Intellectual Property Protection on Multimedia Digital Library

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INTRODUCTION

The principal concern of this article is to provide researchers and practitioners in information science and technology with legal references on the concepts, issues, trends, and frameworks of intellectual property protection regarding *multimedia digital library* in engineering manner.

Digital library is the global information infrastructure in the networked society (Borgman, 2003). A digital library, as an information system, consists of digital contents in databases and retrieval mechanisms. The right protection of digital library is a critical issue in the digital library community that demands frameworks for recouping their investment in database design and system implementation. Intellectual property law gives incentive to advance appropriate investment in database design and implementation with two types of intellectual property protection: copyright and patent (Jakes & Yoches, 1989; Junghans & Levy, 2006).

Multimedia digital contents take a variety of forms including text, images, photos, and video streams, which often commingle in multimedia digital libraries. Nevertheless, present legal studies are not satisfactory as the source of technical interpretation of the intellectual properties regarding multimedia digital libraries. The intellectual property protection of the multimedia digital libraries demands clear and concise frameworks.

BACKGROUND

In this section, we discuss two main issues on the intellectual property protection regarding multimedia digital libraries. The first issue is the copyright protection of databases to which the multimedia digital contents are stored in multimedia digital libraries. The second issue is the patent protection of the retrieval mechanisms of multimedia digital libraries.

Copyright on Multimedia Digital Libraries

U.S. Copyright Act (2005) defines that a compilation or assembling of individual contents, that is, preexisting materials or data, is a copyrightable entity as an original work of authorship. Gorman and Ginsburg (2002) and Nimmer,

Marcus, Myers, and Nimmer (2006) state that a compilation is copyrightable as far as it is an "original work of authorship that is fixed in tangible form."

Multimedia digital libraries consist of multimedia 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. A database of a multimedia digital library is copyrightable in the form of a component of *contents-plus-indexes* while static indexes or metadata are fixed to multimedia digital contents in a tangible medium of repository, that is, database. Static indexes or metadata represent a certain kind of categorization of the entire content of each database in a multimedia digital library (see Figure 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 in a multimedia digital library? The court of *American Dental Ass'n vs. Delta Dental Plan Ass'n* (1997) 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 in multimedia digital libraries 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 (Aplin, 2005; Reinbothe, 1999; Samuelson, 1996). That European scheme shares the same issue on the originality regarding the categorization of multimedia digital contents in databases of multimedia digital libraries.

Patent on Multimedia Digital Libraries

U.S. Patent Act (2005) defines that a data-processing process or method is patentable subject matter in the form of a computer-related invention, that is, a computer program. The computer program is patentable as far as the "specific machine … produce(s) a useful, concrete, and tangible result … for transforming … " physical data ("*physical transformation*") (*In re* Alappat, 1994).

The computer-related inventions often combine means for data processing, some of which are prior disclosed inventions. A retrieval mechanism in a multimedia digital library consists of a number of *processes*, that is, methods or means for data processing in the form of combination of computer programs. A set of programs focuses on image processing, while another set of programs operates text mining, for example.

Meanwhile, the processes in a retrieval mechanism of a multimedia digital library comprise means or components for parameter setting which is adjusted to retrieve specific kinds of multimedia digital contents, for example, images in certain domains. The problem is that which process is to realize technical advancement (nonobviousness) on its combination of the prior arts and is to be specific/enable on its parameter setting. These two issues are emerging problems in the advent of multimedia digital libraries. Uniform frameworks on the novel combination and the specific parameter setting must be formulated in engineering manner, respectively.

FRAMEWORKS FOR RIGHT PROTECTION

In this section, we outline the frameworks for intellectual property protection regarding multimedia digital library: copyrightable database and patentable retrieval mechanism.
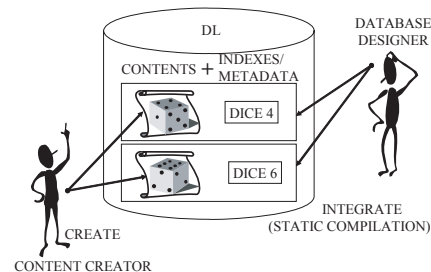
Multimedia Digital Library as Copyrightable Database

Our framework for copyrighting the databases of multimedia digital libraries determines which type of database should be copyrightable in the form of a component of contents-plus-indexes (Sasaki & Kiyoki, 2003, 2004, 2005b). The collection of static indexes and individual contents forms a component of contents-plus-indexes. That component identifies the entire content of each database, as is a static and copyrightable compilation. Copyrightable compilation is to be of sufficient creativity, that is, originality in the form of a component of contents-plus-indexes.

The set of conditions on the original categorization regarding indexes or metadata is formulated as follows (Sasaki & Kiyoki, 2004, 2005b). A categorization regarding indexes or metadata is original only when:

1. the type of indexes or metadata accepts discretionary selection in the domain of a problem database; otherwise, and
2. the type of taxonomy regarding indexes or metadata accepts discretionary selection in the domain of a problem database.

Figure 1. Copyrightable digital library as contents-plus-indexes

A typical case of nonoriginal categorization is a photo film album database which has indexes of consecutive numbers. That case does not accept any discretion in the selection of the type of indexes or metadata, or the type of taxonomy. The photo film album database uses its respective film numbers as indexes for its retrieval operations. The taxonomy of the indexes is only based on the consecutive numbering without any discretion in its selection of the type of indexes or taxonomy regarding a database in a multimedia digital library.

Meanwhile, the discretionary selection of the type of indexes or metadata, or taxonomy constitutes copyrightable compilation of minimal creativity, that is, originality on the categorization regarding indexes or metadata. A typical case of discretionary selection of the type of indexes or metadata is the Web document encyclopedia as a multimedia digital library. Suppose that a database restores pictures of starfish which are manually and numerically numbered by day/hour-chronicle interval that is based on their significant life stages from birth to death. That database is to be an original work of authorship as a copyrightable compilation in the form of a component of contents-plus-indexes. That database of discretionary type of numbering or indexing is an original, that is, copyrightable database in a multimedia digital library.

Multimedia Digital Library as Patentable Mechanism

Our framework for patenting the retrieval mechanisms of multimedia digital libraries determines which type of retrieval mechanism should be patentable in the form of a component of novel combination of prior disclosed processes and/or a component of specific parameter setting (Sasaki & Kiyoki, 2002a, 2002b, 2005a, 2005b). The frameworks focus on the

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