

# Techno-legal content protection and structural substitutes

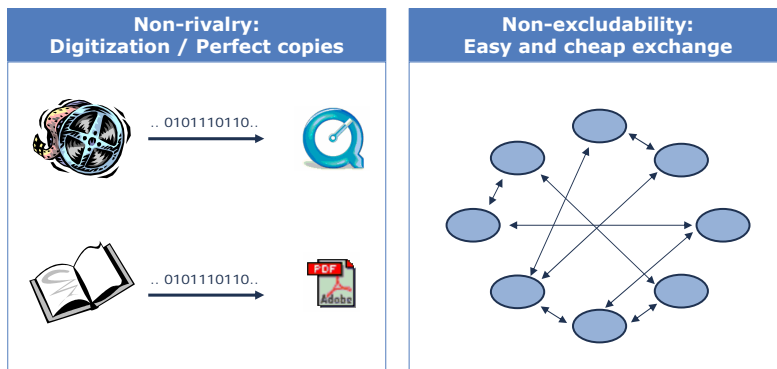
Vural Ünlü, MBA / Prof. Dr. Thomas Hess  
Munich School of Management

Budapest, 03.02.2005

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**WIM**

The fundamental Problem: Copying and Exchange of content are facilitated through ICT

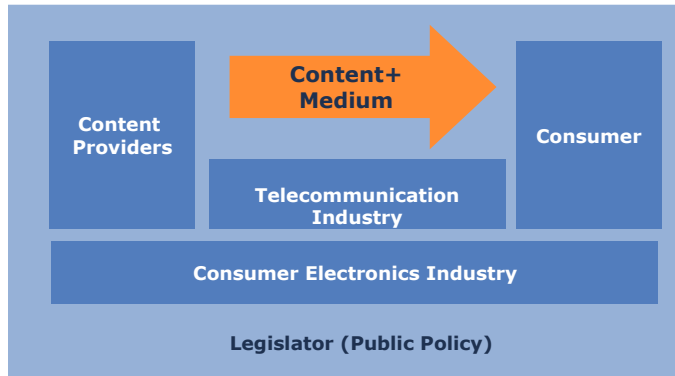


Source: Ünlü04

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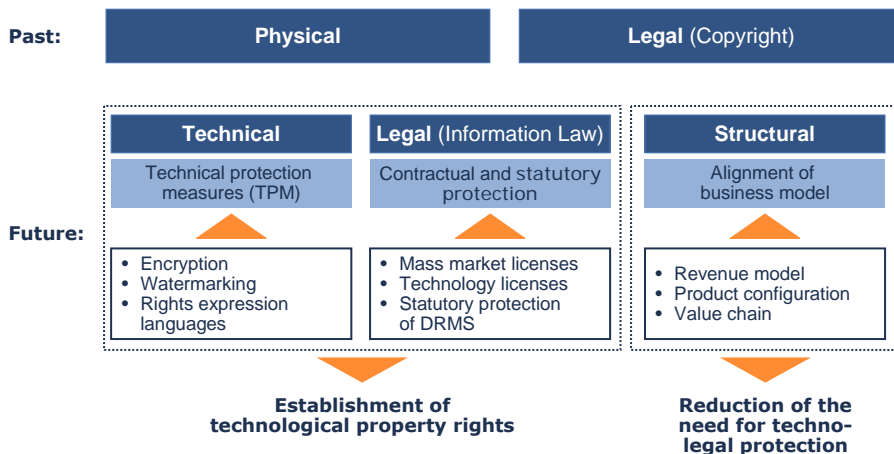
## Consequences of Digital Piracy: „Stakeholder Perspective“



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## Changing content protection strategies



Source: Ünlü04

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## Digital Rights Management Systems as the most effective solution?



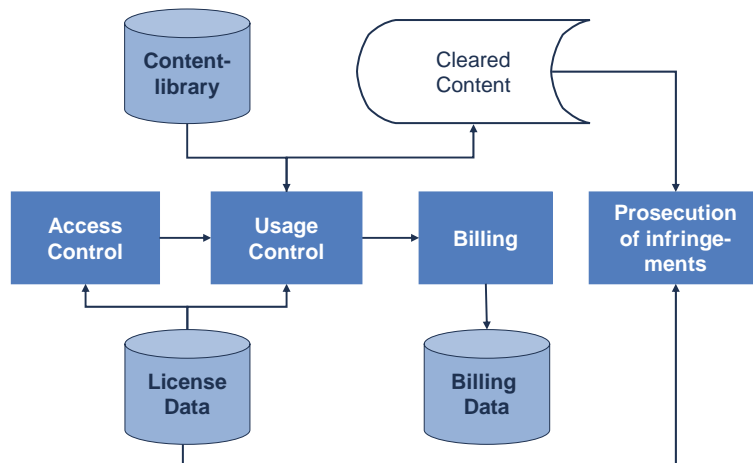
- DRM pursues the objective of technically enforcing the economic and moral interests of content providers.
- By using a bundle of technical components, a secure and efficient use of digital content via all media is ensured and usage-dependent business models are made possible.

Source: Ünü04

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## Logical architecture of Digital Rights Management Systems

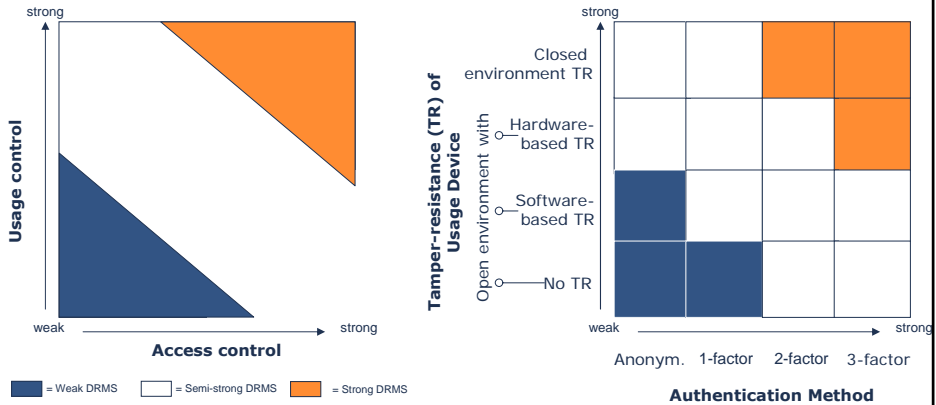


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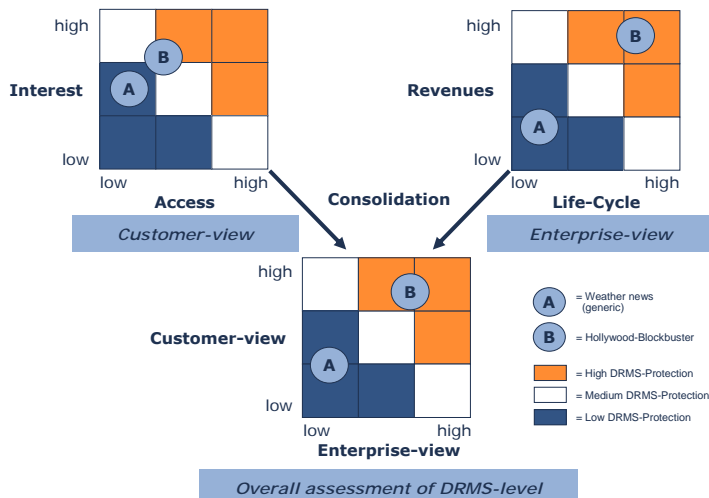
# The optimal level of content protection: "The access-usage-control-matrix"



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# The optimal level of technical content protection (1): Media Asset Value Maps

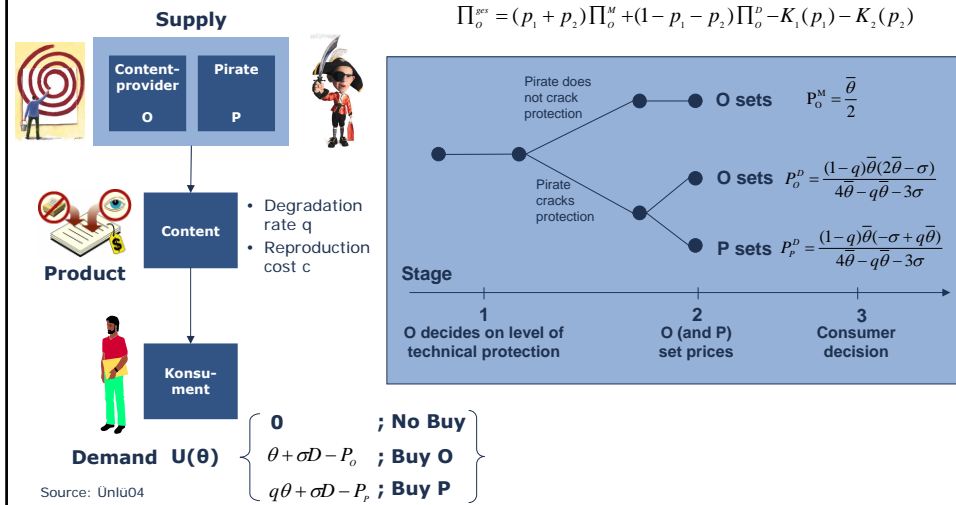


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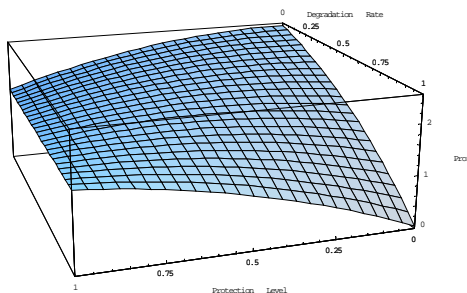
## The optimal level of technical content protection (2): Industrial Organization model



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## Basic Industrial Organisation model



### Core results

- Optimal level of protection increases with higher valuation of media good
  - Example: Hollywood movies vs. generic novels
- Optimal level of protection increases with lower degradation
  - ERP software vs. music songs

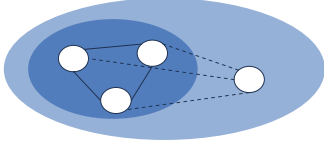
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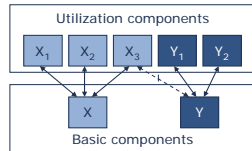
# Concept of Network Effects

## CONCEPT

Direct Network Effects  
→ Network effect goods



Indirect Network Effects  
→ System goods



## ORIGIN

### Original Utility

- Utility that an economic good delivers to the consumer **irrespective of how many homogeneous or complementary goods** are used by other consumers (Singular product)

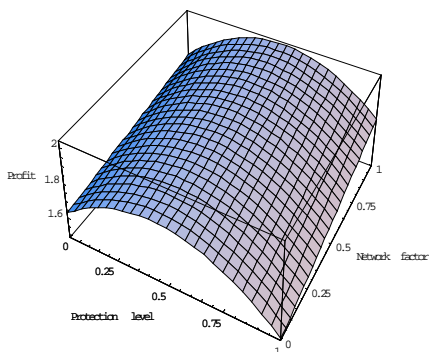
### Derived Utility

- Utility that an economic good delivers to the consumer **by using it in interaction with homogeneous or complementary goods** of other consumers (Network effect product)

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## Model extension 1: Impact of network effects



### Core results

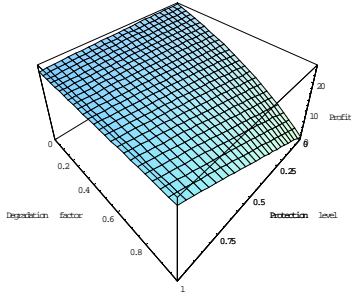
- **Optimal level of protection increases with increasing network effects (for a sufficient valuation)**
- **“Myth of profitable piracy” can not be confirmed**

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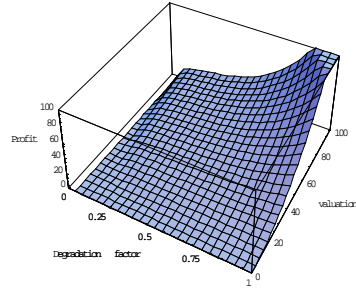
## Model extension 2 / 3: Utility decline / Deliberate content degradation

**Utility decline with increasing protection**



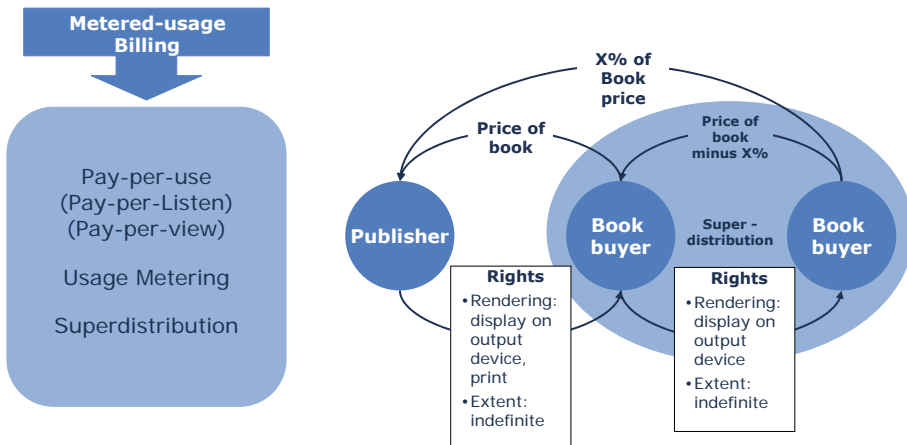
- Protective measures harm content providers
- Results in a lower level of content protection

**Endogenization of degradation factor**



- Deliberate content degradation does not add value
- Degradation measures are prohibitively costly

## Alignment of business model: Superdistribution of book content



Source: Ünü04

## Conclusion

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- "The important thing is to maximise the value of your intellectual property, not to protect it for the sake of protection" [ShVa99,97]
- Need for content providers to determine and implement the optimal level of content protection
- Valuation and Content degradation are main determinants of optimal level of content protection
- Network effects: "Myth of profitable piracy" can not be confirmed
- Content degradation measures are prohibitively costly
- The profits of content providers are reduced, when protective measures cause utility decline on the consumers side
- Additional positive revenue impact may result from an alignment of business model