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## **How Open Source Software Will Affect Virtual Worlds**

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## How Open Source Software Will Affect Virtual Worlds

By Francis X. Taney, Jr. Shareholder, Buchanan Ingersoll & Rooney PC

Open source software has been and continues to be a transformative force within information technology. Indeed, open source software competes with proprietary software across a full spectrum of applications.

Virtual world platforms and applications are no exception. Linden Research, Inc., provider of the Second Life virtual world platform, has released the majority of its client-side code under the GNU General Public License ("GPL"). There are also a number of other open source projects, such as Open Simulator, Multiverse, and realXtend, that offer open source software designed to enable users to launch their own virtual worlds. In addition, there are an increasing number of open source software applications available for particular items of functionality that are of potential use in the virtual world that developers may incorporate into open source and non-open source virtual world platforms.

From a technical standpoint, open source will likely accelerate the development of virtual world technology, and lead to a proliferation of virtual worlds and a corresponding expansion of the volume of virtual worlds related commerce. From a legal standpoint, the intersection of open source and virtual worlds promises to raise a host of legal issues, some of which this article will explore.

### ***Copyright Law as Applied to Virtual World Technology and "Virtual Objects"***

Given the nature of software, and open source software in particular, the rise of open source software in virtual world platform development will inevitably involve a host of copyright law issues. Copyright protection extends to original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. 17 U.S.C. § 102. To qualify for copyright protection, a work must be the original work of an author, i.e., not copied from a preexisting work, and exhibit a minimal amount of creativity. *Feist Publications, Inc. v. Rural Telephone Service Co., Inc.*, 499 U.S. 340 (1991). The creativity requirement is not very difficult to satisfy; even a slight amount of creativity will suffice. *Id.*

A copyright owner has the exclusive right to, among other things, display, copy and distribute the copyrighted work. 17 U.S.C. § 101. A copyright owner also has the right to create modified versions or "derivative works" based on the original work. 17 U.S.C. § 101.

The software used to operate virtual world platforms, as well as most of the so-called "virtual" objects and other content created and sold by the merchants and content creators within Second Life and other virtual world platforms, are copyrightable subject matter under established copyright principles. For example, courts have long recognized that the computer graphics associated with video games satisfy the fixation requirement in 17 U.S.C. § 102, in that the graphics are embodied in the memory devices of computers, from which the graphics may be perceived with the aid of other components that interact with the memory devices. *See, e.g.*,

*Williams Electronics, Inc. v. Artic Intern., Inc.*, 685 F.2d 870 (3d Cir. 1982). Graphics resulting from the operation of virtual world platform software, and individual virtual objects created or placed in a virtual world, are therefore potentially copyrightable as visual or audiovisual works.

In addition, courts have also long recognized that the object and source code underlying an item of software is copyrightable as a literary work. *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3d Cir. 1983). In appropriate cases, copyright protection may extend beyond the literal elements of a computer program to the non-literal structures of the program. *Computer Associates Intern., Inc. v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992).

There is no reason to believe that courts will treat the code underlying virtual world platform software and individual virtual objects any differently than the courts in these prior cases. As in other areas of the law, we can expect that an increase in the volume of commerce around virtual worlds will be the catalyst for the development of a body of case law specific to virtual worlds. To date, there has simply not been the volume of commerce necessary to generate a sufficient number of disputes of enough magnitude to generate precedent. By making virtual worlds technology more accessible to would be entrepreneurs, open source promises to accelerate the growth of virtual world commerce, and with it the development of virtual worlds law.

### ***Open Source Software Licensing***

Many technologists and information technology industry observers think of open source software as mainly a class of technology. In reality, open source is as much a legal and business innovation as it is a technological one.

Most commercial software companies, with few exceptions, make their software available to their customers by way of a non-exclusive license. This is because in most cases, software companies derive their revenues in large part from licensing the same software, or slightly modified versions of the same software, to a multitude of clients. Conveying a non-exclusive license to use the software ensures that the software owner is free to convey licenses for use of the same software to more than one customer.

Typically, these licenses (hereinafter "commercial" licenses) contain numerous restrictions on the manner in which a customer may use the software. Common restrictions include limits on the number of machines on which the software may be deployed, the number of people who may use the software as well as the purpose or purposes for which customer may use the software. Of equal significance, commercial software licenses typically preclude customers from redistributing the software, or from modifying or creating derivative works based on the software.

Open source software licensing has developed as an alternative to traditional commercial software licensing. Many users of open source take issue with the philosophy behind commercial software licensing, and believe instead that software creators should not restrict the use of the software they distribute in the manner typically done through commercial software licenses.

To facilitate freer use, modification and distribution of software, open source software adherents make software available to users pursuant to so-called "open" licenses that differ significantly from commercial software licenses. While there are numerous so-called open licenses in use, most of the open licenses allow free use, modification, copying and distribution of the applicable software. Many provide for access to the source code for the software, which is the human readable version of the code that developers can use to determine how the software was written. Two of the most widely used open source software licenses are the GPL and BSD licenses.

Often there are communities of developers contributing to the development of particular open source applications. Open source advocates point to this community effort as a reason why one can expect open source software projects to progress at least quickly and efficiently as commercial software applications. Because developers can access open source software for free, and at the same time save development time and cost, open source software can be very attractive to software developers.

### ***Distribution of Open Source Software***

Despite the commonalities in philosophy and relative freedom of use common to many open source software licenses, not all of the licenses are the same, and many of the licenses have attributes that can complicate commercial use and distribution of open source software. A significant number of the licenses, including the GPL, provide that if a user combines code subject to the GPL with code that is not subject to the GPL, the user must release the source code to the entire body of code in connection with any distribution of the code. Commentators have referred to this feature of the GPL and similar licenses as "viral," meaning that the including the GPL code in the overall code base "infects" the overall code or application.

While the requirement to release the source code to the entire application may not concern some open source software users, an unwary company that intends to sell or license software or a device with imbedded software by way of a traditional commercial license may experience an unpleasant surprise if its developers had included GPL code in the software or application. If the company could not re-engineer its software or device to remove the GPL code, the company would be forced to release the source code to the entire application in connection with any distribution of the application. This source code release requirement may or may not be consistent with the company's strategy to commercialize its software, and in fact, may completely nullify the company's strategy.

Moreover, failure to release the source code in connection with distribution of software subject to the GPL license, or similar license, can expose a company to a copyright infringement lawsuit from the creator of the software. Items of relief potentially recoverable or obtainable under the United States Copyright Act include disgorgement of profits derived from the infringing conduct, attorneys' fees, injunctive relief, impoundment of infringing articles, and/or statutory damages as much as \$150,000 per item infringed in the case of willful copyright infringement. This is more than an academic matter, as the Free Software Foundation, a non-profit organization the advocates the use of open source software, has in the last year brought a number of well-publicized lawsuits on behalf of copyright owners against companies that had used open source software in their commercial offerings without complying with the license's requirements with respect to the release of source code.

Another complication that may arise from the use of open source applications is that, as noted previously, there are a large number of different open source licenses, and the terms of these licenses can differ significantly. Licensing problems may arise when a company combines several open source applications subject to competing open source licenses into a combined body of code. This is because some licenses, known as "strong copyleft" licenses, require that anyone using the software may only redistribute the software pursuant to the same license, or a license that places no additional restrictions on the use or redistributions of the software. In a situation in which portions of an application are subject to two or more conflicting open source software licenses, distribution of the code cannot occur in compliance with any of these licenses. This condition could subject companies attempting to distribute such applications to exposure for copyright infringement as well.

These issues have significant potential import for the coming proliferation of virtual world platforms and virtual world commerce. As more would-be platform owners develop competing virtual world platforms, or go to market with software applications useful for virtual worlds, it is all but inevitable, given the substantial inroads open source has already made in the virtual world space, that many of these platforms and applications will use open source software. Because there is not a particularly high corporate awareness of the prevalence of open source software and the copyright issues it poses, it is likely that a significant number of these enterprises will attempt to distribute applications containing open source software in a manner inconsistent with the licensing requirements.

### ***Patent Issues***

The rise of open source software affecting virtual worlds promises to raise issues in areas beyond copyright. One such area is patent law.

Computer programs consist of algorithms. The United States Supreme Court has held that algorithms and other mathematical formulas are akin to laws of nature, natural phenomena, and abstract ideas, which are not patentable in and of themselves. *Parker v. Flook*, 437 U.S. 584 (1978).

In *Diamond v. Diehl*, 450 U.S. 175 (1981), however, the Supreme Court held that where a process incorporated a computer program as one step in the process, the computer program may be patentable subject matter when used as part of the process. In *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed Cir. 1998), *cert. denied*, 525 U.S. 1093, the United States Court of Appeals for the Federal Circuit held that where the inventor is claiming protection in an application of an algorithm that produces a "useful, concrete and tangible result," as opposed to protection in the algorithm in the abstract, the invention is potentially patentable. In *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, the Federal Circuit applied the *State Street* test to a business method incorporating an algorithm.

The increasing role of open source in virtual world development will mean that development will proceed in a decentralized fashion, in many locations, often simultaneously. This will increase the potential for patent infringement claims and litigation. This is because unlike copyright law, independent creation is not a defense to an infringement claim. If a developer creates code that infringes on a business method patent, that developer is liable for patent infringement regardless of the fact that the developer did not copy or refer to the code

with patent protection, or otherwise was acting innocently. By contrast, in the copyright context, the fact of independent creation would be fatal to an infringement claim.

Another complicating factor is that, in contrast to the prevailing practice in the commercial software industry, open source software licenses almost never carry with them any warranties of any sort, including warranties of title or non-infringement. Enterprises that use open source are not going to have the benefit of any warranty or indemnification from the creator of the software they are implementing. Further, while some open source software licenses grant explicit patent licenses of varying scope to practice inventions inherent in modifications that the recipient of the open source software make subsequently make, many other licenses do not. This means that in some cases, companies that use and modify open source software may be subject to patent infringement claims from the persons or entities from whom they received the code, if those persons or owners separately and previously created inventions relating to the same subject matter.

It should be noted that sellers and users of commercial software are prone to much the same exposure for patent infringement, and in that sense, the patent infringement exposure issue described above is not unique to open source applications. However, as the virtual world industry enlarges and diversifies, it is reasonable to expect that one or more of the emerging competitors will attempt to gain a competitive advantage through patent protection and/or litigation. The decentralized nature of the software development that will likely occur in the virtual worlds space promises to complicate the picture and impact any such patent based strategies.

### ***Conclusion***

The application of open source software licensing and development to virtual worlds platform development involves the intersection of two transformative technological forces. This intersection will cause explosive commercial growth and, over time, create a body of law specific to virtual worlds, both with respect to intellectual property issues, which this article has explored, and otherwise. The development of this body of law will, in turn, affect the course of the industry in a substantial way, both in terms of determining the individual winners and losers, and in providing all of the participants in the industry with the rules by which the game must be played.