Crowd Control use case

5G CM Fieldlab Amsterdam

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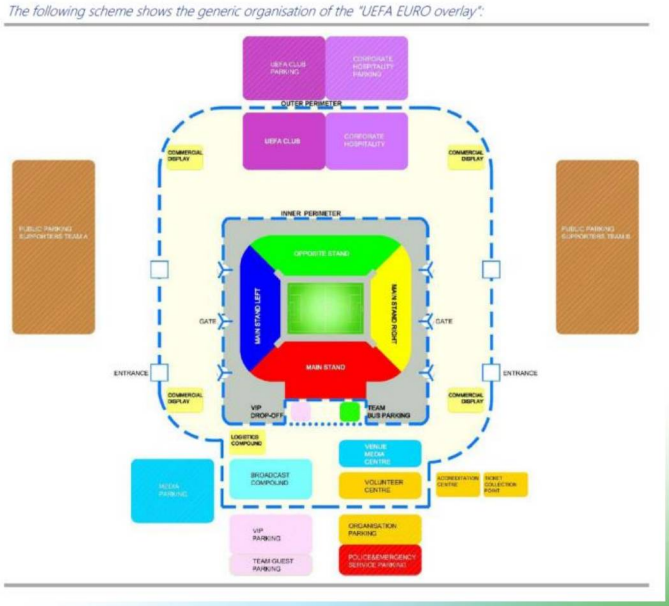
The outer perimeter

UEFA EURO 2020 tournament requirements

- A UEFA EURO Stadium has a much bigger footprint than a stadium which is used for regular league games, European club competition or international matches. The Stadium needs to accommodate and facilitate additional needs of media and broadcast operations, hospitality and commercial activities as well as logistics and transport undertakings.
- Therefore the regular operational perimeter of the Stadium will be extended to encompass all exploited adjacent areas for tournament purposes. This perimeter is called the outer (security) perimeter and is physically marked by a fenced-off line: during the exclusivity period it is under UEFA's sole control



5G use case Crowd Control should support the outer/inner perimeter requirements of EURO 2020 by building a supportive digital perimeter

- Build an outer digital perimeter around Johan Cruyff ArenA that can meet UEFA requirements. It should support the following verifications that UEFA requires to be done (ref UEFA):
  - That the person possesses a valid ticket, accreditation or other form of valid permit to gain access to the stadium
  - The identity of a person entering the stadium with accreditation will be checked against the photograph on his badge. The stadium and zoning privileges will also be checked. Accreditation is not proof of identity and accredited persons may be asked to provide an acceptable alternative proof of identity before access is granted.
  - A person may be subjected to a full search of their person and/or possessions at the security checkpoints.
  - All vehicles entering the outer perimeter of the stadium must undergo security screening and a search.
  - That the person has access rights to any restricted areas or controlled zones.
  - That the person is not in possession of any weapons, other prohibited items, unauthorised alcoholic beverages, intoxicating substances or drugs
  - That the person is not under the influence of alcohol or intoxicating substances or drugs.

Crowd Control Requirements and supportive 5G solutions

OUTER PERIMETER		
SECURITY		**5G SUPPORTIVE SOLUTION**
OS.1	Visual ticket and accreditation check	N/A
OS.2	Initial search	N/A
OS.3	Vehicle entrance check	Detect vehicle licence plate with smart camera and check with police database / authorisation database + alarm security / police
OS.4	Detect fights or other uproar	Smart lamppost that detects sounds and alarms securoty personell or police
OS.5	Identify dangerous persons	CCTV camera with face recognition software and interface to police database + alarm security / police
OS.6	Identify dangerous situations (e.g bag left unattended)	Smart lamppost with CCTV camera that detects objects + alarm security / police
CROWD CONTROL		**5G SUPPORTIVE SOLUTION**
OC.1	Prevent congestion around stadium entrance	• Count number of visitors at each entrance gate gives insight in # waiting visitors • Count number of visitors walking from and to the train/metro station on ArenA Blvd gives insights in possible congestions • Give time slot for people on their mobile phone where and when to enter to ensure minimum waiting time • Heatmaps based on visitor counts
OC.2	VIP Entrance	N/A
OC.3	Clear signposting	N/A

INNER PERIMETER		
SECURITY		**5G SUPPORTIVE SOLUTION**
IS.1	Electronic ticket and accreditation check	N/A
IS.2	CCTV Cameras	Face recognition software
IS.3	Stewards / Security staff to guard the pitch	Body cam with face recognition software
CROWD CONTROL		**5G SUPPORTIVE SOLUTION**
IC.1	Clear signposting	
IC.2	Prevent overcrowding and congestion at stadium entrance gates	• Count number of visitors at each entrance gate • Compare visitors already entered with vistors yet to enter the gate • Give time slot for people on their mobile phone when to enter to ensure minimum waiting time

Gemeente Amsterdam
VCS
JOHAN CRUIJFF ARENA
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NOKIA

What to show on Sunday October 28th? (Ajax – Feyenoord)

Final rehearsal on Wednesday October 13th (Nederland – Deutschland)

Assumptions

- Standalone demo, not integrated with any operational processes of ArenA or Municipality
- Create a digital perimeter on ArenA Boulevard (Restaurant Jinso to Grolsch Pub)

What to show

- Number of people waiting at gates G and H and send message to people for these gates whether it is crowded and they can better wait
- Number of cars entering parking lot Passage
- Detect ficticious dangerous person when entering the perimeter by face recognition
- Detect ficticious dangerous vehicle by license plate recognitions
- Detect person who is not authorised to be in VIP area
- Detect number of persons at one of the catering stands and determine waiting time, broadcast message to visitors in the designated catering area of waiting time and advise te wait until waiting time <2 minutes (broadcast again)

