



SUITS

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Urban Traffic Monitoring through Crowdsourcing

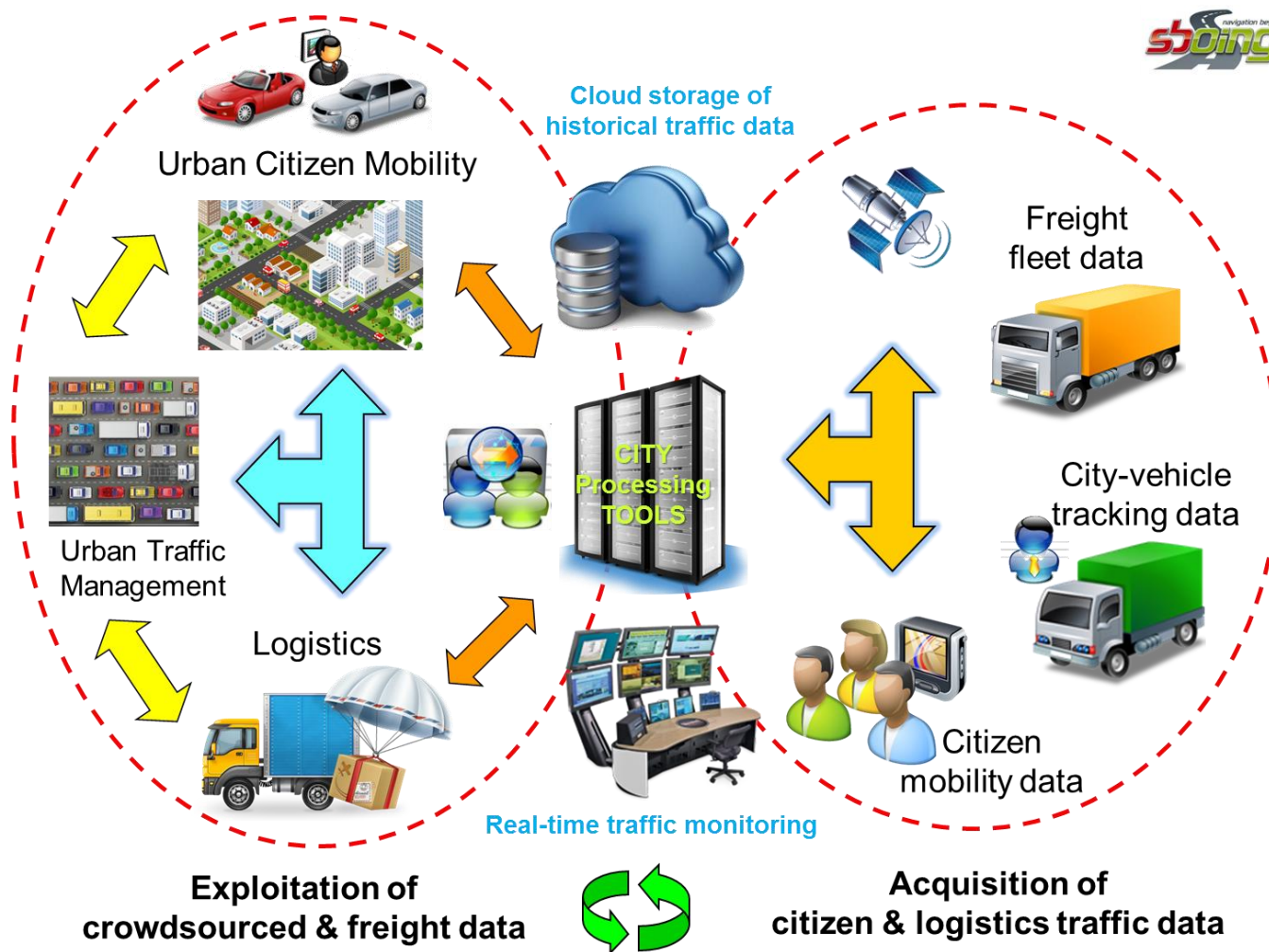
The Kalamaria Pilot

SUITS-TfWM Conference
Coventry, 21/11/2018

Dr. Fotis K. Liotopoulos, (SBOING)

SUITS Crowdsourcing Model for Local Authorities

- Integrating Citizen Mobility data & Logistics data



Data Collection & Visualization Tools

Data Collection & Visualization Tools

(by **SBOING**)



1. **sbCarNavi®**: Android app for crowdsourced traffic data collection
2. **sbUTracker**: An advanced GNSS+INS urban vehicle tracker (h/w)
3. **MyPolisLive.net**: A web platform for urban traffic monitoring and fleet management

Demo: Pilot in Kalamaria, with 50-100 vehicles (3-4 mo.)

sbCarNavi®:

Android app for crowdsourced traffic data collection



sbCarNavi®:
A GPS navigation app
for Android multimedia
consoles

Offline navigation and
traffic data collection
(*trace recording*)

sbUTracker:

A vehicle tracking device for Urban Mobility Monitoring



Arduino Mega256 (16MHz) microcontroller: 256KB flash, 16 analog / 54 digital I/O pins, 8KB SRAM, 4KB EEPROM

+



Multi-GNSS + INS receiver

+



GSM / GPRS module

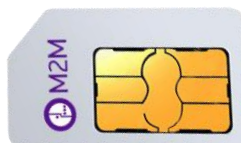
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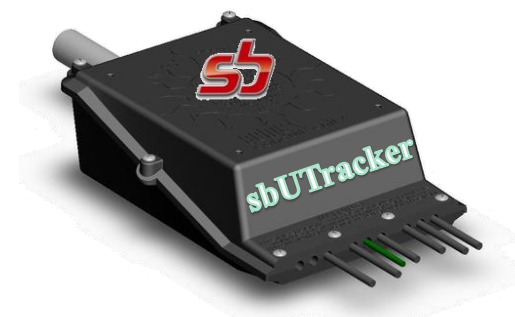
Bluetooth module

+



IoT / M2M SIM

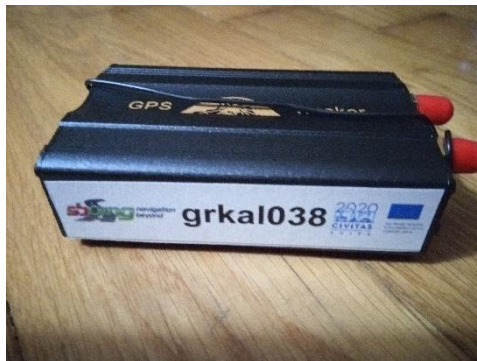
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CIVITAS / SUITS Urban Tracker

= ... our own, customizable and enhanced Urban TRACKER solution (**sbUTracker®**)

Urban Mobility Tracking Pilot in Kalamaria (Greece)



❖ 50-100 vehicles with commercial GPS trackers

- Selected a commercial GPS tracker: TK103B
- Cost: ~50 euro/unit

❖ Pilot Management

- Participating users were invited by public invitation, (first-come-first-served)
- Special invitation to user groups with preference to TAXI companies.
- Participants get the tracker for **free**, if they contribute traffic data in the area of Kalamaria (incentivization).
- They pick up the tracker after they sign a consent form
- Coordinated with the City (Kalamaria).

❖ IoT / M2M SIM cards (cellular providers)

- Tried to reduce the communications cost, to make it a viable “tool”.

MyPolisLive.net:

A Platform for Urban Mobility Monitoring



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CLEANER & BETTER TRANSPORT IN CITIES

Securing a long-term reduction in urban road congestion is a major challenge for modern cities.

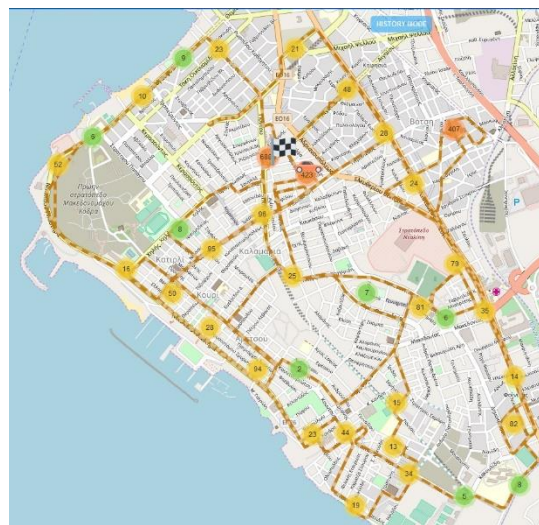
[GET STARTED](#)

MyPolisLive.net: Vehicle / Fleet Tracking ⁽¹⁾

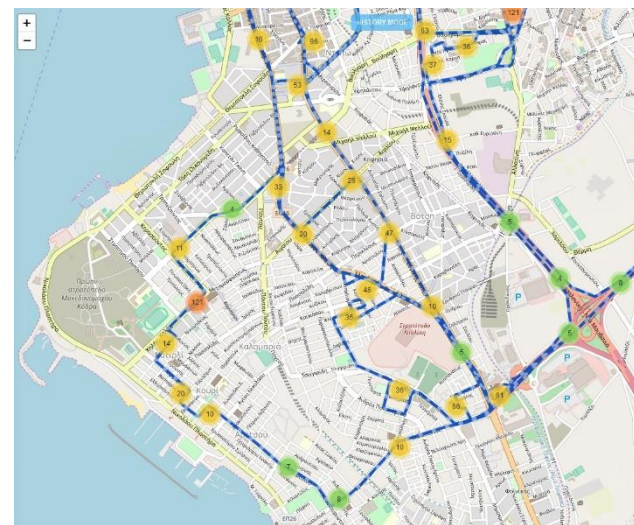
24-hour traces



Citizen vehicle



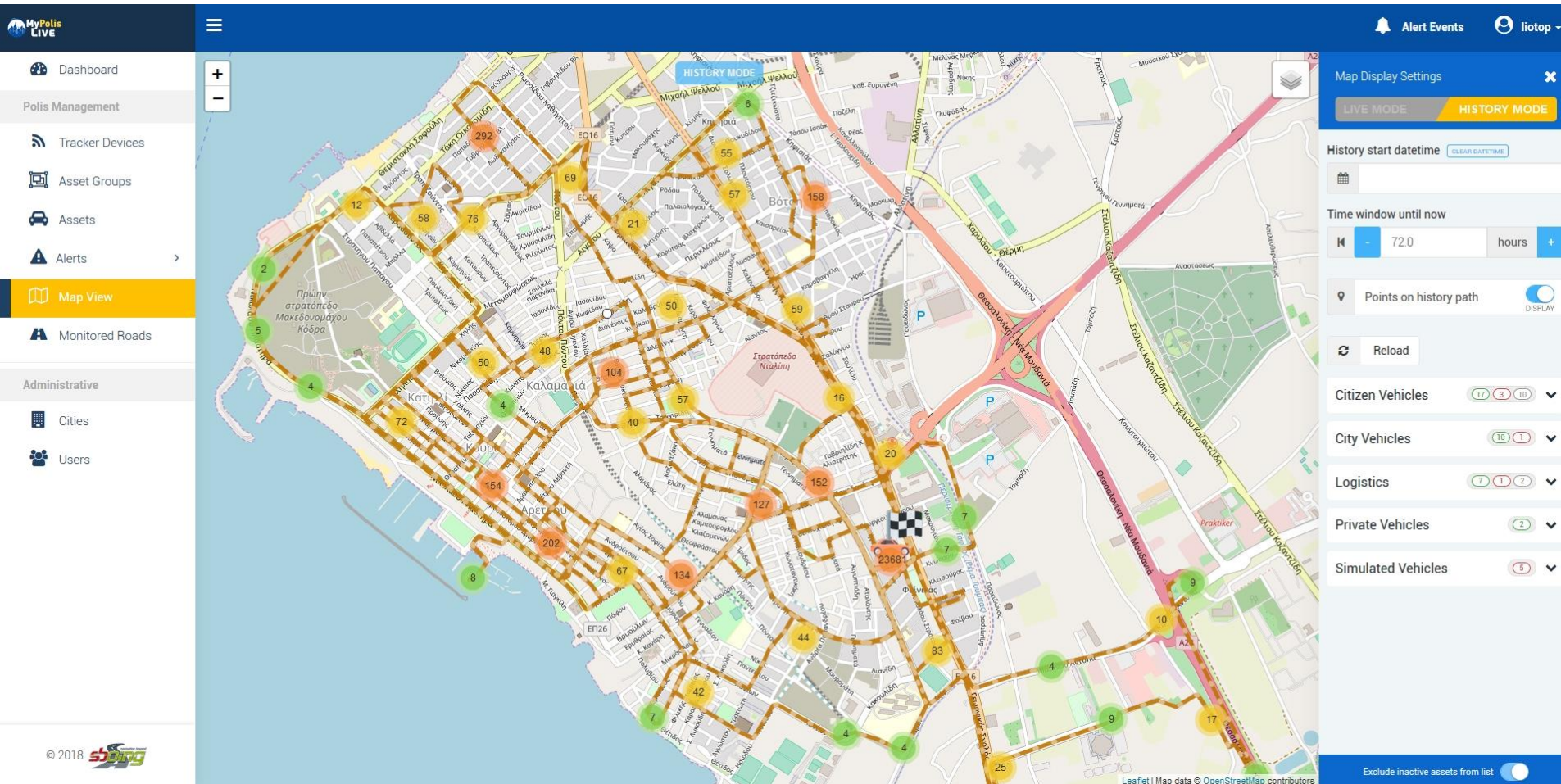
City vehicle



Taxi

MyPolisLive.net:

Vehicle / Fleet Tracking (2)

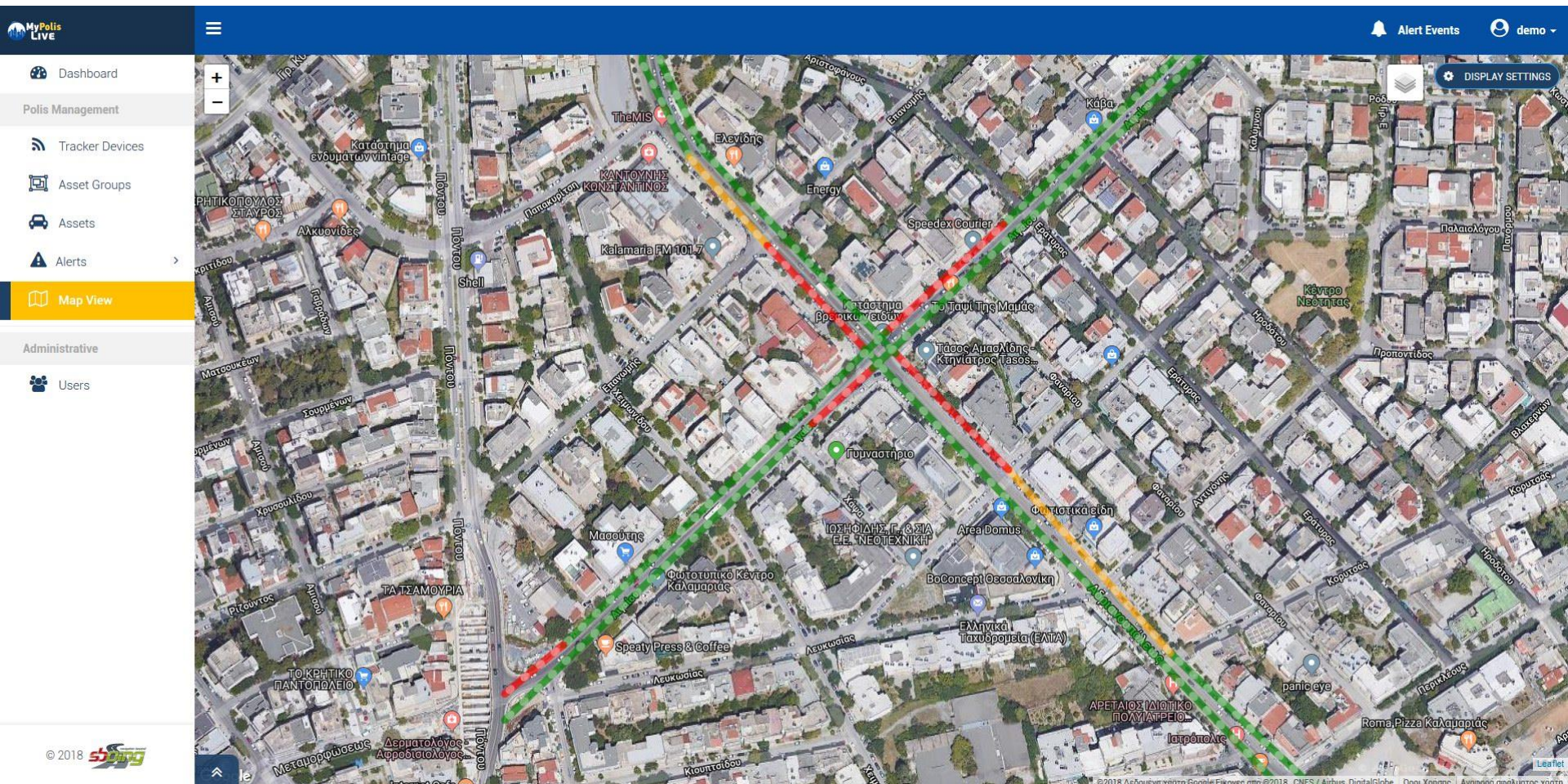


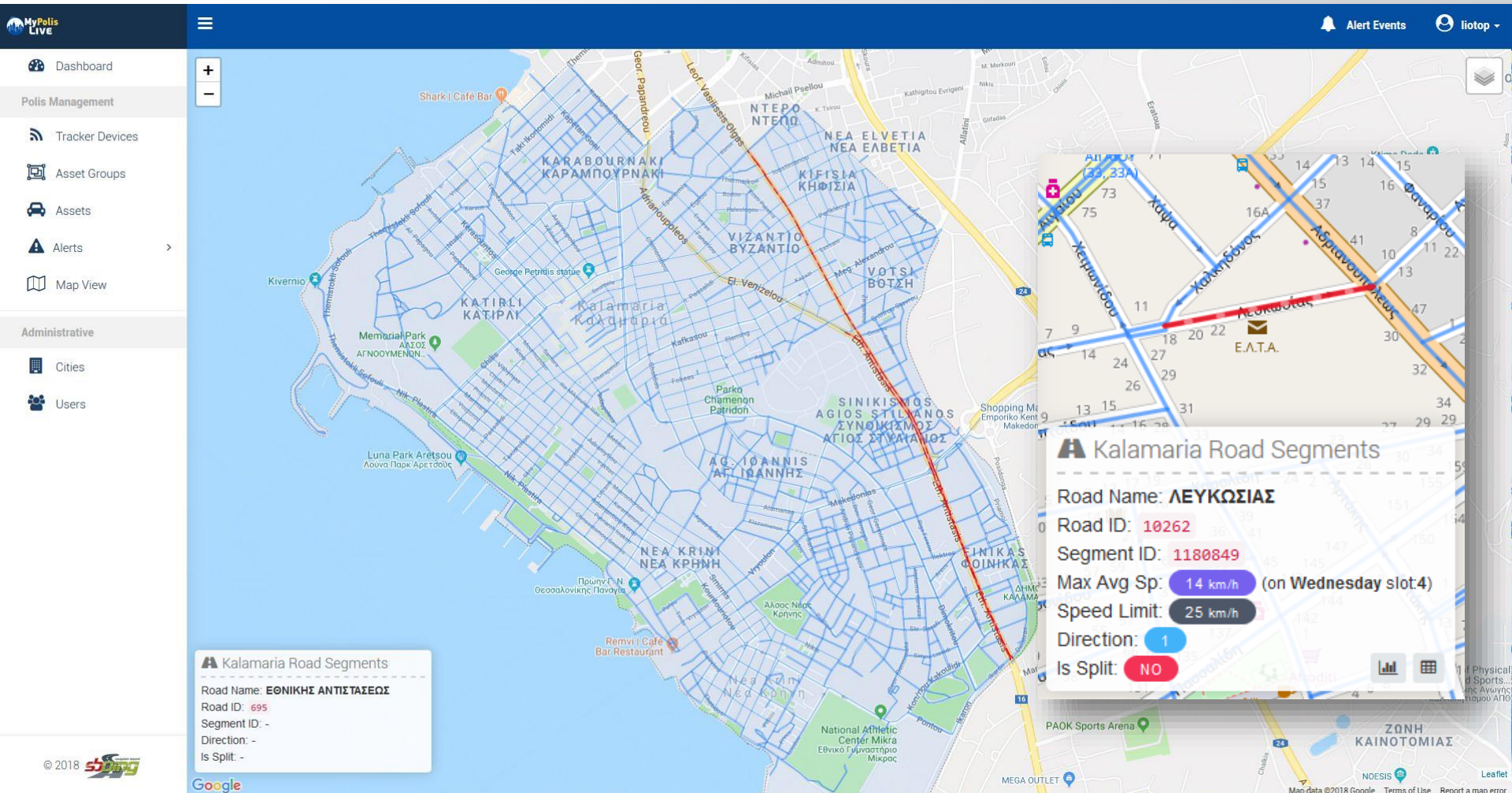
Urban Traffic Monitoring ⁽¹⁾

The screenshot displays the myFleet LIVE web application interface. The top navigation bar includes a logo, a menu icon, and an 'Alert Events' notification. The left sidebar contains navigation links: Dashboard, Fleet Management (selected), Tracker Devices, Asset Groups, Assets, Alerts, Map View (active), and Administrative (Organizations, Users). The main area shows a map of a city with a fleet of vehicles tracked in real-time. A legend indicates 'Live traffic' with a color scale from Fast (green) to Slow (red). The bottom status bar provides vehicle status (ONLINE), timestamp (2018-04-10 22:20:20), location coordinates (38.5897069°, 21.2359112°), and various sensor data: 126 km/h Speed, 4.4° Pitch, -6.7° Roll, 329° Compass, 22.31°C on-board temp, 21.25°C Temperature 0001a, and 45.19% Humidity 0001a.

MyPolisLive.net:

Urban Traffic Monitoring (2)





Speed distribution for SegmentID: **1187883** (ΕΘΝΙΚΗΣ ΑΝΤΙΣΤΑΣΕΩΣ)

Day of week

(Any)

From slot number

0 (from: 00:00)

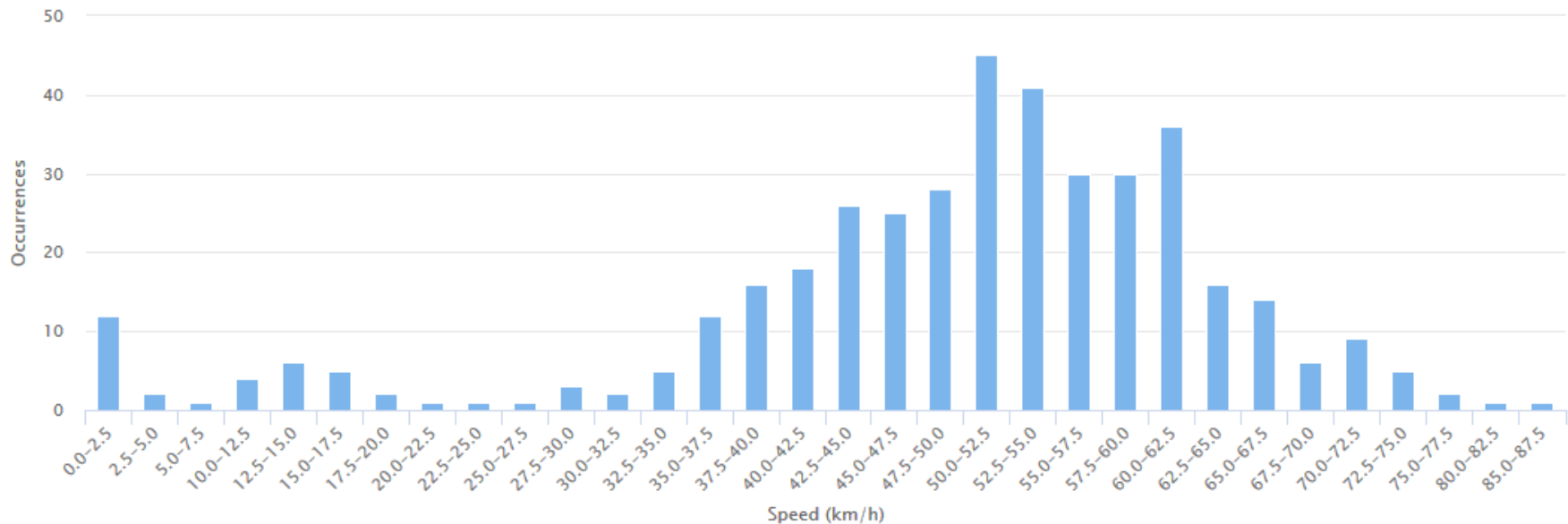
To slot number

287 (until: 23:59)

Reload

Speed distribution graph for SegmentID: 1187883

From slot 0 to slot 287



- Cities need their **own traffic data**:
 - ❑ Data ownership may yield profit!
 - ❑ Can be processed in several ways and produce a variety of useful results
 - ❑ More accurate and useful than traffic data provided by cellular operators
 - ❑ More rich and powerful than data provided from 3rd parties (Google, etc.)
- **Decision making** may be assisted by crowdsourced data for:
 - ❖ Urban traffic management and optimization
 - ❖ Improving citizen mobility
 - ❖ Optimizing urban freight logistics (efficient & timely distribution of freight in urban areas)
- Must provide **incentives** so that people adopt the concept of vehicle tracking!
 - ✓ Collaborate with **taxis** and **logistics** and offer them benefits for offering their tracking data
 - ✓ Promote the concept of crowdsourcing to **citizens** and offer them benefits, too.

Thank you!

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