

Copyrighth Piracy in the Audio and Video Industry

"Watermarking - a promising technology in the fight against copyright piracy"

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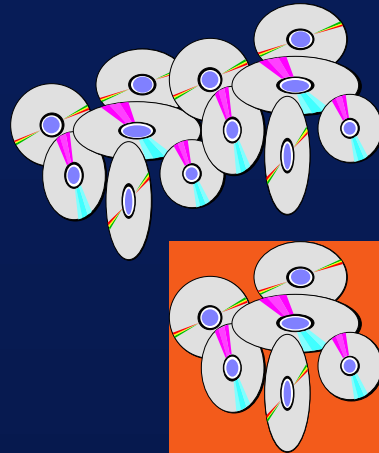
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IBA Conference New Dehli, 4.11.1997

The Threat

- IFPI Statistik per 1996:

worldwide 1/3 illegal



- Elton John's
"Candle in the Wind":

counterfeits after 1 day

“Watermarking”

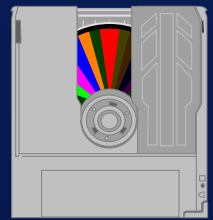
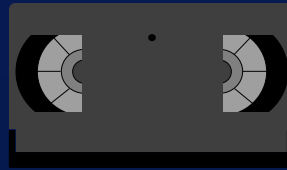
a promising technology in the
fight against copyright
piracy

Scope of Presentation

- 1. Technical status quo
- 2. Internet communication in the near future.
- 3. Watermarking: How does it work ?
- 4. Watermarking: What does it help ?

Distribution

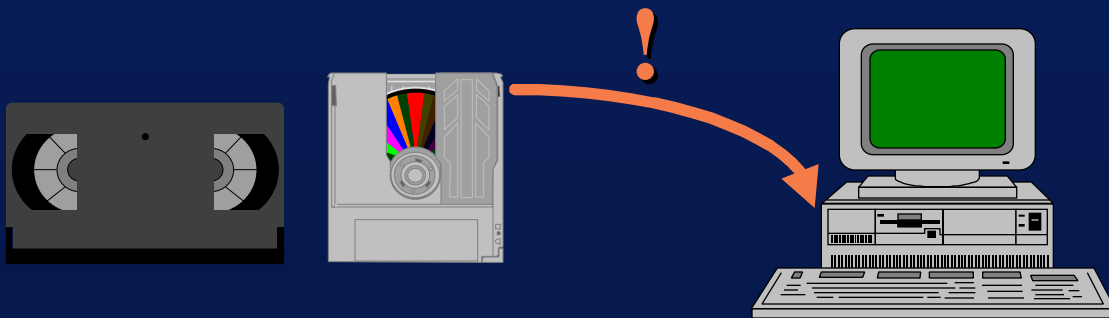
- Audio and Video



- Still images and software



Protection



Protected by:

- holograms,
- source-ID codes,
- License certificates,
- sticker labels etc

Delayed on-line distribution

- Lack of protection solutions for the digital material
- Limited data transmission rates and storage capacities

Enhanced technologies

- advanced compression schemes
- faster modems
- transmission via television cables
- New storage technologies

New technology

- 1 terabyte storage capacity
- =
- 100'000 minutes of music
- 1400 CD-ROM

- Downloading via television cables
- 1000x faster than via telephone lines
- as fast as a CD-Player

How do watermarks work ?

- Encoding information by alteration of the inaudible and invisible noise signal
- Ability to identify the copyright owner and to add further downstream information
- Encoding at any distribution stage

On-line Distribution

Distributor



Watermark:

- author
- copyright owner
- distributor

Purchaser DS



Watermark:

- author
- copyright owner
- distributor
- **authorized User DS**

On-line Distribution

Distributor



Watermark:

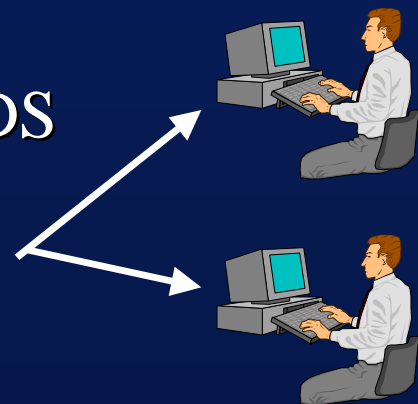
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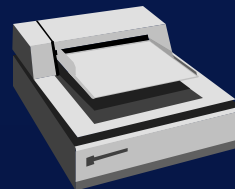
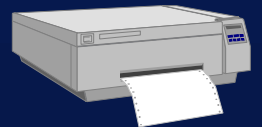
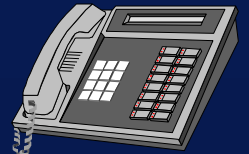
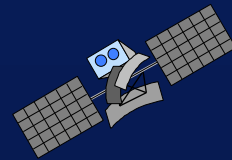
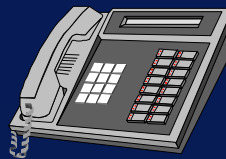
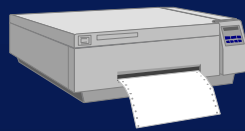
Watermark:

- author, etc
- **authorized User DS**

Close to indistructible

- virtual impossiblity to extract watermarks
 - ◆ Difficult localization without key,
1000 watermarks per 3 minutes of real display time
 - ◆ impossible extraction without damaging the original signal
- surviving conversion from digital to analog format and back

survival



Conversion
scaling

Watermark:
- author
- copyright owner
- distributor
- **authorized User**
DS

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Start of commercial use

- still images: Adobe's "Photoshop 4" using Digimarks watermarking technology
- IBM to introduce own watermarking technology in its online "InfoMarket"-Service
- Audio and video ?

New technology

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=

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***Before the end of the year
2000***

This paper and more information
and links on:



www.wwp.ch

Thank you.