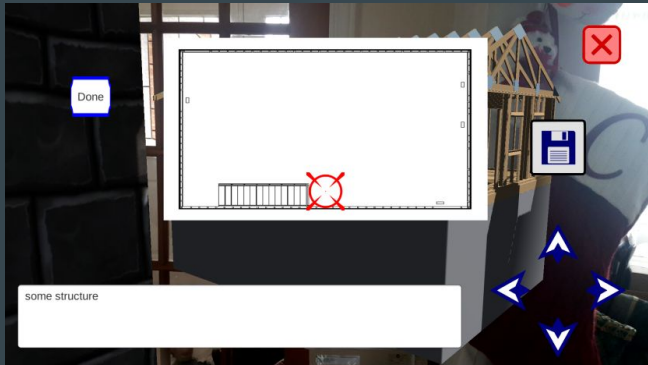
- Updated look on the save models menu
- Implemented the save function into the working model



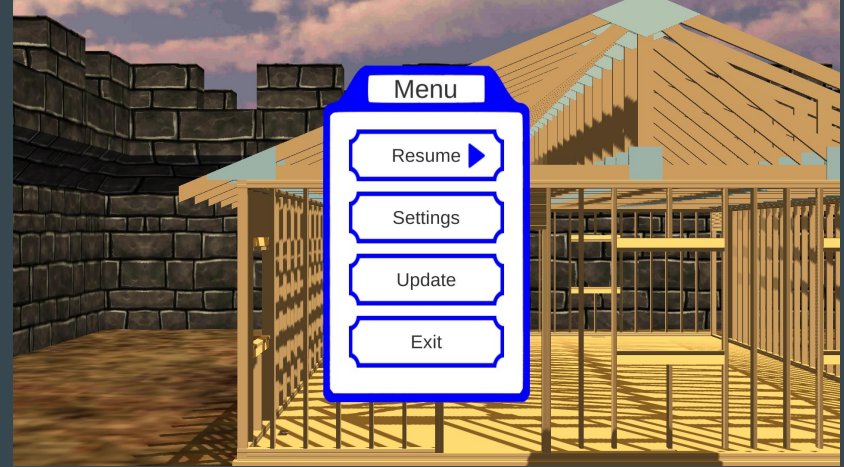
Prototype 3 Implementations



- New in game pause screen
- Able to now save annotations to screenshots saved to file within app
- Added annotations map display, showing location of interest.

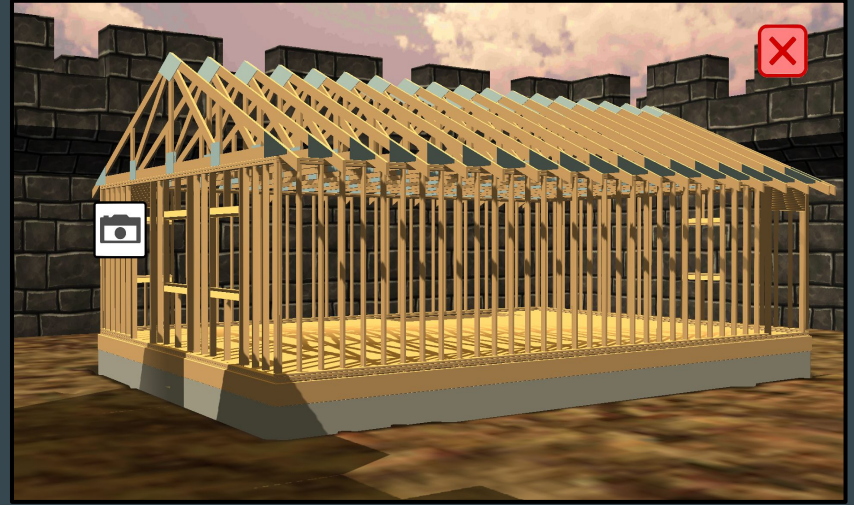
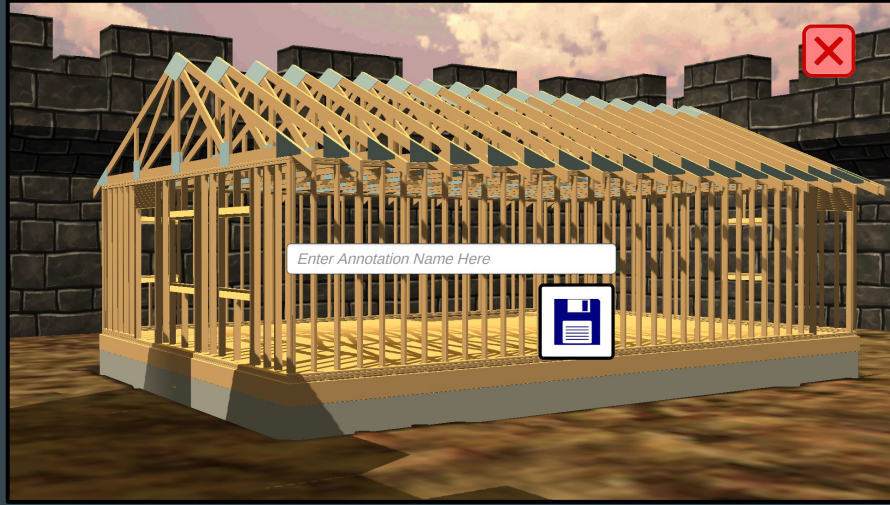


Prototype 3 Implementations



- New transparency feature, accessible through the main menu
- Annotations prompts are called from the main view screen.

Live Demonstration





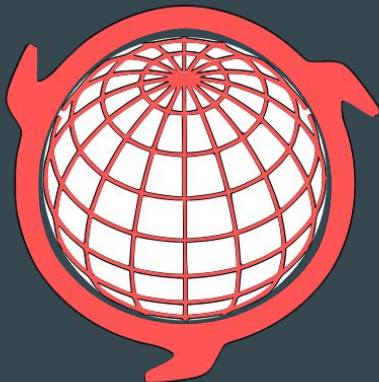
basement stairs haven't had a railing installed

Looking to the Future

Next Iterations of Project ARC modelling suite to Include:

- Enhanced AR environments with model scaling option and planar anchoring
- User ID and preferences save file
- Implement proper google cloud sharing with Firebase
- Automatic location detection for annotations map
- Improved multi-lingual interface options

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"Together We Thrive"

Thank you for your
time and your
considerations

Stay safe out there