

V-LAB

Beacon Application Title

V-Lab

Beacon Application Description:

V-Lab is a virtual laboratory simulating in a realistic environment a biology lab and several of the processes a trainee is expected to perform there. In this context, the trainee navigates through the lab space and makes use of the various instruments and objects in order to perform experiments. The particular experiment for this beacon is microscopy of test specimens with the use of a photonic microscope.

Target User Groups:

Science Students, Science/Medical Lab Staff

Learning Scenario:

The user is supposed to perform the procedure of microscoping of a test specimen. In order for the user to learn how to microscope a test specimen, s/he needs to be trained in guided mode and afterwards, test his/her skills in unguided mode.

Difficulty Level:

There will be two playing modes considering the simulated microscoping procedure; guided mode, where the user is guided by text and voice and is each time able to perform only the particular action that s/he is instructed to; and unguided mode, where the user is allowed to interact with the instrument freely but receives no guidance at all.

Interactions:

The interaction is made through the keyboard and the mouse; the user uses the arrow keys to navigate in the virtual lab and the mouse to interact with the various instruments and lab objects.

Enablers:

- Unity game engine (latest stable 2021 version)
- Infrastructure for “pluggable” assets (to be investigated)

The programming languages and databases used:

- C# (Unity’s scripting language)

Platform

- The operating system, cloud environment, or other platform that the application is built on:



OS: Windows 10/11

Cloud: Bitbucket.org

● **Relevant details about the platform, such as its architecture, security features, or scalability:**

The beacon app will demonstrate an architecture consisting of (a) a proprietary binary platform implementing the 3D environment's key mechanics and (b) open-source assets, loaded and executed by the platform as plugins, providing application-specific content and functionality (in this case, the microscopy scenario objects and interactions). A number of options for the plugin infrastructure are available and will be thoroughly investigated. The workflow of creating application-specific assets and delivering them in the form required for plugging into the platform will be documented in detail as a streamlined methodology.

Compatible Hardware Platform:

Processor: Ryzen 5 or later, i5 or later

RAM: 4GB or more

We will also be investigating the compatibility of current and popular XR hardware and software layers, including OpenXR, compatible devices and Oculus Quest devices.

Multi-User:

The app does not support multi-user.

3D Engine + Version:

- Unity game engine (latest stable 2021 version)

Ownership of 3D Data:

Hellenic Open University