



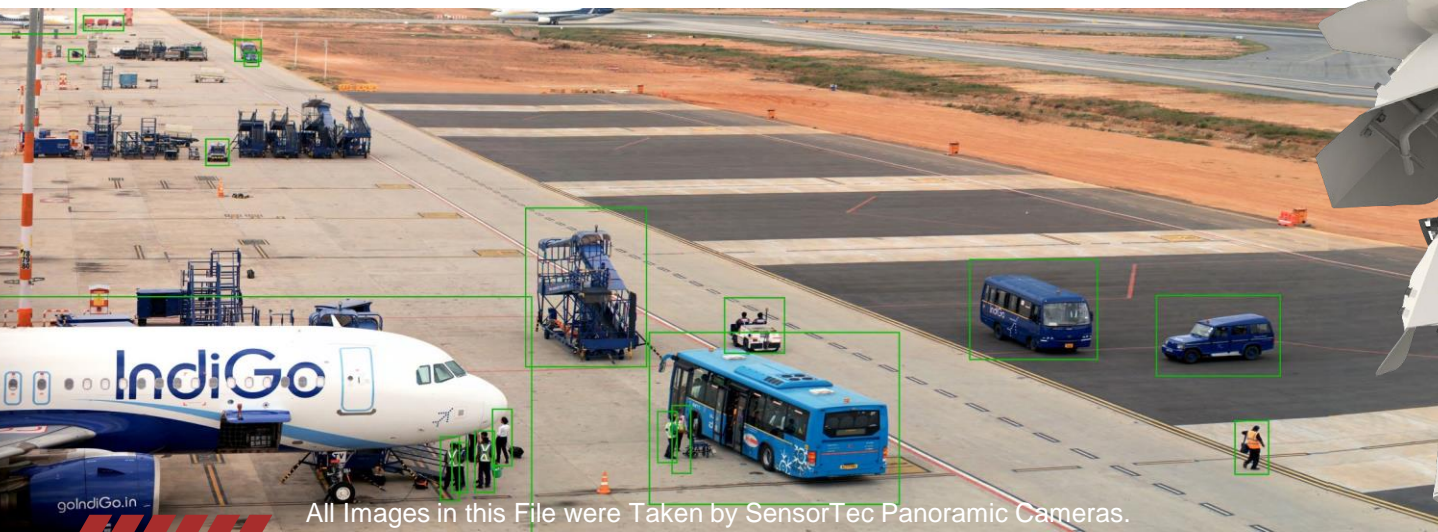
# SENSORTEC AIRPORTS SOLUTIONS ADVANCED TURNAROUND MANAGEMENT

# SENSORTEC AIRPORTS SOLUTIONS

## ADVANCED TURNAROUND MANAGEMENT

Inefficient turnarounds lead to significant time losses for airplanes, highlighting the vital need for refining these procedures. Employing advanced technologies such as technology-driven process management and predictive modeling can boost operational efficiency without compromising safety standards. SensorTec Turnaround Management Solution is developed precisely for this purpose. Its capabilities facilitate seamless management and precise registration of turnaround processes. Utilizing data-driven decision-making through this system empowers airports to enhance turnaround efficiency, thus contributing to overall operational efficiency.

SensorTec Turnaround Management Solution helps optimize turnarounds, provides high-resolution visual feedback and assists in managing and registering services with reduced personnel.



All Images in this File were Taken by SensorTec Panoramic Cameras.



# SECURITY BEYOND LIMITS



In the few years since 2000, SensorTec has grown into an international company that it is today. We are among the most innovative technological companies in the world, manufacturing and developing intelligent security and surveillance solutions specifically for largescale projects for military, law enforcement, public authorities and private sectors.

We believe that serving the needs of our clients efficiently can only be achieved by delivering complete solutions. In order to achieve that, we design and manufacture all the critical components of our systems, including hardware, software and embedded computer vision. Our entire product range is manufactured and developed in accordance with the highest quality requirements.

SensorTec provides integrated solutions, which combine a wide range of devices, sensors, and software, such as surveillance cameras, surveillance radars, video analytic software and C3. All of our solutions are designed to work in harmony and provide a comprehensive multi-layer approach to deliver situation awareness and interactive intelligence.

## KEY FIGURES

300+	TECHNICAL SUPPORT ENGINEER AND TECHNICIAN
4	<b>BRANCHE OFFICES</b> <b>HQ and Manufacturing Facilities:</b> Cambridgeshire, UK. Budapest, Hungary.  <b>Sales and Technical Support Offices:</b> Dubai, UAE. Riyadh, KSA.



# END-TO-END SENSORTEC SOLUTIONS



Borders  
Video Surveillance



Airports  
Video Surveillance



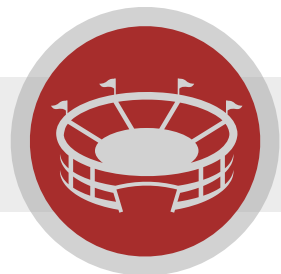
Seaports  
Video Surveillance



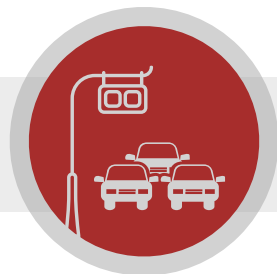
Critical Infrastructure  
Video Surveillance



Safe & Smart City  
Video Surveillance



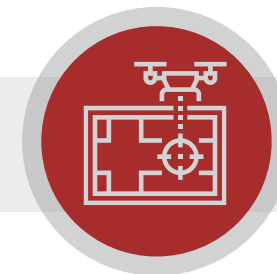
Stadiums & Crowds  
Video Surveillance



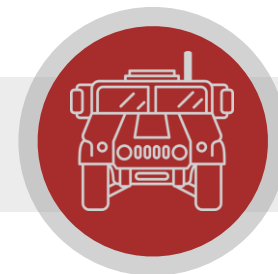
Traffic Management  
& Violations Detection



Highway  
Video Surveillance



Anti-Drone/UAV  
Intelligent System



Mobile (In-Vehicle)  
Video Surveillance

# SELECTED INTERNATIONAL REFERENCES

## BORDERS SURVEILLANCE AND SECURITY

Hungarian Land Borders - Hungary.  
 Egyptian Land and Sea Borders - Egypt.  
 Kuwaiti Land and Sea Borders - Kuwait.

## AIRPORTS SURVEILLANCE AND SECURITY

LaGuardia Airport - New York.  
 Hungarian Airport - Hungary.  
 Mumbai Airport - India.  
 Turkish Airport - Turkey.  
 Alexandria Airport - Egypt.

## SEAPORTS SURVEILLANCE AND SECURITY

Hungarian Waterway - Hungary.  
 Sea Ports - Kuwait.  
 Sea Port - UAE.

## CRITICAL INFRASTRUCTURE SECURITY

Ministry of Defense - Egypt.  
 Egyptian Monument Authorities - Egypt.  
 Manarat Al Saadiat Cultural Museum - UAE.  
 Private Palace - Kuwait.  
 Saudi Arabia Embassy - Geneva.

## CITY SURVEILLANCE AND SECURITY

Delhi City - India.  
 Luxor City - Egypt.  
 Sharm El Sheikh City - Egypt.  
 Cairo City - Egypt.  
 Port Saeed City - Egypt.

## STADIUMS AND CROWDS SURVEILLANCE

Manchester City Stadium - UK.  
 Budapest Szusza Ferenc Stadium - Hungary.  
 Rijeka Stadium - Croatia.  
 Beşiktaş Stadium - Turkey.  
 Atatürk Olympic Stadium - Turkey.  
 Fenerbahçe Şükrü Saracoğlu Stadium - Turkey.  
 Luzhniki Stadium Moscow - Russia.  
 Spartak Moscow - Russia.  
 Mecca Religious Sites - KSA.  
 Dubai Festival Plaza - UAE.  
 Pyramids Touristic Area - Egypt.

## TRAFFIC LAW ENFORCEMENT

Traffic Management And Violation Detection - Cairo, Egypt.  
 Traffic Management And Violation Detection - Kuwait.  
 Traffic Management - Armenia.  
 Traffic Management - Hungary.

# CHALLENGES OF TURNAROUND MANAGEMENT



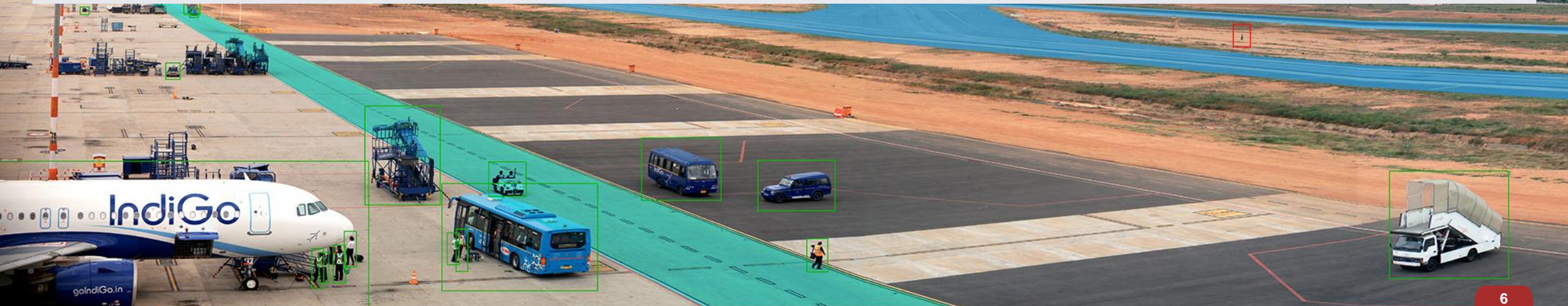
The new decade has exposed a dual challenge for airports. On one hand, there's a permanent growth in demand for air travel, while on the other, unforeseen disruptions create additional complexities. Balancing between these opposing forces necessitates strategic planning. Traditional solutions like expanding airport size or acquiring additional assets aren't feasible due to various constraints, making the optimization of existing infrastructure a critical focal point. The evolving nature of air travel trends dictates a paradigm shift towards a technological evolution rather than relying solely on conventional expansion methods.

## THE SOLUTION

In order to help rebuild airports in this new era, SensorTec created **STAARS - ADVANCED TURNAROUND MANAGEMENT (SENORTEC AIRPORT AUGMENTED REALITY SOLUTION)**

Our solution combines state of art video monitoring technology, smart integration and specially designed software to enhance the efficiency of turnaround management. It helps optimize turnarounds, provides high-resolution visual feedback and assists in managing and registering services with reduced personnel. Its organized datasets aid in identifying critical bottlenecks and improving turnaround times.

[Click to watch the video](#)  
Airports Solutions - Turnaround Management.





# STAARS

INTELLIGENT AIRPORT SOLUTION WITH  
AUGMENTED REALITY

# WHAT DIFFERS OUR SOLUTION FROM OTHERS

## TURNAROUND MANAGEMENT

- Our solution is a high-end image sensor-based system. SensorTec's cameras provide clear visibility of all stands and the extended surrounding areas at the apron.
  - High-resolution visual feedback is delivered of each turnaround processes.
  - Operators can confidently manage multiple turnarounds simultaneously. They can switch between stand views immediately whenever they have to.
  - Using advanced historical operation mode, turnaround registration can be performed with accurate time stamp even after the processes have finished.
  - Our solution allows browsing among the captured turnarounds. Operators can recall the high-resolution footage of any turnaround process if needed.
  - We deliver the full component line of the complex system, from hardware to software.
- Our solution provides AI-based features, developed to track and register the turnaround processes automatically.
  - Our solution makes it possible to create useful statistics based on the registered turnaround data.
  - Our solution provides irrefutable visual evidence of any incidents that occur during turnarounds, also proves that a damage occurred prior to the investigated turnaround.
  - Our solution provides long storage periods, thanks to its intelligent storage management technology.
  - Our solution provides full integration with airports systems and solutions like:  
Positioning Systems: ADS-B, MLAT, A-SMGCS, Vehicle Management System.  
Data Import and Export: Airport Information Systems, AIXM.  
Resource Management System: SITA.





# PIONEERING TECHNOLOGIES BEHIND TURNAROUND MANAGEMENT SOLUTION



## SensorTec Panoramic Technology

SensorTec panoramic technology makes it possible to geometrically stitch images of SensorTec visible light and thermal sensors. The images are taken in a synchronized fashion which precludes the possibility of duplicated or hidden objects at the stitching borders. White balance and tone correction algorithms smoothen the color gradient between the images.

## Sensor Fusion Technology

SensorTec developed specific raw data level and GPS level sensor fusion technologies. Raw data analysis works with uncompressed data, therefore it provides the highest level of accuracy. It was developed for SensorTec sensors, but the system is able to fuse the data of external sensors as well. Complex data analysis means, the algorithms fuse the data of different sensors, which results in more accurate object detection and geopositioning.

## SensorTec AI-Powered Video Content Analysis

SensorTec provides the most reliable VCA possible, as the algorithms run on full resolution, uncompressed image streams. This approach ensures accurate detection and tracking even at far distances. The VCA relies on several advanced methods. One of them is the Multidimensional Gaussian Background Model that always adapts to the background and differentiates every moving object from the learnt environment.

Our built-in neural network ensures that the system does not lose the relevant non-moving objects. The VCA also applies object feature extraction, motion behavior analysis and motion path estimation algorithms in order to realize an intelligent, self-learning virtual environment.



# PIONEERING TECHNOLOGIES BEHIND TURNAROUND MANAGEMENT SOLUTION



Click to watch the video  
Airports Solutions - PTZ Cross-Mapping.

## SensorTec PTZ Cameras Cross Mapping

SensorTec high-end PTZ cameras efficiently complement the system. A special function allows the PTZ cameras to be assigned with the panoramic cameras by registering common spatial points that are visible to both cameras. This function allows operators to control the PTZ cameras by selecting the area of interest in the panoramic image.

SensorTec developed a special technology to overcome this issue. The system stores the panoramic images in full resolution on the NVR, but always transmits and displays only relevant pixels. When a panoramic overview is on screen, its horizontal resolution is equal to the screen resolution. When an operator zooms in, the system sends the cropped image in higher resolution. As the zoom value increases, so does the transmitted image resolution.

## SensorTec Intelligent Storage Management Technology

SensorTec system continuously records the videos. Thanks to our Ageing Technology, storage period of video streams can be greatly prolonged. The system intelligently drops frames from the video stream according to a configured period. As the JPEG2000 stream consists only intra-frame images, the footage will be still available after video stream ageing, but with reduced fps.



## Monitoring in Full Resolution

Displaying 200-320MP panoramic images during live monitoring or archive playback is not an easy task. This amount of data can impose excessive burdens on the network infrastructure and also on client computers.



# SENSORTEC TURNAROUND MANAGEMENT SOLUTION

## MAIN FEATURES AND FUNCTIONS

### Monitoring

- 40-320MP panoramic video stream with 20fps.
- 20MP video stream with 20fps.
- Real-time monitoring in full resolution.
- PTZ control on panoramic images.
- Interactive map.
- Daily flights per stands.
- Turnaround history.
- Turnaround statistics.

### AI Video Content Analysis

- Registering Landings and Take-offs.
- VCA-based object tracking.
  - Detection.
  - Classification.
  - Motion information (object frames, path history, heading).
- Geofencing.
- Virtual fence.
- Situational awareness.
  - Proximity alert.
  - Collision prediction.
- Automatic traffic enforcement.
  - Overspeed.
  - Line violation.
  - Traffic light.
- Automatic FOD detection.

### Turnaround Management

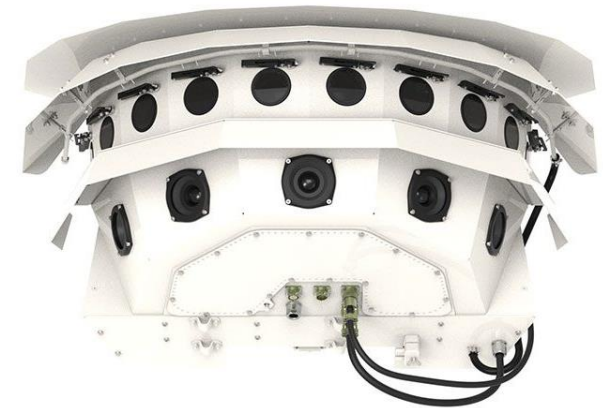
- Overview of all aircraft stands.
- Automatic and manual registration of ground services.
- Interactive ground service timeline and list.
- Turnaround History.
- Summarized turnaround data.

### Perimeter Security

- PIDS triggered intrusion detection.
- VCA-based intrusion detection.
- Highest detection accuracy possible.
- Automatic zoom in on alarmed area.

### Integration

- Positioning systems: ADS-B, MLAT, A-SMGCS.
- Radar systems and rangefinders.
- Airport information sources: SITA.



# SENSORTEC TURNAROUND MANAGEMENT FINANCIAL BENEFITS



## REDUCED INFRASTRUCTURE COST

Only few cameras are needed to cover an entire airport, as a result no need to install numerous poles. The network infrastructure is far less complex and cabling is also fast and easy.



## LONG LIFETIME

SensorTec leading-edge technologies ensure the system avoids both physical and technological obsolescence for a long time.



## UNINTERRUPTED OPERATION

SensorTec provides uninterrupted system availability as all their components are developed to operate with high MTBF.



## DESIGNED TO LAST

SensorTec systems can withstand intense weather conditions with metal constructions and built-in heating and cooling systems.



## NO NEED FOR FREQUENT MAINTENANCE

SensorTec hardware components are capable of self maintenance, thanks to their built-in self-cleaning and deicing systems.



## OPTIMIZING STAND OCCUPANCY

Various airport statistics can be created on stand occupancy, which helps realize explicit business benefits.



## LESS MANPOWER

Operators can manage several stands simultaneously, therefore less manpower is needed to manage all stands at the apron.



## SUPPORTING STRATEGICAL DECISIONS

Our system supports KPI calculations by providing accurate data on actual turnaround times and delays.



# SENSORTEC TURNAROUND MANAGEMENT OPERATIONAL EFFICIENCY BENEFITS



## ENHANCED VISION AT THE AIRCRAFT STANDS

Our solution allows to cover all aircraft stands and their surrounding areas from multiple angles. This way operators have real-time visual information on all stands at the apron and they can check the progress of the turnaround processes.



## REAL-TIME STAND ALLOCATION MANAGEMENT SUPPORT

Our solution calculates the end of turnaround services, alerts delays and time conflicts, which make stand allocations and re-allocations easier for operators.



## CONVENIENT TURNAROUND REGISTRATION

Operators have a user-friendly interface to register turnaround processes real time, or use the historical mode to search the exact time when the processes have started.



## UNDOUBTED VISUAL EVIDENCE IN QUESTIONABLE SITUATIONS

Any situation can be thoroughly investigated with our solution, down to the smallest details. For instance, in cases when it is unclear whether an airplane has been damaged at the airport or prior to landing. Our cameras provide undoubted visual evidence upon request.



## INCREASED OPERATIONAL EFFICIENCY

Our solution makes it possible to register turnaround processes at a higher level, assisted by Video Content Analysis (VCA), and therefore increase ground handling management efficiency at the apron.



## REAL-TIME DECISION-MAKING SUPPORT (RTDMS)

Our solution functions as RTDMS system that always highlights the most relevant information on screen.

Status	Type	Flight phase	System ID	Registration number	Responsible	Number	Sub type
In motion	Aircraft	Arrival	47006	N8312C	Southwest Airlines	W0937	B739 Airside
In motion	Vehicle	-	47155	-	-	-	Light Terminal
In motion	Vehicle	-	47204	-	-	-	Heavy Terminal
Gone	Aircraft	Arrival	47213	N8312C	Southwest Airlines	W0937	B739 TWY 3
Parked	Vehicle	-	47205	-	-	-	Light Airside
Gone	Vehicle	-	25948	-	-	-	Heavy TWY 1
Gone	Vehicle	-	25990	-	-	-	Light TWY 2
Gone	Vehicle	-	25967	-	-	-	Light Airside
Gone	Aircraft	Departure	25925	N302PQ	Delta connection	DL4936	DR39 TWY A
Gone	Aircraft	Departure	26013	N445YK	American Eagle	AA4347	E75L RWW 13
Gone	Vehicle	-	25993	-	-	-	Heavy TWY 5
Gone	Vehicle	-	26002	-	-	-	Light Airside
Gone	Aircraft	-	26012	-	-	-	Light Airside

# DESIGNING YOUR PROJECT



## 3D MODEL OF VISUAL COVERAGE

SensorTec starts each project with a customized 3D plan, which helps optimize camera arrangement, the necessary resolution and coverage at the airport, according to client needs.



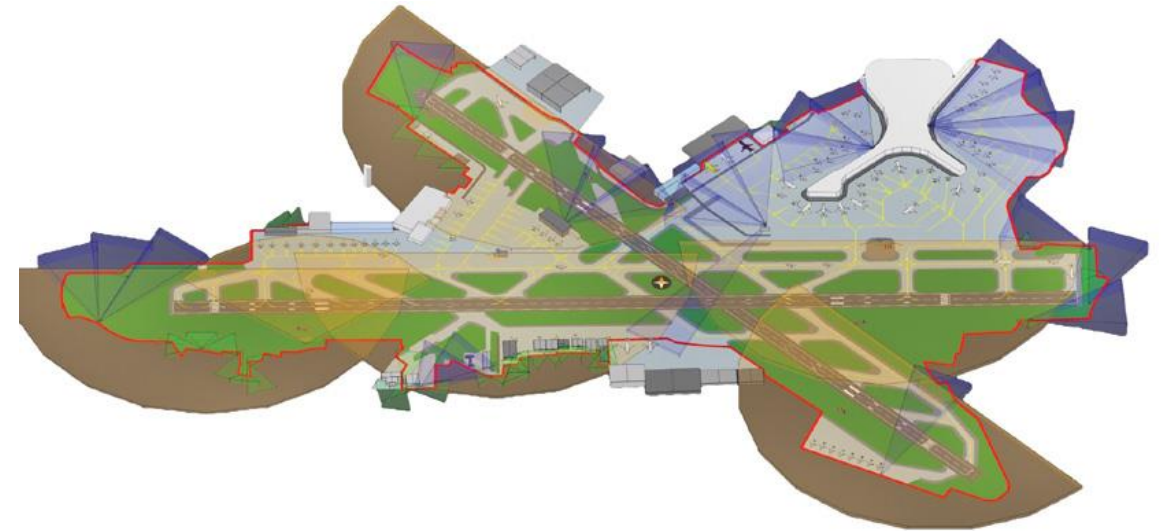
## ADAPTABLE SYSTEM STRUCTURE

We always consider the specific structure and characteristics of airports to best adapt the system for the current project. Moreover, STAARS has a flexible hardware structure that can be easily rearranged in case of future airside developments.



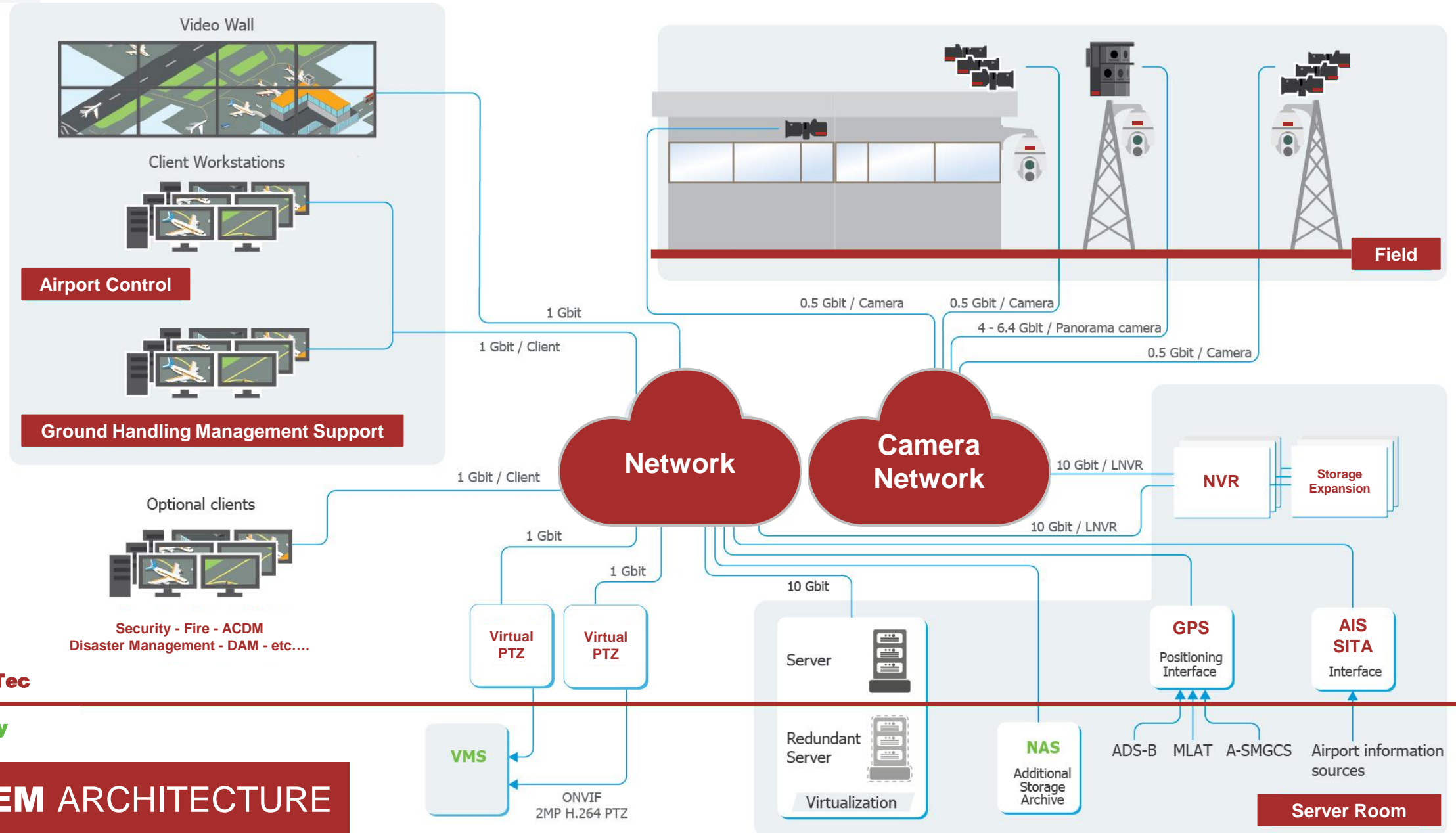
## SYSTEM EXTENSION

SensorTec airports solutions are designed to be flexible for future developments. Both the covered areas and also system functionality can be extended easily on demand.



Click to watch the video  
Airports Solutions - Mumbai Airport.





SensorTec

3<sup>rd</sup> Party

# SYSTEM ARCHITECTURE

# AI-BASED VCA ASSISTED AND MANUAL TURNAROUND OPERATION MODES

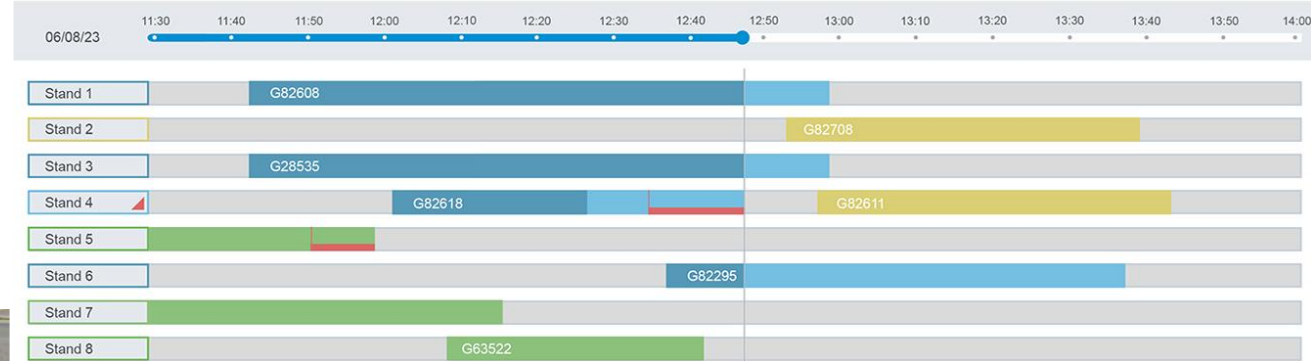
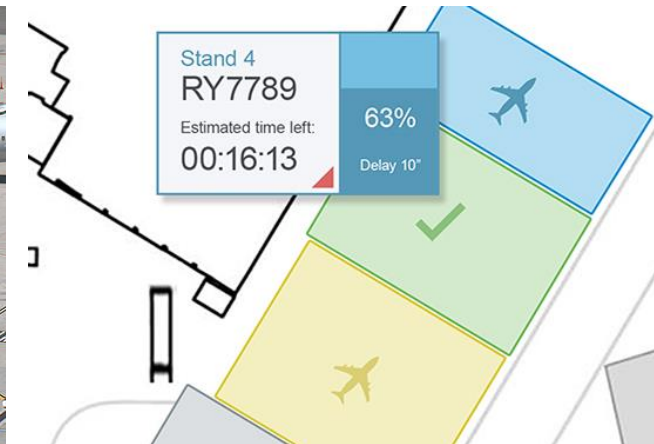


Our Turnaround Management Solution is available in two versions. The first one essentially relies on full manual operator activity. The second one is an extended version, where AI-based Video Content Analysis assists in registering some of the operations.

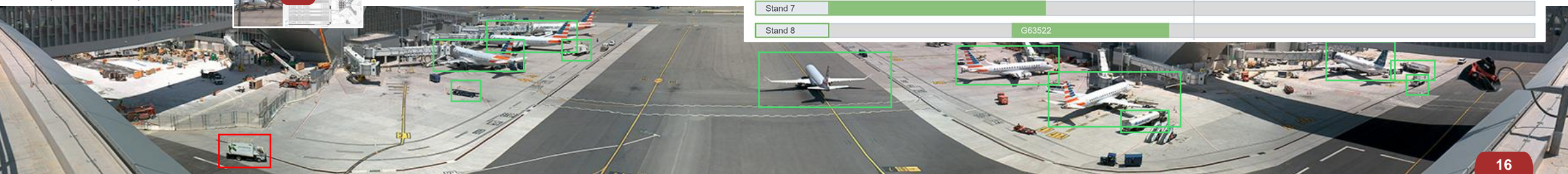
SensorTec VCA can detect the presence and classify different objects. It can accurately track the motion of airplanes and various ground equipment. Depending on the applied resolution and chosen point of view the algorithms can detect even complex processes.

## Turnaround Management Solution Main Functions:

- Landing and Take-Off
- Apron Overview.
- Turnaround Registration.
- Turnaround History.
- Turnaround Statistics.



[Click to watch the video](#)  
Airports Solutions - Apron Overview.

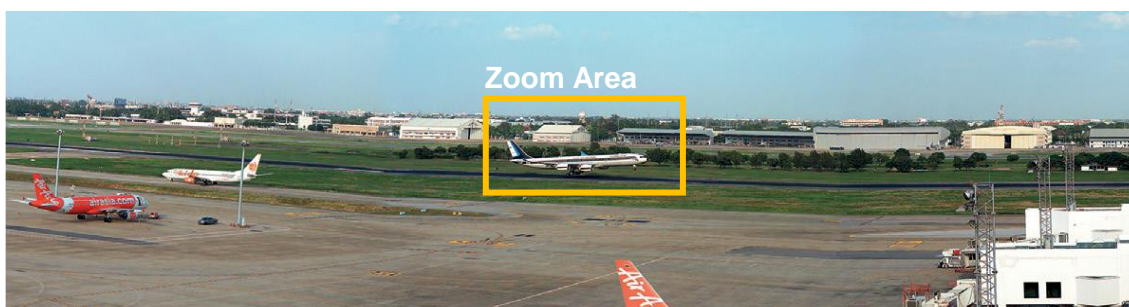




# LANDING AND TAKE-OFF

STAARS detects the moment of landings and takeoffs with great precision. The module automatically detects and registers the very moment when aircraft wheels touch or leave the runway. It also saves evidence images with time codes in the image header. It compiles detailed reports, which can be later reviewed fast and easy.

In case the system receives transponder data, it automatically calculates the exact time that airplanes spend at the airport. This function significantly simplifies billing procedures.

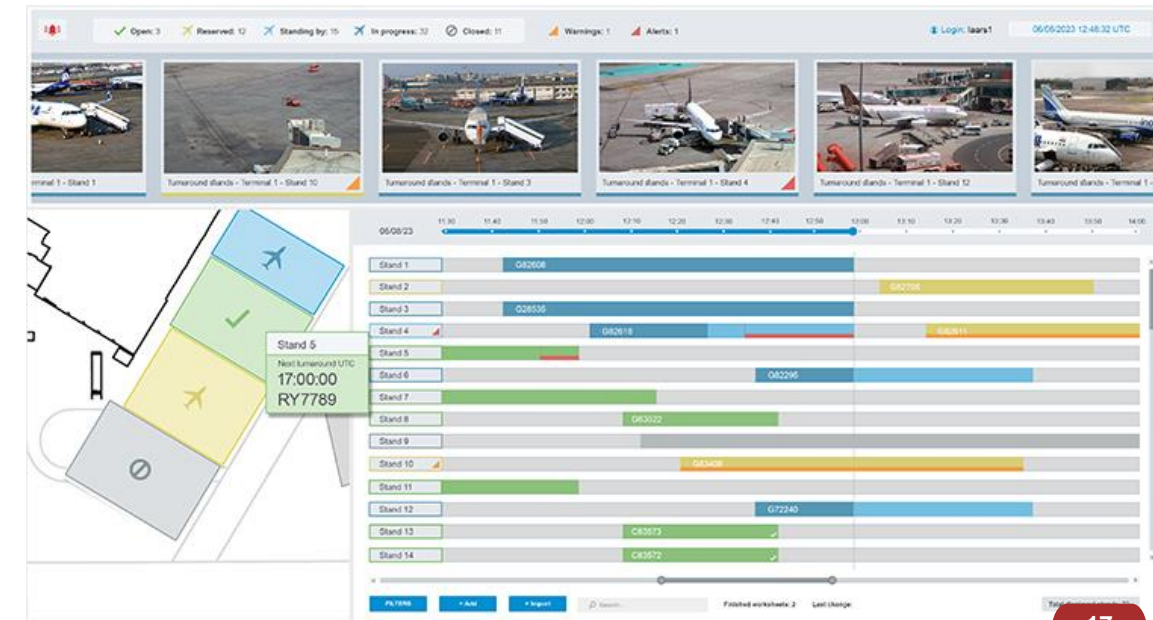


# APRON OVERVIEW

Apron overview provides a summary on all aircraft stands at the apron. Operators receive real-time information quickly monitoring images of the stand-alone cameras and also the daily flights, which can contain even hundreds of stands with daily schedules.

The visualized stands and turnaround statuses are all color-coded in order to provide clear, instant feedback on their statuses. Operators can easily filter for stand groups or simply for their assigned stands. The whole interface is intended to deliver turnaround information as quick as possible.

An interactive map displays aircraft movements and stand statuses. Operators can zoom in and pan on the map in order to find and enlarge areas of interest. Hovering on a stand, an informative label pops up, showing airplane allocation or current turnaround progress. In case any delay or change that occurs in the daily plan, operators can instantly understand the situation and they can provide information to Airport Operation and Ground Handling Agents. This way they can easily re-schedule the aircraft stand allocation.

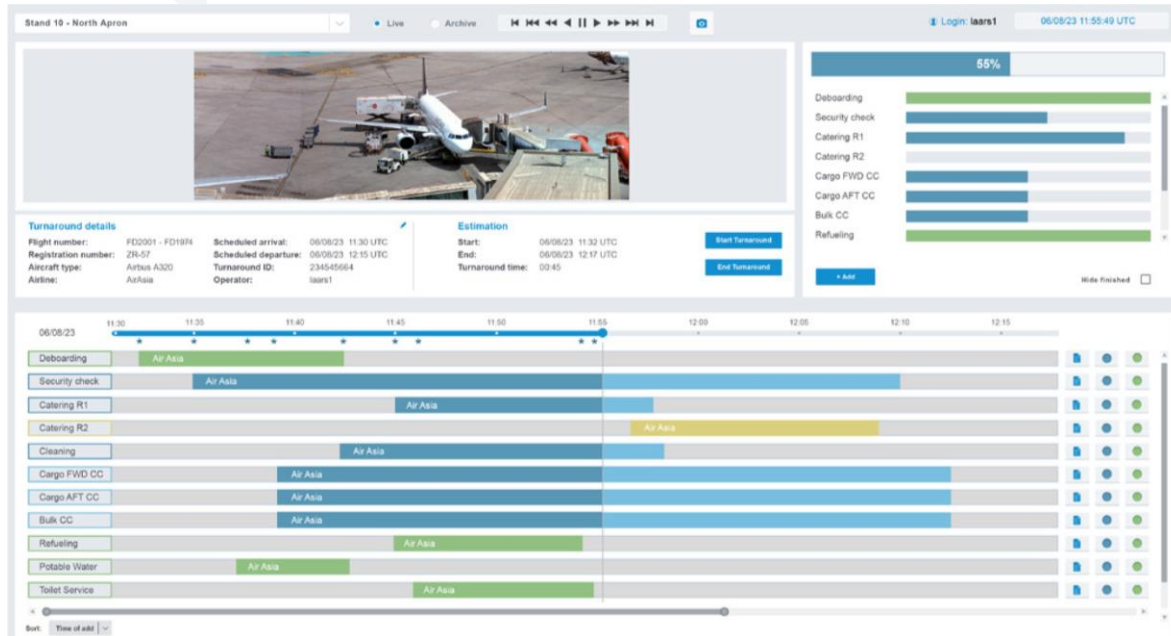


# TURNAROUND REGISTRATION

The Turnaround Registration interface enables operators to monitor and register the progress of turnaround processes on any stand, starting from parking until push-back. Operators can easily navigate through turnarounds on the overview interface and choose one for a more detailed view.

Once an individual turnaround is selected, the registration interface appears, allowing operators to verify whether turnaround tasks are being executed within the scheduled operational parameters.

They can create a comprehensive turnaround report by registering the processes with precise time stamps. Since the stands are continuously monitored from multiple angles, operators have constant access to high-resolution visual feedback on the activities surrounding the airplanes. Additionally, they receive turnaround details in text format, including an estimated turnaround time based on predefined time frames.



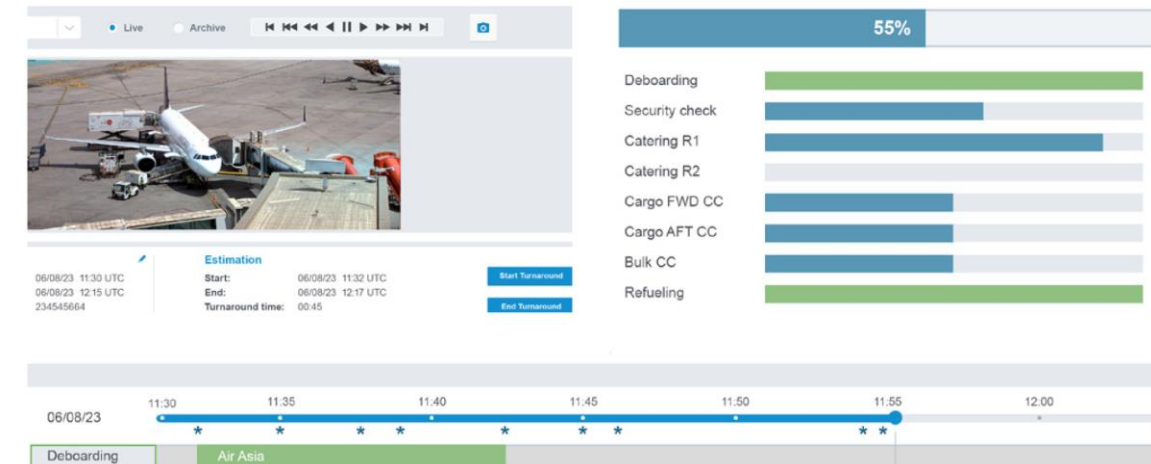
The schedule is filled automatically with the optimal time frames based on an imported list or template, that contains the ordered services. The system constantly refreshes the estimated time of this schedule according to real-time information about the progress. The time frames vary automatically based on airplane types and stand types.

In case of manual operation, operators have the opportunity to register every services in real-time, but they also have the opportunity to register already ended services using the archive mode. They can rewind or fast forward the whole process, search within the timeline and register services within minutes.

This feature allows operators to manage several turnarounds and stands simultaneously.

AI-based VCA assisted operation mode increases system efficiency and takes some of the burden off of operators. In this case computer vision algorithms monitor the progress of the turnaround processes and register them. The type of the recognizable processes are just the matter of applied resolution and the right camera angle.

Whenever operators or the VCA start or end the registration of a service the module automatically saves reference images, but operators can save extra images any time. These can be watched back any time until the end of the storage period.



# TURNAROUND HISTORY

Using the Turnaround History form, operators can search in the registered turnarounds and recall them within the storage period whenever necessary.

The interface is similar to the turnaround registration form in archive mode, except it has an extra search bar for browsing the registered turnarounds. The displayed schedule facilitates the search process.

This way operators can find the reference image of interest within seconds. They can use this for any type of evidence search.

Stand 10 - North Apron

 Live
  Archive
 

⏪ ⏩ ⏴ ⏵ ⏸ ⏹

**Turnaround details**

Flight number: FD2001 - FD1974  
 Registration number: ZR-57  
 Aircraft type: Airbus A320  
 Airline: AirAsia

Scheduled arrival: 06/08/23 11:30 UTC  
 Scheduled departure: 06/08/23 12:15 UTC  
 Turnaround ID: 234545664  
 Operator: laars1

**Estimation**

Start: 06/08/23 11:32 UTC  
 End: 06/08/23 12:17 UTC  
 Turnaround time: 00:45

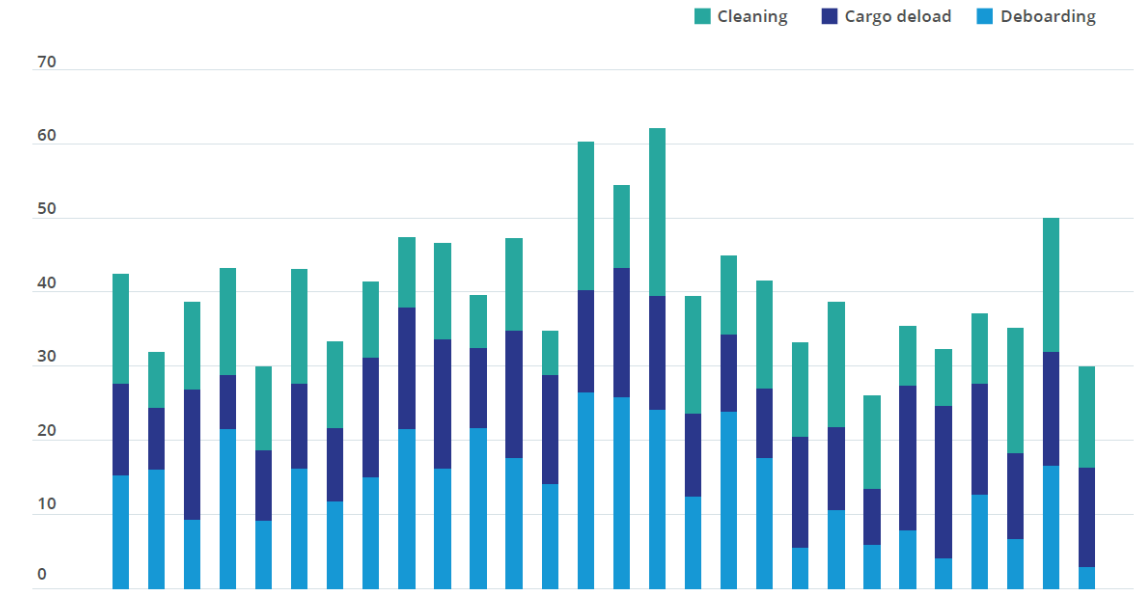
Start Turnaround  
End Turnaround

06/08/23 11:30 11:35 11:40 11:45 11:50 11:55 12:00

# TURNAROUND STATISTICS

Valuable Turnaround Statistics can be created from the registered data. This function allows to analyze turnaround times and every service in details. Automatic calculations can be made to identify critical bottlenecks and improve turnaround times.

These can be performed separately for every type of aircraft and flights serviced on the airport, and also for each stand individually, if needed. The performance of different Ground Handling Agents can also be measured.



**Statistics**

Stand occupancy
Turnarounds
Services
Delays

Time interval: 1 month

From: 06/09/2020 To: [calendar icon]

Make report

Export list

	Sum Total turnarounds completed	Sum Average turnaround time [min]	Sum Total delays [min]
	87	66,3	5,47

Area	Total turnarounds completed	Average turnaround time [min]	Total delays [min]
Apron A1	10	58,1	2,16
Apron A2	27	60,4	7,34
Apron A3	12	61,2	8,23

Stand name	Area	Total turnarounds completed	Average turnaround time [min]	Total delays [min]	Stand availability [%]	Occupancy rate [%]	Used status rate [%]	On stand by status [min]	On stand by status rate [%]	Open status [min]	Open status rate [%]	Reserved status [min]	Reserved status rate [%]	Closed status [min]	Closed status rate [%]
Stand 1	Apron A1	0	0	0	20	0	0	0	0	334,1	20	0	0	2088	0
Stand 2	Apron A1	5	57,6	2,1	100	34	290,4	33	42,5	15,5	226,7	14,6	12,6	0,6	0
Stand 3	Apron A1	4	65,2	13,4	100	67	260,6	65	26,1	14,9	346,0	24,6	10,9	1,2	0
Stand 4	Apron A1	3	50,3	0,4	100	19	153,5	118	44,1	17,6	149,8	30,7	14,9	7,3	0

# GEOFENCING AND VIRTUAL FENCE

STAARS geofencing function allows to virtually map existing airside zones on camera images. These configured zones facilitate orientation and accelerate object search for operators. They can easily find objects during live monitoring or archive search, as the objects always carry their current zone IDs. Operators can also filter for zones to list all their current objects. Geofencing function also allows to virtually assign various object and/or time-based airside rules to the designated zones.

Operators can designate temporary zones and they can define various rules to these areas. They can simply draw around a static object or a desired area and apply relevant rules. The activated rules take effect on this area and trigger different warnings or alerts.



# SITUATIONAL AWARENESS

With the help of computer vision technologies STAARS is able to enhance situational awareness at the airport. VCA-based features help prevent incidents by tracking real-time position of objects, predicting their future status and alerting users in time.

Proximity alert function uses dynamic proximity areas around objects. The size of these areas vary based on object type, speed and airport zone. In case the proximity areas of objects are overlapping, the system immediately alerts the user. This function mostly protects parking aircraft and vehicles from dangerously moving objects.

Collision prediction function helps prevent collisions among moving objects by applying Motion Behavior Analysis and Motion Path Estimation. The system analyzes the motion dynamics of the moving objects and calculates their motion vectors. In case the motion vector of an object is pointing to another one, the system predicts a possible collision area and alert operator instantly who can react in time and warn the pilots or drivers. If the objects seem to miss collision the warning or alert signal ceases immediately.



# FOD DETECTION

Foreign Object Debris can cause serious damage to airplanes and severely injure personnel, therefore it is essential to clean all AOA areas from them. Despite preventive FOD awareness, FODs constantly form on the runways, taxiways and aprons.

It is very difficult to explore the entire airside area by general FOD inspection and FOD walks. To help collect FOD, STAARS provides an automatic FOD detection function. Beside inorganic FODs (stones, plastic foils, tools, aircraft parts, dolly wheels or bolts, screws, etc), STAARS is able to detect and classify animals on the airside. The size of the detectable FOD only depends on the applied resolution, which is always customizable.

The function does not just recognize FODs, but it also supports the entire FOD management operation and helps investigate FOD formation. The function registers the source object which the FOD comes from (human, aircraft, dolly, etc.). It also provides information on exact FOD geoposition.

To handle the situation, operators first virtually fence the FOD area. They send inspectors to collect the FOD and when it has done, they acknowledge the process. All actions are recorded automatically which can be later reviewed if necessary.



FOD Source Object: Human.

Status	Type	Object ID	Responsible	Number	Area	Date	Time	GP
▶ Detected	FOD	8894	Human	8557	Parking lot	7/9/2021	08:27:36	47.529070
▶ Detected	FOD	8858	Human	8557	Parking lot	7/9/2021	08:27:36	47.529070
▶ Detected	FOD	8781	Human	8557	Parking lot	7/9/2021	08:27:36	47.529050
▶ Detected	FOD	8715	Human	8557	Parking lot	7/9/2021	08:27:36	47.529030
▶ Detected	FOD	8690	Human	8557	Parking lot	7/9/2021	08:27:36	47.529050
▼ Detected	FOD	8643	Human	8557	Parking lot	7/9/2021	08:27:36	47.529030
▶ Detected	FOD	8643	Unknown	0	Parking lot	7/9/2021	08:26:35	47.529030
▶ Detected	FOD	8634	Human	8557	Parking lot	7/9/2021	08:27:36	47.529020
▶ Gone	Human	8557	-	-	Parking lot	7/9/2021	08:27:13	47.528900
▶ Detected	FOD	8894	Human	8557	Parking lot	7/9/2021	08:24:04	47.529070
▶ Detected	FOD	8858	Human	8557	Parking lot	7/9/2021	08:24:04	47.529070
▶ Detected	FOD	8781	Human	8557	Parking lot	7/9/2021	08:24:04	47.529050
▶ Detected	FOD	8715	Human	8557	Parking lot	7/9/2021	08:24:04	47.529030
▶ Detected	FOD	8690	Human	8557	Parking lot	7/9/2021	08:24:04	47.529050

FOD Automatic Record Database.

Click to watch the video  
Airports Solutions - FOD Investigation.



# AUTOMATIC TRAFFIC ENFORCEMENT

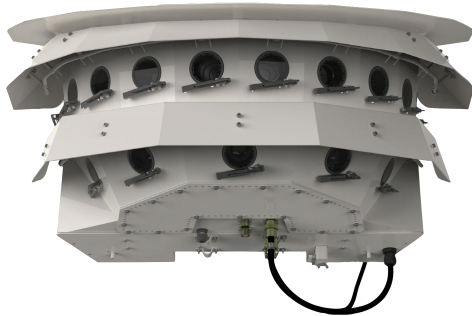
STAARS provides several traffic violation detection at the airport for both cooperative and noncooperative vehicles. Different rules can be specified for different type of vehicles in different areas. The system effectively detect overspeed, line, traffic light and parking violations within the monitored areas. In case a vehicle is violating a traffic rule, the system generates a warning immediately and signs it on the monitoring interface. The function does not just detect traffic violations, but also registers them and save an evidence image.



# KEY SYSTEM COMPONENTS



180° 200MP  
Panoramic Camera



180° 300MP  
Panoramic Camera



6MP  
PTZ IR Camera



SensorTec 4<sup>th</sup> Generation  
Indoor Rack-Mount NVR



40° 320MP Dual Vision  
Panoramic Camera



40° 320MP  
Panoramic Camera



20° 20MP  
Fixed Camera



SensorTec 4<sup>th</sup> Generation  
Outdoor NVR

SENSORTEC TURNAROUND MANAGEMENT SOLUTION



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