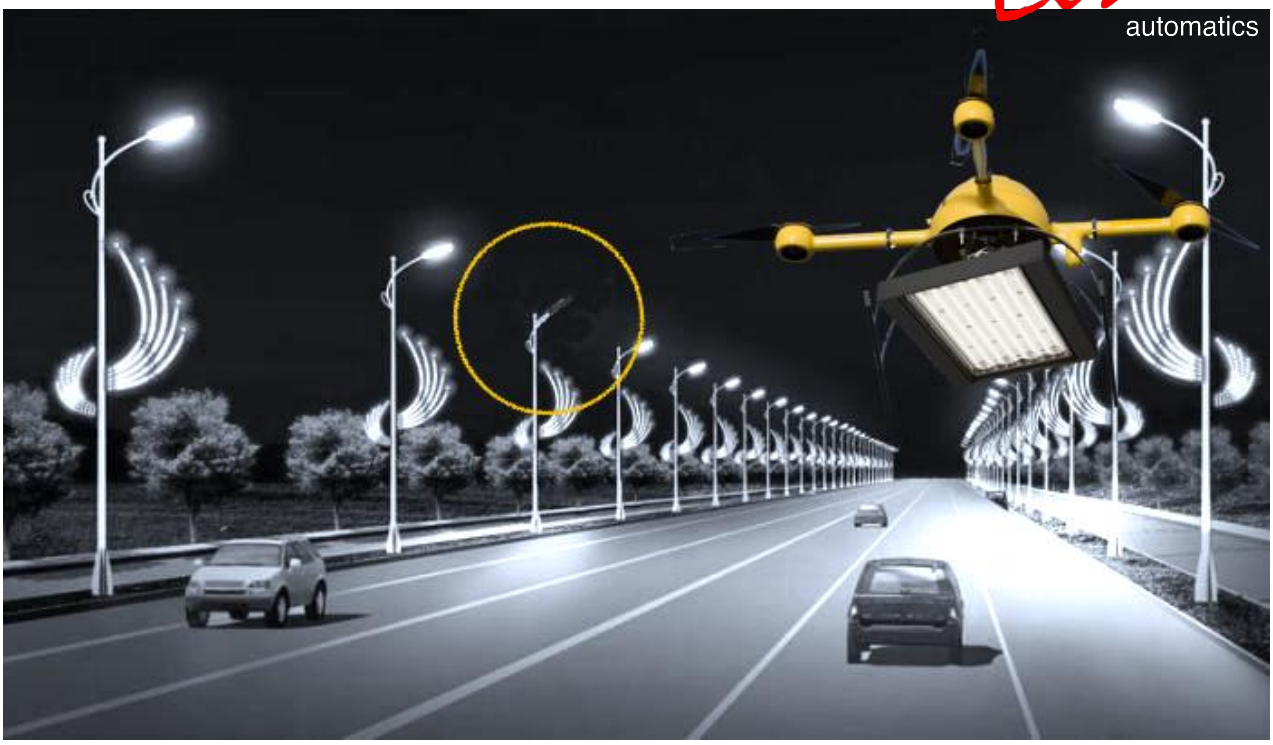
Eireen automatics



A platform-chassis solution for smart city's street lights

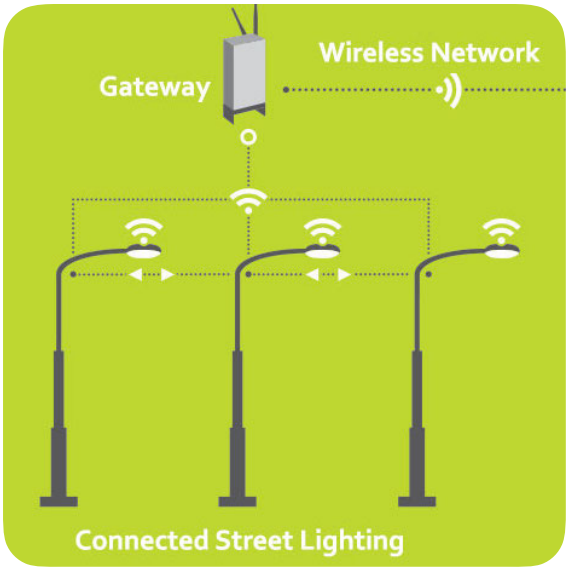
fast unmanned maintenance • upgradability • power efficiency

A unified street light platform which allows performing automated repairs and upgrades done by UAV (drones) will provide a cheap and fast street light maintenance and will serve as a platform for the development of a smart city.

ISSUE

1. A move toward smart-cities

Top performing cities are constantly upgrading its infrastructure in order to meet the demand for higher living standards. Citizens tend to ask for safer and more comfortable surroundings for their families. Meanwhile, many technologies are evolving to provide us with a wide range of tools to meet those demands.



A successful project was implemented in Monheim (Germany). Old street lights were replaced by GSM-connected, highly efficient LED lights. Major savings came not only from reduced electricity consumption but also from dimming of lights at times when streets didn't have any traffic or pedestrians. Additional benefits also included automatic reports that came from any particular lamp if there was a failure which in turn eased maintenance.

(Source: GSMA Smart-cities guide. Street Lighting)

City lighting is an important element that influences on our perception of safety. However, too much light on the street could be harmful as well.

Increasing complexity of city infrastructure creates new requirements for hardware of the infrastructure such as wireless internet access, traffic and pedestrian presence sensors and parking availability sensors just to name a few.

> *To keep street light infrastructure operable municipalities have to develop feedback systems where citizens can report street light failures. There are certain difficulties assosiated with pole identification, especially on highways that are away from pedestrian walkways.*

The key to having a sustainable smart city is having decreased dependence on labor as well as increased infrastructure «self-healing» procedures done by automated systems.

2. Thinking green and efficiently

Less pollution means more comfortable and sustainable environment for living. Pollution caused by electricity wasted on lighting causes more greenhouse gas emissions. Pollution from light itself should also be taken into consideration since it may harm not only human beings but entire ecosystems as well.

> *In 1999 the city of New York aiming to increase power efficiency started to replace its 400 Watt lighting units for more efficient 250 Watt ones. By 2007 about 60 000 of street lights were replaced. Furthermore, from 2007 till 2009 there was a further 82 000 lamp replacement. Conversion to lights with lower wattage has reduced energy consumption and as a result minimised greenhouse gas emissions as well as decreased upward lighting. (Source: Green light. Sustainable street light for NYC)*

Spending on street lighting is a considerable expence for any municipal budget. In order to increase energy efficiency of street light local authorities have to replace an entire lamp fixture. The same issue exists when taking LED light efficiency into account. During the past 10 years efficiency of LED lights increased as much as 60% from 185 to over 300 Lumens per Watt. Therefore, in order to improve street light efficiency further municipalilies have to replace the entire LED fixtures again.

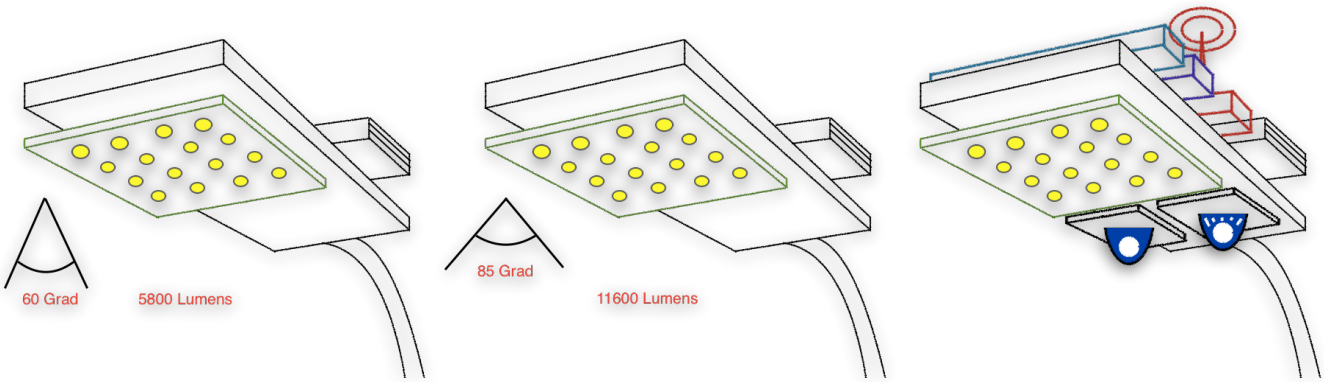
For the most part current LED lamp solutions mostly do not provide flexibility in maintenance, upgrades, and light management.

There are multiple LED lamp solutions that are not monitored directly from the center hence repairing them in the field is an extrimely difficult and time consuming task.

SOLUTION

A new sophisticated platform-chassis for street lights developed by Eireen Automatics allows:

- Creating a unified street lamp with easily interchangeable components



The architecture of a new street light is based on standardized components with different characteristics that can easily be combined together to meet owner's needs.

A product customized for a particular customer's need will be a street light build on LED board of desired light power and distribution which will be coupled with suitable power module (driver) picked based longevity of use as well as outside temperature criteria. It will feature a particular control module for desired functionality and will have an option of additional traffic/pedestrian or other types of sensors attached.

There will no longer be a need to replace an entire head when more efficient LED chips or more reliable drivers are invented. Components designed on a common platform will be replaced without a hassle. It will be as easy as to replacing an incandescent light bulb in your bedroom lamp.

- Performing an unmanned repair by drone

One of the major advantages of a new platform is its ability for «self-healing». Most of maintenance operations are done by a drone equipped with a special tool. Most of the routine maintenance operations like exchanging a short-circuited LED module or power block, upgrading a control module or adding a new sensor block - are done quickly and efficiently.

- Adding new features whenever there is a need such as pedestrian and traffic sensors, wireless network stations, parking slot sensors, etc

The platform comes future development ready which is achieved by having a universal slots for extensions.

PROJECT STATE

Team

A core team consists of five professionals with assigned roles.

Alexey Leshchev, Founder, CEO (full-time). A visioner, an owner of several patents. A founder of a company that resides in Skolkovo Innovation Center (Moscow).

Viktor Elkin, Business Development Manager (full-time). An MBA degree from HULT (Boston, MA). Business owner, experienced senior manager.

Alexey Lubimov, Project Manager (part-time). A certified project manager professional with a master's degree from IzhSTU (Russia).

Olga Rodnikova, Engineer (part-time). A Master's degree from Moscow State Technical University named after Bauman. Participated in several projects of developing LED street lights as a Lead Engineer.

Alexander Kalachev, IT Engineer (part-time), deeply specializes in microelectronics and processor chips, have an extensional experience developing wireless networks in wast number of applications.

We are open to new members who can significantly contribute to the development of the project. Please, e-mail us directly at elkin@uralremmash.ru with related inquiries.

Product

A concept of a project was thoroughly defined. The base blocks of the system were configured. As of February 2018, the team's engineers are working on platform detailing while others are directing their efforts toward business communication. Currently, we are in the process of establishing strategic partnerships with Russian LED light manufacturers.

Financing

As of today, all the investments have been done solely by co-founders. To accelerate the project development the team is looking for an initial investments about $200 000. According to the financial plan, this amount will be sufficient to build a prototype and finalize a series of tests. Please, contact Viktor Elkin directly by e-mail: elkin@uralremmash.ru or by phone #: +1 (617) 800-9985