



An In-depth Analysis on Intellectual Property Problems Confronted by Local Area Network Information Resource Sharing in Diverse Industries

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Abstract. Sharing local area network (LAN) information resources is one of the most important approaches to accelerate informatization construction in diverse industries. Throughout the process of constructing, disseminating, and storing LAN information resources, various intellectual property problems may occur. The key to solving these problems is to analyze the work processes involving intellectual property rights, handle authorization issues properly, and utilize technological means to prevent infringement.

Keywords: Local area network, information resource sharing, intellectual property, infringement, information management.

1 Introduction

Local area network (LAN) of certain industries can be defined as an internal computer network that is physically isolated from the Internet, which uses the same technology as the Internet and is established within an organization of certain industries to share information and/or provide communication services for relevant personnel of the organization. In recent years, international competition has been focusing on technologies of network information management digital processing, and of digital information resource construction, to which many countries worldwide have input considerable personnel and invested enormous funds in the research and development of these technologies^[1]. With the wide application of computer, communication, and network technologies in LANs, the construction and utilization of information superhighway today have been providing an unprecedented environment and atmosphere with favorable conditions for large-scale sharing of LAN information resources.

Intellectual property refers to the personal and property rights enjoyed by intellectual workers over the knowledge products generated from their intellectual creation or innovation activities. As the construction of China's information resource continues to accelerate, the intellectual property problems occurred throughout the process of sharing information resource have become increasingly prominent.

In April 2002, Professor Chen Xingliang from Peking University accused National Digital Library of China Co., Ltd. of copyright infringement, claiming that the company had infringed his copyright by uploading his three works to the "National Digital Library of China" website without his consent, authorization, or permission^[2]. It has been universally acknowledged that the information resource sharing and the exclusiveness of copyright contradicts each other, for which reason various infringement problems have permeated each and every aspect of digital information resource sharing, becoming a bottleneck hindering the development of information resource sharing and a widely concerned issue in library industry.

Currently, the construction of LAN information resources is prospering. Although various companies and organizations are making great efforts in establishing information resource databases while promoting the dissemination of information resources within the LAN, however, there may be potential infringement of intellectual property rights. To solve the aforementioned infringement issues, effective countermeasures must be taken to prevent and/or avoid them, based upon which this study therefore conducts the following detailed analysis and investigation.

2 Infringement in Establishing Databases

The establishment of databases is the very core of constructing LAN information resource sharing. During the process of establishing an information resource database, diverse resources must be compiled and organized according to certain selection criteria and arrangement methods, thereby forming various databases. The selection and compilation of resources involve multiple rights of the original author/authors.

The Article 10 of the Copyright Law of the People's Republic of China clearly stipulates that the copyright owner has the right of publication (the right to decide whether a work should be made public), the right of authorship (the right to indicate the author's identity and sign on the work), the right to modify (the right to modify or authorize others to modify a work), the right to protect the integrity of works (the right to protect works from distortion and tampering), and the right of compilation (the right to select, arrange, and merge a work or its fragments into a new work).

According to the law, unauthorized using of board design of the books or journals published by the publisher will be charged of a civil liability infringement. Although LAN databases are only used within the local area, it is important to understand relevant copyright laws and regulations when establishing and developing databases and abstract index libraries to avoid infringement. For works protected by copyright, whether for partial or full use, authorization from the copyright owner must be obtained. For works without copyright, authorization from the author is also required before use.

The strategies of purchase and utilization can be adopted to deal with copyright issues during the establishment of databases.

2.1 The Strategy of Purchase

The database resources mainly include various compact-disc databases and online databases, for which the former can be purchased directly and used permanently, whereas the latter can only obtain its access. Any organizations or individuals responsible for the construction of LAN databases shall pay attention to understanding the legitimacy of the database itself when purchasing the database.

According to recent legislative and judicial practices foreign and domestic, it can be seen that databases can be included in compiled works and must not infringe upon the copyright of each work within the compilation. Nevertheless, many database developers enter their works into the database without the authorization of the copyright owner, which thus infringes on the interests of the owner. Therefore, when signing a purchase contract with the database developer, the buyer should request them to provide relevant copyright proof to indicate that the content in the database has been authorized by the author and the publishing house, or to specify in the contract that in case of infringement in the database, all legal and economic responsibilities shall be borne by the developer^[3].

As for the contract signed with the developer, the buyer should strive to maximize the benefits for LAN users, including but not limited to striving for the maximum number of users to log in to the database online simultaneously, and requiring the database provider to provide as many usages as possible, such as browsing, saving, downloading, and printing.

2.2 The Strategy of Utilization

Any organizations and individuals must comply with legal provisions and contract agreements when using the purchased database. They are not allowed to illegally copy, decrypt, or modify the database, to delete, hide, or modify the copyright statements and rights management information added by the database developer in the data content, and not allowed to use the database to provide services to unauthorized users. In addition, database users should also receive education on legal protection of databases, such as informing their users of behaviors that infringe on the rights and interests of data providers, and enabling them to use the database reasonably and legally. Once it is discovered that users may engage in infringement during the use of the database, managers should promptly prevent those activities from happening.

3 Infringement of Network Information Dissemination During the Process of Online Dissemination

The right to disseminating information on network is a right that belongs to the copyright owner and is determined in the form of legal norms. The Copyright Law of the People's Republic of China, revised and promulgated in 2001, clearly stipulates that "the right to disseminate information on network refers to the right to provide works to the public through wired or wireless means, so that the public can obtain the works at

the time and place they personally choose." Obviously, as a large-scale, multi-user network, LAN belongs to the abovementioned wired propagation methods. So the problem is, does the organization or individual responsible for disseminating information on LAN without copyright inevitably infringe on the right of disseminating network information of others when disseminating information? This cannot be generalized, because in legal theory, once the ownership of a specific right is determined, it does not mean that only its right holder can exercise the right, while other natural persons, legal persons, or social organizations can also obtain it through certain means that are contractual or legally permitted.

In order to effectively address the intellectual property issues confronted in the sharing of LAN information resources, modern science and technology should be adopted to protect the copyright of digital works. In addition to improving legislation to protect the copyright of digital works of information resources, it is also necessary to strengthen technical supervision and effectively prevent piracy and illegal copying by adopting advanced scientific and technological means. An overview of the methods that can be adopted under the existing technical conditions is presented as follows.

3.1 Adopt Encryption and Digital Signature During Network Transmission

With the development of computer technology and the popularization of the Internet, encryption and digital signature technologies can be used in the network transmission of digital works, such as asymmetric encryption technology and security protocols. Based on this, the application of digital signature technology can strengthen the clarity and authenticity of network transmission, prevent data from being tampered with and/or stolen. In addition, administrators can also set access permissions to distinguish and control different users accessing LAN information resources.

3.2 Digital Watermarking Technology

Load watermark identification into digital works (text, charts, photos, etc.) to display copyright information. When users use the work, the watermark mark will not disappear regardless of viewing, copying, or transmitting it. Currently, there are two loading techniques: watermark (watermark identification such as copyright information displayed on the surface of the work) and hidden watermark (watermark identification not visible to naked eyes). Hiding a string of encrypted numbers in legitimate text allows users to browse and read on the screen, but cannot copy (print or download, etc.), which allows users to only read on the screen. Once the text is copied, the watermark will clearly display copyright information in the center of the text. To read the copied text normally, one must apply for legal copyright from the author or authorized copyright manager.

3.3 Certification Technology

Users can apply to the copyright management agency to obtain authentication, thereby establishing a trust relationship. Once the user engages in illegal copying, the copyright management agency will investigate or even sue.

4 Intellectual Property Issues in Long-Term Preservation of Digital Resources

Most digital resources on LAN have long-term circulation and long-lasting value, which requires long-term preservation. Long term preservation of digital resources can ensure that future users can retrieve, obtain, interpret, browse, understand, and explain various data and records at any time. However, the long-term preservation of digital resources confronts many intellectual property issues. This preservation is a dynamic process, and the intellectual property issues and solutions involved are closely related to the entire preservation process. After obtaining legal archiving rights and collecting digital resources, digital resource managers (organizations) need use data management modules to organize and compile long-term storage metadata, and then store digital resources and metadata in long-term storage systems while maintaining the persistent availability of stored data as needed.

4.1 The Impact of the Methods of Copying Data

The method of original copy, which copies data objects into a simple document storage system without any changes, mainly involves the issue of replication rights, especially the multiple replication rights generated by periodic copying processes. Organizing the copied updated data into the already stored resource system may require comparing and filtering the data, establishing associations between new and old data, deleting some data content, modifying some copyright information, etc., thereby affecting the protection of the integrity rights, modification rights, and copyright information integrity of the work^[4].

4.2 The Impact of Preservation Management Techniques and Methods

At present, the main preservation techniques include simulation, migration, update, etc. From an engineering perspective, simulation may result in the loss of functionality, which involves the issue of protecting the integrity of the work. The migration method is to migrate digital resources to different software and hardware environments to ensure that digital resources can be identified, used, and retrieved in the evolving environment, which involves replication rights and excessive replication issues. In addition, the above migration may involve transformations of code, format, structure, tags, etc., and may involve new metadata extraction. The update method primarily includes copying data from the existing storage media to new storage media of the same type, or

copying from one storage media to another, which mainly involves replication rights and excessive replication issues.

4.3 The Impact of Content Depth and System Mode of Saving

Simply retaining pure content data for digital resources cannot guarantee the reliability of long-term preservation. It is highly likely that after a period of time, no one will have a clear understanding of the content structure, encryption methods, compression methods, labeling methods, etc. of the saved data, which further results in the saved data becoming "invalid data"^[5]. Therefore, when collecting and storing metadata related to the storage and use of content data, it involves the basic requirements and components of long-term storage rights. During this process, we should clarify our storage management requirements and rights in long-term storage to avoid missing rights and infringement.

5 Conclusions

Storage systems can be categorized in terms of the degree of restoration services provided by long-term storage systems, i.e., hidden storage systems, semi-transparent storage systems, and transparent storage systems, which also involve different intellectual property issues. The first type mainly involves the right to copy content data. The second type may involve the protection of data integrity rights and of the rights of disseminating information on network, which requires complex rights transfer and protection mechanisms. The third type not only involves various aspects of storage processing rights, but also more complex rights constraints for both parties. Under the environment of LAN in diverse industries, the construction of information resource sharing emphasizes the development, construction, and utilization of digital information resources, while also paying close attention to intellectual property issues during the construction process. By combining legal measures with technical means, we can better promote the construction of digital information resources and ensure the healthy and sustainable development of digital library construction.

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