UMBC Virtual Tour 2.0

Project Presentation

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UMBC
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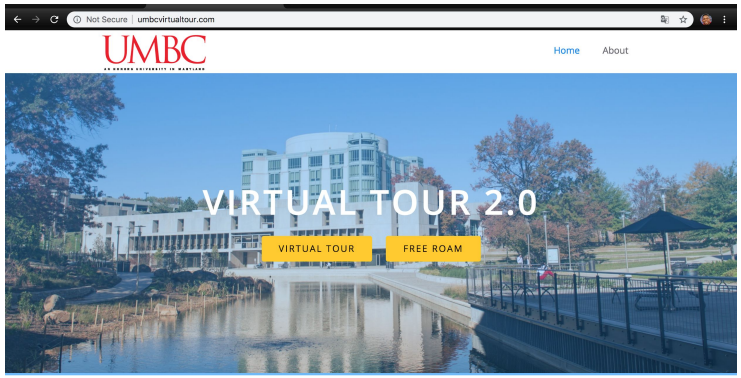
UMBC Virtual Tour 2.0 (VT2)



Goals

- Improve existing UMBC virtual campus tour applications by importing UMBC campus map and building information into Unity game engine, enabling users to freely explore a 3D rendering of the campus.
- Offer other useful features, such as the ability to highlight valid parking locations on campus based on user status.

Intended Users

- Prospective students seeking to familiarize themselves with the campus environment and current students, faculty, and visitors trying to find their classes or event venues and seeking the best place to park.

Milestones

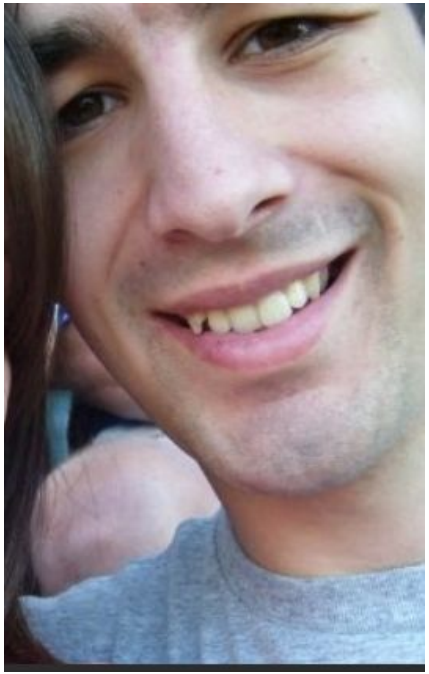
10/26	Software Requirements Specification
11/20	System/Subsystem Design Description
12/07	Software Test Description
12/19	System Demonstration

UMBC VT2 Team Members

- **Noah Johnson** - Chief Communications Officer, Senior Documentation Engineer
- **Ronan Kaye** - Senior Web Developer
- **Tyler Little** - Deputy Chief Unity Engineer, Camera Integration Lead
- **Ryan Martin** - Chief Unity Engineer
- **Kristin McLaughlin** - Senior Documentation Engineer

UMBC VT2 Project Customer - Jason Harper

- Senior algorithm engineer at Zenuity
- Senior software engineer at Johns Hopkins University Applied Physics Laboratory
- B.S., M.S. in Computer Science from Case Western Reserve University
- Expertise in autonomous driving, Advanced Driver Assistance Systems (ADAS), intelligence and multi-agent systems, signal processing, and computer vision



Logistics

- **Meetings** - In class, ad-hoc
- **Communications**: Slack, Google Docs
- **Code & Document Repository**: GitHub
- **Tools:** WebGL, Unity
- **Languages:** HTML, C#
- **Risks**

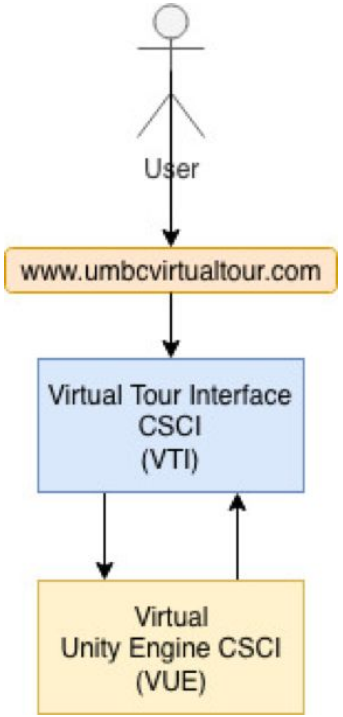
Timeline of Customer Interactions

- **Mid-October 2018:** Achieved consensus on basic requirements
- **November 2018:** Customer completed review of SRS
- **December 2018:** Informed customer that system prototype would have to be scoped to include only the website and campus explorer components

Requirements

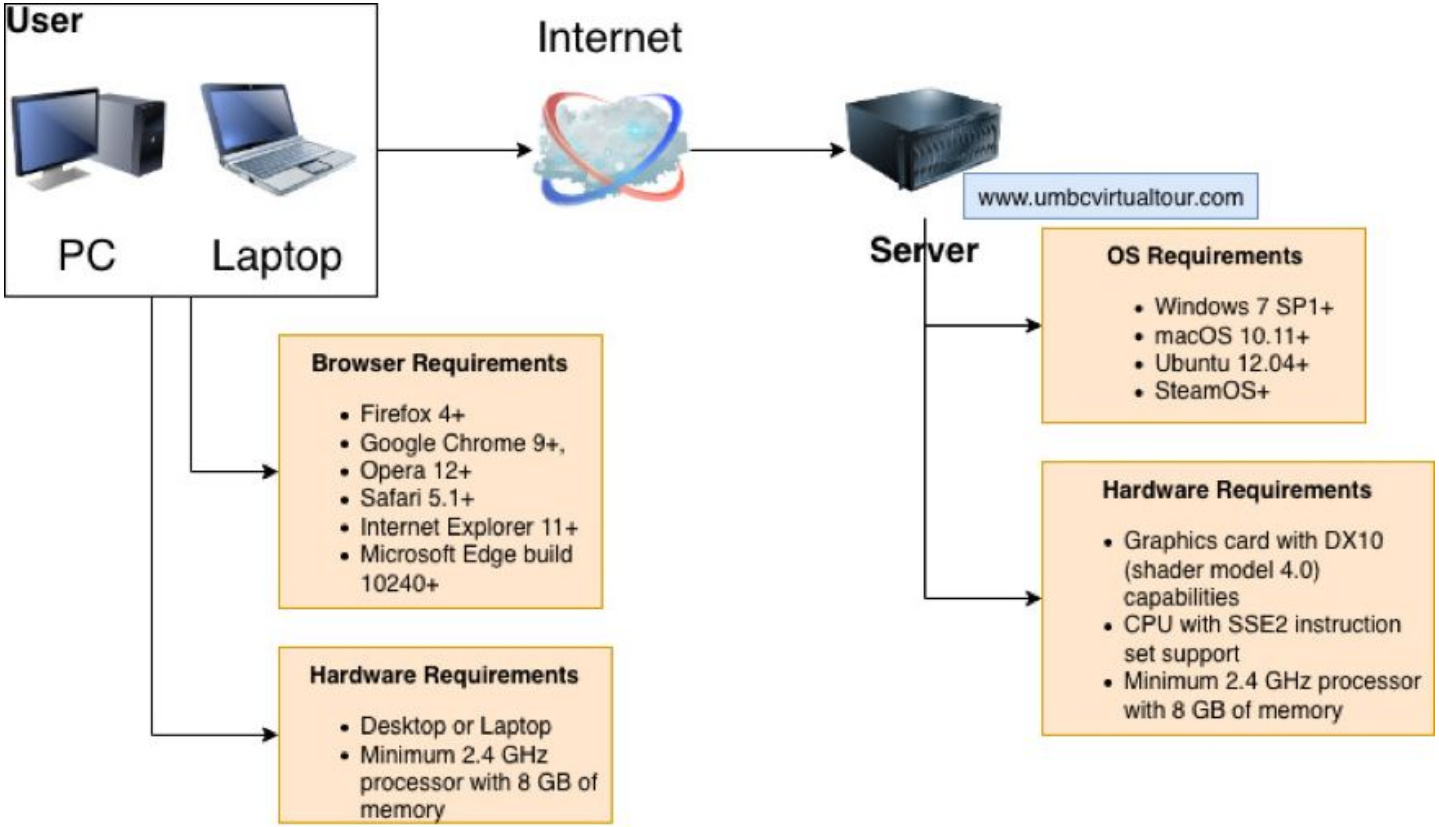
- ***Virtual Tour Interface (VTI) CSCI***
  - Provides a menu-based web interface for the VT2 system based on the WebGL framework
  - Manages user's interaction with the VUE CSCI
  - Accessed through the website www.umbcvirtualtour.com

- ***Virtual Unity Engine (VUE) CSCI***
  - Customized version of the Unity engine that includes accurate 3D renderings and textures of the UMBC campus buildings.
  - *VUE_CampusExplorer* CSC: Enables natural movement around the campus with motion and camera effects similar to first and third person point of view video games
  - *VUE_ParkingFinder* CSC: Provides ability to identify parking lots where the user is allowed to park based on the user's status (faculty member, commuter student, residential student, visitor, etc.)

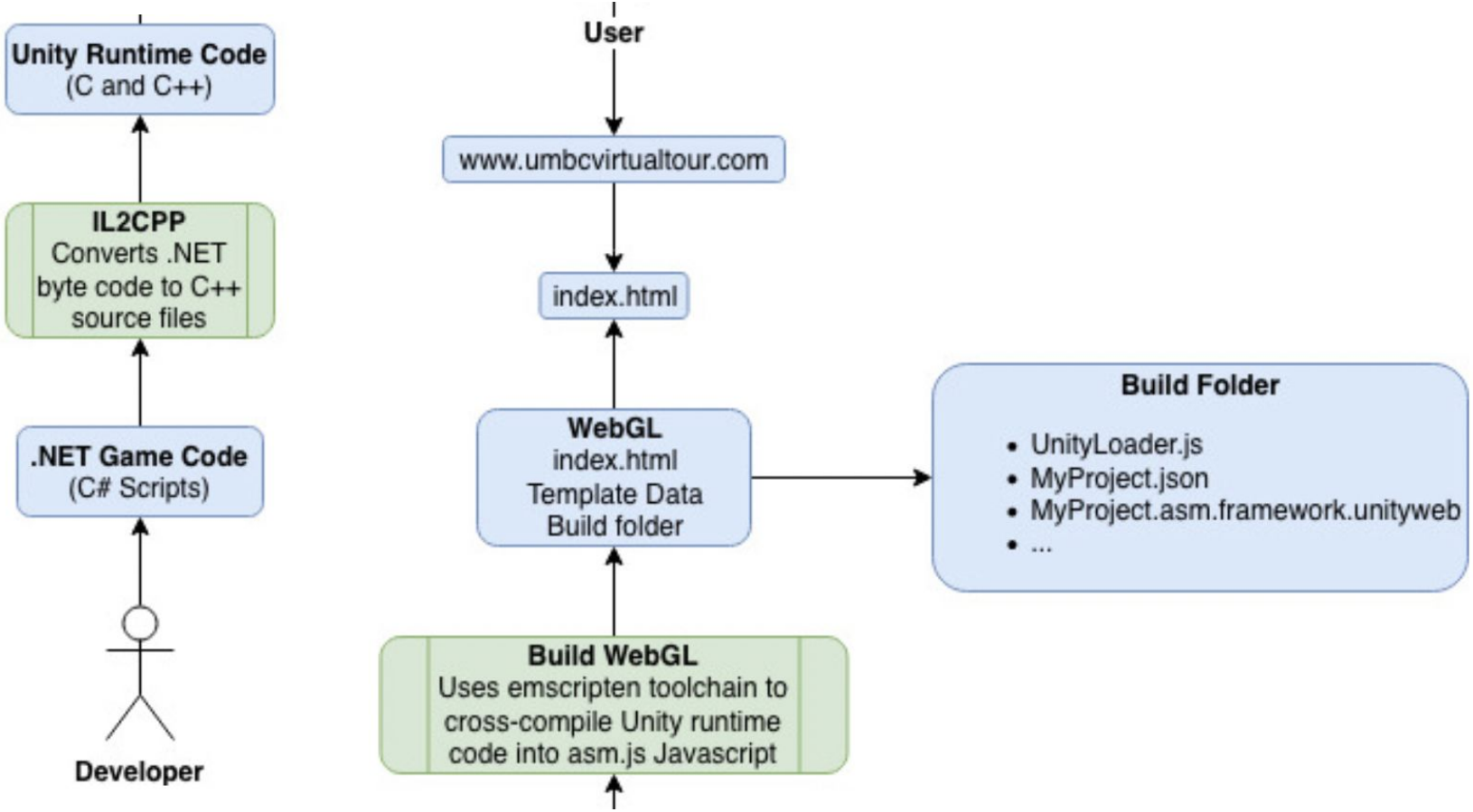


Relationship Between VT2 System CSCIs

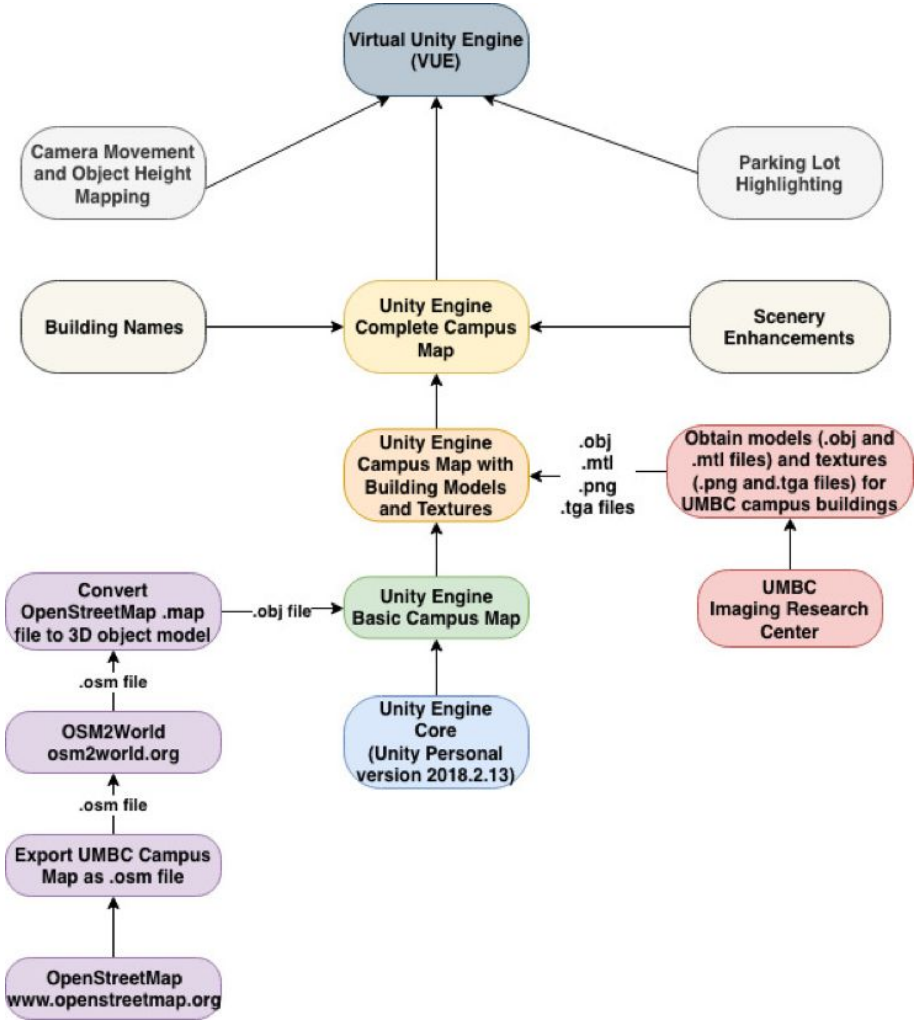
Design - Hardware Architecture



Design - WebGL Framework



Design - Development of Virtual Unity Engine (VUE) CSCI



Test Descriptions

Testing primarily accomplished through demonstration and inspection

4.1.1 The user accesses http://umbcvirtualtour.com through a specified browser

4.1.2 Contents of the VTI homepage

4.1.3 The web server provides a stable hosting platform for end users

4.1.4 VUE provides realistic campus view

4.1.5 VUE uses specified maps, models, textures, and movement

4.1.6 VT2 website meets minimum hardware and software requirements

Demo

www.umbcvirtualtour.com