

Current Problems and Challenges for Developing a Standard Digital Rights Management System

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- ◆ Introduction
- ◆ DRM vs. DRMS: A definition
- ◆ IT issues
- ◆ Legal issues
- ◆ Business/Economics issues
- ◆ Ethical/Social issues
- ◆ Conclusions

Introduction

- ◆ DRM is the technological measure for supporting copyright¹.
- ◆ DRM is focusing on develop standards and methodologies².

1. *Copyright is a set of exclusive rights that regulate the use of a particular expression.*

2. *Methodologies such as OMA v 2.0, MPEG-21.*

Introduction

- ◆ The key issues
 - Definition
 - IT (security)
 - Legal
 - Business/Economics
 - Ethical/Social

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DRM vs. DRMS: A definition

- ◆ Absence of a global definition.
- ◆ Confusion with terms: DRM and DRMS
- ◆ Problems:
 - Increasing confusion.
 - Absence of inter-operation among different digital rights management systems.

DRM vs. DRMS: A definition

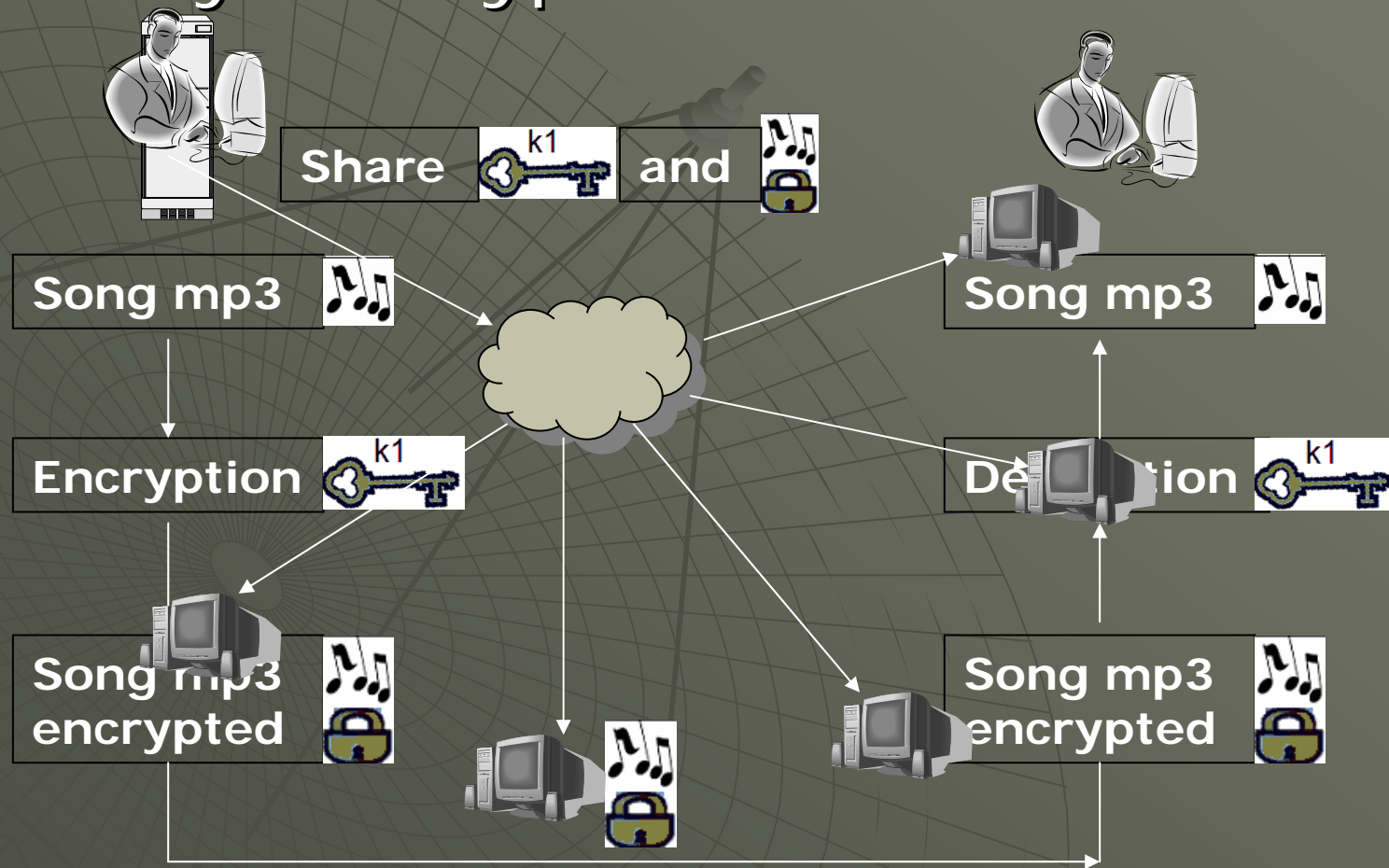
- ◆ Recommendations:
 - Defining DRM and DRMS.
- ◆ Possible results:
 - Feasible evaluation of capabilities, metrics and structures of different proposals.
 - Develop an extended system.

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IT issues

◆ Security: Encryption



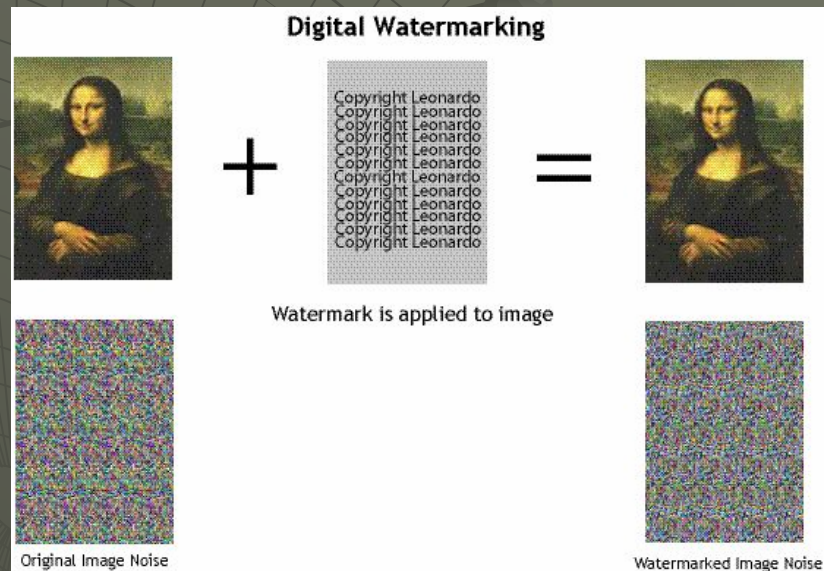
1. Encryption data only offers protection as long as the data remains encrypted. ⁹

IT issues

- ◆ Security: Digital watermarking
 - Software, video, music.
- ◆ Watermarking solutions embed some mark into the content.
- ◆ Watermarking technique uses a mark for many copies.

IT issues

- ◆ Security: Watermarking



1. *Digital watermarking is mainly oriented to protect the copyright*

IT issues

- ◆ Security: Digital fingerprinting
 - Software, video, music.
- ◆ Fingerprinting solution provides a good alternative to dissuade illegal redistribution.
- ◆ Fingerprinting technique uses a specific mark for each copy.

1. *Digital fingerprinting is mainly oriented to identify people from illegally redistribution digital data.*

IT issues

- ◆ Security: Digital fingerprinting

Original: 111000100011101111110101110001011

Area: 11100010001110111111110101110001011

Mark 1: 1110011111111011111000101110001011

Mark 2: 1110011101111011111000101110001011

Owner of copy with mark 1 = Bob

Owner of copy with mark 2 = Alice

1. *Digital fingerprinting is mainly oriented to identify people from illegally redistribution digital data.*

IT issues

- ◆ Problems and challenges:
 - Efficiency
 - Reliability
 - Computational cost
 - Attacks
- ◆ Tendency:
 - Focus the security on combining PMI and biometrics.
 - Security must be implemented using tamper resistance devices

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Legal issues

- ◆ Aim of a DRMS: enforcing copyright law and providing evidence in case of any illegal action with respect of digital contents.
 - Intellectual property
 - Contracts
 - Information protection
 - Moral rights

Legal issues

- ◆ Intellectual property:
 - The most accepted legal framework is the work developed by the WIPO¹.
 - Guidelines provided by the European Union.
- ◆ Problems:
 - The implementation of the framework is limited by the law in each country.

1. *WIPO (World Intellectual Property Organization)*

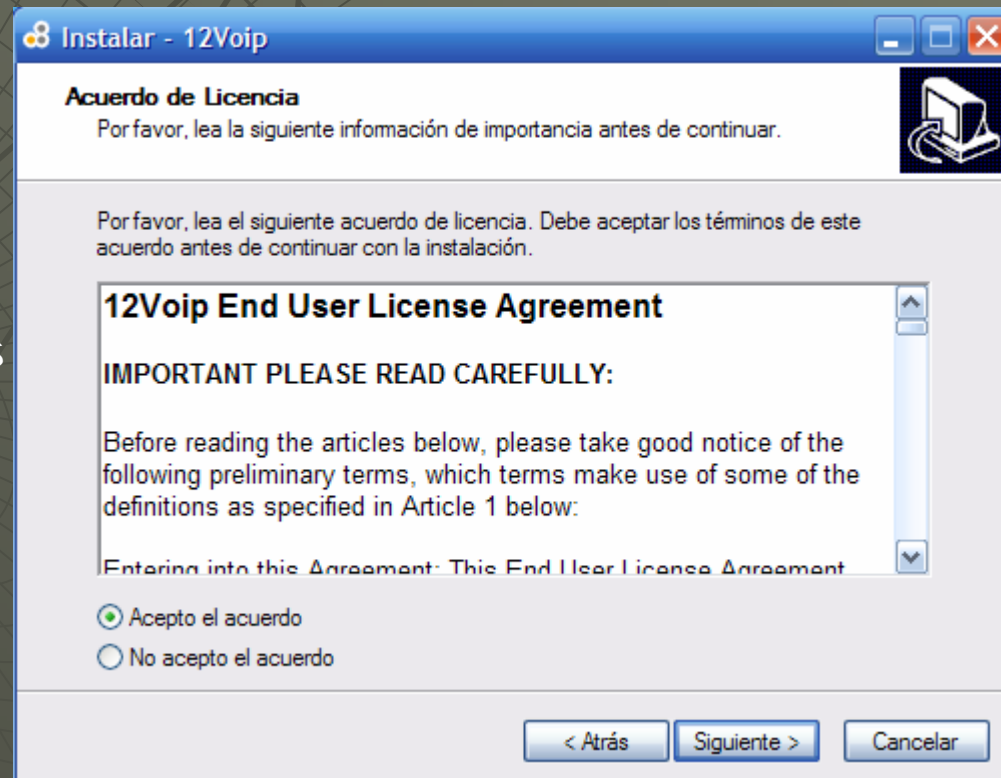
Legal issues

- ◆ Contracts: the best way to fill the extant legal gaps is using contracts.

- ◆ Problems:

Negotiate about the terms

The language



Legal issues

- ◆ Recommendations:
 - Provide many possible contract models as possible to be able to give users the chance of fulfilling the legal emptiness that there may be in certain transaction.
 - The contracts must be writing in different languages as possible to describe clear the terms of the contract.
 - Implement negotiation protocols.

Legal issues

- ◆ Possible results:
 - Users can decide which type of contract want to accept and sign.
 - Using the users language they can understand the contract.
 - Negotiation protocols allow to modify contracts according with demands and needs of the involved entities.

Legal issues

- ◆ Privacy/Intimacy protection:
 - DRMS must request certain type of personal information.
 - DRMS must maintain the users information store in a secure database without share it with other entities.
 - DRMS must trace specific users activities.

Legal issues

- ◆ Problems:

- DRMS collect many information about the users.
- How can users be sure that this information will be securely kept and will not be misused?

Legal issues

- ◆ Solution:
 - Transparency policies.
 - Justifying why certain information is demanded from them.
 - Define a template of which information is necessary.
- ◆ Possible result:
 - The users can trust in DRMS.

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Business/Economics issues

- ◆ Payment methods: Identifying most accurate according usage (or access to) content.
 - Pay-per-view
 - Pay-per-download
 - Pay-as-reading
 - Pay to get access to a specific resources

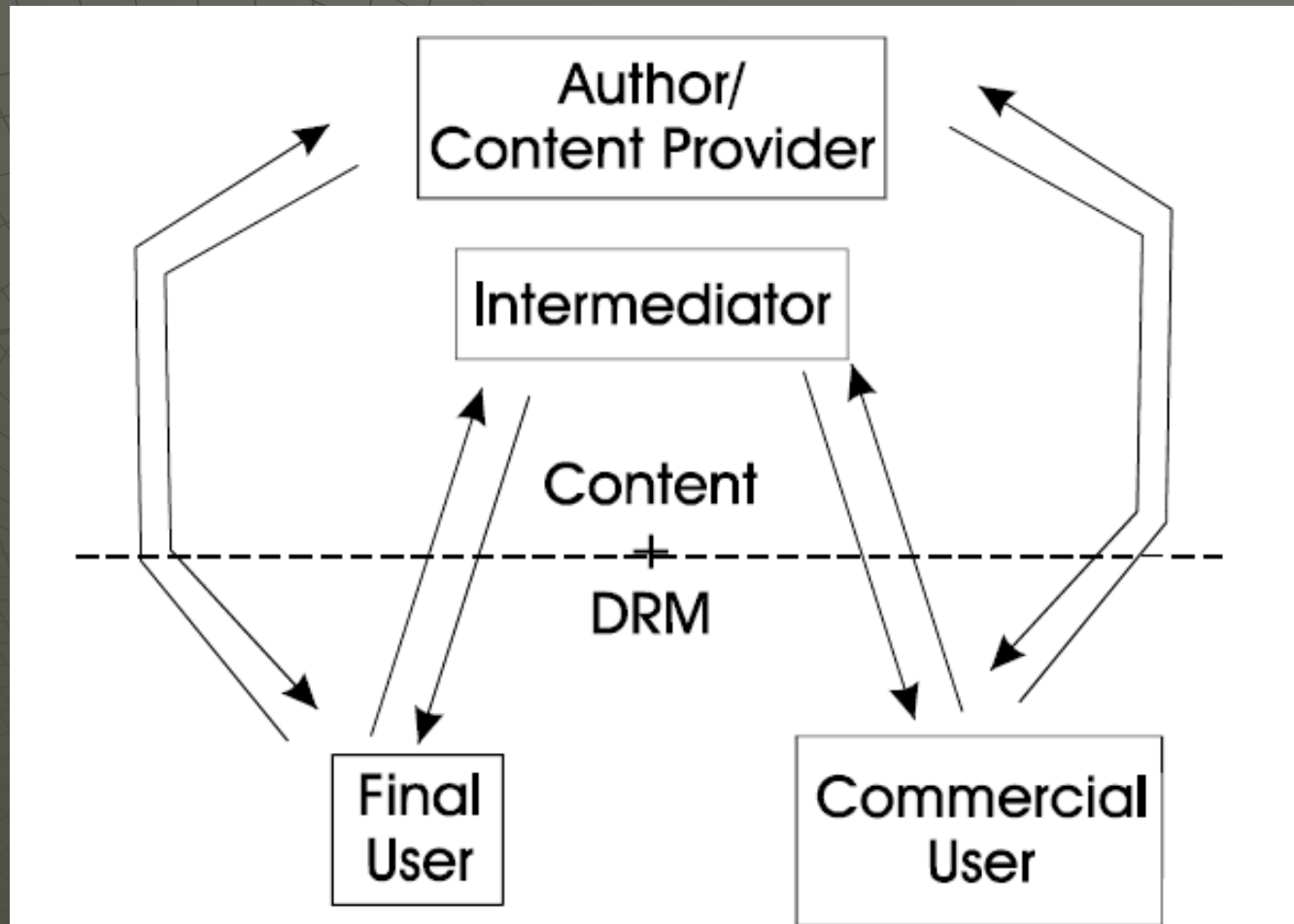
Business/Economics issues

- ◆ Payment does not necessarily mean money.
 - In the contract appears the means of payment.
- ◆ Special mention: electronic cash and micro-payments.

Business/Economics issues

- ◆ *Business models:*
 - DRMS have more applications than just for commerce.
 - Evolution of IT: new opportunities to make business.
- ◆ *Advantages:*
 - Making easier development and implementation.

Business/Economics issues



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Ethical/Social issues

- ◆ Culture:

- Resistance to change: researches and techniques centered on classifying reactions and character of people.

Ethical/Social issues

◆ Globalization:

- Has made them feel distances are closer.
- Has allowed people to keep informed about whatever it happens in any part of the world, almost at the same time as happening.
- Has made them change their concept of their own privacy.

Ethical/Social issues

- ◆ Ethical behavior: concerns from both sides of a DRMS.
 - Developers to users: avoiding they get contents for free.
 - Users to DRMS handlers: they feel expose and unsure about their personal information.
- ◆ This might be solved by honoring, promoting, making public and enforcing an ethical code.

Ethical/Social issues

- ◆ It could be interesting:
 - Including ethical demands in contracts model to be signed.

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Conclusions and future work

- ◆ We have presented the main problems in DRM topic.
- ◆ Our future work will be center on the design of a generic business model based in this paper.



THANK YOU!!!