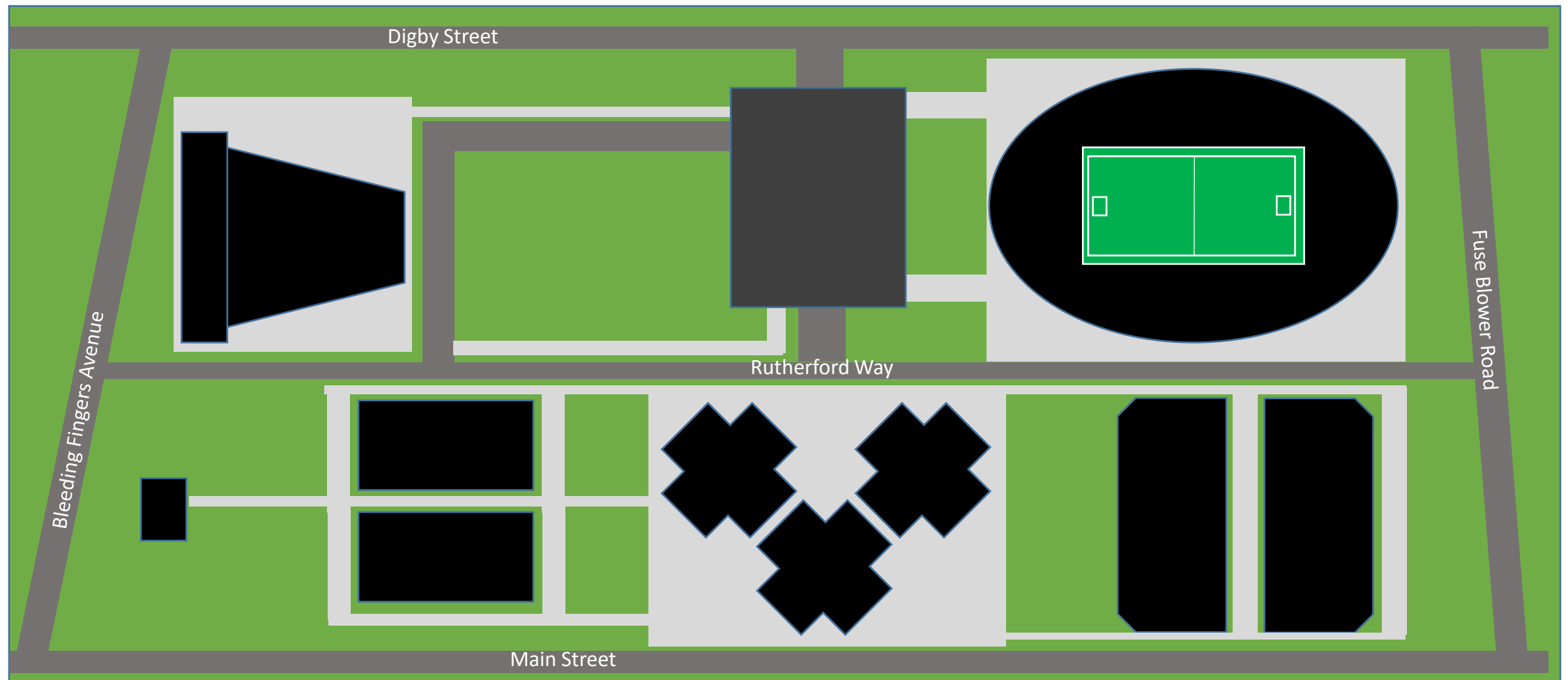


System Design Session #1

A Case Study of the Audio Systems at
Sir Digby Rutherford's School for Wayward Musicians

Our Case Study Begins...

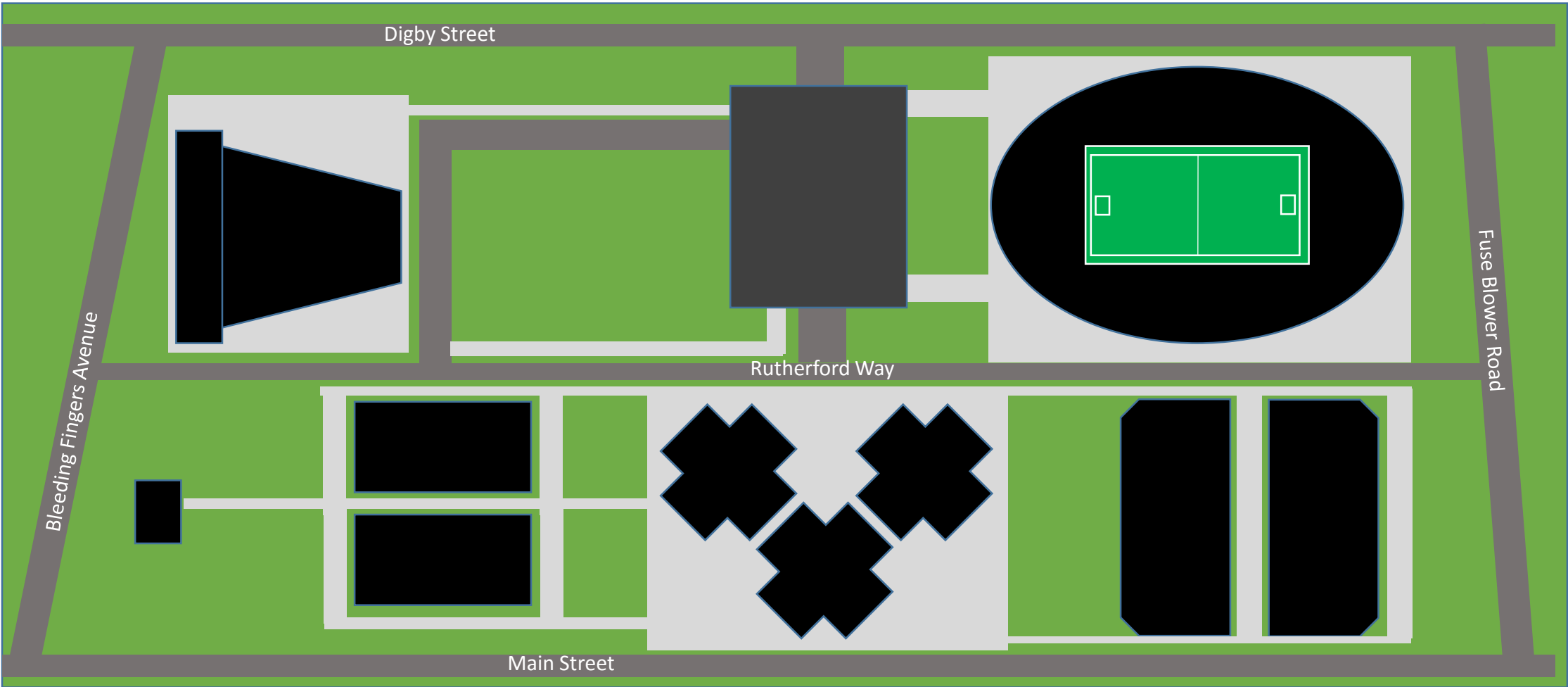
- Below is a campus map for one of the most highly successful yet unpublicized educational institutions on the planet.





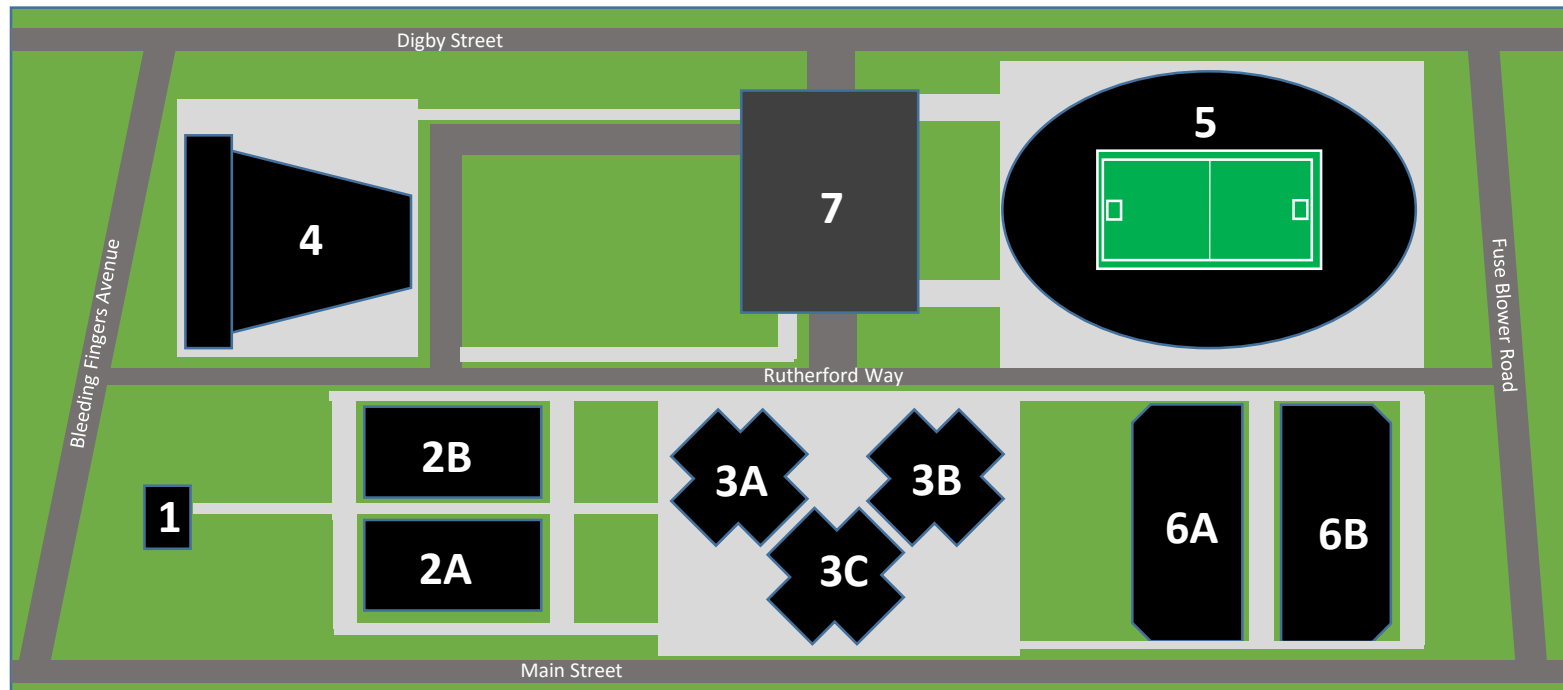
Sir Digby Rutherford's School for Wayward Musicians

“Turning Musicians into Productive Members of Society”



Campus Overview

Below is a map of the campus as it stands today. Once a desolate piece of wasteland, now an educational institution of the highest order.



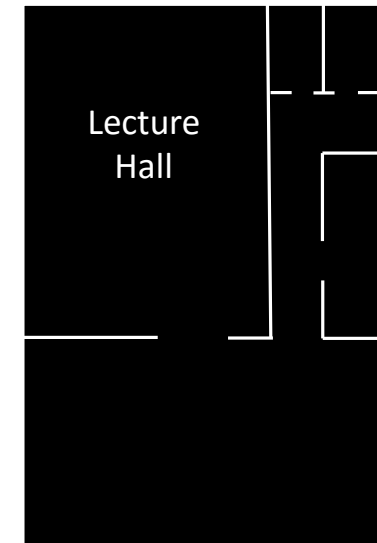
- 1 – Lecture Hall (Original Building)
- 2 – Education Center (Classrooms)
- 3 – Student Center & Housing
- 4 – Performing Arts Center
- 5 – Stadium
- 6 – Hotel & Conference Center
- 7 – Broadcast & Main Offices

From Humble Beginnings

The first building on campus was an existing structure located on a large piece of farmland.



1 – Lecture Hall (Original Building)



Lecture Hall - Project Site

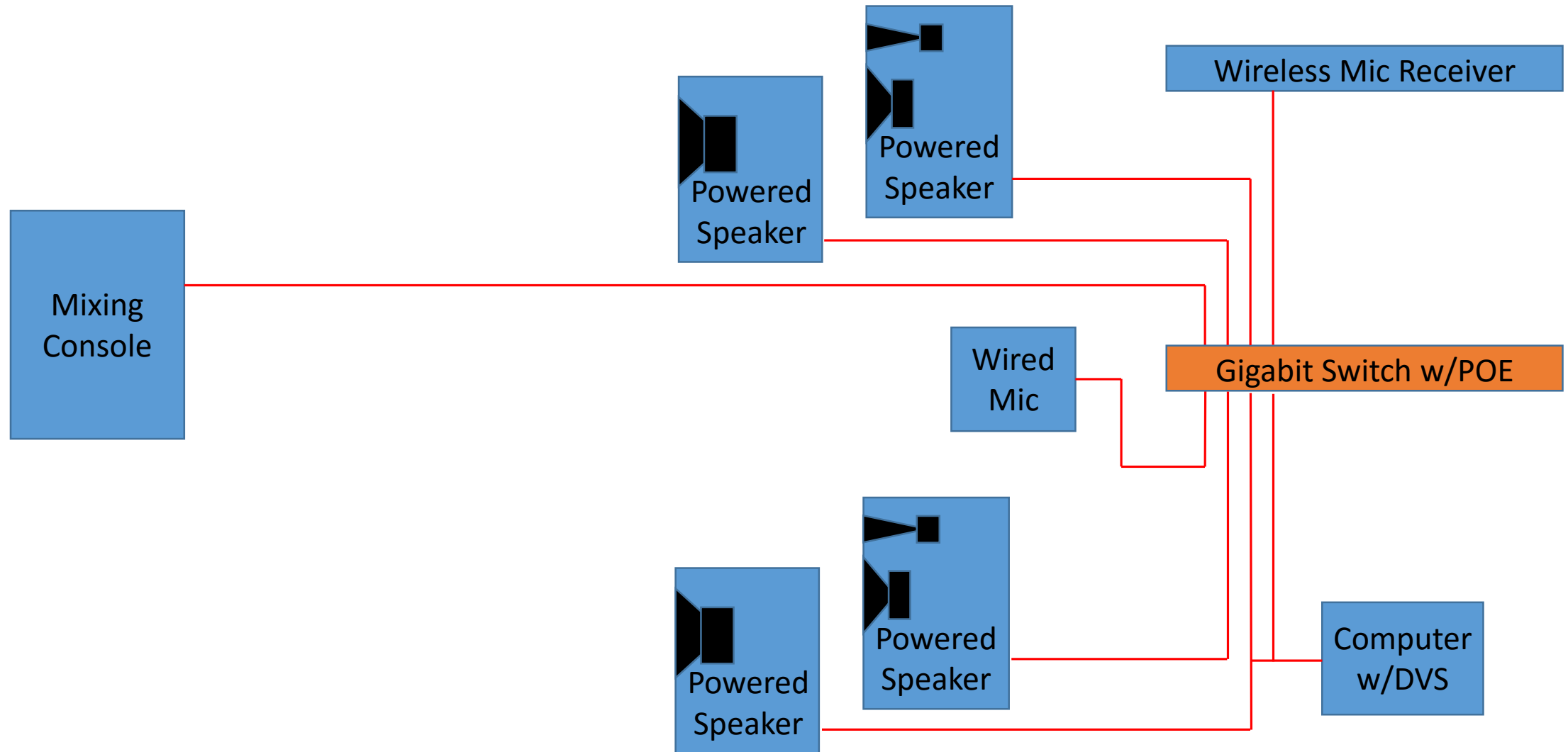
- The building is an old former warehouse that was repurposed for lectures, A/V presentations, and occasional live music.
 - It's construction has made the installation any new A/V infrastructure difficult.
 - Some older, existing telecom/network cabling already exists in the building.
 - Were used as pull strings for new CAT-5e cables
 - Sir Digby did not want to write a large check to his favorite electrician to install conduit/raceway of the capacity required for an analog.
 - He also wants to have some portability with the system, opting to still use speakers on portable stands so he can still do an occasional "road show".
 - He decided to design a networked audio system using Dante.

Lecture Hall - System Components

- The system will consist of the following Dante Enabled gear:
 - Mixer
 - Powered Loudspeaker
 - Wireless Microphone
 - Wired Microphone
 - Computer running DVS
 - Gigabit Ethernet Switch

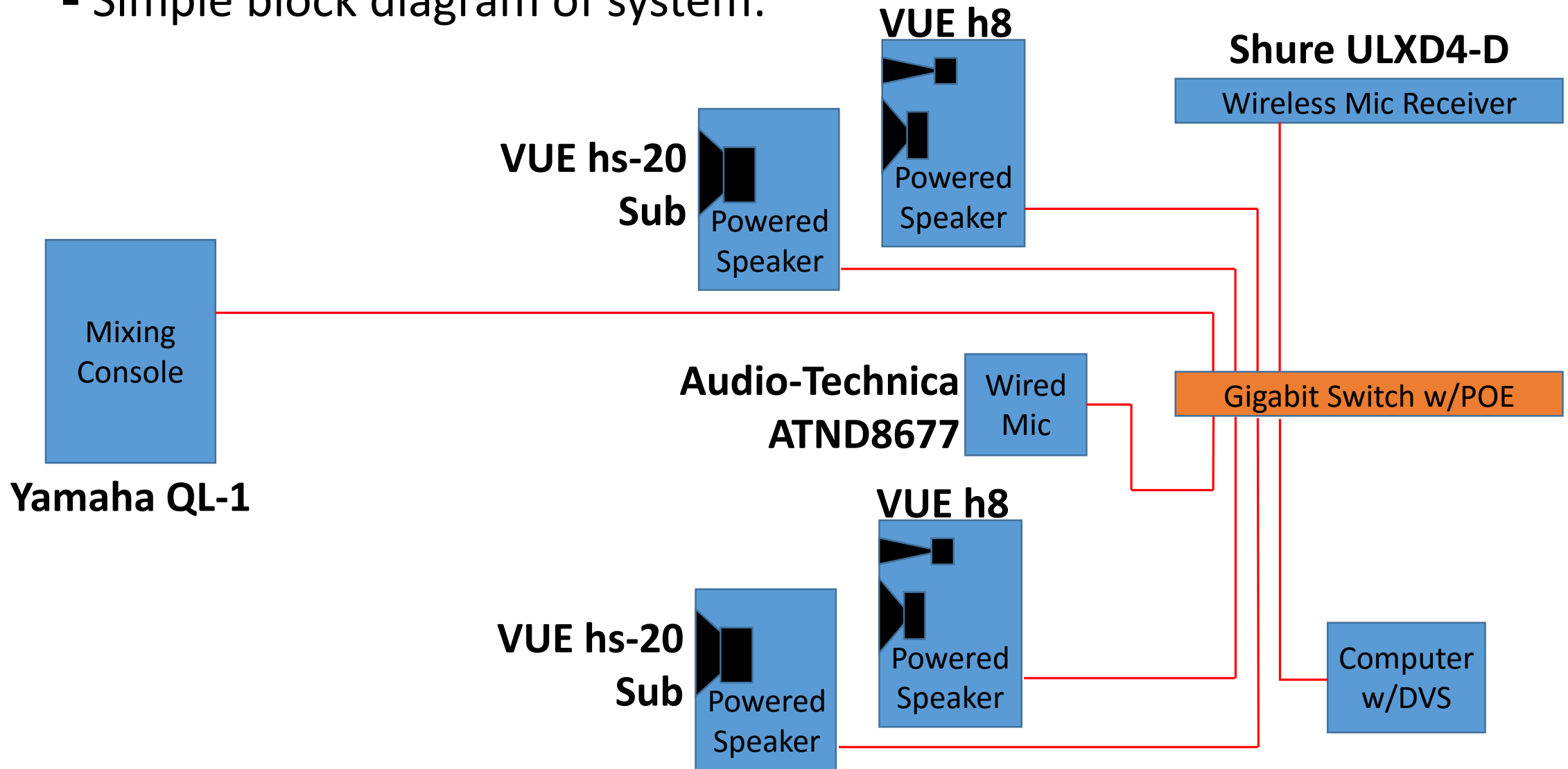
Lecture Hall - System Components

- Simple block diagram of system:



Lecture Hall - System Components

- Simple block diagram of system:



Lecture Hall - System Components

VUE h Class



Yamaha QL-1

VUE h Class



Gigabit Switch w/PoE



Shure ULXD4-D



**Audio-Technica
ATND8677**

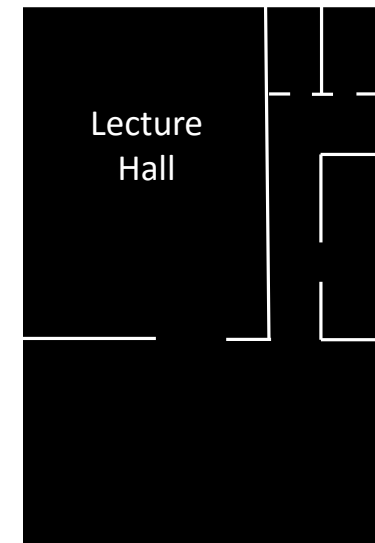


**Computer
w/DVS**



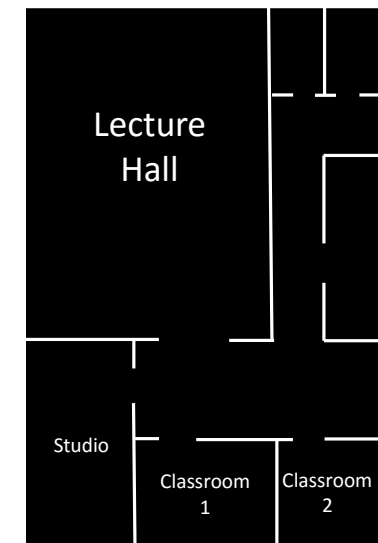
Lecture Hall - Expanding the System

- Several months go by and due to the success of Sir Digby's teaching methods, enrollment skyrockets and the lecture hall is jammed pack.
- Government funding is approved for the school since they achieved a high placement rate with recent graduates.
 - Especially in preparing drummers, bass players, guitarists, and keyboardists for careers in the professional audio industry.



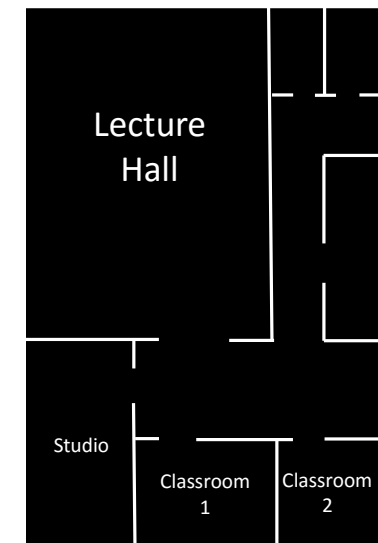
Lecture Hall - Expanding the System

- He decided to convert the remaining space in the building into some small classrooms and a production studio.
 - The Classrooms and Studio are to operate individually.
 - But have the ability to share sources and mixes between the rooms.
 - And also have the ability to produce and post on-line videos of the various classes being taught in the rooms.



Lecture Hall Expansion - Design Concerns

- The Production Studio is given a higher priority with the overall budget than the classrooms.
- Limited space in the classrooms
 - The Studio will house a majority of the gear for all three rooms.
- Sharing of existing resources.
 - Decide to share the wireless microphones between the Lecture Hall and the Classrooms.
- The network design
 - All 8 ports of the Gigabit switch that is used in the Lecture Hall are already used.
 - Buy a larger switch
 - Buy another switch of the same type?



Production Studio - System Components

- The Production Studio audio system requires:
 - Computer with DAW software, Plug-ins & DVS
 - Dante enabled I/O devices
 - Microphones and direct boxes
 - Studio Monitors
- There is also the need to incorporate some existing esoteric analog signal processors (non-Dante devices).
- Let's look at the Dante I/O devices...

Production Studio – Dante I/O Devices

- There are many Dante I/O devices built for studio use, such as:

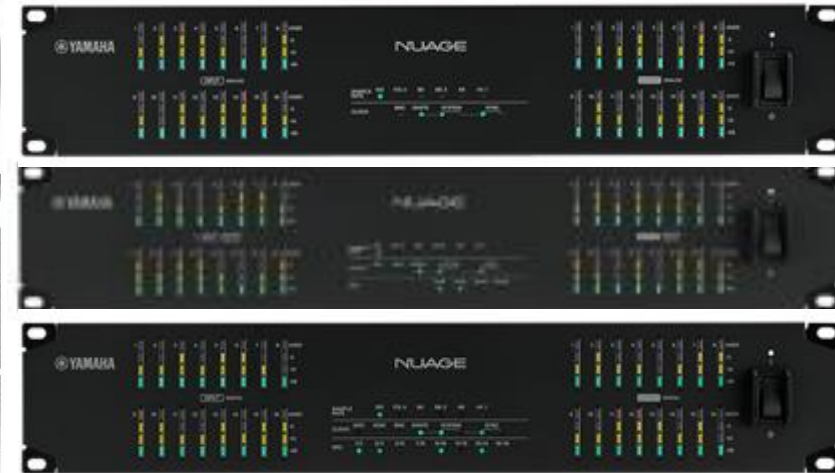
Focusrite RedNet



Solid State Logic

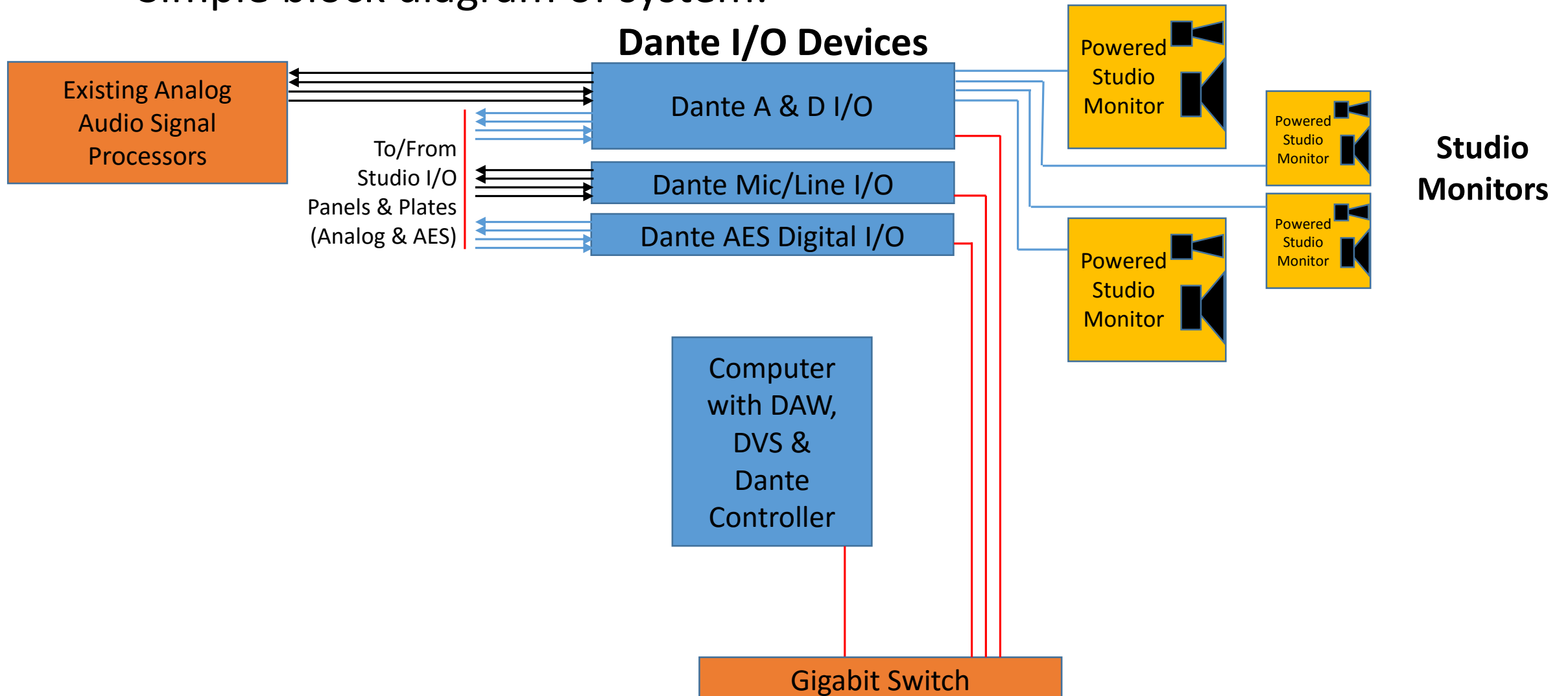


Yamaha Nuage



Production Studio- Block Diagram

- Simple block diagram of system:

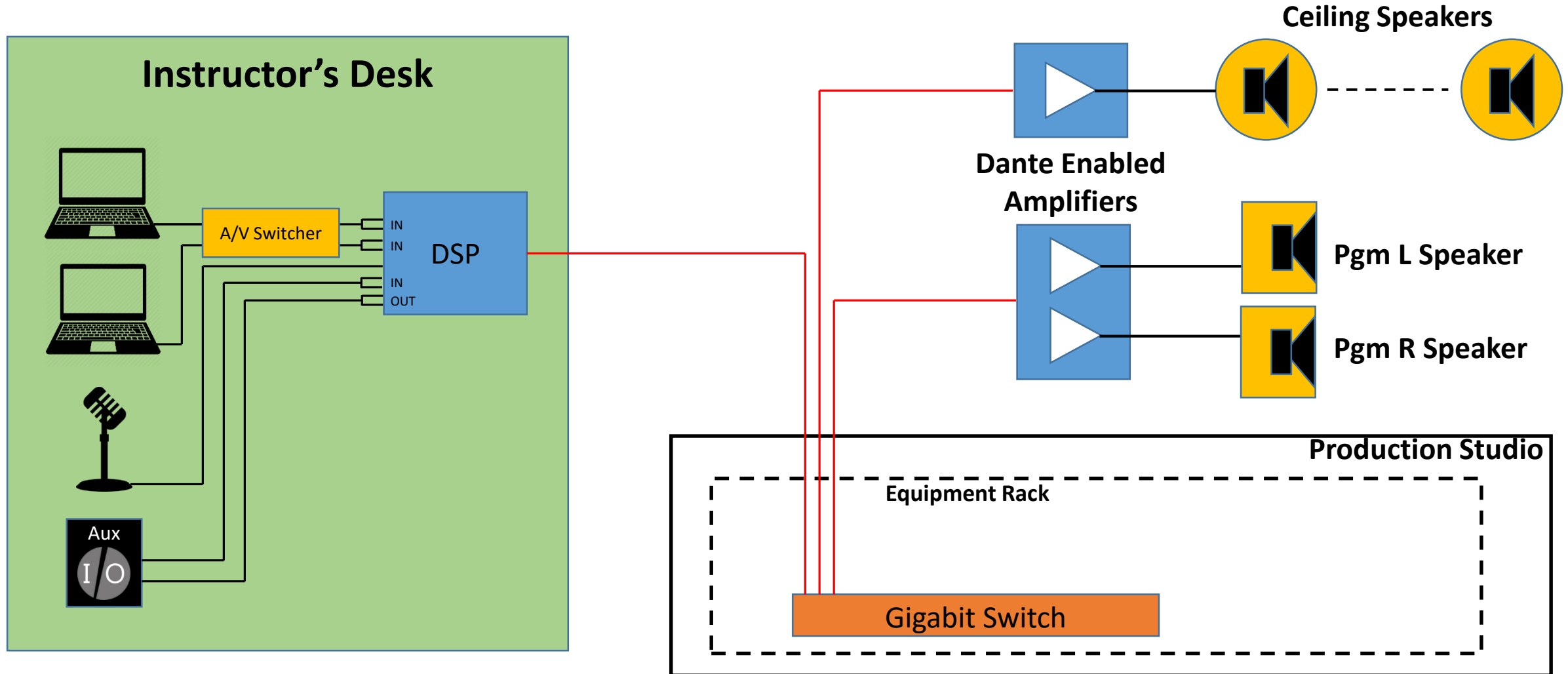


Classroom - System Components

- The Classroom audio systems require:
 - Instructor station with A/V connectivity for:
 - 2 computers
 - Auxiliary audio I/O (stereo)
 - Lectern Mic
 - Wireless Mic
 - Belt pack transmitter with lavalier mic (for recording)
 - And the remaining gear required:
 - Mixer/DSP
 - Ceiling speakers
 - Power amplifiers

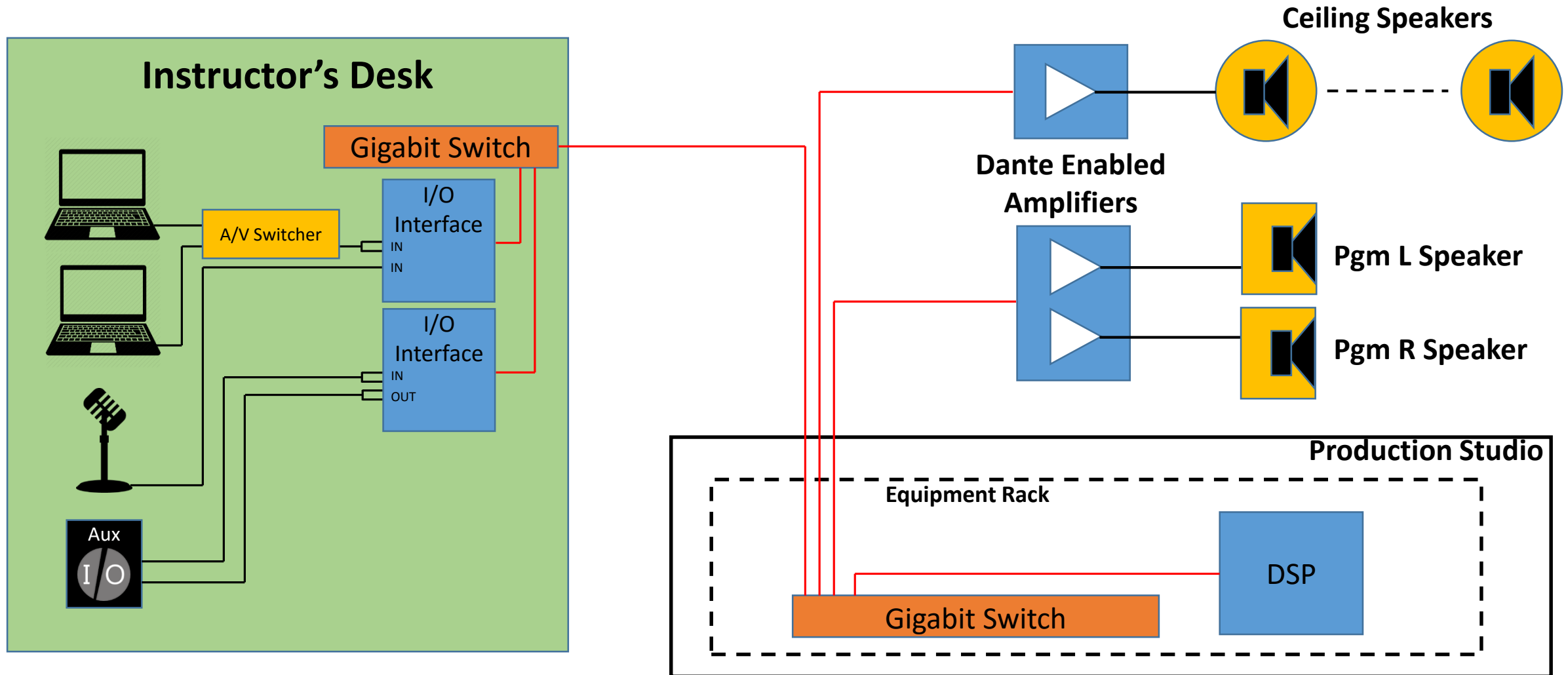
Classroom – Block Diagram:

- Simple block diagram of system:



Classroom – Block Diagram:

- Simple block diagram of system:



Classroom System – Dante Devices

- There are many Dante I/O devices available to choose for this type of application, including:

Atterotech



RDL



Classroom System – Dante Devices

- Here are some of the DSP products available to use in designs such as this:

Extron



Lectrosonics



Symetrix



Xilica



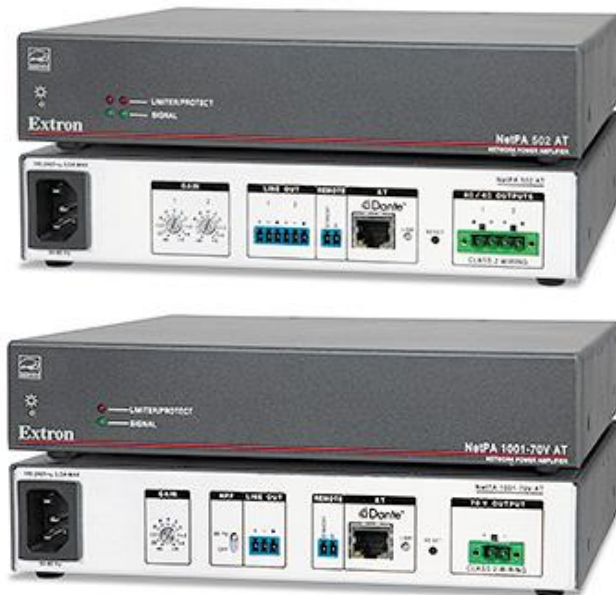
Yamaha



Classroom System – Dante Devices

- And here are some of the Dante enabled power amplifiers that could be used in this application:

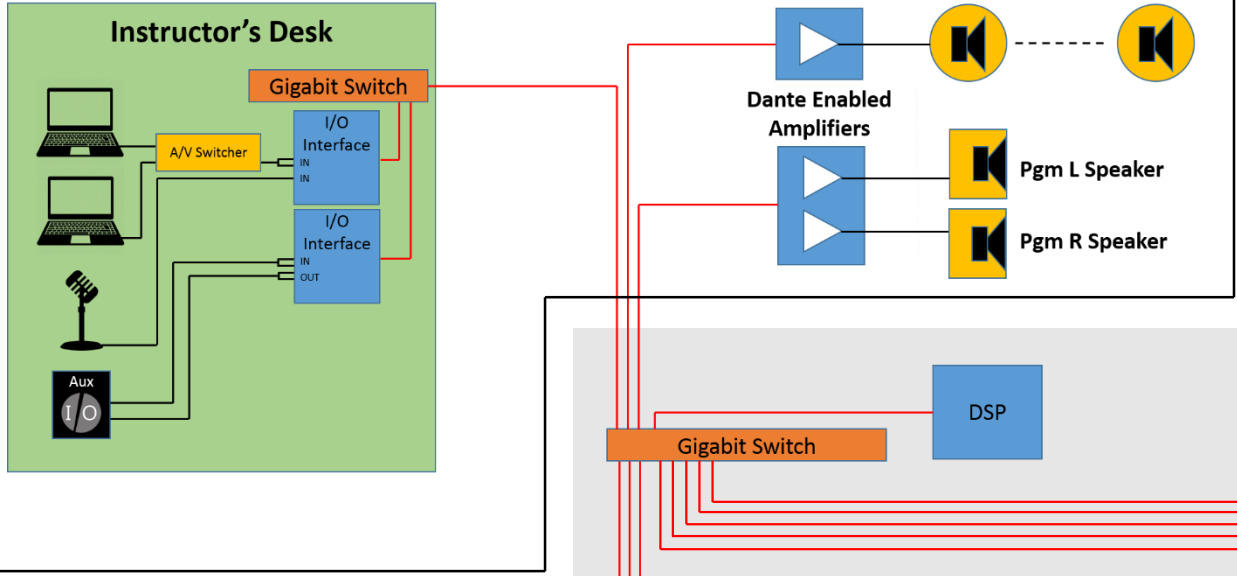
Extron



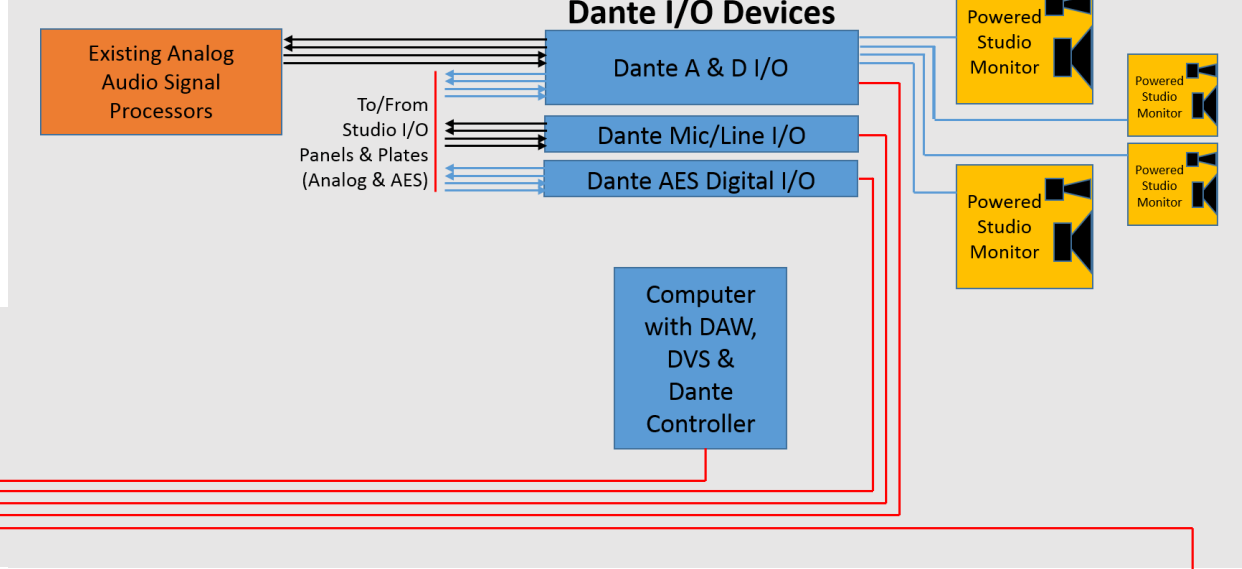
Stewart Audio



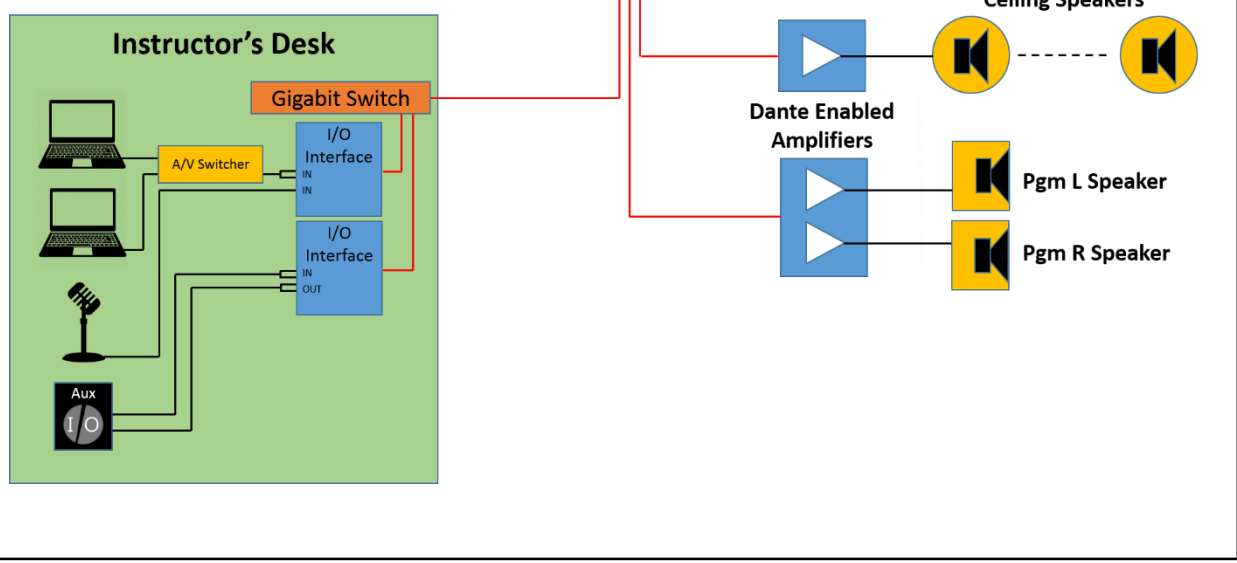
Classroom 1



Production Studio



Classroom 2



Lecture Hall

