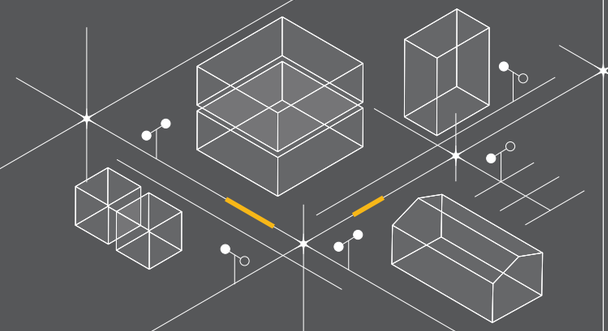
inteliLIGHT®

city-centric **smart** street lighting

We work with city managers, street lighting operators and lamp manufacturers to understand their particularities, adapt and build smart cities together.



FLASHNET
Shaping the Future of Smart Cities

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2024 en v1.4

cities are **growing**

In a world where lighting accounts for more than 19% of the global power consumption, smart street lighting **reduces energy consumption and CO2 emissions by up to 40%**, saving millions for communities everywhere.

Environmental Concerns

Real time **Information** & **Control**

Public or **Regulatory** Pressure

Improved **Maintenance** & Faster Repairs

Budget constraints

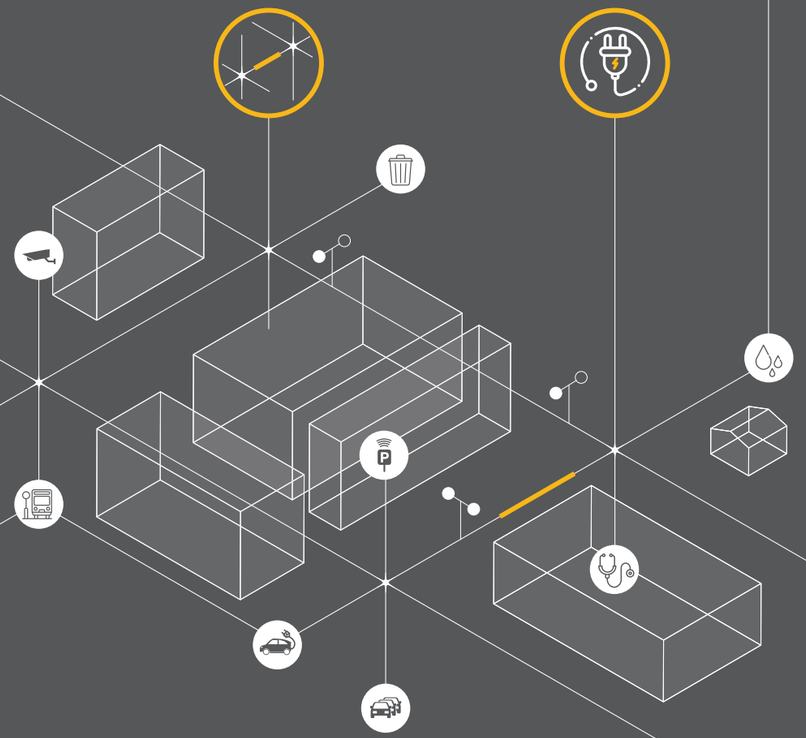
Energy **Savings** & Reducing Costs

and need to be **smarter**

Smart city systems need two essential resources to work, and intelligent street lighting provides them both:

communication infrastructure

permanent **power** supply



inteliLIGHT®

intelligent street lighting

control

Street lighting operates autonomously, using preset algorithms based on astronomical calendar, light level sensors or motion detectors. You can add scheduled exceptions or manually control ON/OFF and dimming for either individual lamps, lamp segments or the entire grid.

awareness

Gain full hardware, electrical and geographical awareness for the street lighting grid. inteliLIGHT® offers detailed electrical parameters for every lamp and feeder pillar, with real-time malfunction alerts and inventory control, all displayed on a user-friendly map overlay.

optimization

Enjoy faster maintenance interventions and improved lighting policies. Advanced analytic report tools help you understand the trends and monitor energy loss. Also, malfunctions are reported in real time and the maintenance teams can be informed and deployed right away.

integration

Control everything from one place. inteliLIGHT® allows subsequent management of compatible sensors and IoT applications. Furthermore, it integrates with other city systems and major smart city platforms through northbound and southbound API connectivity.

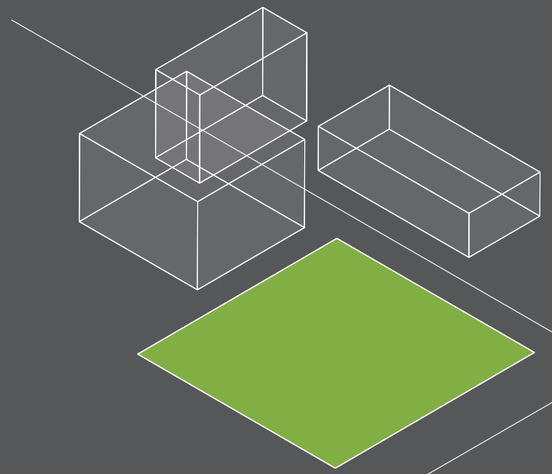
inteliLIGHT®

for the **community**

increased safety
Street lighting acts as a crime deterrent and helps avoiding accidents. With inteliLIGHT®, you have access to real-time information, as street lighting malfunctions are detected and addressed before the citizens even get the chance to notice them.

reduced energy and maintenance costs
Up to 40% lower energy consumption with intelligent ON/OFF switching, progressive dimming and efficient energy management. Smart maintenance and proactive grid interventions decrease operational costs by up to 42%.

more sustainable cities and cleaner environment
Reduced energy consumption means less CO2 and lower environmental impact in the context of increasingly demanding norms. Dimming also decreases light's negative impact on birds and wildlife.

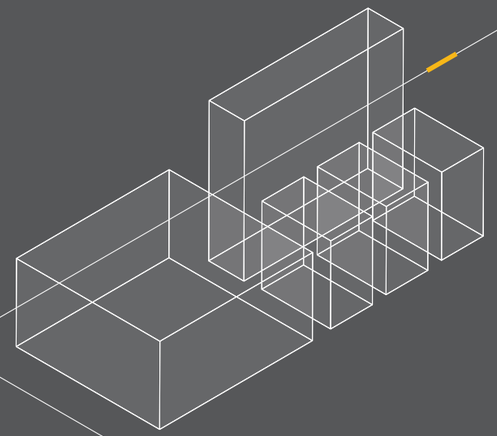


for the **municipality**

unprecedented options and open communication standards
NB-IoT, LTE-M, LoRaWAN™. inteliLIGHT® uses any IoT open protocol communication technology or combines them to meet the project's needs. Flashnet's IoT Platform and TALQ compatibility make sure it is easy to integrate, even if you are already using lighting control hardware and/or software from other providers.

installation flexibility and multiple form factors
Our controllers can upgrade existing lighting fixtures or can be embedded into new luminaries, to minimize the visual impact. Whether using wire connections or standard sockets (e.g. ZHAGA, NEMA), the actual deployment is almost plug-and-play.

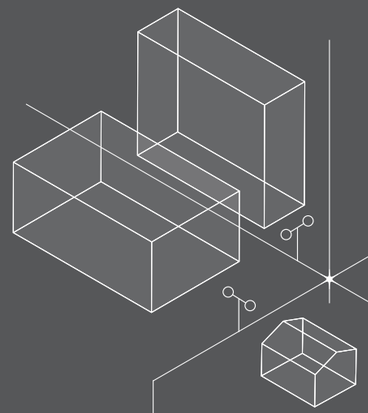
integrated with major smart city platforms
Keep planning for a synergistic smart city. inteliLIGHT® is already integrated with major citywide management platforms like ENGIE livin', Nokia, Ericsson, Cisco Kinetic for Cities or Telekom Cloud.



each project is **unique**

choose the lighting control that **fits you** best

Which communication technology fits best? Do you need a private communication infrastructure or can you use locally available public IoT communications? Our technical consultants will assist you in choosing the appropriate system configuration and will work together with the lamp manufacturer or the lighting service provider to identify and implement specific controller customizations.



never feel **supplier locked** again

Don't worry if you already have a streetlight control system in place, if you plan to work with multiple suppliers or if you already use smart city integrations. Our system uses open communication technologies, allows northbound and southbound API connections and is already integrated with major smart city platforms.

build a **smart city**

smarter lighting for a smarter city
The autonomous street lighting, continuous awareness, real-time malfunction alerts and dynamic ON/OFF/dimming control are some of the immediate smart city benefits.

add smart applications to the "always on" lighting grid
With inteliLIGHT®'s lamp-level control, the street light networks are continuously under power. There is a large number of sensors and IoT devices that can be supplied directly from the grid.

build synergistic smart cities
A real smart city is the one integrating all services, not managing them individually and inteliLIGHT® is already integrated with most smart city application suppliers.

make sure everything **works**

fast and easy to install
inteliLIGHT® is a reliable plug-and-play turnkey solution, supported by an incredibly fast implementation process. The technical and compatibility assessment, system tailoring and pilot project implementation will be fluent and, after you validate the proposed solution, the actual deployment will be a smooth and user friendly process. The system becomes functional within days and you can start controlling the connected lamps immediately.

impressive track record
Our projects speak for themselves: hundreds of thousands of lamp controllers and feeder pillar monitoring units installed in hundreds of cities on all continents.

inteliLIGHT®

system **architecture**

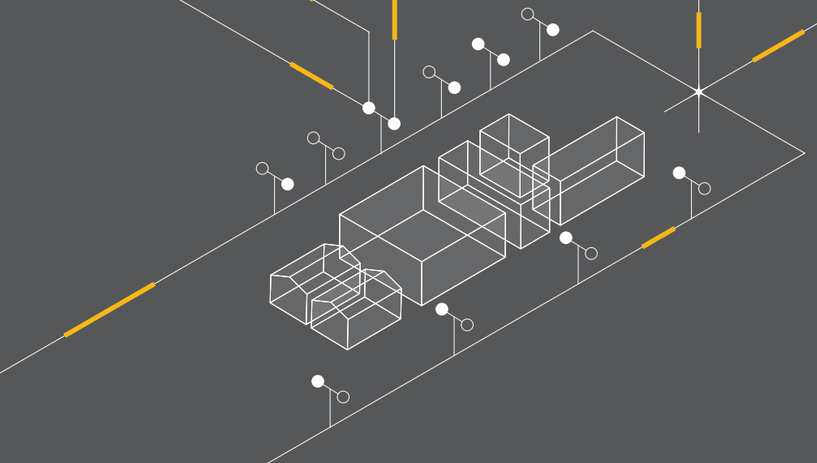
luminaire controllers

Several available form factors: NEMA, ZHAGA and compact wired controllers to be embedded into lighting poles or into luminaries right from the production line.

NEMA **ZHAGA** **pole** mounted/ **embedded**

lighting panel control & monitoring unit

Installed inside the feeder pillar, it is designed to provide autonomous operation for street lighting installations and to carry out three phase measurements and analysis of electrical parameters in street lighting grids.



private or public **communication** infrastructure

LoRaWAN
LTE-M
NB-IoT
GSM

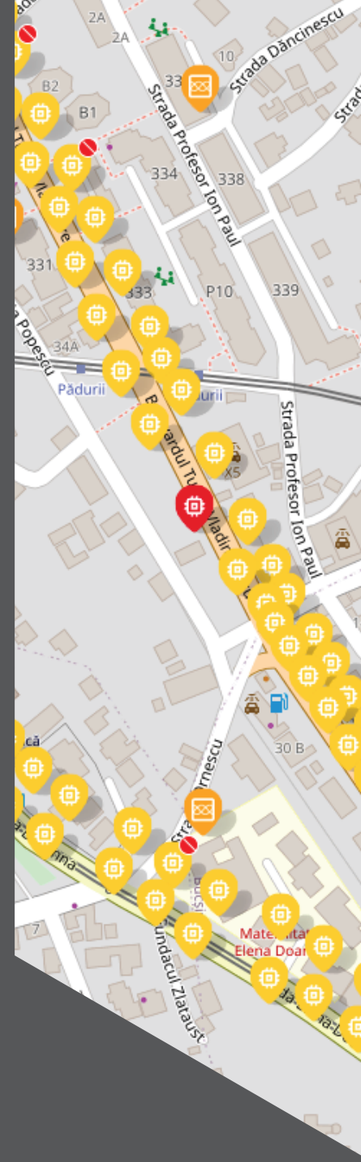
API for your own software, controllers or sensors

inteliLIGHT® StreetLight Control **software**

TALQ CERTIFIED

smart city platform **integrations**

CISCO
OPEN TELEKOM CLOUD
NOKIA
T-Systems
Actility
orange Live Objects
ENGIE livin'
ERICSSON



inteliLIGHT®

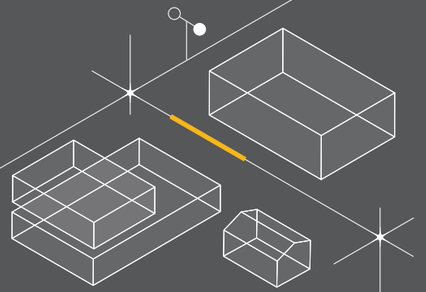
controllers & form factors

We're always up to date with industry innovations. Our products integrate multiple hardware connectors and unprecedented functionalities, for both individual lamp or lighting segment control.

NEMA socket

Plug-and-play upgrade for lamps with compatible 7-pin NEMA socket (ANSI C136.41).

- integrated light level sensor
- digital input
- 80 x 70 mm (Ø x h)
- IP66 rating



Zhaga socket

Plug-and-play upgrade for lamps with compatible ZHAGA (book18).

- integrated light level sensor
- digital input
- 80 x 40 mm (Ø x h)
- IP66 rating

pole mounted / **embedded**

A versatile wired connected controller, designed to retrofit existing street lamps that are not provided with a standard connector.

It has an IP66 protection that allows it to be mounted in outdoor conditions and the dimensions to be installed into the lighting pole, when the option exists, or even directly inside the luminaire for a minimum aesthetic impact.

- cable connected
- digital input
- 113 x 48 x 37 mm (L x W x h)
- IP66 rating

lighting panel control and monitoring unit

Designed to control and monitor the street lighting grid at lighting panel level, can be a fail-safe mechanism for smart street lighting installations.

- GPS for exact location and time
- LCD for displaying electrical parameters and device status
- maintenance switch for local manual override
- three phase electric monitoring
- 2 x digital INPUT
- DIN RAIL mounting
- dimensions: 138 x 90 x 47 mm (L x W x h)
- IP20 (optional IP67 external housing)

communication technology **agnostic**

LoRaWAN™, NB-IoT, LTE-M. We use any open protocol communication technology or combine them to meet the project's needs.

Narrow-Band IoT (NB-IoT) is an IoT narrowband RF communication technology provided by major telecom companies and uses the mobile network to connect. As any carrier-grade communication technology, it comes with increased security and uptime guarantees. Provides excellent penetration, so it can be used in high density urban areas. It cannot be operated privately, so there is no initial investment, but will require a subscription.

LTE-M is a low power wide area (LPWA) IoT communications standard published by 3GPP. LTE-M networks co-exist with 2G, 3G, and 4G mobile networks and benefit from all the security and privacy features of carrier-grade networks. Provides excellent penetration, so it can be used in high density urban areas. It cannot be operated privately, so there is no initial investment, but will require a subscription.

LoRaWAN™ is a Low Power Wide Area Network (LPWAN) that provides bi-directional RF communication. It works over unlicensed radio frequencies and can be installed privately or used with an existing public service. One base station covers up to 5 km in low to medium density urban areas and up to 15 km line-of-sight in rural or remote area installations.

inteliLIGHT® StreetLight Control **software**

The software integrates perfectly with inteliLIGHT® controllers and communication devices and is also compatible with any other open-protocol hardware solution available on the market (third party end devices using LoRaWAN™, 2G/3G/LTE or NB-IoT).

TALQ CERTIFIED

Awareness & Control

The customizable dashboard focuses on general system status, the notification engine alerts of any important events and the map interface helps deep dive into details. Manual commands allow full control of any smart object and inventory keeps track of everything. In-depth analytics & reports reveal a wealth of information to synthesize optimizations.

Flexibility

More than lighting controllers, you can connect and enroll any smart and non-smart objects in the same installation location (pinpoint), enabling a pole-centered ecosystem. Group them to allow logical aggregation of common data, preparing your city for real smart city synergies.

Automation

To make things easier, any repetitive task or functionality can be automated. Street lighting operates autonomously based on smart scheduling procedures and the rule engine uses multiple event sources (electrical parameters, communication, or scheduler events) to automatically issue tickets or commands.

Security

Scalability and high availability without compromising performance: fast, responsive, fault-tolerant, with huge real-time data ingestion. To secure it, authentication uses a WSO2 identity server with OAUTH2 industry-standard protocol and multi-factor authentication is available with SMS and email.

smart **integrations**

The Flashnet IoT Platform enables inteliLIGHT **interoperability** with different software solutions, network providers and equipment manufacturers. inteliLIGHT can coexist with third-party sensors & controllers, third-party software applications and can also connect to existing integrated city management platforms.

inteliLIGHT®
luminaire controllers
& sensors

FLASHNET IoT
communication platform

inteliLIGHT®
software

third party
controllers &
sensors

third party
software
applications

TALQ smart city **protocol**

A global standard that provides a common language for smart city applications, enabling command and monitoring of different types of connected devices through an easy-to-integrate protocol. TALQ defines the message types, data format, parameters and behaviour. Moreover, it provides secured access and associated data payloads to describe the devices, their functions and attributes.

Configuration Device discovery, commissioning, service capabilities	**Data Collection** Eventing, periodic data collect, adhoc data collect, log config	**On-demand Read** Read of metering attributes and status	**Control & Override** Schedulers, control programs, calendars, commands, overrides	**Group Management** Create groups, update groups, delete groups	**Data Package** Firmware update, sending any proprietary data package

TLS Security

HTTP RESTful

smart city

CISCO · OPEN TELEKOM CLOUD · T-Systems · orange Live Objects · ENGIE livin' · ERICSSON · NOKIA · Actility

smart city **platforms**

project **steps**

inteliLIGHT® is a reliable plug-and-play turnkey solution, supported by a proven implementation process.

1. You need a better, greener city and you **contact us** to upgrade your street lighting grid.
2. We provide basic system information and the **start-up questionnaire**.
3. You send us all the relevant street lighting **infrastructure information** and details about your specific needs.
4. After the technical assessment, we present you the **technical solution**, the budget and deployment timeline.
5. **You evaluate** our proposal, then choose a functionality demonstration or a pilot project deployment.
6. We **custom tailor** inteliLIGHT® and we coordinate and manage system demonstrations.
7. **You validate** the demonstration outcome, we sign the agreement and start the actual implementation.
8. We coordinate the **project deployment** together with our local implementation partner.
9. We organize all necessary user **training sessions** and system presentations to ensure successful system operation.
10. After the implementation, we provide 24/7 **technical support**.

inteliLIGHT®

Smart Street Lighting with Solar-Backed UPS for LoRaWAN Network in **Jeddah**, Saudi Arabia

A smart street lighting project focused on enhancing energy efficiency and ensuring reliable lighting control across Jeddah. Designed for uninterrupted performance, the system uses solar power to provide backup for the LoRaWAN private communication network and gateways, ensuring continuous operation of the lighting control infrastructure.

- started in 2024 (ongoing project)
- Thousands of streetlamps already deployed
- Individual and segment control
- NEMA controllers
- LoRaWAN™ communications and private infrastructure
- Solar-powered UPS systems for continuous operation of the communication network

inteliLIGHT®

Smart Street Lighting Upgrade for **Belgium**'s **Highways**

This large-scale highway modernization project in Belgium uses smart lighting to boost traffic safety and improve energy efficiency. inteliLIGHT® Zhaga-compatible controllers use NB-IoT communications and the system interoperability features allow to seamlessly integrate with the beneficiary's existing management system. The project delivers real-time monitoring and control, optimized maintenance and significant energy savings across Belgium's roadways.

- started in 2024 (ongoing project)
- 400 000 streetlights included in modernization effort
- Zhaga controllers
- NB-IoT communications
- Integrated with third-party management system

Industry best practices for a 10-year public lighting project in **Brussels**, Belgium

inteliLIGHT® passed a thorough testing procedure for the best suitable smart street lighting solution for one of the most urbanized areas in the world. Energy efficiency, reduced carbon dioxide emissions, optimized maintenance and increased comfort and quality of life for its citizens in a truly integrated and future-proof smart city platform.

- 2021 (ongoing project)
- 85 000 streetlamps in the city
- Individual lamp control
- NEMA controllers
- NB-IoT, Cellular communications
- Third party software, integrated via TALQ2

The smart city transformation of **Washington**, D.C., USA

A project that will reduce energy use by more than 50%, improve equity of service and extend Wi-Fi coverage in underserved neighborhoods.

- 2022
- 75 000 streetlamps
- Individual lamp control
- NEMA controllers
- NB-IoT, LTE-M communications
- inteliLIGHT® Streetlight Control Software
- Integrated with third party workforce management software
- Smart city integrations: Wi-Fi coverage

15-year commitment to manage smart street lighting in **Santiago**, Chile

A mix of LoRaWAN™ and cellular communications and multiple controller form factors to manage Santiago's public lighting infrastructure and light the way towards a sustainable, smarter city.

- 2020
- 70 000 streetlamps
- Individual and segment control
- Pole-mounted and NEMA controllers
- LoRaWAN™ and Cellular communications
- inteliLIGHT® Streetlight Control Software
- Smart city integrations: irrigation, waste management, city asset localization, air quality and environment sensors

Zhaga socket used for a large scale LoRaWAN™ deployment in **Brescia**, Italy

Seamless street lighting autonomous operation, hassle-free maintenance and substantial energy savings using a local LPWAN™ network provider.

- 2019
- 44 000 streetlamps
- Individual and segment control
- Zhaga controllers
- LoRaWAN™ public communication network
- inteliLIGHT® Streetlight Control Software

EV Charging directly from the street lighting power grid in **Brasov**, Romania

Local conditions demanded the use of hybrid communications, while the city's unique vision required the installation and management of environmental sensors, parking sensors, CCTV cameras and a functioning EV Charging system powered directly from the street lighting grid.

- 2015
- 15 000 streetlamps
- Individual and segment control
- Pole-mounted and NEMA controllers
- LonWorks PLC, LoRaWAN™ and Cellular communications
- inteliLIGHT® Streetlight Control Software
- Additional smart city services

inteliLIGHT®