Digital Cinema Control Systems

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Control Applications

Show Control

- Other names: Presentation Control and Show Control Automation
- Presentation Time-Sensitive Events such as
  - Start Projector
  - Open Douser
  - Change Sound Format
  - Open Curtains
Control Applications

Supervisory Control & Monitoring

- Non-Presentation Events
  such as
  - Manual Projector Start / Stop
  - Manual Sound Format Change
  - Manual Lights On / Off
  - Projector Fault
  - Bulb Failure
Example Show Control Screen

- Program Events (from metadata) at top of bar
- Theatre Events (times chosen by theatre personnel) at bottom of bar
- Events programmed in lower lists
Example Supervisor Screen

- Manual Control & Status
- Fault Reporting
Where do these screens reside?

Theatre Management System

- Workstation
- Typically one per complex
- User interface to the digital cinema system
Overall System

Theatre Management System

Supervisory Network

Show Control Automation

SERVER

SECURITY MANAGER

THEATRE MANAGEMENT SYSTEM

PLAY LIST

DCDM

DISC ARRAY

DECRYPT

IMAGE DECOMPRESS

LINK ENCRYPT

LINK DECRYPT

IMAGER

PROJECTOR

CONTROL & MONITORING

AUTHORIZATION PACKAGE

STATUS MONITORING

PLAY LIST

STATUS MONITORING

KEYS

ENCYPTED HD-SDI (292M)

HD-SDI (292M)

AMPLIFIERS

SPEAKERS

AUDIO PROCESSOR

ANALOG AUDIO

AES / EBU AUDIO

DISCRETE AUTOMATION CONTROLS

Non-Sync

AUDIO PROCESSOR

ANALOG AUDIO

AMPLIFIERS

SPEAKERS

THEATRE MANAGEMENT SYSTEM
Show Control Automation

Implementation

- Contact Closures (support legacy equipment)
- Serial Commands (RS-232 / 422 / 485)
Show Control Automation

Implementation

- Metadata Control
  - Commands in image data tell the projector about lens selection, image format selection
  - Commands in audio data tell the sound system about sound format selection, speaker mapping, and possible “mixdown” capability
Supervisory Control & Monitoring

Implementation

- Several Popular Protocols
  - SNMP (Simple Network Management Protocol - publicly owned)
  - LonTalk (Echelon - proprietary)
  - UPnP (Universal Plug & Play - proprietary)

- Internet Access to the System
  - Remote networks can be secured using VPN (Virtual Private Networks)
Where Standards Apply

- Metadata Controls (SMPTE)
- SMTP Management Information Base (SMPTE & IETF)
Summary

- Systems Are Complex
  - Need sophisticated control methods
- Controls Can Be Categorized
  - Show Control
  - Supervisory Control
- Remote Supervisory Controls Will Be Available Over The Internet
Thank you!

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

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What does Automation mean today?

Examples

- Curtain Control
- Lighting Ramp On / Ramp Off
- Projector Start / Stop
- Audio Format Selection
- Fault Reporting
SYSTEM ORGANIZATION
Exhibition System

User Interface

"Show Control" Automation

Curtains

House Lights

Douser

Projector

Server

Sound Processor

Amplifiers

Remote Workstation

ACTION

Legend:
Action <> Show Control
C&M <> Supervisory Control & Monitoring
VPN <> Virtual Private Network