Product Evaluation

Throughout the development of our product, we made sure to evaluate the decisions which we were making. We made sure to get feedback from our clients so that we knew our design choices were on track. These key meetings coincided with our three submission deadlines:

Minimum Viable Product

When developing our MVP, we did not have access to the intended users of the app. However, we did still have people who could critique our design and development choices: our clients, our mentor and each other. This evaluation took place as part of our regular in-person meetings which took place either in MVB or in meeting rooms in the Queen's building. In these meetings we would demonstrate the current state of our app and then ask for and discuss any feedback that both our mentor and/or our clients had. As we were all present during these meetings, we decided that the best way to document the observations made was by directly creating tasks on Jira which corresponded to the new ideas and changes that we had agreed upon. These could then be later assigned as and when they were used.
The key findings from our evaluation at this stage involved the control scheme for our game. We received feedback that the drone needed to move faster and were asked to add a feature to turn the camera from the left slider, which differed from our initial choice to add a new slider for rotations. It was also requested that we add a minimap to the game. Both of these features were added successfully before the next release. There were other aspects of our app which were evaluated here, such as the initial physics engine for movements and the mock buildings which we used for size comparisons, but no issues were made so we didn't need to make any refinements here.

Beta Release

As with the MVP, we again evaluated the beta release through observation in meetings with our clients and mentor. However, at this stage we also decided to branch out to test with fellow students. We couldn't test with the intended end-users, as our clients' workshops are infrequent and did not line up with our schedules. But gaining different insights from other people is still valuable. This is because our app will eventually be released onto the Google Play Store, meaning it can be used by anyone with access to this. As a result, we need to make sure our app fits the expectations of a wider audience than simply the attendees of our clients' workshops. This evaluation was performed face-to-face as well, so we decided to continue using Jira to track any tasks that arose from this broader feedback.
Here we were able to test some of the advanced gameplay mechanics that we had implemented. We found that players often had trouble hitting the loops correctly, so decided to alter how their hitboxes were made. We also implemented collision detection in this stage, and had feedback on how the collisions lined up with the models that we had created. Finally, we extended our menu system at this stage. Users did not find any issues with this so we didn't feel the need to make any refinements.

Final Release

The evaluation around this stage was intended to be the most important, as this is where our game was becoming more polished and levels were being created. The feedback gained here would be the most impactful as it would directly impact how our final app would be made. However, at this time we were put into lockdown due to the Covid-19 pandemic. As a result, we were unable to test with a large number of end-

users. Despite this, we did get some feedback from a couple of people who fit the demographic of the students that may attend our clients' workshops. We proceeded with this stage of evaluation again through observations, but this time recorded their comments and split it into two main categories: gameplay and visuals. This can be seen in the "Sample Material" section below.
Our evaluation showed us here that users were not too happy with the UI. They felt it was too basic, especially with the menus being the default style found in many Android apps. They also had some trouble with the customisation, as it wasn't clear what effects the sensors would have on the gameplay. We feel that it is feasible to solve these issues. Given more time, we could design more interesting menus and it would be simple to add an explanation to the sensors.
Evaluation here also found that users were frustrated with our gameplay. They found that the controls seemed too sensitive, especially when turning. They also were irritated by our collisions halting the drone completely when colliding with a building. The former of these issues can be fixed by simply lowering the values associated with our slider, but the latter issue is much less feabile. This would require a major redesign to our physics engine which is not possible in the time that we have left.

Sample Material

Critical comment(s)	**Possible solutions**	**Solvable**
"Turning is too sensitive." "It is hard to hover in place."	The slider to control both rotations and height could be made larger, so that more precision can be gained when it is in use. This will allow for slower turning speeds to be used, and should make it easier to find the correct position to hover the drone.	Yes
"The loops turn red too fast." "The loops are too far apart, they don't show up on the minimap until you are close." "The timer ran out too fast."	These are level design issues that we can solve by simply changing the level files.	Yes
"I keep getting stuck on the building, I want to slide across the walls instead."	This is a much harder issue to solve as it would require changing a large part of how our physics engine calculates collisions.	Not without large changes
"There is a lack of interesting UI" "It's just basic Android" "It is hard to know when sensors are equipped"	Custom UI could be designed to make the menus more interesting	Yes
"I'm not told how the sensors affect the gameplay"	We simply need to add a sentence to each sensor to explain what it does to the game.	Yes

Critical comment(s)	Possible solutions	Solvable
”The controls are unconventional, they’re not like in other games”	This was an intentional design choice as it was meant to mimic the controls of the drones used in our clients’ workshops.	No
”The camera clips into objects”	This would require us implementing camera culling	Yes