XOVIS

Airports
Solution
Sheet

SANITARY
FACILITIES

How to make the best possible use of sanitary facilities?

XOVIS IOT-SYSTEM TO SOLVE CAPACITY CONSTRAINTS

CHALLENGE

Not only is the constantly increasing number of air travelers a challenge for keeping sanitary facilities clean, it is clearly also about peak usage. If a toilet is located close to arriving flights, or directly after the security checkpoint where longer queues may occur, this can quickly lead to overcrowding. Conventional time-control-led cleaning is not effective and as a direct result, customer satisfaction decreases. Here are some examples of decisive factors to be measured in order to better understand the usage:

- When are certain toilet areas used to capacity?
- How often is each individual restroom stall used?
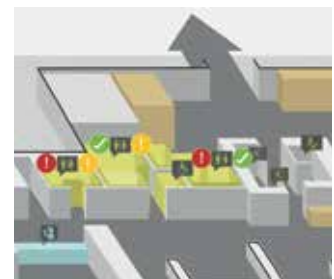- When are there queues due to capacity overload?

SOLUTION

In addition to measuring queue lengths, waiting times, and other KPIs at check-in, security etc., the Xovis Passenger Tracking System (PTS) is a versatile tool to balance the use of facilities and maintain a high service quality. Stable, accurate, and failure-independent counting can initiate capacity filling levels and usage statistics such as:

- Real-time measures following live situational awareness (e.g. interim inspection/cleaning or passenger redirection to other facilities)
- Reactive measures after non-standard situations (e.g. different aircraft stand allocations, seasonal changes)
- Optimization of long-term cleaning planning following statistics by gender, area and its utilization but not primary time oriented

Symbols on the map overview indicate the real-time usage of the toilets

Display of the number of passengers in each toilet in the detailed view

BENEFITS

The Xovis Passenger Tracking System (PTS) is one system for all purposes. Its accurate real-time data is the foundation to accommodate fast growth without having to add new facilities. Airports and passengers benefit in many ways:

- Comprehensive passenger flow management based on measured data and facts
- Balanced use of infrastructure, which can help avoid costly investments
- High service level - a key determinant for passenger satisfaction
- A database for the collaboration with any required stakeholder
- Reliable data to enhance passenger flow simulation models considerably

How does it work?

Long queues make airports look bad and frustrate passengers. Xovis provides airports with a powerful tool to move passengers more smoothly through their facilities, optimize staff and infrastructure planning and ultimately increase customer satisfaction. The combination of Xovis 3D Sensors and software solutions helps improve efficiency all over the airport and prepares the ground for innovative business models.

Counting and tracking passengers anonymously, the Xovis system combines 3D Sensors with software solutions to measure the targeted KPIs in real-time. A broad portfolio of Xovis 3D sensors with ultra-wide viewing angle accommodates the specific architectural conditions of any airport. Mounted on the ceiling, one sensor covers up to 100 m2 or 1100 sq.ft. and can be mounted from 2.2 to 30 m or 7.5 to 130 ft. high. A high-resolution 3D image, often also referred to as stereo image, of the covered/ recorded area is calculated up to 30 times per second, providing the basis on which every person that is entering the covered area is counted and tracked anonymously.
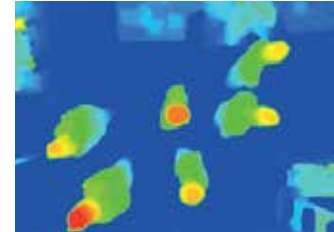
Based on the 3D images computed on the sensor, the software receives data streams from all the installed sensors, calculates and visualizes KPIs such as waiting times and passenger throughput on real-time dashboards. An unlimited number of sensors can be connected into a Multisensor to continuously track passengers through large areas anonymously. The system also features an automated queue detection that measures waiting times only for passengers excluding staff, meeters and greeters even in unstructured, dynamic multi-queue areas.

Passengers are recognized individually even if they are only 18 cm/ 7 in. away from each other. Sample rates up to 98% are guaranteed, meaning that 98% of passengers in the covered area are registered. The 3D stereo vision technology does not depend on signal-emitting devices and is highly robust against all kinds of external influences such as shadows, light changes and heat emissions.

According to the study "Rise to Challenge – The Risks and Opportunities of Digitization for Airports," from Roland Berger, a five-minute delay for 25 percent of passengers at the security checkpoint could induce a drop in retail sales of 2 to 3 percent. People that wait more, spend less.

Power over Ethernet (PoE), combining data connection with power in one cable, and a Mean Time Between Failure (MTBF) of 25 years simplify installation/ maintenance and keep total cost of operation low. Implementing FPGA technology, the image processing is performed on the sensor. No video stream leaves the sensors and data privacy is guaranteed. Only a constant stream of moving dots, representing the counted passengers, is sent out. Only one server is needed to run the system with up to 600 sensors. The Xovis system can easily be integrated with other software solutions. For example, waiting times can be exported automatically from the system and displayed on screens at the airport or on the airport's mobile app.

3D image computed by Xovis 3D Sensor indicating heights and distances by different colors

Xovis 3D Sensor, PC2
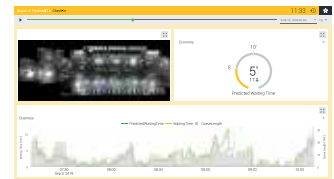
The Xovis software receives data streams from the sensors, calculates and visualizes the KPIs

Web and mobile clients of the software are also available

Data such as waiting times can be exported and displayed.