

Digital and Sustainable

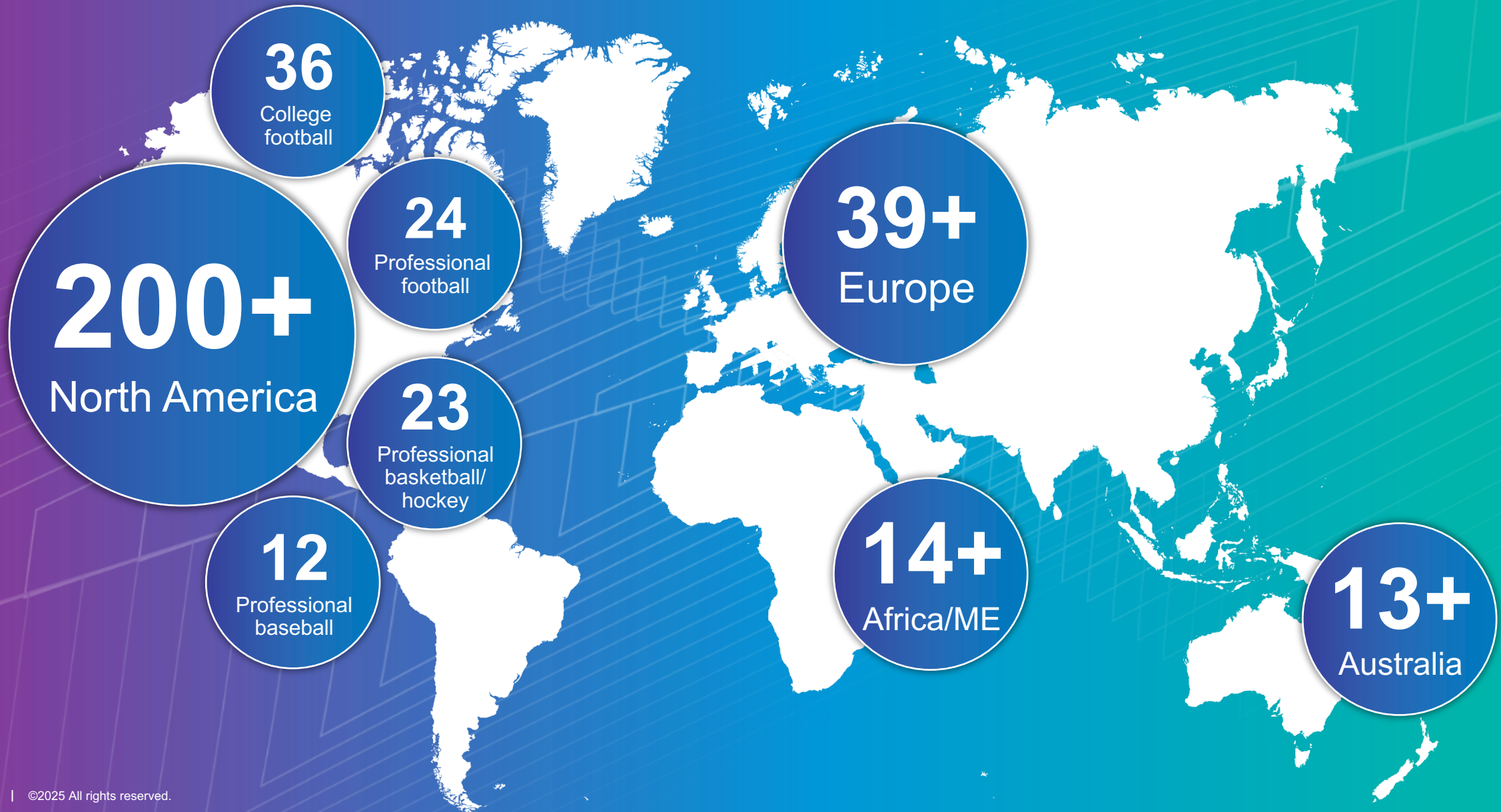
How to approach connectivity
for the new wave of stadiums

Thierry Chau

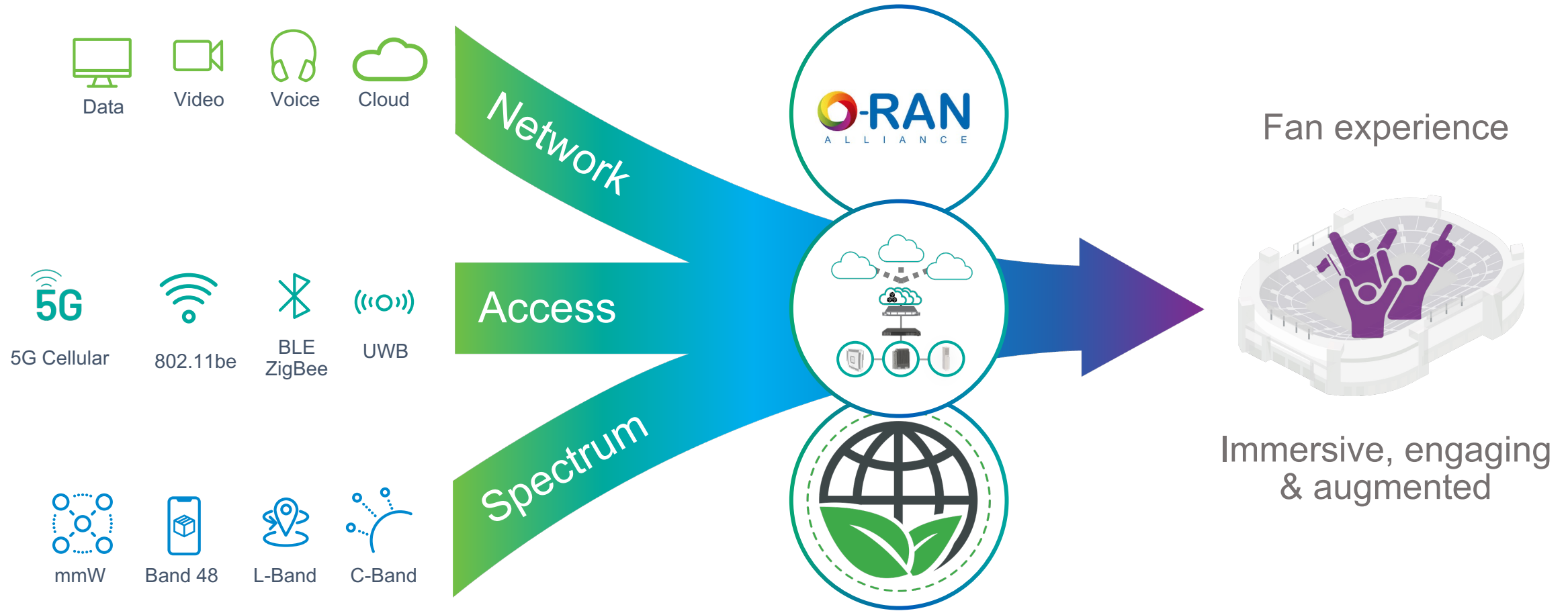
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Playing in venues around the world



3 Key LPV trends to deliver the fan experience



Phases of the stadium digital journey

VENUE OPERATIONS

Ticketless, touchless, cashless
Food & beverage
Team/player analytics
Coaches communications
Smart concession
Fan loyalty
Way-Finding

CONNECTIVITY

Email
Texts & SMS
Social media
Photo sharing
Web browsing
RideShare

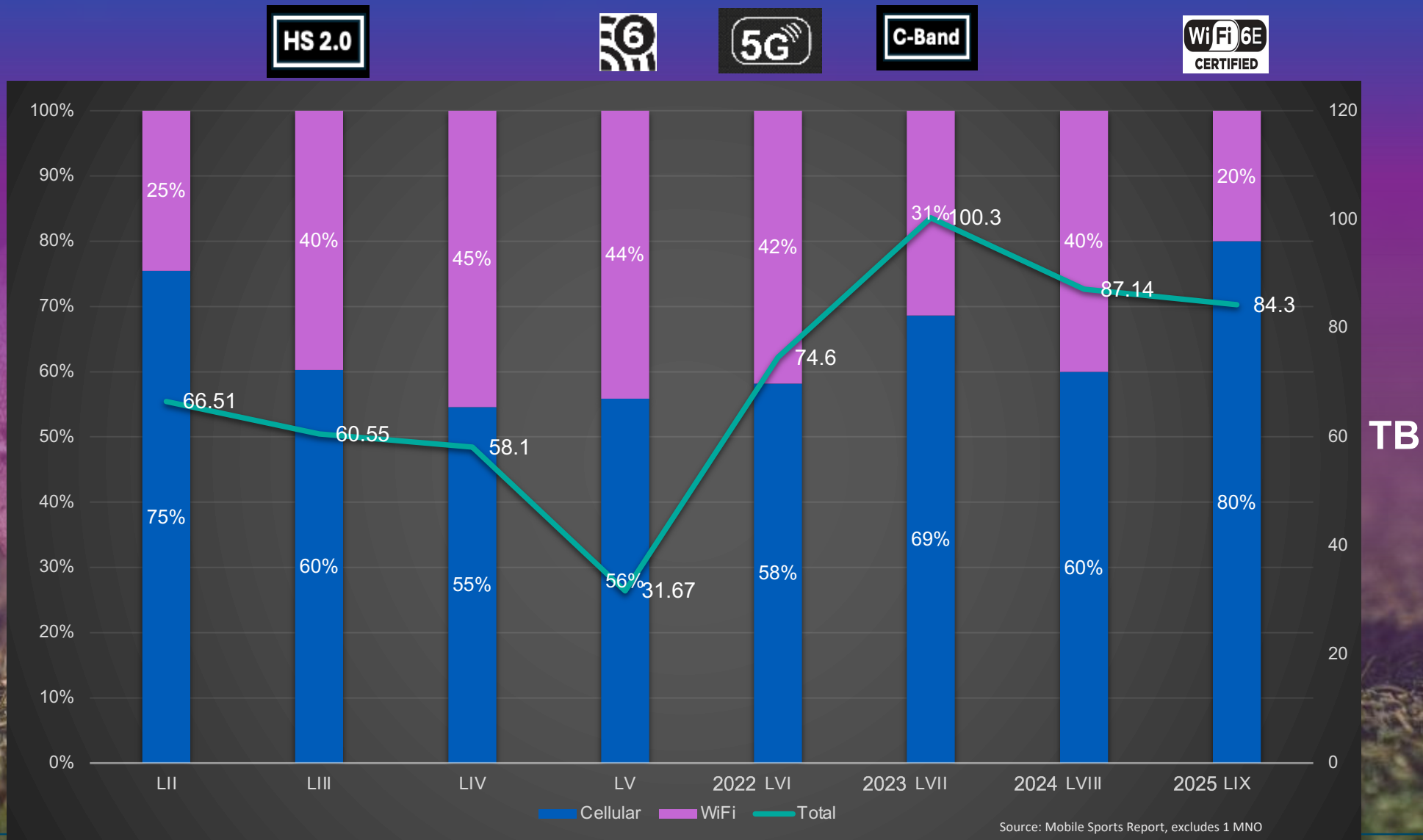
IMMERSION

Digital wallets
Immersive AR/VR
Streaming services
Statistics/fantasy
Live micro betting
Specialized content
Personalization

GREAT FANS. GREAT NETWORK. GREAT EXPERIENCE.



Super Bowl data



The capacity challenge

Lots of people
Lots of devices...
Lots of apps...

Lots of radios...
Lots of space...
Lots of complexity...
Lots of costs...
Lots of interference...
Limited spectrum...
Limited flexibility...

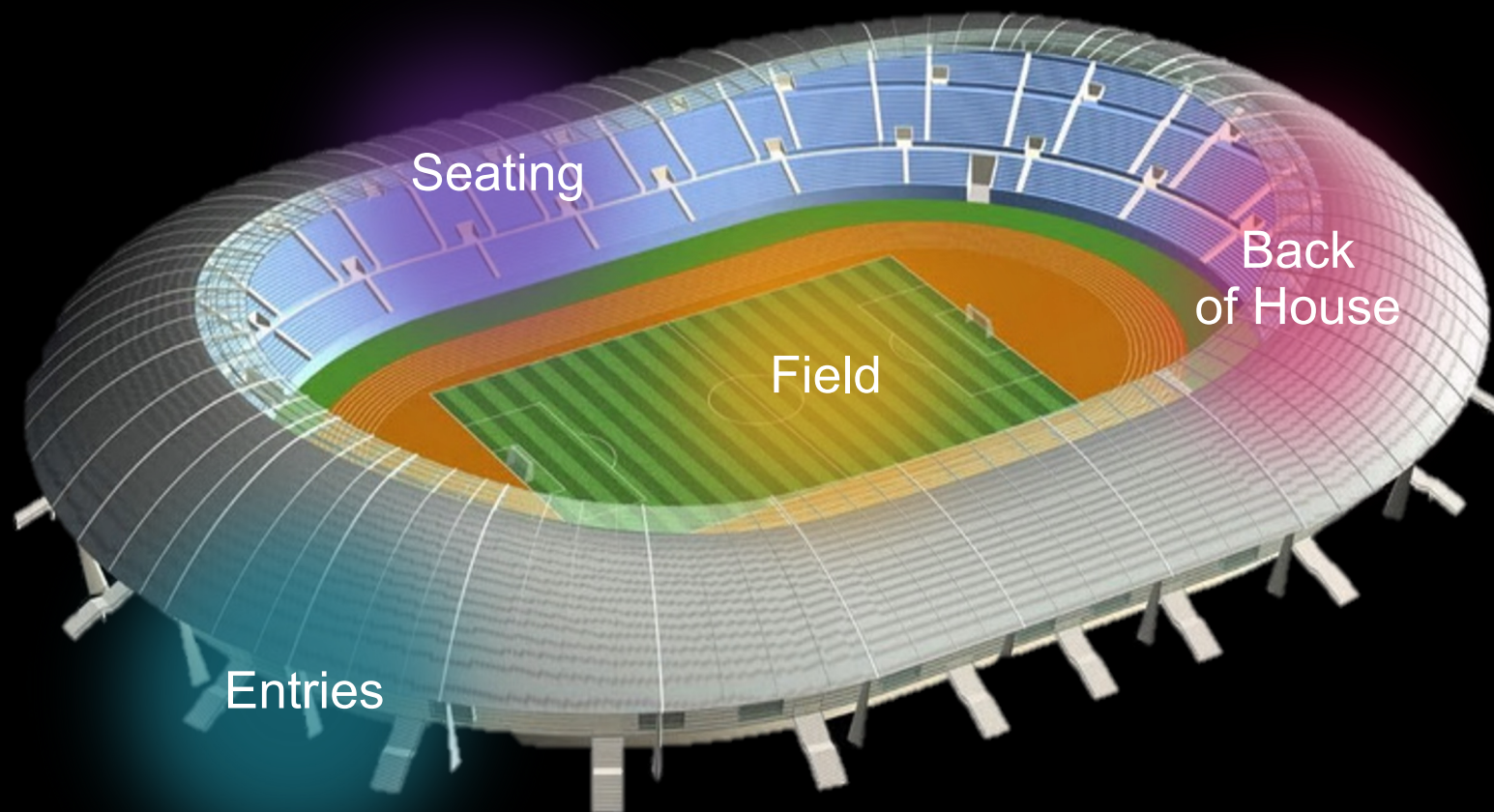
From a few bands to
over a dozen...

2G/3G (<1GHz)

4G/5G low-band (<1GHz)

5G mid-band (3.5GHz)

5G mmWave (>28GHz)



Deployment models evolution – Balancing capacity with aesthetics

Late 2000's

Overhead and from behind



1

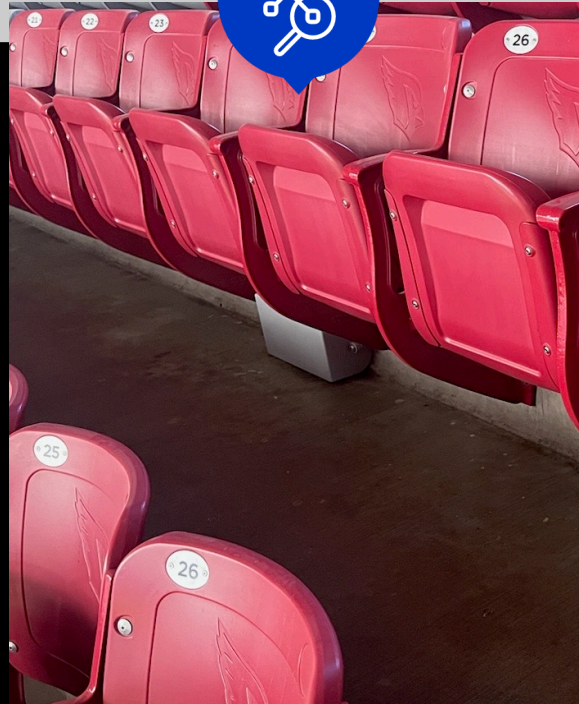


2015's

Over handrails and front dasher



2



2020's

Under the seat



Now

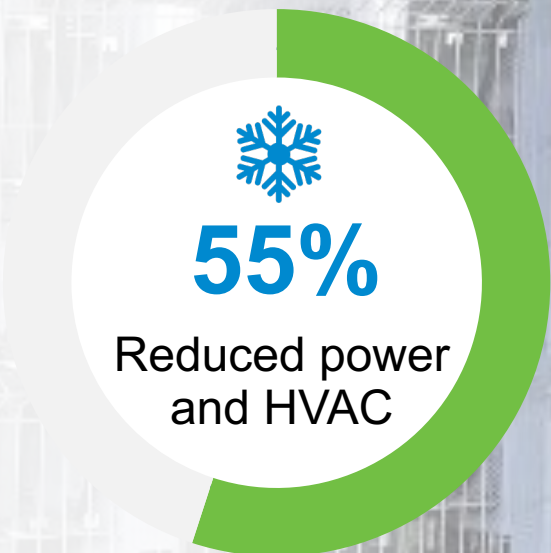
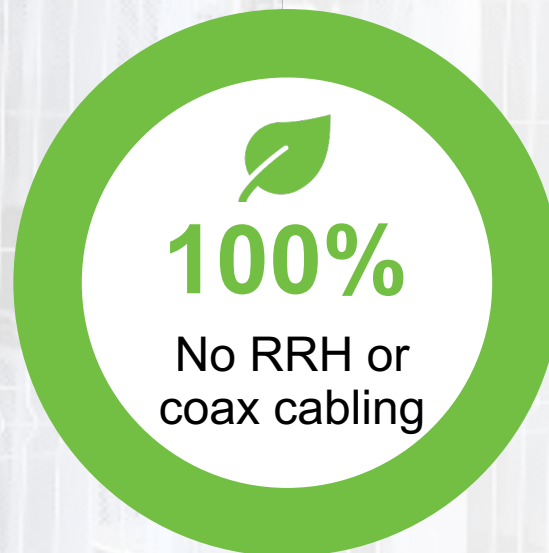
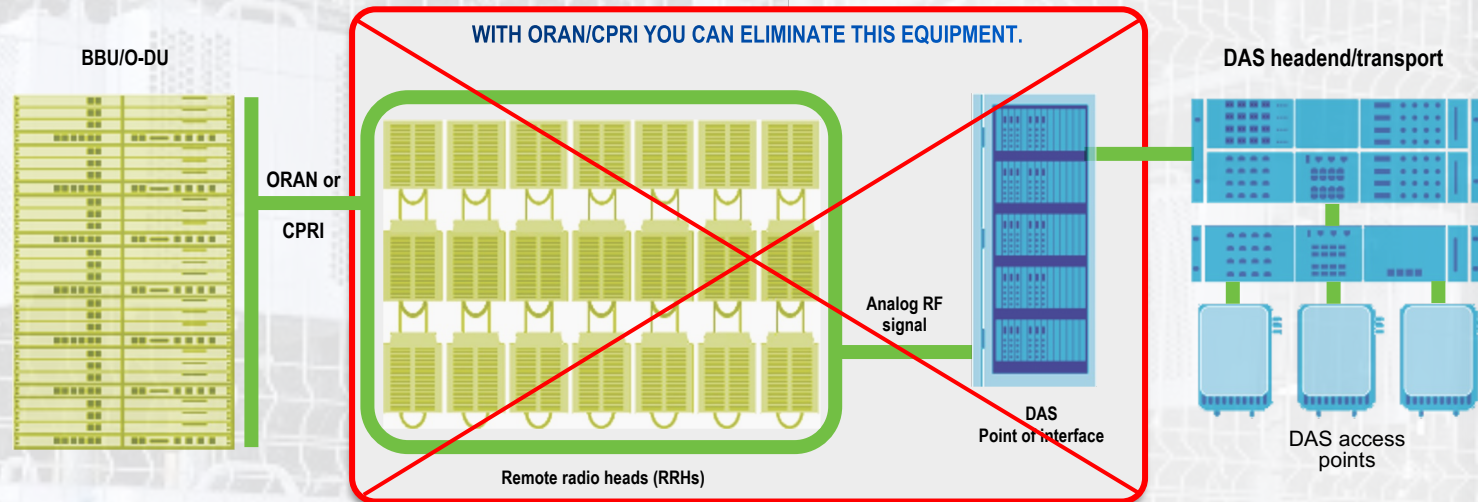
Overhead lens & smart antennas



3



Digital can help: Smaller footprint, better sustainability



Digital can help:
smaller footprint, better sustainability

BBU/O-DU

WITH ORAN/CPRI YOU CAN ELIMINATE THIS EQUIPMENT.

DAS headend/transport

CNBC SPORT

The Dallas Cowboys are improving stadium cell coverage before fans return for 2021 season

PUBLISHED MON, AUG 2 2021 1:10 PM EDT



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SHARE



Reduced space

No RRH or
coax cabling

Reduced power
and HVAC

More capacity & performance, smaller footprint

- FROM
- 3 DAS rooms
 - ~35 sectors
 - 4 Operators
 - Traditional antennas & under seat
 - No CPRI or ORAN



- TO
- 1 Row of racks, 2 rooms free
 - 100% digital interfaces – CPRI/ ORAN
 - Over 300 zones – growth to over 600
 - Multi-operators & mid-band
 - Lens based technology overhead



1/10th

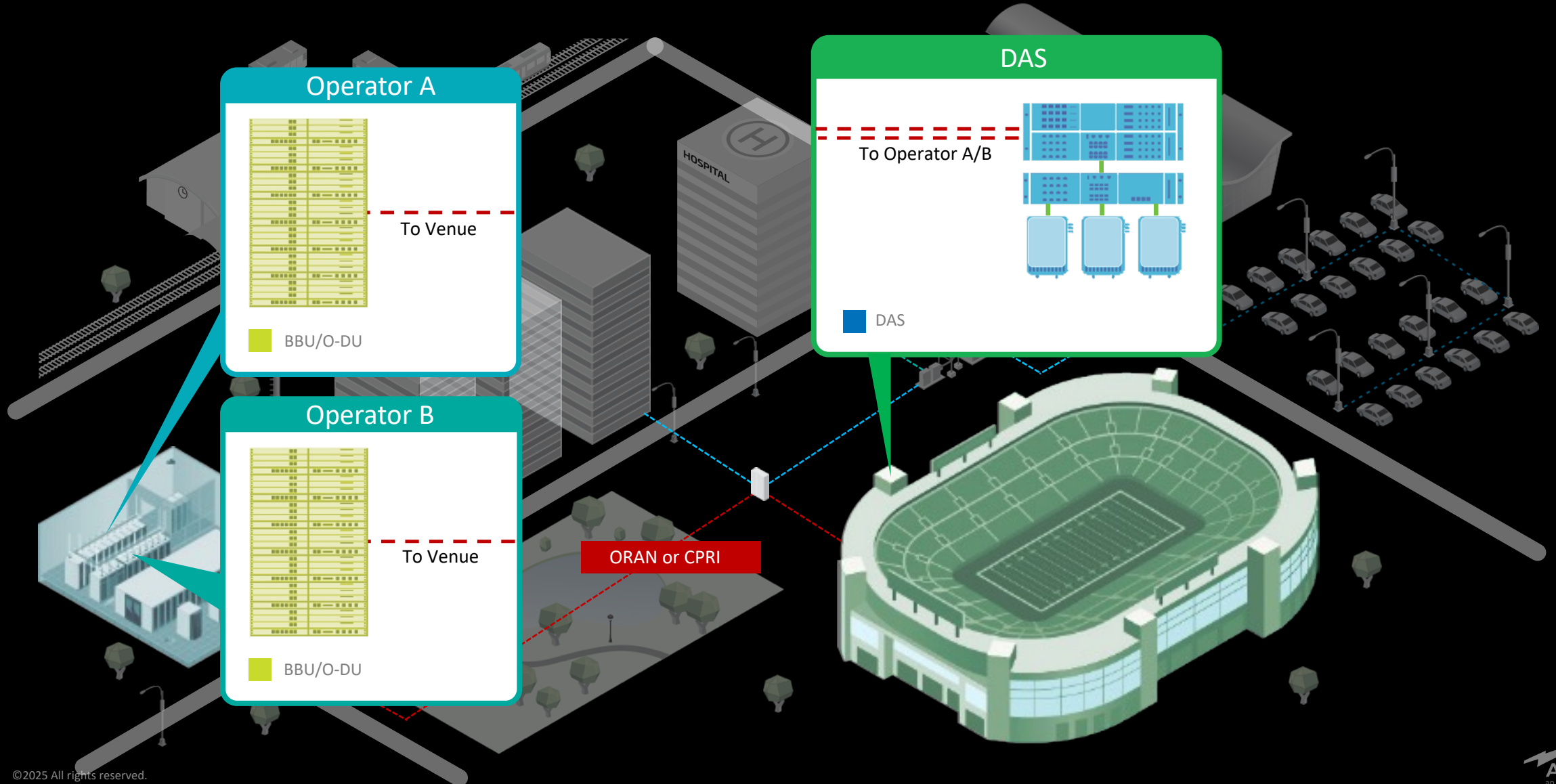
THE SPACE



10x

THE CAPACITY

All digital offers architectural & deployment flexibility



Key stadium DAS considerations



Multi-MNO
Multi-band



Operating
model



Upgrade
roadmap



Monetization
options

Thank You



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