



# Stadium Connectivity

SCWS – Riyadh

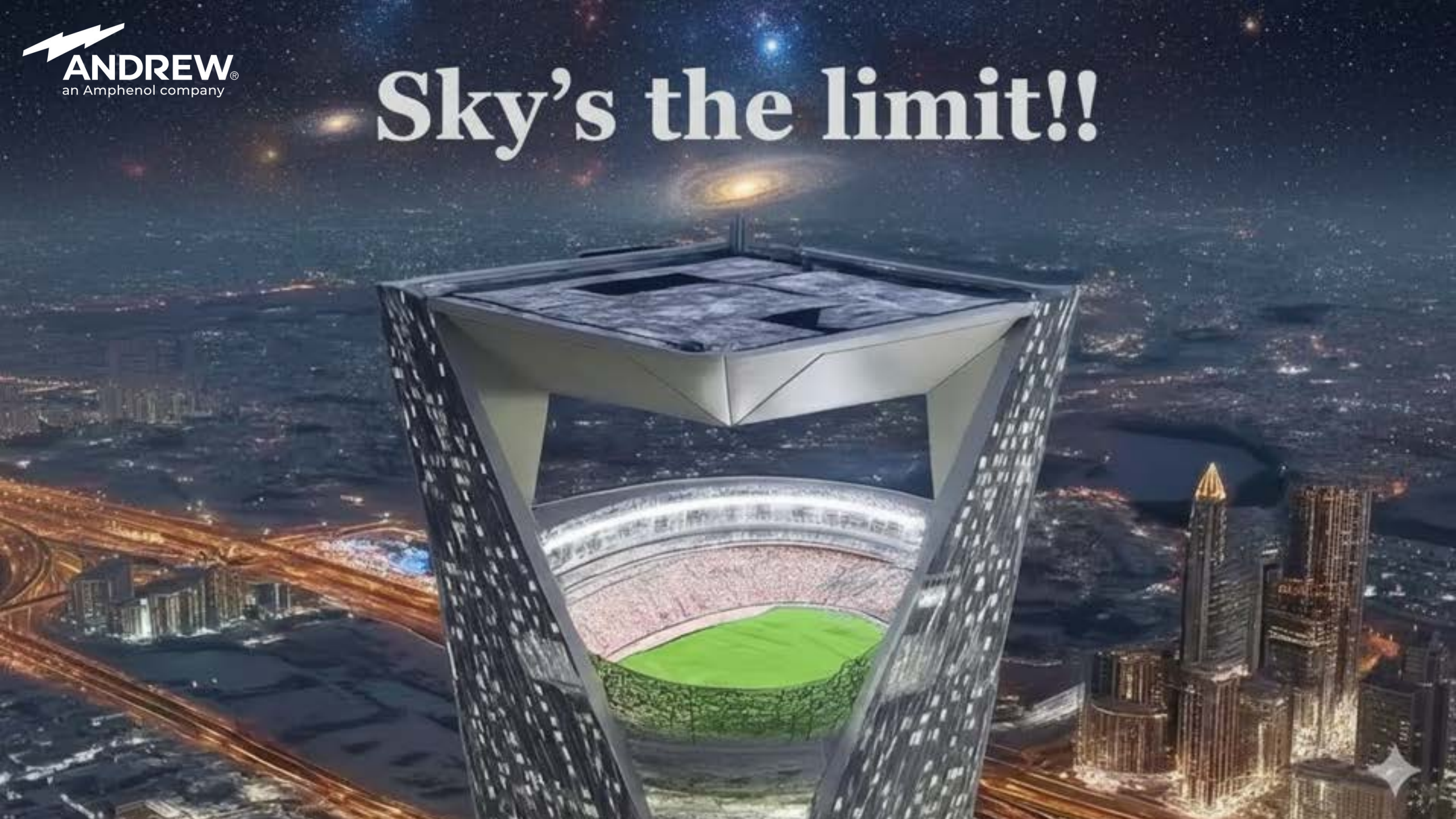
Anis Khoury

Director of Business Operations – ICN, MEA

[anis.khoury@andrew.com](mailto:anis.khoury@andrew.com)



# Sky's the limit!!





# Saudi Market Overview

01

To be #1 in Data Throughput

Maximize user experience by achieving highest DL/UL throughput

Highest number of bands  
(+9 Bands)

B1, B3, B8, B20, B28,  
n40, n41, n78, n77

02

03

Saudi to Lead & Export  
Technology and Development  
4G & 5G - ORAN & 6G

Vision 2030...

Tourism, EXPO & Stadiums

Vision of 2030 and Beyond to WC2034

04



# Stadiums Baseline Requirements



## Capacity

High number of sectors to address the 4G / 5G req, within the stadium

01



## Space

Large room space is required to accommodate all MNOs equipment

03

02

## Sustainability

Addressing Room power consumption requirements and heat dissipation



## Scalability

Capability to interface with multiple RAN options / vendors and future demand and market Dynamic



04





>160 **ANDREW**  
an Amphenol company

Major Sports Venues  
Worldwide



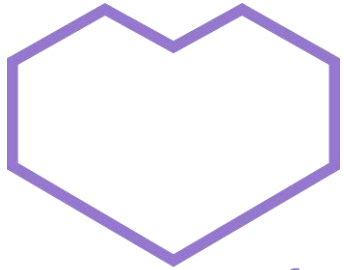


40+  
STADIUMS  
EUROPE



**ANDREW**<sup>®</sup>  
an Amphenol company





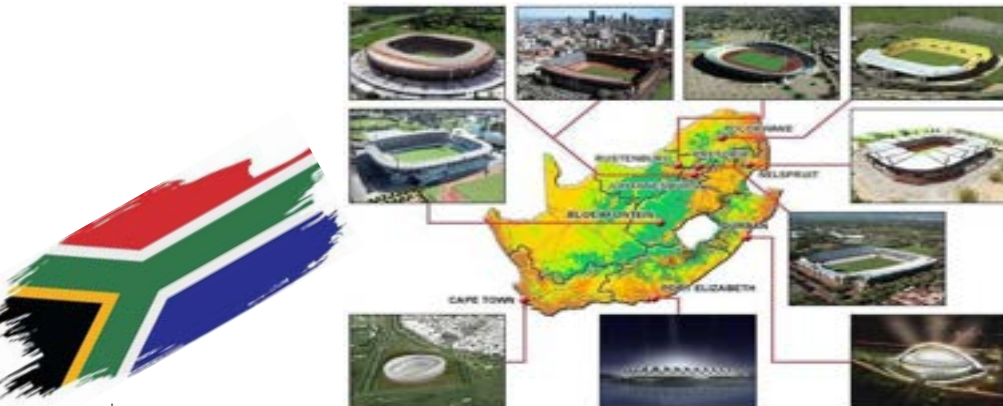
الأول بارك  
ALAWWAL PARK



20+  
STADIUMS  
MEA



**ANDREW®**  
an Amphenol company





ANDREW

10 Super Bowls in 14 Years



XLV

AT&T Stadium

103,000  
Seating

XLVI

Lucas Oil Stadium

70,000  
Seating

XLVII

Superdome

80,000  
Seating

XLVIII

MetLife

83,000  
Seating

XLIX

State Farm

65,000  
Seating

LI

NRG Stadium

72,000  
Seating

LIV

Hard Rock Stadium

65,000  
Seating

LV

Raymond James Stadium

66,000  
Seating

LVII

State Farm

65,000  
Seating

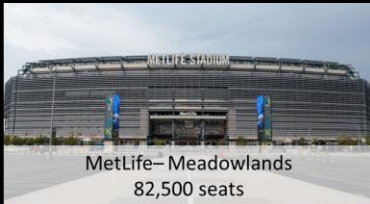
LIX

Superdome

65,000  
Seating

6 of 7

Quarter Final, Semi-,  
Final Stadiums



36  
NCAA

24  
NFL

23  
NBA/NHL

12  
MLB

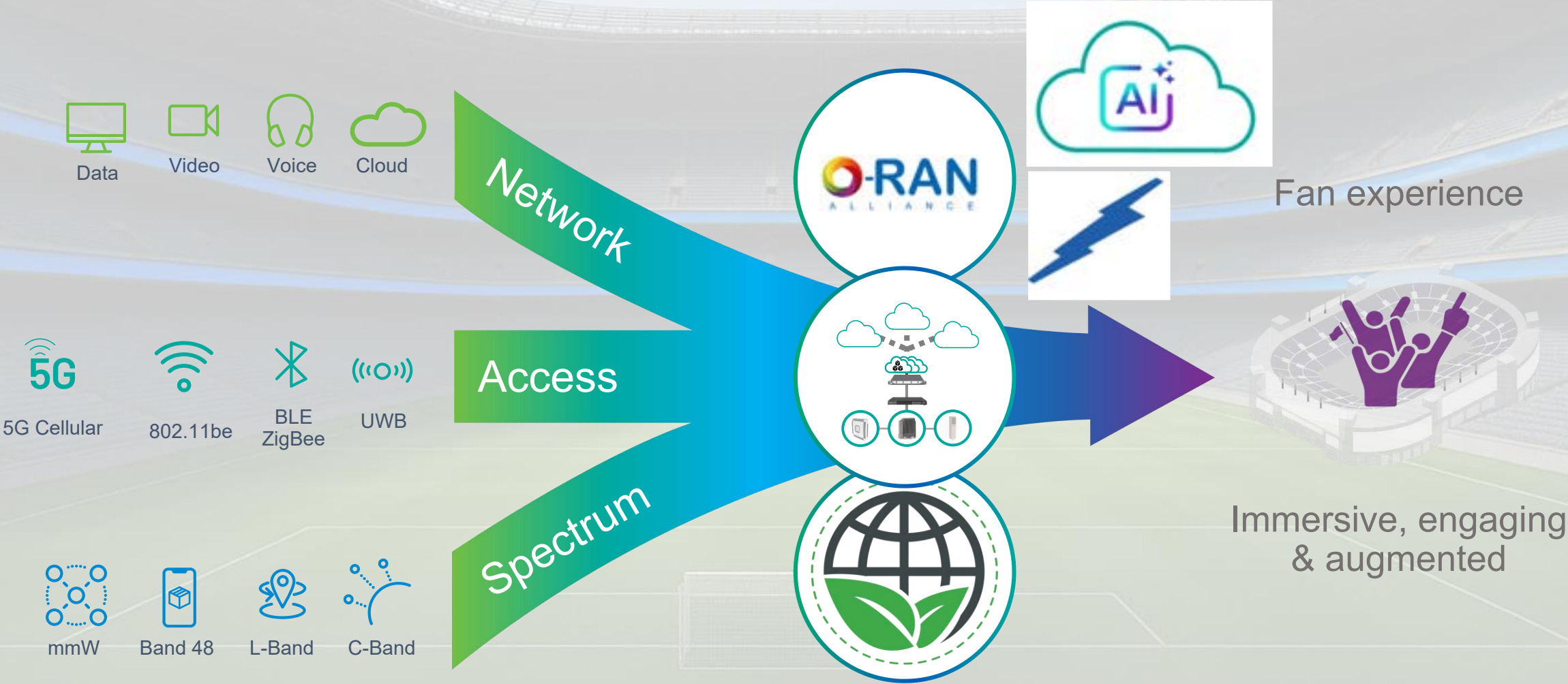
95+  
STADIUMS  
UNITED STATES

ANDREW®  
an Amphenol company





# 3 Key LPV trends to deliver the fan experience





# ERA<sup>®</sup> end-to-end Digital – Value proposition

**2-5G**  
FDD-TDD

## ALL-DIGITAL

**O-RAN & CPRI** all-digital Performance  
C-RAN Flexibility  
Neutral Host Public, Private  
Technology, Band, Carrier **Agnostic**  
TDD and FDD



## OPERATIONAL EFFICIENCY

Automated O-DU/BBU-to-DAS Configuration  
End-to-End O-RAN Delay Management  
**All Power-classes** Access Points: Low-, Mid- and High-  
Real-time PIM measurements and Fault Detection  
**Cybersecurity**



## SUSTAINABILITY AND FUTURE-READINESS

**Zero RRHs**, Associated Cabling  
Less Rackspace, Footprint  
**Less Power**, Cooling Requirements  
Higher MTBF on the market and References  
SW-defined Commissioning and Sectorization  
Automatic HW detection  
**O-RAN to-the-Radio**





## STADIUMS

# AT&T Stadium

## Largest DAS in the World



### SITE

80,000 seats with capacity for 105,000



### CHALLENGE

Replace legacy DAS with long-term capacity for fans in stands and on field



### VALUE

1<sup>st</sup> DAS in the world with 100% ORAN and CPRI interfaces

- 10x increase in capacity over legacy DAS
- ~5000 ft<sup>2</sup> reduction in headend space with 93% less power & 92% less cooling



### SOLUTION

- **CDD** (Nokia) and **ORD** (Samsung)
- **2,452** CAP APs
- **1,000** DAS + MatSing Antennas

**660**

sectors

**133**

fans/sector



Reduced space



No RRH or coax cabling



Reduced power & HVAC



# EASY CAPACITY UPGRADES

## Simplified Zoning

Seating Sectors

On Demand Field Sectors

Zone to Sector Mapping:

Phase 1 → 4:1

Phase 2 → 2:1

Phase 3 → 1:1



BBU / O-DU



DAS



# MATCH DAY PLAN

## Dedicated Sectors



Seating

Field



BBU / O-DU



DAS



# CONCERT DAY PLAN

## Re-Used Sectors



BBU / O-DU



DAS

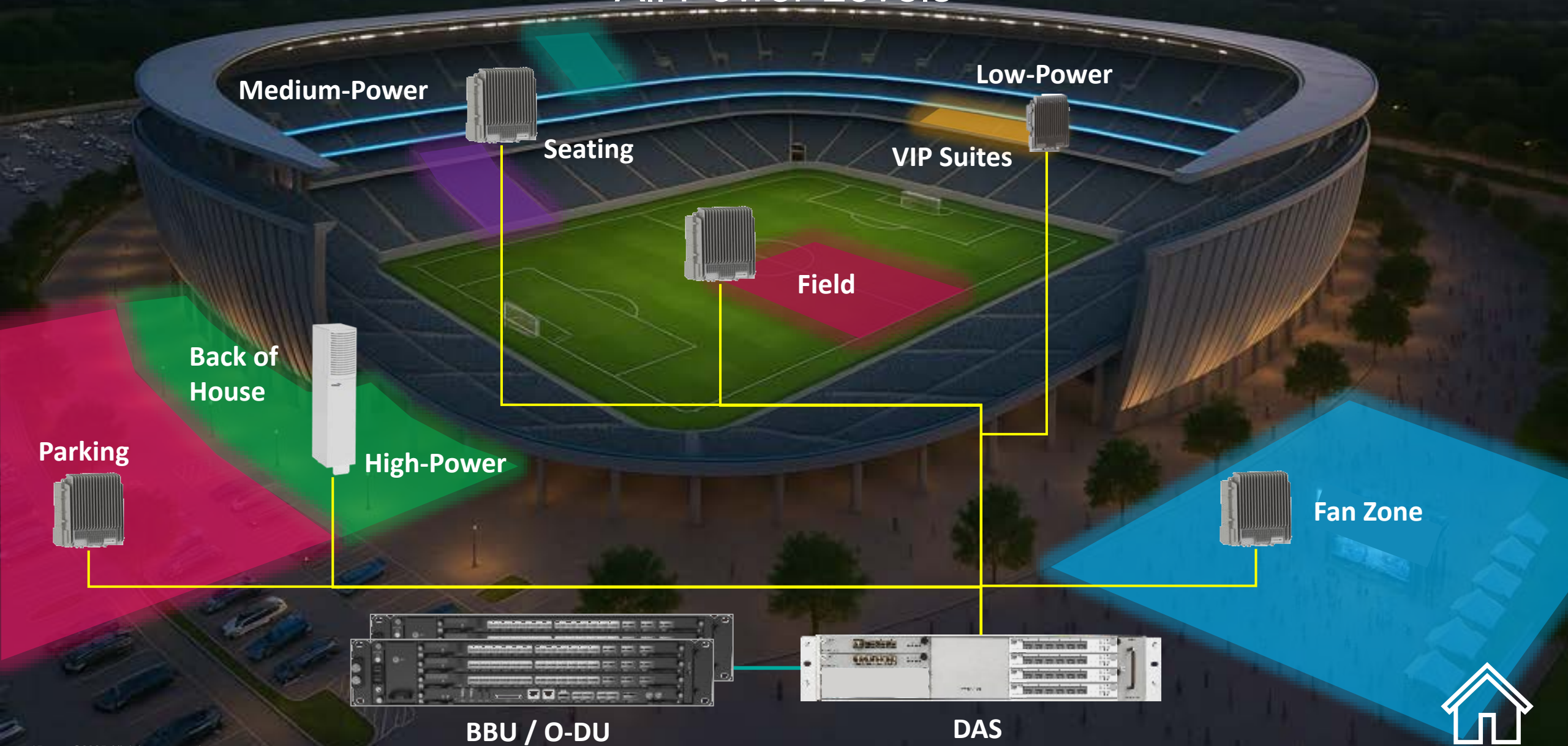
Seating  
Field





# FLEXIBLE ACCESS POINTS

## All Power Levels



# PURPOSE-BUILT ANTENNAS

## Overcoming Stadium Challenges

Catwalk Weight and  
Space Restrictions

Media Screens  
Mounting Restrictions

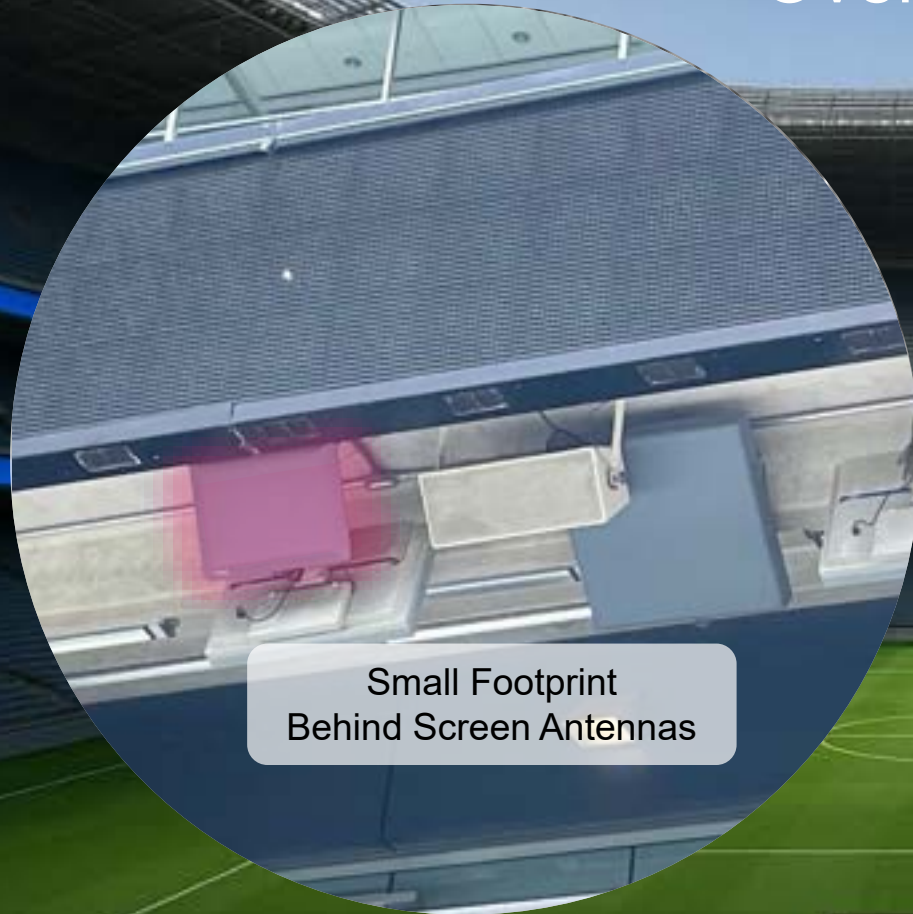
Overhang  
Shadowing

On-Demand  
Field Coverage  
Requirement

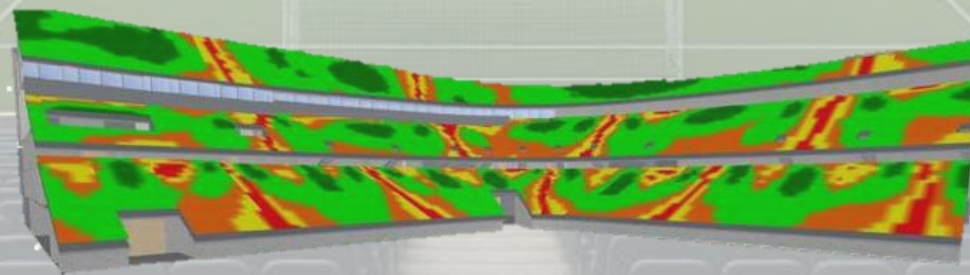


# PURPOSE-BUILT ANTENNAS

## Over The Head



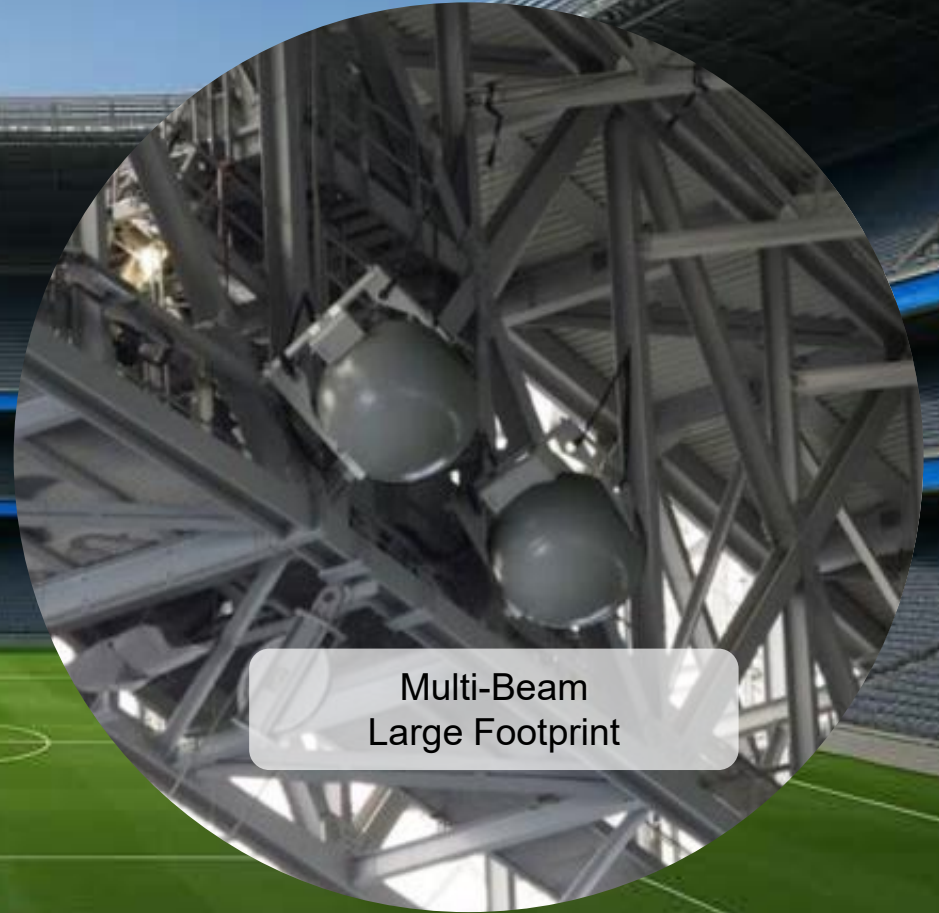
Small Footprint  
Behind Screen Antennas



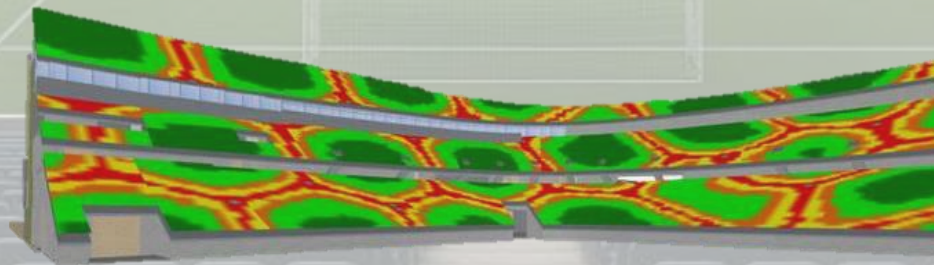


# PURPOSE-BUILT ANTENNAS

## Lens



Multi-Beam  
Large Footprint

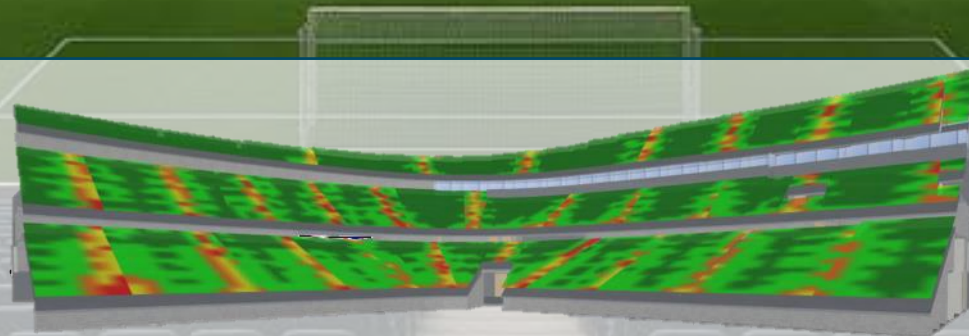
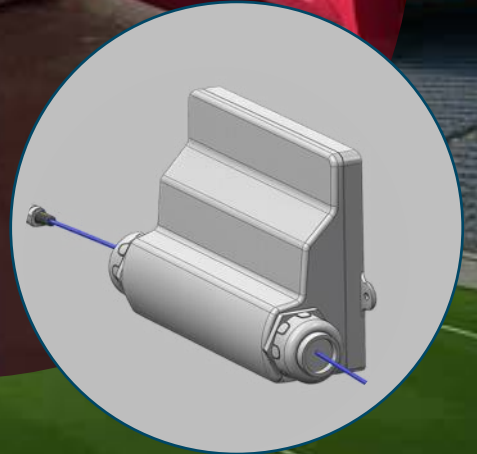




# PURPOSE-BUILT ANTENNAS

## Under Seat

Compact, Ruggedized





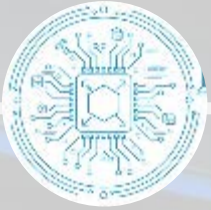
# Hybrid Deployments for best Cost-to-Performance

	Description / Function	Key Specs / Attributes	Ideal Use Case
Under-Seat (Lower/Mid)	Short RF path ensures top SINR and high performance. Densest sectorization for high-capacity zones	IP67, low-profile enclosure for durability and discreet deployment	Stadium lower and mid bowls; under-seat placements
Over-Head (Catwalk)	Precisely shaped beams (30×30, 20×60, 60×60, 50×50) deliver sharp cut-off and minimal upper-tier spill	Provides precise coverage control from catwalks or elevated structures	Upper-tier or balcony coverage with tight control
Lens (Constraints)	Compact, modular lens antennas (17×17, 34×34, 40×40, 54×54) available in single-beam or multi-beam forms	Enables surgical fills in visually or mechanically constrained areas where mounting options are limited	Architecturally restricted or dense RF zones





# ‘ONE STOP SHOP’



## Technology

End-to-End Solution  
**All Digital, All Power-classes**  
Passive and Antennas



## Experience

**100's of Stadiums Globally**  
We are your trusted advisor!



## Knowledge

**VAS;** Design, Commissioning and Integration  
Performance management and after sales support



***BACK AND READY FOR THE FUTURE***