

LoRa® STREET LIGHTING REMOTE MANAGEMENT & SMART CITY PLATFORM

December, 2017 | Version 1.0

inteliLIGHT LoRa® Streetlight Control Solution deployed in Szada, Hungary

Flashnet inteliLIGHT® LoRa® streetlight controllers using Kerlink Wirnet™ Station LoRaWAN™ gateways are successfully installed in the proximity of the Hungarian capital, Budapest.

The location and context

Szada is a small town, with a population of about 5000, located 25 km from Budapest, the capital of Hungary. The most important local activity has been agriculture for centuries, with a twist towards vine growing in the last years.



Thanks to its proximity to Budapest, Szada was early considered a very convenient testing ground for the Flashnet inteliLIGHT® streetlight management solution and Kerlink LoRaWAN™ network capabilities evaluation. Easily accessible from the capital, this pilot project is

an important step before engaging larger projects in Budapest and the entire Hungary. In order to achieve an appropriate mix of capabilities for this implementation, the entire project involved 4 companies: ELMŰ-ÉMÁSZ

Group (one of Hungary's largest DSO), T-Systems Hungary (a subsidiary of Magyar Telekom), Flashnet (smart city and smart energy solutions provider) and Kerlink (network solutions for the Internet of Things).

The challenge

The first project requirements were limited to ON/OFF switching and electric parameters monitoring at lighting panels level, controlling around five hundred lamps. As no LoRaWAN™ network was available locally, the deployment had to include installing and setting up the entire LoRa® system from scratch, starting with a Kerlink Wirnet Station gateway, Flashnet inteliLIGHT® controllers, T-Systems Hungary LoRaWAN™ network management server and the inteliLIGHT CMS application software.

Following the system functionality and reliability confirmation early in 2016, the next step progressively proves its scalability: upgrading all the lighting panels with LoRaWAN™ compatible lighting panel monitoring and controlling units, to provide detailed information and optimization for the functional and electrical parameters of the street lighting grid. Also, inteliLIGHT®'s open build will allow the future integration and installation of a sensor network (eg. environmental, weather etc.) and other smart city applications.

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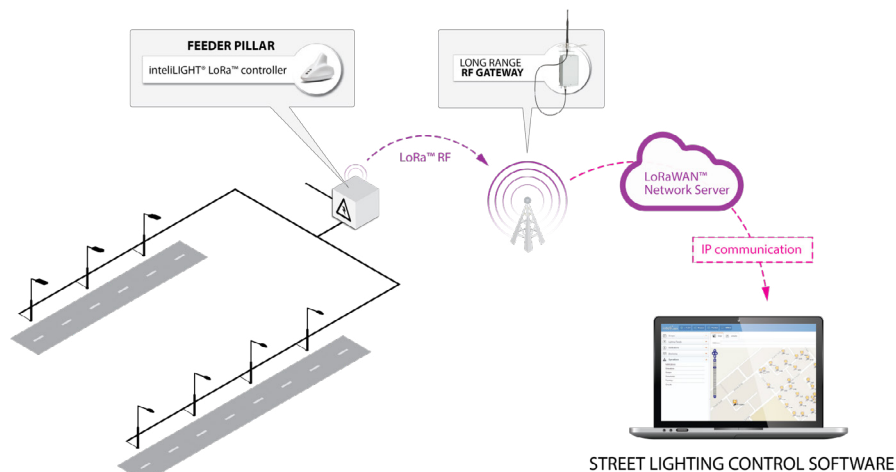
The argument

LoRa® is a long range, low power radio frequency communication technology that allows unprecedented fast and cost-efficient streetlight control systems deployment and operation over large geographical urban-areas.

Compared to classic PLC and Mesh RF/GPRS communication technologies, LoRaWAN™ compatible control systems can cost-efficiently manage, with only one LoRaWAN™ gateway, up to 20.000 streetlight controllers or other IoT/M2M applications in a range of

up to 15 km (depending on urban density and specific communication bandwidth requirements). Practically, cities can benefit from a functioning streetlight control system in a couple of weeks, with no civil works and a minimum amount of deployment effort and upfront investment.

Technical solution

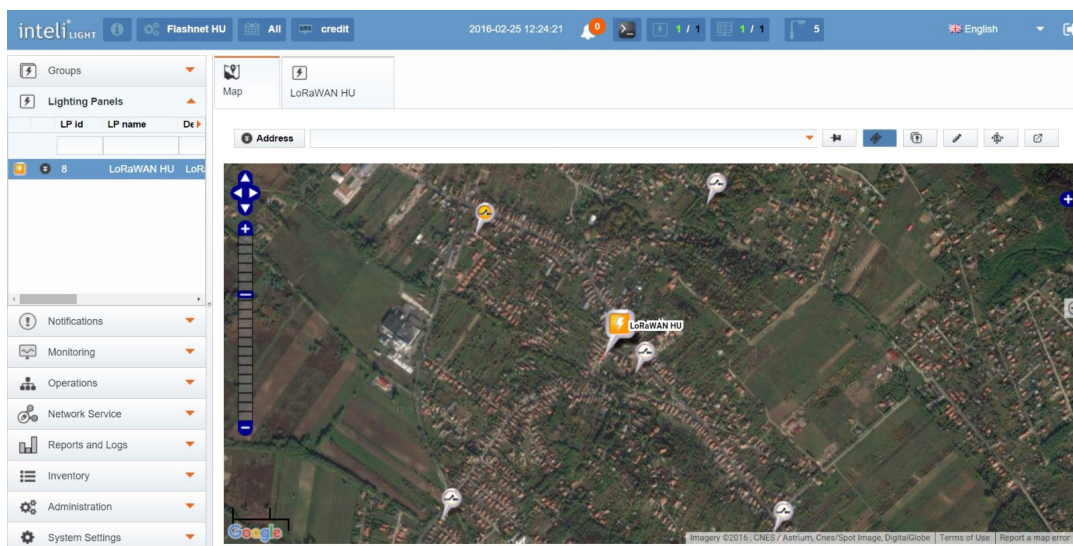


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1. Flashnet inteliLIGHT® LoRa® FRE-220 street lighting controller, with a limited range of functionalities: adapted for on/off feeder pillar remote operation rather than individual fixture control.
2. Kerlink Wirnet Station LoRaWAN™, running on European / 868 MHz ISM band with LoRa® bidirectional communication capabilities: Embedded, remote and open low power communication station; Open development framework based on standard Linux OS; WAN connectivity over GPRS/EDGE/3G or Ethernet; LoRa® module;
3. LoRaWAN™ Network Management Server connects the base stations and manages all connected devices
4. inteliLIGHT® Streetlight Control Software allows the remote control of the street lighting system and 24/7 grid monitoring with advanced Smart City add-ons

Screenshot 1 - inteliLIGHT® streetlight control software



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The deployment

The initial field deployment was performed in December 2015 and took only three days since the hardware delivery (hardware installation and communication setup), proving the system's plug-and-play and extremely fast deployment capabilities. The LoRaWAN™ gateway was installed in the tower of the mayor's office building, one of the tallest buildings available (to provide the best LoRa® signal coverage).

Afterwards inteliLIGHT® LoRa® controllers have been installed in the feeder pillars, finalizing the communication between the controllers and the base station (Class C bidirectional LoRaWAN™), then between the base station and the inteliLIGHT® NMS (GPRS).

The system trials started immediately after the communication was established and encountered no significant difficulties. All the deterrents were successfully surpassed and the system has been functioning since as, according to a predefined lighting schedule.



The results

"We are pleased that the system performs as advertised after almost two months of continuous operation and we were really impressed by how quickly we were able to install it. Of course, this was just the first step of the implementation and we are looking forward to continue and test the full system functionality as soon as possible." Jambor Zsolt, T-Systems Project Manager.

Smart lighting definitely appears as a key use case for the deployment of LPWAN alternative or complementary connectivity solutions. LoRaWAN™ technology especially provides the requested extensive coverage, the scalability and the energy-efficient two-way communication network that enables fast, efficient, and economic roll-out of use cases for smart cities". Yann Bauduin, Kerlink Infrastructure Solutions Sales Director.

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About ELMŰ-ÉMÁSZ Group :

Budapesti Elektromos Művek Nyrt. (ELMŰ) and Észak-magyarországi Áramszolgáltató Nyrt. (ÉMÁSZ) are companies with a history more than 120 years and has been operating as one of the largest company groups in Hungary under the name ELMŰ-ÉMÁSZ Társaságcsoport. ELMŰ-ÉMÁSZ is one of Hungary's largest power suppliers and is part of the RWE Group, one of Europe's largest energy companies. More than two million customers are supplied with electricity by the universal suppliers ELMŰ Nyrt. in Budapest and its conurbation, and ÉMÁSZ in Borsod-Abaúj-Zemplén, Heves and Nógrád, and in certain parts of Jász-Nagykun-Szolnok and Pest counties, while the group also acts as a commercial partner to several thousands of corporate customers on the market. For further information, please visit the following websites: www.elmu.hu www.emasz.hu

About T-Systems Hungary :

Being a 100%-owned subsidiary of Magyar Telekom, T-Systems Hungary provides large corporations, the public sector and institutions with comprehensive telecommunications and IT infrastructure, as well as application development and system integration services that are indispensable for their day-to-day running. With more than 1800 employees and 1700 supplier partners, it is Hungary's market-leading info communication service provider. The expertise and experience amassed by the company has a history of several decades. For further information, please visit the company's official site at www.t-systems.hu

About FLASHNET :



FLASHNET

Founded in 2005, FLASHNET is a leader in intelligent energy management systems, with worldwide operations. Its hardware and software solutions integrate the latest IT, energy and telecommunications technologies in order to create and implement intelligent systems for smarter cities and better infrastructure. For further information, please visit www.flashnet.ro, www.inteliLIGHT.eu

About Kerlink :

Kerlink, a founding member of the LoRa Alliance™, specialises in network solutions for the Internet of Things (IoT). Its mission is to provide its clients – telecom operators, businesses and public authorities – with equipment, software and services to design, launch and operate IoT networks. Over the past three years, Kerlink has invested more than €8 million in R&D. In just over 10 years, more than 70,000 Kerlink installations have already been rolled out for more than 260 clients, including major telecom operators such as Tata Communications, and utilities such as GrDF and Suez. The company's solutions are enabling IoT networks worldwide with major deployments in Europe, South Asia and South America. In 2016, Kerlink generated revenues of €14.1 million, 25 percent internationally. Since 2013, it has posted average annual growth of more than 50 percent. Kerlink has been listed on Euronext Growth Paris since May 2016.

For more information, visit www.kerlink.com or follow us on Twitter [@kerlink_news](https://twitter.com/kerlink_news).

More success stories at <https://www.kerlink.com/customers-usecases/use-cases/>

About LoRaWAN™ :

The technology utilized in a LoRaWAN™ network is designed to connect low-cost, battery-operated sensors over long distances in harsh environments that were previously too challenging or cost prohibitive to connect. With its unique penetration capability, a LoRaWAN™ gateway deployed on a building or tower can connect to sensors more than 10 miles away or to water meters deployed underground or in basements. The LoRaWAN™ protocol offers unique and unequalled benefits in terms of bi-directionality, security, mobility and accurate localization that are not addressed by other LPWAN technologies. These benefits will enable the diverse use cases and business models that will enable deployments of LPWAN IoT networks globally.

