

# COM-IoT Technologies

## Individual Identification and Tracking Short User Manual

**Backlist Alerts**

 Name: Diobro Barbosa Time: 30/12/2018 23:58:24	 Name: Diobro Barbosa Time: 30/12/2018 23:58:24	 Name: Diobro Barbosa Time: 30/12/2018 23:58:24	 Name: Diobro Barbosa Time: 30/12/2018 23:58:24
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**Tracking**

Map showing terminal layout with Ticketing Locations (A-1 to A-4), Food Court, and Gates (1-4). A red path highlights a specific individual's movement.

**Captured People**

- Diobro Barbosa
- Lara Vialgigi
- Paulina Gayoso

**Counters**

**Facial Recognition Counter**  
900

Unique counting of people where every person's face is counted only once regardless of how many times it passes in front of the camera.

**Lidar In Counter**: 800  
**Lidar Out Counter**: 550  
**Lidar Net Counter**: 250

LIDAR based counting of persons entering a specific zone/entrance/gate.  
LIDAR based counting of persons exiting the zone.  
LIDAR based count of the net count of people inside of the zone.

**Traffic Density**

Map showing terminal layout with blue dots representing density of people.

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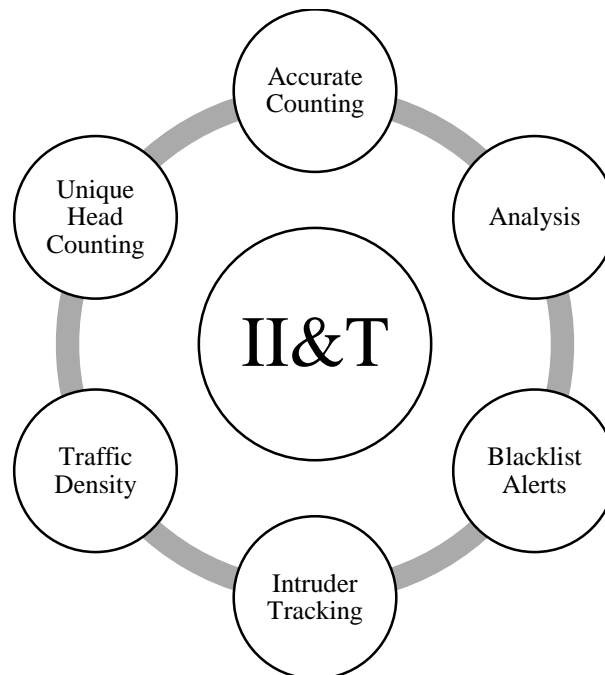
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# 1- Getting Started

II&T is a solution that combines LiDAR sensors and cameras to provide real-time individual tracking, traffic density, counting and unauthorized blacklisted people alerts.

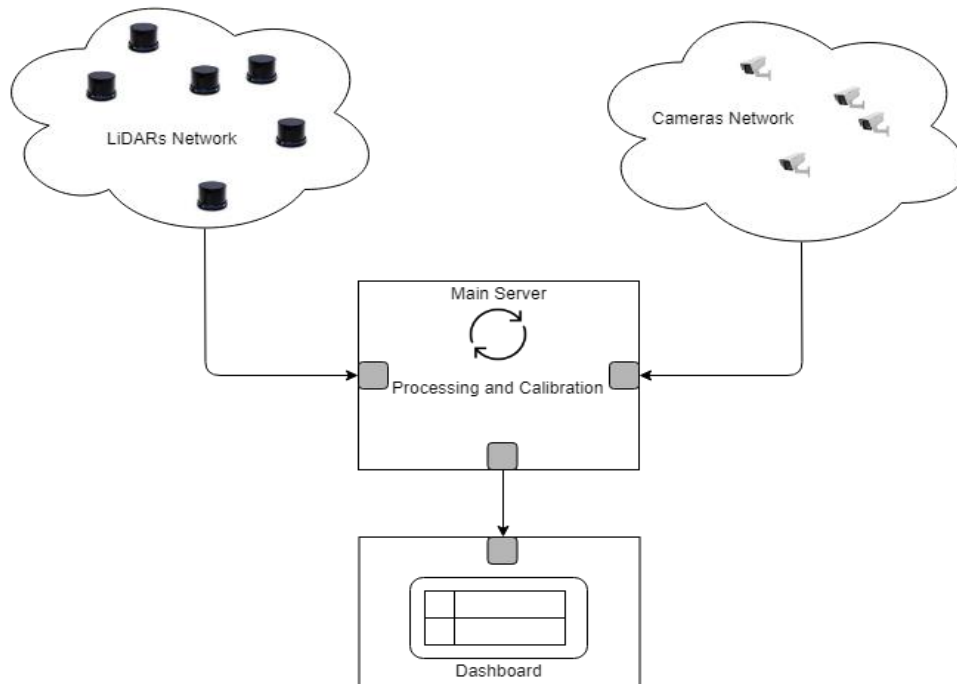


## Features

- 1- Intruder Tracking feature starts tracking a watch-listed individual after being identified, it's in real-time so the user can locate the watch-listed precisely.
- 2- Traffic Density presents a heat map to all user specify the crowded location inside the monitored space in real-time.
- 3- Accurate Counting gives the user the exact number of entries and departures from any given gate, thus accurate estimation of the total number of people inside the monitored space.
- 4- Analysis allows the use to visualize people's traffic by understanding all statistics needed about people going through the monitored space.
- 5- Blacklist Alerts feature sends real-time alerts to the system admins if an unwanted individual entered.
- 6- Unique Head Counting gives an estimation of how many unique people visited the place with details regarding staff and watch-listed people.

## System Architecture

II&T is extremely flexible and can be fully or partially deployed in most of the locations, a high level architecture will look like the following diagram



From the above illustration we can know that II&T doesn't require special networking, all the components can be add easily to the internal network at any given location or a new and simple network can be established.

## 2- Preparing the II&T Environment

This section explains how to set up the II&T environment. In general, you must have a properly set up Ethernet network, properly installed LiDAR and camera sensors, and be able to discover, view and manage those sensors.

***Sensors must be on the same subnet as the II&T server's Ethernet!***

### Preparing Virtualization Environment

For the Windows host, it should have virtualization options enabled from Windows features and from BIOS.

### Installing Quanergy QORTEX DTC

Follow QORTEX DTC Quick Start Guide: <https://quanergy.desk.com/customer/portal/articles/2755133>

### Installing Milestone XProtect VMS (for Milestone integration only):

Follow instructions in <https://www.milestonesys.com/support/help-yourself/manuals-and-guides/>

*NEC's NeoFace Watch should be installed if no other facial recognition service is.*

### Preparing II&T Environment

The following table discusses the number of virtual machines for different installations

VM Name	No. #	OS	CPU Cores	RAM
II&T Dashboard	1	Ubuntu 16.04 +	8+	16 GB
Qortex	(*)	Ubuntu 16.04	(*)	(*)
S3-2 (**)	1	Ubuntu 16.04 +	2	4

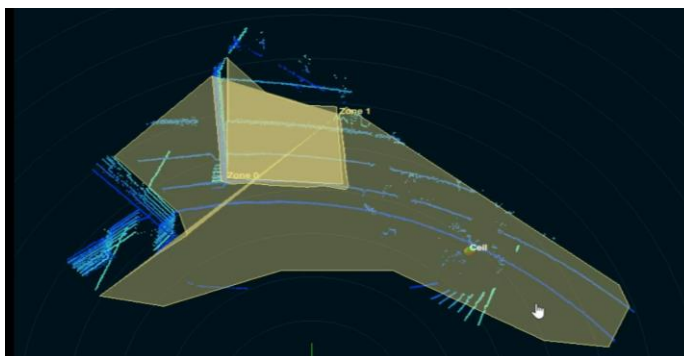
(\*) The number of virtual machines and their corresponding specifications follow the number, network architecture and the installation procedure of the LiDARs, and it needs an expert's estimation. Check the QORTEX DTC Quick Start Guide for more information regarding some of the parameters taken into consideration.

(\*\*) S3-2 LiDAR is used only for counting through doors and can't be used for tracking, so it doesn't require additional software requirements like normal sensors.

Once virtual machines are up and running II&T software should be configured to access all sensors by providing their network IPs in the input file or through the XProtect Plug-in.

## Running steps

- 1- In the dashboard VM, open terminal and move to the dashboard directory and type `'rails s'`, you now can find the server running on `https://localhost:3000`
- 2- Start NEC NeoFace and run all the services, you can now run NeoFace dashboard.
- 3- From QORTEX VMs, mark all counting zones and set the destination of alerts to the II&T server's ip.



*Setting Zones from QORTEX*

- 4- From main server open command line and change to II&T's directory and run `'python IIT.py'` and you can now see the running port and all the data been sent to the dashboard.
- 5- If Milestone is enabled, you should start as many plug-ins as the number of zones being monitored and set the destination to the `<II&T server ip>:<II&T port>/camera_stream`, and now you can control II&T from the XProtect plugin

## System Integration Remarks

Setting up II&T is a challenging task, as it requires calibration, fine-tuning and testing to make sure that all services are aligned correctly, so it's often recommended to ask COM-IoT technical team for help in setting up the environment and deployment.

## 3- II&T Dashboard

Following a demonstration of some dashboard sections and their usage

### Analytics



*Analytics Section*

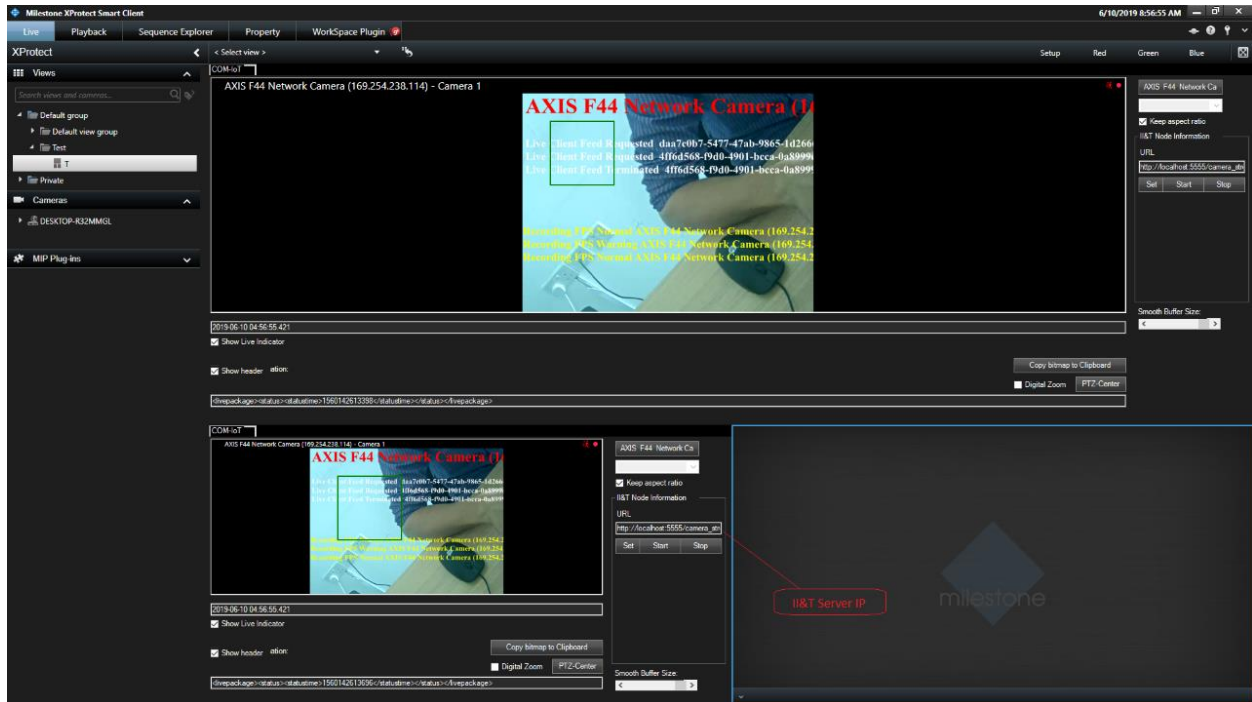
The user can see the number of people entered and left through a specific location through different time intervals and compare between traffic during different times in months, weeks or days.





## 4- Milestone XProtect VMS – COM-IoT Plug-in

Following a snapshot from preparing II&T (COM-IoT) plug-in inside XProtect Smart Client, from which a special version of II&T that's easily controlled from XProtect Smart Client is used to initialize, start and stop the service and receive alert to redirect to the main dashboard.



*COM-IoT XProtect Smart Client Plug-in*