

Technical Note

FW 6.30 Intelligent Tracking



BOSCH
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August 18th, 2016

FW 6.30 Intelligent Tracking

Never lose track of an object of interest! Intelligent Tracking automatically zooms in to and follows a selected Intelligent Video Analytics object as far as possible with the camera. For AUTODOME / MIC IP 7000, this means automatically steering the camera to zoom in to the object and follow it. For a FLEXIDOME IP panoramic 7000, Intelligent Tracking is available in the Virtual PTZ video and steers the dewarped cut-out. For DINION / FLEXIDOME IP 7000 / 8000 cameras, Intelligent Tracking can steer a region of interest (ROI) stream.

Applications:

AUTODOME / MIC IP 7000:

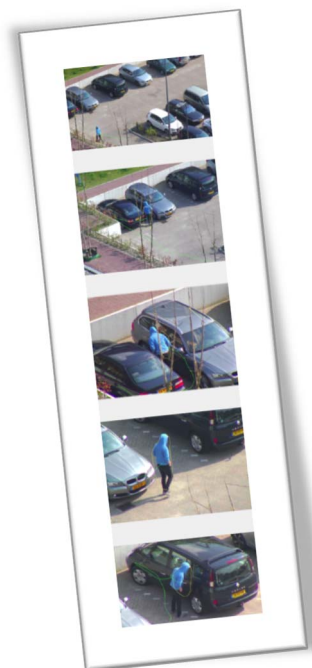
- Automatically get close-up shots of suspects for viewing and recording
- Automatically track the suspect even outside the current preposition to see and document what he is doing
- Ease of use: Steer the camera for the operator

FLEXIDOME IP panoramic 7000:

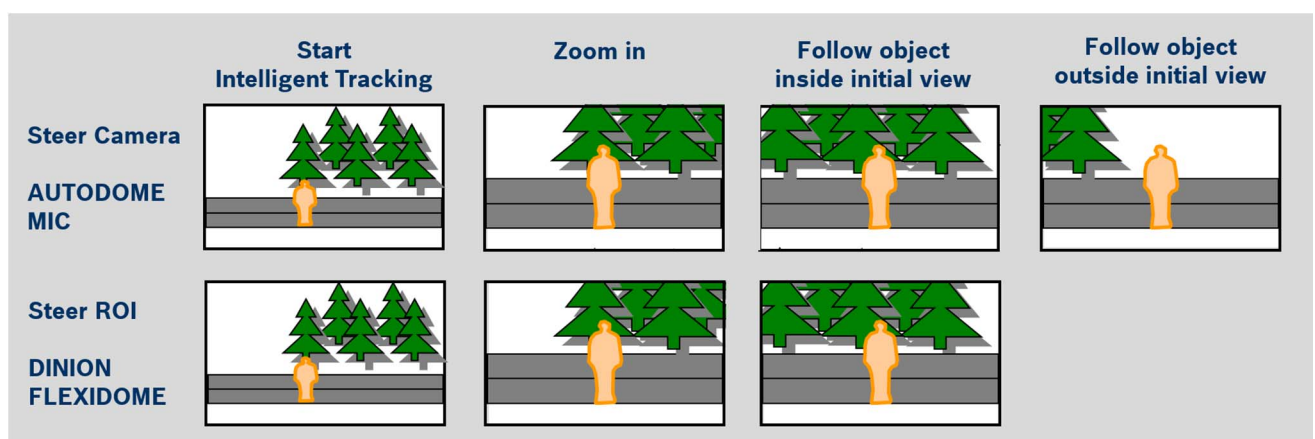
Ease of use: Steer the virtual PTZ camera for the operator to obtain the optimal and already dewarped video of the object of interest. By recording the full resolution in parallel, no detail is lost.

DINION / FLEXIDOME IP 7000 / 8000:

Oftentimes, operators watch several cameras at once on a screen, leaving SD resolution or less for each single camera video. By using Intelligent Tracking to automatically zoom in, a close up of the suspect can automatically be shown in this small resolution, to allow the operator to faster decide on incidents. Furthermore, the motion of the ROI will aid in focusing the attention of the operator. By recording the full resolution in parallel, no detail is lost.









Intelligent Tracking Overview



Limitations:

- Intelligent Video Analytics is needed to start the Intelligent Tracking
- MOTION+ and Intelligent Video Analytics FLOW cannot start the Intelligent Tracking
- Intelligent Tracking may be confused if more than one object moves through the field of view.
- Intelligent Tracking may be confused by motion in the background like wind in trees or moving water. If possible, mask out these areas.
- AUTODOME / MIC 7000:
 - o If a suspect is followed with Intelligent Tracking, another suspect may pass through undetected through the areas currently not covered by the cameras field of view.
 - o If the camera needs to significantly zoom in on a faraway suspect, the object may be lost while zooming.
 - o Motion towards the camera, especially with a low perspective, may appear too small to properly follow.
 - o Will not work on water.

Visualization of Intelligent Tracking status

Visualizations	
	Intelligent Tracking active, waiting for object to follow
 	Intelligent Tracking active and following object with blue outline
 	Intelligent Tracking active, object is lost but still waiting for reappearance
	Intelligent Tracking active, object is lost

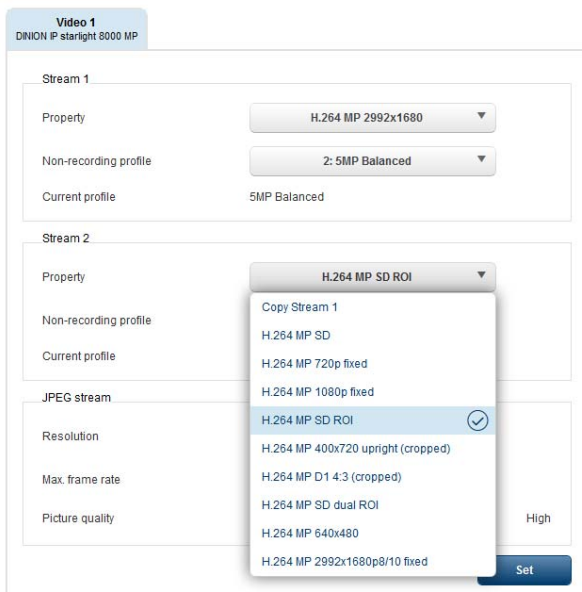
Comparison: Intelligent tracking on moving cameras (AUTDOME / MIC) and fixed cameras (DINION / FLEXIDOME)

	AUTODOME / MIC 7000	DINION / FLEXIDOME 7000 / 8000
What does Intelligent Tracking do?		
Follow selected object	Camera pan / tilt / zooms to follow selected object	Region of interest (ROI) is used to follow selected object
Zooming via	Optical zoom	Digital zoom
Which Streams?	All streams No ROI streams available	2 nd stream if ROI FLEXIDOME IP panoramic 7000: Via video "Virtual PTZ", all streams
Technology	Optical flow based tracking algorithm	Based on Intelligent Video Analytics metadata from full camera field of view
How to start Intelligent Tracking?		
Live Page -> Intelligent Tracking		
<ul style="list-style-type: none"> - Auto: Follows any Intelligent Video Analytics alarm object. In case of SilentVCA follows any Intelligent Video Analytics object. This mode is most useful for scenarios where no motion is expected in the scene. - Click: User clicks on any object tracked by Intelligent Video Analytics to start Intelligent Tracking of this object. This mode is most useful for scenarios where normal scene activity is expected. 		
How to enable Intelligent Video Analytics?		
SilentVCA: Intelligent Video Analytics metadata with default configuration and without alarms	VCA -> VCAConfiguration Active by default outside prepositions	VCA -> VCAConfiguration
Video Analytics Alarms	Define at least one preposition and assign it to the video analytics profile. Set VCA -> Analysis type to Intelligent Video Analytics. The video analytics will start as soon as the corresponding prepositions are reached.	Choose a single profile, or switch between up to two profiles via scheduling or event-trigger. Set VCA -> Analysis type to Intelligent Video Analytics.

What happens when object stops or is lost?		
(1) Adjustment of ROI for better reacquisition	PTZ Settings -> Tracking zoom-out limit	-
(2a) Case object stopped	Wait for reappearing object: PTZ Settings -> Tracking idle time	Object still tracked for VCA -> Metadata Generation -> Stopped object time
(2b) Case object lost	Wait for reappearing object: PTZ Settings -> Tracking idle time	-
(3) Wait some more	PTZ Settings -> Inactivity period	10 sec
(4) Go back to	PTZ Settings -> Inactivity	Preposition if set in / for recording, full zoom out else
What happens when Intelligent Tracking already follows an object and a new (alarm) object is detected?		
Intelligent Tracking will continue following the object and ignore any new objects.		
How to stop Intelligent Tracking?		
<ul style="list-style-type: none"> - Live Page -> Intelligent Tracking -> Off - Manually steer camera / ROI 		
How to suppress Intelligent Tracking locally?		
Masking	Virtual Masks	VCA Masks
How to remove the Intelligent Tracking option from the Live Page?		
LIVE Functions -> Intelligent Tracking		

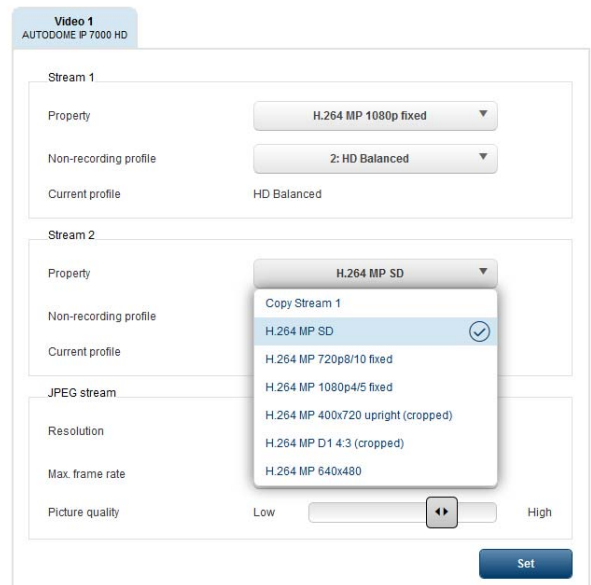
Stream types DINION / FLEXIOME	Description
ROI (Region of Interest)	Zoom / move manually or via Intelligent Tracking in the overall image. When recording a ROI stream, it can be configured which preposition should be used and moved back to after Intelligent Tracking stops.
Dual ROI	Two independent ROI streams. Configure / open via two browser windows / tabs. Only the first ROI stream will be recorded.
All others	Unchangeable field of view.

Encoder Streams



DINION / FLEXIDOME IP 7000 / 8000:
Select ROI stream for Intelligent Tracking

Encoder Streams



AUTODOME / MIC IP 7000 / 8000:
No ROI stream available.
Intelligent Tracking pan / tilt / zooms the whole camera.

Encoder Streams

FLEXIDOME IP panoramic 7000:
E-PTZ video for Intelligent Tracking

Technology

For an explanation of Intelligent Video Analytics technology, see the corresponding tech notes, e.g. Intrusion Detection FW 6.30 and Counting FW 6.30.

On AUTODOME / MIC, where the whole camera pan / tilts / zooms, the field of view of the camera changes during Intelligent Tracking. Therefore the base technology “background subtraction” from Intelligent Video Analytics cannot be used. The object detection and following is based on clustering motion of the same direction:

