Waste management and urban green sector

20 Years DOTSOFT
TECHNOLOGY + PROJECTS + SOLUTIONS

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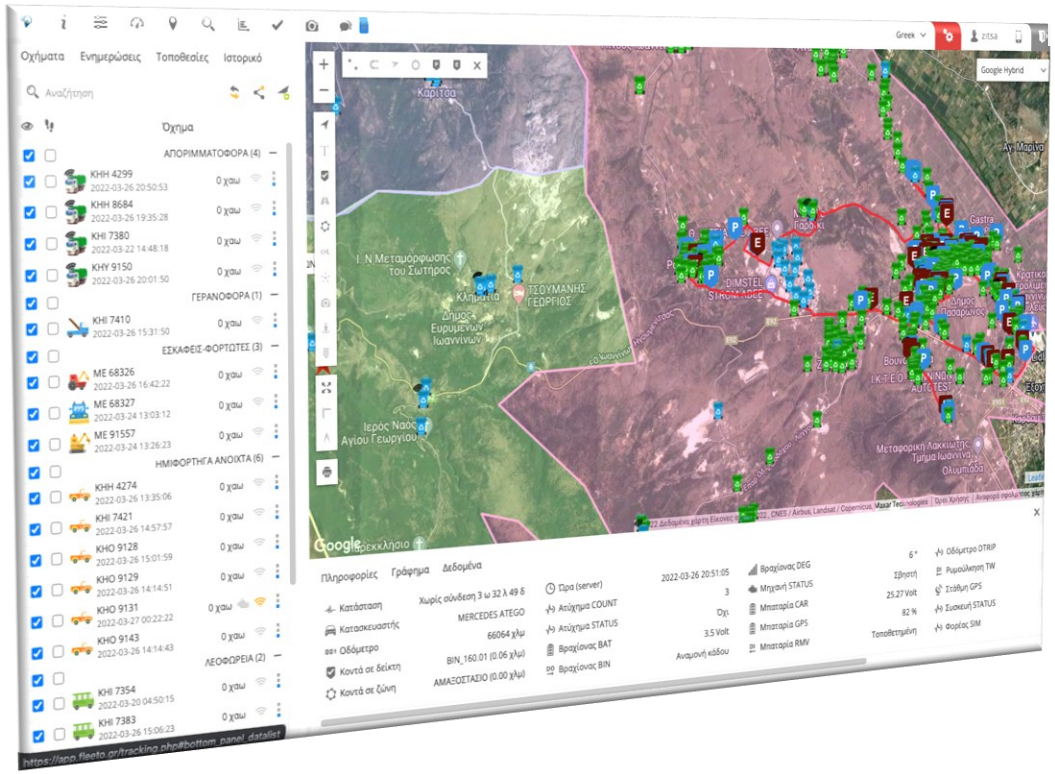
01 Waste collection vehicle fleet monitoring system

The ***Fleeto*** fleet management platform is a modern Geographical Information System that allows us to have real-time data of our fleet. It replaces traditional information tools with a modern and easy-to-use geospatial database that includes automation of data recording and updating in order to contribute to the service and information of citizens, to save resources and to increase the productivity of the services through the efficient management and exploitation of the fleet.

Via the platform we have:



- ✓ Live image from the field
- ✓ Real-time positioning
- ✓ Route optimization
- ✓ Playback of route history
- ✓ Automated notifications of waste collection vehicles, accident involvement, area entry/exit updates
- ✓ Generation of reports with travel time, kilometers travelled and stop duration of selected route

Get the exact positions of your vehicles, the speed at which they are travelling, the direction and the route they have taken.

02 Real-time weighing system of waste containers using weighing devices on waste collection vehicles

- ✓ Platform update for vehicle occupancy
- ✓ Display of bin's weight during collection
- ✓ Graphical display of vehicle capicity
- ✓ Real-time update of overweight vehicle
- ✓ Wireless transmission of weight data

Reducing the environmental footprint as well as providing relief to households requires charging based on the weight of waste generated per household or business.

In the weighing & identification system each bin is identified and weighed when it is emptied. Each bin is linked to one or more households and has a unique identification code. The code is identified and recorded during the process of emptying the bin by the waste collection vehicle. The location, weight and bin identification data are sent on-line to the telematics platform.

03 Problem logging system during waste collection

The employees of the sanitation department will be able, with the push of a button, to report problems they encounter during collection and/or issues that are within the jurisdiction of the Sanitation Department (e.g., broken bin, points with repeated overflow, bins that require washing, points that require intervention of the traffic police due to illegal parking, etc.).

The purpose of integrating the solution into the operations of the organization is to strengthen the existing structure of coordination of fleet operations and the establishment of an intelligent incident reporting system, in order to provide the best possible service to the citizen as well as the monitoring - optimization of daily problems.

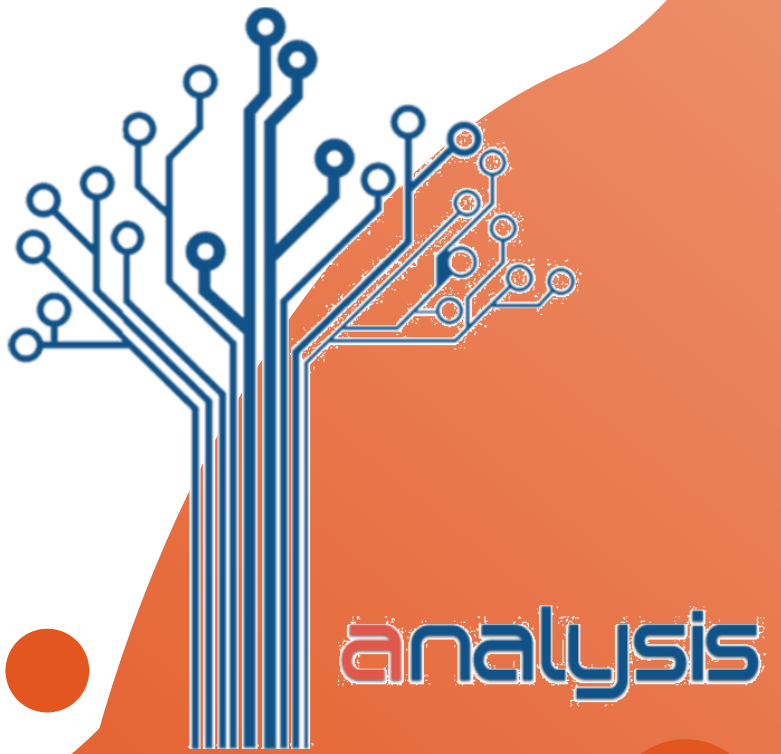
Platform updates for (examples):

- ✓ Point with a broken bin
- ✓ Point with overflowing bin
- ✓ Point with an obstruction to bin collection
- ✓ Point with bulky waste

04 Heavy object management application (bulky items)

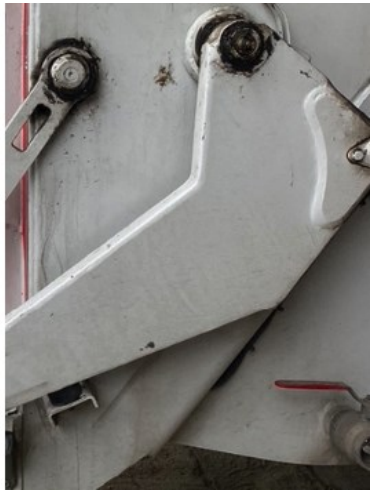
Improve the logging of city sanitation problems by the supervisor for incidents within his/her responsibilities through the use of a button device or app.

- ✓ Digital recording, bulky debris & demolition products, washing, repair & demarcation of bins, abandoned cars & two-wheelers, removal of posters & banners, cleaning of uncovered plots
- ✓ Digital reporting of shortages for tools and materials related to the equipment used by the Sanitation Department
- ✓ Establishment of an intelligent incident reporting system for the service and reinforcement of the existing structure for coordination of fleet operations
- ✓ Interface with existing or subsequent systems for managing citizens' requests
- ✓ Providing a daily work log and production control report with electronic forwarding to the Cleaning Office to which they belong



05 Mapping and monitoring of waste collection vehicle routes and their optimization

- ✓ Automated logging and integration of bins into the management platform
- ✓ Real-time recording of collections
- ✓ Counting the number of collections by bin type & by sector
- ✓ Recording of collection location and time
- ✓ Reports of received bins by sector and waste collection vehicles
- ✓ Updating of bin location change
- ✓ Recording of total number of available bins



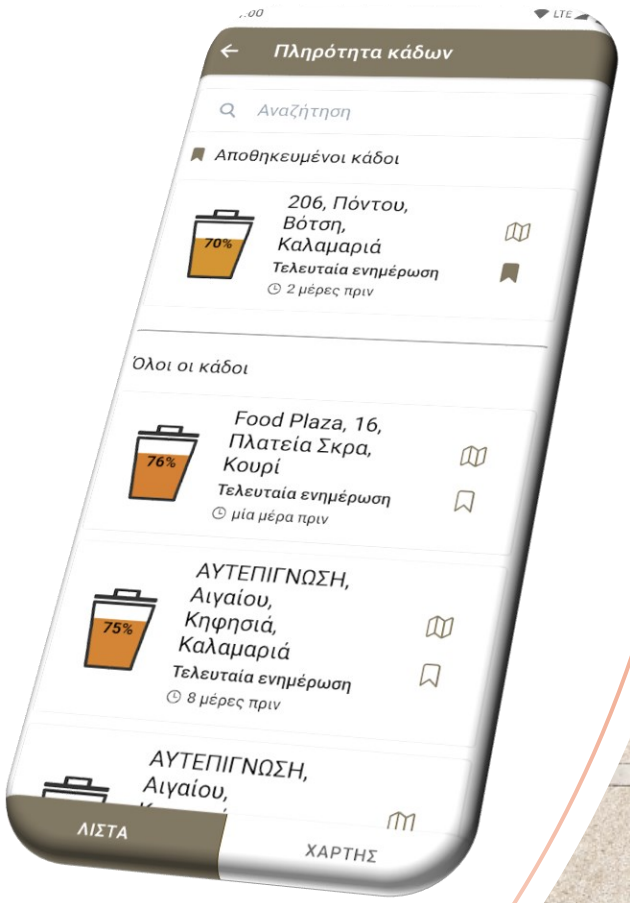
Increase parking spaces and reduce collection time!

The wide spread of bins reduces parking spaces and increases collection time.

Arbitrary placement, movement, and capacity of bins can dramatically increase both the time and cost of collection. Also, the unplanned placement of bins creates huge daily problems that even affect the health of citizens.

The collections and the location of the bins are visualized on the fleet management platform so that an objective placement of the bins is possible, which will scientifically document the number and size of the bins needed, the number of routes and the sizes of the waste collection vehicles.

06 Application for informing citizens about waste containers fullness



1. The app includes all the information concerning citizens
2. Accessible from a PC, mobile phone or tablet
3. Real-time updates on the capacity of bins
4. The citizen is notified on his/her mobile phone
5. The citizen can send a request to the Municipality for the collection of waste
6. The citizen is informed when the waste collection vehicle empties the bin

07 Routing application of waste collection vehicle drivers using in-vehicle tablets

The dynamic display of routes using a tablet can significantly help the efficiency of drivers for the optimal use of routes and the notification of current incidents.

The optimization of municipal waste collection in an urban area by dynamically displaying the routes in the driver's cab results in a reduction of collection costs while at the same time improving the routing of the waste collection vehicles.

Achieving the objective may include running unknown collection routes by all available drivers, minimizing the overall transport costs, minimizing the difference between the longest and shortest route in order to achieve a workload balance between drivers.

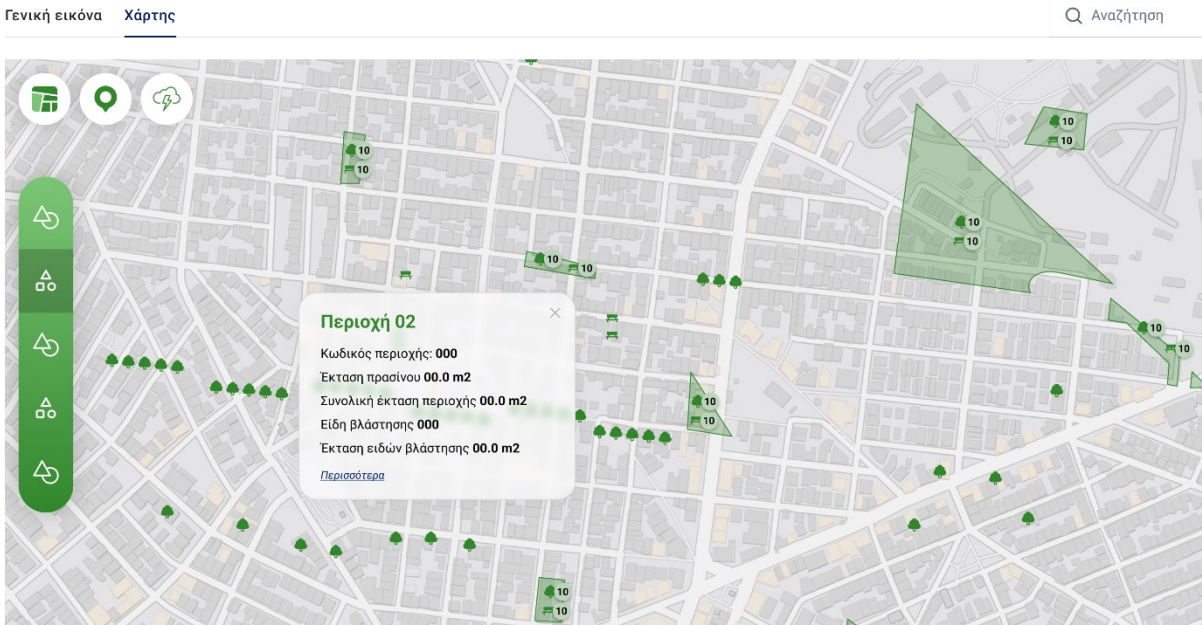
- ✓ Routing of drivers to collection points by sector
- ✓ Informing drivers about the collection points for the bins
- ✓ Informing drivers of the start and end of collection
- ✓ Informing drivers of remaining bin collection points

08 Smart management and maintenance app of urban green infrastructure using sensors

- ✓ Inventory of green spaces
- ✓ Vegetation inventory by green space
- ✓ Inventory of urban equipment per green space
- ✓ Monitoring of data from sensors per site (e.g., environmental data, soil moisture, etc.)
- ✓ Remote management of devices installed in green spaces (e.g., irrigation)
- ✓ Management and monitoring of maintenance and work orders

The information integrated into the platform leads to the creation of an all-round system for the effective management of urban green spaces.

The result is an intelligent and integrated management system that monitors and regulates all activities related to the management of urban green spaces, maximizing the ecological benefits.



09 Monitoring application for use of Personal Protective Equipment (PPE) among the staff of Municipality

Personal protective equipment (PPE) is the equipment that workers use to protect themselves from hazards that can cause injury or illness in the workplace. Using the platform, it is possible to monitor the correct use of Personal Protective Equipment (PPE) using Internet of Things (IoT) proximity technology sensors.

- ✓ Strengthening the safety of workers in various sectors
- ✓ Awareness-raising on the non-use of PPE
- ✓ Enabling automated Push notifications procedures on mobile phone
- ✓ Reducing the exposure of workers to risks
- ✓ Addressing risks that cannot be reduced by technical or administrative means
- ✓ Instant notification of non-use of PPE

Innovative Management and Monitoring System for the use of Personal Protective Equipment (PPE) in workers using proximity technologies

Thank you!

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