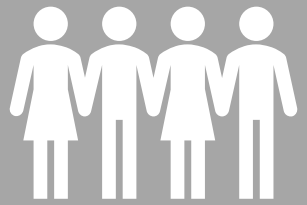
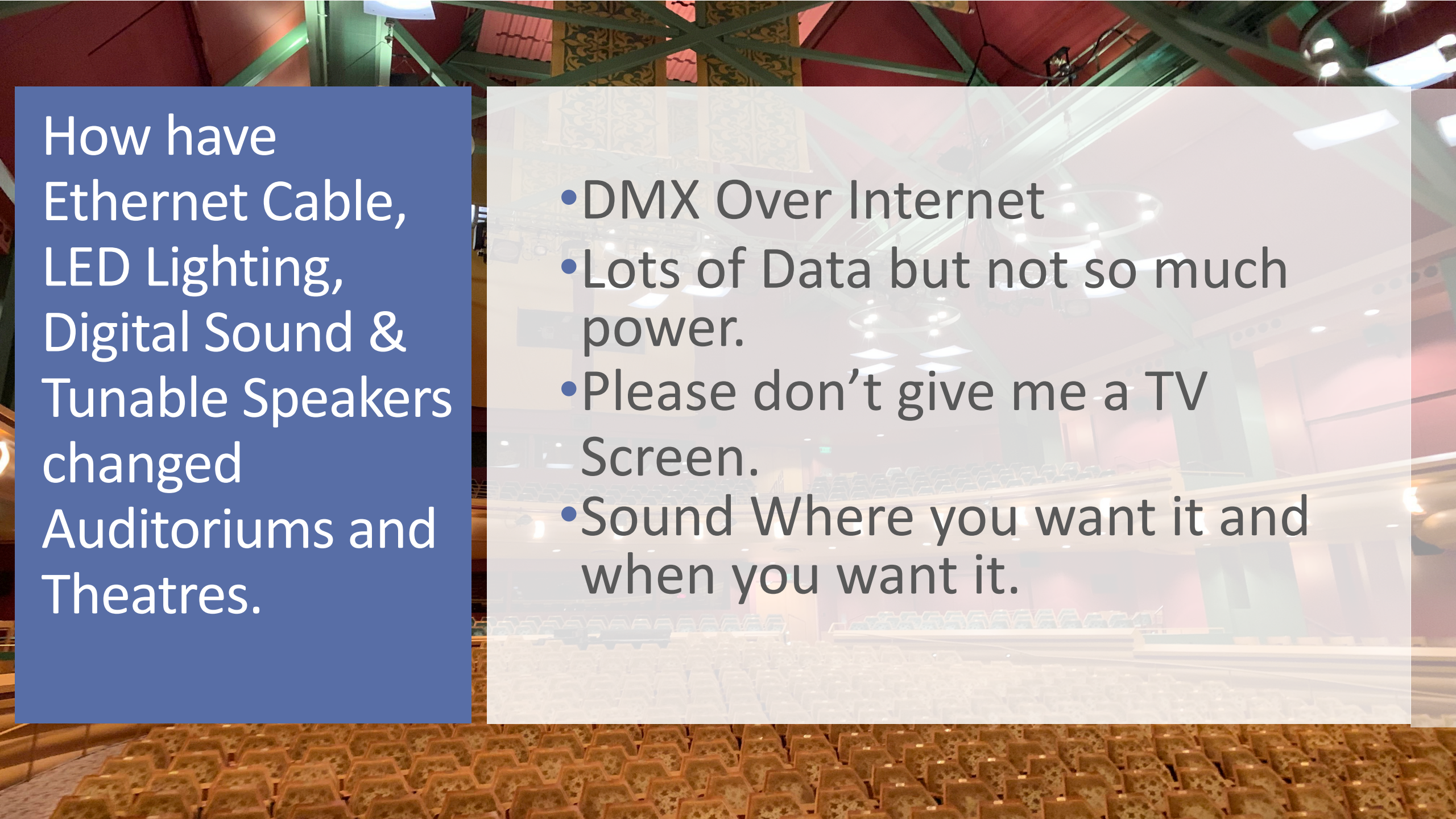
21st Century School Auditoriums and Theatres



Presenters:

Russ Blain – Fantasee Integrations

David Kolenda – West Michigan Lighting



How have Ethernet Cable, LED Lighting, Digital Sound & Tunable Speakers changed Auditoriums and Theatres.

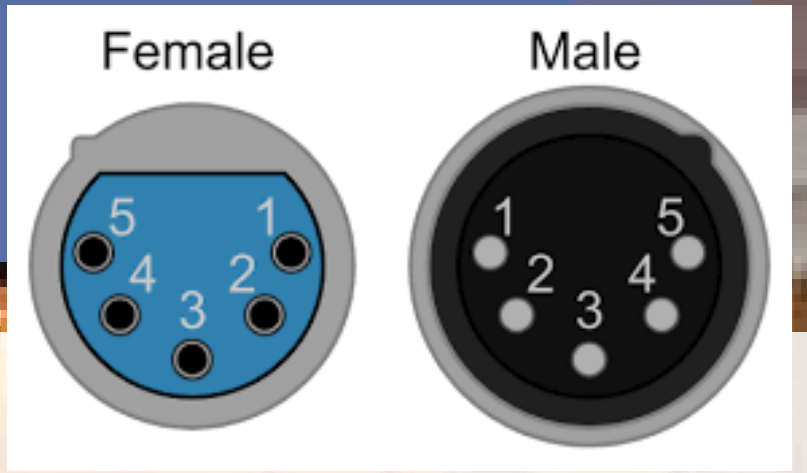
- DMX Over Internet
- Lots of Data but not so much power.
- Please don’t give me a TV Screen.
- Sound Where you want it and when you want it.

Ethernet in the Theatre

DMX EVOLUTION

- Developed by the Engineering Commission of United States Institute for Theatre Technology (USITT), the DMX512 standard was created in 1986, with subsequent revisions in 1990 leading to USITT DMX512/1990Lighting System (Stage and House Lighting)

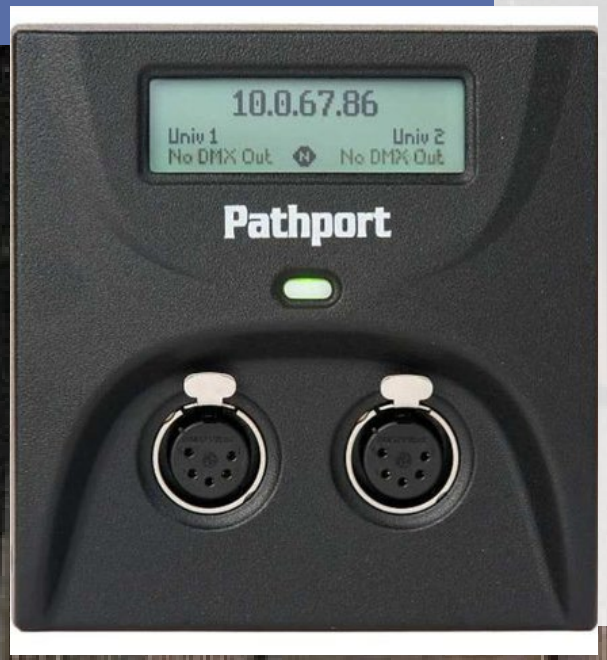
DMX 512



- Up to 512 channels of control per “Universe.”
- DMX Cables typically terminate in 5-Pin connectors (sometimes 3-Pin but PLEASE don’t use microphone cables) when for theatrical use.
- DMX (out) signals can be amplified and split using “opto-splitters” or “repeaters”
- DMX/RDM enables fixtures to send data to controllers and computers.
- Multiple Universes of DMX 512 can be transmitted over Ethernet.

The Need For Multiple DMX Universes

DMX 512 OVER ETHERNET



- DMX over Ethernet allows for complete networks to be established solely for theatrical lighting data communications.
- Lighting consoles and other DMX control devices typically plug into the system directly using ethernet cable & RJ45 Jacks

- A “gateway” is required to “break-out” individual DMX universes from a DMX over ethernet network.
- Gateways are typically available to “break-out” between 1-8 universes, and they are available in rack mount, wall mount, and portable (pipe mount) configurations. Gateways with multiple universes are assignable.

Incandescent Fixtures

REQUIRE AN ELECTRICAL DIMMER TO REGULATE INTENSITY.

COLOR, FOCUS, FRAMING, ARE ALL CONTROLLED MANUALLY

LED FIXTURES

INTENSITY CAN BE REGULATED THREE WAYS:

- Electrical Dimming
  - House Lighting
  - Architectural Fixtures
- 0-10v Dimming
  - House Lighting
  - Architectural Fixtures
- Data (DMX) controlled dimming
  - Stage Lighting
  - House Lighting

COLOR, FOCUS, FRAMING, AND NUMEROUS OTHER PROPERTIES CAN BE CONTROLLED FROM THE LIGHTING CONSOLE AND ARCHITECTUAL CONTROL STATIONS

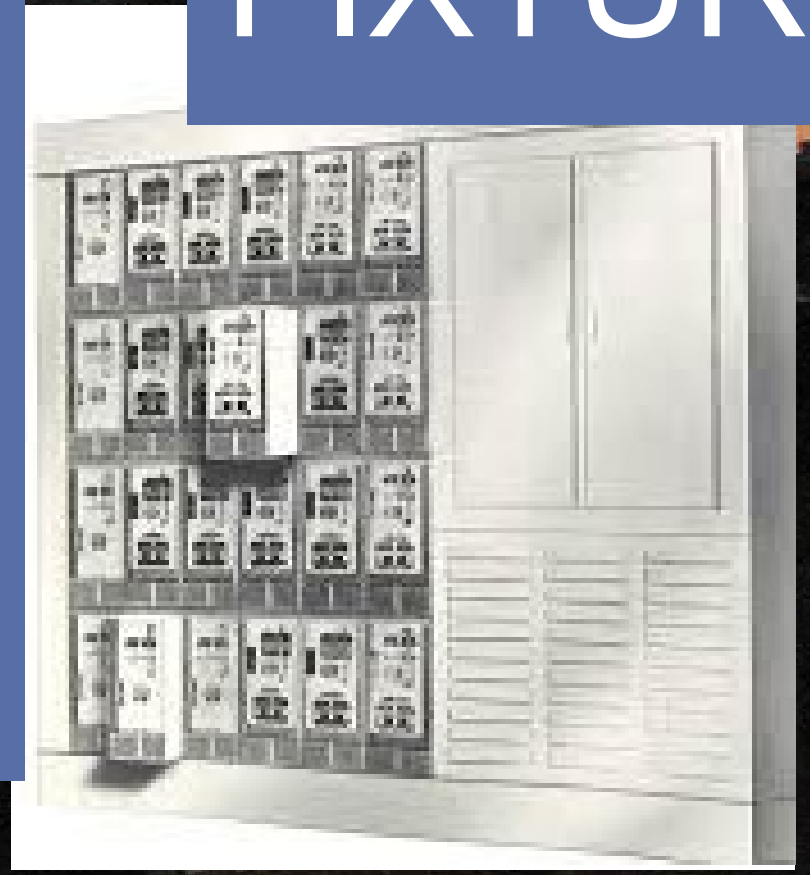
DIMMING LED FIXTURES

Electrical (Mains) Dimming:

- **Often doesn't play well with LED fixtures.**
  - **Flicker**
  - **Drop-Outs and Bump-Ins**

- **Some manufacturers offer module options specifically designed to accommodate different types of LED fixtures.**

- **Some LED fixtures and lamps are now being designed to dim smoother when using electrical dimming.**
  - **The best are a bit pricey.**



DIMMING LED FIXTURES

0-10v Dimming:

- Requires constant full current to power fixtures.
- Requires a low-voltage wire be run between fixtures which regulates intensity.
- Often used for house lighting control and in architectural fixture control.
- Never used in theatrical lighting fixtures
- Drop-Outs and Bump-Ins
- Inconsistent dimming between fixtures.
- DMX signal is typically converted into 0-10v when 0-10v fixtures are integrated into a theatrical lighting system.

LED FIXTURES

Data (DMX) controlled dimming:

- Requires constant full current to power fixtures.
- Requires a low-voltage (DMX) cable be run between fixtures which provides data to control intensity, color, and other properties, depending on the specific fixture.
- Wireless DMX between controllers and fixtures is becoming more common.
- Commonly used in both theatrical stage and house lighting fixtures.
- Typically results in very smooth dimmer curves with no Drop-Outs and Bump-Ins.

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RELAY PANELS

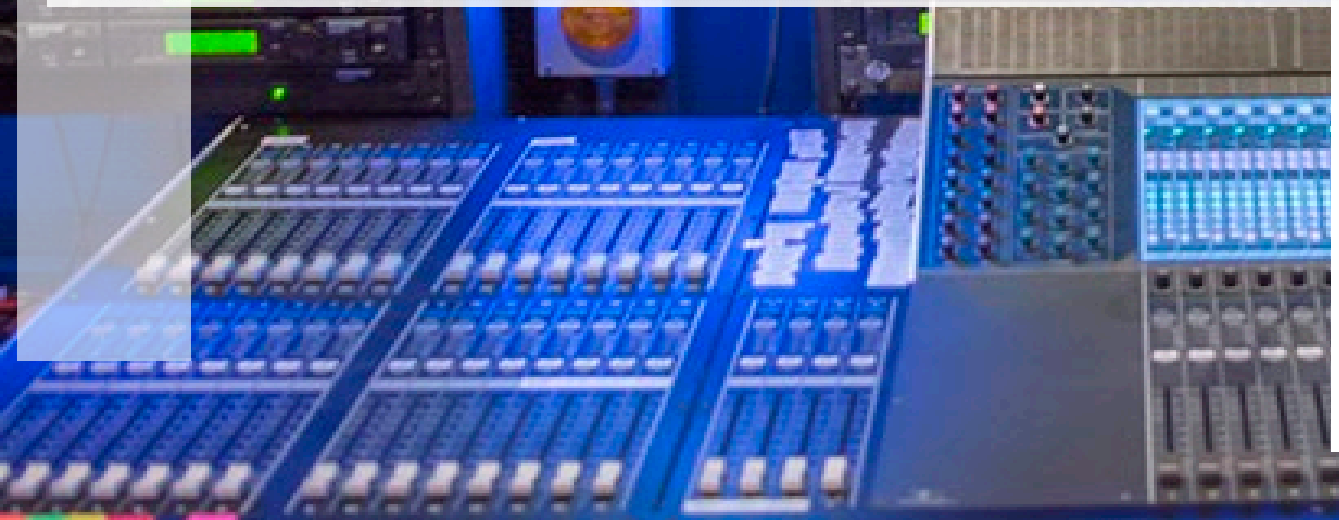
- What options exist for converting from Dimmer Racks to Relay Panels?
- Are any Dimmers still going to be required?
- What options exist for house lighting upgrades?
- What options exist for Architectural Control?
- What is going to be the best way to get DMX signal from the control console to the fixtures?
  - DMX Cables and Opto-Splitters?
  - Wireless DMX Transmitters and Receivers?
  - Installing a DMX over Ethernet Network?
  - A combination of any or all the above?

Digital Audio

- Digital Snakes
- Digital Mixers
- Tunable Speakers
- Tunable Amplifiers

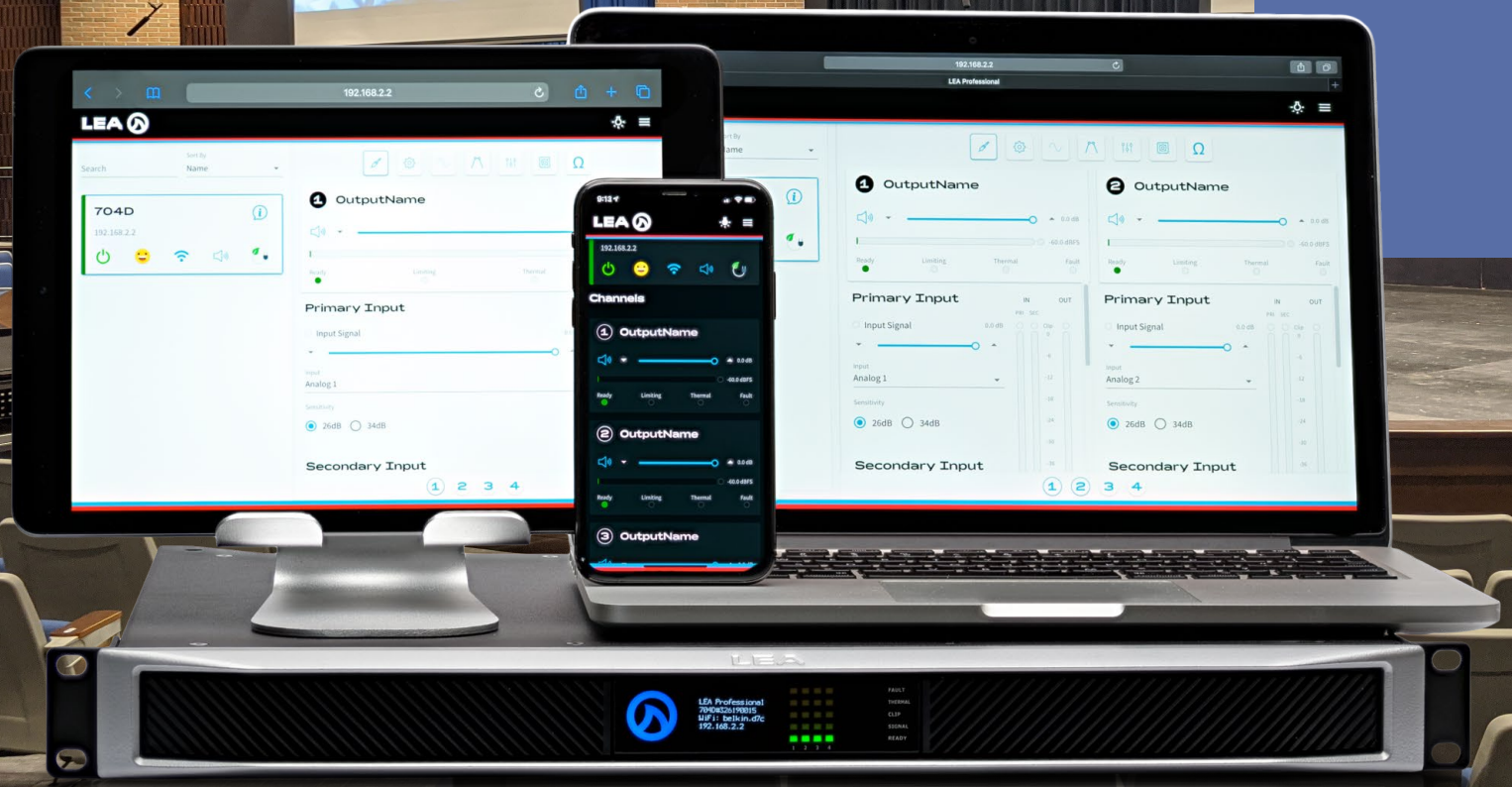
Analogue Vs Digital Snakes

Analogue Vs Digital Mixers



Tunable Speakers

Tunable Amplifiers



TRANSITIONING CONSIDERATIONS

- Must it happen all at once, or can it be accomplished in steps?
- What of the fixture inventory can be salvaged?
- What of the existing dimming & control systems can be salvaged?
- What is the present system of architectural control?
- What is the status of the existing House Light (and other integrated architectural) Fixtures?

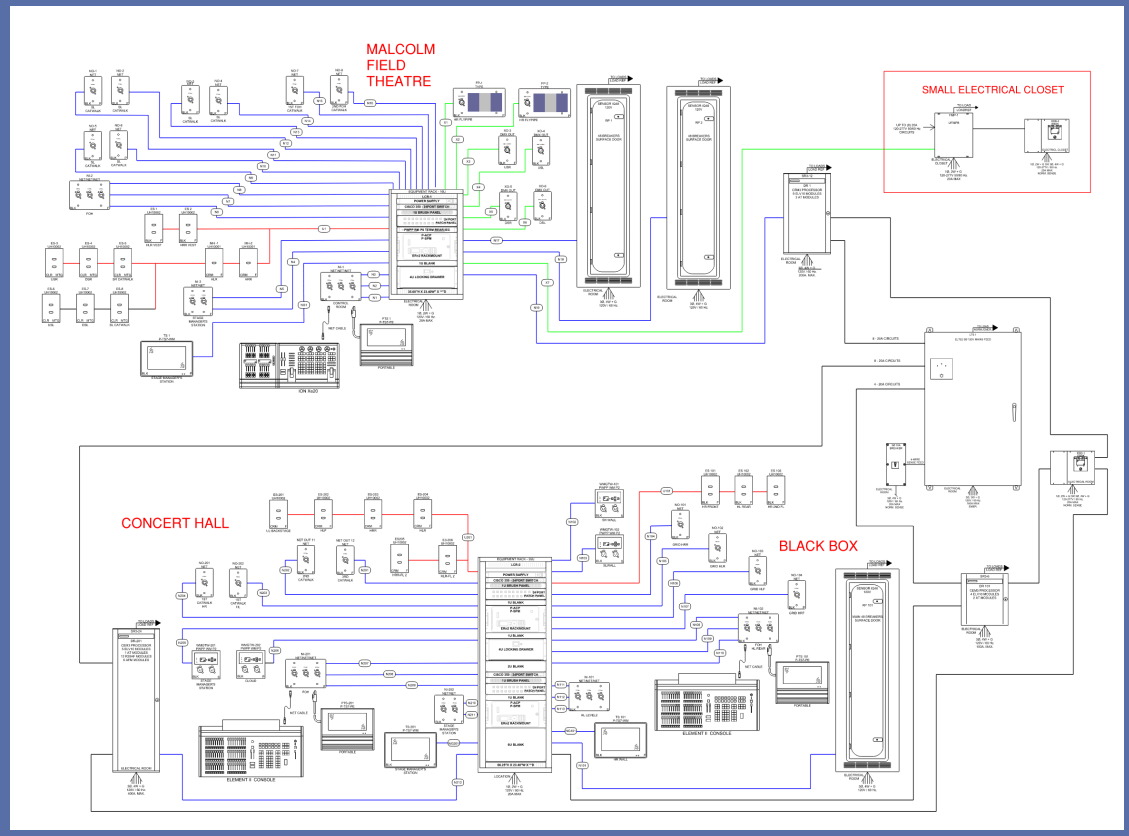
MOVING FORWARD

- System Design:
  - In-House
  - Theatrical Lighting Integrator (Eventually)
  - Specifier (Public Bid & Larger Systems)
- A Lighting Integrator can often provide you with product demonstrations and budgeting estimates.
- A specifier provides a system design, specifications, and a drawing set, suitable for public bid. Specifiers frequently continue to serve their clients throughout a project. Specifiers charge a “consulting fee” for their services.

A Manufacturer’s Representative can design systems, provide demo gear, and budget prices. A Rep be used as a first step to start answering basic questions and help give direction and advice on products and systems that would compliment your performance space .

- At some point during the process, input and services from a Licensed Electrical Contractor will be required

Q&A


MALCOLM
FIELD
THEATRE
SMALL ELECTRICAL CLOSET
CONCERT HALL
BLACK BOX