Semantic Expression and Execution of B2B Contracts on Multimedia Content

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Abstract. Business to business commerce of audiovisual material can be governed by electronic contracts, in the same way as digital licenses govern business to consumer transactions. The digital licenses for end users have been expressed either in proprietary formats or in standard Rights Expression Languages and they can be seen as the electronic replacement of distribution contracts and end user licenses. However, these languages fail to replace the rest of the contracts agreed along the complete Intellectual Property value chain. To represent their corresponding electronic counterpart licenses, a schema based on the standard eContracts and the Media Value Chain Ontology is presented here. It has been conceived to deal with a broader set of parties, to handle typical clauses found in the audiovisual market contracts, and to govern every transaction performed on IP objects.

Keywords: Contract, license, DRM, Intellectual Property, Ontology, MPEG-21.

1 Introduction

Perhaps audio and video distribution never received so much public attention as in these days. From the legal changes around the intellectual property (IP) to the newest gadget with new wondrous capabilities to appear in the market, mass consumption of media is nowadays in the spotlight of everybody. Less socially interesting but of no fewer economical importance are the transactions of multimedia material within the business to business (B2B) limits.

Technologies to serve media to the consumer have developed very fast, in a controlled manner through web portals and Digital Rights Management (DRM) systems and in non controlled manners through parallel channels like P2P networks, fast download servers, etc.

In the business to consumer (B2C) sector, economical transactions have been kept relatively simple —the consumer pays and in exchange can download a file or gain access to a football match streaming, for example. Digital licenses, expressed in one of the existing Rights Expression Languages (REL) allow some degree of complexity, where the transaction can be conditioned to the satisfaction of some conditions (e.g., of temporal or territorial nature), and can define more precisely the action the user can
make (perhaps render but not store nor print). In the B2B sector of audiovisual content, transactions happen in a similar way: there is flow of money and a flow of content in opposite directions, both of which can take place in the digital space. The quintessence remains the same as in the B2C case, but complexities arise in the conditions and the nature of the agreements, and a pre-filled license does not suffice. Written contracts regulate the economical transactions instead of digital licenses, and technology is not relied as it is in the retail segment.

The authors of this paper believe that part of this lack of acceptance of digital systems to create, manage, and execute the agreements is due to the lack of maturity in the technology, which has failed to express satisfactorily the terms of real contracts in a digital language and manage and execute them accordingly.

This paper recalls the previous attempts of expressing contracts in a digital language and their role as enforcement agents in information systems. It then particularizes to the case of the audiovisual B2B sector, which presents some recurrent patterns in the contract structure, and a very well defined candidate environment for their use: the DRM systems. The paper finally evaluates more complex contracts in the context of its execution and its role as steering documents.

2 Contract Representation

2.1 Contract Representation Overview

B2B transactions in the audiovisual market have been regulated with narrative contracts. Contracts are legally binding agreements and they are made of mutual promises between two or more parties to do (or refrain from doing) something. The terms of a contract may be expressed written or orally, implied by conduct, industry custom, and law or by a combination of these.

Efforts to represent contracts electronically are not new—they are as old as computers, and even making them part of digital systems is not new. Along with the development of computer sciences and network communications, the electronic representation of contracts played each time a more active role. Thus, in the earliest Electronic Data Interchange (EDI) standards, about forty years ago, only bills and invoices were exchanged, but slowly the exchanged messages became richer in their expressivity and their role in an integrated information system was each time more important.

Besides proprietary systems where information acquired an ad-hoc structure there have been some remarkable attempts to structure electronically the information in contracts. COSMOS [1] was an e-commerce architecture supporting catalogue browsing, contract negotiation and contract execution. It defined a contract model in UML and proposed a CORBA-based software architecture in a coherent manner. DocLog [2] was an electronic contract representation language introduced in the 2000 with a ‘XML like’ structure, which anticipated the next generation of XML-based contract representations. When XML was mature enough it was seen as a good container of contract clauses, and thus the new format specifications came under the form of a XML Schema or a DTD (Document Type Definition). An effort to achieve a common XML contract representation was the Contract Expression Language (CEL) [3],