

Smart City Lighting System



BellaDati IoT and advanced analytics platform - key enabler to build smart cities of tomorrow

INTRODUCTION

Smart city that supports its citizens is inevitable to come now, smart city concept needs to identify what really matters and create an architectural framework that supports that vision.

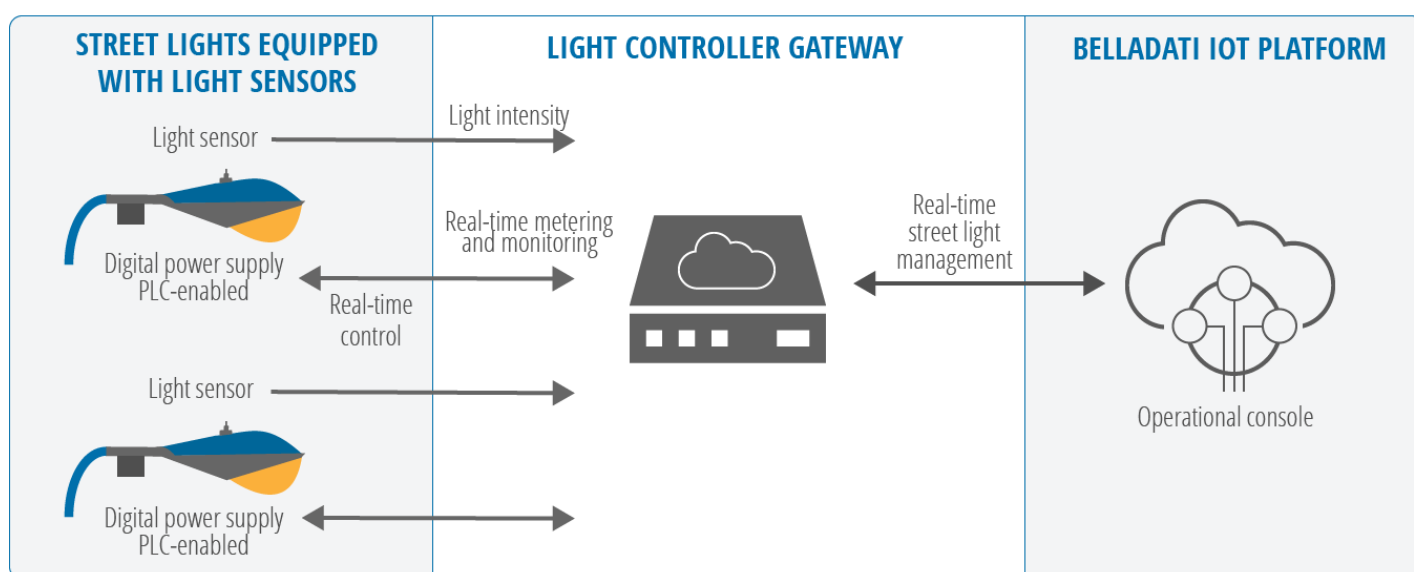
Technologies are the core enabler for such transformations, but they are not enough to make something "smart." Rather, the "smart" label should be assigned only when technology enables a foundational change, such as dramatically reducing water or power losses, transforming an insecure area into a public garden for families, or improving accessibility to people with disabilities. With a proper vision, a city can become more efficient and sustainable, and citizens' daily experiences will improve.

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SOLUTION OVERVIEW

The BellaDati IoT and advanced analytics platform delivers end-to-end functionalities and creates the technical and economic conditions for offering energy management applications to consumers, industries, and cities on a single cost-effective, standard-compliant, scalable, and vendor-agnostic multi-tenant platform. BellaDati IoT advanced analytics platform makes it easy for cities, and enterprises to onboard new use cases and rapidly achieve successful outcomes. It enables real-time control and automatic scheduling of switching on and off, and dimming levels of individual lights from a central location, taking into account luminosity from sensors.



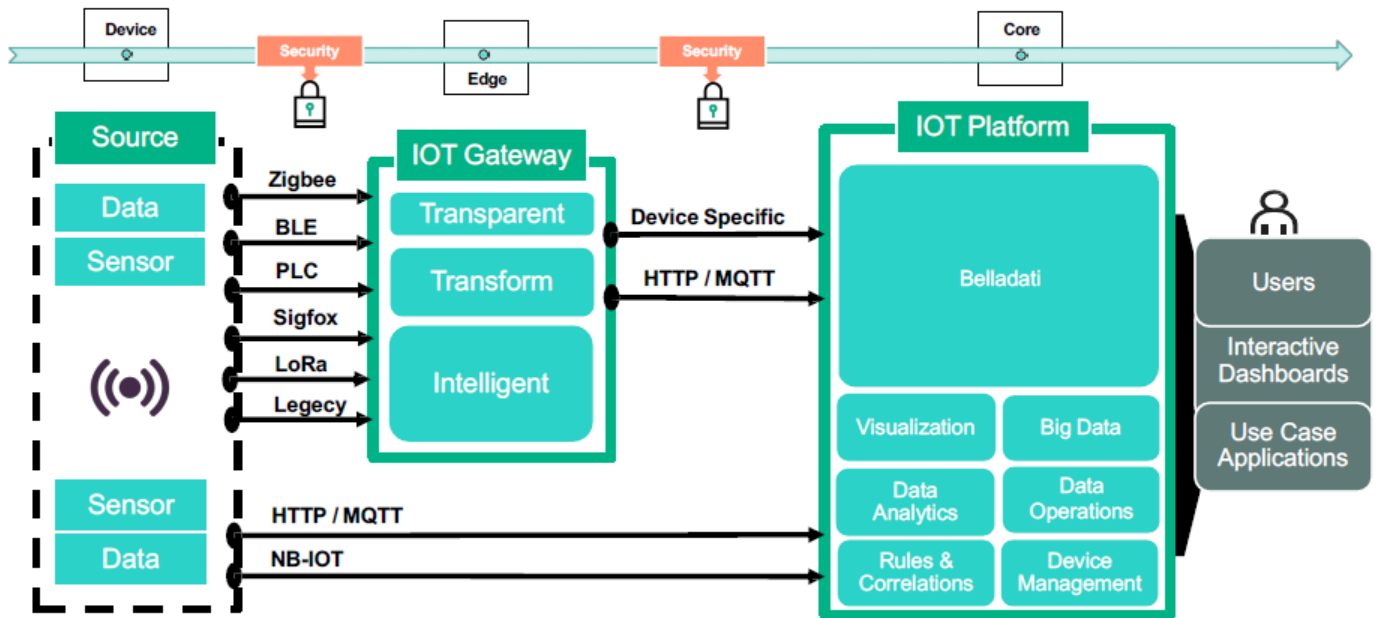
With smart lighting system in place, the city saves an estimated 50 percent on lighting costs a year. A typical city has 100,000 street lights that use approximately \$24 million of electricity per year. The cost to adopt grid smart lighting system is about \$100 per street light - a total initial investment of upgrading all the lights in the city will run up to around \$10 million.

By working with HPE, we have made our street light platform more scalable and flexible for IoT device management. Our vision of data driving smart cities is in line with HPE's focus on managing and analyzing data from core to edge". "Our partnership with HPE data analytics has yielded a critical solution for street light control, smart city sensor integration, data analysis and predictive analytics.

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Powering IoT from Edge Enablement to Core Enhancement



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\$ BENEFITS

- ✓ Less energy usage by using automatic lighting schedules, hence reducing the carbon footprint
- ✓ Savings in operating and maintenance costs
- ✓ Efficient remote monitoring system, thus doing away with using surveillance vehicles to check for faulty lights
- ✓ Flexibility in mixing different lamp types and technologies
- ✓ Scalability and extendibility to support other applications such as traffic, weather, and motion monitoring
- ✓ Display of street light locations on a map for real-time control and monitoring

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USED HARDWARE

PLC-ENABLED DIGITAL POWER SUPPLY FOR STREET LIGHTS

The PLC-enabled Digital Power Supply (DPS) is a state-of-the-art module consisting of a power driver integrated with gridComm's GC8800 module, which is based on gridComm GC2200, a proven robust OFDMA (Orthogonal Frequency Division Multiple Access) PLC transceiver chip. The DPS along with gridComm Master Light Controller GC1310 and gridComm Street Light Management Software (SLMS), together form a complete Smart Street Light control and management system and it enables real-time control and automatic scheduling of switching on and off, and dimming levels of individual lights from a central location. The DPS also provides metering functions for real-time monitoring of operational status, power consumption, current, voltage, and power factor of individual street lights. Different luminary DPS options, such as LED, Sodium Vapor and Metal Halide, are available.



PLC SMART LIGHT CONTROLLER

gridComm offers a state-of-the-art Power Line Communications Smart Light controller module, which is ideal and most suitable for transforming traditional street light installations into smart street light systems that are energy-aware and remotely managed and monitored over cloud-based management networks without replacing existing installed driver. Attaching the Smart Light Controller (SLC) module behind the existing light driver already installed is all that is required to make it "smart". The SLC is capable of controlling different luminaries eg. LED, Sodium Vapor and HID lamps up to 500W.



GC1310 MASTER LIGHT CONTROLLER

The gridComm GC1310 is a 3-Phase DIN Rail Power Line Communication (PLC) Master Light Controller designed for Street Light Control operations. The GC1318 has additional LoRa Radio Frequency (RF) capability as an option. The GC1310 serves as a powerful concentrator and gateway connecting a network of streetlights to the cloud-based Street Light Management Software via a built-in GPRS/3G modem, controlling and monitoring the operations of turning on/off, dimming, scheduling, alarm events and data-logging functions of an individual light or a group of street lights. It also integrates Digital I/Os that could be connected to an external anti-tamper or overload sensor for fail-safe measures and motion sensors or other sensors based on trigger events. With LoRa RF option available in GC1318, the MLC can be extended to communicate with plug-and-play RF battery-operated IoT sensor nodes, such as weather, light, pollution, flood, seismic sensors, which leverage on GC-Net networking firmware using power line network as the backbone network infrastructure.



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Smart Street lights Connection

