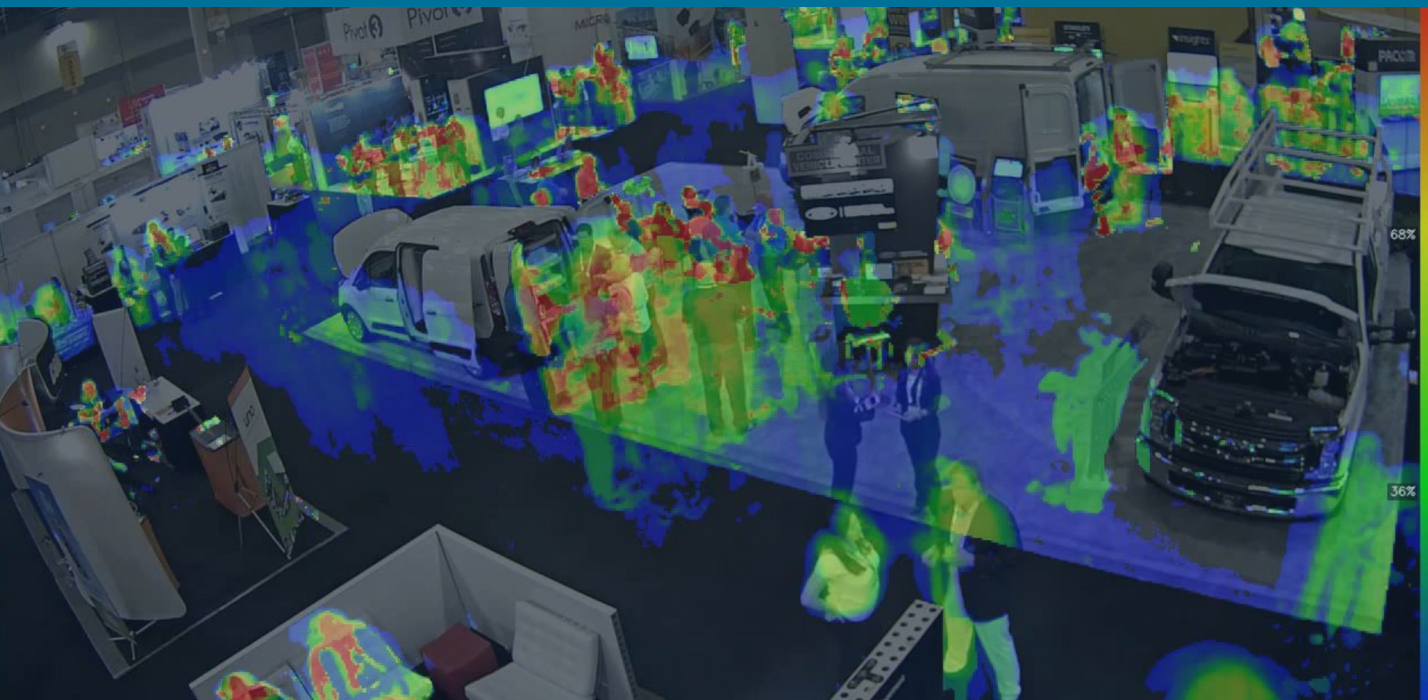**CymbIoT**

Making IoT Smarter

CymbIoT Visual Analytics

CymbIoT
Analytics Module
VISUAL▮ AUDIO▮ DATA

The CymbIoT Analytics Module offers a series of integral analytics packages- comprising the world's leading visual content analysis capabilities, and a range of cutting-edge sound analytics: from License Plate Recognition, through Face Recognition, to audio identification of gunshots, screams, and panic.
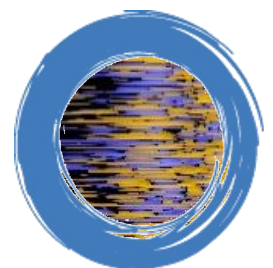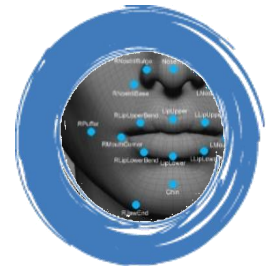
The CymbIoT C&C software integrates with any existing surveillance infrastructure (cameras, microphones, gates, access control systems, etc.). And applies selected analytics to the data produced by the installed systems.

CymbIoT has three (3) dedicated Analytics modules:

Visual Analytics – including Face Recognition, License plate Recognition, Heat Maps, and more.

Audio Analytics: identify gunshots, distress sounds, glass breaking – and more.

Data Analytics: Analyze and present data using our Reports module, create complex events, and utilize our Executive Dashboard.

VIDEO ANALYTICS MODULE

CymbIoT's Video Analysis module comprises analytics algorithms that identify actions and activities of people and objects within the camera frame. These analytics are then applied to the feed generated by any cameras connected to CymbIoT and support triggering of actions and procedures.

Presence
Define a "sterile zone" and trigger an alert whenever presence is detected in the zone.

Keep Away
Alert when a second object crosses a predefined line less than a predefined time period following a first object.

Stop
Alert when an object stops in a predefined area.

Enter/Exit
Alert when an object enters or exits an area (directional).

Direction
Alert when an object crosses a line in a certain direction.

Abandoned Object
Alert when an object is left/taken from an area within a given time.

Color Alert
Alert when an object with a certain color is identified..

Appear/Disappear
Alert when an object appears/disappears..

Speed
Alert when an object enters a zone at a given speed range.

FACE RECOGNITION

CymbIoT's Face Recognition module supports accurate identification based on features, based on video or still feeds. The module supports management of permissions, guests, and suspects, and comprises integral integration capabilities for fusion with Access Control and Surveillance systems of all types.

Main Features

- **In Motion identification**
- **Multi-face recognition (up to 50 simultaneously)**
- **Managing mixed group (mix of authorize and not authorize).**
- **Visitor management**
- **Attendance & occupancy reports**
- **Fusion of biometric technologies with face recognition**
- **Multiple Person Passage Security Levels**
  - Access permitted if at least one person is recognized
  - System requests confirmation from recognized person
  - System will request approval for each unrecognized person.

Face Recognition-based Access Control

- **Acceptance level for recognition: up to 30^0 (camera to face line)**
- **Distance between eyes in the capture frame > 30 pixels**
- **Enrollment via imported pictures or video (> 30px between the eyes or minimum 100px for a face)**
- **On-the-fly photo acquisition and entity buildup**
- **Support day/artificial lighting**

HEAT MAPS

CymbIoT's VCA module generates heatmaps on request, in order to enable operators and administrators to present and analyze data over time in a visual format.

Number of People

Heatmap presenting the number of people per a given location over a defined time period.

Crowd Density

Heatmap presenting crowd density in a given location over a defined time period.
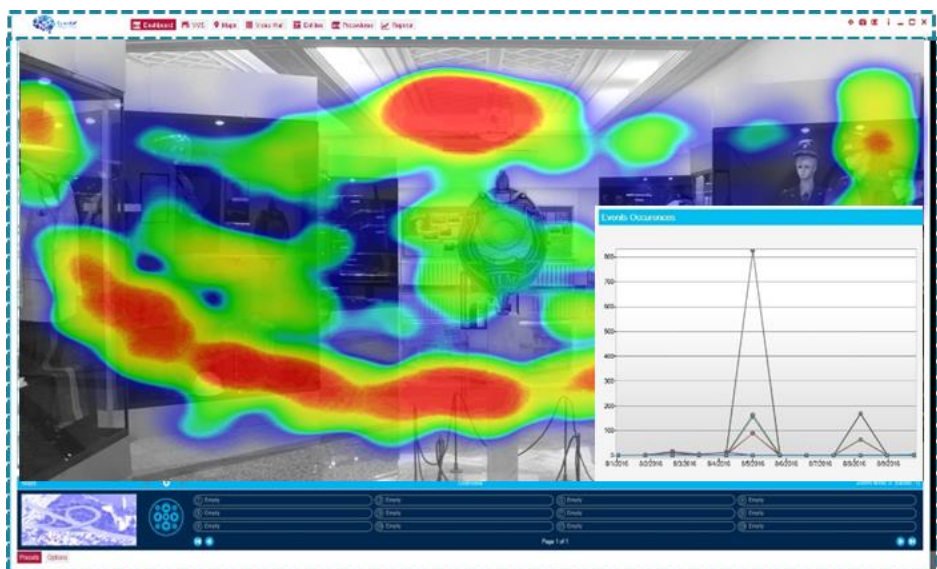
Time Analysis

Heatmap presenting the length of time people spent in a given location over a time period.

Motion Analysis

Heatmap presenting the motion of crowds (which route is most popular, etc.) over a given time period.

LICENSE PLATE RECOGNITION

License Plate Recognition is a type of video and image analysis. This analytic is an integral part of the CymbIoT C&C software package, but requires installation of cameras in a location that supports capture of the required information.

The plate must be clearly legible and distinguishable on the image. Too large an angle can cause the plate symbols to be illegible to both the human eye and machine analysis. Large remote cameras can also prevent the machine from identifying the license plate.

Vertical Mounting

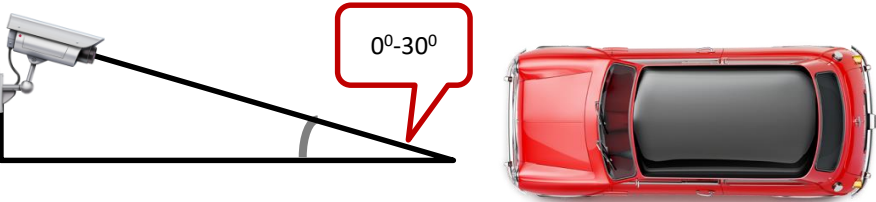| Horizontal Distance to Car	3.04	3.6	4.8	6.1	9.1	12.2	15.2
Max. Mounting Height	2.1	2.4	3.04	3.6	5.2	6.7	3.04

Distance in m.
$(D/2)+0.6m=H$
Assuming plate height of 0.6m

D= Horizontal Distance to Car
H=Max. mounting height

Horizontal Mounting

Horizontal Distance to Car	3.04	3.6	4.8	6.1
Max. Mounting Side Deflection	1.5	1.8	2.4	3.04

Distance in m.
$D/2=M$

D= Horizontal Distance to Car
M=Max. mounting side deflection

UNIQUE CAPABILITIES

CymbIoT's unique unsupervised AI VCA agent combs through hours of video in real-time to identify patterns, concepts and alert situations–driving improvements in safety, traffic management, and much more.

Unsupervised Learning

The system is able to learn on its own, adapting to new situations - objects do not need to be predefined in advance for future search.

Dynamic Concept Recognition

CymbIoT's VCA AI can identify an unlimited number of objects in the frame including dynamic concepts - such as a moving vehicle, security breach, protests, and more.

Journey Tracking

Tracking and correlating individuals during as they move throughout space

Robust Technology

The visual perception technology works in all conditions, regardless of weather, occlusions, lighting conditions, and low quality video.

Aerial image Analysis

Recognition of objects & patterns from the air – including granular images and moving objects.

Low Computation Overhead

The AI works with low power consumption and does not require a supercomputer.

Efficient & Unlimited Storage

Our big data platform uses highly compressed lossless signatures to enable indexing of the vast amounts of visual data and support fast search and retrieval by text, video, and more in real-time.

Security

Event
Group of people enter secured area.

Detection
Face Recognition identifies group.

Response
CymbIoT C&C analyzes data and implements procedures:.

	Checks group access control permissions
	Identifies visitors based on images in DB
	Opens gate to visitors with permission, alerts for others.

Crowd Management

Event
Exhibition room in gallery is overfull.

Detection
Visual Analytics Counter notes crowd density.

Response
CymbIoT C&C analyzes data and implements procedures:

	Sends Smart-sign messages to direct people to other rooms.
	Alerts security
	Switches doors to Exit Only – people can exit room but not enter it.

Traffic

Event
Traffic jam in front of secured area.

Detection
Visual analytics identify traffic jam

Response
CymbIoT C&C analyzes data and implements procedures:.

	Security is alerted
	Close gate nearest event
	Alert traffic police

Making IoT Smarter

CymbIoT's mission is to design, implement and deliver advanced Internet of Things (IoT), Video Management Solution (VMS), and Command & Control (C&C) platforms. We empower end users to configure and manage integrated networks of all types and scales - from Smart and Safe Cities, through Transportation Hub security, to Smart Buildings and Enterprise management.

With millions of sensors across numerous verticals using our products to deliver actionable intelligence and real-time response capabilities to customers worldwide - we have the experience, know-how and technology to deliver real world solutions that work.

CymbIoT

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