GlobiLED
LED ΦΩΤΙΣΜΟΣ
We make light

LMS
Light Management Software

The Light Management Software (LMS)

GlobiLED is the developer of a powerful, robust and fully certified Tele-management System for LED Street Lights. The system is comprised of the following structural parts:

## The Light Management Software (LMS)

The intelligent Wireless Management Nodes, GlobiNode and GlobiNode2

The GlobiLED Wireless Controllers (GWC)

The LMS is a cloud-based (accesible by any web browser and updated automatically via cloud in greek/ english language) or stand alone (Server based) application software (for smartphones and tablets) (both options are available), compatible with Windows, Linux operating systems. LMS gives its authorized user/ operator (based on its access rights and role, as defined by the LMS "User Management" function - RBAC) the capability to manage, control and monitor ,at the same time, individual LED Steet Lights or groups of LED Street Lights, via commands which are transmitted with a wireless link to many different Wireless Management Nodes (WMNs) type "GlobiNode" and "GlobiNode2". These commands and the information gathered from the LED Street Lights, stored in multiple databases. WMNs monitor and control LED Street Lights either via an IEEE 802.15.4 ZigBee wireless link or via controlling and monitoring the power network lines (centrallized management mode). In the first case, the LED Street Lights must be equipped with the GlobiLED Wireless Controllers (GWCs) and the LMS supports all control signals/commands supported by the GWCs, as described in the datasheet of the LED Street Lights. GlobiNode2 monitors and controls the (LED) Street Lights only by controlling and monitoring the power network lines (centrallized management mode). LMS exchange Data (Read and Write) in real-time with individual LED Street Lights or groups of LED Street Lights via WMNs (Mode of operation and dimming level, Time and Dimming schedules, Real Time Clock (RTC), Geographical coordinates, Functional state, Operating hours, electrical and energy consumption parameters, (i.e. hours, V, I, PF, KWh,etc).

NB-IoT
Street Lights equipped with NB-IoT (Narrowband IoT) module can also be managed by the LMS. In this case each street light communicates directly with the LMS, providing greater speed and reliability. Lms can perform the same functions (on-off, dimming level, schedule etc) directly to Street Light without the intersection of the node and street Light can directly send alarms to Lms.
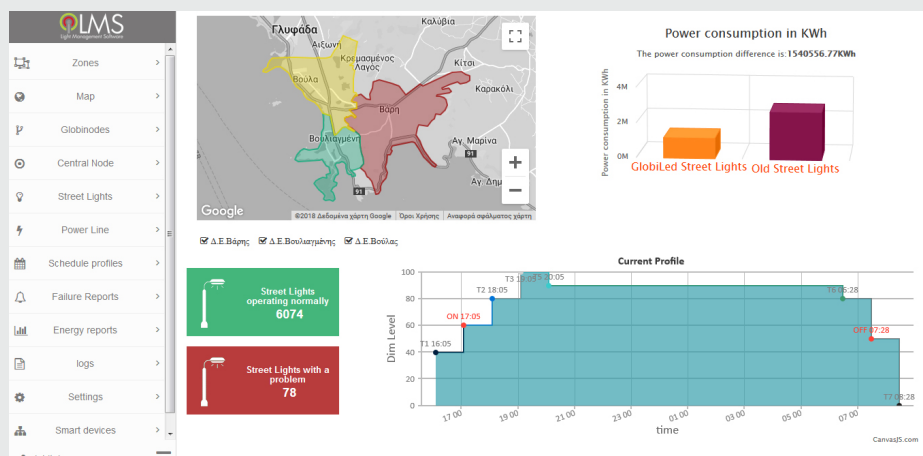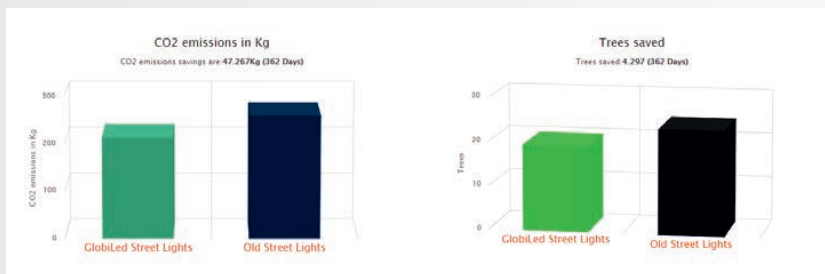

The data communicated between the LMS, GLOBINODE, GWCs are protected by security protocols and data advanced encryption (AES - 128)

Based on a set of smart commands and by synchronizing its database with the database of the WMNs, the LMS can generally:

Monitor, manage, control and modify (read/write) all parameters of the all WMNs. In this context, the user of the LMS can select/create individual LED Street Lights or groups of LED Street Lights and define modes of operation to the WMNs of the Street Light Network. When the Zigbee wireless interface is employed between the GlobiNode and the LED Street Lights, the user of the LMS may also define a different mode of operation for individual LED Street Lights or groups of LED Street Lights.
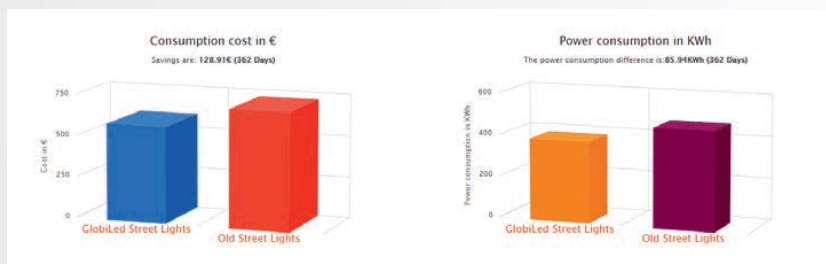
Provide historical data and current information, and creating function-based reports and statistics in selected time frames (in chart and table format) related to alarms and energy/costs/CO2 emissions/tree savings. Dynamic configuration of reports and alarms, according to the needs of the user, is also possible. Also LMS can export data to other systems via interfaces application programming (API).


Provide warning indications on a street map for possible failures of the LED Street Lights or the WMNs, optimizing in this manner the maintenance policy and the relevant costs.
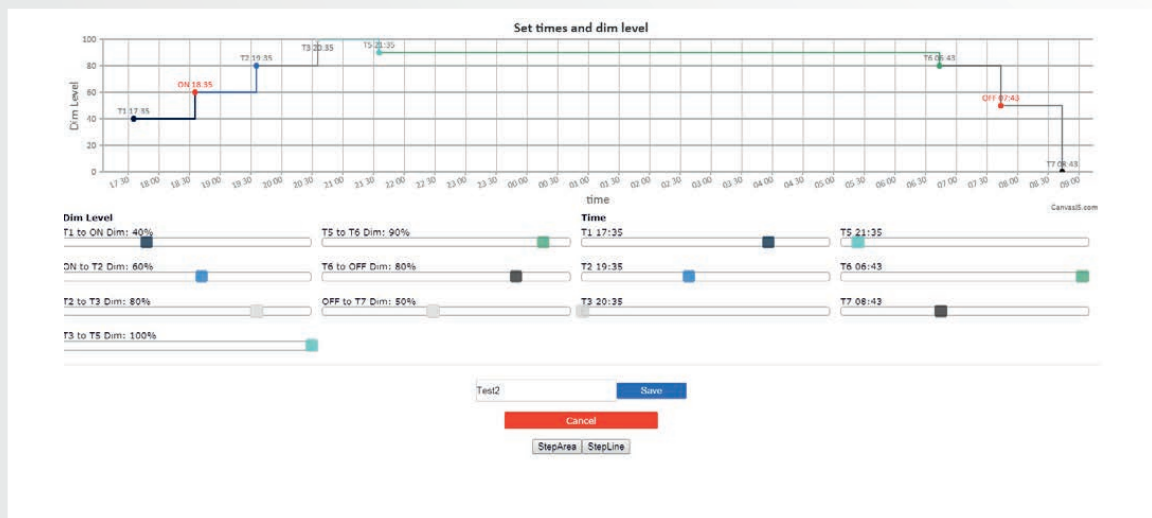
Failures and Alarms notifications appear separately with distinct coloring and can notified to the operator(s) via e-mail and/or SMS

Implement to individual LED Street Lights (wirelessly, via GlobiNode, when the Street Lights use GWCs) or groups of LED Street Lights (by controlling the power lines, either using GlobiNode or GlobiNode2) the desired mode of operation, optimizing in this manner the energy savings.
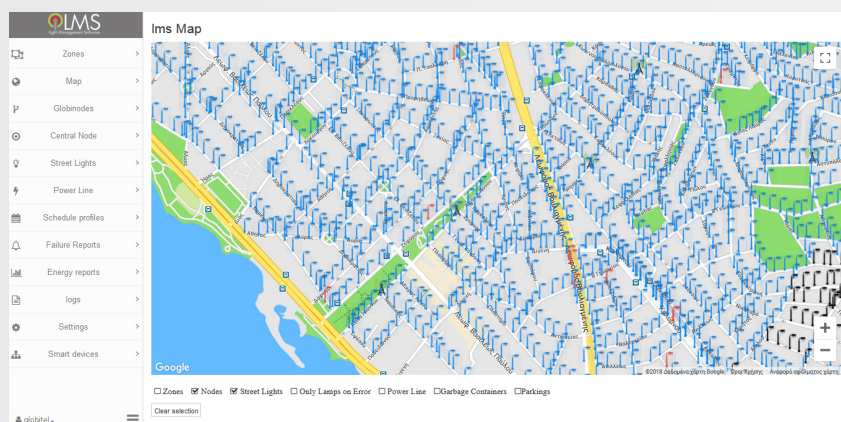
Modes of operation that the LMS can set the LED Street Lights via the WMNs (GlobiNode or GlobiNode2), operating in centrallized management mode.

✓ Photo-sensor mode (a photo-sensor can be located at the WMNs and the power lines switch on/off automatically with respect to a programmable threshold).

✓ Sunrise-sunset mode (i.e. the power lines switch on/off automatically at the sunrise/sunset time, respectively, on a daily basis).

✓ Fixed (dim) schedule mode. This (daily) schedule is comprised of up to 10 time-points and at each time-point the power lines can be programmed to switch on or off automatically. The 10 time-points and the mode of operation at each time point (on or off) are dynamically configurable by the operator of the LMS.

✓ Manual (real-time) On Mode : for individual LED Street Lights or groups of LED Street Lights
Manual (real-time) Off Mode : for individual LED Street Lights or groups of LED Street Lights

✓ Flash command : Real-time set of the LED Street Light in flashing mode, in order to indicate danger or alarm

Emergency mode

Schedule mode

Data exchanged (Read and/or Write) in real-time with the WMNs

✓ The mode of operation of the LED Street Lights and its parametrers, as described in the datasheets of GlobiNode and GlobiNode2

✓ The Real Time Clock (RTC)

✓ The geographical coordinates of the WMNs

✓ The functional state of the WMNs and of the LED Street Lights

✓ The power network electrical and energy parameters

Map

The LMS displays all WMNs and all LED Street Lights on a street map (Google Streets,Google Satellite, Google Hybrid, Open Street Map) and provides messages and indications (popup windows) related to their technical characteristics, functional state, mode of operation, power network connections, etc. In this manner the monitoring, management and maintenance of the LED Street Lights network is simplified.

Fault Detection & Alarms

The LMS can identify the faulty LED Street Lights or WMNs, indicate the possible type of failure [e.g. Zero or reduced energy consumption (burned LEDs), LED Driver fault, RTC shift error, Network connection problem, etc.], and the exact location of the faulty equipment (WMNs or LED Street Light) on a street map. Moreover, it provides notifications whenever certain maintenance milestones are reached (in terms of operating hours), which may be defined and set by the operator of the LMS. Faults and Alarms notifications appear separately with distinct coloring and can notified to the operator(s) via e-mail and/or SMS.
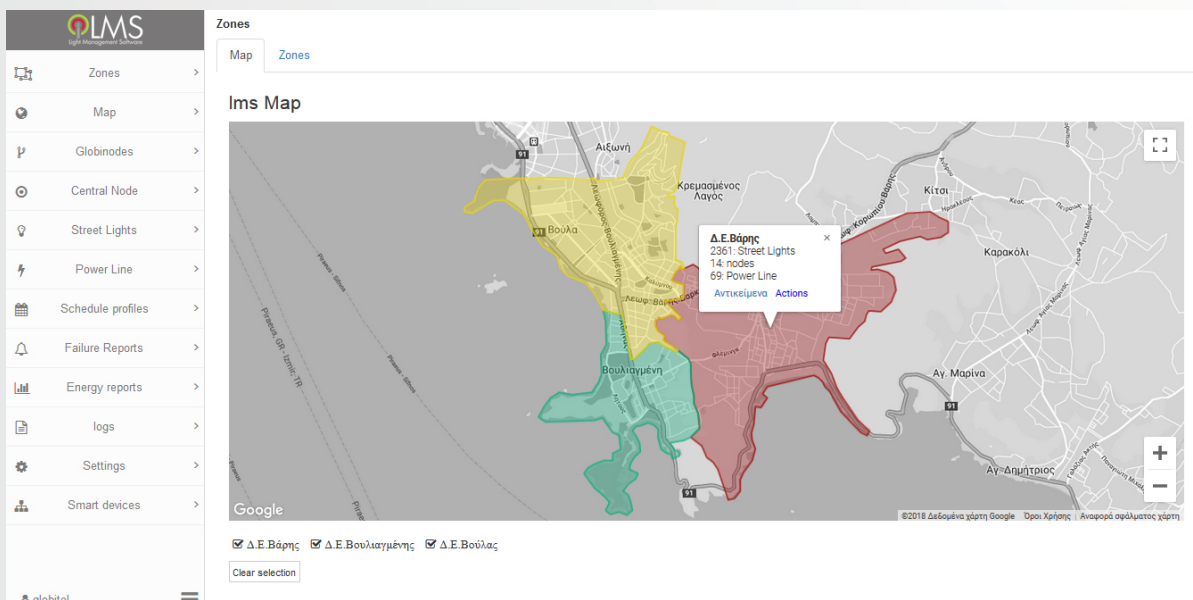

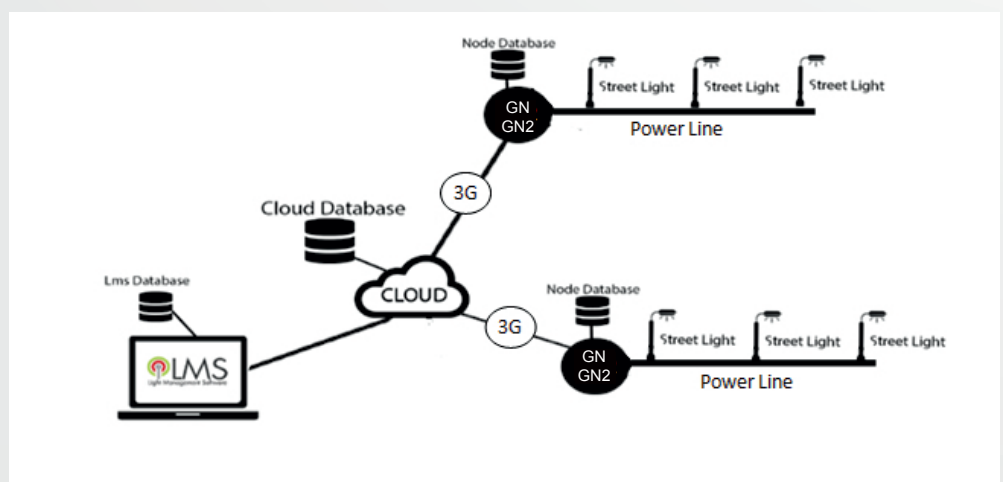**GlobiNode**

GlobiNode2

The Computerized Maintenance Management System (CMMS)

Part of the LMS is the Computerized Maintenance Management System (CMMS) which is an application developed by GlobiLED for the special needs of managing and organizing any kind of maintenance tasks and repairs of systems and equipment related to Smart Cities applications. For more details refer to CMMS datasheet.

LED Street Light Wireless Network
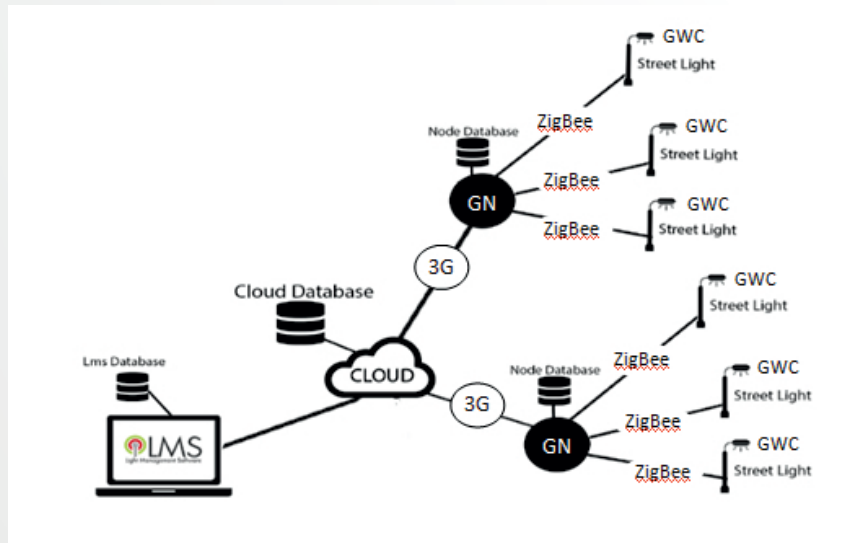
LED Street Light Power Line Control Network

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