
Hideyasu Sasaki\textsuperscript{1,2}

\textsuperscript{1} Ritsumeikan University, Department of Information Science and Engineering
6-4-10 Wakakusa, Kusatsu, Shiga, 525-0045 Japan
\textsuperscript{2} Attorney-at-Law, New York State Bar
hsasaki@alumni.uchicago.edu

Abstract. In this paper, we discuss current issues and future trends on intellectual properties of digital libraries by interpreting legal concepts in engineering manner as a reference to Asia-Pacific DL researchers and practitioners. First, we discuss problems on copyright entities in digital libraries and patent objects in their retrieval mechanisms. Second, we formulate the conditions of copyrightability on the multimedia databases as digital libraries and the patentability on the parameter setting components in retrieval mechanisms. Third, we discuss a new direction for protecting numerical parametric information as trade secret embedded in the patentable parameter setting components.

1 Introduction

Digital library is the global information infrastructure in the networked society \[1\]. The intellectual property protection of digital libraries is a critical issue in the digital library community, which demands frameworks for recouping their investment in database design and system implementation. A digital library, as an information system, consists of digital contents stored in databases and their retrieval mechanisms. Intellectual property law gives incentive to advance appropriate investment in database design and implementation with two conventional types of intellectual property protection: copyright and patent \[2,3\]. Nevertheless, present legal studies are not satisfactory as the source of technical interpretation of the intellectual properties regarding digital libraries. The intellectual property protection of the digital libraries demands clear and concise frameworks.

In this paper, we would describe the technical and legal issues on digital library as the objects of copyright, patent and trade secret that have not been discussed with sufficient attention at the present. The principal concern of this paper is to present the conditions of copyrightability on the multimedia databases and the patentability on the parameter setting components in retrieval mechanisms with the directions for protecting numerical parametric information in the parameter setting components as trade secret. Our secondary concern is to provide researchers and practitioners in the DL community with legal references on the concepts, issues, trends and frameworks of intellectual property protection regarding digital libraries in engineering manner.

The scope of this paper is restricted within the current standard of laws and cases in transnational transaction and licensing of intellectual properties regarding digital library. Cultural diversity in the Asia-Pacific region is a source of legislative differences.
in intellectual property laws, though those countries join international trade agreements for intellectual property rights. We discuss the harmonized IP law standard regarding digital library with which the Asian-Pacific countries are able to keep up with the foregoing countries.

2 Background

In this section, we discuss three issues on the intellectual property protection regarding digital libraries. The first issue is the copyright protection of databases into which the digital contents are stored as form digital libraries. The second issue is the patent protection of the retrieval mechanisms of database systems or digital library systems. The third issue is the trade secret on the numerical parametric values for retrieval operations in the parameter setting components.

2.1 Copyright on Digital Libraries

U.S. Copyright Act [4] defines that a compilation or assembling of individual contents, i.e., preexisting materials or data, is a copyrightable entity as an original work of authorship. Gorman and Ginsburg [5], and Nimmer, et al. [6] state that a compilation is copyrightable as far as it is an “original work of authorship that is fixed in tangible form”.

Digital library systems consist of digital contents which are indexed and stored in databases for appropriate retrieval operations and the retrieval mechanisms which are optimized and applied to object domains of those databases. The entire database is copyrightable in the form of a component of “contents-plus-indexes” while static indexes or metadata are fixed to digital contents in a tangible medium of repository, i.e., database. Static indexes or metadata represent a certain kind of categorization of the entire content of each database (See Fig. 1).

The originality on the categorization makes each database copyrightable as is different from the mere collection of its individual contents. What kind of categorization should be original to constitute a copyrightable compilation on the database? The Court of American Dental Association v. Delta Dental Plan Association [7] determined that minimal creativity in compilation sufficed this requirement of originality on databases. Any standard or framework on the requirement is not clear in the technical or engineering meanings. A uniform framework on the categorization regarding indexes or metadata of databases must be formulated in engineering manner.

The European Union has legislated and executed a scheme for protecting a database including its content per se, known as the sui generis right of database protection [8][9][10]. That European scheme shares the same issue on the originality regarding the categorization of digital contents in databases.

2.2 Patent on Digital Library Systems

U.S. Patent Act [11] defines that a data-processing process or method is patentable subject matter in the form of a computer-related invention, i.e., a computer program.