Optimize your Content Value Chain with Distribution Watermarking

Harrie Tholen, Nagra

CONTENT VALUE PROTECTION FROM ORIGIN TO CONSUMPTION

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AGENDA

1. Piracy trends
2. Response of sports rights holders
3. Distribution watermarking for linear channels
4. Distribution watermarking for file assets
5. Statistics from distribution watermarking
6. Watermarking for live OTT services
7. Nagra references

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Use of Illegal Set Top Boxes Costs UK Industry £9 billion Per Year

"IN US ALONE COMPANIES LOSE OVER 2.4 BILLION USD EVERY YEAR".

-IAB

"IN SPAIN, FOOTBALL DISTRIBUTORS LOST 271M€ IN 2016 DUE TO PIRACY".

-La Coalición

"Piracy is a scourge. It damages industries, puts live sports andevents at risk and threatens thousands of jobs".
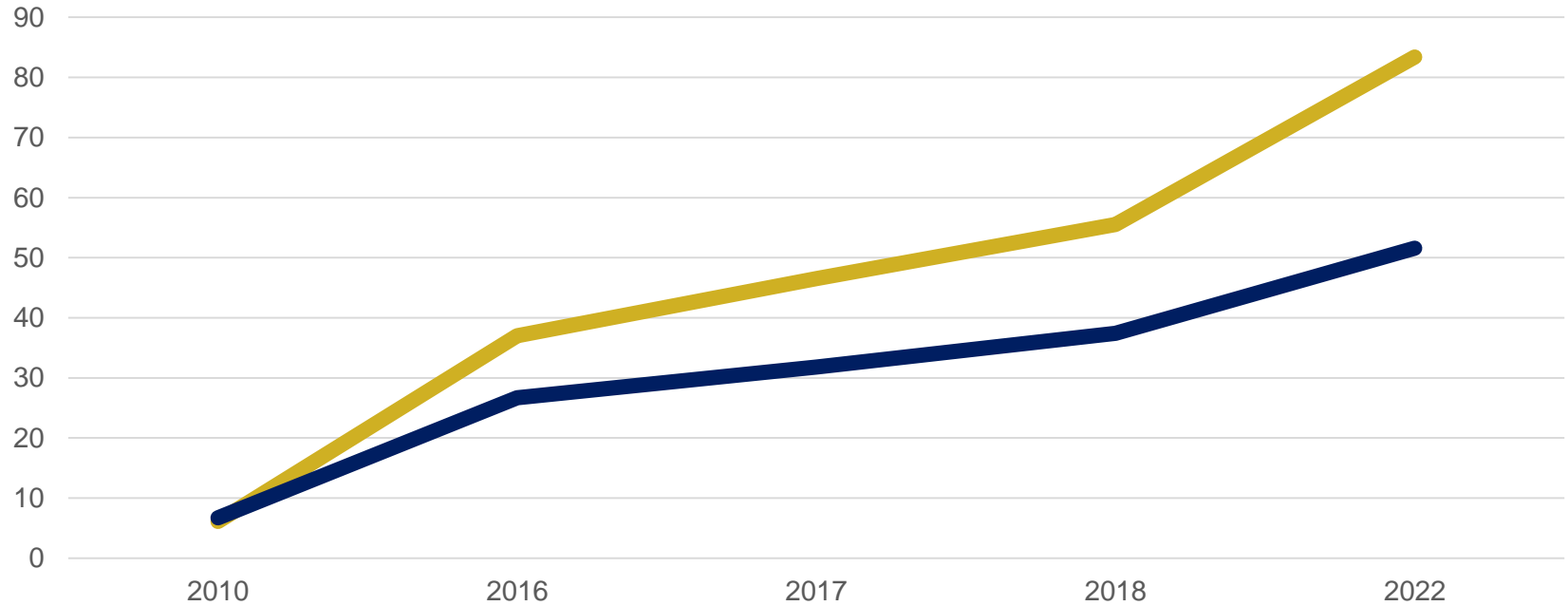
- Peter Tonagh, Foxtel CEO

"In Asia, pay-TV industry incurs a loss of over 1 billion USD yearly".

- CASBAA

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Losses to piracy will double between 2016 and 2022 to $51.6 billion

Legitimate online revenues versus piracy losses ($ billion)

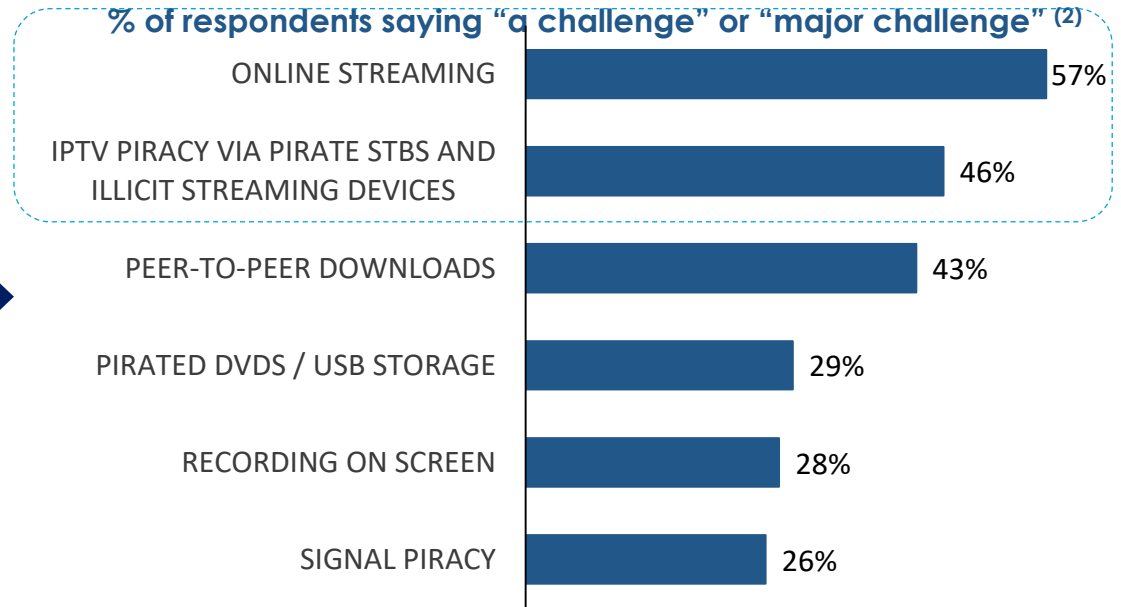**Source:** Digital TV Research

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Content piracy is seen as a significant, and growing, problem for the pay-TV industry, fuelled by rapid take up of illicit streaming devices

47%

of executives think that **content piracy will lead to greater pressures** on the pay-TV industry over the next five years, up from **41%** in 2016 [1]

% of respondents saying "a challenge" or "major challenge" [2]

ONLINE STREAMING	57%
IPTV PIRACY VIA PIRATE STBS AND ILLICIT STREAMING DEVICES	46%
PEER-TO-PEER DOWNLOADS	43%
PIRATED DVDS / USB STORAGE	29%
RECORDING ON SCREEN	28%
SIGNAL PIRACY	26%

Questions: (1) How much do you agree or disagree with the following statements? (% of respondents indicating "strongly agree" or "agree"; n = 138) p
(2) In your opinion, how big a challenge are the following types of content piracy to pay-TV businesses in your country? n = 138) p

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Are Sports Rights Losing Value due to Piracy?

Premier League football rights is set to break the £10 billion barrier for the first time, according to Ampere Analysis.
- January 2018, Bloomberg

*Sky wins bulk of Premier League rights as value slips by **13%**.*
- February 2018, Reuters

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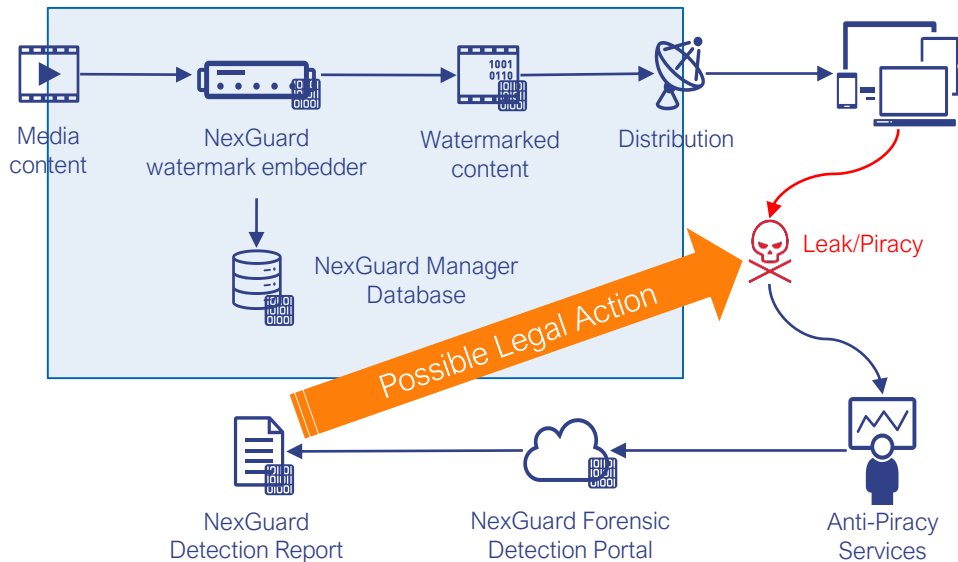
Sports Rights Holders fight back

- Some of the world's top leagues/sports rights holders have started to publish security requirements for licensees, just like Movielabs does for movies

- These requirements include operational security measure, credential handling, CA/DRM requirements, but also include watermarking

- Distribution watermarking for channel providers to identify from which licensee the pirated content originates

- Session-based watermarking for operators to identify users that restream the content
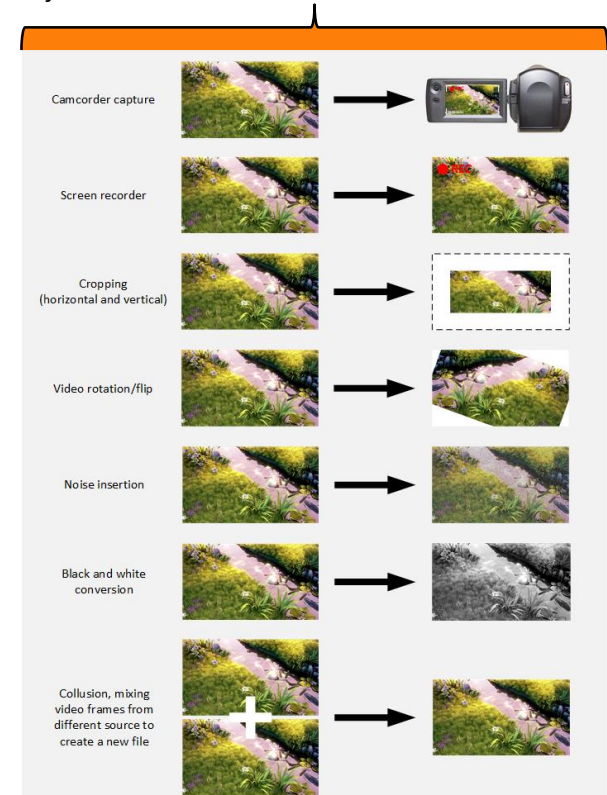
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The power of watermarking

- Watermarking involves the embedding of unique, imperceptible and inseparable information into the audio or video

- Watermarking makes each content copy unique

Media content → NexGuard watermark embedder → Watermarked content → Distribution → Leak/Piracy

NexGuard Manager Database

Possible Legal Action

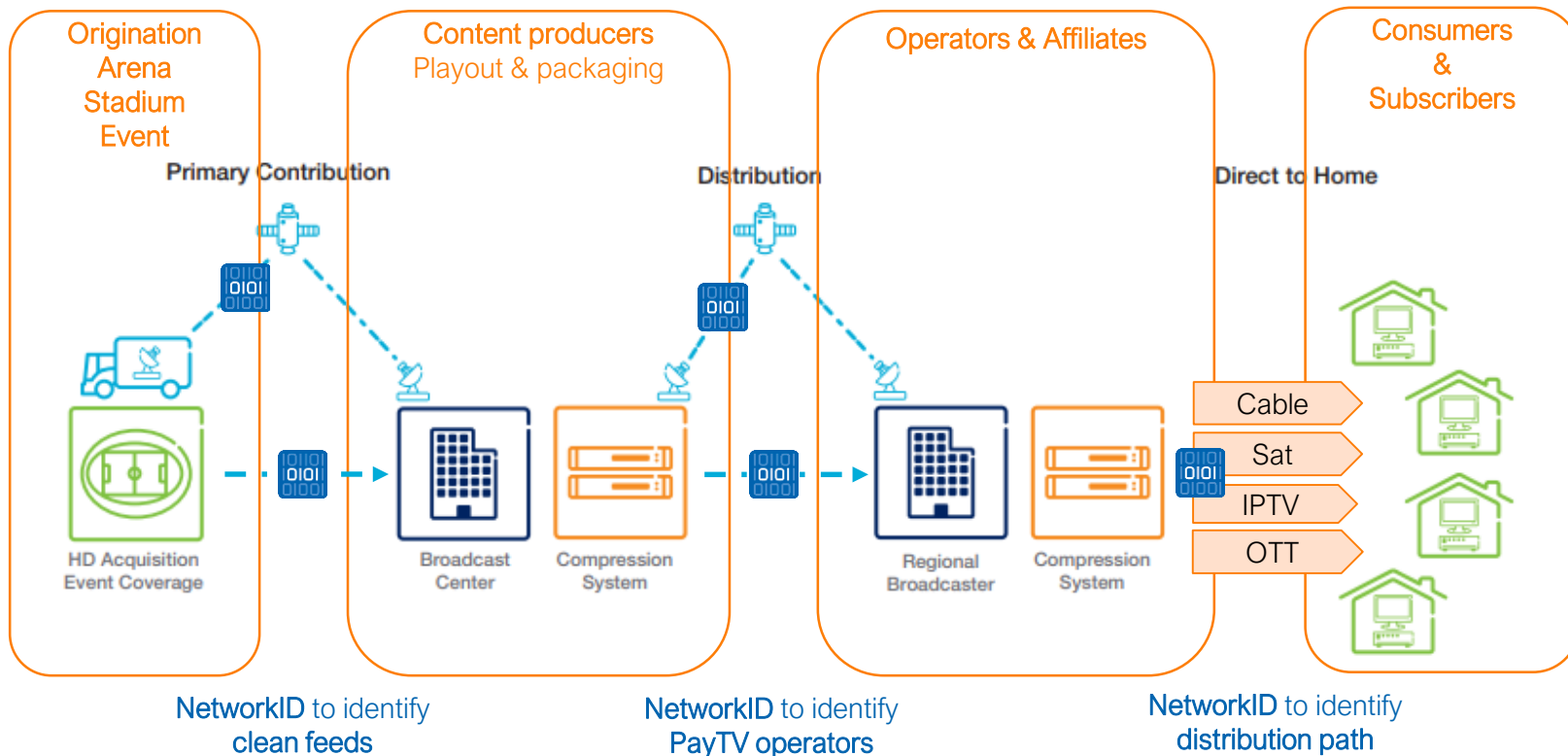NexGuard Detection Report ← NexGuard Forensic Detection Portal ← Anti-Piracy Services

- Imperceptibility of the NexGuard watermark was validated by the major Hollywood movie studios, other content owners and PayTV operators
- The NexGuard watermark is proven to be robust against severe degradations of the content, beyond the point it has any commercial value

Camcorder capture

Screen recorder

Cropping (horizontal and vertical)

Video rotation/flip

Noise insertion

Black and white conversion

Collusion, mixing video frames from different source to create a new file

Linear distribution watermarking: Network ID

Origination
Arena
Stadium
Event

Content producers
Playout & packaging

Operators & Affiliates

Consumers
&
Subscribers

Primary Contribution

Distribution

Direct to Home

HD Acquisition
Event Coverage

Broadcast
Center

Compression
System

Regional
Broadcaster

Compression
System

Cable
Sat
IPTV
OTT

NetworkID to identify
clean feeds

NetworkID to identify
PayTV operators

NetworkID to identify
distribution path

Network ID watermarking implementations

1. For satellite one-to-many B2B distribution, Network ID is implemented in Commercial IRDs
   - Already supported by Ateme, Arris and Ericsson

2. Network ID can also be implemented in encoders
   - Already supported by Harmonic XOS, Ateme, Ericsson

3. For one-to-one baseband video distribution, Network ID can also be implemented on SDI level
   - Supported by Crystal Vision and Nevion

Network ID: Implementation in Commercial IRDs

Under head-end control, IRD will insert watermark in each channel in the uncompressed video domain
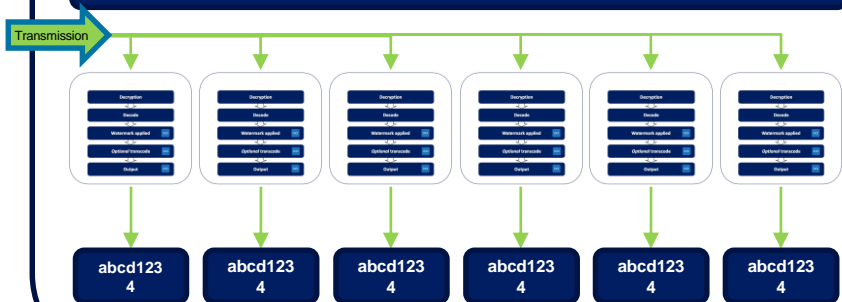
The watermark will remain present within the video stream regardless of transcode or rescale.

Already supported by: Arris, Ateme, Ericsson

Single IRD with multiple channels

UA / IRD Serial number =abcd1234

Transmission

abcd123
4

abcd123
4

abcd123
4

abcd123
4

abcd123
4

abcd123
4

IRD

Transmission

Decryption

Decode

Watermark applied

Optional **transcode**

Output

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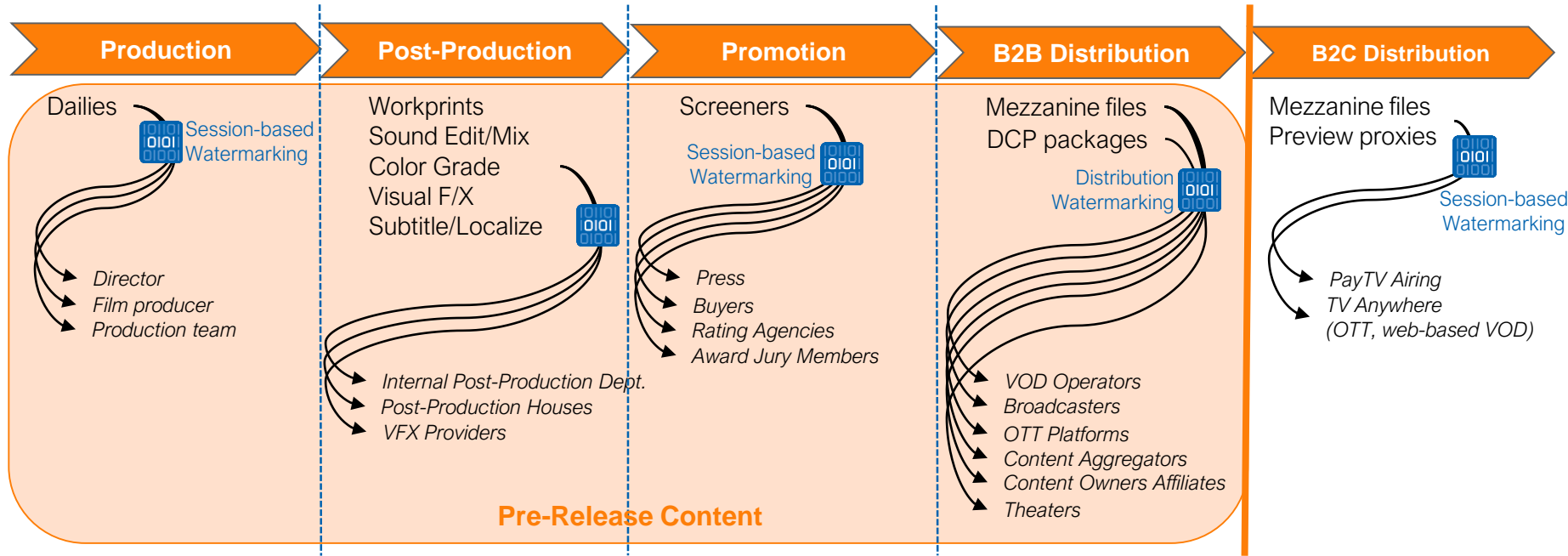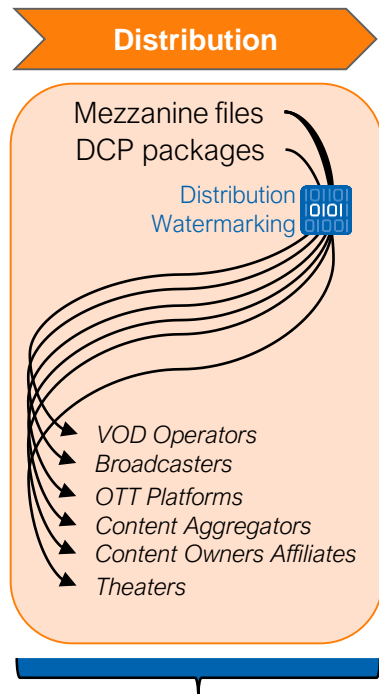
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Watermarking file assets (movies,TV)

Production	Post-Production	Promotion	B2B Distribution	B2C Distribution

Dailies

Session-based Watermarking

- *Director*
- *Film producer*
- *Production team*

Workprints
Sound Edit/Mix
Color Grade
Visual F/X
Subtitle/Localize

- *Internal Post-Production Dept.*
- *Post-Production Houses*
- *VFX Providers*

Screeners

Session-based Watermarking

- *Press*
- *Buyers*
- *Rating Agencies*
- *Award Jury Members*

Mezzanine files
DCP packages

Distribution Watermarking

- *VOD Operators*
- *Broadcasters*
- *OTT Platforms*
- *Content Aggregators*
- *Content Owners Affiliates*
- *Theaters*

Mezzanine files
Preview proxies

Session-based Watermarking

- *PayTV Airing*
- *TV Anywhere*
- *(OTT, web-based VOD)*

Pre-Release Content

NexGuard Forensic Watermarking at Every Stage

Distribution watermarking implementations

Distribution

Mezzanine files
DCP packages

Distribution
Watermarking

VOD Operators
Broadcasters
OTT Platforms
Content Aggregators
Content Owners Affiliates
Theaters

➢ File Delivery
➢ Plugins for Transcoders

Pros & Cons	Transcoder Plugins	File Delivery
Distribution workflow	Best for one-to-one distribution workflow	Designed for one-to-many distribution workflow
Number of recipients per asset	Best for less than 15 recipients per asset	Optimized for more than 15 recipients per asset
Marginal time for any new request of watermarked files	Requires to process again the file in the transcoder	Instantaneous watermarking for any additional files
Codecs	Support any codec available on the transcoder	Format dependant, with support of the main distribution formats (ProRes, XDCAM, H264)
Workflow automation	Each uniquely watermarked file must be prepared in advance, and independantly loaded in Aspera	Tight integration into Aspera to generate on-the-fly watermarked files

Watermarked File Distribution with Aspera
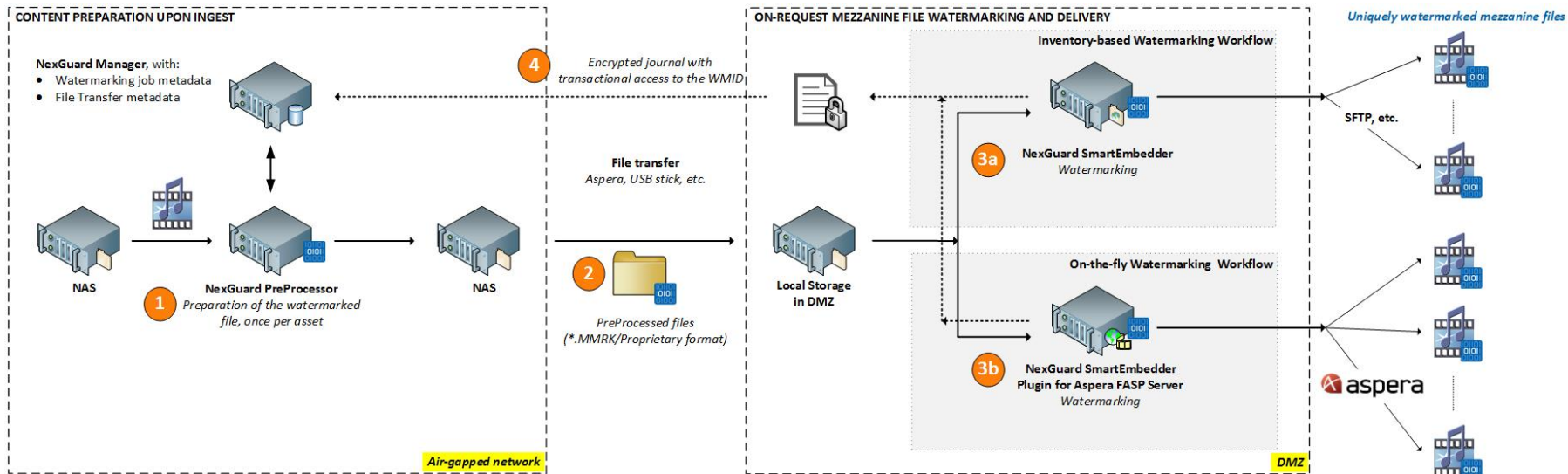
Pre-Processing
Performed once per asset

On-the-fly SmartEmbedding
Lightweight process to very quickly
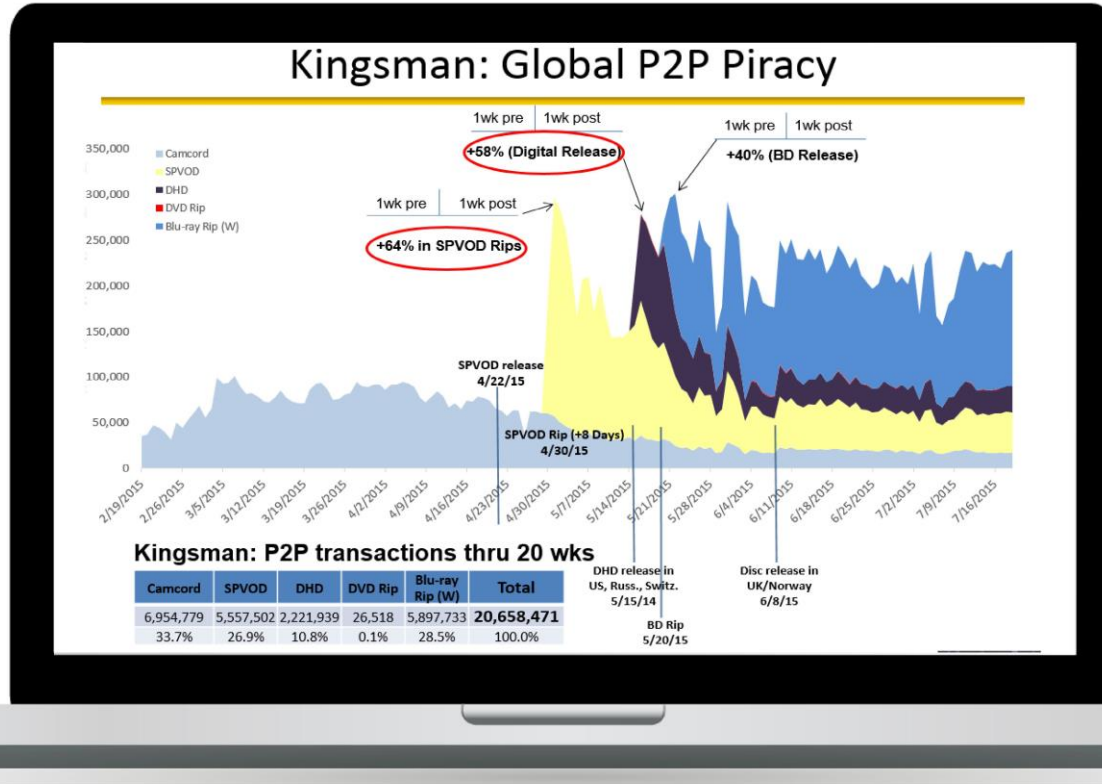embeds a unique transactional watermark

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Benefits from distribution watermarking

- Allows to trace which distribution path, platform or affiliate is the most significant source of piracy

- Provides info to fix/replace insecure links or technologies

- Enables targeting of Anti-Piracy budgets for most impact

- Enables the optimization of release windows, e.g. for movies/TV shows

- Provides proof of ownership of content
    - for legal cases
    - to enable take-down on social media

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Piracy statistics from distribution watermarking

C O N F I D E N T I A L

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Live Sports Streaming
a growing trend .... and an increasing target for pirates

- Watch on mobile devices

- Reach fan audiences anywhere

- Direct consumer relationship

- Social media integration

NAGRA introduces NexGuard QuickMark

- Client-side watermarking solution for Live Sports

- Near real-time identification of OTT devices used as source of Piracy

- Dynamic client-side solution, not impacting mission critical Encoders/CDNs

- Secure implementation

- Ideal complement to NAGRA Anti-Piracy Services

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Nagra Anti-Piracy Services Team

- **120+** media employees: lawyers, investigators, ex-police officers, security engineers
- **20 yrs** online investigation experience
- **700+** forensic analyses performed
- **60+** on-going lawsuits against pirates
- **2000+** pirate sites under daily monitoring
- **150+** pirate sites seized and shutdown
- **150+** international clients
- **20 yrs** police raid experience
- Offices in **33** countries
- **15+** reporting & monitoring languages

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Nagra Pre-release watermarking clients

Hollywood Studios

NBCUniversal · 20th Century Fox · Warner Bros. Pictures · Sony Pictures · The Walt Disney Studios · Paramount Pictures

Broadcasters

HBO · AMC Networks · TVB · Viacom 18 · ZEE TV · ABS-CBN

OTT Providers

NETFLIX

Content Aggregators

VUBIQUITY Premium Content Services · spafax

Monitoring & Anti-Piracy

deluxe · CRIFST

Nagra Pay TV watermarking – selected clients

Nagra Anti-Piracy Services Clients
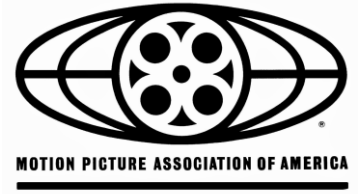
dtv.nagra.com/anti-piracy-services