Team 2-bit Dev Log

Week 4: 09/10/23 - 15/10/23

Michael Hayes

Overview:

After the previous week, we decided to revise our initial proposal for the energy concept Laser Beat. We wanted to reduce the scope as one of our team members unfortunately left and time to complete the project was dwindling down. Therefore we revised our Laser Beat proposal, applying Liminal's feedback of the first proposal and our subsequent meeting.

We held back the creation of the prototype to the end of the week as we focused on revising the first proposal. After receiving positive feedback from the revised proposal, we started work again on the prototype.

Unfortunately work on the prototype did not go smoothly when trying to test it using the Oculus quest VR headset, delaying our progress as we will have less time available to work next week.

Agile Sprint Update:

Sprint 3: Liminal proposal Submission (Completed)

Production of 2 game proposals with detailed information on the experience. To be submitted to Liminal VR for green light to begin development.

Sprint 4: Prototype (In-progress)

Production of 2 game proposals with detailed information on the experience. To be submitted to Liminal VR for green light to begin development.

Table of Contents:

This week's completed tasks:

Teams Minutes and Agenda

Link to Minutes and Agenda:
CS2 - Minutes and Agenda
Link to Team's Jira Scrum board:
https://cs2mr.atlassian.net/jira/software/projects/CS2LVR/boards/2/backlog

Week 4: 09/10/2023 - 15/10/2023

Monday:
- Liminal meeting
- Talk with our professor

Tuesday:
- Creation of "Liminal Feedback Form"
- Creation of "Liminal Proposal: Laser Beat 2" document
- Audio member left the project

Wednesday:
- Feedback on our Proposal from Liminal (email) -> "Liminal Feedback Report" continued
- Mike Presentation to marketing class - New team members

Thursday:
- EGX - Networking event

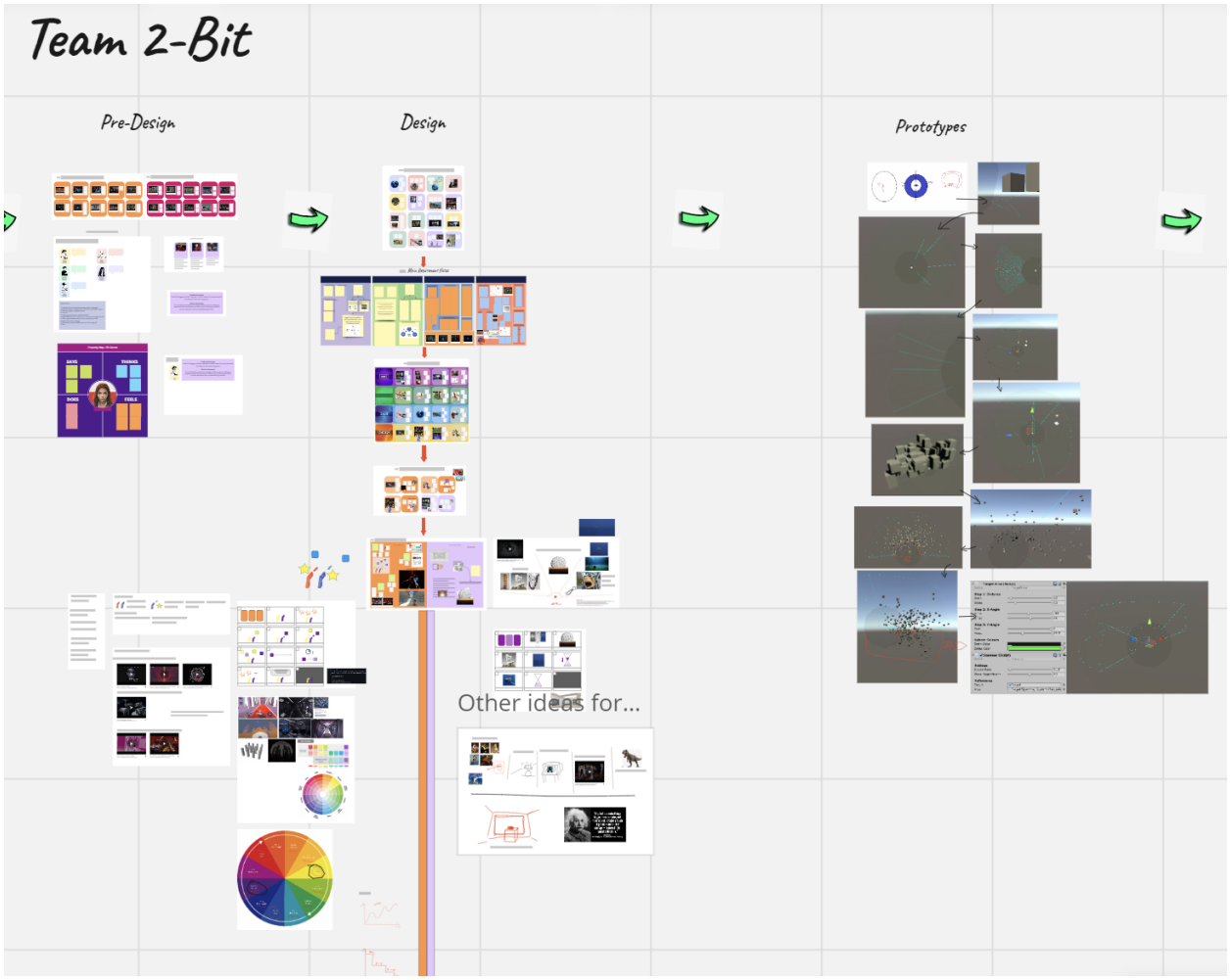
Friday:
- Read through Liminals documentation on the Liminal wiki

Saturday:
- "Target Spawning System"
- Gun Shooting System

Sunday:
- Robin continued with target spawning system
- Mike tested project with Oculus vr headset - Input system was not working - troubleshooted the problem
- Referred to Liminal documentation and then asked the liminal slack chat for help on the issue

Miro board overview (end of week 4):

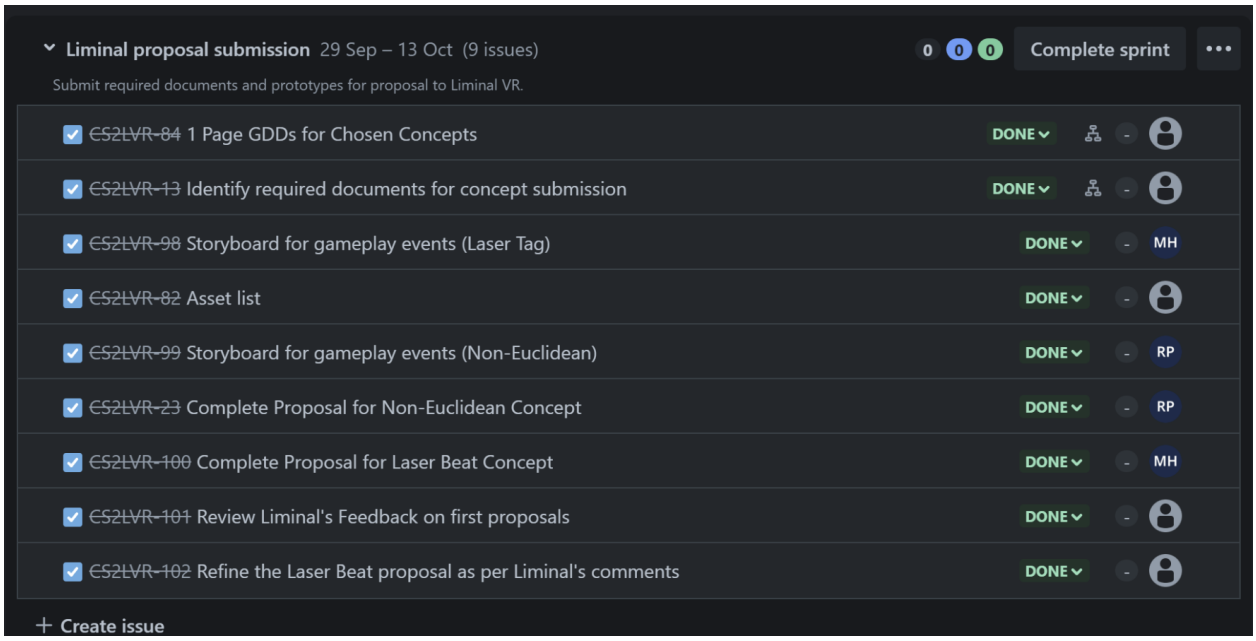
https://miro.com/app/board/uXjVMj-Nye0=/?share_link_id=77318451600.



Sprint 3 Tasks:

Completed Sprint 3 - Submission of proposals to Liminal which required us to complete our 2nd revision of the Laser Beat game proposal, in reply to the Liminal CEO's comments about reducing the scope of the project.

Jira Scrum Board (Backlog view):



Liminal Meeting

After submitting proposals for our Awe and Energy concepts we had a meeting with our professor and the Liminal CEO. During this meeting, the Liminal CEO expressed concerns that our scope of work for the Energy concept was too large and all the mechanics were not clearly defined and presented within the initial proposal. A second revision of the Energy "Laser Beat" proposal was requested, with further details and a possible reduction of scope if we were not 100% confident we would be able to complete the product to a high standard with the resources available.

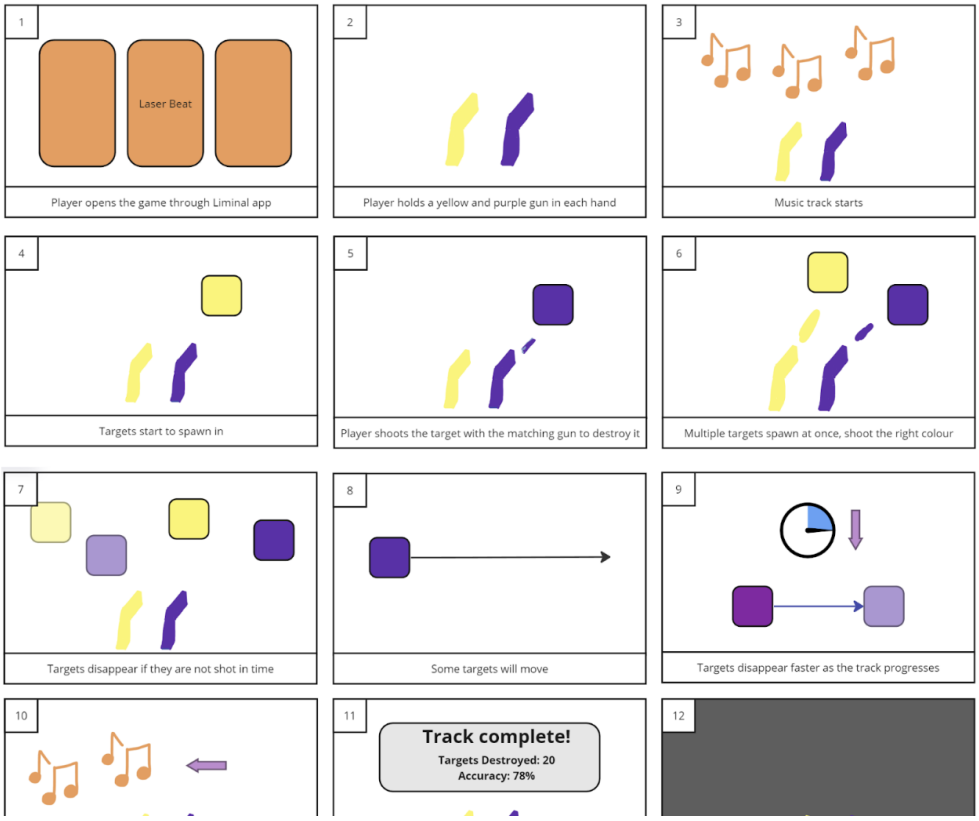
Laser Beat Proposal Second Revision

In the second proposal we wanted to ensure that we removed ambiguous sections to avoid room for interpretation when looking at a single mechanic. To do this, myself and Robin started off by re-defining the game loop from start to finish, to make sure we were clear on each of the mechanic's exact definition and implementation.

After this we removed any unnecessary mechanics that we felt did not add to the enjoyment of the game or strayed away from our mission's focus, to market to less skilled VR users.

We rewrite the document and storyboard to make it fit the new lower scoped vision. As our audio team member had unfortunately left the team, it made the decision of removing the “shoot to the beat” mechanic simple, as we had limited resources in this area.

New storyboard of game events:



Added a references section to the proposal document to make our vision clearer:

Beat Saber VR (Gun mod)	Pistol Whip VR
	
2 Colour Targets & Weapons, shoot the correct target with the correct weapon	Up-beat tempo music and visuals provide energy to the player
Aimlabs	**First Encounters**
	
Shoot static and moving targets before they disappear	Sci-fi cartoon guns

You can find a link to the document here: Liminal Proposal: Laser Beat rev 2 .

Liminal's Feedback

After the second revision of the Laser Beat proposal, we received further feedback from Liminal VR. Overall it was fairly positive, the only concerns raised was creating a game with exceptional UX design and high quality throughout, keeping the energy levels higher without becoming too dull.

Link to all of Liminal's feedback: Liminal Feedback Report

Overview

Overall feedback in the email was generally very positive due to the scope reductions and clarifications we made since the last proposal. The only feedback we did receive was general to the shooting VR genre.

Feedback

- The scope of the project has been improved but have exaggerated the following issues:
    - User experience (UX) throughout the whole experience is of great importance than before due to the the increased simplicity of the concept
    - Coordination with the art team is essential to produce high-quality assets and if they can't create what is needed, we'll should look elsewhere
- This genre is still a very challenging experience to develop as it requires the player to become more energised as time goes on
- Avoid repetitive or harsh sounding music and SFX

Sprint 4 Tasks:

After receiving the green light from our new proposal we started again on the prototype after delaying it to make room for our revised proposal.
First we got in a call together and identified the required main mechanics we wanted to showcase and divide them between us. I took on the shooting mechanics and Robin started work on the target mechanics.

Laser shooting mechanic

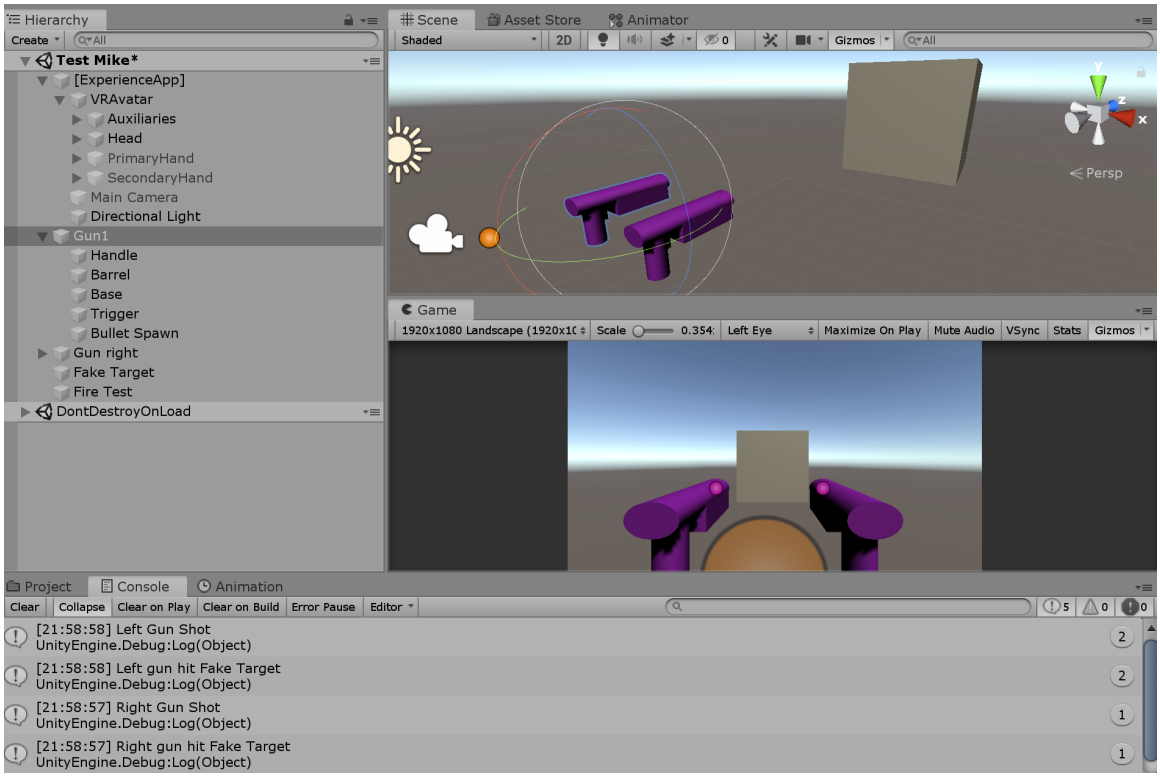
I decided to implement Raycast to check if a target was hit when the player shoots a laser gun. This is so we can avoid physics and use components on game objects such as Rigidbodies to make projectiles move through space. This will reduce the computational load of the project as there are less processes being completed at run time.

Ensuring that we optimise the games performance is of utmost importance to hit the consistent 72hz target on Lower hardware, Liminal has defined for us. Therefore every frame counts.

Raycast code being called in test using the legacy Unity Input System:

```
14
        Unity Message | 0 references
15      private void Update()
16      {
17          if (Input.GetMouseButtonDown(0))
18          {
19              Debug.Log("Left Gun Shot");
20              CastRayLeftGun();
21          }
22          if (Input.GetMouseButtonDown(1))
23          {
24              Debug.Log("Right Gun Shot");
25              CastRayRightGun();
26          }
27      }
28
        1 reference
29      private void CastRayLeftGun()
30      {
31          RaycastHit hit;
32          Ray gunRay = new Ray(leftGunMuzzle.position, Vector3.forward);
33
34          if (Physics.Raycast(gunRay, out hit))
35          {
36              if (hit.collider != null)
37              {
38                  latestRayHitLeft = hit.collider.gameObject.transform;
39                  Debug.Log("Left gun hit " + hit.collider.gameObject.name);
40              }
41          }
42      }
```

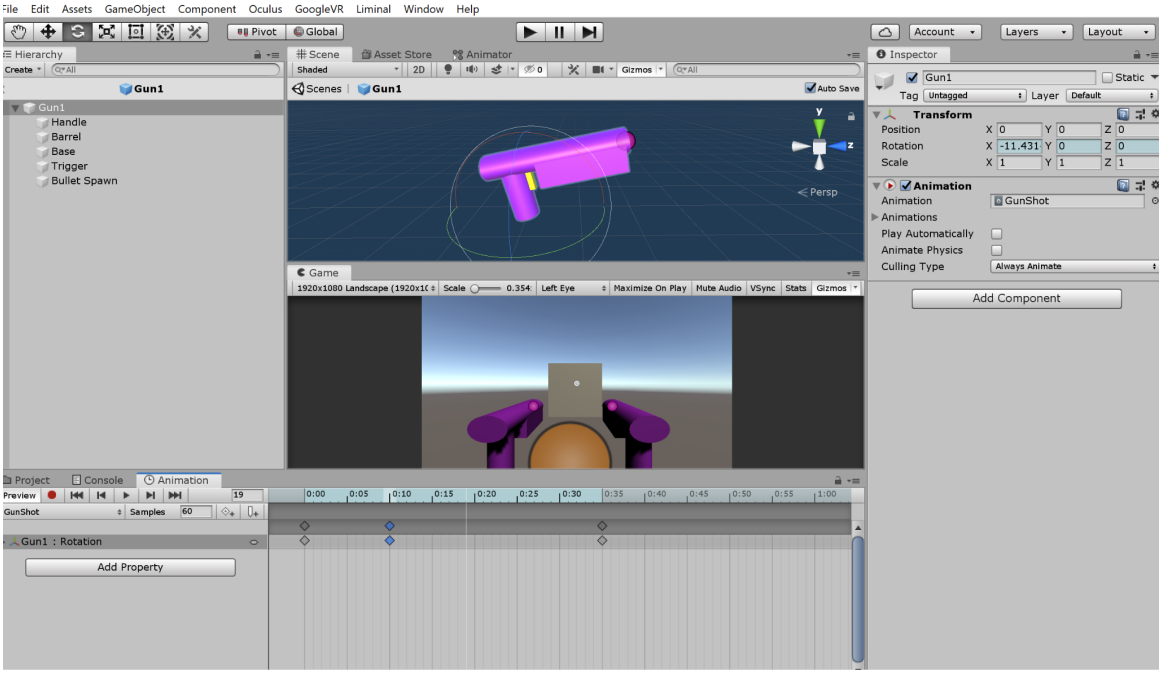
Console debug test to ensure that code is working as expected, when firing at a target:



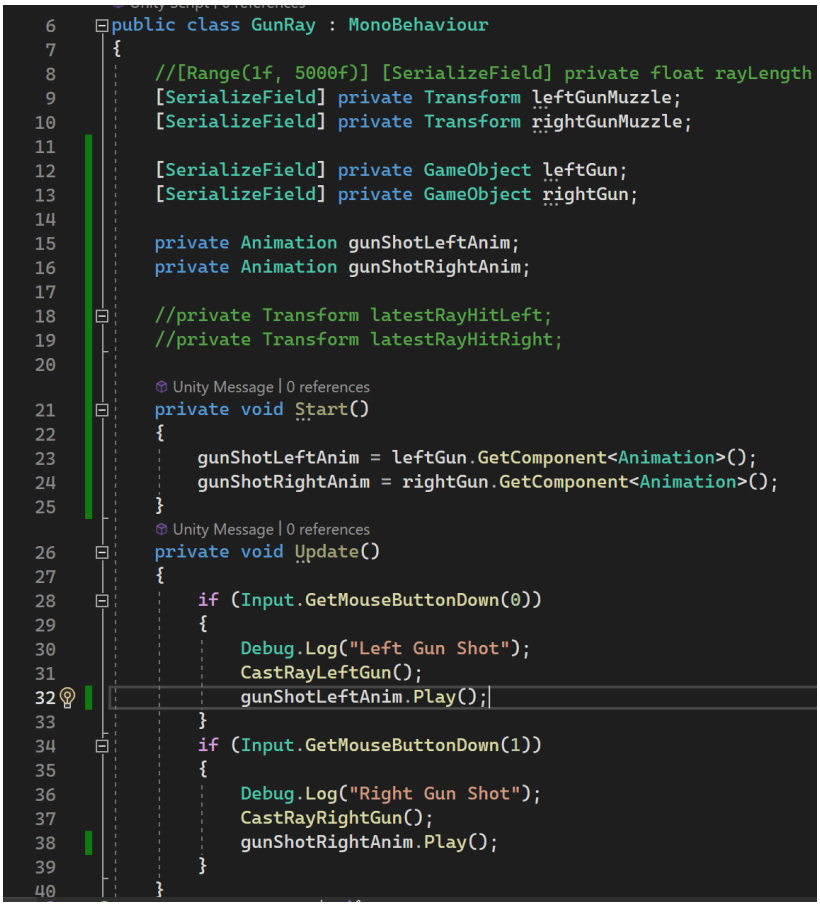
Animation

Using Unity's animation tools, I created a simple animation which would be called when the gun is fired. This would provide some visual feedback that the weapon has been fired. However this animation is only temporary as we are unsure how weapon kick back will fill when playing in VR.

Creating the animation using Unity animation tool:



Calling the animation when the gun input is fired:



```
6   public class GunRay : MonoBehaviour
7   {
8       //[Range(1f, 5000f)] [SerializeField] private float rayLength
9       [SerializeField] private Transform leftGunMuzzle;
10      [SerializeField] private Transform rightGunMuzzle;
11
12      [SerializeField] private GameObject leftGun;
13      [SerializeField] private GameObject rightGun;
14
15      private Animation gunShotLeftAnim;
16      private Animation gunShotRightAnim;
17
18      //private Transform latestRayHitLeft;
19      //private Transform latestRayHitRight;
20
        Unity Message | 0 references
21      private void Start()
22      {
23          gunShotLeftAnim = leftGun.GetComponent<Animation>();
24          gunShotRightAnim = rightGun.GetComponent<Animation>();
25      }
        Unity Message | 0 references
26      private void Update()
27      {
28          if (Input.GetMouseButtonDown(0))
29          {
30              Debug.Log("Left Gun Shot");
31              CastRayLeftGun();
32              gunShotLeftAnim.Play();
33          }
34          if (Input.GetMouseButtonDown(1))
35          {
36              Debug.Log("Right Gun Shot");
37              CastRayRightGun();
38              gunShotRightAnim.Play();
39          }
40      }
```

Gizmos (visual debugging tools)

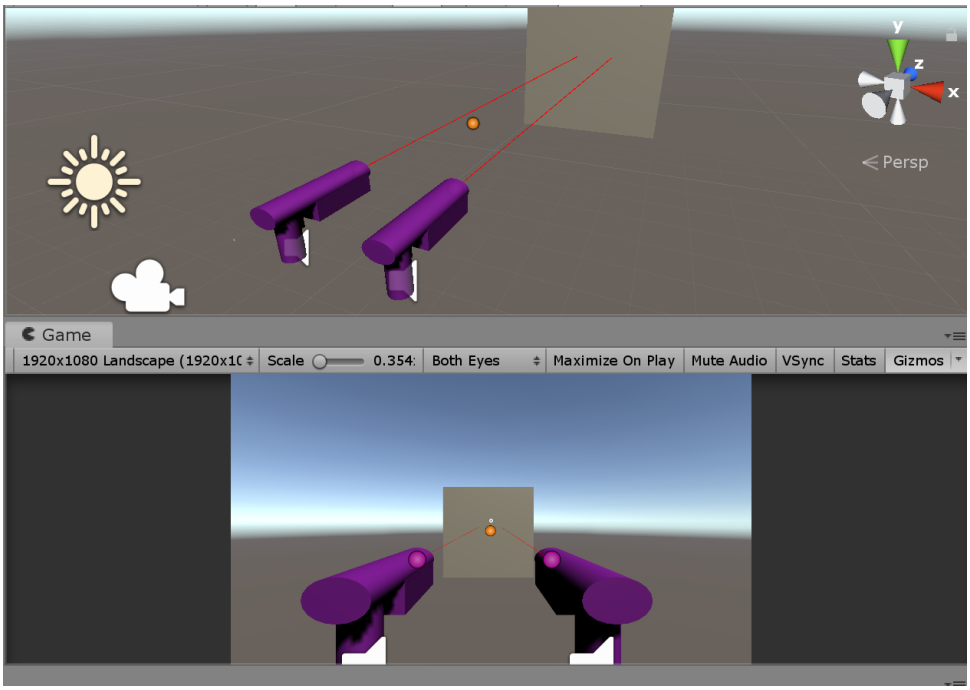
Whilst troubleshooting some gizmos errors in my code, myself and Robin stumbled upon the raycast hit's attribute called "point". This returns a vector3 world position where the raycast hit a collider.

Using this attribute, when the laser's ray cast hits a target, the new vector3 will be stored in a declared Vector 3 field. This field will then be called in the On Draw Gizmos method to show a gizmo line from the laser gun to the target. This will be beneficial in testing so we can see exactly where the raycast came from and exactly where the ray cast hit the target collider.

Raycast hit point attribute being used in code:

```
64  private void CastRayRightGun()
65  {
66      RaycastHit hit;
67      Ray gunRay = new Ray(rightGunMuzzle.position, Vector3.forward);
68
69      if (Physics.Raycast(gunRay, out hit))
70      {
71          if (hit.collider != null)
72          {
73              latestRayHitRight = hit.point;
74              Debug.Log("Right gun hit " + hit.collider.gameObject.name);
75          }
76      }
77  }
78
        Unity Message | 0 references
79  private void OnDrawGizmos()
80  {
81      Gizmos.color = Color.red;
82
83      if (latestRayHitLeft != null)
84      {
85          Gizmos.DrawLine(leftGunMuzzle.position, latestRayHitLeft);
86      }
87      if (latestRayHitRight != null)
88      {
89          Gizmos.DrawLine(rightGunMuzzle.position, latestRayHitRight);
90      }
91
```

Gizmos for raycast working in the scene view:



VR Input Troubleshooting

First I tried setting up the VR input using the Liminal examples script that was provided with the SDK, however that did not work. I then referenced the Liminal wiki and notion pages for input help, and all attempts failed.

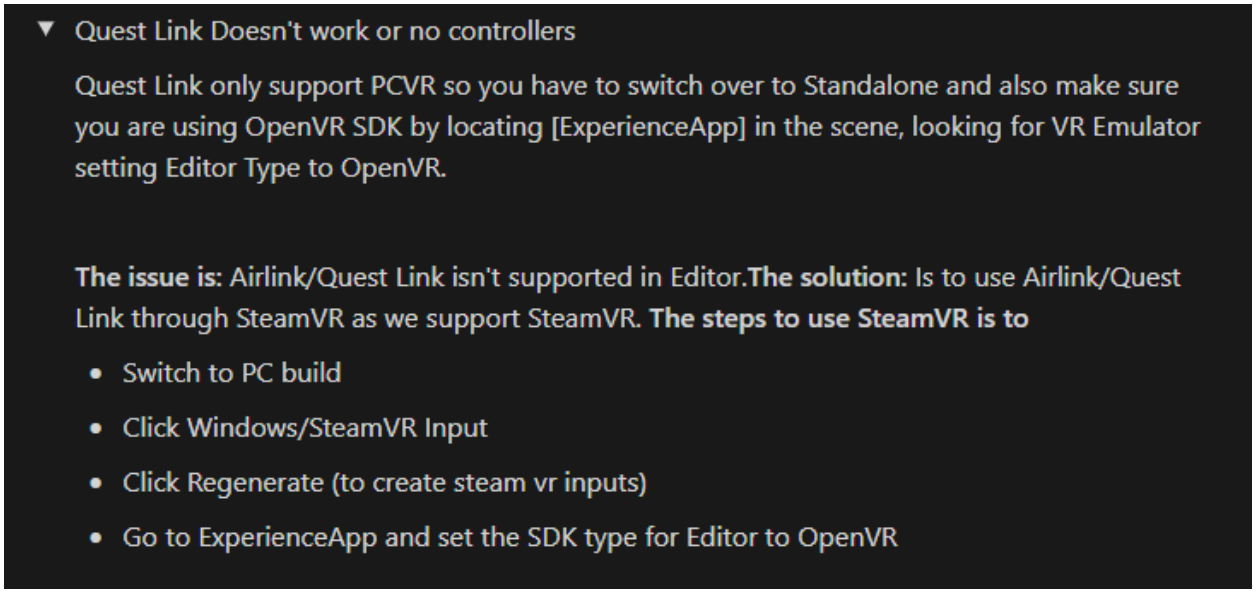
Example of the failed attempt, using the code from the SDK examples script:

```
Unity Message | 0 references
32  private void Update()
33  {
34      var avatar = VRAvatar.Active;
35      if (avatar == null)
36          return;
37
38      var rightInput = GetInput(VRInputDeviceHand.Right);
39      var leftInput = GetInput(VRInputDeviceHand.Left);
40
41
42      //if (Input.GetMouseButtonDown(0))
43      if (leftInput != null)
44      {
45          if (leftInput.GetButtonDown(VRButton.Trigger))
46          {
47              Debug.Log("Left Gun Shot");
48              CastRayLeftGun();
49              gunShotLeftAnim.Play();
50              gunShotSound.Play();
51          }
52      }
```

```
2 references
69  private IVRInputDevice GetInput(VRInputDeviceHand hand)
70  {
71      var device = VRDevice.Device;
72      return hand == VRInputDeviceHand.Left ?
73          device.SecondaryInputDevice : device.PrimaryInputDevice;
74  }
```

After doing more research on the Liminal notion page, I came across the information that the Oculus quest link connection was not supported by the SDK. Therefore, I had to switch the project build to PC mode from Android, change to Steam VR input and regenerate the files. I would then have to access the unity window via steam desktop mode.

Excerpt from the Liminal FAQ page:



Other

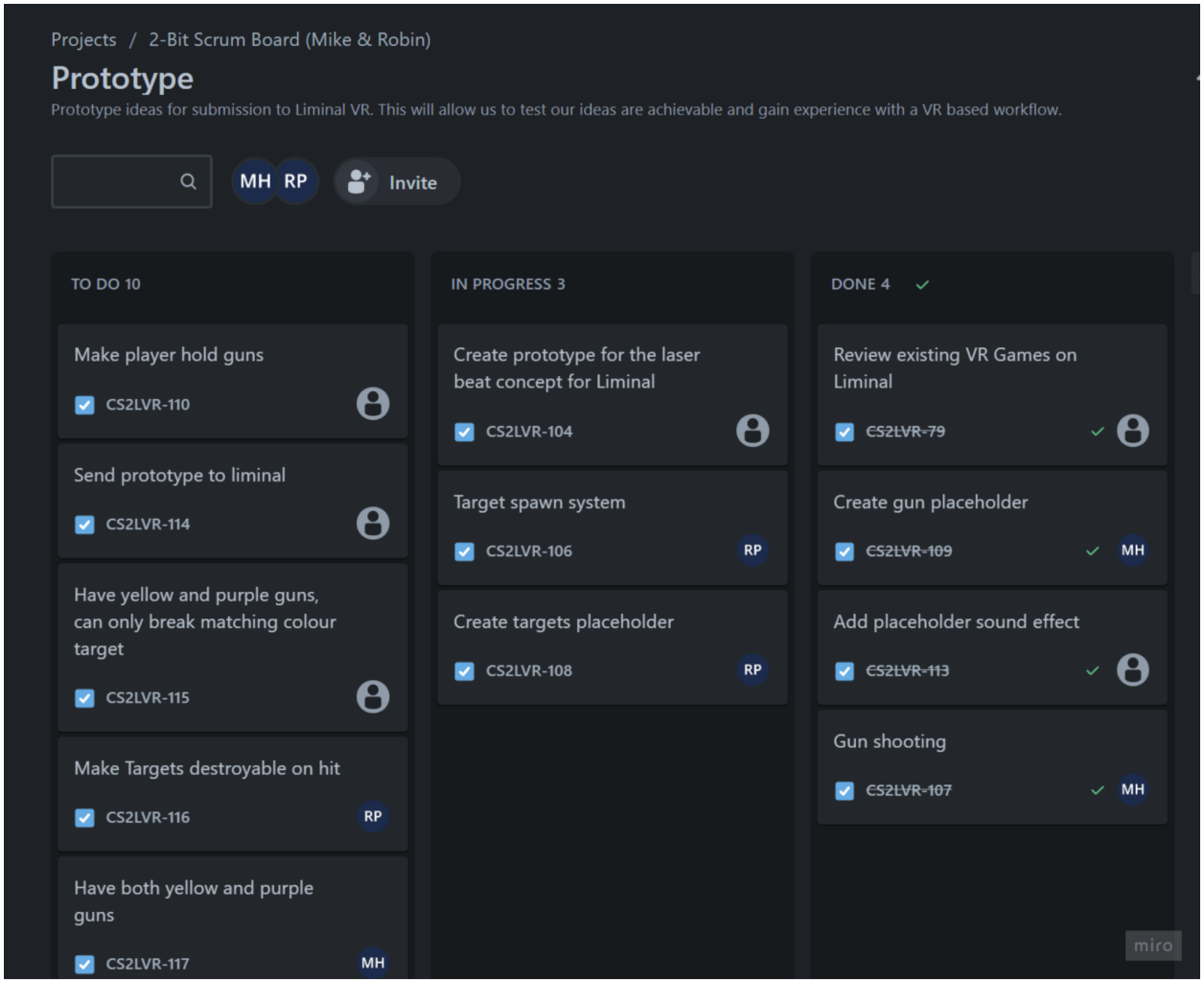
Presenting to Marketing Class

This week as part of a collaboration with the marketing class, I presented a short pitch for our Laser beat idea. The audience seemed quite engaged and one of the students expressed interest in joining our team for the project. We exchanged details and set up a time to talk later.

In Progress Tasks:

- Completing tasks related to the prototype build of the Laser Beat concept

Jira Scrum Board for Prototype sprint (end of week 4)



Challenges Encountered:

Audio

Unfortunately our audio team member decided to leave the team. As this happened before development and we created a risk management plan in advance, it did not have much of an impact on our team's progress. We decided to reduce the scope of our game and pivot the main mechanic to shooting targets with the matching colour gun.

Prototype

Due to underestimating the difficulty of getting the VR component of the project up and running, we were unable to finish the prototype before the end of the week as we originally planned to do. This was due to a large amount of our work time spent on troubleshooting. Exacerbating the situation we will not have much time to dedicate to the project next week which will surely cause our original timeline to have to be revised.

Code

Whilst coding gizmos (visual debugging tools) in my project, I had some trouble having them appear. My teammate Robin troubleshooted the issue with me and we found the main function name had a typo which was not producing an error.

Low time available next week

As there is a low amount of time available next week for us to work on the prototype, we will be severely delayed in our current sprint, as we are unable to finish the prototype soon. To resolve this we will need to revise the sprint timeline and Jira backlog to account for the delay.

Team Members:

Robin Pound - Co-Lead:

Individual works:

- Created“Liminal Feedback Report” document
- Started developing the “Target Spawning System”

Next Week's Goals:

- Complete sprint 4 (Prototype)

Sprint 4: Prototype

Production of 2 game proposals with detailed information on the experience. To be submitted to Liminal VR for green light to begin development.

Feedback and Comments: