



# Axolotl Industries

## **Team B03-2**

**Deliverable G - Prototype II and Customer Feedback**

**Engineering Design - GNG1103**

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## ABSTRACT

*The purpose of this deliverable is to discuss prototype II and highlight how the feedback from the previous client meeting was implemented. Furthermore, it discusses how the testing process took place and presents feedback to prototype II. The feedback consisted of expert and general feedback.*

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## **1. Introduction**

In the previous deliverable, prototype I underwent development, testing and was subject to client feedback to design the next prototype. The purpose of this deliverable is the same as the last but will focus on prototype II, now redesigned according to previous client feedback. This deliverable will be divided into three parts; discussing prototype II, customer feedback, and finally, the next steps in the project.

## **2. Prototype II**

The main purpose of this prototype was to complete as much of the application as possible. It was a comprehensive prototype including the updated home screen and main screen, as well as the editing screen. This prototype was also subject to more testing methods compared to prototype I.

### **2.1 The Home Screen**

The application home screen, as described in the previous deliverable, is the opening screen of the application that will greet the user and allow them to choose whether they wish to enter the V.R mode or the A.R mode. It also features additional buttons such as the settings button and the tutorial button. Referring to figure 1., it can be seen that the updates made to this prototype were the background change, to fit the theme of the app, as well as a redesign in the button icons. These changes were also applied throughout the app. Additionally, this prototype also included the settings screen, shown in figure 2., where the user will be able to change the application language, the resolution, and turn off and on the background music.

In regards to what needs to be completed for prototype III, the languages will be implemented, and the resolution button, as well as the music configuration buttons, will be scripted. Moreover, the tutorial video needs to be filmed, but it must be noted that a new feature will be added to complement the tutorial and increase ease of use. This feature includes icon labelling. As demonstrated in figure 3, every time a new user opens the application, they will be first shown the application with every icon labelled to avoid confusion. Finally, the application logo will be redesigned to suit the theme of the app.

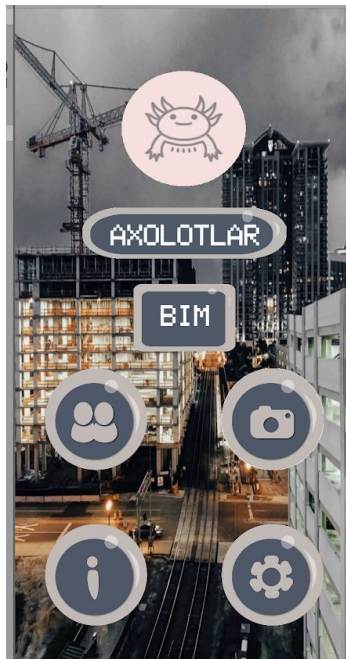


Figure 1. Application Home Screen

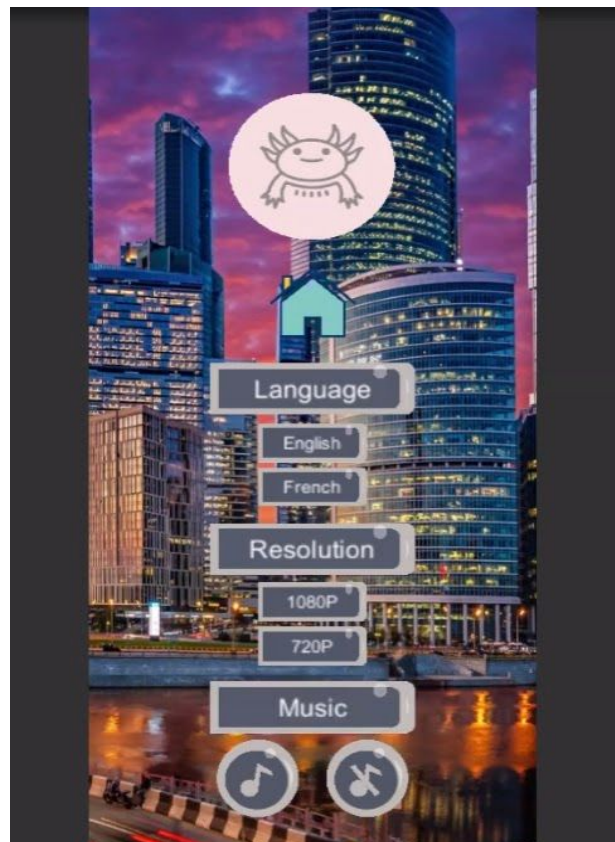


Figure 2. Application Settings

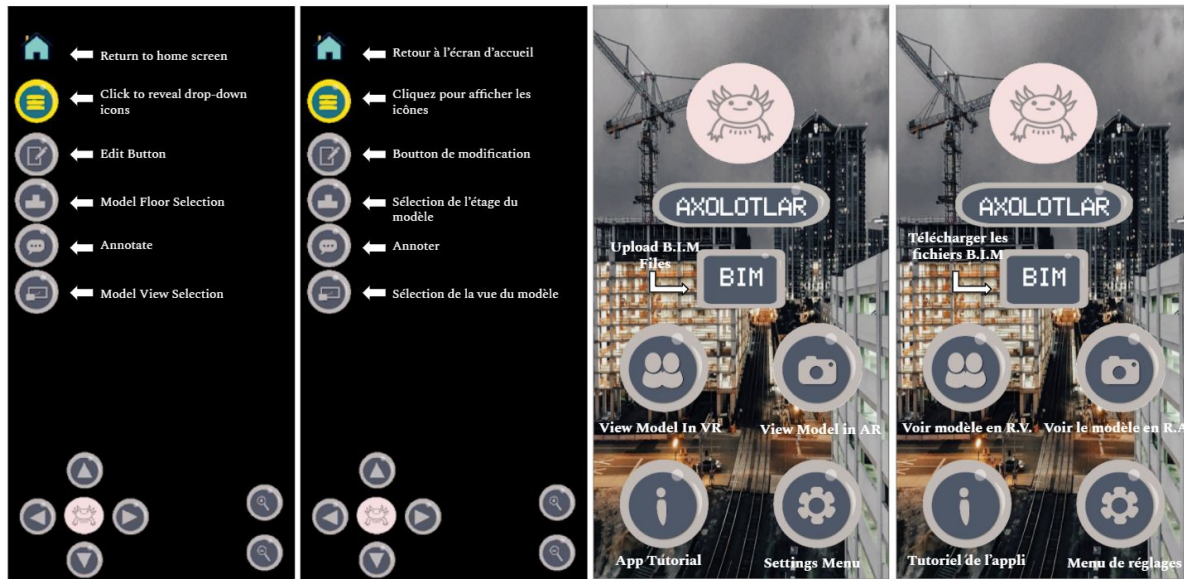


Figure 3. Icon Labelling in Both Official Languages

## 2.2 The Main Screen and Editing Screen

The main screen is where the user will experience the AR and VR component of the application, and holds the role as the most important screen. Illustrated in figure 4., for this prototype, the most significant updates were the icon redesign and the screen's overall aesthetic. Common client feedback was that the screen was too crowded, and it was reorganized to users having to click an icon for the drop-down menu of the rest of the features (refer to figure 3).

In regards to what needs to be done, there will be a gaze interaction function where the user will be able to point their camera at a certain part of the B.I.M and that part will show any comments previously added to that part. The user will also be able to add their comments using gaze interaction, which will be done from the annotate button. Using gaze interaction, the user will be able to enter the editing screen, from the edit button, where they can edit the part of the B.I.M, undo any changes and save their changes.

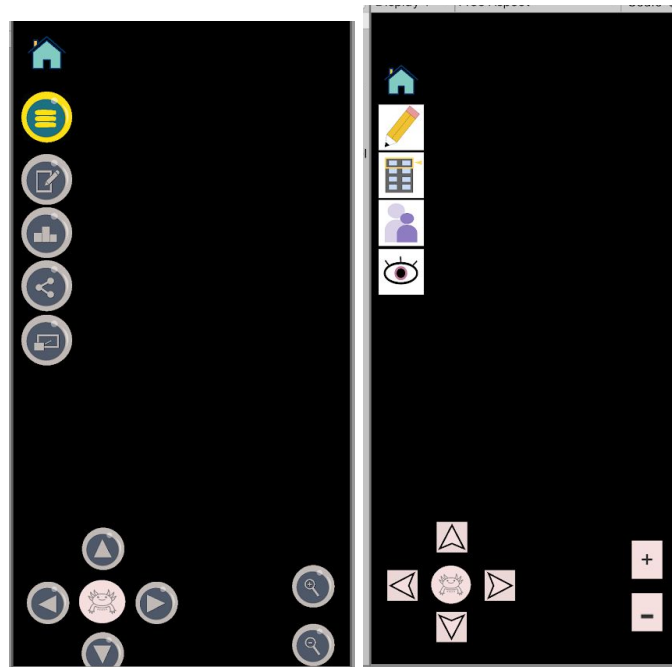


Figure 4. New (left) and Old (right) Design of Main Screen

## 2.3 Testing

As mentioned previously, prototype II underwent more rigorous testing than its predecessor, however the testing platforms remained the same: the Unity PC and mobile platform. The stopping criteria for the unity platform was whether the buttons functioned as scripted and the aesthetic of the application. The stopping criteria for the mobile platform was cross OS compatibility, aesthetics, functionality of the scripts, and if the placement indicators, and models in AR worked.

Regarding the test results, prototype II passed the Unity PC test, but only partially passed the mobile test. Although it worked across operating systems, had desirable designs, and buttons worked as intended, the scripting of the placement indicator failed. The indicator would not remain fixed to a level plane, and instead would move across the screen, which it should not. As the reason behind this error has not been found, prototype II was given a conditional pass. This error will be fixed for the final prototype. Additionally, as the intended B.I.M model was incompatible for the purposes of this app due to its file size, a personal B.I.M of a house was created. The model, depicted in figure 5., will be used for demo purposes to show how the applications scaling, panning, zooming and engineering views feature. The model appeared in both the Unity and mobile platforms, and thus passed this testing criteria. Screenshots of the model in Unity and on an android device are below as figure 6 and respectively.

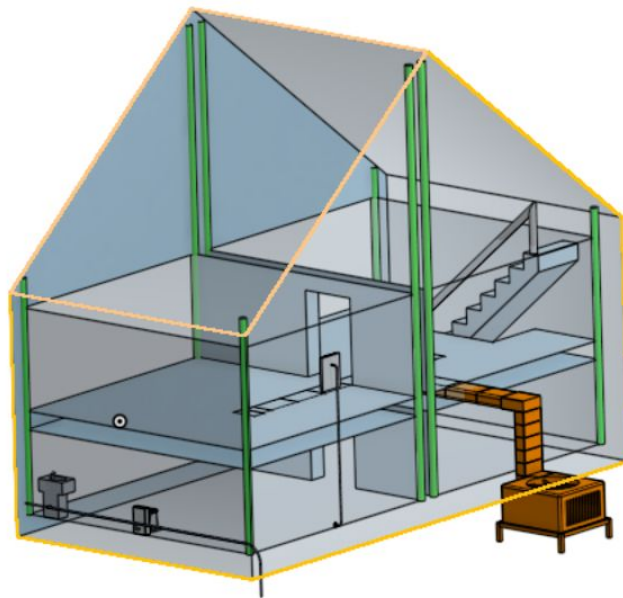


Figure 5. House B.I.M

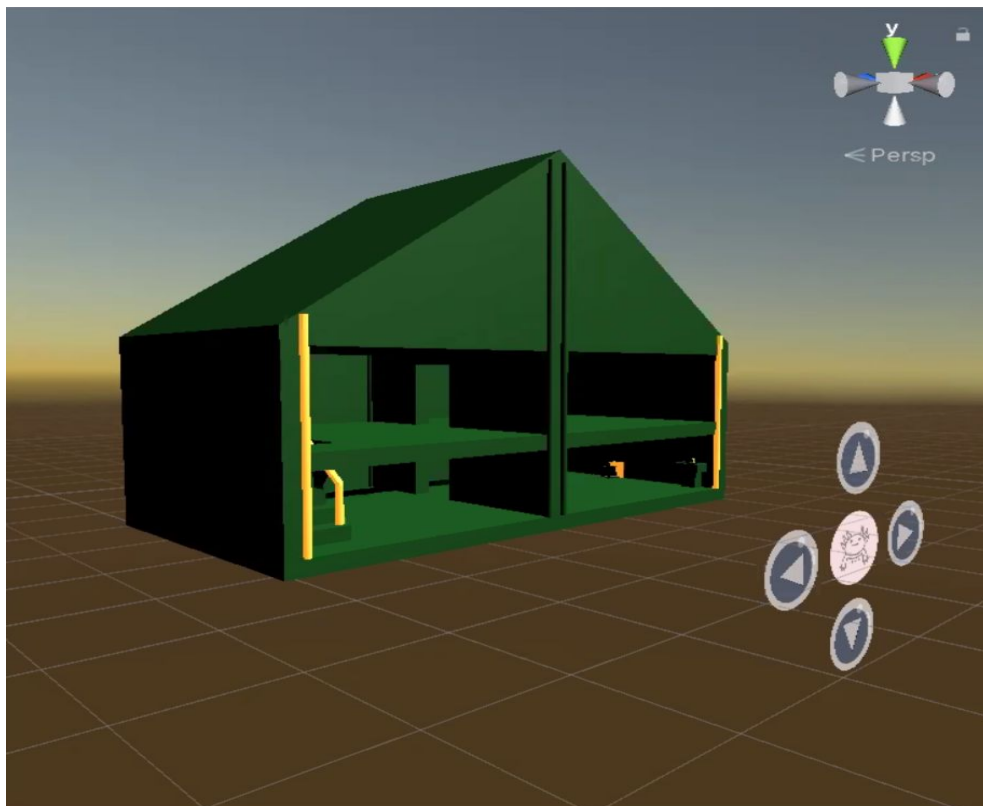


Figure 6. House B.I.M on Unity



Figure 7. House B.I.M while using the app

### 3. Feedback

Feedback for prototype II consisted of two main types: expert feedback and general feedback. Expert feedback was from an individual with extensive knowledge and experience of Unity and was mainly used to discern how the application looked from an engineering perspective. General feedback, as the name suggests, was feedback from customers and/or users with a basic understanding of app development and functionality of mobile applications. This feedback was

to gather feedback on the user experience and aesthetics of the app from the general audience perspective.

### **3.1 Expert Feedback**

The expert feedback received for prototype II consisted of a critique of the icons, the overall aesthetic of the application, and the features that are included or are to be included in future prototypes. First, it was said the functions of the buttons were vague, based on the chosen icon designs. For instance, it was not clear to the user where the editing button, and the engineering views button were. The expert suggested that the icons could still be used but they would have to be accompanied by a legend (on another screen) describing each of their functionalities. Second, it was mentioned that the app design itself was crowded, with multiple icons being too close together, and having other many unnecessary icons. This feedback applied mainly to the main screen and home screen of the app. Third, it was mentioned since icon functions are not clear, new users should be guided to the tutorial immediately, instead of the current design where users have to manually click the tutorial button to view it. It was also mentioned that the background was chosen for the home and the main screen could take the focus away from the buttons and features of the app. Finally, it was said how in the editing screen, the annotation by audio message feature was not well thought out. Considering that the audio feature will input and save messages to selected objects and that each model can have up to thousands of objects, this feature is not possible at this level of app development.

In response to the feedback, changes have either been implemented in this prototype or planned for the next prototype. This includes omitting the audio recording feature for the next prototype and replacing it with a commenting feature only. Other changes were additions of drop-down menus to reduce screen clutter, and on-screen icon labelling, shown in figure 3., to help understand the icons for first-time users. The final update that will be used for the final prototype will be the new user experience, where they will be prompted to watch the tutorial before they can use the application.

### **3.2 Other Feedback**

General feedback was received regarding the application's layout and functionality. This feedback included adding some music to the background of the app and making the app be able to stop the music in settings.

## **4. Conclusion**

For this prototype, we were able to add most of the features discussed in the previous deliverable. We received a lot of feedback from a variety of people, including expert opinions and general users, and these will be used to produce the final prototype, prototype III.