מטאו-טק meteo-tech

EnviWizard
SENSING FOR LIFE



| SYSTEM FOR DETECTING POTENTIAL POLLUTION SOURCES |

for Odor and Air Pollution Incidents

It can happen to you!

DATE: Tomorrow
TIME: 12:00 Noon

INCIDENT:

Residents report an odor or air pollution nuisance!

THE REASON AND SOURCE ARE YET UNKNOWN!

The residents are complaining and concerned about their health!

WHAT DO YOU DO?

How do you rapidly find the source of the odor or air pollution?



“The greater the knowledge, the smaller the risk”

(Steven Harper)



“Knowledge is Power”

(Francis Bacon)

Handling odor and air pollution nuisances requires a system that is able to

IDENTIFY THE SOURCE OF THE NUISANCE QUICKLY AND IN REAL TIME!

THIS INFORMATION IS CRITICAL TO

resident health, industrial safety and environmental protection!

These information
must be compiled

IN REAL TIME! **RAPIDLY; AND** **ACCURATELY**

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METEO-TECH INTRODUCES:

A unique, **patent protected** system that identifies to the potential sources of pollution in **real time**, using meteorological **data**, applying a unique **model** and **calculating** airflow trajectories **back in time** from the reporting areas and **forward in time** from potential emission sources.

WHAT ARE THE STAGES OF THE PROCESS?

STAGE 1:

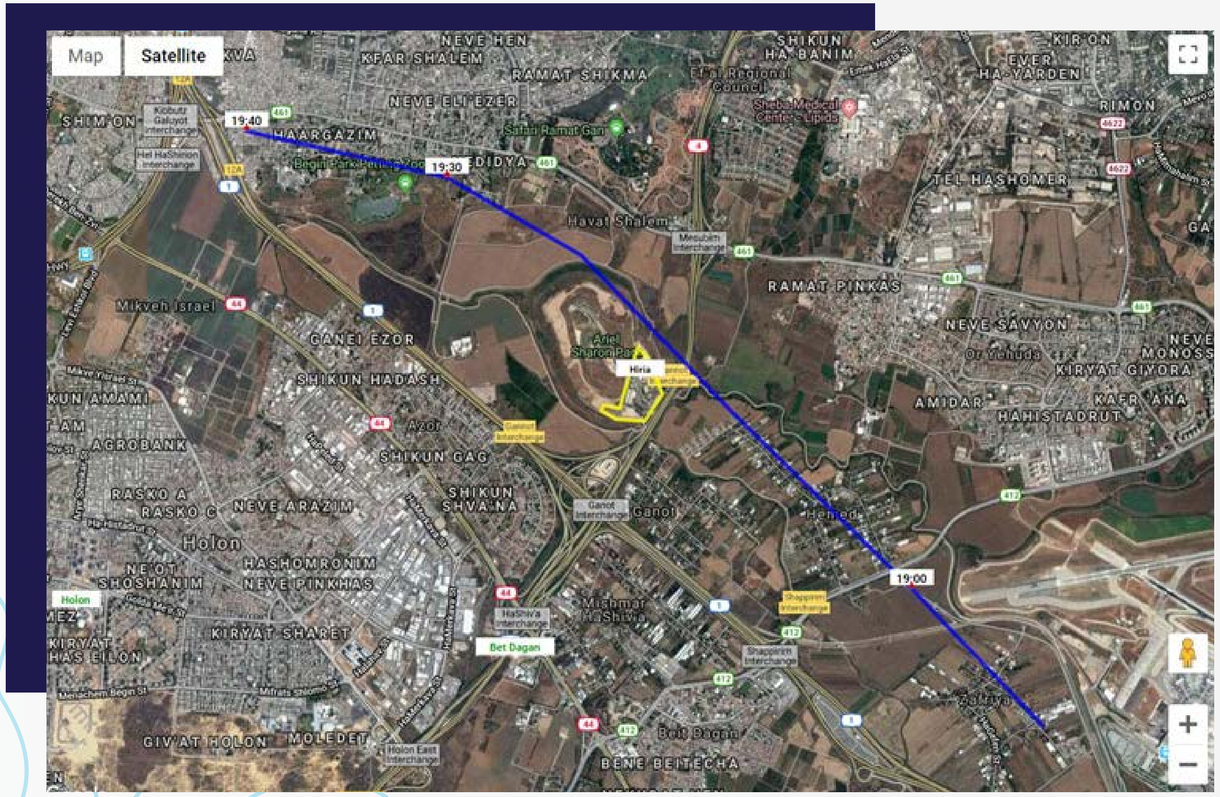


An odor or air pollution report is received.

STAGE 2:

The system calculates and displays airflow map back
in time from the complaint site using real time meteorological data

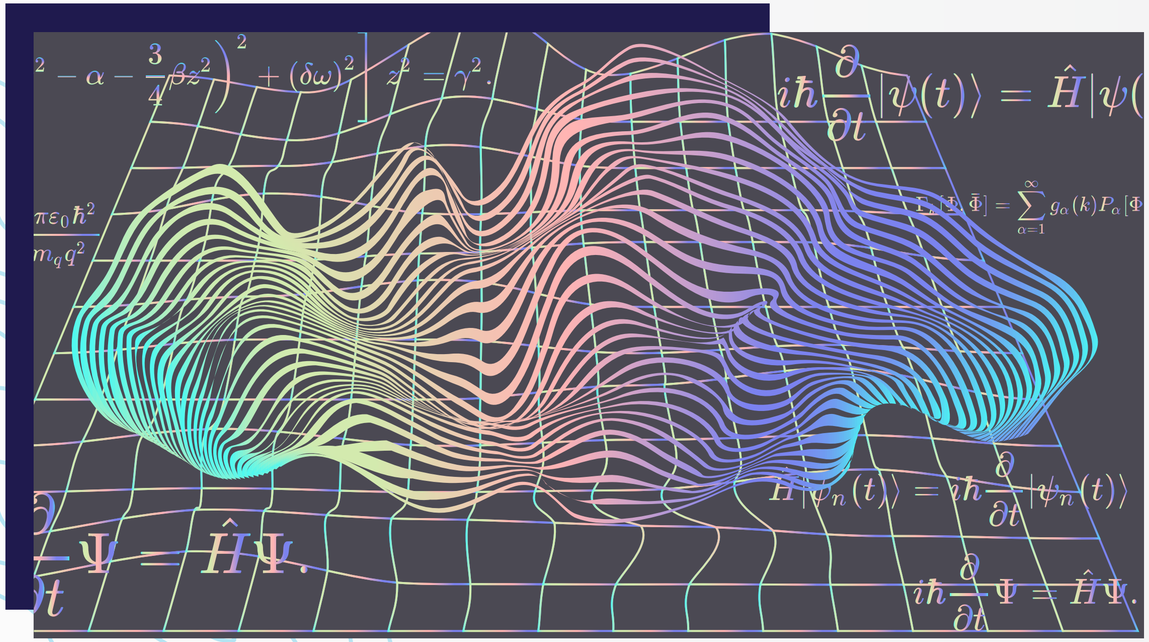
and locates suspected potential pollution sources.

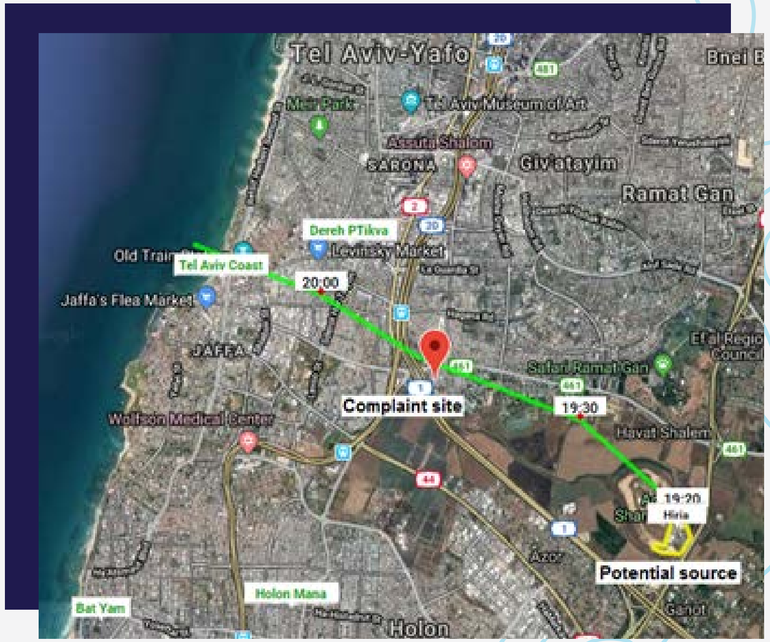


STAGE 3:

The system calculates the airflow trajectories **forward in time**

from the previously detected potential pollution sources and confirms the specific source.



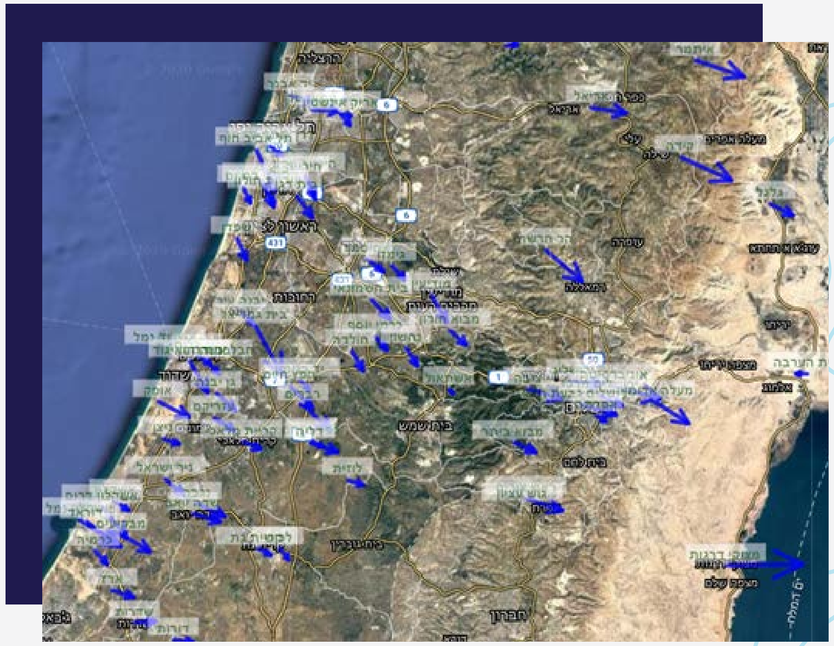


HOW DOES THE SYSTEM DO IT?

“Know from where you come, and where you are going”

(Mishna, Pirkei Avot 3a)





The system is continuously and connected to

every meteorological stations, available in Israel

24/7, compiling wind data (direction and speed).

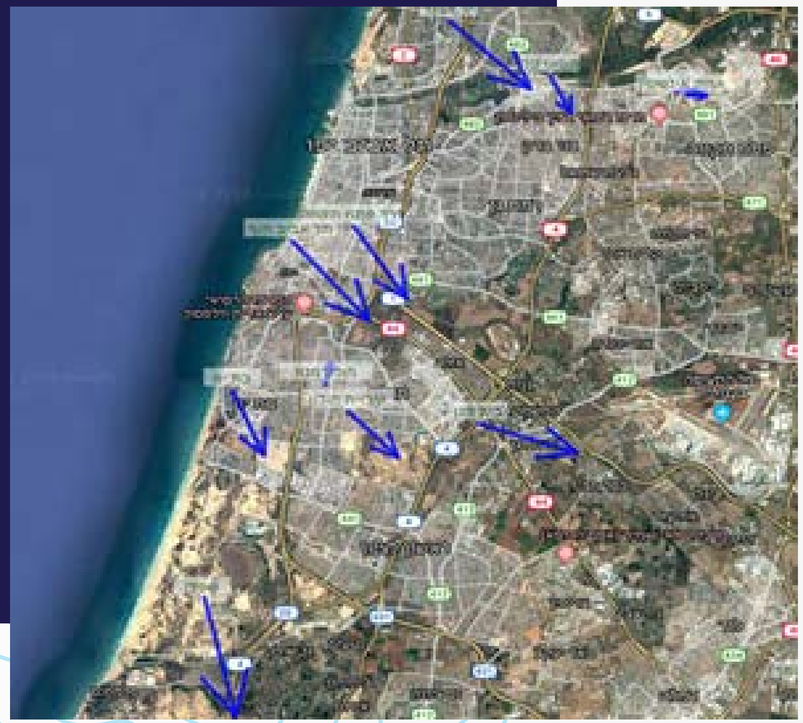
The system is connected to ~200 meteorological stations.

Upon receiving the complaint, the system collects the following data: Complaint

TIME AND PLACE.

$$V_x(k,t) = \frac{\left[V_{x1}(t)dx_1^{-b} + V_{x2}(t)dx_2^{-b} + \ldots + V_{xm}(t)dx_m^{-b}\right]}{\left(dx_1^{-b} + dx_2^{-b} + \ldots + dx_m^{-b}\right)}$$

$$V_y(k,t) = \frac{\left[V_{y1}(t)dy_1^{-b} + V_{y2}(t)dy_2^{-b} + \ldots + V_{ym}(t)dy_m^{-b}\right]}{\left(dy_1^{-b} + dy_2^{-b} + \ldots + dy_m^{-b}\right)}$$



The system activates a unique model that provides a minute-by-minute calculation of the wind field – direction and intensity – in the relevant area, enabling the calculation of airflow trajectories.

The system is embedded with an algorithm based on Cressman formulas, which calculates wind intensity and direction for every location in the relevant area.
The system interpolates the wind data from all stations, enabling more accurate calculations of wind flow trajectories.

Following are Cressman equations of wind components at a certain point in space based on interpolation of available stations:

Based on the wind field data which is, calculated every 5 minutes during the analysis process, the model integrates and calculates the airflow trajectories

IN TWO STAGES:

BACKWARD AND FORWARD IN TIME.

STAGE 1:

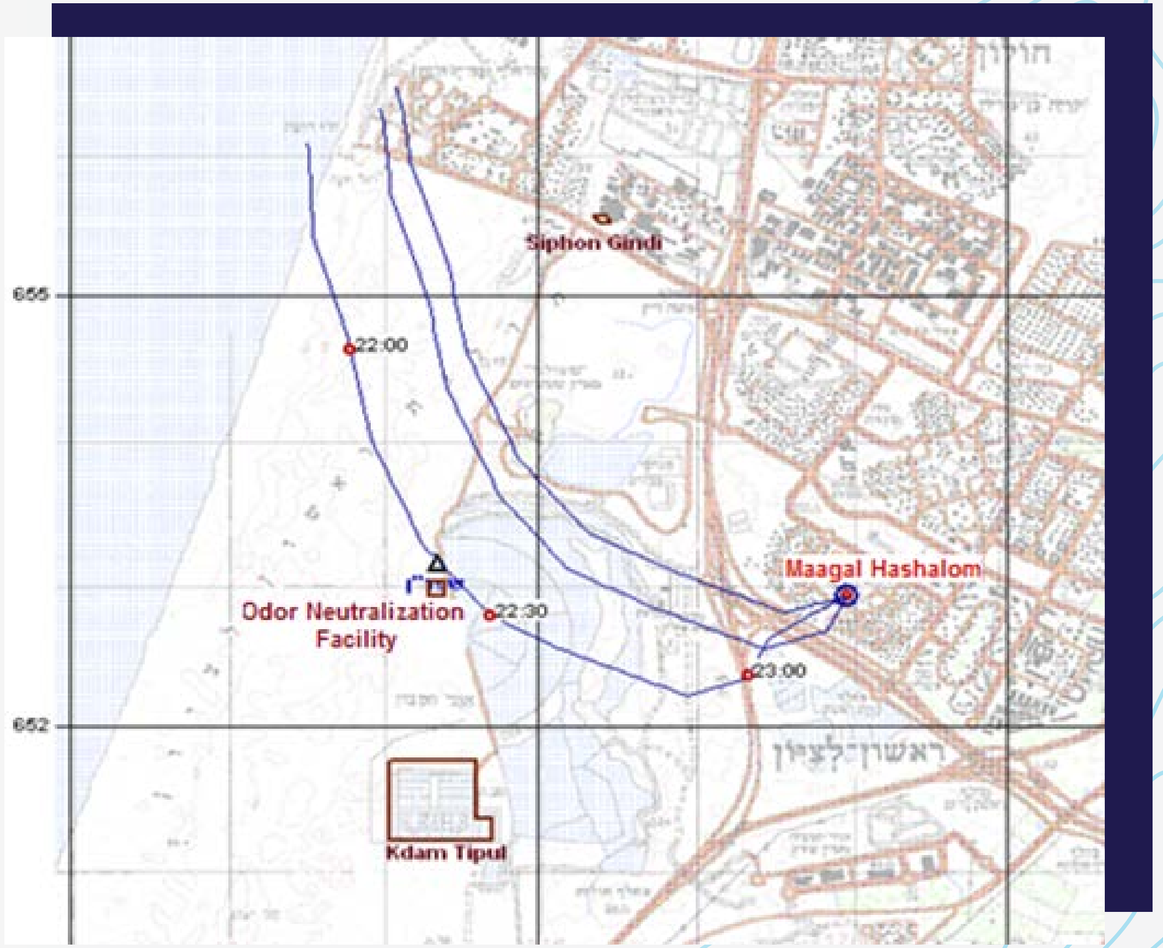
Backward integration from the complaint site to locate a potential pollution/odor source

The system displays the airflow trajectories on a map, standing back from the complaint site in a time dependent mode:

First trajectory:
From the complaint site at the complaint time.

Second trajectory:
From the complaint site at 5 minutes before the complaint time.

Third trajectory:
From the complaint site at 10 minutes before the complaint time, and so on...



This demonstrates

WHERE THE AIR CAME FROM

at the complaint time

AND ENABLES THE LOCATION OF POTENTIAL POLLUTION SOURCES

STAGE 2:

Forward looking integration
from the potential pollution/odor site

The system displays the airflow trajectories on a map from a potential pollution source forward in time after identifying it through back integration

First trajectory:

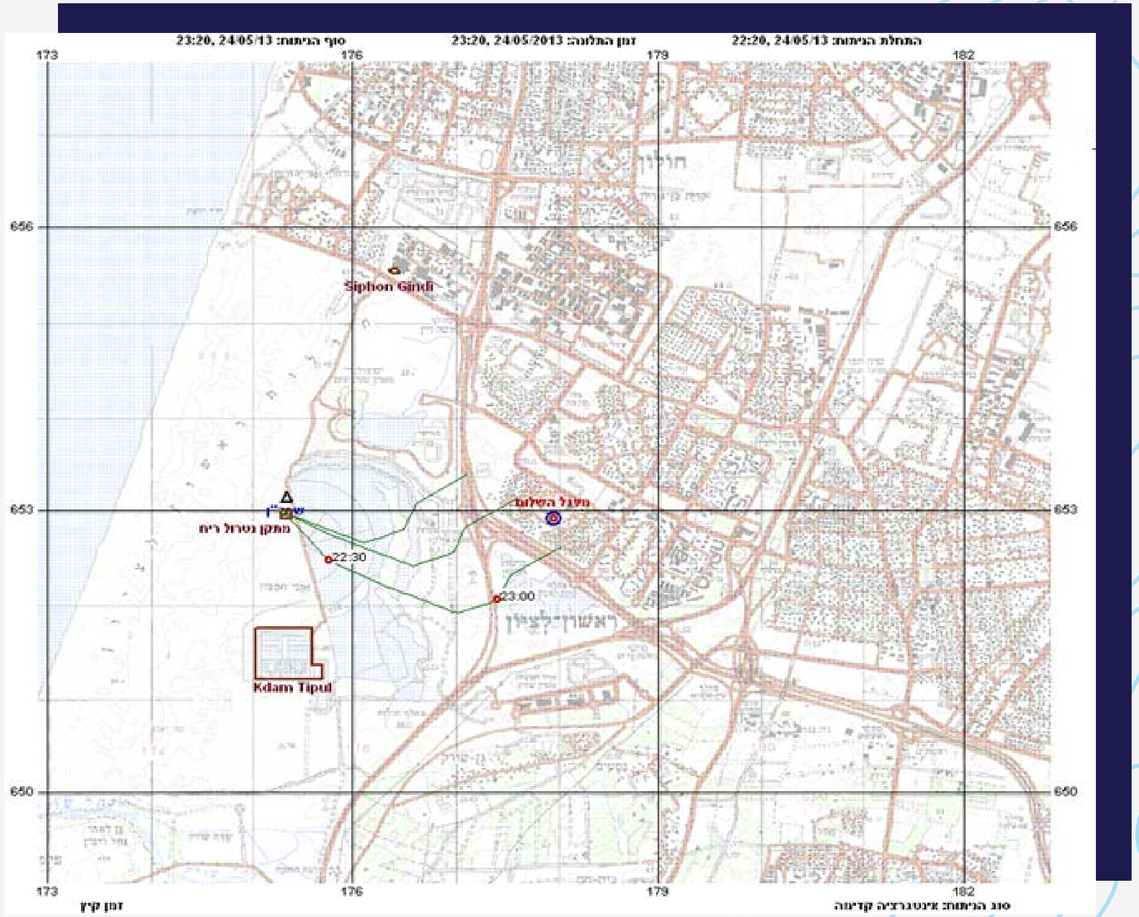
From the potential pollution site upon the computed emission time, calculated by the backtracking

Second trajectory:

From the potential pollution site **5 minutes before** the first trajectory.

Second trajectory:

From the potential pollution site **10 minutes before** its the first trajectory, and so on...



This demonstrates

THAT THE METEOROLOGICAL CONDITIONS

in the analysis area prevailing at the time of the incident occurrence

ENABLED THE TRANSPORT OF POLLUTANTS

from the potential pollution source to the complaint site

Conclusion: Stages of analyzing an air pollution incident using EnviWizard 1

01

Receiving complaint data and entering it into the system by the operator

02

Calculating airflow trajectories through back integration from the reporting site and identifying a potential emission source

03

Calculating airflow trajectories through forward integration from the potential emission source

04

Locating/Rejecting the potential source of the emission of pollutants that caused the odor nuisance

Conclusion:

The ENVIWIZARD 1 provides a rapid and real time analysis of odor and air pollution complaints/incidents and

Determines a **potential source of the air pollution as the cause of nuisance.**

Shows that the meteorological conditions enabled pollution transportation from the potential source to the complaint site for the time for which the complaint was reported.

Based on real time meteorological data collected from unlimited number of meteorological stations.
Succeeds in identifying specific emission (yet unknown) sources even if they are located closely by.

Detects new potential pollution sources suspected of the air pollution.

To negate the option that an emission source, that was suspected as the source of the air pollution, is the actual contamination.

ENVIWIZARD 1 ADVANTAGE OVER ALOHA:

The ENVIWIZARD 1 calculation method demonstrates a significant and very important advantage compared to the ALOHA calculation method:

Aloha defines the air trajectories based on wind data compiled from only one meteorological station

The ENVIWIZARD 1 bases its calculations on wind data measured in real time at the all available meteorological stations in the analysis are.

As a result, the ENVIWIZARD 1 provides a more accurate picture of the pollutant trajectories and enables better estimate the pollutant concentration in the real time compared to Aloha.

SIMPLE. CONVENIENT. QUICK. ACCURATE!

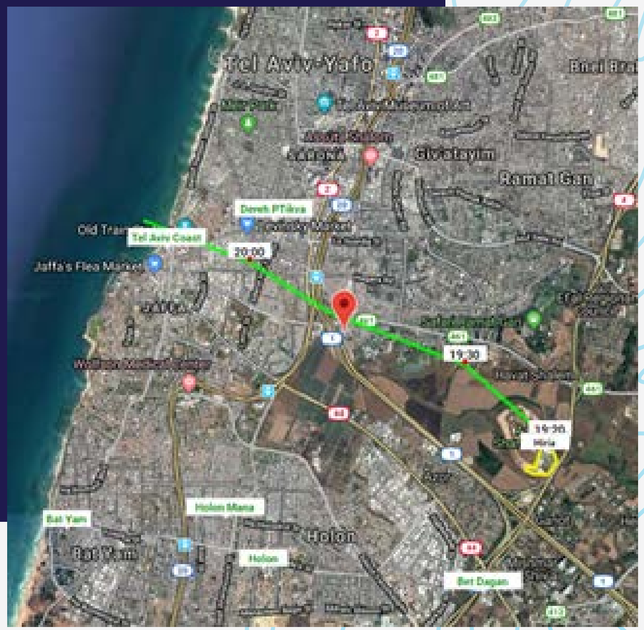
The system operates online on the internet and can be easily and simply operated by any subscriber in the field or at the office:

- On a Google Maps map
- Using Google Chrome and Microsoft Edge
- From any PC or laptop, smartphone or tablet with internet access.

There is also an offline version of the system, enabling:

- **Real time analysis**
- **Hindsight event investigation**





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T. 972-3-6160598 | **M.** 972-54-6490581 | **F.** 972-3-6184384 | **W.** www.meteo-tech.co.il