



LOGIPIX

# STADIUM VIDEO SURVEILLANCE

with Logipix System

[www.logipix.com](http://www.logipix.com)





# EXPERIENCE SAFER ENTERTAINMENT EVENTS

## Main benefits

- 1.** *Stitched panoramic images up to 240 MP resolution cover the entire seating bowl*
- 2.** *Recognizable faces at every seat in the stadium during the whole event*
- 3.** *Flexible system structure owing to the individually installed cameras*
- 4.** *User-friendly system management*

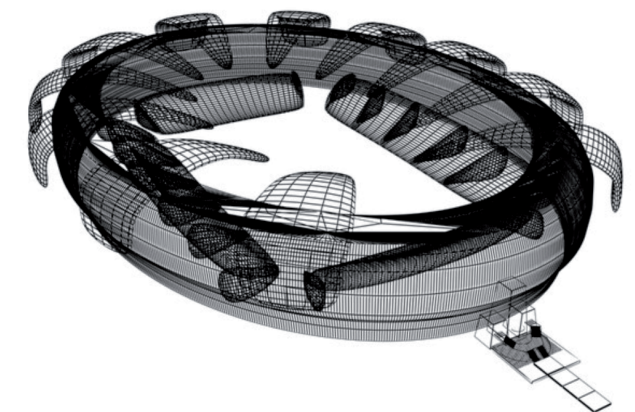
## Mission of the Logipix Stadium System

Football matches are among the most crowded community events. Tens of thousands of people in one place at any time creates a high risk security situation. The Logipix Stadium Video Surveillance System provides a safer environment in stadiums. The reliable surveillance system helps prevent any unnecessary incident by providing high-definition videos both in real time and via continuous recording. With Logipix, the security staff is able to handle security incidents quickly, effectively and appropriately, as well as to provide irrefutable video or still image evidence in court.



## Starting with virtual 3D modeling

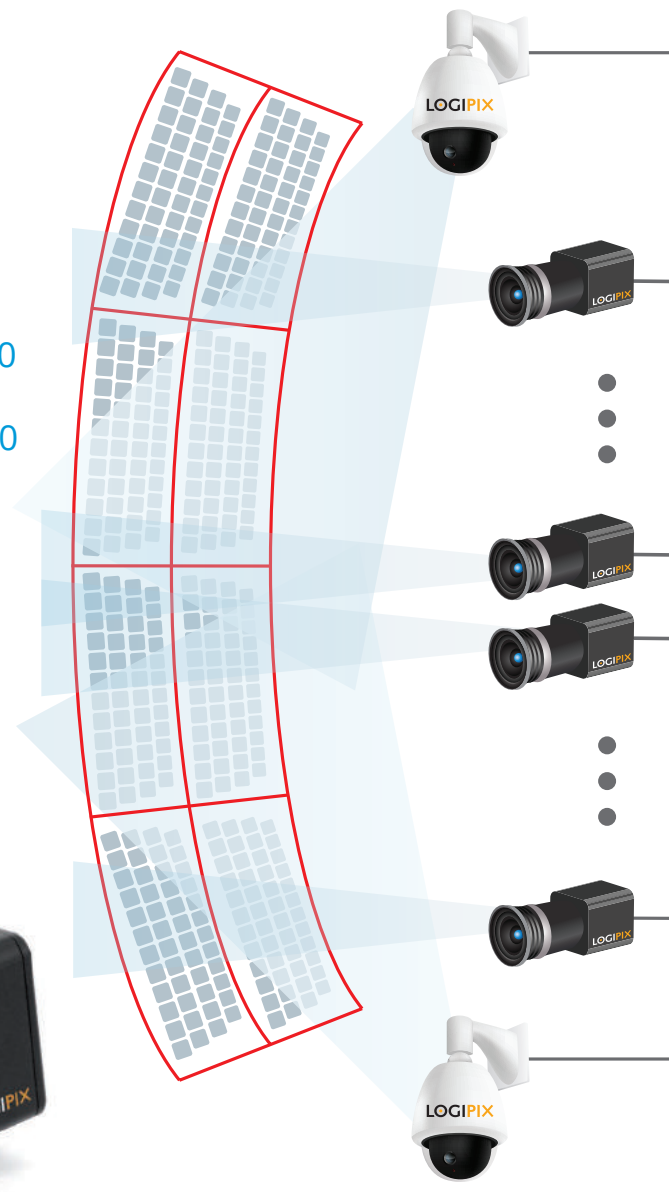
- Careful design helps achieving the required picture resolution while keeping the costs at bay
- Stadium operators are able to get an early overview of the entire surveillance system with respect to quality requirements
- The final plan contains the exact 3D model of the stadium with accurate camera positions
- Simulated views of each individual camera eases system installation



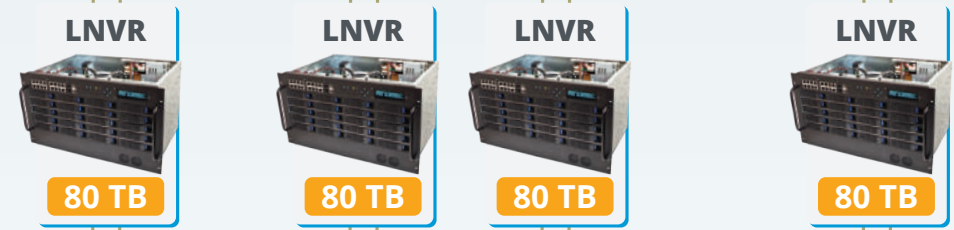
# THE LOGIPIX STADIUM SYSTEM

## SEAT CAMERAS

- LOGIPIX ONE 20 MP JPEG2000
- LOGIPIX 15 MP JPEG2000
- LOGIPIX Full HD PTZ JPEG2000



### CAMERA VLAN



### VMS VLAN



### CLIENT 1



### CLIENT 8



## PERIMETER, ROAD AND OTHER CAMERAS

2 MP H.264

### Hybrid



## INTEGRATED ANALOG FIXED AND PTZ CAMERAS

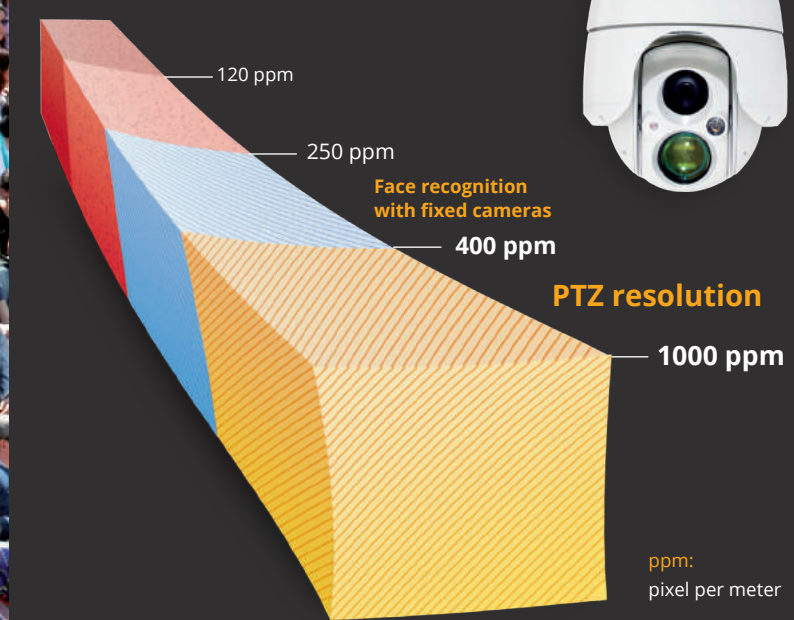
### Hybrid



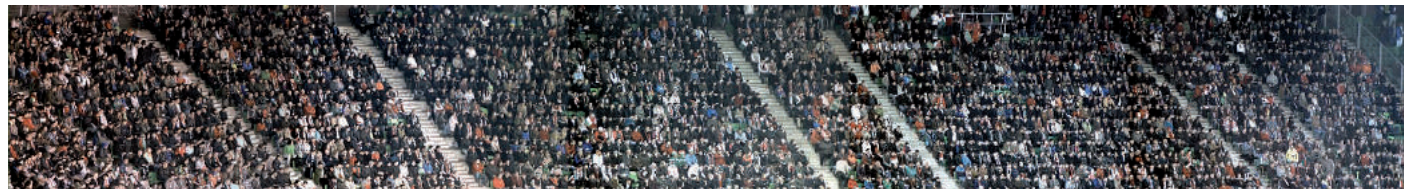




## Typical stadium resolutions



# FEATURES OF THE LOGIPIX STADIUM SYSTEM



## Face recognition at every seat

- Several 15 Megapixel Logipix cameras cover the entire seating bowl of the stadium.
- Individual streams are seamlessly stitched together to create virtual panoramic views
- There are neither hidden nor redundant areas on the panoramic images
- Permanent security footage during the entire event with a resolution high enough for face recognition at every seat (250-400 pixel/m)

## Minute details by additional full HD PTZ cameras

- Additional LOGIPIX Full HD cameras are working in concert with the multi-megapixel panoramic camera system
- Interactive PTZ control on the panoramic images by selecting the desired area
- Optically zoomed images with 1000 pixel/meter resolution

## Outside the seating bowl

- Wide range of fixed perimeter cameras from 2 to 15 Megapixels
- Monitoring each perimeter area of the stadium from the gates to the corridors
- Full HD PTZ cameras permanently scan the stadium environment



## Video recording

- The industry's fastest NVR ensures reliable recording on a VRM fail-safe file system
- Optionally, the system can be extended with spare NVRs, replacing a recording device in case of any failure



## Fast video download in case of an incident

- In case of any disorderly conduct the selected camera picture or the entire screen content can be saved or printed in no time
- The operator is able to download a video of a pre-defined time interval immediately with only one click



## Archive search back

- Versatile archive search back functions to find the critical situations easily and rapidly
- Easy-to-use timeline, thumbnails and adjustable time intervals help the incident search
- Irrefutable evidence from the archive security footage of any event, without needing to know the measures of escalation at the time of the outburst



## Event management for storage optimization

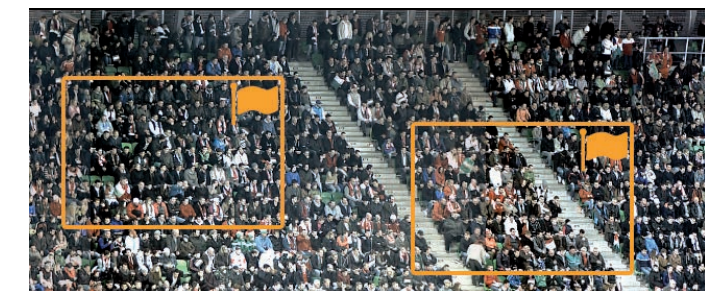
- Dual configuration for the cameras in the stadium
- One setup can be used during the events and another with lower quality settings can be set for periods without a game for general monitoring

## Convenience PTZ control functions

- PTZ control without security joystick
- On-screen joystick emulation control
- PTZ control by selecting desired picture areas on the panoramic images

## Logipix PTZ remembers

- Potential threat areas of the stadium can be bookmarked and saved as PTZ positions
- Accelerating the navigation between the bookmarked zones by easy-to-use software function



## Touchscreen control

- Well-known touchscreen gestures for system control significantly enhance the user experience

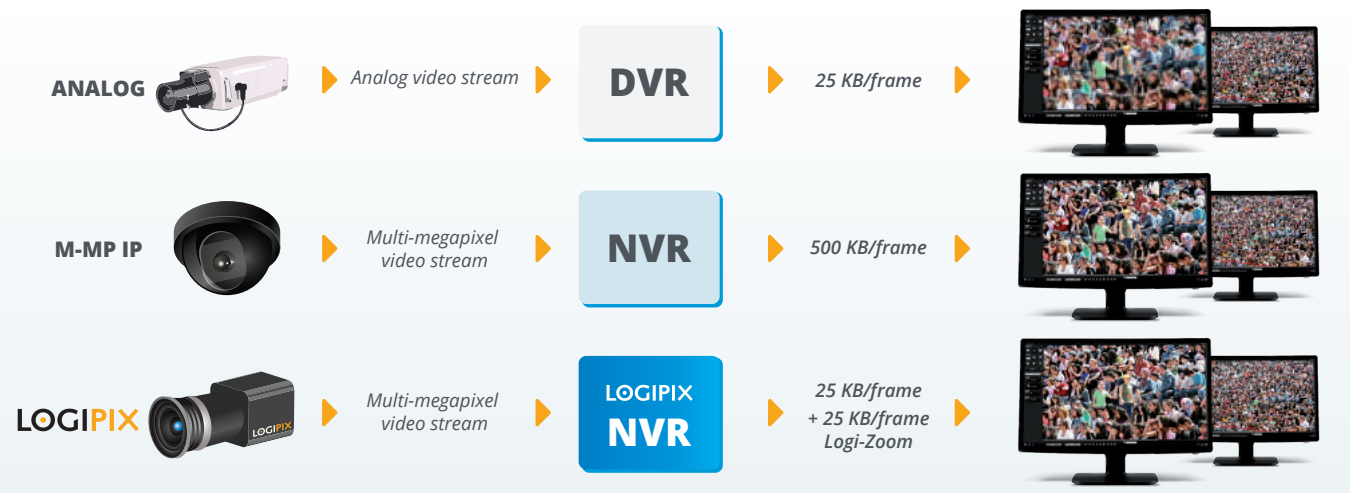


## Monitoring details in full resolution

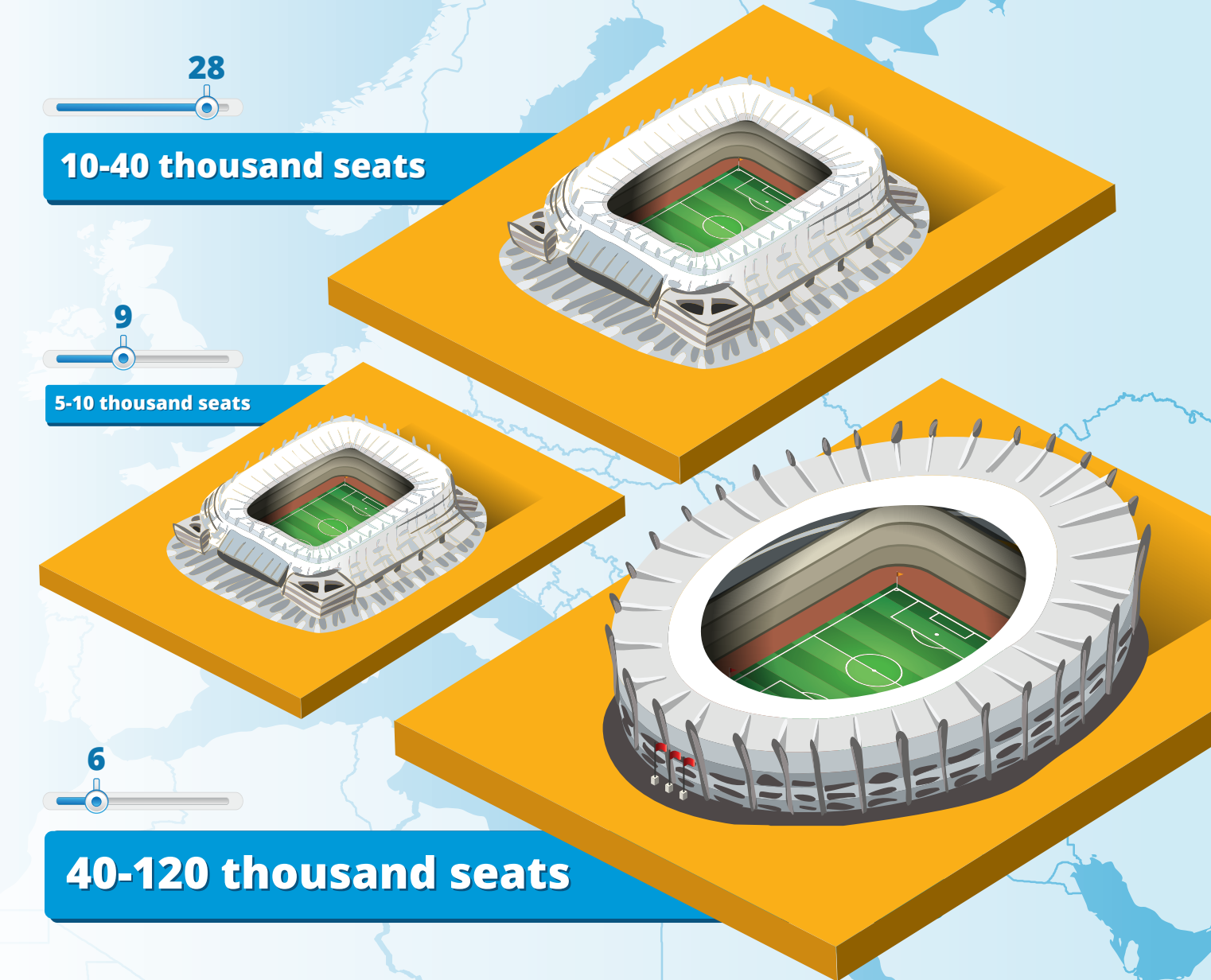
- Visually lossless JPEG2000 standard for image compression
- Uniquely developed Logi-Zoom function, based on the embedded multi-stream of JPEG2000
- Transferring the zoomed, full resolution multi-megapixel image areas via low-bandwidth network
- Non-zoomed areas are displayed with proper screen resolution.

## Multi-zoom on the stitched camera picture

- Available Multi-Zoom function in the panoramic images
- Several high resolution zoomed area can be observed on a single stitched image at once in both live and archive video streams



## MORE THEN 40 SUCCESSFUL PROJECTS WIDE RANGE OF STADIUM SIZES







# CASE STUDY IN BRIEF

## Enhanced security in the Turkish football stadiums

### Motivation

Association football took its roots in the early of the 20th century in Turkey and since then it has become the most popular sport in the country. Football matches attract tens of thousands of fans continuously from event to event. This enormous amount of crowd can generate a potential danger on itself and on the environment as well. The Turkish Football Federation (TFF) decided to enhance the security of 29 football stadiums all over the country. In 2013 they issued a tender to which the world leader companies of the surveillance industry

responded. TFF selected the Logipix Stadium Surveillance System from among the candidates, as the features of the Logipix end-to-end system best met their needs.

### Solution

The scalable LOGIPIX Stadium Surveillance System has been implemented in 29 Turkish football stadiums. The capacity of the smallest object is 5 thousand, the largest stadium can accommodate 76 thousand people. All of the seats are observed by Logipix Panoramic Camera System which consists of several individual 15

Megapixel Logipix cameras and additional Logipix Full HD PTZ cameras which are working in cohesion with the panoramic system to get more visual information of the situations occurring. Full HD Logipix cameras are permanently monitoring the inner corridors furthermore the areas between the stadium gates and the arena.

Enterprise type Logipix Network Video Recorders have also been installed to record and store security footage. Police officers and the security operators of the stadiums are using the convenient Control Center software to effectively handle every disorderly conduct and emergency situation.

### Benefits

As the images of the 15 Megapixel Logipix cameras are stitched together by a unique software application, a permanent high quality footage is stored of every visitor at the seating bowl. Several hundred megapixels of visual information provides a resolution which is suitable for face recognition during the entire event in both live and archive video streams. Owing to the stitching technology a few panoramic images are sufficient to cover the whole seating bowl with neither hidden nor redundant areas. As the panoramic system consists of individual cameras the structure of the whole system is excessively flexible, therefore it is able to serve all the stadiums in all sizes in Turkey.

Additional Full HD Logipix PTZ cameras are scanning permanently the arena providing enormous resolutions up to 1000 pixel per meter. Having more detailed images from different angles help the operators to make the right decisions in an anxious situation. To accelerate and facilitate the control of the







cameras and the everyday tasks of the operators, PTZ cameras are linked to the panoramic system by a specially developed feature. Owing to this application, the pan tilt and zoom functions of the PTZ can be controlled by selecting an exact area on the panoramic image.

Due to the reliable and intelligent storage system security footage cannot be lost in case of a single point of failure of either a HDD or an entire NVR. NVRs record the security footage with VRM fail-safe file sys-

tem and if an NVR stops working for any reason, a configured spare NVR takes over its duty.

**Control Center** allows for a dual configuration of the cameras in the stadiums. One setup can be used during the events and another with lower quality settings can be started after the events for general monitoring. This function helps to effectively manage the storage system.

Using the multi-megapixel Logipix panoramic camera

system reduced the number of the required devices to cover entire stadiums beside maximizing the resolution. This action saved a significant amount of installation and maintenance cost.

Although the system is complex and has to satisfy numerous requirements, its configuration and management are really straightforward with the intuitive Control Center software. Operators can effectively respond to any disorderly conduct or accident in no time by analyzing the high resolution images on-site and take the best decision that helps solving the occurred situation. The match operation center, the so called MOC is a centralized monitoring room, from where all the stadiums are remotely accessible and fully manageable. Spectators know that the new security surveillance system can identify them with unmatched accuracy. Using the Logipix Stadium System at Turkish stadiums has ensured that vandalism and critical incidents have been kept at bay, ensuring a safe and welcoming stadium experience for everyone.



## Türk Telekom Arena in Istanbul

### STADIUM SPECIFICATION

Capacity	56,652
Monitoring room space	160 m <sup>2</sup>
Operator workplaces	18
Full security staff	1000 persons

### LOGIPIX DEVICES

Network Video Recorder	44
15MP JPEG2000 cameras	408
2MP PTZ JPEG2000 cameras	19
2MP H.264 cameras	462

### INTEGRATED EXISTING DEVICES

Analog cameras	21
Analog PTZ cameras	38





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