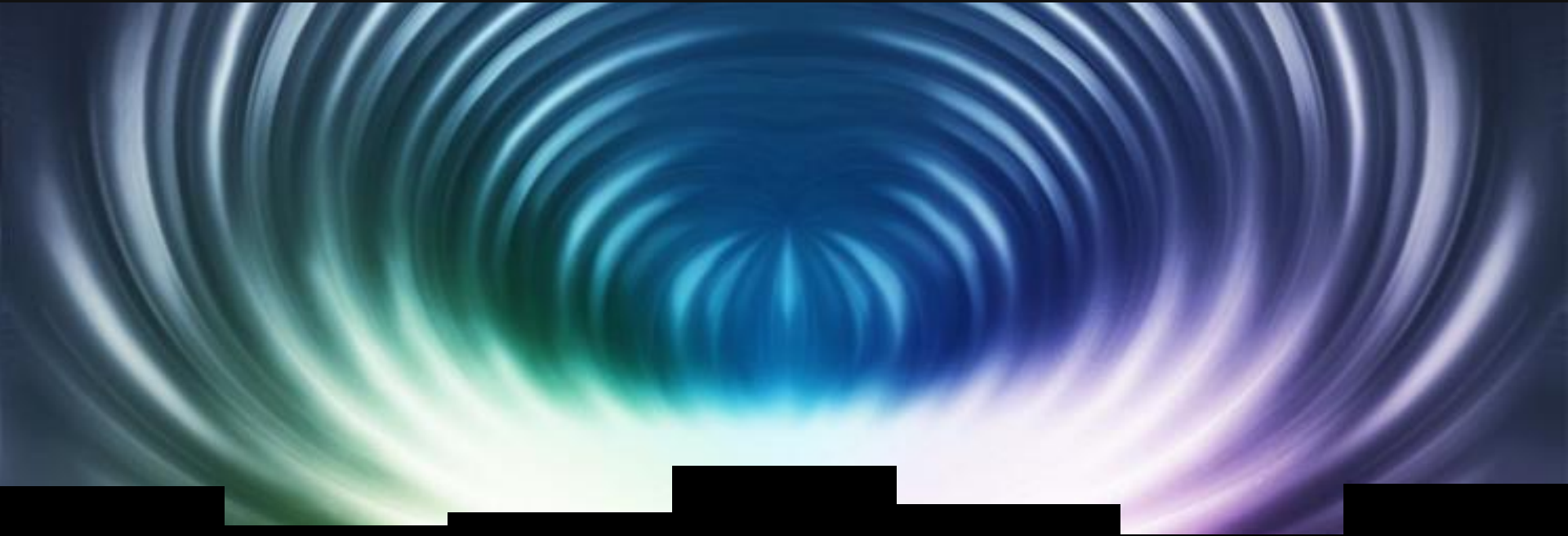


Securing Content: a multi-layered approach

DIEHL Eric



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Agenda

- A multi-layer approach for protecting content

- A tool box

- Some resources

- Conclusions





A multi-layer approach

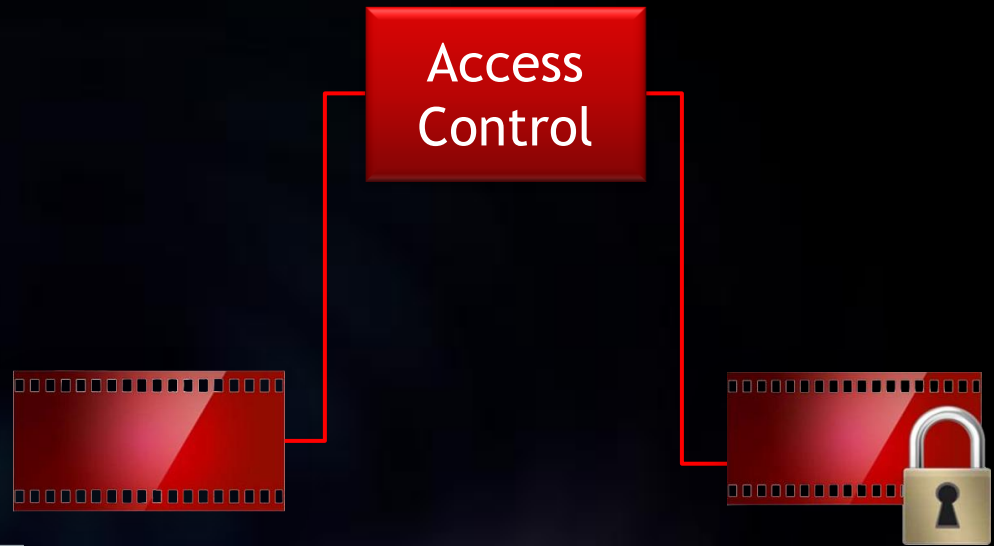
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First Security Goal

Control access to assets

- Only authorized users should have access
- Professional premises
- Not effective against insiders



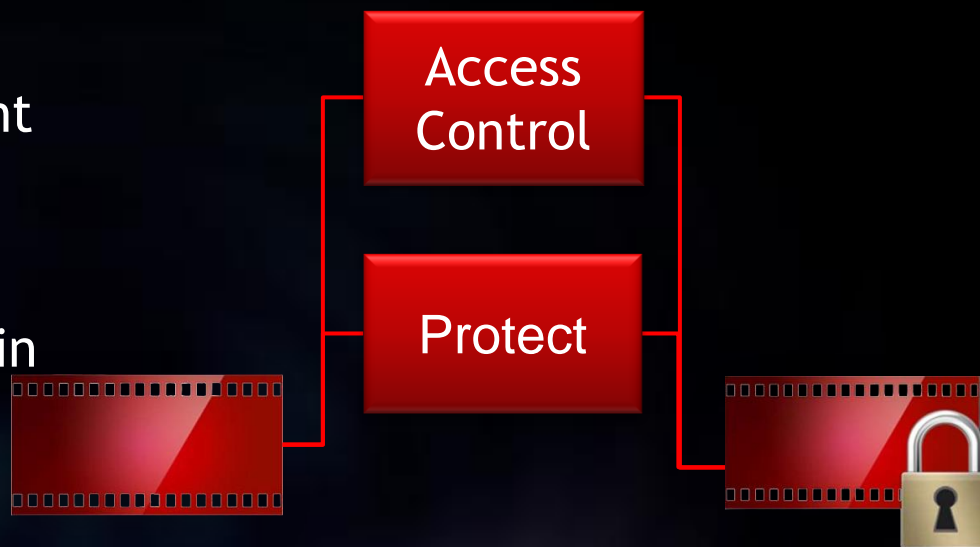
Solutions

- Physical security
- IT security
- Follow processes

Second Security Goal

Protect the assets

- Make theft useless and prevent alteration
- All along the chain
 - Physical and digital domain



Solutions

→ Encryption

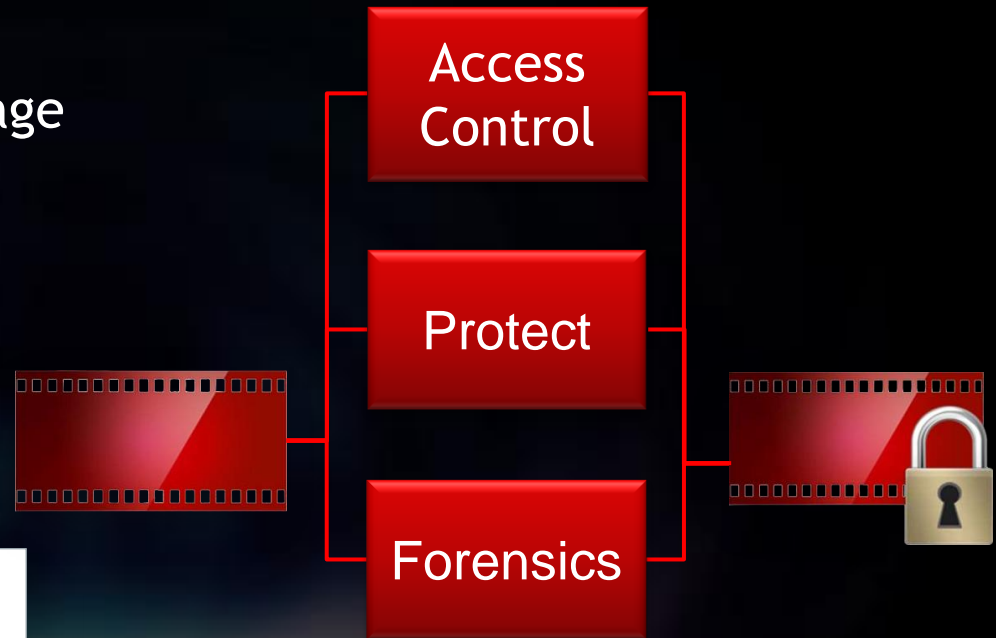
Third Security Goal

Trace the assets

- Trace back the origin of leakage
- All along the chain
- A posteriori
 - It is too late
 - Corrective actions

Solutions

- ➔ Forensics watermark
- ➔ Video
- ➔ Audio



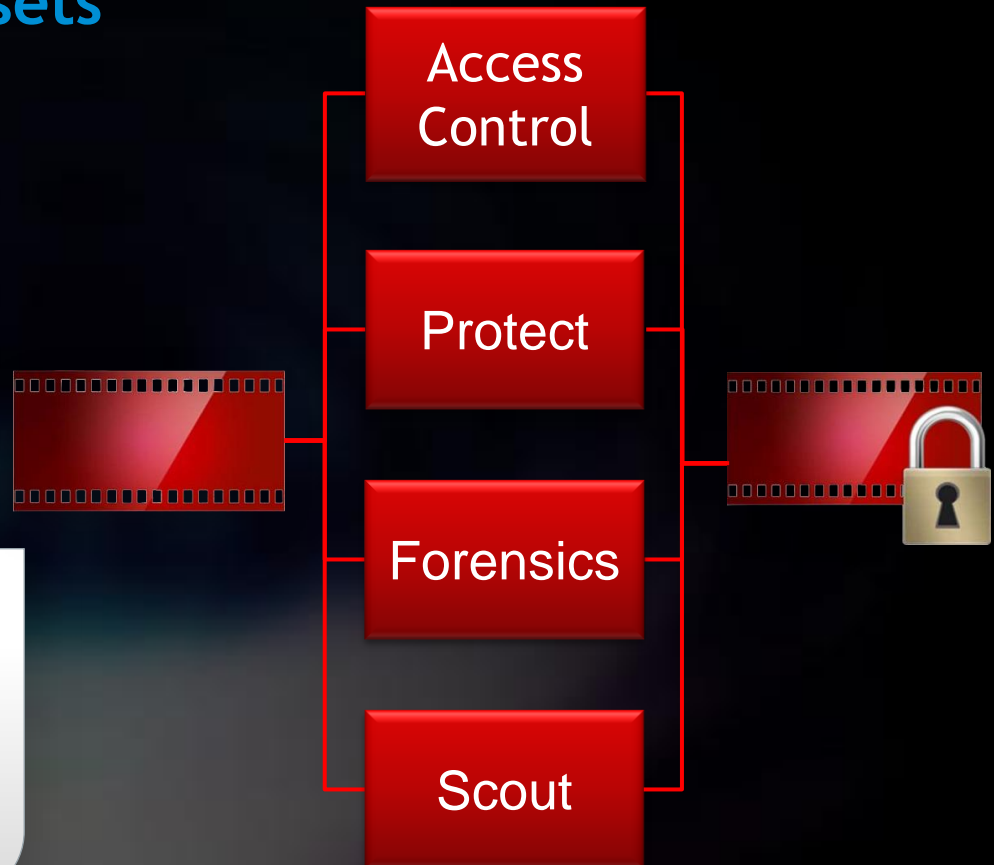
Fourth Security Goal

Limit illegal use of the assets

- Spot illegal content
 - Internet
- Too late

Solutions

- ➔ Video fingerprint
- ➔ Forensics detection



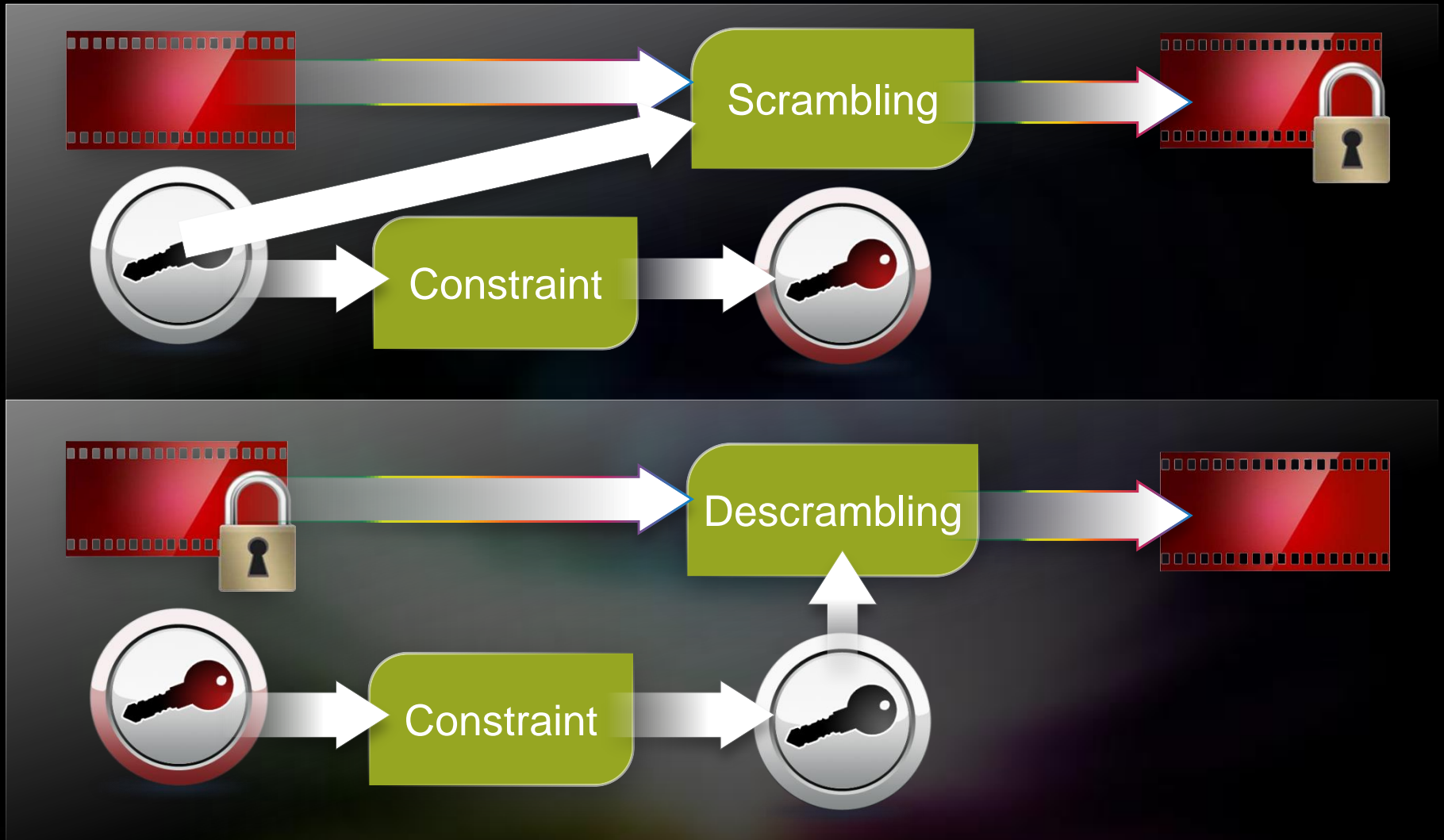


A Tool Box

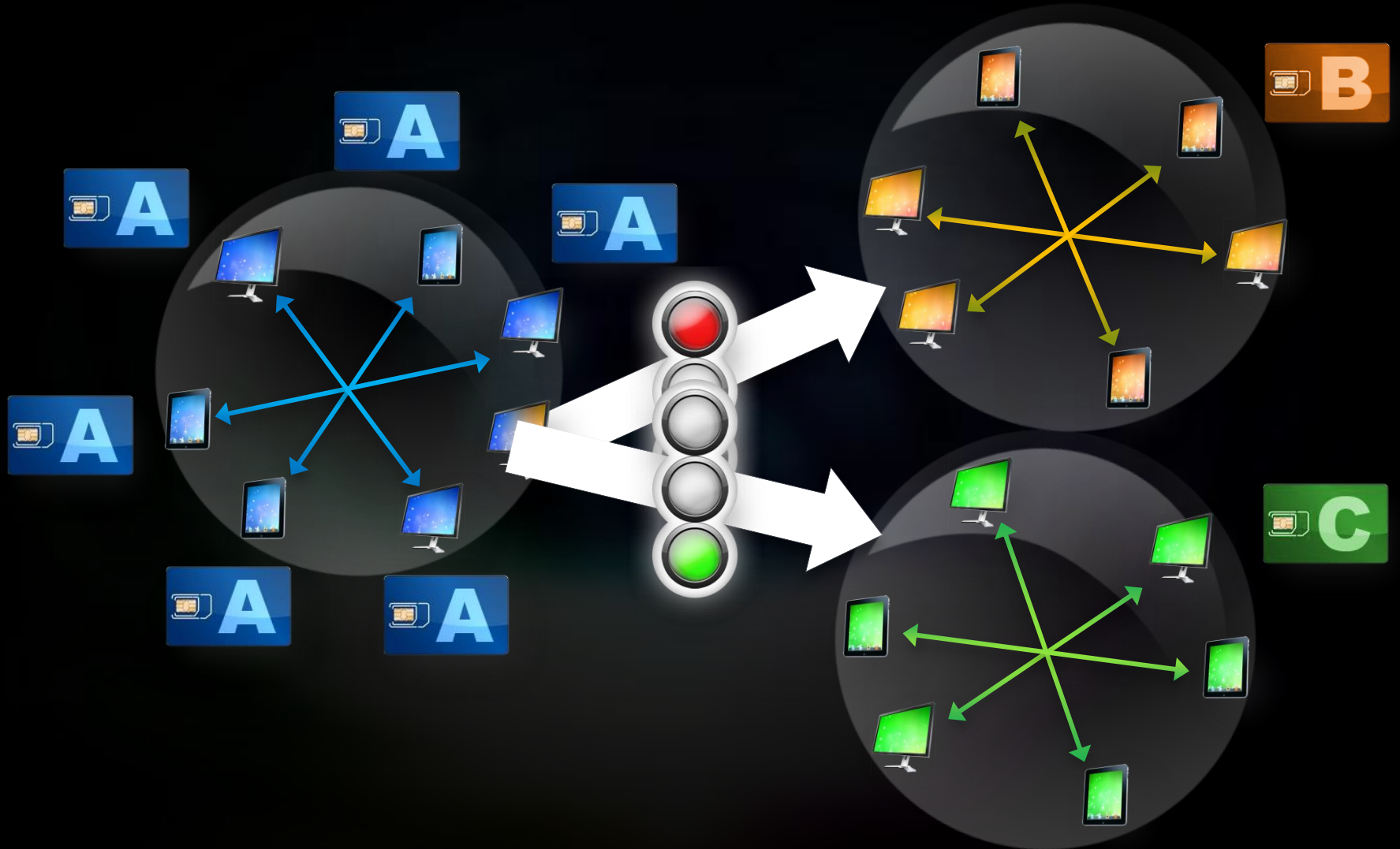
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Encryption



Domain Key Management



Watermark

Information strongly embedded in content

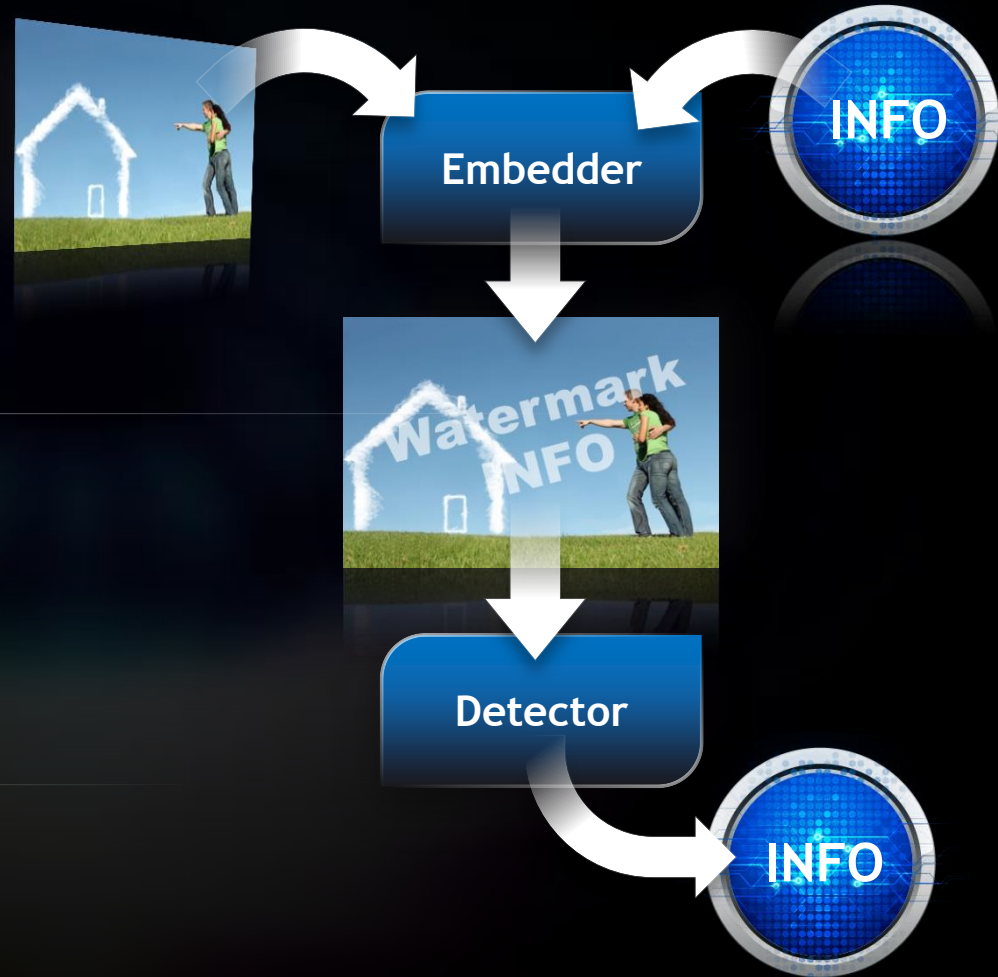
- Imperceptible
 - Audio
 - Video

Robust to “attacks”

- Voluntary
- Involuntary
 - Normal transformation

Payload

- Viewer identity
- Time stamp
- Theater identity





Some Resources

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ContentArmor™ New Generation of Video Watermark

Working in the compressed domain

- Up to 4K
- Even encrypted

Two-step watermark

- Profiling
- Embedding

Low calculation for embedding

- Blitz fast
- Easy and cheap to implement

Robust to attacks



ContentArmor Seal: secure viewing

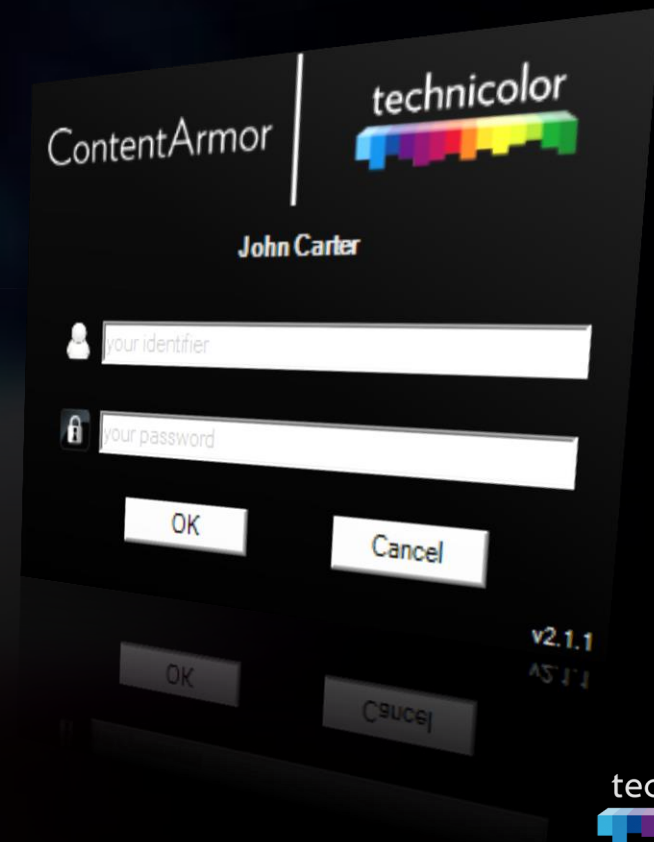
State of the art encryption

Individual forensic marking

- Visible burn in
- Invisible watermark
- Inaudible watermark

Simplified logistics

- Same file for all viewers
- No need for Internet connection
- Easily integrated in production workflow





Conclusions

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The Art of Securing Digital Video

Security is a complex task with many pitfalls

- Ten laws

- <http://eric-diehl.com/ten-laws/>

Encryption is not just a good algorithm

- Robust implementation is key
 - Too easy to make lousy

Security is not stronger than its weakest point

- An overall complex set of interacting defenses
- Implementations

Hackers are bright

- Security is a mindset



The Art of Securing Digital Video

Trust and skill

Technicolor is your secure partner





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Security Laboratories

Thank you for your attention