A Review of Digital Cinema

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Digital Cinema Systems

- Exhibition System Organization

- Design Level Considerations
  - Standards
SYSTEM ORGANIZATION

Projector

- Decryption
- Image Scaling
- Color Management
- Format and Lens Control
- Status Monitoring
SYSTEM ORGANIZATION

Server

- Play List Operations
- Decryption & Decompression
- Link Re-Encryption
- Status Monitoring
SYSTEM ORGANIZATION

Security

- Authorization Package = content keys + DRE
- Receives Key Requests
- Securely Transmits Keys to Devices
- Status Monitoring
Theatre Management System

- Server Management
- Play List Generation
- Status Monitoring
SYSTEM ORGANIZATION
Audio System

- Digital Input -- AES/EBU or 1394
- Format Control via Metadata
- Status Monitoring
SYSTEM ORGANIZATION
Exhibition System
Where Standards Apply

- Image & Audio File Formats
  - SMPTE (DTIM)
- Colorimetry
  - SMPTE
- Metadata Content & File Format
  - SMPTE
Where Standards Apply

- Compression
  - MPEG / SMPTE

- Encryption
  - AES/Rijndael, Triple DES

- Data Packaging Method
  - SMPTE
Where Standards Apply

- Control & Monitoring
  - IETF (SNMP)

- Digital Rights Expression
  - XrML (Open Standard / ContentGuard)

- Key Distribution
  - ITU-T Recommendation X.509
  - IETF (IPSEC)
PACKAGING
Method

Reel 1
Reel 2
Reel 3
Reel 4
Reel 5
IMAGE
[ENGLISH]
[RATING G]

Reel 1
Reel 2
Reel 3
Reel 4
Reel 5
IMAGE
[ENGLISH]
[RATING R]

Reel 1
Reel 2
Reel 3
Reel 4
Reel 5
AUDIO
[ENGLISH]
[RATING G]
Summary

- Complex Systems
- Interoperability is the Goal
  - Existing standards to build from
  - Standards to create
Thank you!

This presentation at:  http://mkpe.com/articles

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