The Legal Environment for Copyright Protection and Trust Management in China

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***Abstract*—This paper surveys the legal and regulatory environment surrounding copyright protection technologies, focusing on China in particular. The paper begins with a discussion of some of the interactions between law and technology in copyright protection, which has led to the creation of international treaties to protect the technologies that protect copyrights. A comparison of the various national responses to these conventions is presented, followed by a discussion of the structure and development of the relatively advanced Chinese system for copyright protection technology. The last section outlines some of the unique challenges that have arisen in China for copyright protection technologies and the businesses that depend upon them.**

Keywords: ***Trust Management, Digital Rights Management, Copyright Law, Anti-circumvention***

I. Introduction

Copyright protection is an essential risk management technique in the modern market for digital goods. Without copyright protection, producers of content have no assurance that they will be compensated for their investments in production. Traditionally, content producers have relied upon copyright law to protect their interests. In the analog era, this body of law, though not perfect, was generally sufficient to prevent the most egregious copyright infringements.

In the digital marketplace, however, traditional copyright law has been unequal to the challenge of protecting the interests of copyright holders against widespread infringement. The general availability of compression technologies and broadband communications networks has placed the means for casual infringement in the hands of ordinary consumers. As a result, content providers have increasingly relied upon technical means for enforcing their copyrights, primarily via Digital Rights Management (DRM) systems.

In practice, the technical and legal means of copyright protection reinforce one another. Legal structures act as a backstop against breaches in the technical protection mechanisms, and the technical mechanisms act as a dynamic and responsive first line of defense against infringement. Together, these two approaches allow content producers sell their work to consumers under compelling new business models while protecting their own investments.

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II. Copyright Protection Technology and the Law

Copyright laws do not enforce themselves. Before the invention of technologies such as conditional access and DRM, copyright infringements had to be evaluated and punished long after the infringements occurred. Rights management technologies act as an immediate first line of defense against infringement in a way that is impossible through legal means.

A. Technical and Legal Approaches Reinforce One Another

Copyright protection technologies such as DRM help to enforce copyright laws in a number of ways:

- By preventing access to copyrighted works that have not been legitimately acquired.
- By tracking and auditing the use of digital works so that copyright disputes can be addressed fairly.
- By preventing abuses of fair use and the doctrine of first sale in a world where copies of a digital work are indistinguishable from the original.

On the other hand, DRM technology is not infallible and is itself supported by law. For example:

- Anti-circumvention laws in legislation such as the Digital Millennium Copyright Act (DMCA) in the United States prohibit disabling technology that protects copyright.
- Technical measures may be protected by laws on patents and trade secrets. Attacks on these systems may therefore infringe patents or constitute theft of trade secrets.
- When consumers purchase digital content, they enter into a contract with the seller. Such contracts typically limit the ways in which consumer may use the content, and contain prohibitions on tampering with the technologies that protect the content. Misuse violates the contract as well anti-circumvention laws.

B. Copyright Protection and Trust Management

Trust management (TM) provides an essential link between the legal and technical approaches to copyright protection. Trust Management is based on authentication of identities for both human users and digital systems whose identities and other attributes need to be relied upon for DRM systems to function properly.

The legal intersection between TM and DRM centers on authentication. In a DRM system, DRM objects are issued and

actions are taken based upon authentication. For example, if a person authenticates to a DRM-enabled service to obtain access to a digital work, and the technical measures that protect that work are later found to have been compromised (especially in a way that can be traced to the authenticated user), the person may be subject to legal liabilities that would not exist for anonymous users. This intersection has implications at all levels of law, from the prosecution for copyright infringement to compliance with government regulations concerns the suitability and use of content.

Furthermore, TM provides a basis for reliable, predictable commerce between members of a DRM-protected content value chain that can be used in legal proceedings if one party fails to meet its obligations. This property of TM systems is based upon its ability to authenticate participants involved in the transaction.

III. International Treaties, Laws, and Regulatory Environments for Copyright Protection

While enabling an unprecedented degree of access to content, digital technology also creates new challenges for copyright protection legislation in every jurisdiction. National legislation on intellectual property tends to follow the principles of independence and territorialism, but the global proliferation of digital media over the Internet means that modern challenges in copyright law cross national borders.

In 1996, the World Intellectual Property Organization (WIPO) ratified the *WIPO Copyright Treaty* (WCT) and the *WIPO Performances and Phonograms Treaty* (WPPT), which require WIPO member states to amend their national legislation to address digital copyright protection issues.

The anti-circumvention provisions of these two international treaties are of particular interest, since they have had the largest impact on national legislation. The WCT requires that WIPO member states enshrine anti-circumvention provisions in their laws [WCT]:

> *Article 11: Contracting Parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law.*

The anti-circumvention language of the WPPT [WPPT] is similar, but applies specifically to recorded works such as phonographs and other performances.

The following sections discuss the ways in which various WIPO member countries have incorporated the WIPO treaties on copyright. These treaties came into effect in China in September 2007; the Chinese system is described in §IV.

A. The United States

As a technical leader, the US has evolved a sophisticated and relatively complete intellectual property system. The American copyright system is as old as the country itself. Article I, Section 8, Clause 8 of the US Constitution gives the Congress the authority to create a system for protecting patents and copyrights. The US has published three copyright acts in 1790, 1909, and 1976. Facing new challenges from network and digital technologies, US copyright law has been substantially amended every few years.

The United States was the first country to incorporate the WIPO treaties on digital copyright protection into national legislation, publishing the Digital Millennium Copyright Act [DMCA] in 1998. The DMCA is considered to endow the copyright owner with the right to control access to copyrighted works via technical means. As a result, acquisition of a work in a protected form does not imply the right to access or use that work in the absence of further permissions form the copyright owner — a marked departure from prior practice. The most important feature of the DMCA is that access restrictions are set by the copyright owner (and enforced by a technical means such as DRM) rather than the copyright act itself.

B. The European Union

In order to perform its obligations under the WIPO treaties on digital copyright protection, the EU also published anti-circumvention articles [EUCD]. There is no general legal system of copyright in the EU, as the copyright law in each member country is independent. However, the European Commission is trying to coordinate and integrate the copyright systems of its members, requiring eventual adoption of the anti-circumvention language [TOM].

In 2001, the EC issued the EU Copyright Directive (EUCD), to fulfill the regulations of the WIPO treaties. Eventually, individual EU members will include the international regulations in their own national legislation. The EUCD requires that the members offer sufficient and effective legal protection against fraud, vicious technological measures, and illegal facilities.

Beyond the EUCD, many EU members, (including the UK and Germany) have signed the WCT and WPPT treaties directly. Accordingly, their national laws have already been amended under the terms of these treaties.

C. The Pacific Rim

In 2000, Japan published the Strategic Guideline for Intellectual Property and announced its ambition to become an "intellectual-property-based country". It promulgated the Basic Law on Intellectual Property, and "promoted the policies to create, protect and utilize intellectual property, and to improve its international competitiveness". In 1999, Japan reformed domestic copyright legislation to effectively protect the technological measures for copyright protection, in compliance with the requirements of the WCT and WPPT treaties. Though the Japanese law is similar to the US DMCA, its anti-circumvention articles are different. In particular, the Japanese law does not prohibit direct circumvention [ZHU].

Australia launched an "Innovative Action Plan" aiming to promote its intellectual property strategy. Based on the free trade agreement between Australia and the US, Australia revised its intellectual property law in 2005. In order to meet the requirements on international protocols and the technical

Feature	US	EU	Japan	Australia	China
Prohibits direct circumvention	Yes	Yes	No	No	Yes
Restricts sale of circumvention technology	Yes	Yes	Yes	Yes	Yes
Exceptions for research	Yes	Yes	Yes	Yes	Yes
Exceptions for fair use	Yes	Yes	Yes	Yes	Yes
Exceptions for personal use	No	Yes	No	No	Yes
Exceptions can be contractually limited	Yes	No	Yes	No	Yes
Regulatory process for adding new exceptions	Yes	Yes	No	No	Yes
Regulatory process for adding new restrictions	Yes	No	Yes	Yes	Yes

TABLE I
A COMPARISON OF ANTI-CIRCUMVENTION PROVISIONS IN VARIOUS COUNTRIES

challenges of its own domestic content industry, it also regulates DRM [FTZ].

IV. The Chinese Legal and Regulatory Environment for Copyright Protection

After joining the WTO in 2001, China signed the WCT and WPPT treaties in June 2007. At that time, the regulatory framework for copyright protection and trust management had been in development for more than four years. In marked contrast to the situation in other countries, the copyright laws and regulations in China were developed in anticipation of market requirements rather than in response to market requirements. While most Western countries scrambled to amend their copyright laws to counteract the risks brought about by the rise of digital media and broadband networks, China began its reform well in advance of the development of its domestic digital media market. This approach has been very effective in China, particularly given the sensitive nature of many of the technologies used in copyright protection.

A. Copyright Protection Laws in China

In 2001, China revised its copyright laws [CC01]. Article 47(6) stipulates that copyright owners have the right to use technical measures to protect their copyrights. This was the first time that the term "technical measures" appeared in the copyright laws. In 2006, China developed *Regulations on Protection of the Right to Communicate on Information Network* [RPC], including anti-circumvention provisions conforming to international standards. These regulations define:

- "Effective" technical measures. Article 26(2) defines the term as follows: in order to obtain a license to access a protected work, it is first necessary to acquire some specialized information that is only available based on the authorization of the copyright holder.
- The behaviors to be sanctioned. The regulations classify direct circumvention of the technical measures as illegal, as well as offering technology or services that help other to circumvent.
- Limitations and exceptions. The regulations define a number of exceptions under which direct circumvention is allowed. They also define a process through which the copyright holder may grant exceptions. If the user and copyright holder cannot agree on terms, only then do the direct circumvention exceptions apply.

B. Trust Management Laws in China

As noted in §II-B above, trust management technologies are an essential technology for creating a robust and reliable marketplace for digital goods. As a result, China has developed the regulatory framework for these technologies to a relatively advanced level, starting at the highest levels of government.

In 2003, the CPC General Office issued *Document 27*, which declares the general guidelines and basic principles for national information safety and protection. The document also lists specific requirements for the information security protection hierarchy, regulations for the construction of network trust systems, and so on. Most of the detailed regulatory work was left for lower-level agencies to complete.

The 5th meeting of National Network and Information Security Coordination Team reviewed and ratified *Document 11: Some Comments on Construction of Network Trust System*. This *Document 11* defines the term "network trust system" as a complete system to be used for in identity verification, license management, and determination of responsibility. The Network Trust System consists of regulations, technical standards, and infrastructures. In accordance with the spirit of *Document 27*, it highlights the requirement to build up a network with "well-designed layout, controllable security, economic benefits, and orderly operation" — still fairly high-level requirements.

Over time, requirements outlined by *Document 27* and *Document 11* were turned into specific technical regulations. The *Electronic Signature Law* [ESL] was passed in the 11th Peoples Congress Standing Committee meeting. In this law, Ministry of Information Industry (MII) and State Encryption Administration (SEA) were given oversight of services and cryptographic technologies for trust management, respectively.

At present, regulations in this area are quite detailed, surpassing those of most other countries. The regulatory framework for information security has been developed far in advance of the actual market need. For example, the MII regulations describe processes for notification of key compromises, shutdown of authentication businesses, and even management of human resources at authentication services.

C. Regulatory Agencies

The responsibility for promulgating and enforcing regulations for trust management and copyright protection falls to a variety of government agencies. These agencies generally

have distinct areas of regulatory authority, but a given technical deployment of copyright protection technology may be governed by several such agencies in practice. This section describes some of the most important regulatory agencies in the area of protected digital media.

1) SARFT: The State Administration for Radio, Film, and Television (SARFT) audits, monitors, and regulates all media content to be broadcast or published in China. Legally, only contents that adheres to guidelines laid out in the *Regulations on Broadcast and Television Administration* [RBT] and other such regulations may be approved for broadcast. In practice, SARFT has broad subjective discretion to limit or prevent distribution of content deemed inappropriate. SARFT governs the activities of content providers as well as broadcasters and other content aggregators.

2) MII: The Ministry of the Information Industry (MII)[1] regulates online services and systems that access them. The regulatory roles claimed by MII include licensing for:

- Internet Service Providers (ISPs) that provide services of any kind over the Internet
- Internet Content Providers (ICP), ISPs that specialize in media and content services
- Network Operators that build private communications networks or virtual private networks over open networks
- Trust Management Operators that offer services for issuing certificates and managing their lifecycles
- Device Manufacturers whose devices access any of the aforementioned networks.

3) SEA: The State Encryption Administration (SEA) regulates the use of cryptography in commercial contexts. Their responsibilities include issuing guidelines for the use of ciphers and other cryptographic technology in applications such as digital signatures, certification, and authentication.

The requirements for such technologies are very carefully constructed, since cryptographic technologies are classified as state secrets. Due to the sensitive nature of this technology, many higher-level government agencies have issued guidelines that are implemented and enforced by SEA. For example, the State Council published a set of *Regulations on Commercial Code Management* [CCM] that govern research, production, and use of cryptographic technologies and define punitive measures for violations. Other agencies such as the Ministry of Public Security, the State Secrecy Bureau, the State Encryption Management Committee Office, and the State Council Informatization Office have all been involved in creating requirements and regulations for cryptosystems. In general, regulation of cryptographic technologies has proceeded from the top down.

4) NCA and GAPP: The National Copyright Administration (NCA) and the General Administration of Press and Publication (GAPP) are responsible for copyright registration. They punish piracy, and regulate the production, use, and exchange of copyrighted products. These agencies aim develop policies and regulations that require content producers and service operators to respect copyright obligations. Their responsibilities intersect those of MII in the area of concerning copyright responsibilities in the operation of networks.

[1]MII was absorbed into a larger ministry called the Ministry of Industry and Information Technology (MIIT) in 2008.

V. Unique Challenges in China

Based on the foregoing discussion of the legal and regulatory environment for trust management and copyright protection technologies in China, this section presents an overview of some of the unique challenges that apply to businesses in the digital media industry.

A. Overall Regulatory Burden

The regulatory agencies described above are the most important in this area, but the list is incomplete. The heavy regulatory burden presents a formidable barrier to entry for foreign companies who have no equivalents of agencies like SARFT and MII in their own countries.

B. Overlapping Agency Responsibilities

Each of the regulatory agencies described above has a clear, well-defined area of expertise: SARFT regulates content, MII regulates services, SEA regulates cryptographic technologies, and NCA and GAPP regulate copyright enforcement. Unfortunately, services that provide protected digital media over networks lie in the intersection of these areas of responsibility.

For example, a service that wishes to operate a Certification Authority must obtain a Trust Management license from MII and a license for the use of cryptographic technology from SEA. An online service provider that plans to sell protected digital media content must interact with all three agencies. Even in ideal circumstances, where all of the agencies cooperate, this may be a daunting task. In practice, it seems likely that regulatory agencies will vie for influence in areas that they regulate. For example, SARFT issues licenses to content broadcasters based on the nature of the content and MII issue licenses for operating content services on the network. Both SARFT and MII have sponsored (separate) standards initiatives for the DRM technology used to protect digital media, opening up the possibility that adopters of one standard may be placed at a disadvantage in their relations with one of these agencies.

C. Ownership Requirements

Despite their competition in standardization bodies, SARFT and MII do sometimes collaborate. In December 2007, SARFT and MII jointly published *Regulations on Internet Audio and Video Services* [RIAV], which came into effect in January 2008. It states that "the applicant for Internet audio and video services must be a state-invested or state-held organization". If fully enforced, this regulation would severely limit rate of growth in the online media market by excluding non-state-affiliated companies. In fact, several privately-held media companies were apparently exempted from this rule due to grandfather provisions and it is unclear whether the regulation will be consistently enforced.

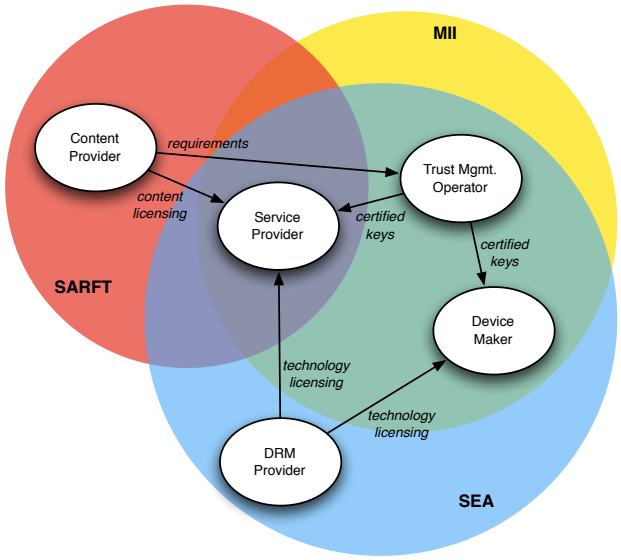

Fig. 1. Overlapping regulatory responsibilities for typical actors in a digital content value chain.

D. Untested Mechanisms

As noted in the previous section, much of the regulatory framework for copyright protection technologies was developed in advance of market requirements. As the market has developed, there have been several well-publicized occasions where regulations failed for predict the directions the market would take. The rise of user-generated content sites, for example, has presented serious challenges to the framework, since the regulations were designed to govern professionally produced content that could be monitored by SARFT. Several popular and successful services have been permanently or temporarily shut down due to problems with content deemed socially inappropriate. This type of shut down presents a risk to any would-be new media company operating in China. As new markets develop, it is unclear how the regulatory framework will respond.

VI. Conclusions

The protection of copyrighted content is a complex problem requiring both legal and technical solutions. Technologies such as DRM can help to enforce contracts and copyright laws, but these technologies must be protected by law themselves. Beginning with the WCT and WPPT treaties ratified by WIPO in 1996, countries around the world have begun to update their copyright laws to incorporate anti-circumvention provisions.

Whereas most countries have behaved reactively, China has been proactive in creating a framework of law for copyright protection and information security. This relatively advanced body of law coupled with a tendency towards overlapping bureaucratic responsibilities, has created a uniquely challenging environment for the networked digital media industry in China. However, with careful coordination and communication between these agencies, China is in a position to take advantage of one of the world's most advanced legal environments for trust management and copyright protection.

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