

# Smart Stadium Audiovisual Solutions

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Empowering Your Businesses Through Innovative IT Solutions

UNI-X



**01** What problems do users have in the process of using the stadium?

**02** what systems can we do?

**03** What are the advantages and highlights of these systems?

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Background**

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## PART 01

# Industry Background

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## Stadium Overview



### Smart stadium

A stadium refers to a building for indoor sports competitions, physical exercise or concerts; a smart stadium is a modern stadium based on intelligence and digitalization; it has a complete system and is networked and scientific.

Smart stadium uses **cloud computing**, **Internet of Things**, **intelligent terminals** and a **new generation of mobile information technology**, through the ubiquitous **network** (communication network, Internet, Internet of Things), **PC** and **intelligent terminals** and other equipment as a carrier for the people to provide a safe, convenient, fully functional training games and office environment.

The high-tech content, high technology level, high-grade modern comprehensive management platform makes the management more humane, more convenient.

# Question

**What problems did you encounter in stadium?**





## Lack of unified planning

- The positioning and development direction of the stadium is not clear enough, the starting point of **construction is not high**, there are **no characteristics** of the operator only to provide basic water, electricity, gas and other infrastructure construction.
- Information technology, intelligent construction is not perfect enough, resulting in **multiple system information silos**, it is difficult to achieve the sharing of information resources.

## Backward management level

- Lack of **informatization, remote and centralized control methods**, and high maintenance costs.
- Management is passive and cannot uniformly manage various situations in the stadium.
- Strategic management is limited to traffic, security monitoring and other aspects.



## Start from needs

- Stadiums are generally used to hold sports events stadium.
- As the **hardware foundation** to support a variety of games, **how to do modernization, intelligence, information technology** has become the top priority for the construction of new stadiums.

## Start from function

- Relying on network and big data platform, ensure the **safety** of people and **proper ty** in sports stadiums.
- Save **energy consumption and management costs** to the greatest extent.
- Build reasonable, practical, advanced, convenient and efficient sports stadiums.

# PART 02

# Solution

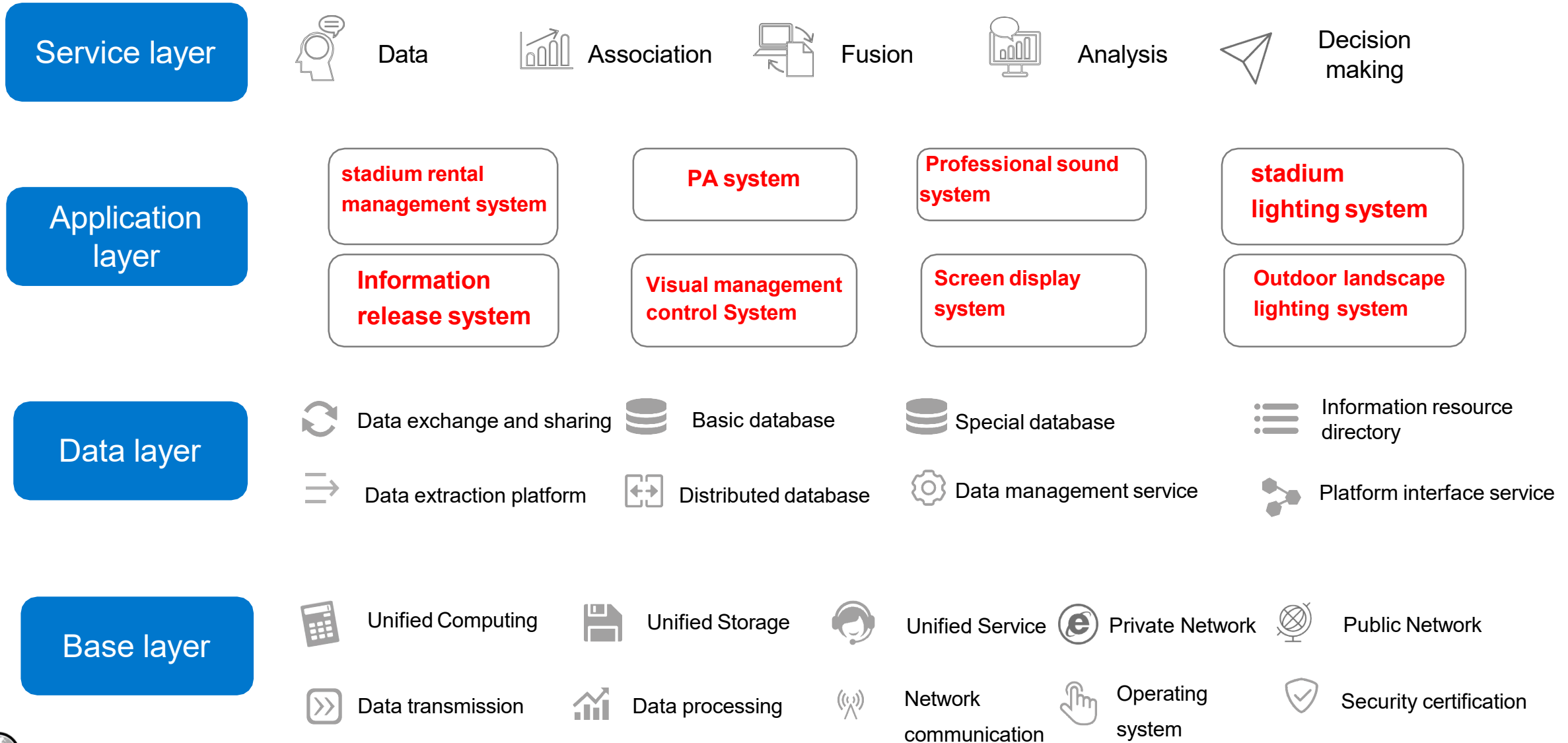
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# What systems can we deploy in smart stadium?

<https://www.720yun.com/t/a6aknyfbr8y>



# System structure



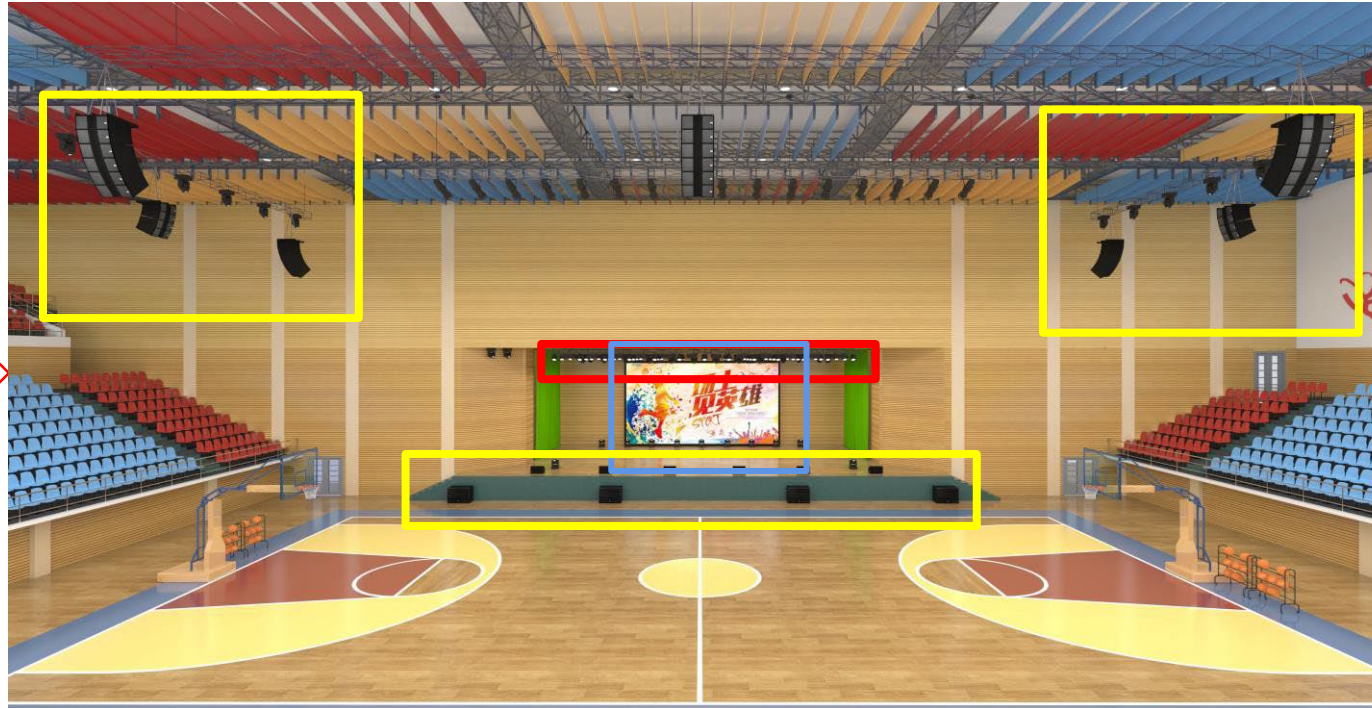


# Functional application design framework



## Pro sound system

It is designed with professional line array speakers and point source speakers to meet multi-functional sound reinforcement for sports events, performing arts, etc., and reaches the national first-class hall sound pressure level standard.



## Stage Lighting System

It meets the needs of performances when the stadium is used for multi-functional purposes, and creates perfect choreographic effects.



## Conference speech system

At the podium position, analogue microphones and wireless microphones are set up to meet the functional needs of leadership speeches and referees' speeches.



## LED Display System

Design of a P3.0 LED large screen combined with a video processor system with 4K UHD display for displaying score results, etc.



## PART 03

# Product Introduction

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PART 3.1

# Stadium Rental Management System

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# Stadium rental management system

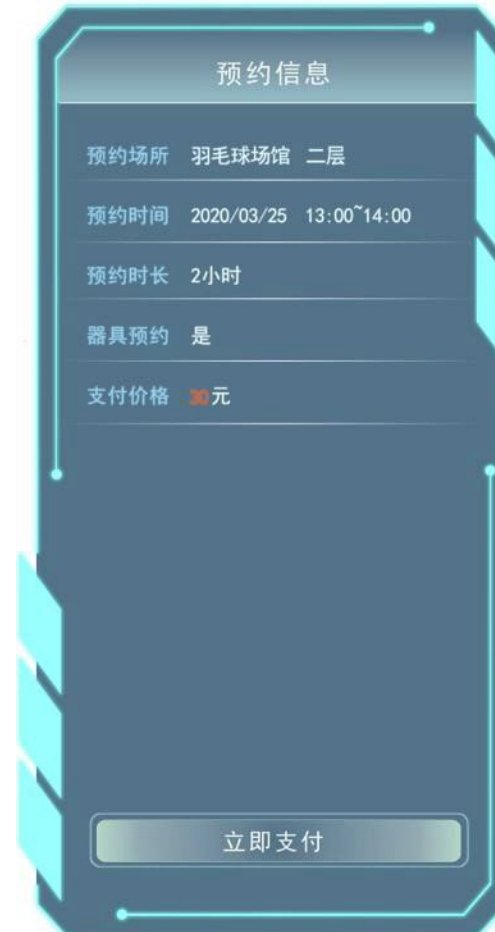
## Appointment platform



## Online Reservations



## Online Reservation of Tickets



## Online Payments





Customers can view stadium facilities, stadium environment, and choose stadiums online without leaving home; they can choose their favorite stadiums from multiple dimensions.



## VR tour of the stadium

- VR experience stadium guide service
- Show detailed location information
- Understand the overall layout



## Business Consulting

- Touch screen interaction to query stadium services
- Instant release of ticket sales and verification policies, high-speed information



## Smart seat selection

- Enable smart seat selection service
- Warm reminder for seat cleaning
- Follow the pre-broadcast events closely using the QR code

# PART 3.2

# LED Display System

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## LED display system ultra-high definition display to meet the display needs of stadiums

The stadium display screen is an important part of the electronic information system of the stadium.

The **release of sports competition information and results** is the basic requirement for the electronic display screen to realize its display function.

Therefore, the use requirements of various sports competitions should be fully considered in the design. Various real-time information can be displayed during the game, such as the **name** of the team, **score**, **goal scorer**, **substitutions**, **player name**, and number of **foul penalties**, etc.



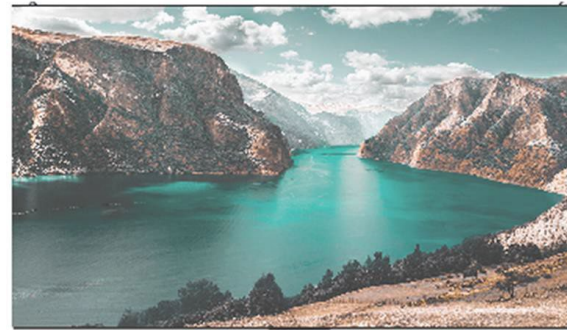


## LED display system ultra-high definition display, specific function highlights

1

### Ultra-wide viewing angle - perfect display at any angle

Ordinary LCDs have a narrow viewing angle of  $120^{\circ}$  and color cast distortion, while LED series products have  $175^{\circ}$  ultra-wide-angle vision.



Before optimization



Optimized

2

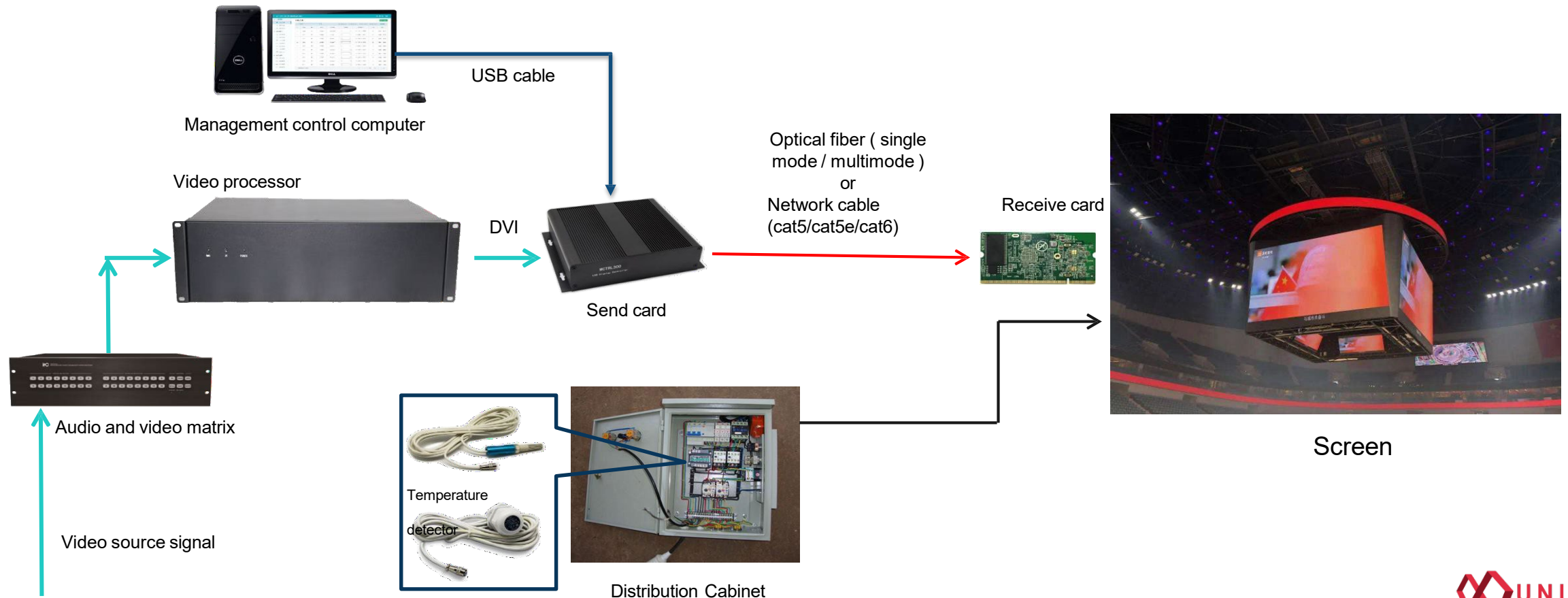
### HDR optimization - highlighting the beauty of details

The itc series of small-pitch light-emitting diode displays achieve the precise resolution of HDR standard film sources, and feature exquisite colors, true dynamics, perfect display and value upgrades.



## Stadium scheme design - on-site LED design

Determine the size of the large screen according to the actual budget, and configure the crane at the same time



## PART 3.3

# Professional Sound System

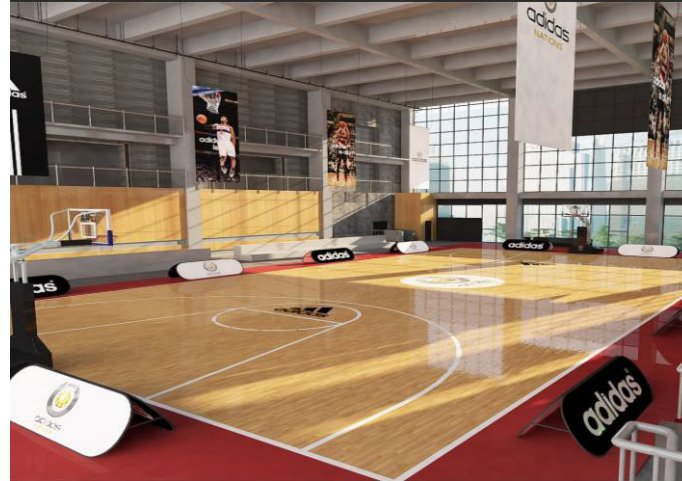
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## Stadium sound design types



**Semi-open stadium**  
sound reinforcement



**Training hall** sound  
reinforcement



**Indoor closed**  
**stadium** sound  
reinforcement

Professional sound system design for sports stadiums:

The sound field standards are designed according to the **grade of the stadium** to be built, and the built sound environment is required to meet the **corresponding grade standards**.



Refer to the " Code for acoustical design and measurement of stadium" ( JGJ/T131-2000 )  
to position the functions of the stadium , and then select different acoustic characteristic  
indicators for design:

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## Stadium building **type**:

Competition hall , practice hall

When a stadium is positioned as a multi-purpose facility, its technical requirements should be determined based on its **main nature of use**, and other uses should be appropriately considered.

## Stadium building **size**:

According to the audience capacity, it can be divided into

**Extra large** ones with more than 10,000 seats;

**Large** 6,000 to 10,000 seats;

**Medium-sized** 3,000 to 6,000 seats;

**Small size** less than 300 seats;

## **Levels** of stadium buildings:

Three levels: Special, A, B, and C

1.**Special-class** stadiums should comply with: Referring to the home stadiums for the Olympic Games, Asian Games and world-class competitions;

2.Stadiums A, B, C, etc. shall comply with the following regulations:

①**Grade A** holds **national** and **individual international** competitions

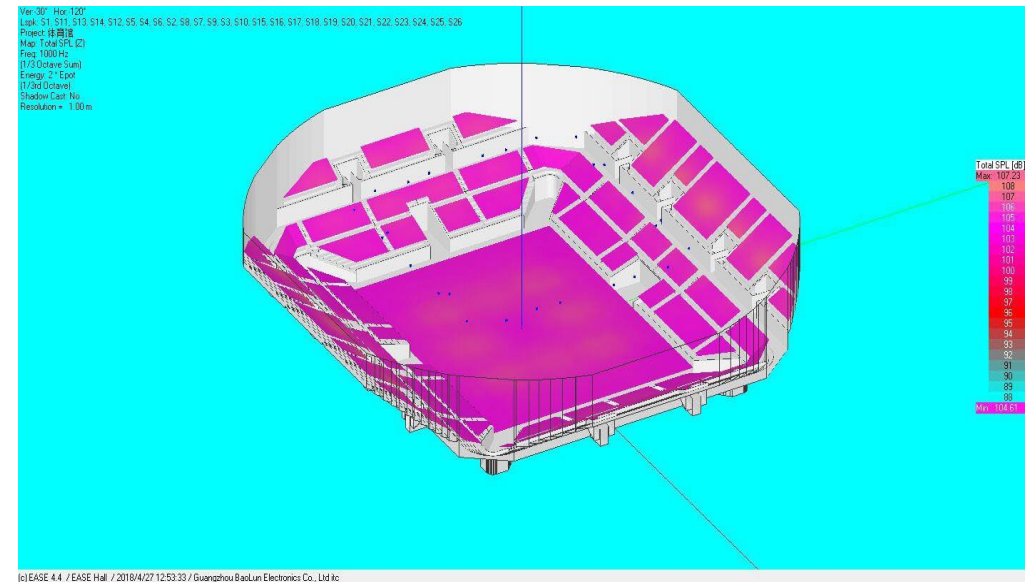
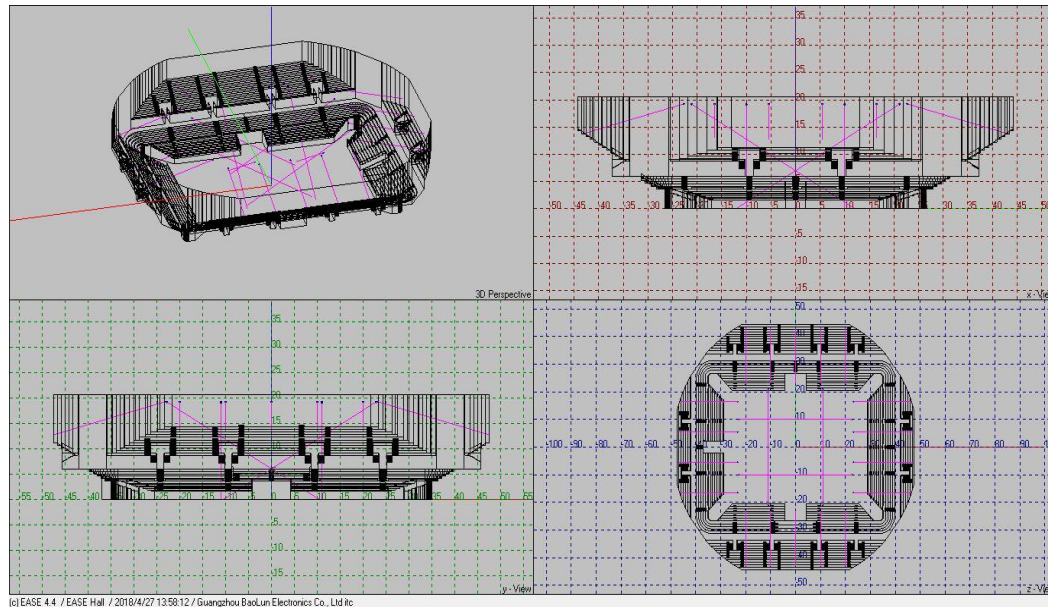
②**Level B** holds **regional** and **national individual** competitions

③**Class C** holds **local** and **mass sports games**



# Architectural acoustics decoration suggestions

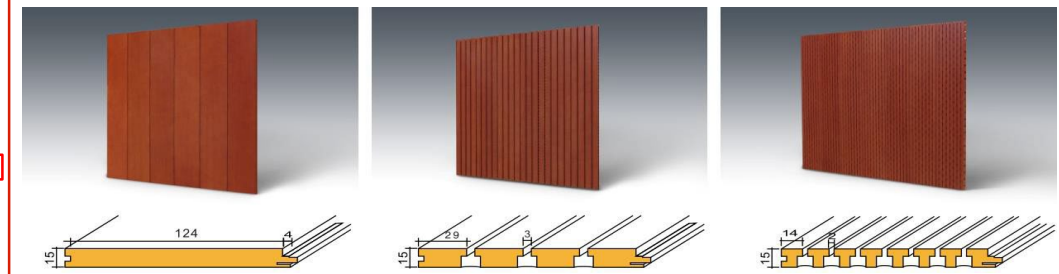
- In the design of the sound reinforcement system, **EASE5** system software was used to conduct a 1:1 modeling simulation analysis of the stadium.
- Taking into account the power **selection of the speakers**, the **sound pressure level**, **uniformity and speech intelligibility of the sound field**, as well as the **installation method**.
- The sound reinforcement speakers are arranged in a decentralized manner , which can easily distribute the sound pressure evenly and prevent howling. Evenly distributed in the stadium to meet the stadium's sound reinforcement needs.





# Architectural acoustics decoration suggestions

For places like stadiums, it is not only necessary to solve the problems of **echo, sound focus, unclear sound**, etc., but also to meet the reverberation time requirements of  $RT \approx 2S$  for stadiums. At the same time, consider the **sound absorption and reflection** of seats, walls, ceilings and floors. A professional architectural acoustic manufacturer is usually required to do the design, here are some simple recommendations:



Environmentally friendly **solid wood slotted sound-absorbing board** has good sound-absorbing effect, increases reverberation time, and effectively improves the fullness, clarity and three-dimensionality of environmental sound quality.



**surface slotted sound-absorbing wood board**



# Stadium professional sound system



## Sports display interaction

Through interaction with sports displays, the **lively atmosphere** of the event is enhanced, the **audience's emotions** are aroused, and the **tense match points** are highlighted.



## stadium sound reinforcement

Achieve sound amplification in the stadium and stands, and clearly **express the stadium's match points**.

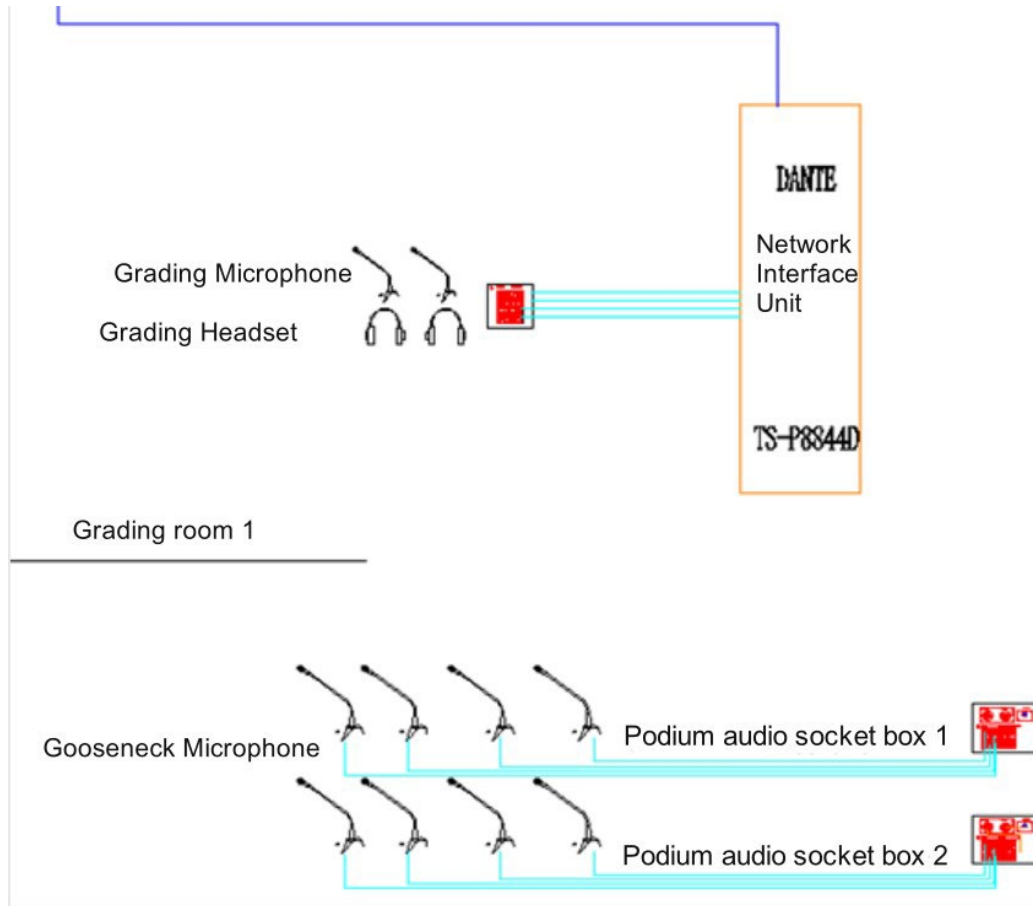


## Evacuation & PA system

Linked with the building's fire protection system, once a fire breaks out in the building, the sound reinforcement system will **automatically link with the fire protection system**, stop playing the on-site sound reinforcement, and **switch to playing the emergency evacuation voice**.



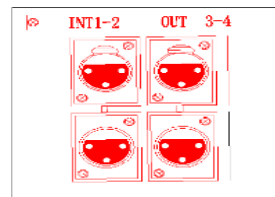
# Stadium professional sound system



## Audio input

The **control room** and the respective scoring rooms, competition stadiums, rostrums, amplifier rooms and other places are all **transmitted through the network**, and the **audio source input** has a **fire broadcast priority** and **strong cut function**.

We transmit signals through network interface machines. The **reporting room / Commentator's room** is equipped with input and output equipment that can be directly connected to the main sound reinforcement system signal ( network ), including **local microphones**, **gooseneck microphone** and **headphones**, for on-site commentary and television broadcast, and can realize local sound reinforcement, and free switching of live broadcast sound reinforcement .



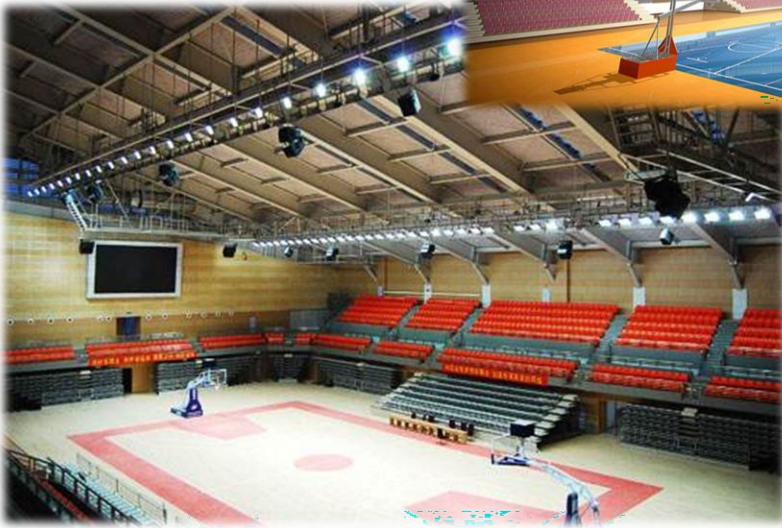
# PART 3.4

# Stage Lighting System

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# Stadium lighting system



- ◆ stadium stage lighting, the **light brightness can be adjusted** and **the scene mode can be switched**.
- ◆ Cooperate with professional lighting control programs to realize **intelligent programming** and energy saving methods;
- ◆ Adjust the overall atmosphere of the stadium to ensure visual clarity.

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## PART 3.5

# Information Release System



# Smart stadium information release system



Display announcements, Internet information, event notifications, weather forecasts, and real-time information in various public areas



Game preview, schedule, game information announcement, real-time information, real-time score display



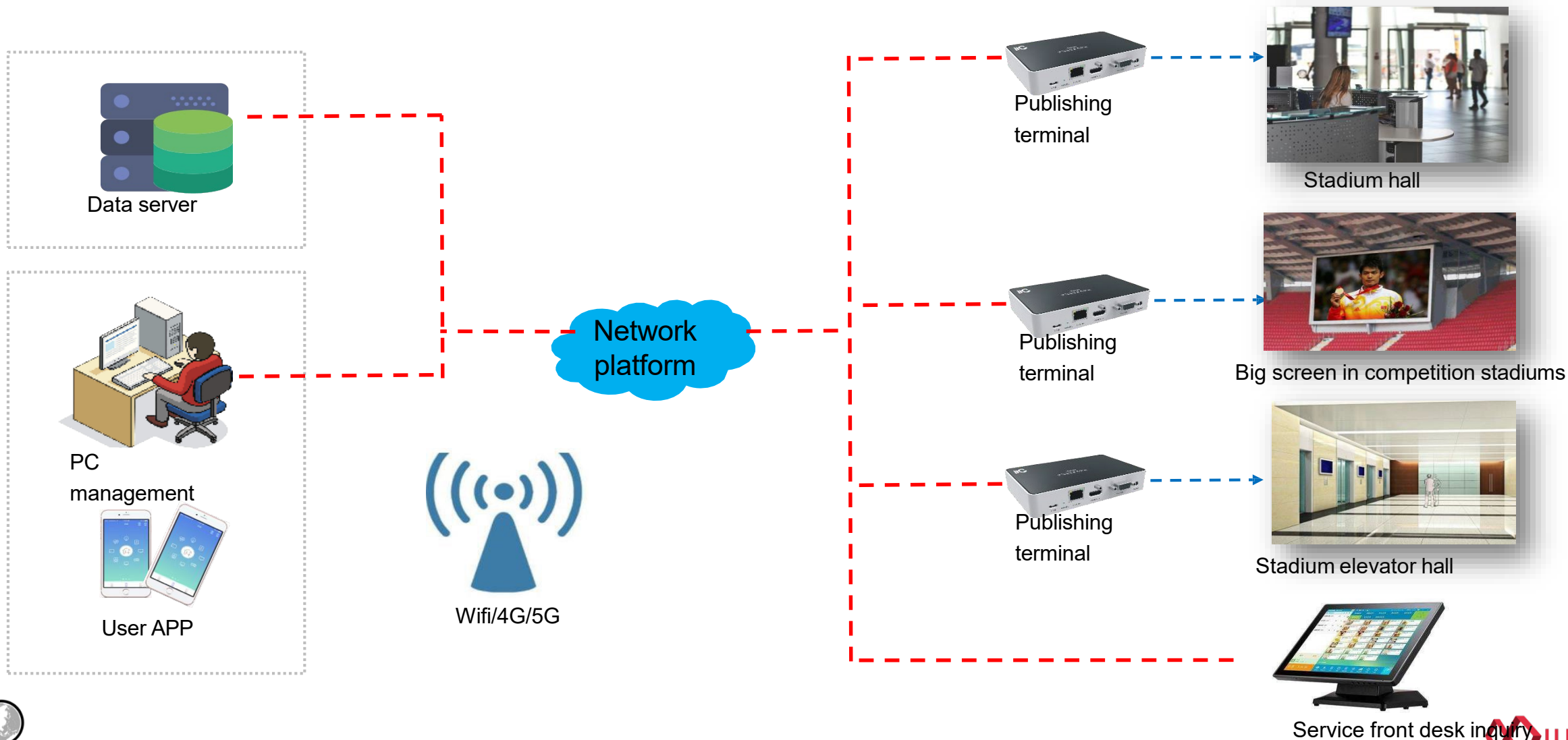
Live broadcast of live games on the network, high-definition live broadcast to all parts of the stadium



Commercial advertisement playback (text information, pictures, videos)



# Smart stadium information release-System structure



# PART 3.6

# Landscape Lighting System

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## Landscape lighting system

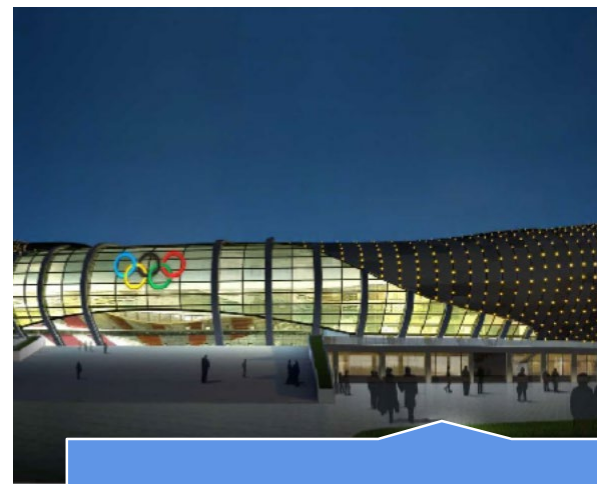
Colorful and ever-changing, lighting up the stadium.



Gorgeous



Transformation



Light up



Venue



# Landscape lighting system

## Outdoor landscape lighting effect display



## PART 3.7

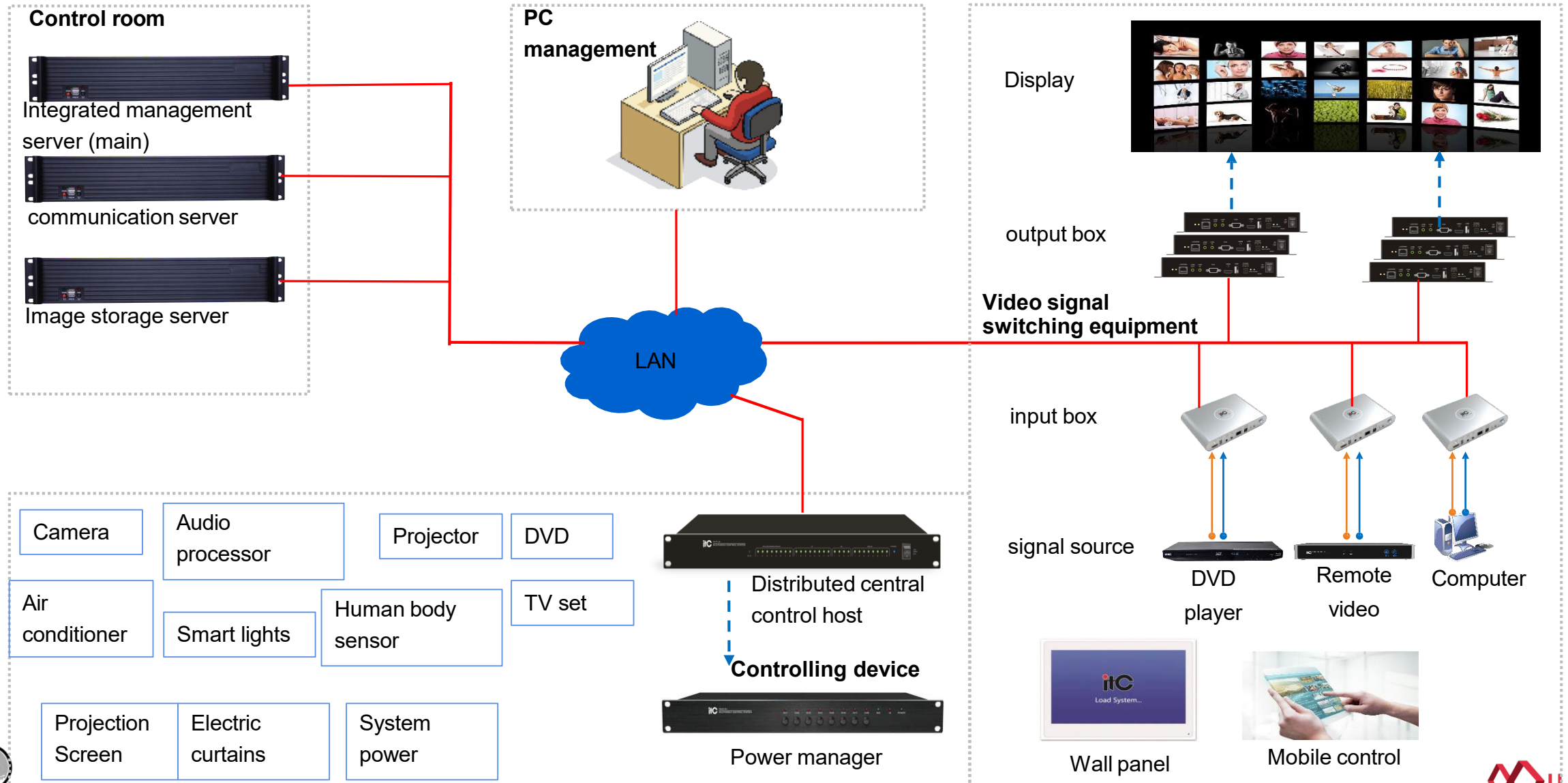
# Visual Management System

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# Visual Management Control system

## System structure





# Visual Management Control system

System function application

## Visual Management Control system area



Referee conference room



Press conference room



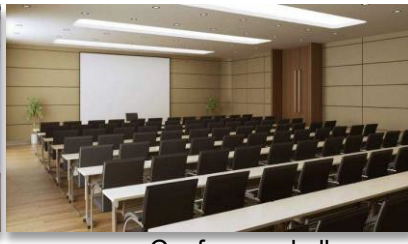
Event command center



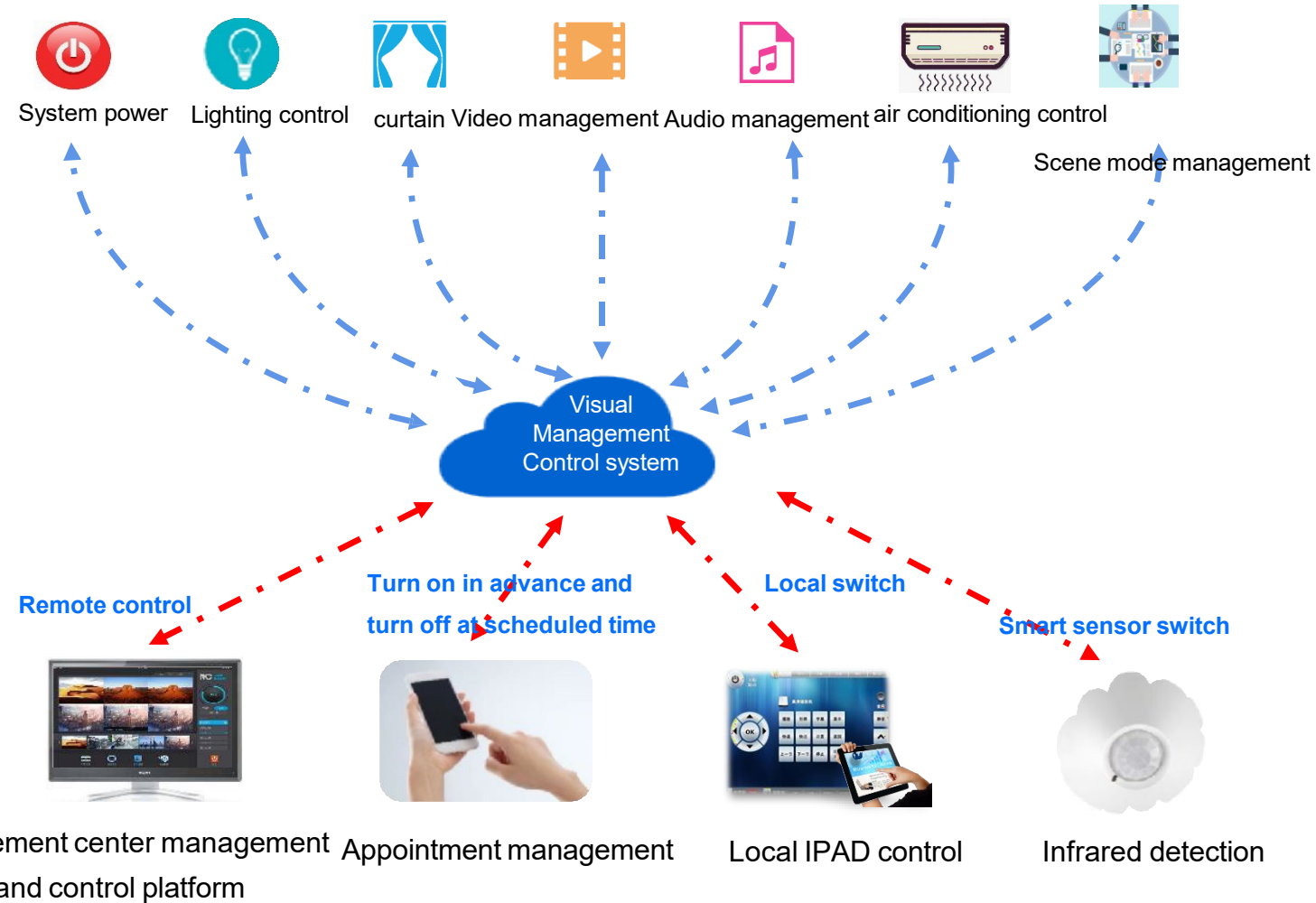
stadium



Ordinary meeting room



Conference hall





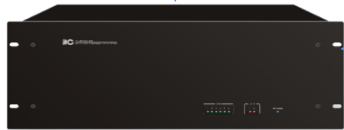
# Visual Management Control system

System function application

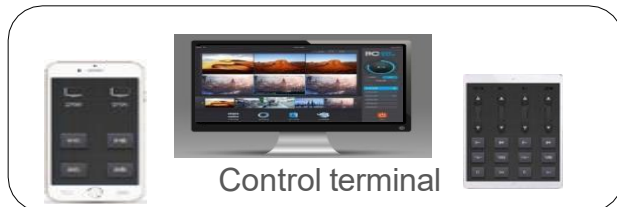
## Security system access



Event command center



Server



Control terminal



data center



IP camera

## Emergency linkage

Combined with the access control system, sound system, and monitoring system, the on-site images are uniformly dispatched, and the images of each surveillance camera in the stadium are monitored in real time, **conducting remote inspections**, and **solving illegal intrusions or other emergencies**.



Lecture Hall



stadium monitoring



Main entrance and exit surveillance

# PART 04

# Application case

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## Selected Cases of stadium



**Beijing Winter  
Olympics Ice Arena**



**Shenzhen  
Universiade**



**Guangzhou  
Asian Games**



**Shanghai  
World Expo**



**Beijing  
Olympics**



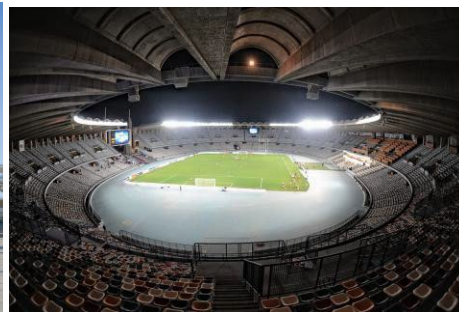
**Hangzhou  
Asian Games**



**Cote d'Ivoire Stadium,  
Africa Cup**



**EXPO Anayla Turkey**



**National Sport hall, Abu  
Dhabi**



**Sumgait Stadium,  
Azerbaijan**



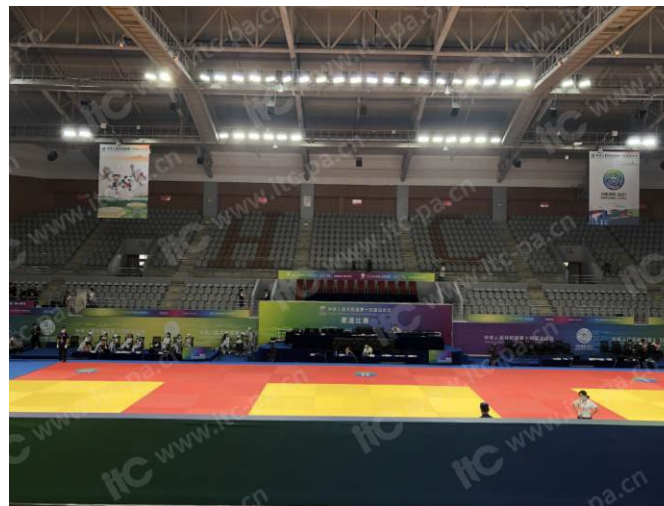
**Bareki Stadium,  
Algeria**



**Douera Stadium,  
Algeria**



# The 14th National Games of the People's Republic of China





# Mehdi Hüseynzadə stadium, Sumqayıt, Azerbaijan



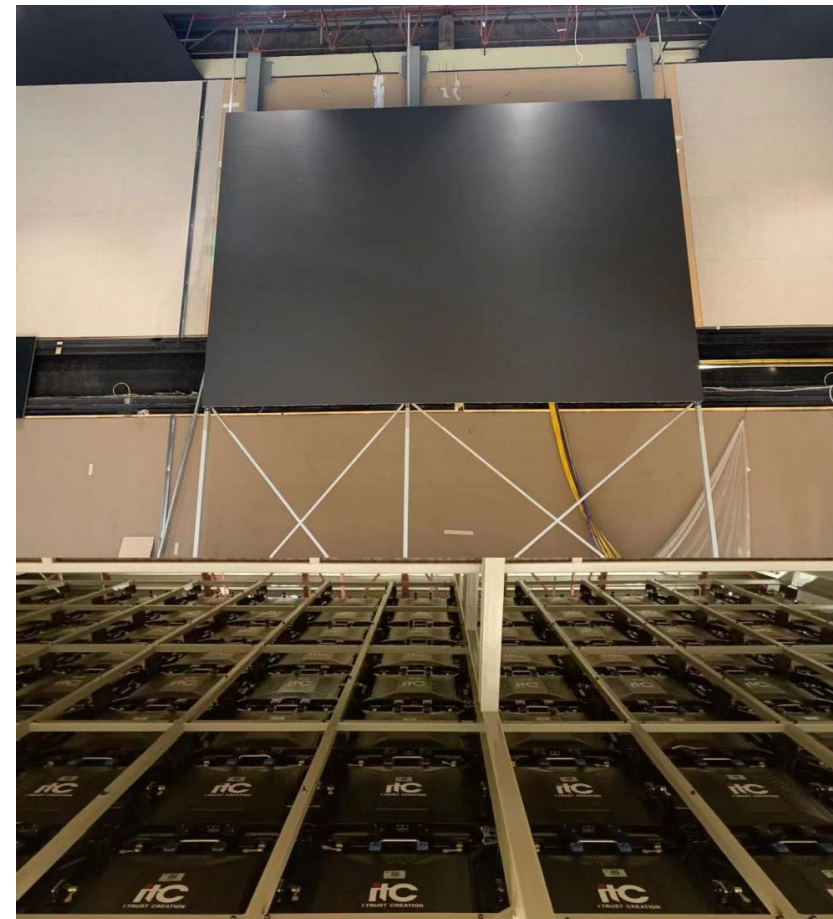


## Bareki Stadium, Algeria





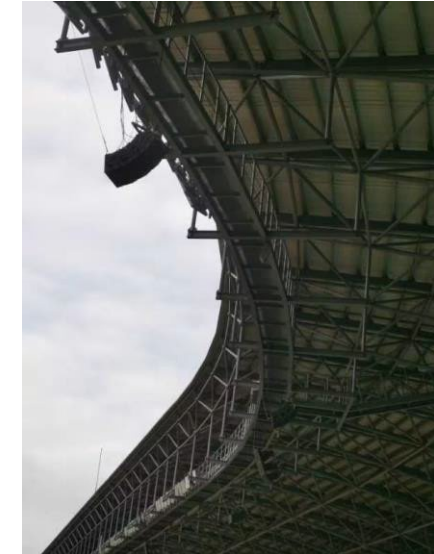
## ✓ National Sport Hall, Abu Dhabi





# ✓ African Cup of Nations in Côte d'Ivoire, San Pedro Stadium

## ✓ Professional Sound System, Digital Conference system



# THANKS

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## Contact Us

E-mail: [info@unitioffice.com](mailto:info@unitioffice.com)

Tel: 03-2779 6100

Website: <https://unitioffice.com>  
<https://uni-x.uniti.asia/>