



**Johan Cruijff ArenA**

# Constant Innovation

**Henk van Raan, CIO**

**Congres Ministerie van Economische Zaken Agentschap Telecom**

7 November 2019

**JOHAN CRUIJFF  
ARENA**

# JOHAN CRUIJFF ARENA

- Europe's 1st multi functional stadium (1996)
- Retractable roof
- 55.000 capacity
- 85 Skyboxes
- 7.000 m<sup>2</sup> hospitality
- Excellent accessibility
- 2.500 Indoor Parking
- PPP Development
- Area Development
- 100 Events per year
- Profitable after depreciation





**Football setting**                      **55.000**

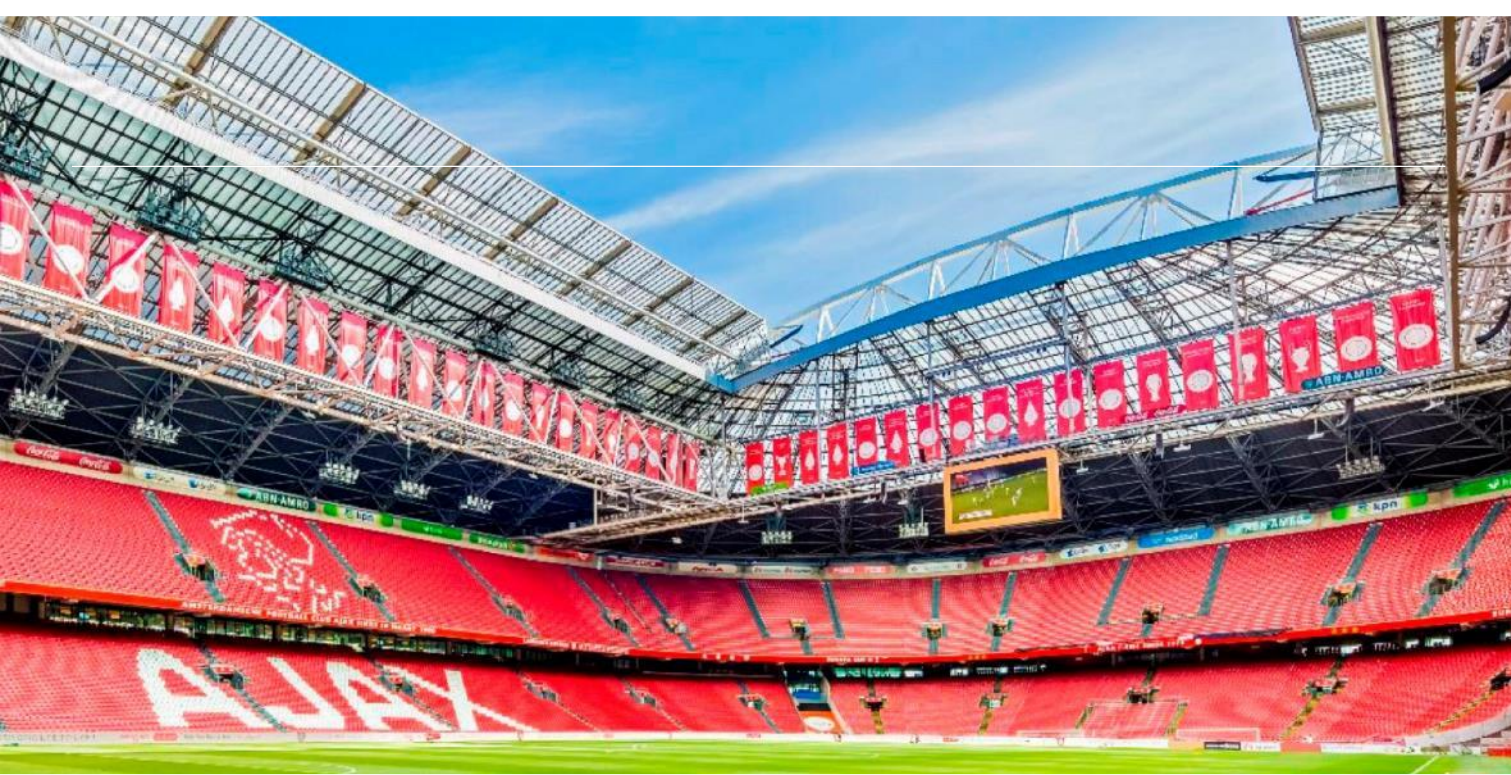
**In the round setting**                **70.000**

**End show**                                **55.000**

**Panorama setting**                    **30.000**

**Dance setting**                         **35.000**

**Amphi theatre setting**               **12.000**



FIFA World Cup qualifiers  
UEFA EC qualifiers  
Friendly matches



Champions League  
Europa League  
Eredivisie League  
Cup matches  
Friendly matches



1998 Champions League Final  
EURO 2000  
2013 Europa League Final  
EURO 2020



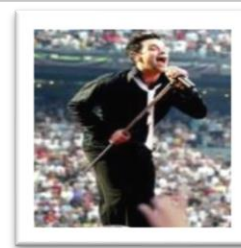
# SHOWS AND EVENTS



**Tina Turner**  
1996 (3x)



**U2**  
2005 (3x)  
2009 (2x)  
2017 (2x)



**Robbie Williams**  
2003 (2x)  
2006 (4x)  
2013 (1x)



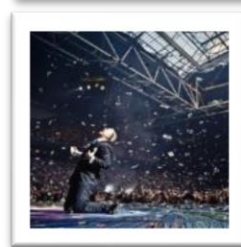
**Rihanna**  
2016 (1x)



**Michael Jackson**  
1996(3x)  
1997 (2x)



**Madonna**  
2006 (2x)  
2008 (1x)



**Muse**  
2013 (1x)



**Coldplay**  
2016 (2x)



**Celine Dion**  
1997 (1x)  
2008(1x)



**Eminem**  
2003(2x)



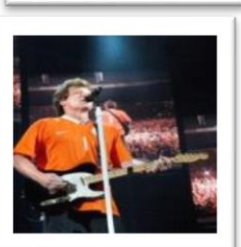
**Roger Waters**  
2013(1x)



**Beyonce**  
2016 (1x)  
2018 (2x)



**Rolling Stones**  
1998 (5x)  
2003 (2x)  
2006 (1x)  
2017 (2x)



**Bon Jovi**  
2001 (2x)  
2003 (1x)  
2008 (1x)



**One Direction**  
2014 (2x)



**Ed Sheeran**  
2018 (2x)



**André Rieu**  
2008 - 2011

7x 34.000  
visitors



**Sensation**  
2000 - 2017

26x 35.000  
visitors



**Toppers**  
2005 - 2018

44x 62.000  
visitors





**HOSPITABLE**

**SAFE &  
SECURE**

**ACCESSIBLE**

**OFFER PEOPLE  
AN  
UNFORGETTABLE  
EXPERIENCE**

**SUSTAINABLE**

**VIBRANT AREA**

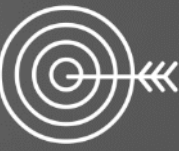
**STATE OF  
THE ART**

**CONTINUITY**

**FAN  
EXPERIENCE**

**JOHAN CRUIJFF  
ARENA**

# Goals 2015 -2020



**MORE EVENTS**

125-  
150

2,5  
MIO

**MORE VISITORS**

**HIGHER INCOME**

+20%

++

**MORE SPONSOR REVENUES**

**LOWER OPERATIONAL  
COSTS**

-20%

0

**LOWER CARBON FOOTPRINT**

**HIGHER CUSTOMER  
SATISFACTION**

+1,5  
(1-10)





Impact on society

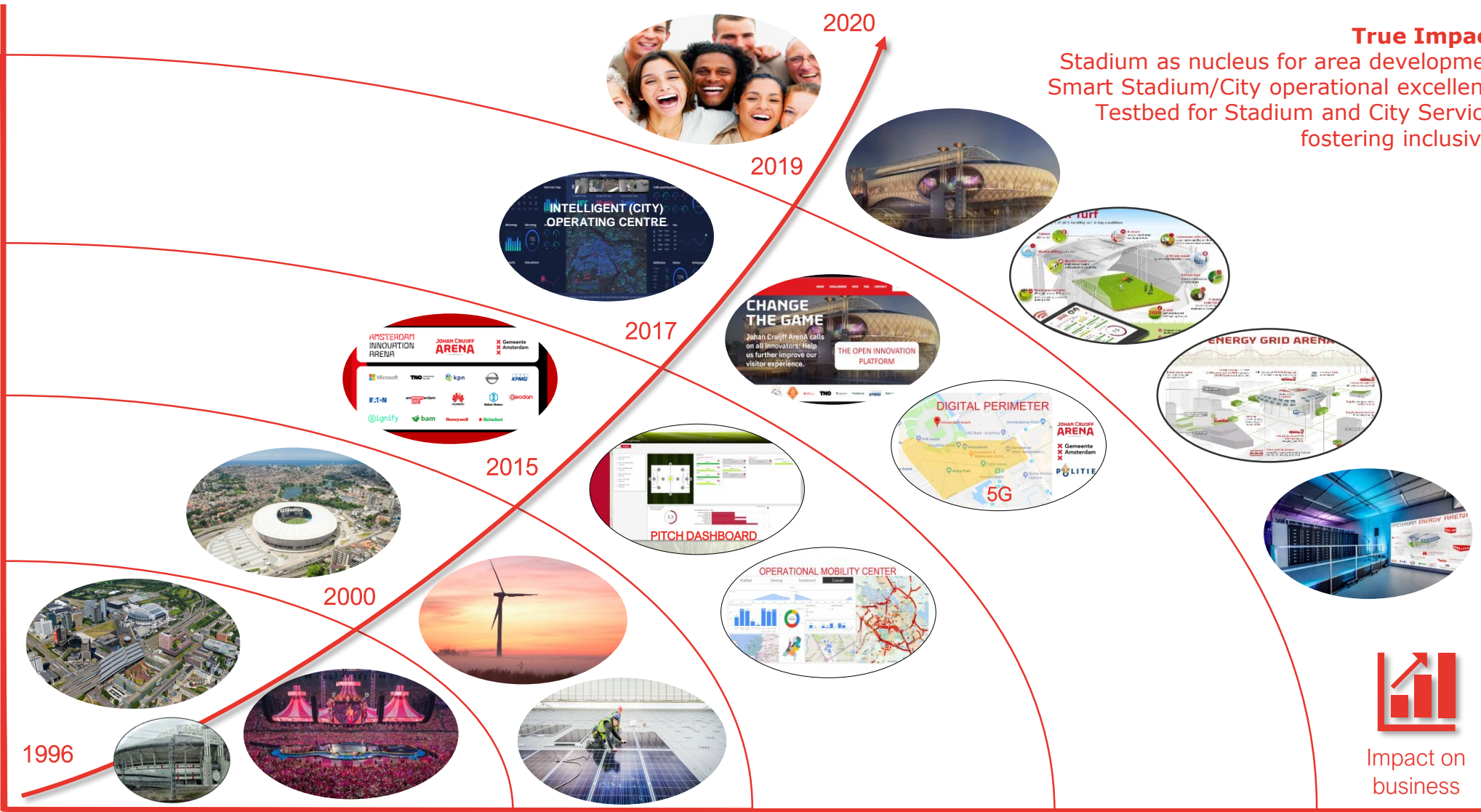
Social inclusivity platform

Innovation platform

Sustainability platform

Knowledge platform

Area development catalyst



5<sup>th</sup> generation Stadium

Multifunctional Stadium

Sustainable Stadium (Energy, 0 carbon footprint)

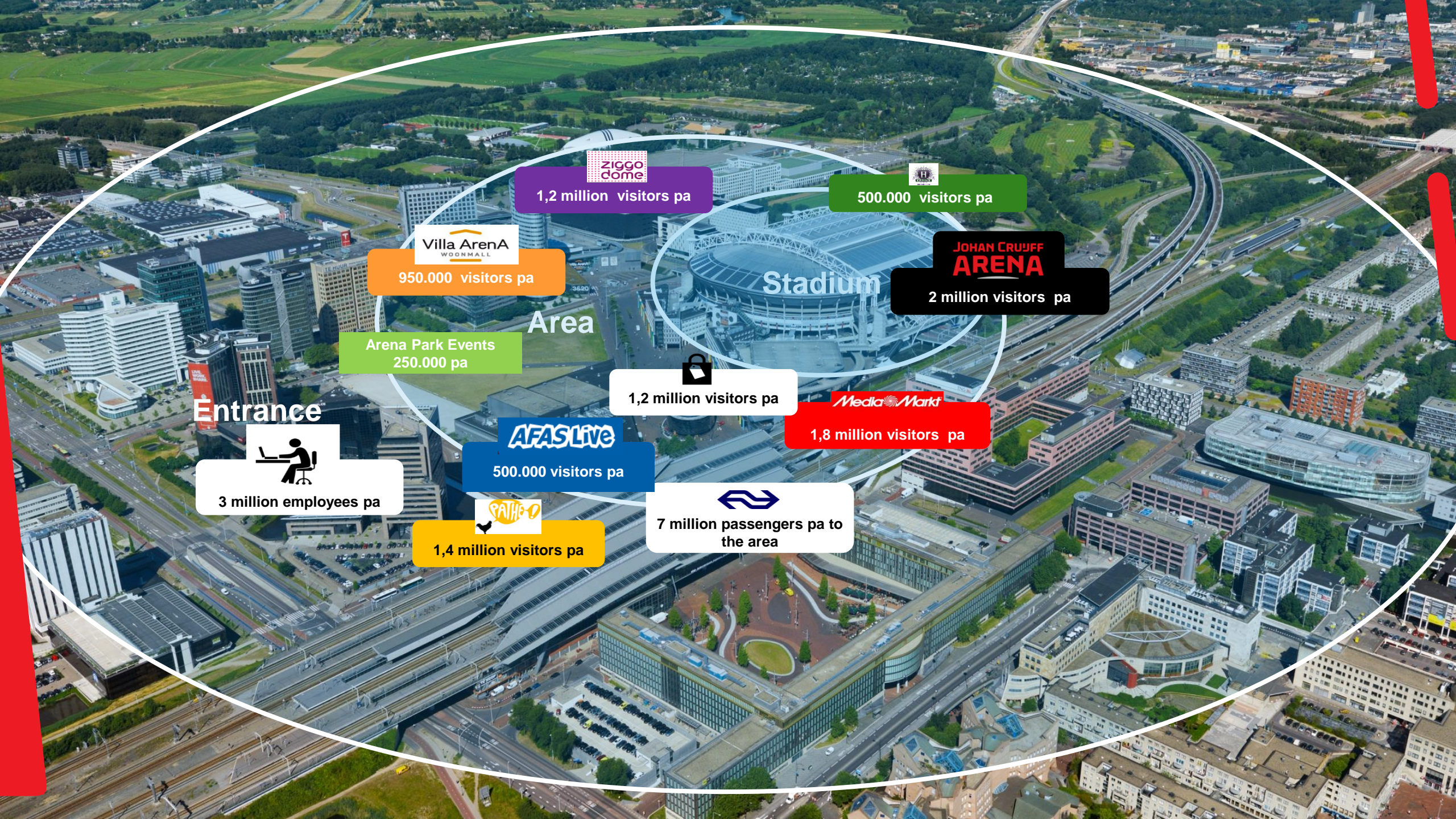
Smart Stadium (Digitalization)

Area management (City OS)

**True Impact:**  
 Stadium as nucleus for area development  
 Smart Stadium/City operational excellence  
 Testbed for Stadium and City Services fostering inclusivity



Impact on business



1,2 million visitors pa



500.000 visitors pa



950.000 visitors pa

**JOHAN CRUIJFF  
ARENA**

2 million visitors pa

Arena Park Events  
250.000 pa

Area



1,2 million visitors pa



1,8 million visitors pa

Entrance



3 million employees pa



500.000 visitors pa



1,4 million visitors pa



7 million passengers pa to  
the area

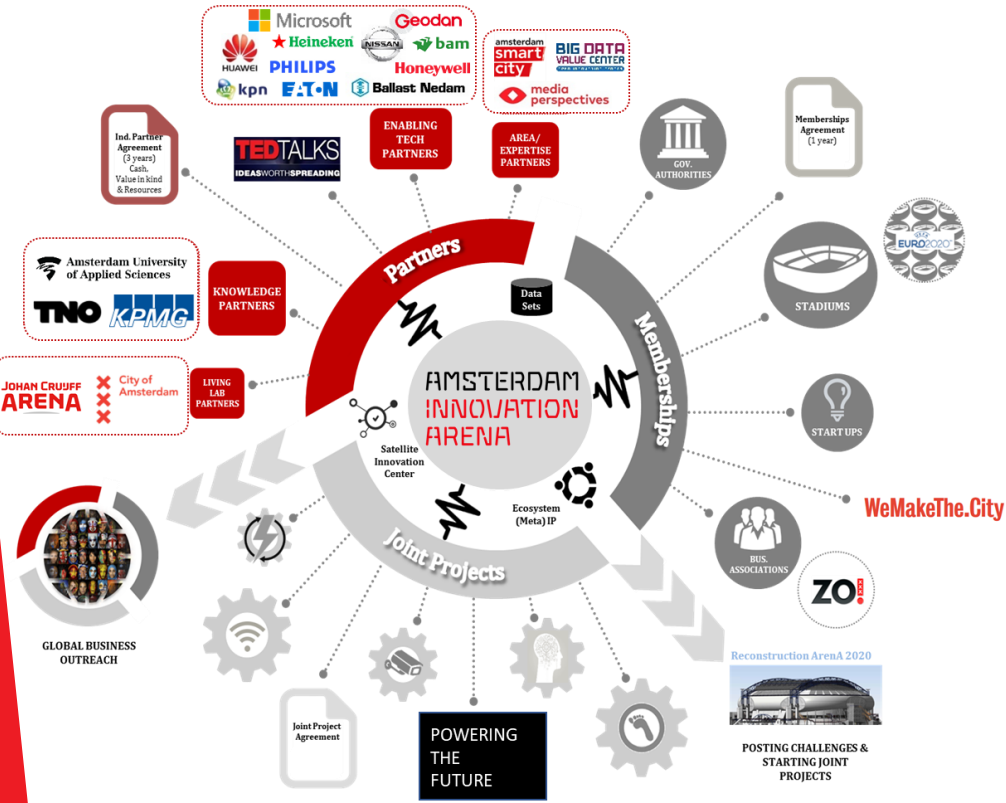
## From protocol driven to data driven operator

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1. Decision support, based on data
2. Data based decision making
3. Decision making based on predictive data analytics
4. Work with stakeholders



# From Innovation Eco System to Living Lab to Scale-up

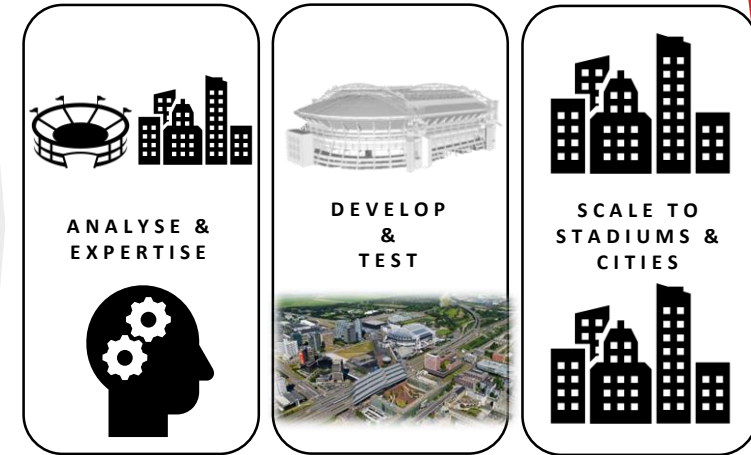


JOHAN CRUIJFF ARENA AS SHOWROOM & LIVING LAB



AMSTERDAM AS LIVING LAB

✘ Gemeente Amsterdam
 amsterdam smart city



AMSTERDAM INNOVATION ARENA AND ITS ECOSYSTEM

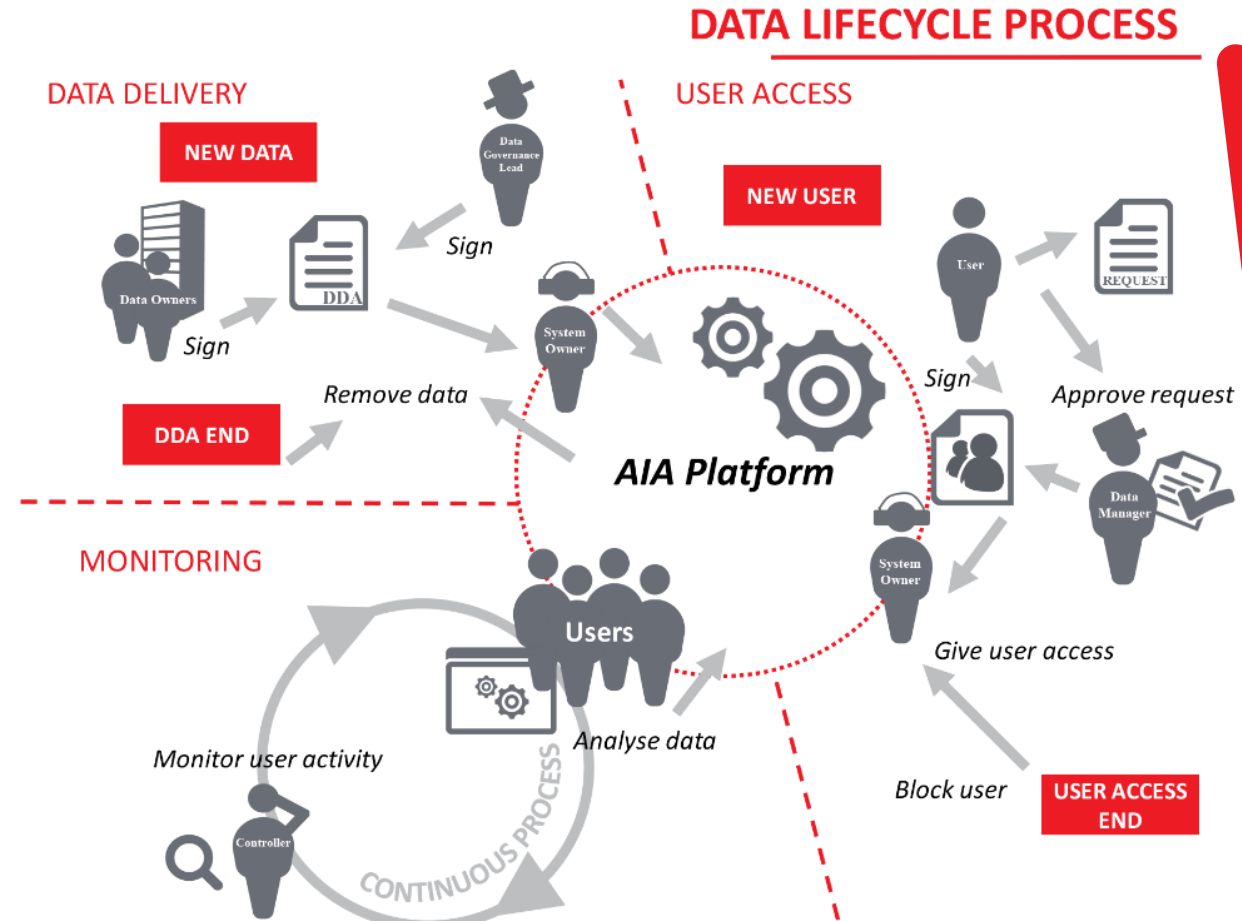
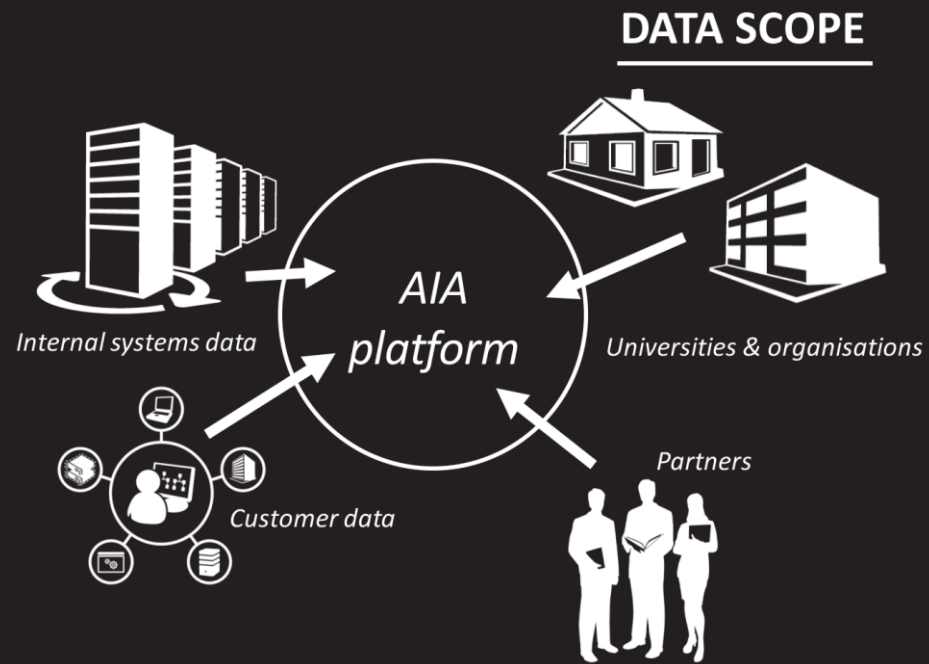
# AIA themes

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1. Basic infrastructure
2. Fan Experience
3. Customer journey
4. Safety & Security
5. Sustainability
6. Facility Management



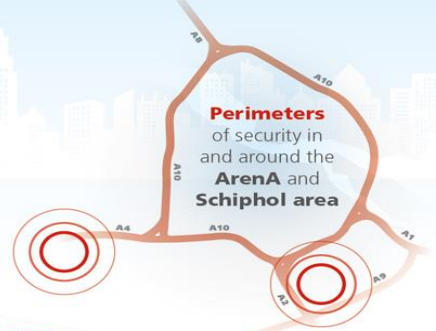
# Data Governance



IN COOPERATION WITH:



# Living Lab for a Safe & Smart City



**Sharing camera images** while respecting the latest **privacy regulations**

**Smart Living** concepts:  
Smart Home, Smart Energy, Smart Parking, Smart Waste

**Developing services** and **sharing data** between public and private parties

**P1 Smart Parking**  
Smart Lighting, Energy Hub

**Smart Utility Hub**  
Transshipment point for supplies to **ArenaA** and **entire area**

**A2 Seamless Travel Experience**  
online **guidance** to location

**Crowd Management** Efficient deployment of staff and resources through **cooperation**

**Livable and hospitable Zuidoost**  
Viability, safety, accessibility, services

**Area-wide connectivity**  
4G/5G

**Smart Sensing**  
For example **smart lighting**; brightness based on crowds or noise

**Security perimeters** in and around the area

**ArenaA: from an Operational Mobility Center to a 24/7 Operational Security Center**

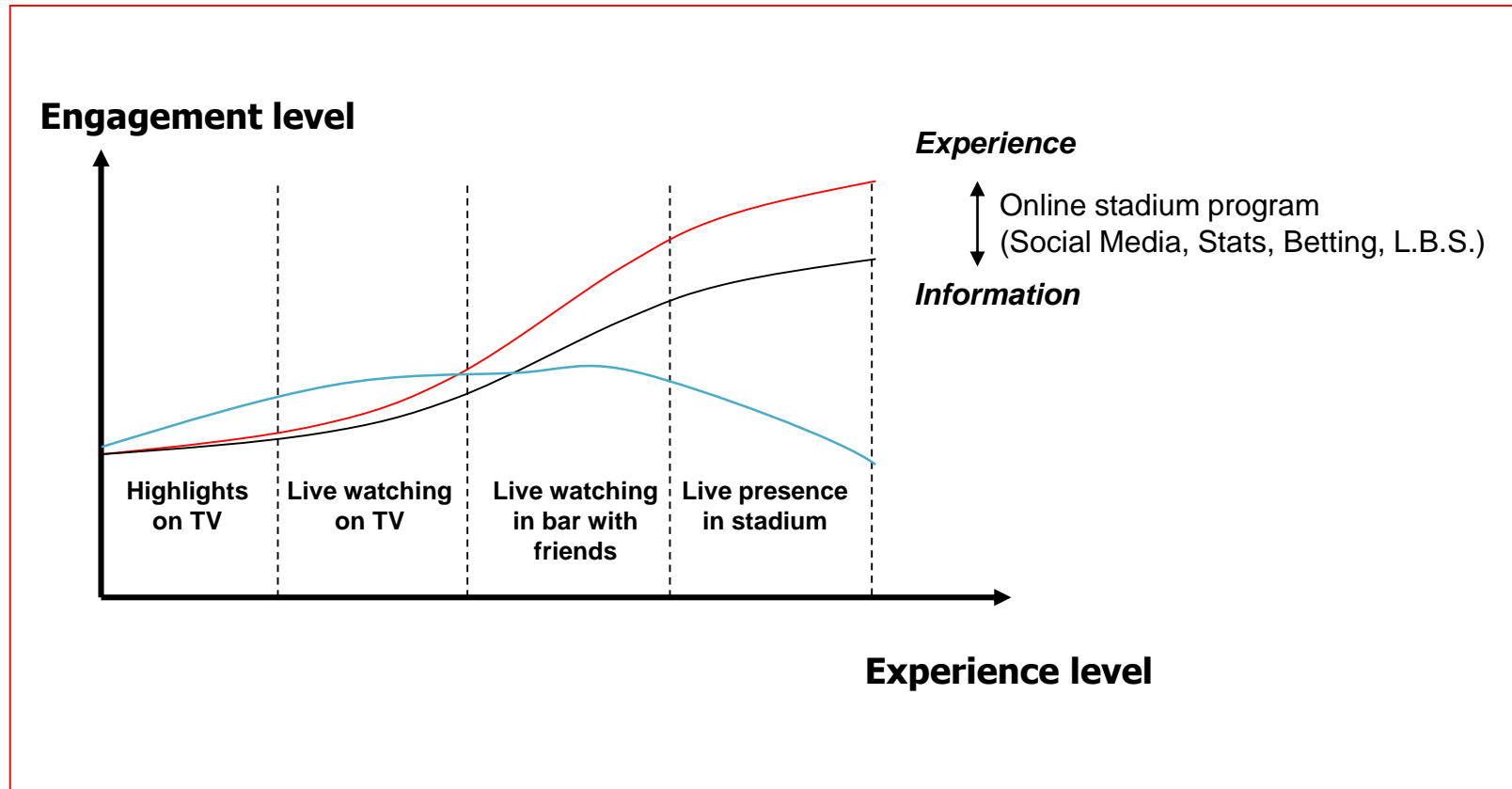
**Smart Sensing** For example, **sensors** that indicate when trash cans are full

**EK 2020 ready**

**Integration** of all security and calamity organizations (**Liaisons**)

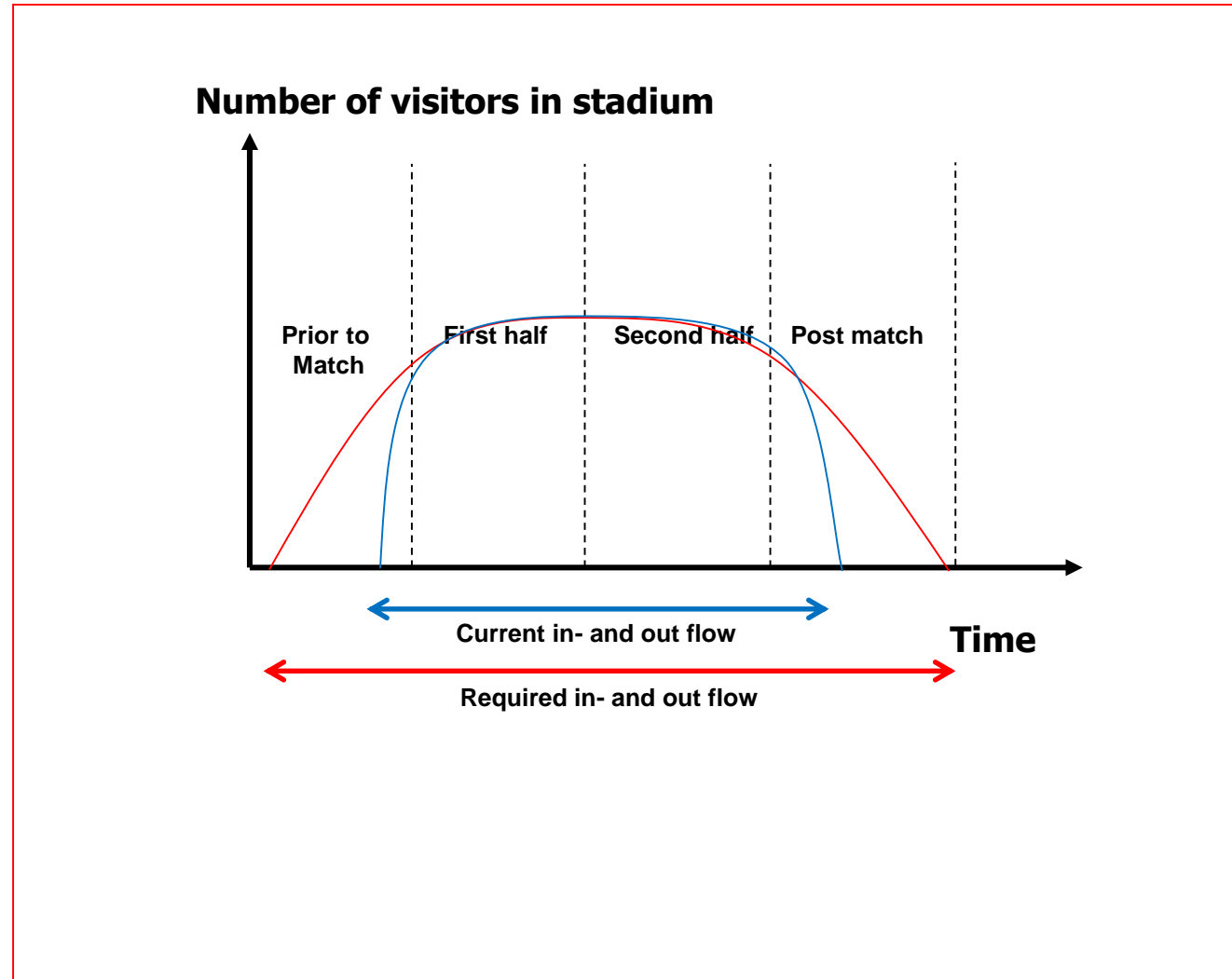


# ENGAGEMENT VS EXPERIENCE

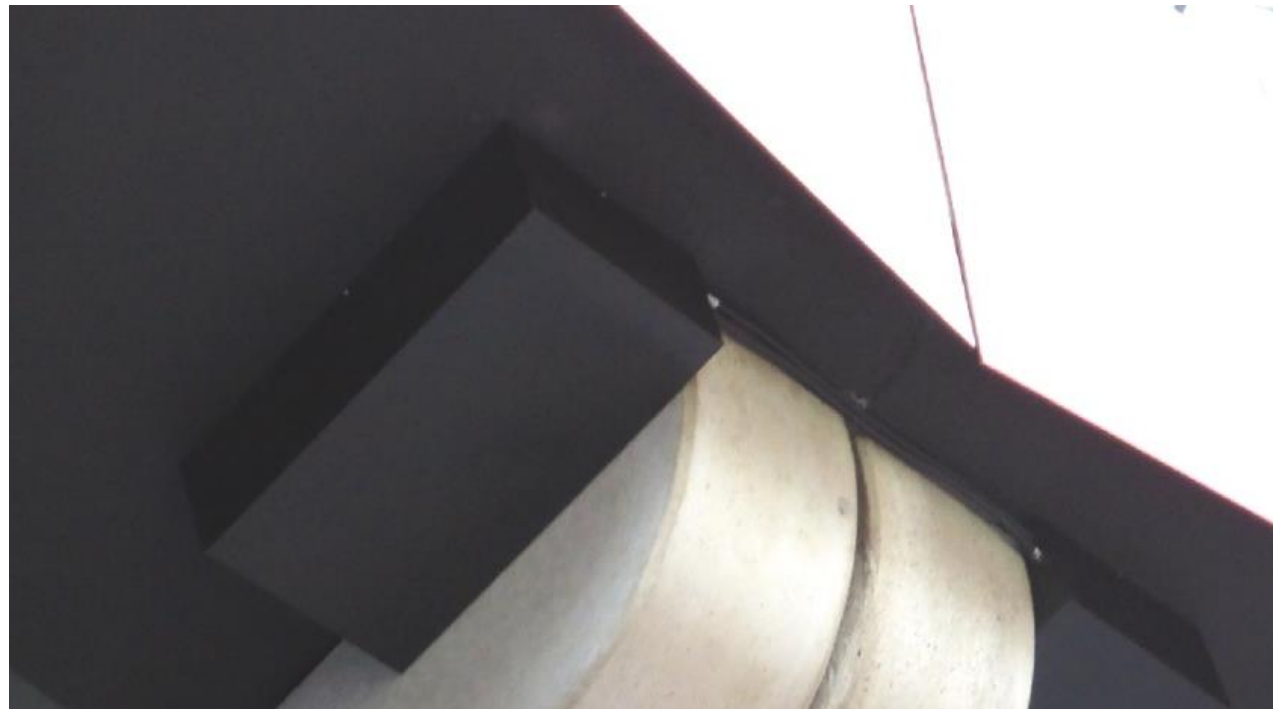
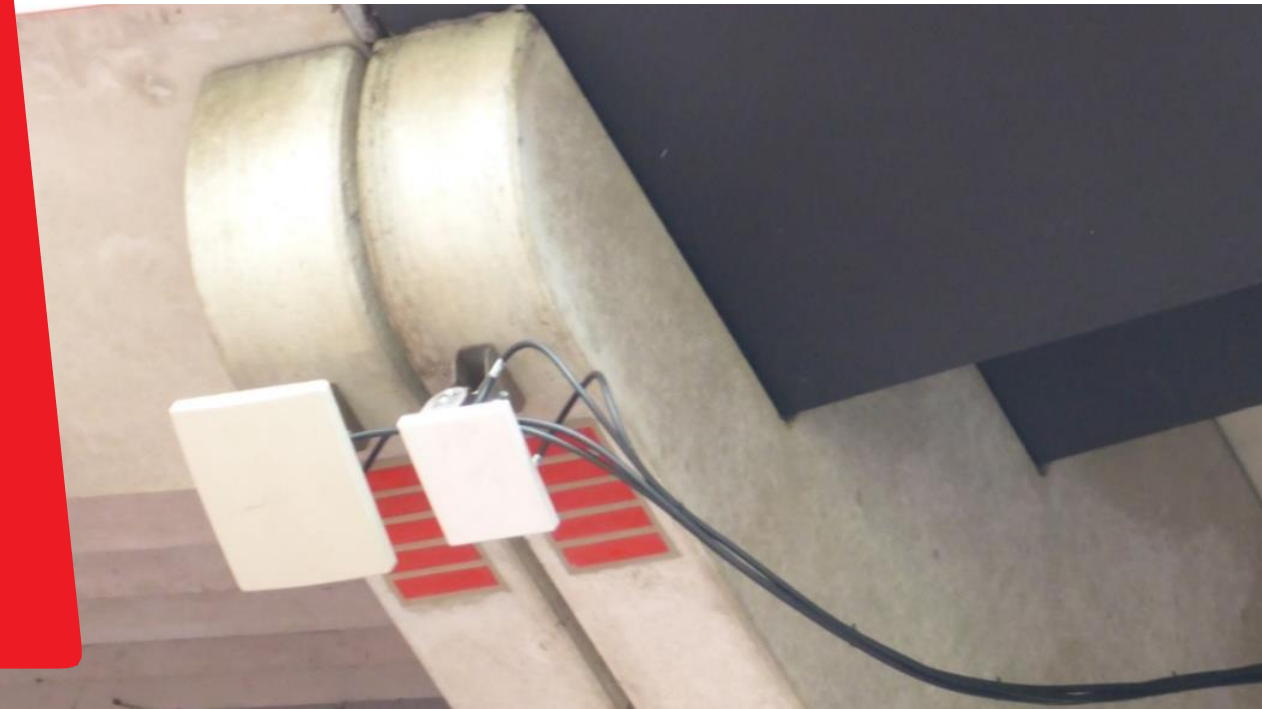




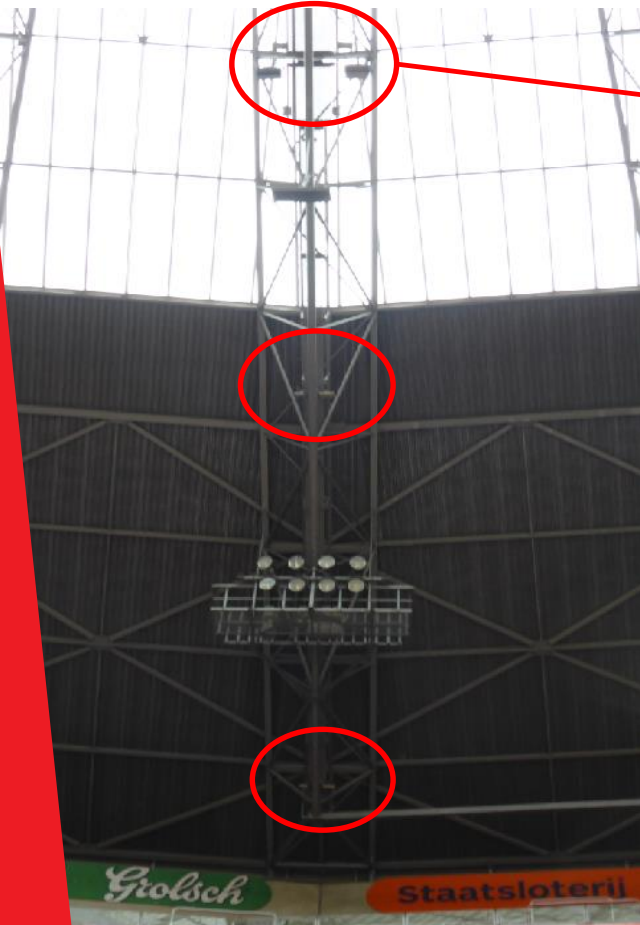
# ENTERTAINMENT EXTENSION



# WIFI HARDWARE



# WIFI HARDWARE



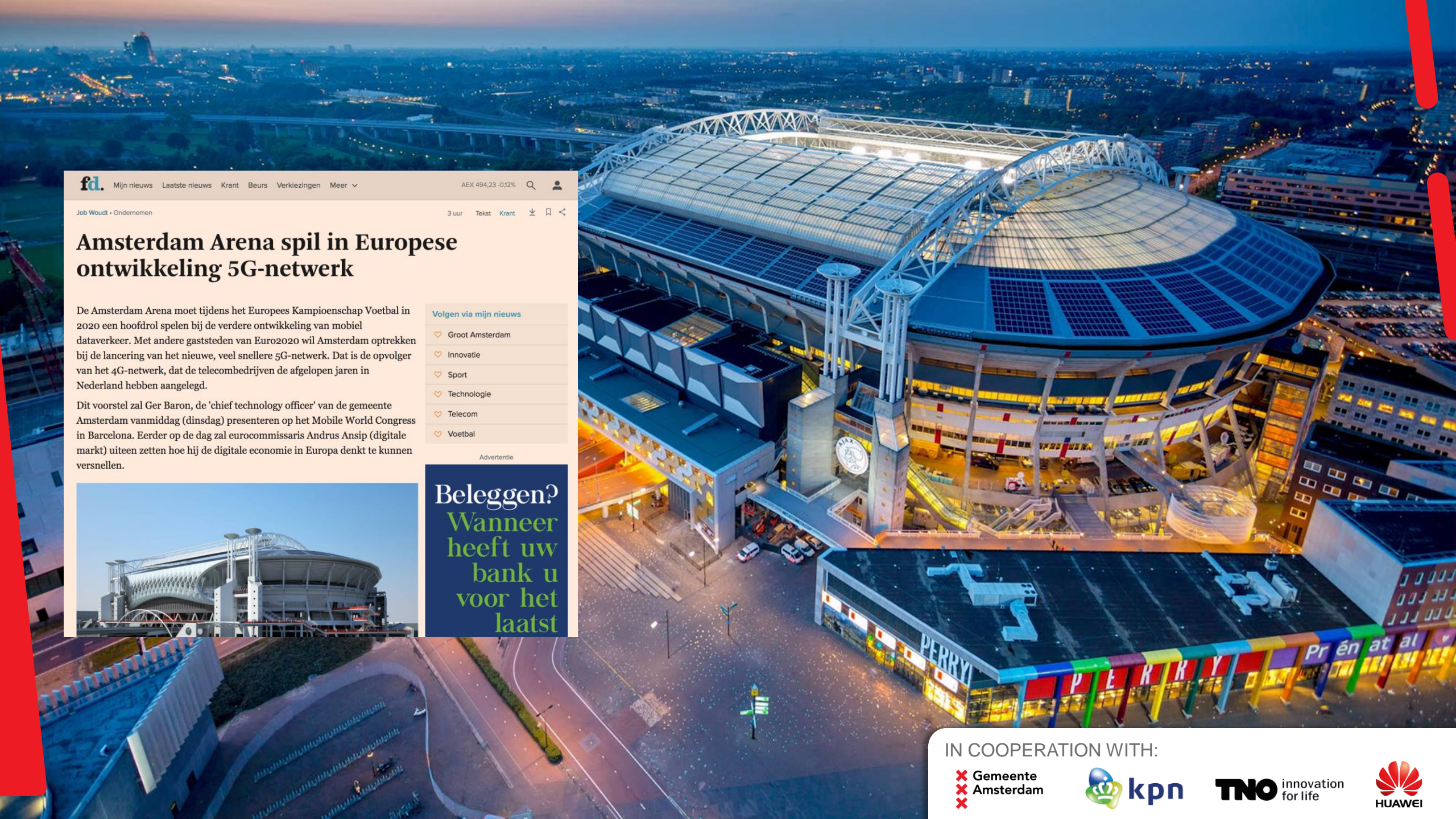
Radials:  
147 access points  
294 antennas



Catwalk:  
38 access points  
76 antennas







# Amsterdam Arena spil in Europese ontwikkeling 5G-netwerk

De Amsterdam Arena moet tijdens het Europees Kampioenschap Voetbal in 2020 een hoofdrol spelen bij de verdere ontwikkeling van mobiel dataverkeer. Met andere gaststeden van Euro2020 wil Amsterdam optrekken bij de lancering van het nieuwe, veel snellere 5G-netwerk. Dat is de opvolger van het 4G-netwerk, dat de telecombedrijven de afgelopen jaren in Nederland hebben aangelegd.

Dit voorstel zal Ger Baron, de 'chief technology officer' van de gemeente Amsterdam vanmiddag (dinsdag) presenteren op het Mobile World Congress in Barcelona. Eerder op de dag zal eurocommissaris Andrus Ansip (digitale markt) uiteenzetten hoe hij de digitale economie in Europa denkt te kunnen versnellen.

- Volgen via mijn nieuws
- Groot Amsterdam
  - Innovatie
  - Sport
  - Technologie
  - Telecom
  - Voetbal

Advertentie



Beleggen?  
Wanneer heeft uw bank u voor het laatst

IN COOPERATION WITH:



# ARENA 5G USE CASE DOMAINS

**A**

Enabling new mission-critical control services

Operational Mobility Center for MRA based on high reliable, high secure, high scable, low latency networks for camera sharing, peer2peer data sharing, multi site Common Ops Picture

**B**

Connecting the massive Internet of Things

Smart Stadium Operating System for Event & Building management with real time IoT, 3D GEOBIM Canvas for VR/AR supported operations

**C**

Enhancing mobile broadband content services

360° video capture for live content 4k media distribution collaboration with event organizers

# Safety & Security case – Digital perimeter in 5G



## Cooperation

- National Police (funding partner)
- City of Amsterdam
- KPN (Telco), technology suppliers
- Johan Cruijff Arena

## In-Living Lab

- Direct communication with personnel
- In-house processing using edge computing

## Digital Perimeter

- Identify people
- Automated anomaly detection
- Capture incidents by stewards with bodycams
- Group communication by phone
- Mobility Command Center is control room

# Critical Connectivity Operational Mobility Center



## Involved parties include:

- Event venues (JCA, Ziggo Dome, AFAS Live)
- Parking providers
- NS (Dutch Railways)
- GVB (Amsterdam Public Transport)
- Rijkswaterstaat (Dutch National Road Authorities)
- Provincie North – Holland (Provincial Road Authorities)
- Brink Verkeer (Traffic and parking controllers)
- Social Media providers: LiveCrowd
- Other Service providers: Mobility Portal

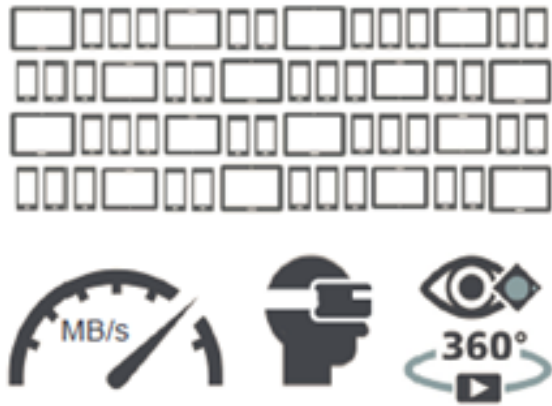




# 5G TARGETS A MOBILE CONNECTED SOCIETY

1

## Enhanced Mobile Broadband (eMBB)



- Fast and reliable mobile broadband
- Virtual Reality (VR) and Augmented Reality (AR)
- Fixed Wireless Access

2

## Massive Machine Type Communications (mMTC)



- Smart agriculture
- Transport & logistics
- Smart energy
- Industry 4.0

3

## Ultra Reliable Low Latency Communications (URLLC)



- Auto Driving
- Public Safety
- Robotics
- Medical/E-Health
- Drone delivery

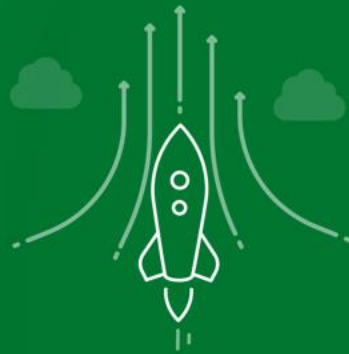
# BRINGING 5G EXPERIENCE TO ARENA



First business  
demands of **customers**



Together  
with **partners**



Leading in **technology**  
implementation



New **business**  
market approach



Connectivity for smart society

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Connectivity is Key Enabler

Essential infrastructure for social and economical development

Cornerstone for linking physical and virtual worlds to create successful smart livable cities

Trusted & Secure by Design!!



Je gaat het pas zien  
als je het door hebt.

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# Thank you for your attention

**Henk van Raan**

November 7th, 2019

**JOHAN CRUIJFF  
ARENA**