Unit 2 Research Project

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IT590 Legal and Ethical Issues in IT

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01/06/2015
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Abstract

The research in this project examines the complex subject of digital intellectual property. There are rising concerns that the copying and sharing of digital content is hurting artists and publishers (Oberholzer-Gee & Strumpf, 2010). Consequently, there have been legal and technology-based attempts to protect online intellectual property. Using legislation, copyrights, and digital rights management, artists and publishers can begin to protect and enforce intellectual property rights. To gain an appreciation for digital property rights, the topics associated with intellectual property have been researched, and a discourse prepared for review. The research encompasses intellectual property, digital rights management, software patents, duplicating software functionality, and protecting online intellectual property rights.

Keywords: intellectual property, patent, copyright, digital rights management
As the world becomes more and more digital, there is an increased need to protect the digital intellectual property of artists and publishing companies (Oberholzer-Gee & Strumpf, 2010). The Internet, which started off as a way for academic and scientific communities to communicate, has grown into a global digital pipeline (Hayes, 2014). As such, this pipeline of data now facilitates the mass reproduction and world-wide proliferation of what is considered to be intellectual property. This raises serious questions about the protection and the management of digital content. Thus, examining intellectual property, and its relative components, are essential to understanding how technology is affecting the creative rights of artists and publishers in a contemporary era.

Intellectual property is defined as a person’s unique work, which has the legal right to be protected by law for a specific amount of time (Saha and Bhattacharya, 2011, para. 2). What constitutes as unique work? Work is unique if it is an original invention or creation, such as any original work produced in science, art, music, or literature. It can be imagined, that if a musician writes a song, that song should be legally theirs. Likewise, if an inventor designs a new method for fuel injection, there should be certain intellectual property rights that are enforced by law. In an online world, there are specific types of intellectual property that are associated with computers and the use of the Internet; they include, check-out bin technologies, trademark keywords, and online music.

In 1999, Amazon.com, an online commerce site, filed a patent that detailed a type of check-out bin technology, known as 1-click; this technology allowed customers to make online purchases using a single-click. Soon after Amazon.com had filed the patent, Barnes & Noble, a book store, started an Express Lane option at its website; the express option permitted customers
to make purchases using a single-click. Due to a patent violation, Barnes & Nobles was sued by Amazon.com for infringement (Bostwick, 2009). The 1-click technology demonstrates a valuable lesson about intellectual property; it is critical to identify who has the rights to a specific form of technology before claiming ownership—otherwise, be prepared to suffer the consequences.

In trademark keywords, the words themselves have a legal owner. Trademark keywords are used in search engines to point to an owner’s website or commercial products. The improper use of these keywords can lead to trademark infringement. As an example, in a 2006 trademark infringement lawsuit, Google was charged with selling the keyword Rescuecom (Bostwick, 2009). Rescuecom, a tech support company, noticed searches for the Rescuecom name was being returned in Google’s search engine results; however, the search results also included Rescuecom’s competitors. By Google allowing the competitors of Rescuecom to use the company name as a keyword, Google had violated trademark law (Bostwick, 2009). Clearly, understanding how trademark keywords affect a company’s online presence, can be the difference between the success and failure of an online business strategy.

Another example of technology-based intellectual property, is online music. Today, popular sites such as Pandora and Spotify exist to stream music directly to devices, which ultimately are meant to protect the intellectual property rights of the respective artists; however, those services have not always been available (Westergreen, 2013). In 1999, a file-sharing site named Napster was brought online (Quinn, 2013, p. 189). Napster’s primary purpose was to maintain file servers, where music could be uploaded and shared with thousands of people. Of course, Napster did not own the rights to the music, nor did they have the authorization to store and share the music files. The Recording Industry Association of America (RIAA), a company
that protects intellectual property, sued Napster (Quinn, 2013). The lawsuit was successful, which forced the company to shut down all its servers. The lesson to be learned, is that violating intellectual property rights is liable to lead to lawsuits, result in the permanent removal of services, and tarnish company reputations.

When considering how to protect intellectual property, there are two methods—patents and copyrights. A patent is a type of property right granted by the U.S. government to an inventor; the property right excludes other people and companies from taking the idea and using it as their own (United States Patent and Trademark Office, 2014). Patents usually include inventions, machines, devices, and products related to manufacturing and business (United States Patent and Trademark Office, 2014). To obtain a patent, an inventor must submit a standard patent application to the U.S. Patent and Trademark Office. Patents can be used to protect intellectual property, while at the same time having the ability to publicly disclose the details of the invention.

A copyright describes the protection of a different kind of intellectual property. Unlike patents, which tend to cover devices and machinery, copyrights include unique works of authorship, such as art, music, movies, literary works, and software. Conversely, these types of creations use a physical medium, whereas patents only require the working details of an invention (United States Copyright Office, n.d.). For a person to obtain a copyright, a standard application for copyright must be submitted to the U.S. Copyright Office. It is important to note, copyrights are much easier to obtain than patents; they are cheaper and last much longer. A typical copyright application fee is fifty-five dollars, and will last the entire life span of the author, plus an additional seventy years (United States Copyright Office, n.d.). In contrast, the
patent application fee is four hundred and fifty dollars, and the ownership of a patent usually lasts twenty years or less (United States Patent and Trademark Office, 2014).

**Digital Rights Management**

If intellectual property is digital, like the content that is available on the Internet, it may require protection that extends beyond obtaining a copyright. Online content presents unique challenges in maintaining the integrity of digital files. This is where implementing digital rights management (DRM) can play a key role in reducing online copyright infringement. DRM technologies track, control access to, and encrypt digital content (Quinn, 2013, p. 184). Three popular DRM technologies include the use of watermarks, encryption, and proprietary operating system (OS) copyright software. Watermarks, more appropriately digital watermarks, are used to mark and track digital content. The watermarking technique uses stenography to embed data into digital media, such as a song or movie; this data could be visible or hidden, but normally contains the distributor, publisher, and release date (Chang, 2011).

Another common DRM technology is encryption. A cryptographic system is used by some companies to secure digital products; and, the only way the content can be accessed, is through a volume license or key (Chang, 2011). For example, when a user downloads a pirated copy of a movie, and they play that movie in an operating system media player, the player checks the volume key. If the volume key does not match the originally embedded key, the video will not play; this is because the vendor has chosen to encrypt the file, and the volume key acts as a sort of copyright enforcer. This kind of encryption can also be used to stop the illegal copying of digital content on CD and DVD discs (Chang, 2011).

A third DRM technology employs the use of proprietary OS copyright software. Vendors can create software that works with the OS to protect digital intellectual property. This
can prevent the illegal copying, distribution, and manipulation of digital content (Chang, 2011, para. 2). The method works by creating layered systems to check the authenticity of digital files. If the authenticity of a file cannot be validated, the content cannot be accessed. As an example, Sony developed the SecuRom product. The purpose of SecuRom was to prevent music and movies from being copied using a CD-ROM device (Chang, 2011). If Sony could disable the copying of discs, this would also prevent users from tampering with the digital content; if the content on discs cannot be manipulated, it also cannot be uploaded and shared online.

Watermarks, encryption, and proprietary OS copyright software each have their pros and cons. Watermarks tend to be easy and cheap to implement, whereas encryption and OS copyright software require the owner to work with the OS maker. Encryption is a solid technical solution, but involves the management of volume keys (Chang, 2011). Proprietary OS solutions will prevent users from exploiting copyrights, however the technology tends to be costly, and can quickly become outdated (Chang, 2011). All three of these approaches do require effort from the artist or publisher; however, if the need to protect intellectual property is critical, implementing DRM is a good solution. Something worth mentioning, using DRM to protect intellectual property should be used in addition to obtaining an official copyright, not as a replacement.

Software Patents

There is the belief that unique software should be patented; however, patentability of software continues to remain highly controversial. To programmers and application designers, software is valuable intellectual property, and as such, should have the option to be patented. The primary issue with patenting software is one of reliability. The inconsistencies in the patenting process can be seen in the examination of the patent, the evaluation of prior software features and functions, and the overgeneralization of novel ideas (Computer Professionals for Social
Responsibility, 2002). The first issue pertains to the examination of the software patent. There are a limited number of computer scientists that work for the Patent Trade Office, which can result in inexperienced patent clerks improperly classifying patents and missing copyright infringement. Also, software tends to have many moving parts. The complexities of software algorithms and programming code make the examination of the patent a daunting task, even for an experienced person.

When a patent clerk examines a patent, they must search for prior work; they do this to research claims for, or against, known ideas. For software, this search process returns a colossal amount of literature; there are magazines, journals, user manuals, programming code, websites, and the list just goes on (Computer Professionals for Social Responsibility, 2002). As a result, the examiner has the impossible task of verifying that a specific software feature or function does not already exist. Without knowing whether or not the software idea is indeed unique, the examiner must reject the patent. Or, in an even worse scenario, the patent clerk does not find enough data to support the patent, but grants the patent anyway. This will lead to numerous patents being granted that detail unoriginal software.

Another potential issue with software patents is a lax obviousness standard (Computer Professionals for Social Responsibility, 2002). When developing software, programmers and designers often create functions to reduce complexity and increase interoperability; this is common practice. The problem is, a patent clerk may look at this, and consider a specific feature or function novel, when in actuality it is obvious. It is the general rule of the Patent Trade Office to reject all patent applications if the idea is obvious; as there is no obviousness standard for software, patents will be granted for unoriginal work. Eventually, this will stifle creativity and hinder innovation, as the influx of patents will prevent other programmers from using similar
code. All three of these suggested problems have the potential to negatively affect the patenting of software. Thus, due to the intricate nature of software, and the limited amount of computer science knowledge at the Patent Trade Office, the software patenting process is deemed contentious at best.

**Duplicating Functionality**

Software development can be a complex process. To save time, software designers and programmers will often duplicate functionality from other software products; this approach does increase the risk of copyright infringement. It would be easy to acquire some retail software, reverse engineer it down to its core pieces, and then adapt those components into new software; this is considered illegal, and is a blatant violation of copyright law (Quinn, 2010). To not violate copyrights, a company—that wants to duplicate functionality—must formulate a software development strategy. Companies could develop a program exclusively based upon its own design ideas; this would eliminate the risk of copyright infringement. However, the problem with this approach, is that the end product may not be very competitive once it enters the consumer market; it may lack features and functions that customers are used to using. A better strategy is a “clean-room” approach.

In a clean-room, there are levels of separation between the design and development teams (Quinn, 2013, p. 198). For example, a company wants to develop a new word processor application. Rather than the designers and programmers examining an off-the-shelf product together, the teams are split up. The designers are on team one, and work on determining the characteristics, features, and functions of the word processor; they may even draw inspiration from a retail product or even multiple other software products. Team two, the development team, will not have access to, nor see any original source code. The developers will only use the
technical specifications provided to them by the designers. This separation of teams permits the developers to code and debug the new word processor application in total isolation, thus guaranteeing the software code has not been copied, not even in part. Using this strategy, companies can then provide proof to their competitors [if necessary] that the word processor is based upon new code, and that no copyrights have been violated.

**Online Rights**

To protect online intellectual property rights, a holistic approach needs to be taken in the development of an effective online strategy. This strategy should include the registration of the intellectual property, monitoring the marketplace for improper use of the intellectual property, and defending infringement, if and when it happens (Hyatt, 2010). Long before allowing access to digital content, it would be best to fully understand copyright law—what it protects, and what it does not protect. Once copyright law has been reviewed, digital content should be officially copyrighted. To do this, the owner of the intellectual property must submit an application to the U.S. Copyright Office. When the copyright has been granted, the digital files can then be made available online. Or, extended copyright measures can be taken to further protect the digital intellectual property; for example, DRM technologies can be implemented at this time. After the digital content has been made available online, the last step is to monitor the marketplace for copyright infringement (Hyatt, 2010). This last step is critical to maintaining the integrity of online content. When copy infringement does happen, it should be addressed immediately; sometimes, a simple email sent to a webmaster, or to an Internet hosting service, can resolve the problem; other times, legal action may be required. Either way, it is the responsibility of the owner of the online content to enforce copyright law through action.
Conclusion

Intellectual property defines a type of creation or invention that merits legal protection. As such, there are actions that artists and publishers can take to obtain legal ownership of intellectual property; two of these methods include filing for patents and submitting applications for copyrights. If the intellectual property is destined to become online digital content, extended measures may have to be taken to further protect copyrights. DRM technologies, which include digital watermarks, encryption, and proprietary OS copyright protection, will reduce online copyright infringement (Chang, 2011). When it comes to creating new software, understanding copyright law will be critical in the design and development stages. A safe approach—that will reduce the risk of copyright infringement—is to use a clean-room strategy; this is where there are levels of separation between the design and development teams. Ultimately, the burden of responsibility falls on the owner of the intellectual property. It is the artists and publishers that must understand their rights, educate themselves with the law, and learn to leverage technology in ways that provide the greatest amount of copyright protection.
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