

# Digital Cinema Control Systems

Michael Karagosian  
NATO Digital Cinema Consultant





# Control Applications

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## 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

2

## **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

Acme Presentation Control: Screen 5

File Screen Configuration Help

Begin Title End Credits End

-- Program Events --

-- Theatre Events --

1 2 3 4 5

Event 1

<input checked="" type="checkbox"/> Start Projector	<input type="checkbox"/> Sound Format: Non-Sync	<input type="checkbox"/> Lights 100%	<input type="checkbox"/> Open Curtain
<input type="checkbox"/> Stop Projector	<input type="checkbox"/> Sound Format: Stereo Optical	<input type="checkbox"/> Lights 50%	<input type="checkbox"/> Close Curtain
<input type="checkbox"/> Douser Open	<input type="checkbox"/> Sound Format: Digital 5.1	<input type="checkbox"/> Lights Off	
<input type="checkbox"/> Douser Close			

Event 2

<input type="checkbox"/> Start Projector	<input type="checkbox"/> Sound Format: Non-Sync	<input type="checkbox"/> Lights 100%	<input checked="" type="checkbox"/> Open Curtain
<input type="checkbox"/> Stop Projector	<input type="checkbox"/> Sound Format: Stereo Optical	<input type="checkbox"/> Lights 50%	<input type="checkbox"/> Close Curtain
<input checked="" type="checkbox"/> Douser Open	<input checked="" type="checkbox"/> Sound Format: Digital 5.1	<input checked="" type="checkbox"/> Lights Off	
<input type="checkbox"/> Douser Close			

Event 3

<input type="checkbox"/> Start Projector	<input type="checkbox"/> Sound Format: Non-Sync	<input type="checkbox"/> Lights 100%	<input type="checkbox"/> Open Curtain
<input type="checkbox"/> Stop Projector	<input type="checkbox"/> Sound Format: Stereo Optical	<input checked="" type="checkbox"/> Lights 50%	<input type="checkbox"/> Close Curtain
<input type="checkbox"/> Douser Open	<input type="checkbox"/> Sound Format: Digital 5.1	<input type="checkbox"/> Lights Off	
<input type="checkbox"/> Douser Close			

Event 4

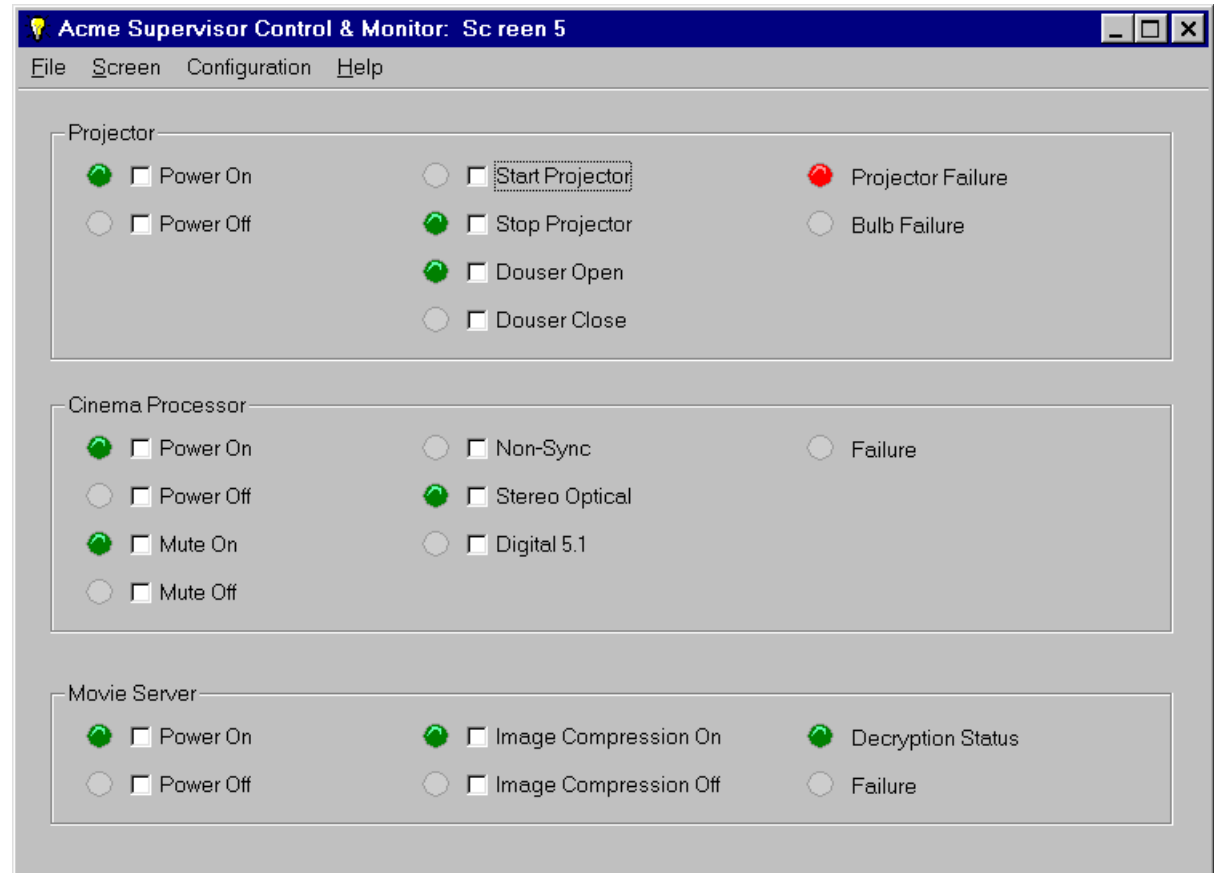
<input type="checkbox"/> Start Projector	<input checked="" type="checkbox"/> Sound Format: Non-Sync	<input checked="" type="checkbox"/> Lights 100%	<input type="checkbox"/> Open Curtain
<input type="checkbox"/> Stop Projector	<input type="checkbox"/> Sound Format: Stereo Optical	<input type="checkbox"/> Lights 50%	<input type="checkbox"/> Close Curtain
<input type="checkbox"/> Douser Open	<input type="checkbox"/> Sound Format: Digital 5.1	<input type="checkbox"/> Lights Off	
<input checked="" type="checkbox"/> Douser Close			

Event 5

<input type="checkbox"/> Start Projector	<input type="checkbox"/> Sound Format: Non-Sync	<input type="checkbox"/> Lights 100%	<input type="checkbox"/> Open Curtain
<input checked="" type="checkbox"/> Stop Projector	<input type="checkbox"/> Sound Format: Stereo Optical	<input type="checkbox"/> Lights 50%	<input type="checkbox"/> Close Curtain
<input type="checkbox"/> Douser Open	<input type="checkbox"/> Sound Format: Digital 5.1	<input type="checkbox"/> Lights Off	
<input type="checkbox"/> Douser Close			

# Example Supervisor Screen

- Manual Control & Status
- Fault Reporting



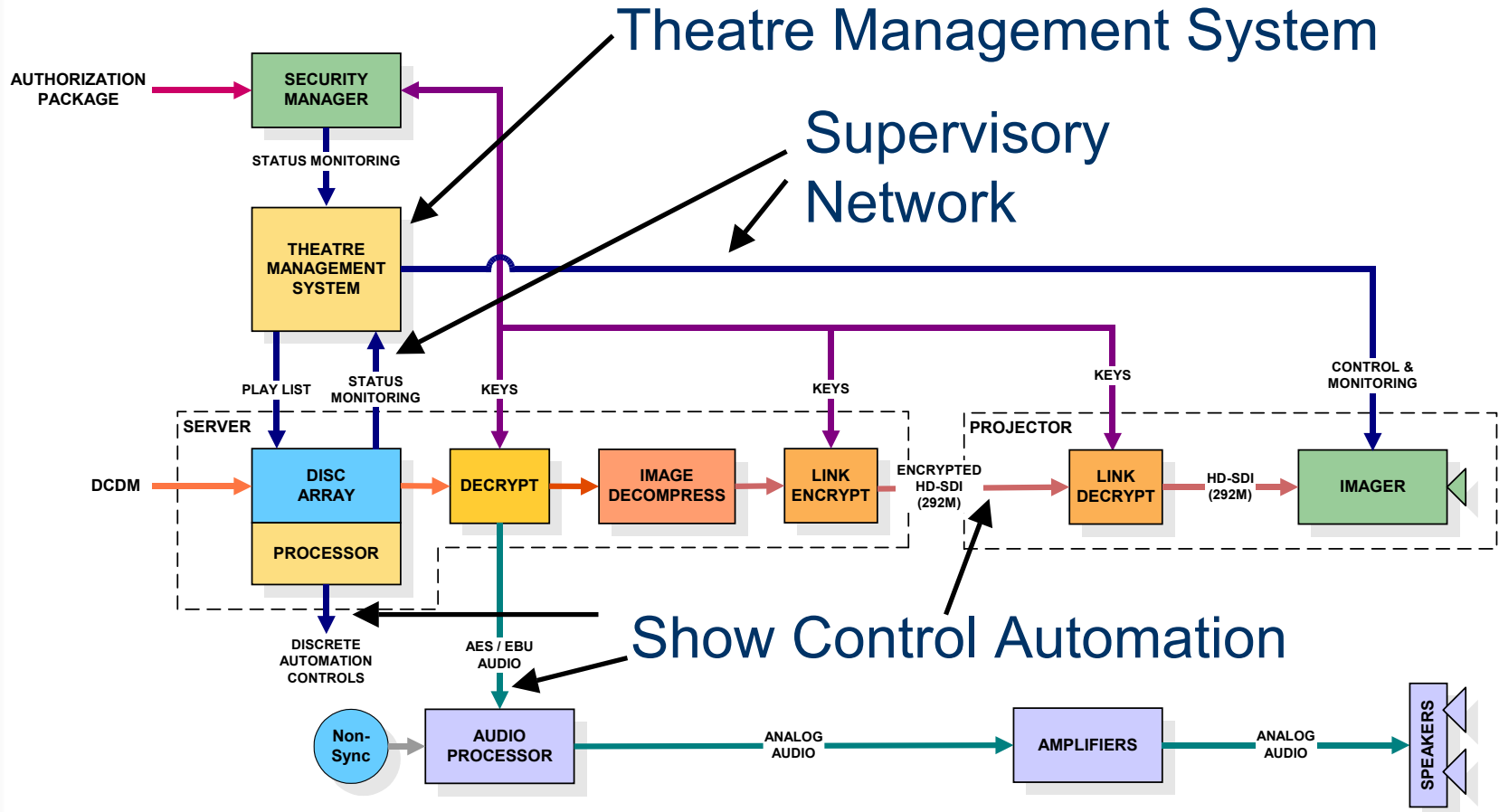


Where do these screens reside?

## **Theatre Management System**

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

# Overall System





# Show Control Automation

## Implementation

1

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





# Show Control Automation

## Implementation

2

### ■ 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

Exhibi

