**Project Aims:**

This project aims to develop and implement a functional web application called **"ExploreX"** that hosts VR multimedia content. This application incorporates digital projection to give users—including prospective students and other individuals (stakeholders)—an immersive experience through a virtual tour of London South Bank University infrastructure and various departments within. Users can select a location they would like to virtually visit and view it as a 360-degree video of it. This application must be a web application that functions on desktop and mobile devices.

After a lot of consideration, the group decided to name the application **“ExploreX”** as it accurately describes of what the application is designed to do, enabling users to explore and engage with the virtual reality world. Our slogan, "Invest in knowledge with a new perspective," reflects the primary goal of the ExploreX project, which is to provides future stakeholders and students with a new and innovative way to gain knowledge of the university. By using our VR application, users can gain a deeper understanding of the university's facilities, which can help them make informed decisions about their educational or professional paths.

Furthermore, a logo has also been created for the web application designed including the name, slogan, and a visual representation of the intended use of the online application shown in Figure 1 below.



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**Background:**

In the modern world of rapidly evolving digital environment, providing an immersive and engaging learning platform and experience is more crucial than ever, and every sector has been looking for ways to incorporate them.

Virtual reality is considered as a state-of-the-art human-computer interface that has over the past few years gained popularity for its propensity to fully immerse users in virtual environments. It makes it possible for the users to engage with a computer-generated environment through gestures and movements.

Today, it is well recognised that many businesses have a genuine interest in immersive content such as Facebook, Zoom, Spotify, Amazon (Twitch), Alibaba, Roblox, Bilibili, Snapchat, Kuaishou, and Huawei are among of them. It is anticipated that by the end of 2025 the metaverse ecology will increase by about 35% reaching 185.7 billion. AR users alone are predicted to grow by 20 million, while VR users are expected to grow by 8.6 million.

The approach of visualizing has changed due to the emergence of virtual reality and University open days are one such example.

Open days are events which are organised by the University across the year inviting the potential students and stakeholders to provide a tour of the campuses. This gives them a chance to look at different facilities provided by the university and generally get a sense of the place.

The solutions we have put in place is to create a visually attractive immersive multimedia for the university's open day. By the help of this project the students or stakeholders who were unable to attend the open days in person or cannot come due to different circumstances now have the chance to see the facilities offered at the university and get a sense of what it might be like to study at London South Bank University.

The developed application simplifies the procedure for accessing and watching the experience of virtually exploring the university and gives the user a step-by-step navigation of how to view the content.

Considering that we are in our last year of our degree, having a heavy workload can make it easier for the team to experience many difficulties; as a result, in the first week of our project, we as a team made a list of all the duties and tasks that needed to be carried out in this project. Our duties were assigned based on which team members' knowledge, experience, and personal preferences they felt would suit them the best. This enabled the group members to maintain focus and complete all the tasks on schedule.

Each team member was given the responsibility of frequently checking in with one another regarding assigned responsibilities to ensure that no one struggled for an extended period of time and that, if they were, they were helped on their assigned duties. This resulted in a balanced workload and provided each team member with the chance to learn something new, such as filming 360-degree movies, editing them, and developing the web application coming out of their comfort zone and experiment with their skills. Also, to provide valuable information / valuable knowledge to other team members.

**Immersive Content Curation:**

The virtual reality multimedia content was curate in the form of virtual cinematography of four buildings at London South Bank university for this creation of VR application that will house the contents filmed.

For the development of VR web application which will host the multimedia content was curated by filming four different buildings at London South Bank University. This section comprises of all the equipment’s that were used for the cinematography, the video filming considerations, the sites which were filmed along with their descriptions, pre-processing of the videos filmed and the curated content.

**Site Description:**

**Faraday Wing Building**

Famous and well-known architects Norman & Dawbarn founded and designed Faraday Wing, previously known as The National College of Wing. The building was first opened in 1960 for the purpose of moving the Heating, Ventilating, Refrigeration, and Fan Engineering. However, Sir David Eccles, Minister of Education, officially opened it on November 20, 1961. It has been stated that for many years, the College was associated to the Borough Polytechnic department, which amalgamated with it in 1970 to become the Polytechnic of the South Bank. The building consists of specialised laboratories, a lecture theatre, and a specialised library until the 1980s. In commemoration of Michael Faraday, who was born in Newington Butts, the structure underwent renovation in 1991 and was given the new name of the Faraday Wing.

Faraday Wing is also considered as the main building for Computer Science and Informatics (CSI) department.

The locations which have been filmed in this building are as follow:

1. **Building Entrance Reception:** This is the entrance to the main building.
2. **First Floor Hallway:** This is the main hallway of the building. This hallway connects the building to the applied sciences department towards the student centre and leading to the Borough building via the green route.
3. **Nelson Theatre:** This is considered to be one of the biggest lectures theatres in the building. The modules which have large amount of students /capacity of students taking the module is large have their lectures in this theatre. Moreover, many events such as guest talks and employability sessions take place here.
4. **AR VR Tutorial Room 114:** This is one of the rooms which is used to conduct the tutorial classes for different CSI department modules. It consists of well-equipped computers. Students are also allowed to use these rooms to work on their projects in their free time.

**LSBU Hub**

The LSBU Hub forms part of the major transformation of the Elephant and Castle campus for London South Bank University (LSBU). This complex refurbishment and remodelling substantially increases the provision of flexible teaching and learning space for the university in the heart of the campus.

This building consists of an open plan library, department specific teaching space, sports hall, lectures theatres and media studio. The façade has been significantly upgraded providing both improved thermal performances including solar glare control, and improved acoustic performance, which is critical on the noisy London Road façade. The building has been designed and simple robust design solutions have been implemented throughout the building; mechanical ventilation is provided for the majority of spaces with minimum fresh air supplemented by space heating and cooling.

The locations which have been filmed in this building are as follow:

1. **LSBU Hub Reception:** The reception gives access to students
2. lecturers and potential visitors to access the building.
3. **LSBU Hub food court:** This area is used to have lunch?
4. LSBU Hub

**Library**

This library is situated on our main Southwark campus within the LSBU Hub. It contains book collections for all subjects as well as extensive study spaces and bookable group study rooms. There are PCs and Macs to use, plus laptops to borrow. For printing, there are Multi-function printer - scanner- photocopiers on every floor. We also have two plotters available for printing plans, drawings and posters. On the third floor of the library IT help desk can be found to assist the students for any problem they encounter with.

The locations which have been filmed in this building are as follow:

1. **Borrowing the book Machine:** This self-service machine provides the students the opportunity to borrow books to be able to take them home and study from them and return them after a period of time.
2. **Breakout Area:** This space/area in the library provides a space for the students to stretch themselves and relax for a bit.
3. **Group study Room:** These rooms are made for group study so that the students working on projects can collaborate together and work.
4. **Library Hall:** This is an open space provided to the students so that they can access the computers and work either individually or form of groups.

**Lecture Theatre Halls**

LSBU Hub in total consist of () lecture theatre halls. Each and every one of them is designed differently from one another for different lectures and tutorials to take place.

1. …
2. …
3. …
4. …

**Requirements and Analysis**

**User Roles**

The following users have been identified:

The Figure below describes the roles within this system.

|  |  |
| --- | --- |
| **Roles** | **User Story Description** |
| Potential Students |
| Parents |
| Lecturers |
|  |  |

**Design Tools**

Once we had obtained the full specifications and requirements designs for our VR multimedia website application were created. During the designing process, we had to create mock-ups to demonstrate how the website will appear. The designs outline what to expect, and on another hand, provide the developers a starting base of how the website (front-end) should look like. The design stage is important as it allows the team to coordinate effectively, further enabling developers the opportunity to judge how they will implement certain features and decide what software or technologies they will utilise. Multiple options were discussed for our designs; the contents of our discussions included software’s being utilised, the team member responsible for the creation of designs, and a structured outline of what must be included. After thorough research we will be comparing varying design tools such as Figma, Sketch and Moqups below:

**Sketch:** This software encompasses a variety of designing functionalities for the user interface of mobile applications and websites. It consists of extensive range of prototyping features and collaborative tools. (Webflow, 2022)

**Figma:** Available for free usage online, Figma is a site that boasts tools needed to create high-fidelity designs. It provides features such as interactive forms (multiple choice questions, checkboxes, etc), direct collaboration where members of a team are able to create or edit simultaneously, and a method of testing the prototyped design. The potential of designs created via Figma are excellent. (Webflow, 2022)

**MOQUPs**: Similar to figma, Moqups is free-to-use and accessible online. Moqups offers several designs, such as: diagrams, flowcharts, sitemaps, wireframes, mock-ups, charts, and graphs. The diagrams and templates for wireframes within Moqups, show a fluid connection between designs (pages in the sites) via connecting arrows. This is a significant feature, that is both easily implementable and readable. The flow of events can be clearly portrayed within the design via this feature, benefitting the developers towards understanding the chronology of the webpage and thus, the order of links. Most importantly, Moqups requires very minimal understanding of the tool to be effectively utilised by newer users. (Pietroluongo, L.2022).

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| **Feature** | **Importance** | **Sketch** | **Moqups** | **Figma** |
| Collaboration | Required |  |  |  |
| Offers Prototypes | Required |  |  |  |
| Beginner Friendly | Required |  |  |  |
| Accessible online | Required | (Available only to apple computers) |  |  |
| Free | Required |  |  |  |
| Animation tools | Inessential |  |  |  |
| Drag/ Drop | Desired |  |  |  |

To conclude, Moqups and Sketch were both viable options for the production of high-fidelity designs. However we decided to use the site Figma. It was essential that the tools could be used by all members of the team, allowing for everyone to work unobstructed in matters related to the lack of experience or familiarity towards certain software therefore Figma was the best option to be considered as it was easily accessible and beginner friendly, including built-in design templates further including features such as a drag and drop functionality which neither moqups nor Sketch had provided.