Team 25
Client: NTT Data
Project Abstract: A Virtual Reality Simulation of riding in a Self-Driving Car

<u>**Bi-weekly report**</u>   <u>**Dated:**</u> **06/12/2019**

1. **Overview of the last two weeks:**
   Over the last two weeks, our team made significant progress on the project. On the first week, we further modified the MosCow list to make it more specific. Simultaneously, we have completed user persona which helps us better understand the users and also drew up part of the sketches to explore ideas on how our VR environment looks like.For the assets, we manage to borrow an oculus quest headset from UCL for the testing of our prototype before getting the gloves.

2. **Completed tasks:**
   a. User case diagram
   b. Sketches of car selection and homepage
   c. Personas
   d. An embryonic form of 3D prototype within all fundamental functions except self-driving

3. **Project Status**:
   We made huge progress on this project over the last two weeks and we will try to connect the Oculus with prototype and in the next two weeks.

4. **By the end of the next two weeks, we should have completed:**
   a. For the project itself:
      - Achieve the connection between the VR headset and camera in the VR environment.
      - Able track the hand motions of users using Leap motion
      - Create 2d UI in 3d VR environment where user can interact with.
      - Create a very basic environment for the driving simulation part(i.e. a straight road with no turning)
   b. Draw system architecture diagram
   c. Draw sketches on the Car simulation part

5. **Plan for the next two weeks:**
   a. During the lab session next Tuesday, our team will:
      a. Discuss about the components that the 2d UI inside car simulation part need to have (i.e. what buttons can be included for the users to interact with)
      b. Distributing the coding work for the first prototype.
      c. Sharing some ideas of how to implement different aspects of the project, compare them with other similar projects.
      d. Distributing the assets for each team member to take home during Christmas holiday.
   ● During the second week:

     a. Keep contact with team through Skype meeting
     b. Evaluate the work each team member has done
     c. Discuss about encountered problems
- Meanwhile every team member should do the following things on their own:
  a. Investigate the api provided by both Oculus quest and Leap motion
  b. Continue learning Unity and C#

Team 25
Client: NTT Data
Project Abstract: A Virtual Reality Simulation of riding in a Self-Driving Car

Bi-weekly report   **Date: 07/02/2020**

1. **Overview of the last two weeks:**
   In the last month, our team has constructed a prototype of the VR car simulator. This prototype consists of two main scenes - the Car Selection scene and the Car Simulation scene. Basic functionalities of the Car Selection page include selecting a car, customising its exteriors like changing its color, etc. For the Car Simulation, we have created a self-driving car that drives around a small city. The car currently has very basic interiors - an entertainment/infotainment system, a Dashboard/Instrument Panel with a speedometer, and a navigation panel. *Oculus Quest* and the *Oculus Touch Controller(s)* were used when developing and testing our prototype, instead of Haptic Gloves due to some logistic problems.

2. **Completed tasks:**
   1. Project functionalities (taken from the MoSCoW list)
      a. A user-friendly interface that allows the user to choose a car
         i. User-friendly elements include buttons for choosing a color for the car and arrows for navigating car options
         ii. User must also be able to view information about a car - it's specifications, description, and performance figures
      b. A user-interface for customising the car
         i. A menu that lists out all available cars with additional customising options like choosing the colour of the car
      c. A feature-complete simulation of riding in a self-driving car
         i. Users must be able to see the cars moving from a start point to a destination along a specific track
         ii. The car must have basic elements of a car's interiors; must have a driver's seat, a front-passenger seat, and a Dashboard/instrument panel with at least a speedometer
         iii. A navigation system for the car - a virtual map with real-time updates of the car's position
   2. [Project website](#)
   3. Elevator Pitch Presentation
   4. Preliminary Work video / Lab Demo
   5. Chosen and requested the following Unity Assets:
      a. Car (future self-driving car with car interior assets)
         i. [#067 Sportscar](#)
         ii. [Realistic Mobile Car #06](#)
      b. Map

i.　　[Urban Construction Pack](#)
　　　c.　UI Icon Kit
　　　　　　　　i.　　[Ultimate Sci-Fi UI Components Pack](#)

Total Cost: € 116.14

3. **Project Status:**

We are currently building up on our prototype - finding more Unity assets for our VR environment, working on the self-driving algorithm, and integrating Oculus hand tracking API with our project. We are also working on the IEP Legal Implications document.

4. **Future Plan:**
   a. Improve the Car's interiors
   b. Replace the *Oculus Touch Controllers* with Leap Motion to enable *hands capture*.
   c. Research about algorithms relating to Car Navigation
   d. Complete the self-driving algorithm
   e. Create a UI for Car Navigation so that users can customise the route the car will take

Team 25
Client: NTT Data
Project Abstract: A Virtual Reality Simulation of riding in a Self-Driving Car

Bi-weekly report   **Date: 28/02/2020**

1. **Overview of the last two weeks:**
   In the last month, our team has continued to improve our prototype of the VR car simulator (constructed and presented in January 2020). This prototype consists of two main scenes - the *Car Selection* scene and the *Car Simulation* scene. For the *Car Selection* scene, we are using the [Ultimate Sci-Fi UI Components Pack](#) to improve our UI and our home page for the application. For the Car Simulation, we are currently in the middle of finalising our *City Environment* (created using [Urban Construction Pack](#)) and are testing our Car Navigation algorithm. This algorithm will be further tested when the environment is completely constructed. Along with this, we have completed our car designs and our currently customising their interiors (car models used: [#067 Sportscar](#) and [Realistic Mobile Car #06](#)) Finally, we have also successfully integrated Oculus Hand Tracking with our project application.

2. **Completed tasks:**
   1. Project functionalities (taken from the MoSCoW list)
      a. A user-friendly interface that allows the user to choose a car
         i. User-friendly elements include buttons for choosing a color for the car and arrows for navigating car options
         ii. User must also be able to view information about a car - it's specifications, description, and performance figures
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Total Cost: € 116.14

6. Replace the *Oculus Touch Controllers* with Hand Tracking
7. Research about algorithms relating to Car Navigation
8. Complete the self-driving algorithm

3. Project Status:

We are currently following up on our prototype application - improving its usability, user-experience, adding functionalities, and testing for delivery.

4. Future Plan:

a. Test the car navigation algorithm
b. Create a UI for Car Navigation so that users can customise the route the car will take
c. Finalise our simulation environment
d. Further improve our *Car Selection* scene and add UI components using the aforementioned asset
e. Completely test our project for delivery
f. Complete all documentation for our project

Team 25
Client: NTT Data
Project Abstract: A Virtual Reality Simulation of riding in a Self-Driving Car

<u>**Bi-weekly report**</u>   <u>**Dated:**</u> **17/01/2020**

1. **Overview of the last month:**
   In the last month, our team has constructed a prototype of the VR car simulator. This prototype consists of two main scenes - the Car Selection scene and the Car Simulation scene. Basic functionalities of the Car Selection page include selecting a car, customising its exteriors like changing its color, etc. For the Car Simulation, we have created a self-driving car that drives around a small city. The car currently has very basic interiors - an entertainment/infotainment system, a Dashboard/Instrument Panel with a speedometer, and a navigation panel. *Oculus Quest* and the *Oculus Touch Controller(s)* were used when developing and testing our prototype, instead of Haptic Gloves due to some logistic problems.

2. **Completed tasks:**
   a. Project functionalities (taken from the MoSCoW list)
      i. A user-friendly interface that allows the user to choose a car
         1. User-friendly elements include buttons for choosing a color for the car and arrows for navigating car options
         2. User must also be able to view information about a car - it's specifications, description, and performance figures
      ii. A user-interface for customising the car
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         1. Users must be able to see the cars moving from a start point to a destination along a specific track
         2. The car must have basic elements of a car's interiors; must have a driver's seat, a front-passenger seat, and a Dashboard/instrument panel with at least a speedometer
         3. A navigation system for the car - a virtual map with real-time updates of the car's position
   b. [Project website](#)
   c. Elevator Pitch Presentation
   d. Preliminary Work video/Lab Demo
3. **Project Status**:
   We finished the prototype over the last two weeks and will try to improve the quality of our models. Our plan is to start working on the *self-driving* algorithm in the next two weeks.
4. **Future Plan:**

- Looking for new car models (a tailored self-driving car model would be better)
- Improve the Car's interiors
- Replace the *Oculus Touch Controllers* with Leap Motion to enable *hands capture*.
- Look for a larger, more detailed city map
- Research about algorithms relating to Car Navigation
- Create a UI for Car Navigation so that users can customise the route the car will take

Team 25
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Bi-weekly report   **Dated:** 22/11/2019

1. **Overview of the last two weeks:**
   In the past two weeks, our team has had a skype meeting with Nadia to gather the specific requirements for our project. We then followed up on the meeting, listed out our tasks, and then split them for each team member for the week(this includes creating user personas, creating a MoSCoW list of features, generating use-case diagrams, etc.) Whilst working on the *requirements* part of the project, all the team members are also doing further research on how we will be creating the VR self-driving car simulation environment on Unity.

2. **Completed tasks:**
   a. The framework of the project
   b. DevOps setup
   c. MoSCoW list completed
   d. Project website created

3. **Project Status**:
   We are slightly behind our original plan, but our catching up swiftly.

4. **By the end of the next two weeks, we should have completed:**
   a. Sketches
   b. Use-diagram
   c. Persona
   d. An embryonic form of our prototype

5. **Plan for the next two weeks:**
   - During the lab session next Tuesday, our team will:
     a. Discuss the MoSCoW list of features, make sure everybody agrees on it and knows the exact meaning of every feature on the list.
     b. Drawing sketches for the first prototype, including:
        - Sketch for the car selection part
        - Sketch for the in-car perspective.
     c. Draw the use-case diagram for the first prototype.
     d. Distributing the coding work for the first prototype
   - During the lab session on the following week, our team will:
     a. Evaluate the work each team member has done
     b. Discuss about encountered problems
   - Meanwhile every team member should do the following things on their own:
     a. Continue learning Unity and C#
     b. Look for more, interesting and relevant projects and learn from them
     c. Gathering some useable car models and landscape models.

- Other work to be done:
  - Talk to the Lab Teaching Assistant about the asset request (The gloves as well as 3-D model)
  - Finish the user personas
  - Ask about access to VR lab

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Bi-weekly report   **Date: 28/02/2020**

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    In the last month, our team has continued to improve our prototype of the VR car simulator (constructed and presented in January 2020). This prototype consists of two main scenes - the *Car Selection* scene and the *Car Simulation* scene. For the *Car Selection* scene, we are using the Ultimate Sci-Fi UI Components Pack to improve our UI and our home page for the application. For the Car Simulation, we are currently in the middle of finalising our *City Environment* (created using Urban Construction Pack) and are testing our Car Navigation algorithm. This algorithm will be further tested when the environment is completely constructed. Along with this, we have completed our car designs and our currently customising their interiors (car models used: #067 Sportscar and Realistic Mobile Car #06) Finally, we have also successfully integrated Oculus Hand Tracking with our project application.

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Total Cost: € 116.14

6. Replace the *Oculus Touch Controllers* with Hand Tracking
7. Research about algorithms relating to Car Navigation
8. Complete the self-driving algorithm

3. Project Status:

We are currently following up on our prototype application - improving its usability, user-experience, adding functionalities, and testing for delivery.

4. Future Plan:
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    b. Create a UI for Car Navigation so that users can customise the route the car will take
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