BOSCH

Intelligent Insights 1.0.3

- ▶ Crowd level visualization
- ▶ Occupancy tracker
- ▶ Object flow visualization
- ▶ Object tracking

Intelligent Insights is a user-friendly, web-based application to visualize the Video Analytics metadata from Bosch IP cameras and to provide a better situational awareness. The metadata includes object and people counting, crowd detection, area occupancy, and object geolocation information. The data is presented in pictograms or graphs, displaying the data from a single camera or combining the data from multiple cameras.

Besides data visualization the collected data is accessible by a RESTful API interface. The API allows to query the collected counting, crowd detection and area occupancy data and integrates the data in 3rd party systems.

Intelligent Insights helps the security operator to understand how many objects are actually moving in a certain area and in what direction. The solution intuitively visualizes changing crowd data in real time. This enables the operator to spot potential overcrowding in advance, and take effective countermeasures before it becomes dangerous. All data is stored in an internal database and can be analyzed in a report function.

System overview

Bosch cameras have built-in video analytics to detect crowded scenes, to count objects or to provide geolocation data of detected objects. The data from a single camera is often insufficient, and only the data from multiple cameras collated synchronously can provide usable insights.

Intelligent Insights collects information about crowd numbers, density and geolocation from Essential or Intelligent Video Analytics and visualizes the data in widgets. By combining the information from multiple cameras, Intelligent Insights displays the crowd's density, the occupancy level of the area and the movement of defined objects.

It is possible to install the software package on Windows 10, Windows Server 2016 or Windows Server 2019 operating systems. You can use the solution stand alone or integrated in a BVMS system. The system uses standard web browsers to configure and display the widgets. You can group the widgets in dashboards or access them individually. You can integrate single widgets in 3rd party applications or webpages by URL.

By default the Bosch Video Analytics metadata is stored for maximum 31 days. But you can expand the data retention time up to one year.
In the report function of the system you can review the metadata and export it in CSV format.

Administrators can manage dashboard permissions for an operator user. He can grant or revoke access to a specific dashboard for an operator. Use case and reports permissions are inherited from the dashboard.

Functions

Object and people counting
Object and people counting shows the counted objects or people in a predefined time period on a certain point or the sum of multiple points.

The object counting widget visualizes the counted objects in the selected time period. You can customize the visualization. You can use cars, trucks, bicycles, persons or an individual symbol for the visualization depending on the counted objects.

The people counting widget visualizes two counters in a single widget, one for incoming and one for outgoing persons. The people counting widget visualizes the rate of people passing through an entrance. It shows how many people have entered or left the building through an entrance.

Object and people counting visualizes real-time values in a column graphic or a developing trend in a bar graph. Selectable time periods are 10, 30, 60 min, 12h or 24h. By defining thresholds you can distinguish normal, serious or critical levels by different colors.

Crowd detection
Crowd detection widgets visualize the crowd level of a single camera or multiple cameras. You can visualize the crowd level in live view to give operators the current crowd level of a certain area. Or you visualize the crowd level in a bar graph to illustrate the development of the crowd level over a period of time. Selectable time periods are 10, 30, 60 min, 12 h or 24 h. By defining thresholds you can distinguish normal, serious or critical levels by different colors.

You can use crowd detection by cameras only indoors. For details see the crowd detection white paper.

Occupancy counting
Occupancy counting widgets visualize the currently counted objects in a defined area of interest You can customize the visualization. You can use cars, trucks, bicycles, persons or an individual symbol for the visualization depending on the counted objects. With combining the occupancy data from multiple cameras, occupancy counting gives an overview of the objects that are currently in an area.

The occupancy counting can visualize real-time values in a column graphic or a developing trend in a bar graph. Selectable time periods are 10, 30, 60 min, 12h or 24h. By defining thresholds you can distinguish normal, serious or critical levels by different colors.

Area fill level
Area fill level widgets are based on counting data from a single camera or multiple cameras. The occupancy of an area is the population divided by a defined maximum population, and takes into account incoming and outgoing objects within a configurable period.
You can visualize the area fill level can as real-time values in a column graphic, or as a developing trend in a line graph.
The column graphic visualizes the occupancy level live from a selected start time. The occupancy level is a percentage based on the current population and a

predefined maximum population in a set area. You can additionally display the number of objects entering and leaving the area within a predefined period. By defining thresholds you can distinguish normal, serious or critical levels by different colors.

Object positions
The object positions widget displays the positions of the Bosch IP cameras and the positions of the objects detected and tracked by Essential or Intelligent Video Analytics on an overview map. The widget tracks the location of objects without the need to look at single or multiple camera live streams. A typical application for the object tracking widget is the monitoring of a perimeter. The object tracking widget displays all objects moving around the perimeter, and classifies them as persons, cars, trucks or bikes.

Report functionality
By default collected counter and crowd density data is stored for 31 days in the internal databases. You can expand the data retention time up to one year. For a later analysis and export of the collected data, access the data in a report function. Select individual start and end times, granularities and visualization formats to display the recorded data.
The reporting function gives access to the collected data for a better understanding of crowd situations and the resulting risks. The reporting function measures implemented counter measurements to reduce crowded situations and compares them in order to streamline processes and to improve security and efficiency.

Data API functionality
The Intelligent Insights data API is a pull API to publish data to external applications or to store collected data in an external database. Access all collected data with the same granularity as provided in the report function by the data API.

Technical specifications

Installation notes
The solution is based on latest micro-service architecture and latest technology. We provide the software as an installation package that you can install on Windows 10, Windows Server 2016 or Windows Server 2019 operating systems.

Hardware recommendations

Operating system	Windows 10 Enterprise 1909
	Windows 10 Pro 1909
	Windows 10 Pro for Workstation 1909
	Windows Server 2016 1607
	Windows Server 2019 1809
CPU	Intel Core i7 4770 3.4 GHz (up to 3.9 GHz)

	Support of CPU virtualization
RAM	Minimum 16 GB
Free disk space	Minimum 100 GB **Note:** Minimum 10 GB free disk space must be available after installation.
Network card	1000Base-T
Recommended web browser	Google Chrome

Device compatibility

Supported devices	Bosch Video IP cameras / encoders with Essential and Intelligent Video Analytics
Supported camera firmware version	7.60 or later

System limitation

Maximum number of IP cameras	64
Maximum number of data sources, for example counters or crowd fields	352
Maximum peak counter or crowd events for 64 cameras	4224 events / minute 70,4 events / second **Note:** maximum number of events for all cameras
Maximum number of objects in object position widget	50 **Note:** using the Google Chrome browser
Maximum number of data inputs per counting or crowd use case	30
Maximum number of cameras per object position use case	16
Maximum number of widgets per dashboard	16
Maximum number of parallel visible dashboards per client	1
Maximum number of parallel clients showing dashboards	10
File format for maps	Bmp, gif, jpg, png, tif

API Gateway users	1
APi calls per minutes	1
Parallel API Gateway calls	1

Ordering information

IGI-BASE Intelligent Insights Base
Base license
Order number **IGI-BASE | F.01U.384.690**

IGI-DASH License Dashboard expansion
Expansion license for 1 dashboard. Order the exact number required.
Order number **IGI-DASH | F.01U.384.691**

IGI-XDATAAPI License for Data APi expansion
Expansion license for Data APi. Order the exact number required.
Order number **IGI-XDATAAPI | F.01U.400.019**

IGI-XRETENT License 1yr data retention time
Expansion license for 1 year data retention time. Order the exact number required.
Order number **IGI-XRETENT | F.01U.400.017**

Software Options

IGI-MBASE SMA for IGI-Base 1yr.
One year of maintenance cover for the IGI-Base license.
Order number **IGI-MBASE | F.01U.384.693**

IGI-MDASH SMA for IGI-Dash 1yr.
One year of maintenance cover for the IGI-Dash license.
Order number **IGI-MDASH | F.01U.386.390**

IGI-MDATAAPI SMA for IGI-XDataAPI
One year of maintenance cover for the IGI-XDATAAPI license.
Order number **IGI-MDATAAPI | F.01U.400.018**

IGI-MRETENT SMA for IGI-XRetenT
One year of maintenance cover for the IGI-XRETENT license.
Order number **IGI-MRETENT | F.01U.400.016**