



State of the Art Passenger Tracking and Queue Measurement System for Airports

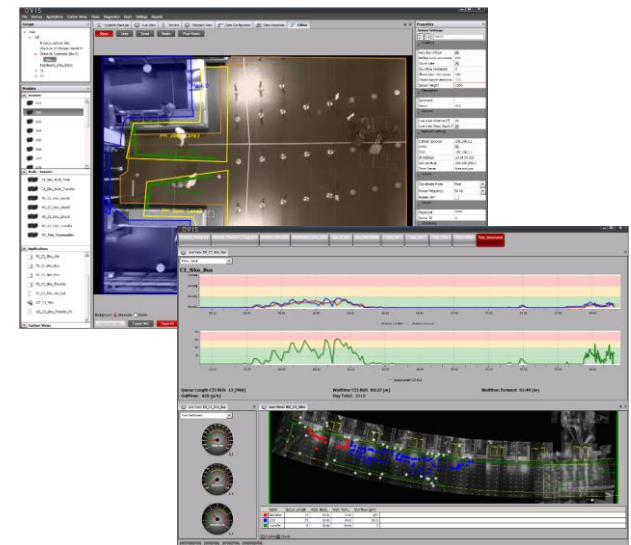
The Xovis Passenger Tracking System

The Xovis Passenger Tracking System (PTS) is an airport management system for passenger flow & queue measurement and service delivery management.

Xovis PTS combines the Xovis PC Series 3D optical sensors with the Xovis XS Software Suite for airports.

Xovis PTS has a proven track record of being the best suited system for all passenger flow measurement and monitoring purposes, including throughputs and opening times for assets such as check-in desks.

In open multi-queue areas such as check-in, the Xovis PTS is currently the only system that measures and forecasts waiting times accurately.



Over 20 Airports Trust in Xovis

Xovis PTS is a fully developed, industrialized and operation-proven system.
 The system is heading to become the airports industry standard for passenger flow & queue/line measurement, service delivery management and passenger counting.



Xovis PTS – One system to serve all purposes

Xovis PTS covers all airport areas and assets:

- Check-in, immigration, security check, customs
- Retail, restaurants, lounges, gates
- People mover, toilets, escalators
- Baggage reclaim, taxi ranks, bus stops

Xovis PTS measures all needed KPIs and statistics:

- Passenger counts
- Queue/line length
- Waiting time and dwell time
- Waiting time prediction
- Throughput and process time
- Desk/lane opening detection
- Automated queue/line detection and desk/lane allocation



Xovis PC Sensors

The Xovis Sensors are **mounted to the ceiling** and track people in their field of view anonymously. Video analytics are performed by a powerful processing engine on the sensor itself; no video is streamed and data privacy is guaranteed.

- Mounting heights up to **20 meters**
- Area coverage up to **100 m² per sensor**
- Design **matching** contemporary **architecture**
- Combining several sensors to a **Multisensor** to cover larger areas



Multisensor illustration

Xovis XS Airports Software Suite

The Xovis XS Suite is a Windows server-client software, which receives data streams from all installed sensors. There is no video, just moving coordinates representing every passenger tracked.

The XS Suite calculates data points such as waiting times, throughputs and number of passengers, visualized on a real-time dashboards with live view.

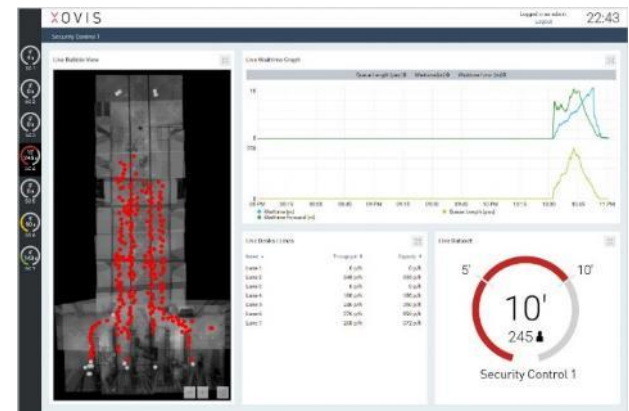
Thresholds and Service Levels can be set and monitored and alarms will send out the requested notifications.

Web and mobile clients are available.

Reporting and sensor management is provided by the Suite as well.



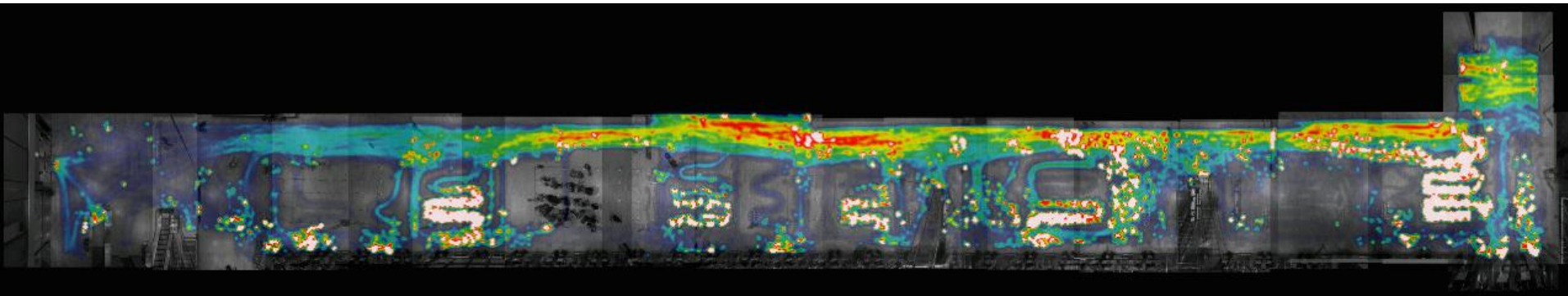
Dashboard



Mobile client

Automated Queue Detection

In large, unstructured multi-queue areas such as Check-ins, passengers mix up with meters, greeters, visitors or staff. Xovis PTS is currently the only system available that manages to measure and forecast waiting times in an accurately. Queues are automatically detected, waiting time is only measured for the passengers in the queues, meters, greeters, visitors or staff can be excluded. Further on, Xovis PTS automatically detects layout changes over the day, so there is no need to intervene in the software.





Why Airports Trust in Xovis PTS

Why our Clients Love our Products

Why should operators invest in tracking and flow analysis technology?

The main driver is to improve passenger experience generally and increase the overall customer satisfaction.



On top, passenger flow data, combined with other data sources, supports digital strategies of airports and create interesting new business cases.

Last but not least, optimizing the usage of existing capacity instead of building new one is based on insights gained through data.

Improving Passenger Experience: Manage Service Levels and Passenger Flows in Real-time.

Xovis PTS offers real-time dashboards with live views, showing live what is going on in areas equipped with Xovis sensors.

Quality airports use real-time passenger flow data and information to dynamically route passengers through their facilities, aided by digital signage. This supports airports in balancing the load on their facilities as well as tactically managing passenger flows.



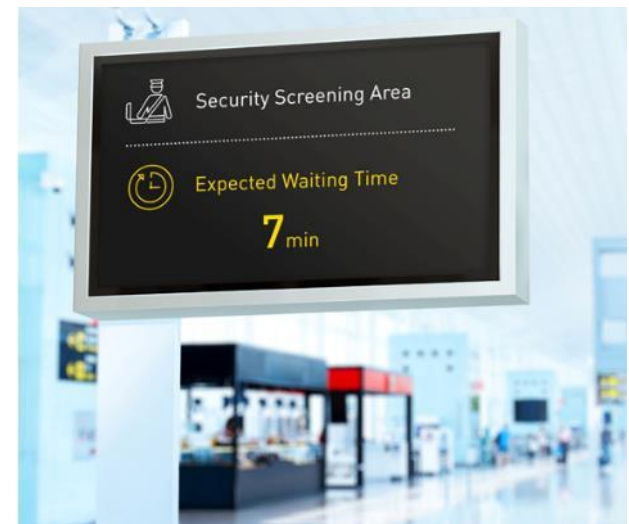
Xovis mobile clients with live view

Improving Passenger Experience: Display Expected Waiting to Passengers

Keep up passengers' mood despite waiting times? This must not necessarily be contradictory: Passenger satisfaction is all about expectation management. If an airport is capable of showing accurate predicted waiting times to passengers, on screens or on a mobile app, passengers know what they have to expect and keep their calm while flowing through the airport.

Especially as long queues do not necessarily mean long waiting times: If a passenger has to wait for a longer time, it is much more acceptable if this is known to him or her in advance.

Therefore, displaying predicted waiting times is mandatory for state-of-the-art airports taking care about passenger experience.



Display expected waiting times to passengers

Data for Process and Operations Optimization

The accurate data produced by Xovis PTS is perfectly suited for optimized asset and resource planning, including

- enhanced check-in allocation planning for maximized infrastructure usage and throughput,
- adjusted cleaning intensity to predicted passenger volumes in real-time, and
- optimized staff planning.

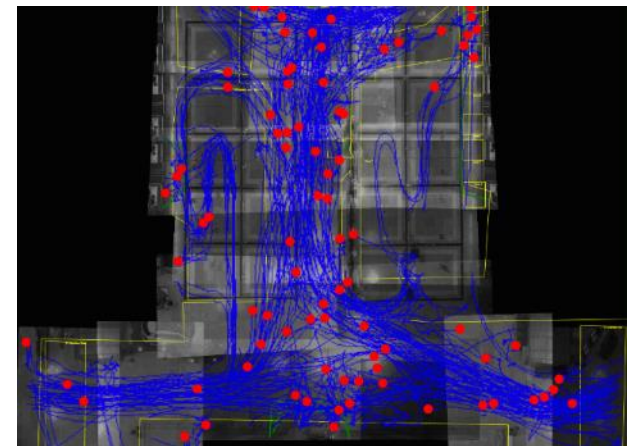
The passenger tracking ability of Xovis PTS records complex passenger behavior analysis.

Passenger flow density maps are available for path analysis and infrastructure optimization.

Name	Type	Throughput	Capacity	Process Time	Pax/Day	Open/Day	Status
Line 1	Economy	180 p/h	240 p/h	00:27 m	364	02:07 h	OPEN
Line 2	Economy	216 p/h	216 p/h	00:18 m	382	02:27 h	OPEN
Line 3	Economy	180 p/h	216 p/h	00:20 m	780	05:31 h	OPEN
Line 4	Economy	156 p/h	216 p/h	00:37 m	820	05:36 h	OPEN
Line 5	Economy	216 p/h	240 p/h	00:22 m	677	04:53 h	OPEN
Line 6	Economy	0 p/h	192 p/h	00:00 m	205	01:41 h	CLOSED
Line 7	Economy	276 p/h	288 p/h	00:19 m	72	00:20 h	OPEN

Totale
Open Lines: 6 Pax/Day: 3300 Throughput: 1224 p/h

Process success analysis



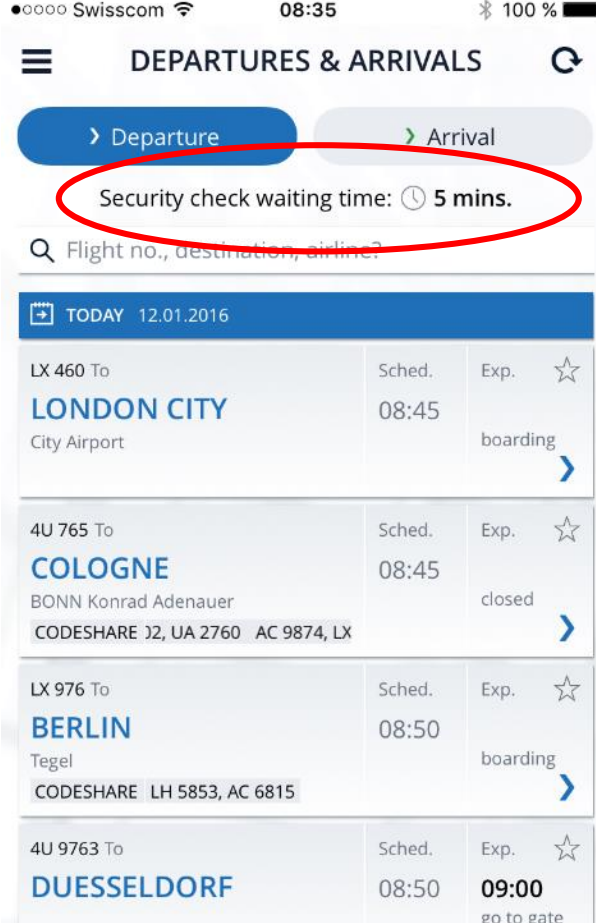
Passenger flow maps

Digital Strategy Business Case

Data generated by Xovis PTS is of highest value to all airport stakeholders. Accurately measured KPIs and statistics will help your partners to improve their efficiency.

As part of their digital strategy, Xovis customers sell the data to their partners, sometimes even combined with other data.

This makes the Xovis Person Tracking Technology a source of revenues.



The screenshot shows the Xovis mobile app interface for 'DEPARTURES & ARRIVALS'. The 'Departure' tab is selected, and a red circle highlights the notification: 'Security check waiting time: 5 mins.'. Below this, a search bar is visible with the placeholder text 'Flight no., destination, airline?'. The main content area displays a list of flights for 'TODAY 12.01.2016'.

Flight	Sched.	Exp.	Status
LX 460 To LONDON CITY City Airport	08:45		boarding
4U 765 To COLOGNE BONN Konrad Adenauer CODESHARE J2, UA 2760 AC 9874, LX	08:45		closed
LX 976 To BERLIN Tegel CODESHARE LH 5853, AC 6815	08:50		boarding
4U 9763 To DUESSELDORF	08:50	09:00	go to gate

Xovis data in mobile apps

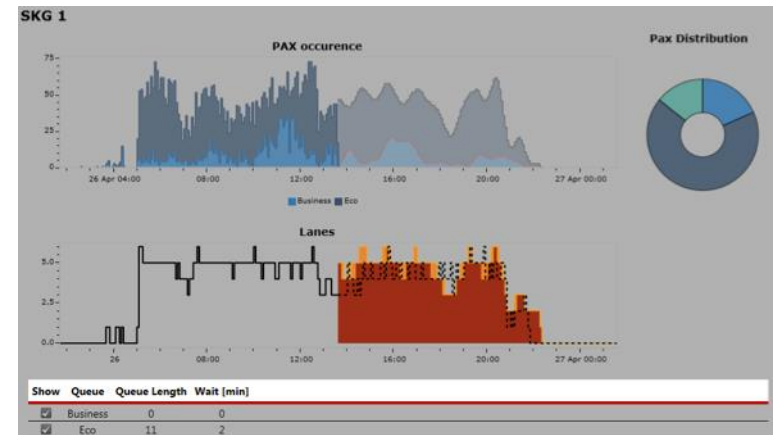
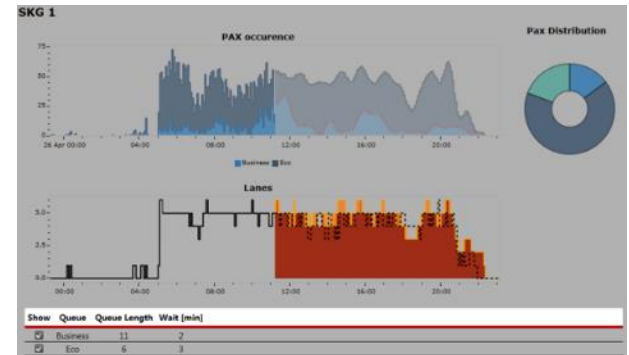
Real-time Forecasting

Start taking action on time:

Xovis Forecasting will provide you with 30min and 24h early alerts on number of passengers showing up and recommend optimized staffing for assets.

All based on historical data analysis and most recent flight information from airport operational systems.

Coming soon!



Xovis 24h forecasting

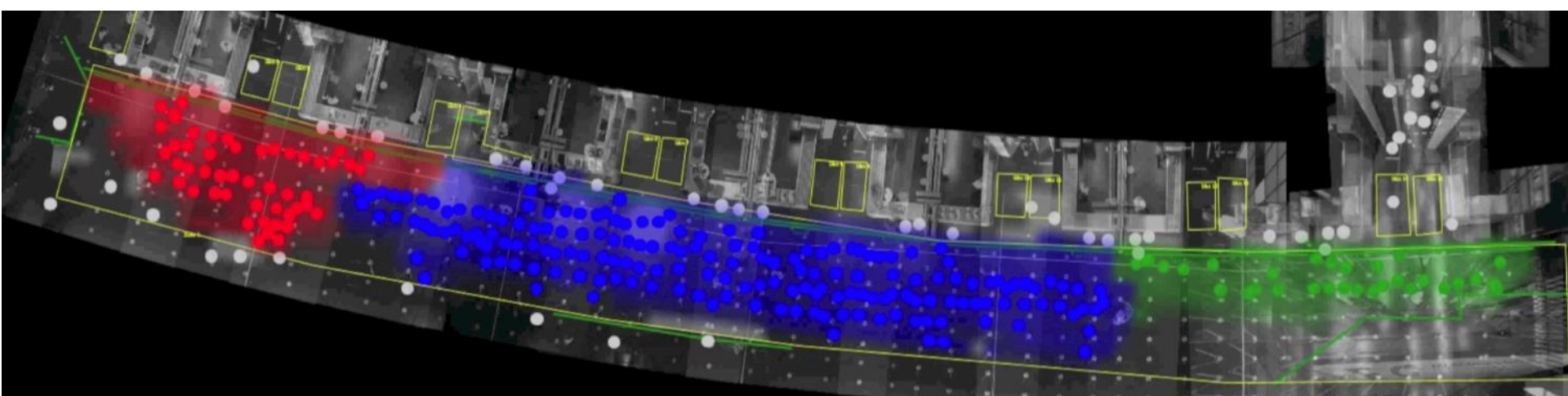


Unique Capabilities of Xovis PTS

Highest Penetration Rates, Accuracy and Stability

With its 3D stereo vision sensors, Xovis PTS guarantees penetration or sample rates of up to 98%. Meaning that 98% of all passengers in an area will be registered by Xovis PTS. Even more importantly, the sample remains at this level constantly.

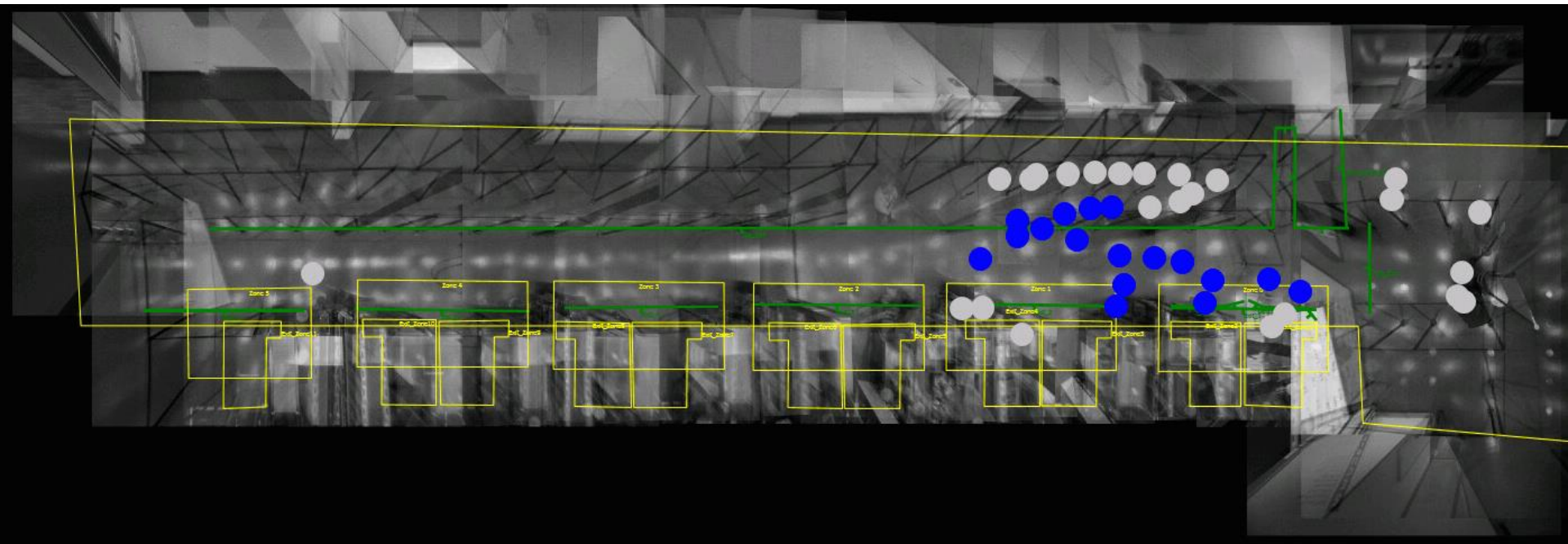
Xovis PTS is an extremely precise measurement system. Unmatched sample rates allow to retrieve KPIs on a minute-by-minute basis. The system detects individuals even if they are only 20 cm away from each other. Also the 3D stereo vision sensor is stable against lighting changes and shadows.



Guaranteed Data Privacy

Due to the Xovis PTS unique 3D Stereo Vision Sensor with a powerful on-sensor Person Tracking Engine, data privacy is always guaranteed.

No video streaming takes place outside of the sensor. The only data sent out by the sensor is a constant stream of moving dots, each dot representing a passenger.



Future-proof and Sustainable System

Xovis PTS is a future-proof and safe investment: The system does not rely on passengers carrying signal-emitting devices such as smartphones or fitness trackers. Thus the technology is not beyond our customers' control.

Xovis sensors are standing for true Swiss Quality in terms of production and reliability. We guarantee a mean time between failures (MTBF) of 25 years. This allows us to reduce electronic waste and the total cost of operation in general.



Xovis Swiss Made Quality

Carefree Operation and Low Total Lifetime Costs

Xovis PTS is a fully developed, industrialized and operations-proven system. The carefree operation keeps the total lifetime costs low.

The sensors come pre-calibrated from Xovis, so once they are installed, there is no need to change the settings again.

In addition, all data is analyzed on the Xovis sensors itself, so the load on the network is low. Conclusively only one server is needed to run the Xovis XS Software Suite.



Contact

The Xovis promise of Swiss Made Quality includes long-life hardware quality, unmatched tracking and counting accuracy as well as highest environmental robustness and ease of use.

But even more important: the Xovis Airports team shares a unique spirit and passion for what we do, showing true dedication for our products as well as our customers.

Just a hollow claim? Challenge us on that promise!

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