

Engineering Capstone Project: Fall 2023 - Spring 2024

Gamified Computers and Networks Virtual Worlds Simulator II

GOAL:

Enable the creation and use of virtual machine environments and virtual networks at enterprise scale within a full-scale 3D virtual world. This with the goal of enabling digital-twin research and education supported by an enterprise-scale virtual machine and virtual network infrastructure.

BACKGROUND:

Currently, there exists a few digital network simulators, for example GNS3, but none of them offer a gamified 3D environment. They also do not include full functionality to interact with virtual buildings and devices in a multimodal manner. This platform would open a new paradigm for research and education on computing and networks by combining gaming with scientific simulation. Examples of past related projects are found here: <https://electricblocks.github.io/> and <https://github.com/VMCraft-II>.

OBJECTIVES:

Create a gamified 3D environment that enables the simulation of cities, buildings, servers, workstations, digital networks and equipment. This using the **Unreal** game engine and backed by real network and virtualization simulator **ProxmoxVE**.

HARDWARE and SOFTWARE ENVIRONMENTS:

A powerful laptop computer or workstation and Internet connection plus willingness to learn and develop and test new games, assets, code, tools, and distributed network applications. We plan on using GitHub and MS Teams for collaboration. We plan on using the EPIC Unreal game engine.

CUSTOMER:

UI CoE: Daniel Conte de Leon.

EXPECTED TEAM:

A team of dedicated Computer Science and Cybersecurity students.

