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**SUMMIT 2023**

# Esports in Education: Next Level AV Infrastructure Design

**Karl Rosenberg**

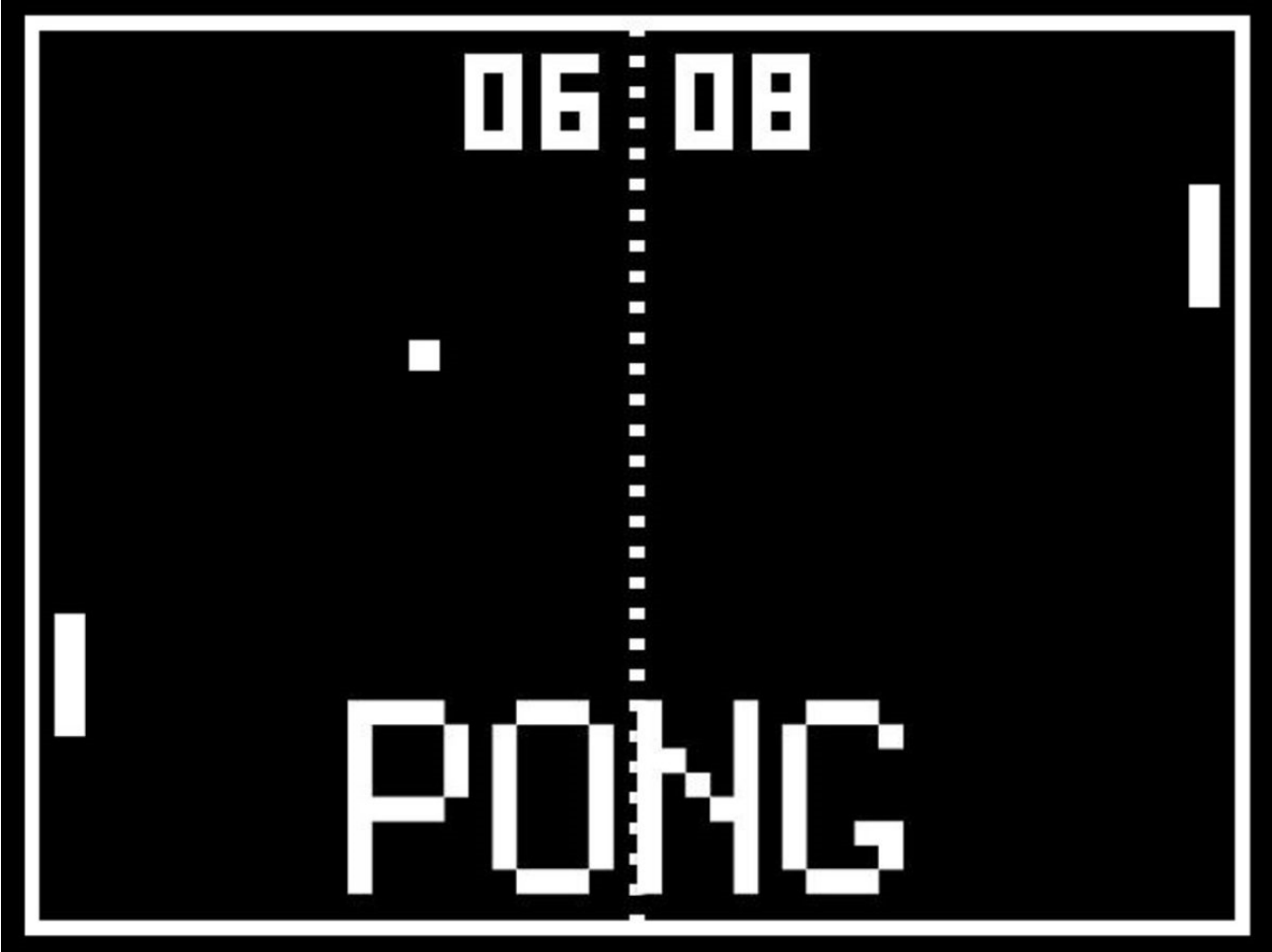


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EXTRON



# Evolution of Esports Ecosystems



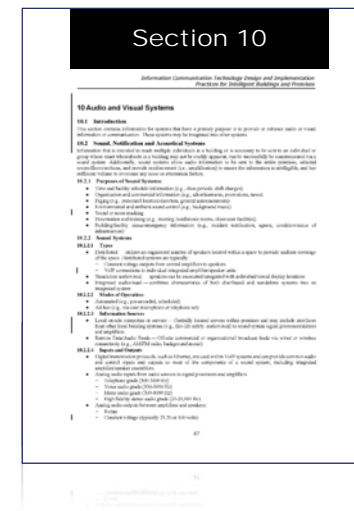


# Why should my company or school get involved with Esports?

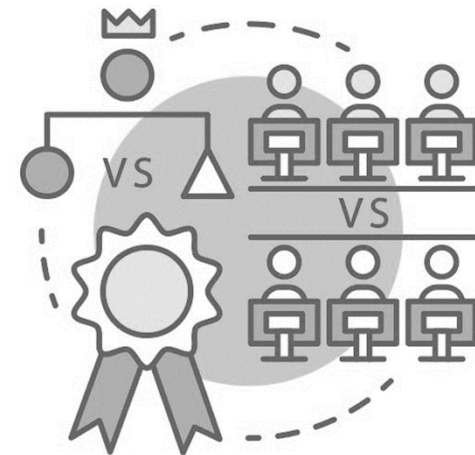
Let's look ...

# Why would you be interested in ESPORTS ?

- All locations will have IT infrastructure
- These Facilitates will need to follow the ANSI/BICSI 007 Standard
  - -Uncompressed AV
  - -AV over IP
  - -LED lights
  - -POE



# Recreational Versus Competitive



# Growth and Popularity



facebook  
gaming

You  **GAMING**





# Importance of Esports in Education



Critical Thinking

Communication



Collaboration

Creativity



# Social & Emotional Learning

- Social-emotional learning (SEL) is the process of developing the self-awareness, self-control, and interpersonal skills that are vital for school, work, and life success. People with strong social-emotional skills are better able to cope with everyday challenges and benefit academically, professionally, and socially.

# Platforms for Leagues and Tournaments

Platform	Focus
NASEF -North American Scholastics eSports Federation	High school
EGF – Electronics Gaming Federation	Youth programs, high school, collegiate
NEA – National Esports Association	Collegiate and public **Also active in developing esports into education programs
Tespa (214 chapters)	Collegiate
Twitch	General
Toornament	General



National Association of Collegiate Esports  
170+ Members



**TESPA**

Collegiate Esports Leagues  
270+ Chapters

# Design Considerations



# Required Equipment

Furniture



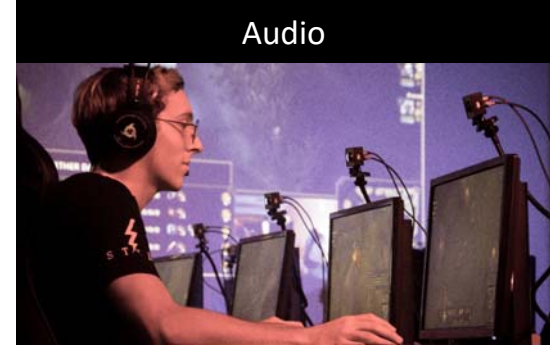
Specialized gaming chairs and desks

Lighting and Control



Special Lighting Needs

Audio



Noise management and voice communication tools



High performance PC  
Multi-output graphics card  
Keyboard and mouse  
Headset



# PC Capabilities



## Hardware

Off the shelf and custom

## System RAM

16 GB, recommended

## Drive

SSD recommended over mechanical hard drive

## Processor

AMD and Intel, recommended

6 core, ideal start point

## GPU

AMD's Radeon or NIVIDIA's GeForce

# Resolutions and Refresh Rates



Affects how quickly players can process information

# Gaming Monitors



**Ideal Combination**  
1080p at 240 Hz =  
17.82 Gbps data rate

## **Sizes**

24", 27", and 32 "

24" most common due to viewability – no need to turn head, eyes on target

## **Sync Technology**

AMD Freesync and Nvidia G-Sync

Compatibility with AMD Radeon and Nvidia GeForce graphic cards

## **Resolutions**

1080p, 1440p (2560x1440) and 4K

More pixels makes GPU work harder

## **Refresh Rates**

Up to 240 Hz

Common: 60, 120, 144, 165, and 240 Hz



# Response Time

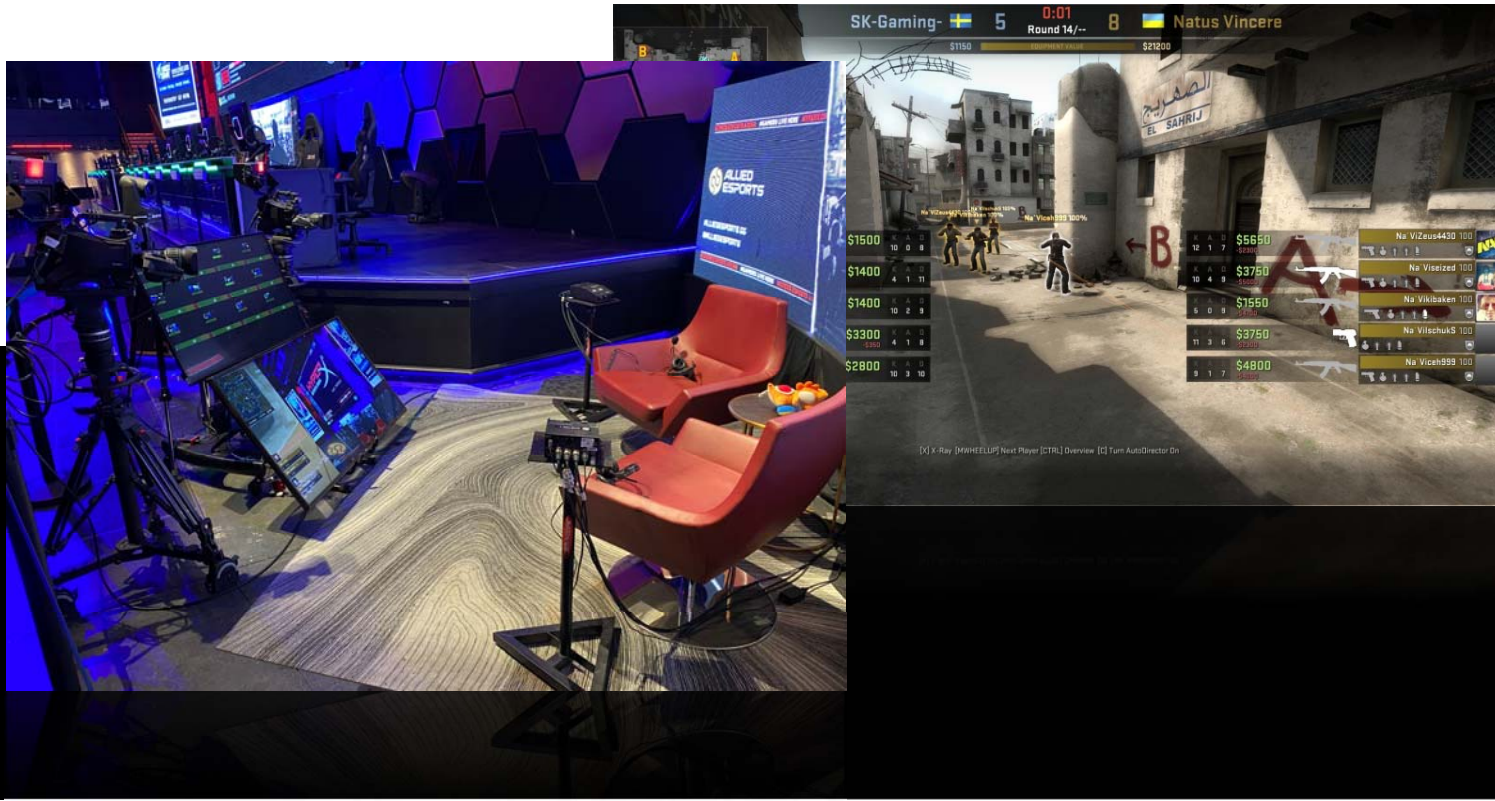


0.5 milliseconds  
To  
1 millisecond

GtG - Gray to Gray

How long it takes for  
the  
pixel to go from one  
gray level to the next

# Spectator Mode



Coaches

Announcers  
Shoutcasters



# Live Spectators



Audiences

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# Types of Esports Systems



# Types of Esports Systems

Esports activities  
take place in a wide  
range of spaces

New construction  
Room conversions  
Portable –  
auditoriums  
and gymnasiums

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## Venue types

New construction  
Room conversions  
Portable –  
auditoriums  
and gymnasiums

General gaming centers  
Game Labs  
Practice Facilities  
Multipurpose Space  
University Competition Rooms  
Esports Arenas



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Let's discuss in more detail ...



What will you physically need to  
install Esports applications?

What are you selling ?  
What are they buying ?



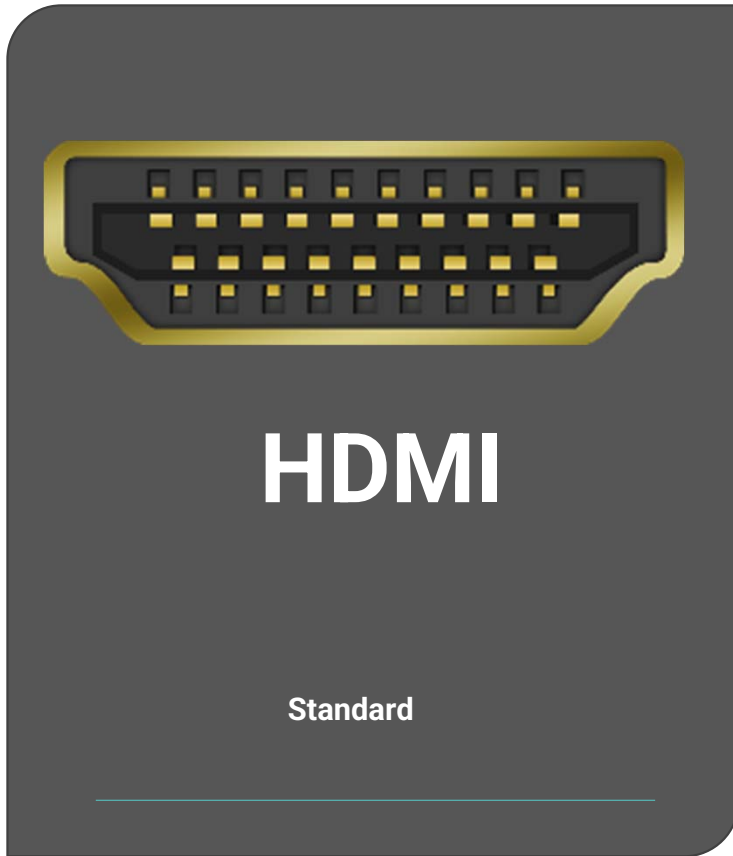
# Main Theme



# Game Labs



# HDMI – Connectors, Distance, Communication



HDMI specification does not define transmission distance  
Cable performance has a direct bearing on distance



# Fiber Optic HDMI cables ( one way )



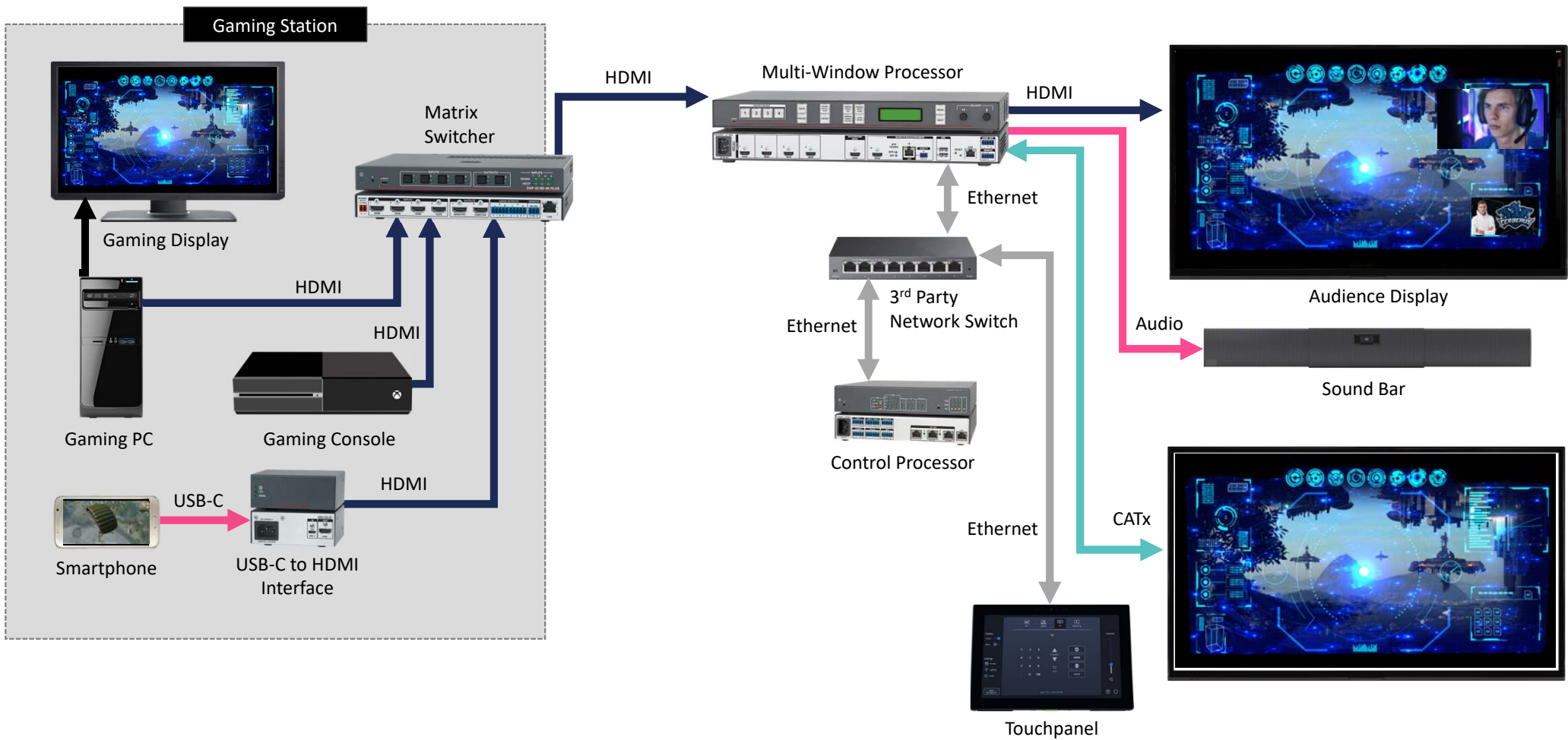
4K/UltraHD, 4K60, HDR

Extended Distance

Low EMI



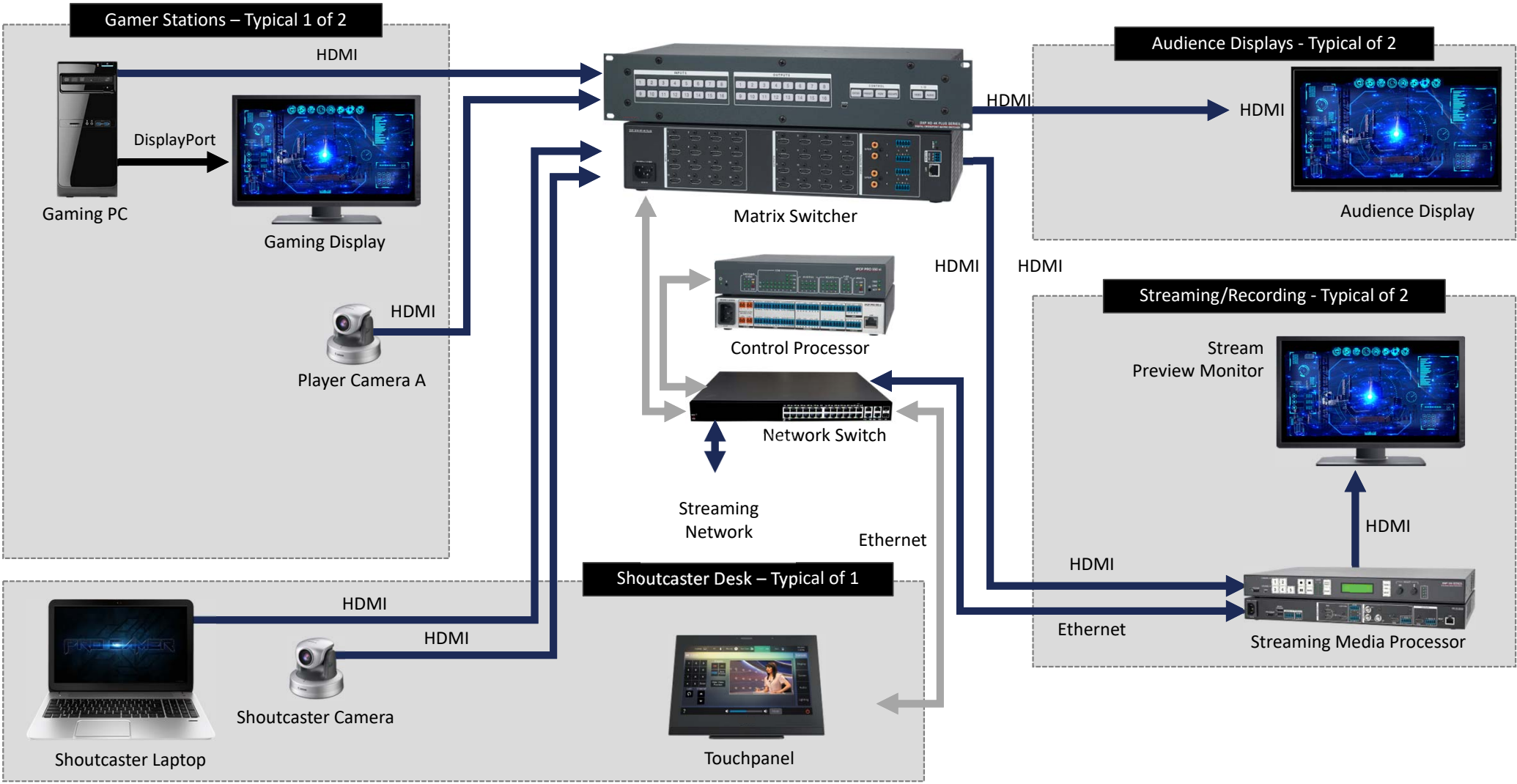
# Multi-platform for Solo and Expansion Ready



# Practice Facilities



# Player vs. Player







GV

**Laker Esports Center**  
Monday - Friday 12 PM - 6 PM  
Saturday 3 PM - 11 PM  
Sunday 3 PM - 6 PM

**Laker Esports Center**  
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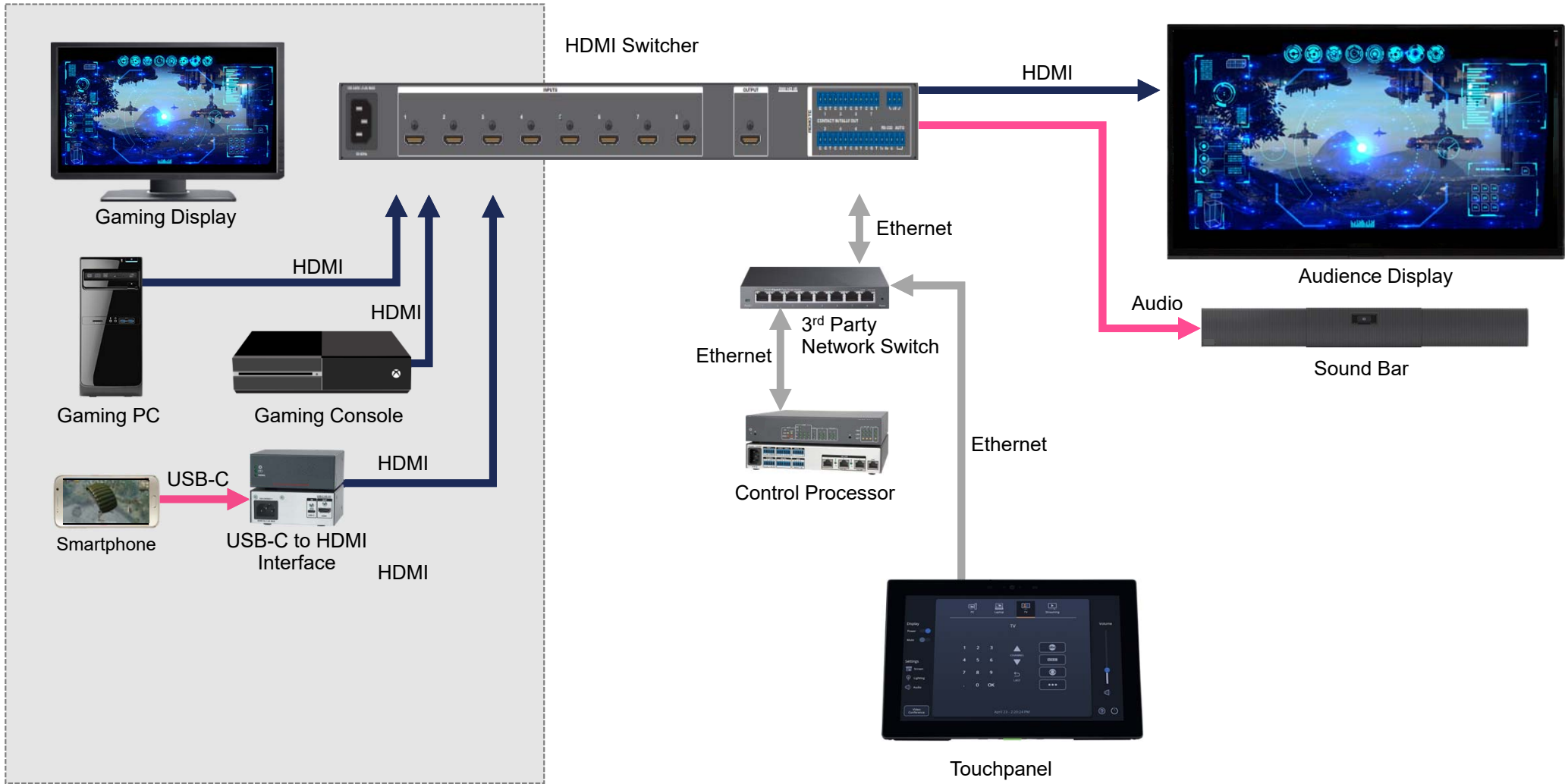
# Retrofit Rooms



# Old Classroom ( K-12)



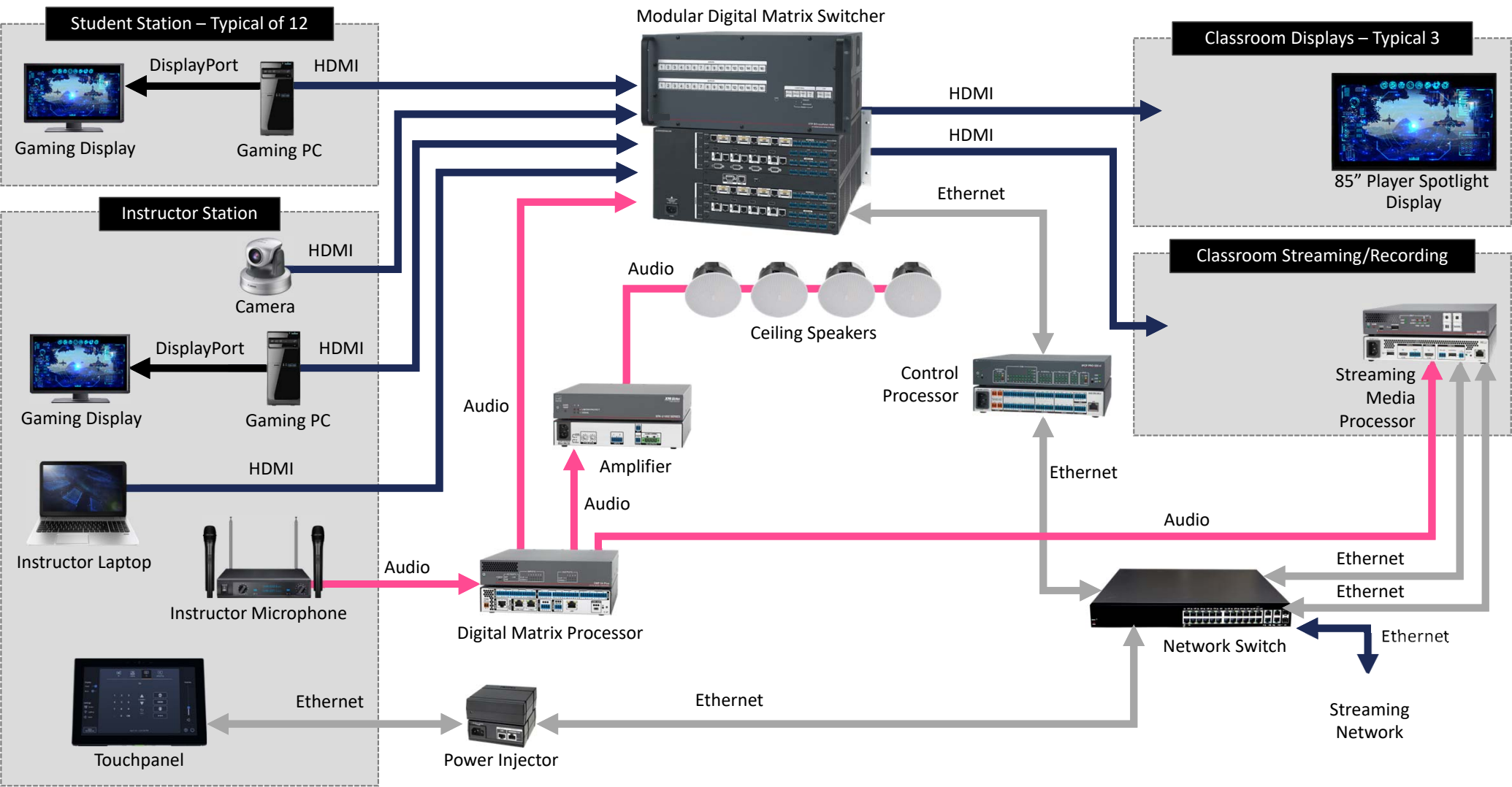
# Older Room Upgrade



# Competition Rooms

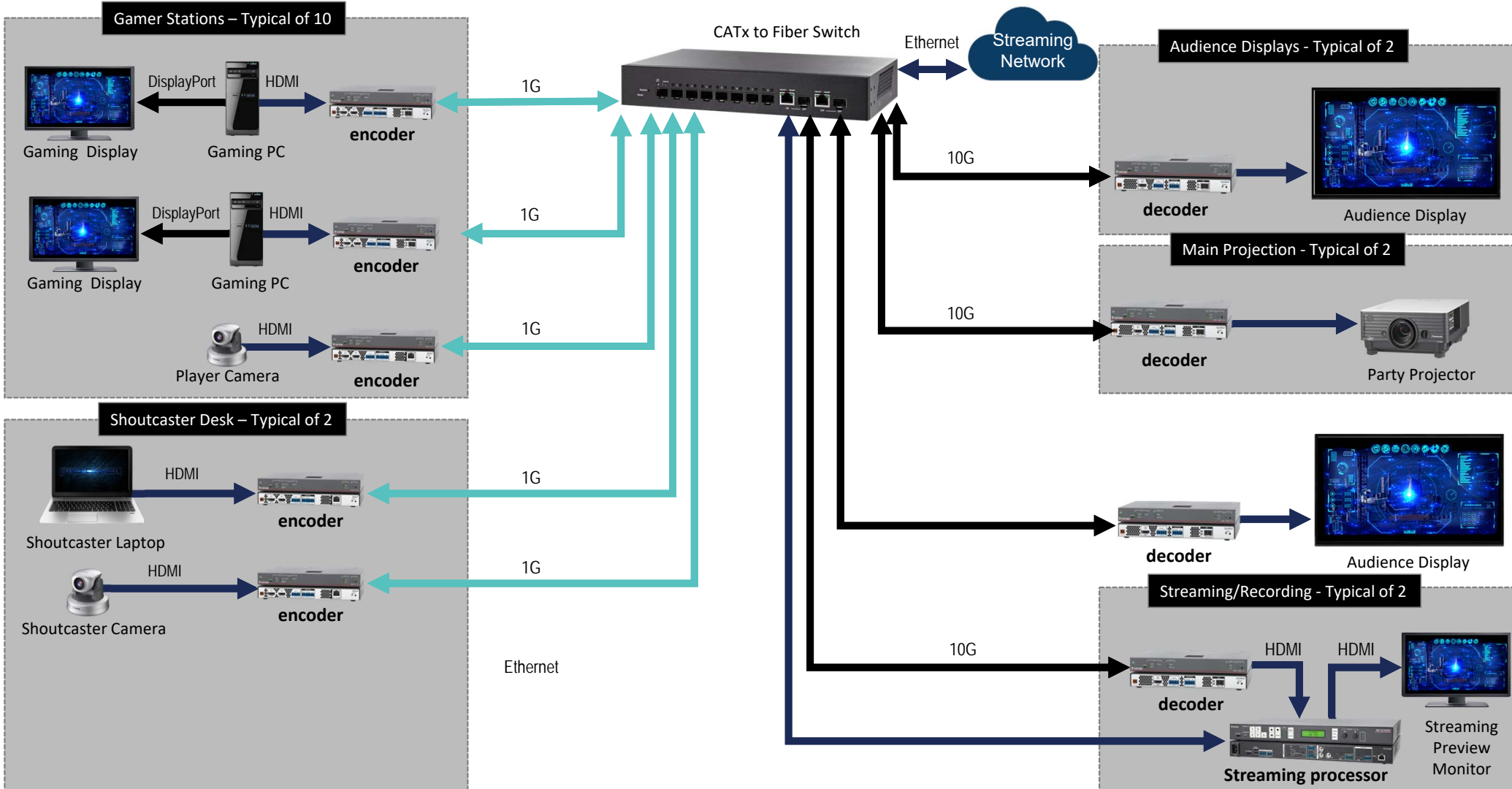


# Coaching for Practice





# AV over IP



# H.264 Streaming Media Processors

## Single Channel, Stream, and Recording

1 Input Channel



1 Output Stream

1 Recording



## Combined Stream and Recording

2 Input Channels



2 Combined Streams

1 Combined Recording



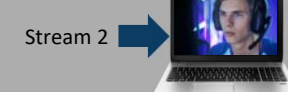
## Independent and Combined

2 Input Channels



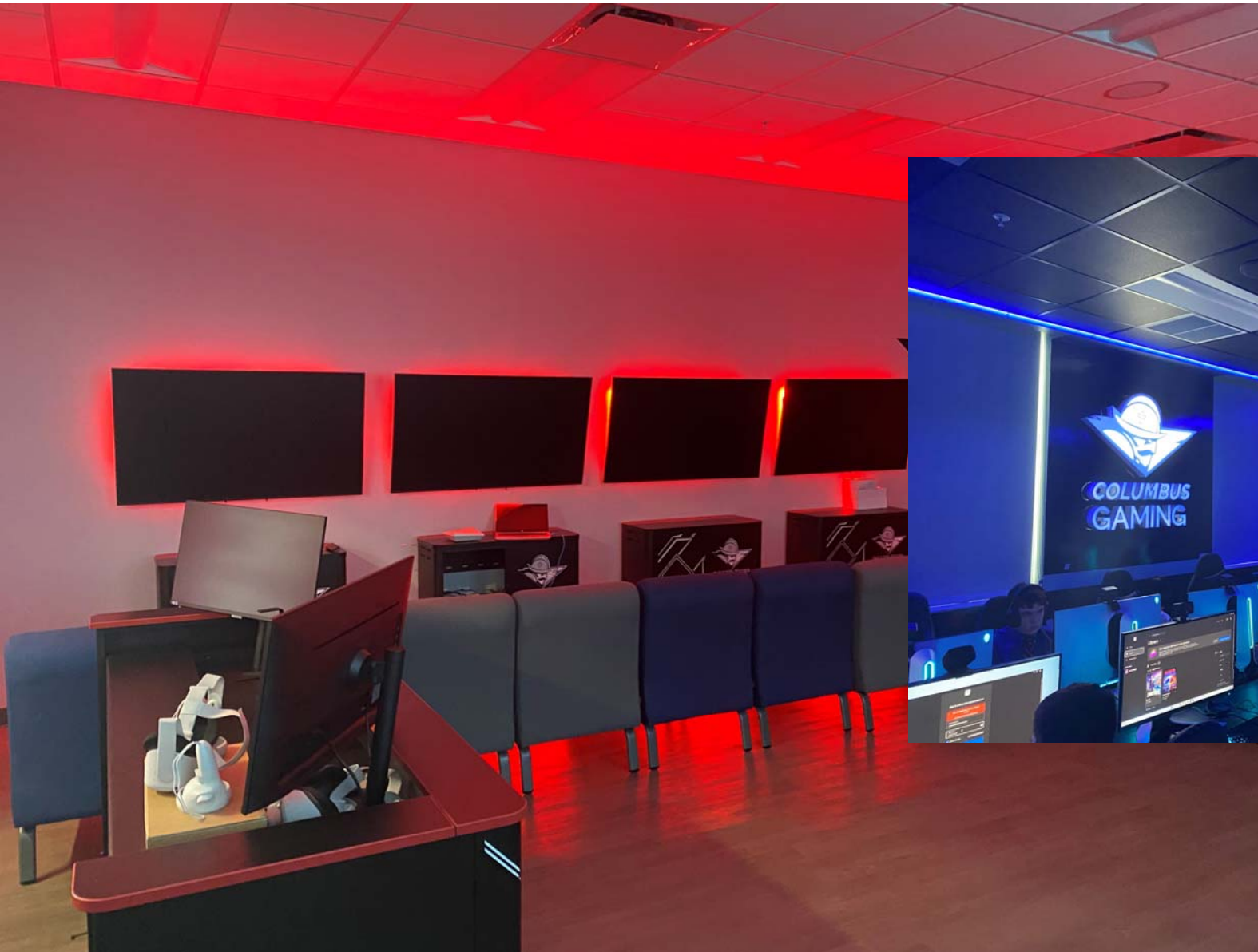
2 Independent & 1 Combined Streams

2 Independent Recordings









Case Study



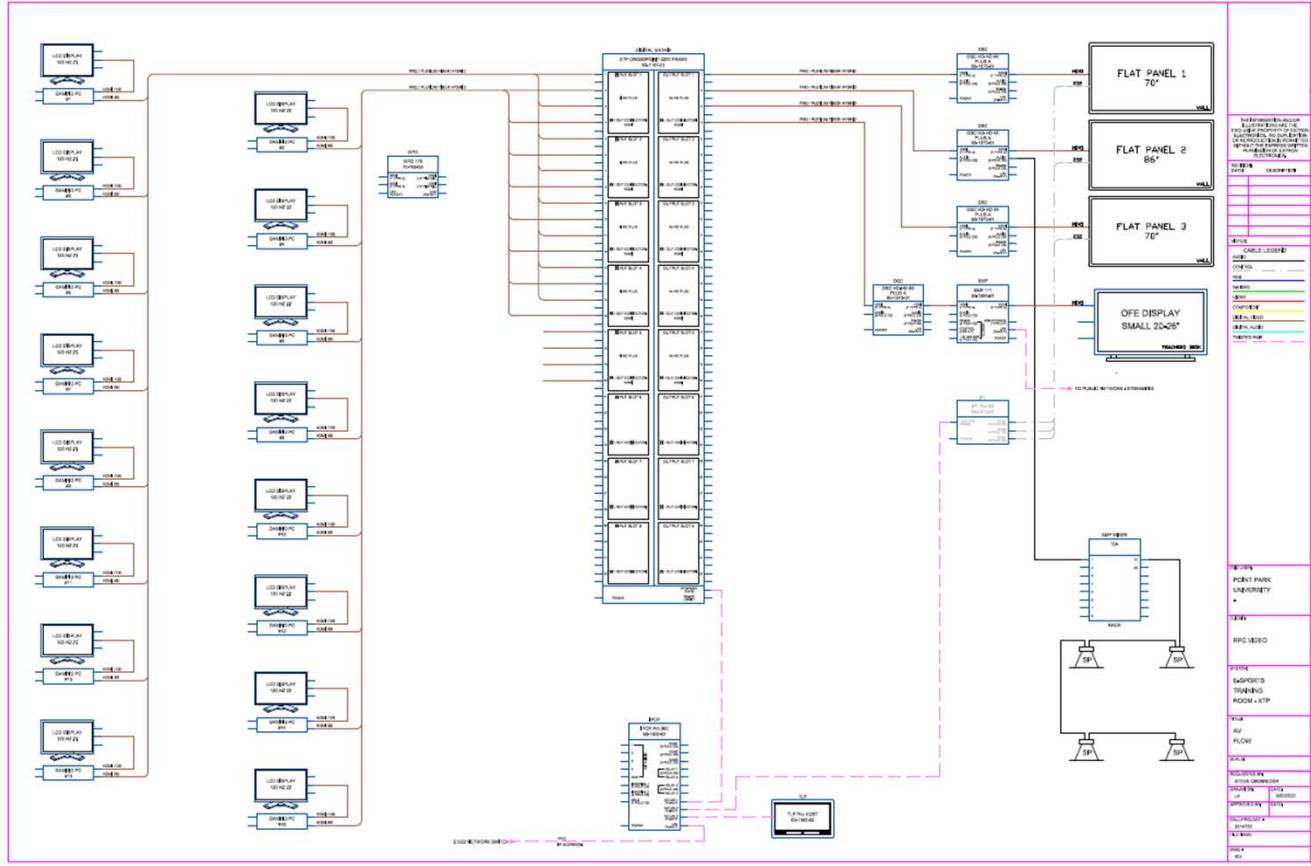








# Integration and System Drawing





# Esports Arenas





**HYPER**<sup>®</sup>  
ESPSPORTS ARENA  
LAS VEGAS

**KNOCKDOWN** Live! AT  
HYPER ESPORTS ARENA  
ON THE LINCOLN REPORT LAS VEGAS

**\$1000 TOTAL PRIZE POOL**

**FRIDAYS\* AT 6PM**

ACCEPTING ENTRIES NOW [HYPERESPSPORTSARENA.COM/KNOCKDOWN](http://HYPERESPSPORTSARENA.COM/KNOCKDOWN)

**AUGUST 27TH**

**\$500 PRIZE POOL**  
SUPER SMASH  
BROS. ULTIMATE

**\$500 PRIZE POOL**  
EMULY BEAR - STRIVE

**\$500 PRIZE POOL**  
TEKKEN 7

HYPER ESPORTS ARENA













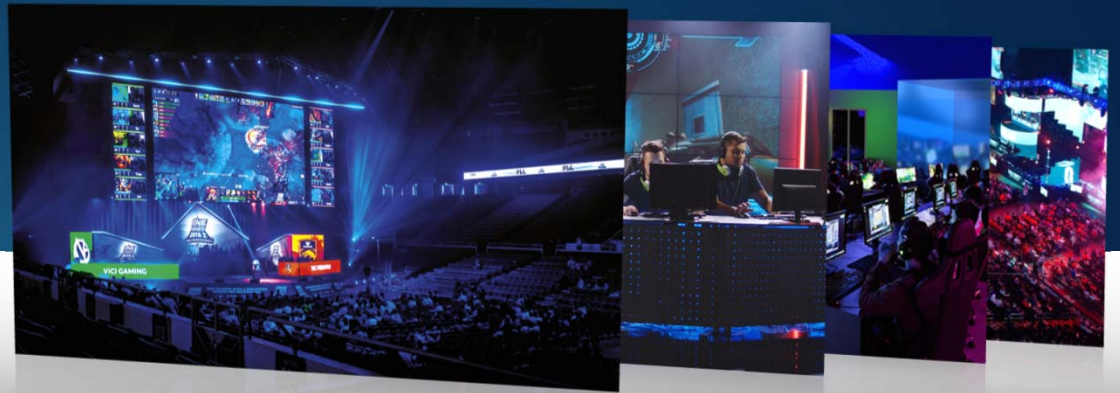
## How to Build a Program

- Start with CLUBS
- Then went to IT
- Coach
- Room(Student Designs)

## Summery

- Great New Vertical Market
- This ecosystem will never go away
- Use your BICSI skills to help these folks create their facilities
- Follow ANSI/BICSI 007 Standard

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I hope you learned  
something today ...

