IPDM06 Conference
iResource.hk – Interoperable DRM platform

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推动信息、创意产业的发展 – 香港数码港

October 2006
Research Topic

• Project funded by Innovation Technology Fund from Innovative Technology Commission.
  – “An interoperable Digital Rights Management (DRM) platform based on MPEG-21 for the creative industries in Hong Kong”
Knowledge Economy

• The knowledge that used to be tertiary after raw materials and capital in determining economic success is now primary. With this reality comes the need for more differentiated systems for determining who owns what intellectual property, better protection for whatever is owned. – Prof. Lester C. Thurow

• Knowledge is bits of information flow in the internet age. The computer with equipped low cost hardware and software which can play audio-visual works is becoming everybody’s hobby. – Youtube, myspace
Knowledge Economy in Hong Kong

- Hong Kong SAR Government set out the Digital 21 IT Strategy in 1998 to focus on building Hong Kong’s information infrastructure and creates and enabling environment for e-business to prosper.
- **Cyberport: Hong Kong’s IT Flagship**
  - HK has **2.298M** household with **56.9%** aged over 10 used internet service
  - **47%** use PC for offline digital entertainment
  - **37.3%** use PC for online digital entertainment
  - **89%** using the PC at home

- HK Census and Statistic Department 2005
Cyberport: Hong Kong’s Largest Intranet

- Integration of technology, people, and business
  - 4 Grade A office buildings (95,000 m²)
  - Arcade (27,000 m²)
  - 5-star hotel (173 rooms)
  - 2,800 residential units
  - 10G/1G fiber-optic network and WLAN coverage

- Creating a strategic cluster in
  - IT applications and IS
  - multi-media content creation, management and delivery
  - Digital content and digital entertainment
Copyright versus Useright

- **Copyright** – the right to copy the work
  - The right to reproduce or copy the work
  - The right to distribute copies of the work to the public
  - The right to prepare derivative works

- **Useright** – the right to use the intellectual property contained in a copy, regardless of how the copy is acquired
  - For audio-visual works, the right to use for personal enjoyment

- **DRM** – Use technological means to protect the Useright
MPEG-21 Multimedia Framework

Metadata
MPEG-21 DID

Identifier
MPEG-21 DII
ISAN, ISWC, ISBN
DOI

Usage Rights
MPEG-21 REL
MPEG-21 RDD

Artist
Publisher
Copyright holder
Title
Media Type

ISAN
006A-15FA-002B-C95F-A
DOI:
10.1000/ISAN 006A-15FA-002B-C95F-A

A play this music for X times
B watch this movie for Y days
C print this book for Z times
HK Research on DRM acceptability and need

• Verify key assumptions and formulate development strategy
  – Demand for DRM in Hong Kong
  – Standardization support
  – Trusted centralized clearance
  – Flexible business model
  – Broadband connected computers as entertainment device
  – Explicit usage contract for digital items
  – Flexible payment methods
Survey Results

- **684 Samples between 15-64**
- Users who need content in different file formats think **standardization** is needed.
- Users download video believe in **2nd hand market**, supported by 90% of the interviewees. 40% of this group will buy and download digital content.
- **Centralized licensing platform** for HK is favored by downloader who need to use copyrighted materials.
- **Flexible business model** is welcomed by students and the people with lower income, with 60% require both play count and subscription model.
- 65% of interviewees will not register to use digital content after getting an unauthorized key, this group also have little or no DRM usage. Suggests **better education** is needed.
We are prototyping an open DRM with the following 3 business scenarios:
- Digital Movie Rental
- ETV programmes for schools
- Second hand market for Digital Content

<table>
<thead>
<tr>
<th>Layer</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Content Identification</td>
<td>MPEG-21 DII (ISAN, ISRC, DOI)</td>
</tr>
<tr>
<td>Digital Content Description</td>
<td>MPEG-21 DIDL</td>
</tr>
<tr>
<td>Domain Metadata</td>
<td>(Dam metadata schema)</td>
</tr>
<tr>
<td>IP Management and Protection</td>
<td>Content Protection, Encryption</td>
</tr>
<tr>
<td>Commerce Store</td>
<td>Authentication, Searching (RSS, RDF)</td>
</tr>
</tbody>
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**Diagram:**
- Input from Content Owners
  - Content Registration
  - Specify Usage
  - Input Metadata
  - Domain metadata generation
  - Information delivery
- Output to distributors
  - License Request
  - Loyalty Tracking and Collection
  - Incomplete Metadata
  - Industry based Metadata with usage conditions

*We are prototyping an open DRM with the following 3 business scenarios.*

- Digital Movie Rental
- ETV programmes for schools
- Second hand market for Digital Content
Key Design Objectives

- Unique Identification
- Standard Compliance
- Future Proven
- Loyalty Management
- Super-Distribution
- Permanent Storage
- Unified Search
iResource.hk Platform Overview

**Unified DAM/DRM Platform**
- Content Discovery
- Metadata Retrieval
- License Management

**Interoperable DRM layer**
- Encryption
- Usage Condition
- Metadata

**Interoperable platform**
- Integrate with multiple Commerce Stores

**Usage license for Content**
- Music Store
- Movie Store
- Commerce Store of (www.iresource.hk)

- Retrieve video
- Articles and Reviews
- Video from same director
- Accompanying music
- Accompanying images
- Metadata
- Rights Information
- Contact Publisher

Content Protected with DRM Technologies
ETV Programme for Schools

Schools

HKedCity

iResource.hk

Upload video content

specify usage condition and content description

Storage of Video Content (NAS)

Update content record Database

Download encrypted content

Content encryption

Update content record Database

Request usage license

License Server

Authorize content playback

Play content from trusted client application

a) Provide IP address
   b) Provide device ID from trusted client application
School ETV platform admin page and IPMP module
Future Development

- Enhance the system to address business challenges for country specific delivery, ETV delivery and support 2nd hand market of digital content.
- Porting the IPMP model to different platform – Unix, Mac OS
- Extending the DRM platform for Next Generation Internet & IPv6 network
- Localizing the REL and RDD into Chinese language
The End

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