

# Taxonomy of Control Mechanisms

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Introduction

Usage and Control

Criteria for Classification

Conclusions

## Usage Control

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- ▶ Data protection.
- ▶ Protection of intellectual property rights.

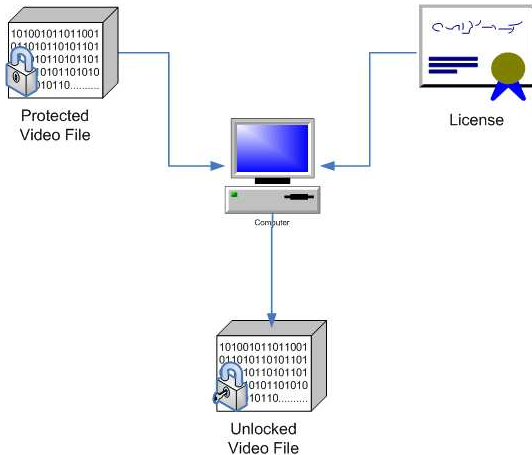
# Short Introduction to DRM

## Definition

“Digital rights management (DRM) is a systematic approach to copyright protection for digital media. DRM’s purpose is to prevent illegal distribution of paid content over the Internet. [...]”

whatis.com

# Short Introduction to DRM



# Problem Statement

## Control mechanisms as used in DRM

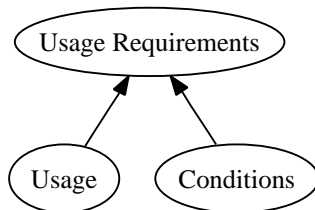
- ▶ exist in a wide variety.
- ▶ are tailored toward special tasks.
- ▶ selection of appropriate mechanisms difficult.
- ▶ are omnipresent, but often not understood.
- ▶ could potentially be applicable in privacy context.



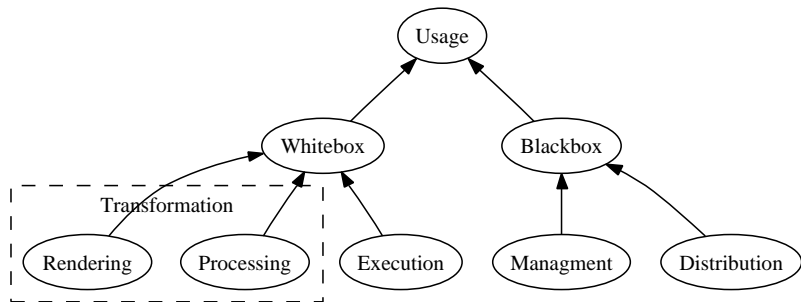
## Contribution

- ▶ Provide an overview about current techniques.
- ▶ Allow easy selection of mechanism based on usage requirements.
- ▶ Gather insights on how those mechanism can be used for data protection and privacy issues.
- ▶ Reveal where further research is needed.

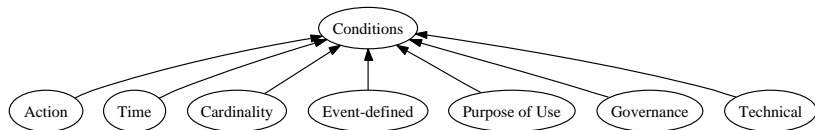
# Usage Requirements



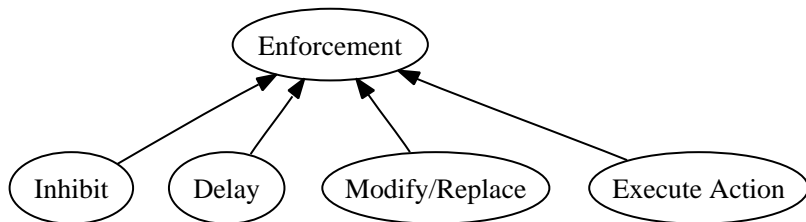
# Usage



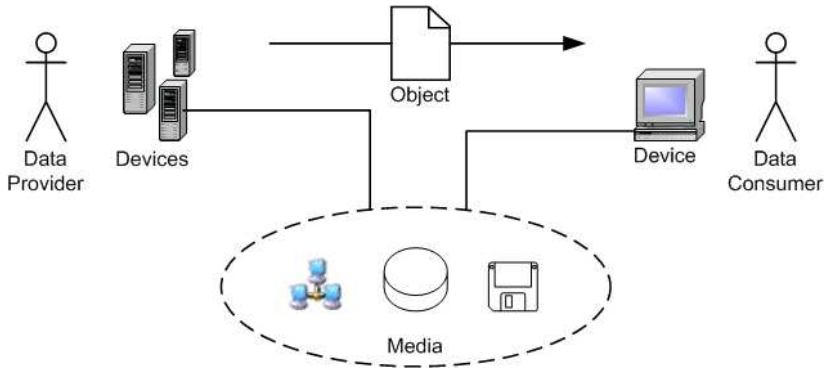
# Conditions



# Enforcement of Usage Control



# System Model



# Objects

Objects = Data that need protection.

Examples:

- ▶ Video File
- ▶ Patient Record
- ▶ Business Report

# Media

Media carry data, but cannot process it.

Examples:

- ▶ Compact Disc
- ▶ Portable Hard Drive



# Device

Device = Implementation of algorithms with data processing, rendering, execution, distribution and/or management capabilities.

Examples:

- ▶ Hardware MP3-Player
- ▶ Personal Computer

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Example:

- ▶ Windows Media Rights Manager (WMMR)

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Example:

- ▶ Encrypted content
- ▶ Punching holes into discs

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Example:

- ▶ Extended Copy Protection (XCP)

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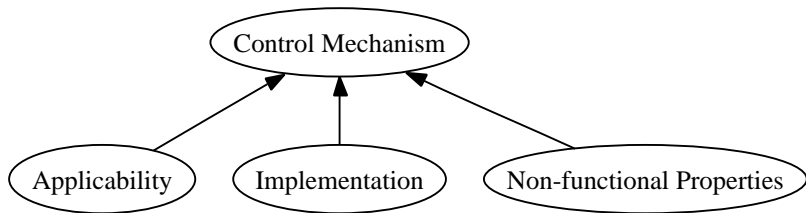
- ▶ Adobe LiveCycle Policy Server

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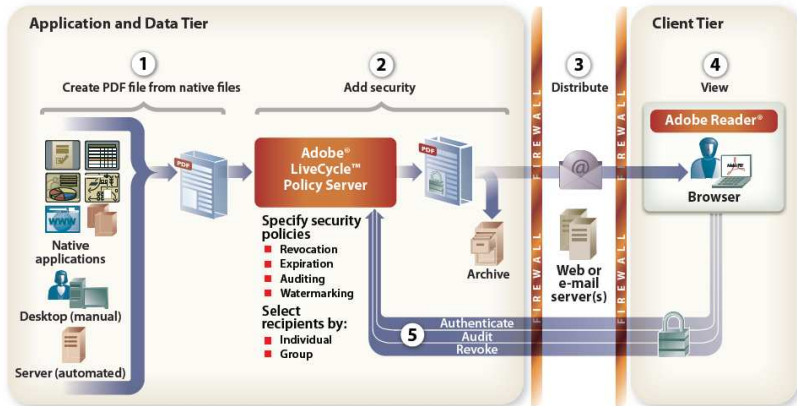
Example:

- ▶ Whenever a file is played, \$5 are charged to the consumers credit card.



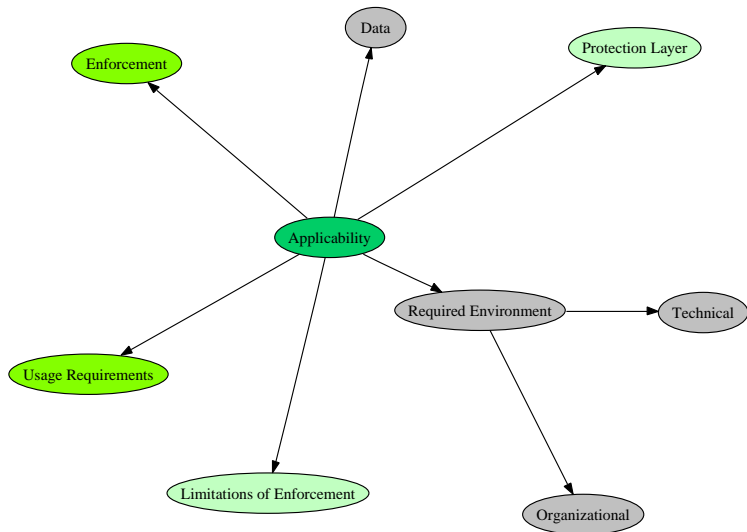


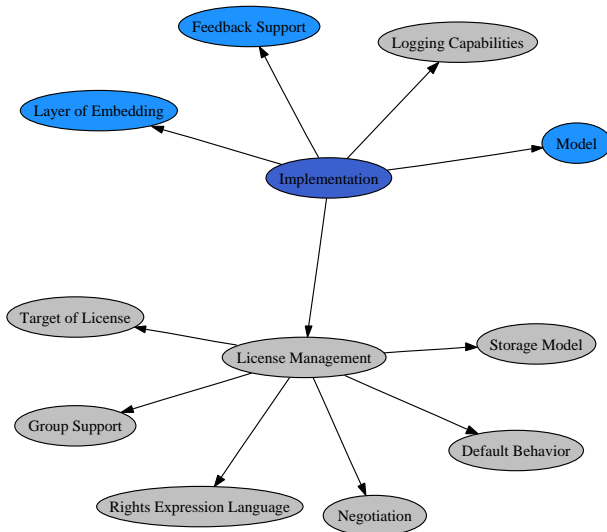
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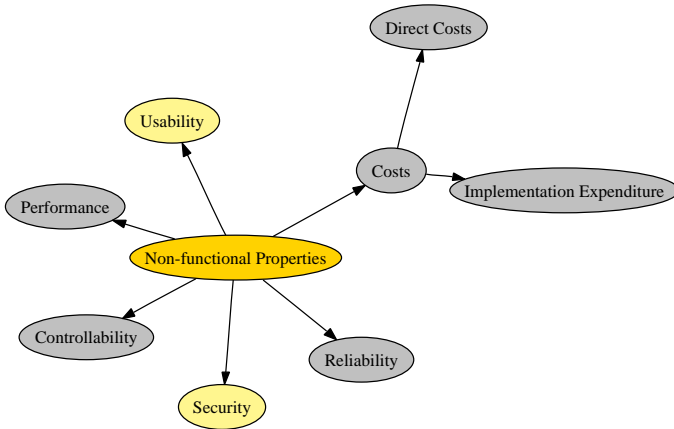


Source: Adobe LiveCycle Policy Server Datasheet









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- ▶ Other surveys exist, but are application specific.



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- ▶ Patents.

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- ▶ Define formal criteria for the selection of appropriate mechanisms.
- ▶ Program that automatically selects control mechanism to meet certain use cases.
- ▶ Select and extend appropriate mechanisms to be used in privacy context.

Thank you for paying attention!

Questions?