An Introduction to Electronic Copyright Management Systems
(Digital Rights Management)

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What are Electronic Copyright Management Systems (ECMS) or “Digital Rights Management Systems (DRM)"

“Digital Rights Management (DRM) involves the description, identification, trading, protection, monitoring and tracking of all forms of rights usages over both tangible and intangible assets - both in physical and digital form - including the management of the Rights Holders relationships”
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The Internet and Intellectual Property

- Digitization of everything:
  - Information, books, film, learning resources, music, images, data, knowledge ...
- Re-examination of processes, costs and revenue:
  - Free and instantaneous distribution of digital work
  - Direct relationship from creator to consumer
  - Profits being sought from previously sub-commercial assets especially “rights”
- New opportunities and threats
  - Demand for new systems to support & manage
  - What IP do I have, what do I require, what can I trade?
  - Deliver the appropriate “rights” or “licenses”
  - Deliver the media that are subject to these rights

... The Knowledge Based Economy
Digital Re-use is Key

Ubiquitous networking and Digital Media means we are moving from:

Traditional Media “Creation Waterfall”

• Pay for possession
• Limited re-use rights available
• Up front purchase of simple rights
• Therefore expensive to move to digital environment

Towards

“Creation Cycle”

• Blurring between creation and use towards recreation and re-use
• Pay for usage, not possession
• Share the rights, share the revenue
• Require Trusted Third Parties (TTP) to validate rights and trades

From “food chain” to dynamic “creation ecology”
Intellectual Property Rights

It is not a mysterious blob or black box
It can be understood by non-lawyers
It is logical & it has structure
Creators must manage it or they will lose it.
Recreators must understand it
or they wont be able to work

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The Questions

• What have I got to Trade?
• How can I trade it?
• How can I describe and promote it to the market without giving the IP away?
• What usages of it are valuable to others?
• How can I balance the likelihood and impact of my risk and my rewards?
What have I got?:
Three Dimensions of Rights and Works

- Degree of Evolution of the Work (Concept, Expression, Manifestation, Instance)
- Degree of Granularity (# of Components)
- Layers of Rightsholders sharing revenue

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Dimension One: Granularity

- Discrete Components within Components within Components: heterogenous or compound work
- A compound object can be decomposed to its individual components and each sold separately.
- Examples:
  - Illustrations within a book
  - Anthology
  - Spanish Translation of a book
  - Subtitles of a movie
  - Learning objects combined into a module into a course into a syllabus

- Can be described as a “Manifest” or “Bill of Materials”
- It is not a “Recipe”
Granularity: Components within Components
A work can have more than one rightsholder in a particular usage or market.
They share the rights, possibly share the revenue
A result of a “recipe”. You can’t decompose a cake but you can slice it.
Eg a collaboration on a script or an editor and author
A single learning object in a Uni could have revenue split between:
- Commercialisation company 20%
- Company Paying for original development 10%
- University 20%
- Department 10%
- Learning Design Expert 5%
- Programmer 5%
- Academic Expert and originator 30%
Dimension Three:
The International Federation of Library Associations
Hierarchy of "Works"

The Asset, Artefact or Concept

has Multiple Expressions

The Concept "War and Peace"

- The Novel
- The Movie
- The Play
IFLA Expressions and Manifestations

Each Expression

has Multiple Manifestations
which is supplied as an

Item or Instance

The Novel

- English Hardcover Book
- eBook
- Softcover

Signed Copy of the Book I have

eBook watermarked to me from OzAuthors
Book Manifestations

The Book

Publishing Rights

- Printed Book (pBook)
- Print on Demand (dBook)

Digital Rights

- Digital Book (eBook)
The future of Books: Which Format do you need?

- **The Book**
  - Printed Book (pBook)
  - Print on Demand (dBook)
    - Single Copy
      - Whole work
      - Extracts
    - Multiple Copies
      - Whole work
      - Extracts
  - Digital Book (eBook)
    - Acrobat PDF
      - Read
        - Whole work
      - Read and Print
        - Extracts
Rights Metadata Model

- Work
- Expression
- Manifestation
- Item

- Author
- Corporate
- Agent
- Publisher

Parties

Rights
Rights Metadata Model

Parties

- Author
- Corporate
- Agent
- Publisher

Rights

- Work
- Expression
- Manifestation
- Item

Usages

- View
- Print
- Lend

Constraints

- Fixed
- Percentage
- Rewards
- Quantity
- Territory
- Devices
5 Co-ordinated Strategies for Effective DRM

- Management of the rights of works through their complete stage of evolution
- Supply Media that is appropriate for Use
- Clarity of permissible usages
- Identification using Digital Object Identifiers, watermarks to manage provenance and more easily identify cases of misuse.
- Real world negotiation, follow up and sometimes legal action of deviations from permitted usages.
Elements of the Supply Chain

Creator

Rights over the work

Trade

Customer

supply chains for the knowledge based economy
Elements of the Supply Chain

Creator

Rights Management

Rights over the work

XML descriptions

Rights being transferred

Trade

Funds flow back to all rights holders

Customer

supply chains for the knowledge based economy
Elements of the Supply Chain

Rights Management

The Work

Asset Management

Trade

Rights over the work

XML descriptions

Rights being transferred

Representations of the Work

Customer

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Elements of the Supply Chain

- Rights Management
  - Rights over the work
  - XML descriptions

- Trade
  - Rights being transferred
  - Asset being transferred

- Asset Management
  - Asset Supply Management
  - Copy protection applied here

- The Work

- Representations of the Work

- Customer

Creator
Copyright Enforcement Technology Vendors

Aegisoft  
Alchemedia  
ContentGuard  
CyberSource  
DigitalOwl.com  
Digital River  
IBM  
InterTrust Technologies  
MediaDNA  
MediaShell

Microsoft  
Perimele  
Preview Systems  
SealedMedia  
Reciprocal  
RightsMarket.com  
SunHawk  
Versaware  
Yankee Rights Management
Works Detail Screen
The Works Detail Screen and Available Expressions

Great Moments in Science

Authors: Karl Kruszelnicki
Literary form: Other
Subject categories: Science/General

Description

"So you thought science was dull and boring! That's not the way Karl Kruszelnicki tells it - all the way from how to make a mummified cat go "woof" to morphine in milk (so that's why I go for Milo shakes!). Great stuff for the curious, like me". - Professor John F. Lovering, Dean, Faculty of Science, University of Melbourne.

Publication details

Published date: 24/01/01
Publish country: AUSTRALIA
Edition: 1st
ISBN: 1-74064035-7

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Creator View: Setting Protection Level and Prices

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Acid rain

What have they done to the rain? A hard rain is already falling and it’s called Acid Rain. The best way to see the effect of Acid Rain is to look at Stone Lake in Sweden. Around this lake is a rock wall which was piled together by some Vikings about 1000 years ago. The Vikings were being besieged by attackers and behind this rock wall they were able to hold off the attackers for about a year. They were able to drink water from the lake and they chopped down trees to keep them warm. They also ate vegetables grown with the lake water and they ate the trout from the lake.

Now, for the first time since the Ice Age this lake no longer has any trout. In fact 20% of the 100,000 lakes in Scandinavia no longer have any trout in them due to Acid Rain. What has happened is that acids of sulphur and nitrogen which are emitted from power plants, from cars, and from metal smelters, have entered the atmosphere. They’ve then dissolved in the water-vapour carried around as clouds, and dropped to the Earth as Acid Rain. This rain can be more acidic than lemon juice — in fact, in Wheeling, West Virginia the rain was once measured at pH 1.6 which is just a bit less acidic than battery acid and a whole lot stronger than vinegar.

Ironically, one of the causes of the spread of Acid Rain was the Environmental Protection Act of 1970, which the Americans introduced to reduce local pollution. This resulted in higher smoke stacks being built and in this way the pollution has spread further. 
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