Chapter 17

Second Life:
A Virtual World Platform for Profiling Online Behavior for Network and Information Security Education? An Initial Investigation

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ABSTRACT

Virtual worlds have become increasingly popular with the growth of high speed Internet access worldwide and online gaming. The popularity of massively multiplayer online role playing games (MMORPG), such as World of Warcraft, and virtual worlds, such as Second Life, has created an opportunity for educators to build a learning platform that students can readily relate to. This paper explores some of the possibilities of utilizing one particular virtual world (Second Life) as a platform for network and information security training with a focus on the profiling of online behavior. In particular it describes the initial attempts of its use at one of the Pennsylvania State University's campuses.

INTRODUCTION

Second Life (SL) is a virtual world (VW) that has become very popular with academics, corporations, and the general public during the last half decade. We are currently exploring its use as a platform for Network and Information Security education. This area of educational training is becoming ever more important as the world relies more and more on the Internet and information technology. It includes all aspects of "cybercrime" including terrorism, corporate and governmental espionage, theft, and other

forms of illegal online behavior. It also includes the safeguarding of an organization's systems, networks, and data assets along with the planning for disaster recovery, intrusion prevention, and other risk management associated with such safeguarding. This work explores the use of SL in educating students in this area with a particular focus on its use in profiling online user behavior and gleaning information about user usage and habits, theoretically without the fear of violating privacy laws. Although the profiling of online behavior would be most commonly used for identifying or confirming suspected cyber criminals, it also has potential for use in a corporate setting. Thus, such an environment provides a potential training platform for students. One question we explore is that of how far a student or class can go before such educational activities in a virtual environment do violate real world laws.

WHAT IS A VIRTUAL WORLD

Virtual worlds have become an ever-increasing part of modern culture. Some of the more popular ones include strictly fantasy gaming, such as World of Warcraft while others seek to mimic the real world to varying degrees. It is this second category that the VW entitled "Second Life" (SL) falls into. Second Life is a server hosted VW with a supposed user base of over 20 million people (Second Life, 2010). Second Life is hosted by a company called Linden Laboratories that is based in California and runs the VW on its dedicated servers. SL uses servers connected in a grid fashion to form a distributed computing virtual environment where avatars can move freely between different areas of virtual real estate called "islands".

What makes SL interesting from an educational point of view is that since it is not a true gaming environment, where there is a goal of winning or defeating an adversary, and a stated beginning and end goal, it approaches more of a real world feeling when users are immersed in it. This means that SL has the potential be used as a simulation environment for education purposes and many universities and educational organizations have presences in SL. One of us (Bartolacci) has created a virtual campus on SL and regularly holds virtual lectures and class meetings with students. The ability to program objects using Linden Scripting Language to perform functions in SL is what gives it some of its usefulness for educational purposes in the information systems area. The fact that most of SL is also open source creates the opportunity to build objects for specific purposes. When combined with the fact that there is limited formal privacy in SL, meaning that the online status of a given avatar is readily available to anyone and that other means of privacy are easily bypassed, SL presents an opportunity for educators in the Information and Network Security arena to involve students in an immersive environment without any real world risks or potential for harm.

WHAT CAN BE ACCOMPLISHED IN SECOND LIFE

Beyond the mundane use of holding class lectures, SL presents an environment where concepts such as cyber eavesdropping, profiling of online user behavior, and even would-be criminal acts such as fraud, can be demonstrated with little or no real world harm or consequences. Due to the open nature of online behavior, great amounts of information about SL users (called residents by Linden Laboratories) can be gleaned without fear of violating privacy laws. The only question that arises with this potential use is when such activities approach a form of cyberstalking if such activities extend beyond SL for some reason.

For example, one of us (Bartolacci) asked students to profile one aspect of online user behavior by examining the online times (logins and logouts) of a group of avatars. Such an exercise would have the real world correspondence to tracking the online habits of potential terrorists or

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