

Chapter 13

Virtual Worlds Innovation with Open Wonderland

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ABSTRACT

Open Wonderland is a Java open source toolkit for creating collaborative 3D virtual worlds. Within those worlds, users can communicate with high-fidelity, immersive audio, share live desktop applications, and collaborate in an education, business, or government context. Wonderland is completely extensible; developers and graphic artists can extend its functionality to create entirely new worlds and add new features to existing worlds. The vision for Open Wonderland is to provide an environment that is robust enough in terms of security, scalability, and functionality that organizations can rely on it as a place to conduct real business or education. Organizations should be able to use Wonderland to create a virtual presence to better communicate with students, customers, partners, or friends. Individuals should also be able to tailor portions of the world to adapt to their needs and to express their personal style.

INTRODUCTION

A virtual world is a genre of online community that takes the form of a computer-based simulated environment, through which users can interact with one another. Virtual worlds allow its users to inhabit and interact, and the term has become synonymous with interactive 3D virtual environments, where the users take the form of Avatars visible to others graphically.

When referring to human representation in a virtual world and virtual environments in general,

you can call it Virtual Humans. There are two distinct types: Virtual Agents and Virtual Avatars. The former is a representation controlled by software. The latter is a representation controlled by a user in the real world, taking the following main points into account: appearance, movement, control mechanisms of interactivity and autonomy (including gesture and locomotion), interaction with other avatars or agents (Balder, 1997).

Virtual worlds make it possible to present perceptual stimuli to the user, who in turn can manipulate elements of the modeled world and thus experience a certain degree of telepresence. Such

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modeled worlds may either appear similar to the real world or depict fantasy worlds. Furthermore they can simulate rules based on the real world. For instance, rules about gravity, topography, locomotion, real-time actions, and communication. Communication between users may range from text, graphical icons, gestures, sound, and voice command.

History

The world set in a mechanical and synthetic way first appears with the introduction of CinemaScope and Cinerama in the mid 1950's. Both are considered to be pioneering experiences in obtaining artificial realism.

Soon after that, in 1956, Morton Heilig (a filmmaker) developed a video-based simulator called Sensorama. Although his invention failed to achieve commercial success, he was a precursor to user immersion in a synthetic environment.

The creation of generic virtual reality simulators – not the creation of games – was among the first uses of virtual worlds. In 1968, Ivan Sutherland built, at Harvard University, the first head mounted display (HMD) with computer-generated images, incorporating a system for tracking the head position. Such device is considered by many as a pioneering landmark in virtual environment immersion, and the start of Virtual Reality.

Maze War was the earliest first-person shooter (FPS), network and multi-user game. It was the first video game to bring in the concept that the players' avatars were eyeballs chasing other players amidst a maze.

By 1978, in comes the first Multi-User Domain (MUD), as a multiplayer real-time virtual world based primarily on text, which combined elements of hack and slash role-playing games (RPG), player vs. player, interactive fiction, and online chat, known as MDU..

The MUD1 game was based on text instead of graphics, that originated the MUD generation and evolved into the Massively multiplayer online

role-playing game (MMORPG). An RPG genre for computers in which users interact through a virtual game world.

In 1996, in the city of Helsinki, Finland, the Helsinki Telephone Company launched what was called the first online virtual 3D representation of an entire city, with a goal to map it thoroughly. The project was eventually renamed Virtual Helsinki Helsinki Arena 2000 Project, and parts of the city in both modern and historical contexts have been represented in 3D ((Linturi, Koivunen, & Sulkanen, 2000).

OPEN WONDERLAND

This Section will provide a brief overview of Open Wonderland (OWL) – formerly known as Project Wonderland – comprising its motivation, basic technology, features, resources, and whom it is intended to.

Development Viewpoint

OWL is a toolkit for creating 3D collaborative virtual environments, through the use of free, open source code under the General Public License (GPL v2) (GNU Project, 2007). It has been developed entirely in Java programming language.

The choice of language was determined by the project's main sponsor at the time, Sun Microsystems (OpenWonderland, 2010a). The following Picture shows an example of an OpenWonderland application.

After *Oracle* acquired *Sun Microsystems*, it announced that it would no longer directly fund *OWL*. Thus the *Open Wonderland Foundation* was created for continuing the project, which was then renamed *Open Wonderland* (OpenWonderland, 2010a), for legal purposes.

Every tool or resource used in developing *OWL* is made with open source code, whereas all financial resources geared to develop the project

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