libelium
Powering the IoT Revolution

Streetlight integrates Libelium IoT solutions providing digitization to a US campus

ENE.HUB's SMART.NODE grants security, connectivity, environmental control and even Electric Vehicle Charging station to Cal State Fullerton

A medium or large sized **university is a replica of a small city**, with its services, workers, users and resources. University life is a microcosm, a reflection of society and, at the same time, an engine of change.

» The challenge

Provide security, connectivity and extra services to students in a simple and scalable way

» The solution

Smart Cities solution integrated in ENE.HUB's pole SMART.NODE™

Smart Campus with intelligent streetlights   **libelium**

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THE SOLUTION

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California, USA

Smart Cities, Smart University and Campus

Smart Cities PRO   WiFi 4G

"The digital solutions help universities to create and maintain the next-generation campus that continually modernizes iteratively over time."

Cal State Fullerton
officials

California State University Fullerton wants a smart campus with a strong focus on safety and connectivity to support the GI2025 initiative. **Modernizing the campus by offering services such as smart parking, Electric Vehicle Charging, WiFi** will make it more attractive for new students. It will also help to detect those barriers that users face every day and ease their daily lives on campus.

ENE.HUB, a company of Australian origin that designs Smart Poles, has been in charge of providing the necessary infrastructure to this Californian **university to make the leap to digitization**.

Smart Campus with intelligent streetlights

Starting from the concept of a streetlight, ENE.HUB has designed a complete solution that allows Fullerton **not only to illuminate a public space but also to provide it with intelligence with connectivity, energy, surveillance or environmental control**. In this SMART.NODE™ they have integrated some of the Libelium solutions to complete the final product:

- Libelium Plug & Sense! Smart Cities for the control of air quality, luminosity and noise.

- Libelium Plug & Sense! Smart Agriculture for measuring and forecasting weather conditions
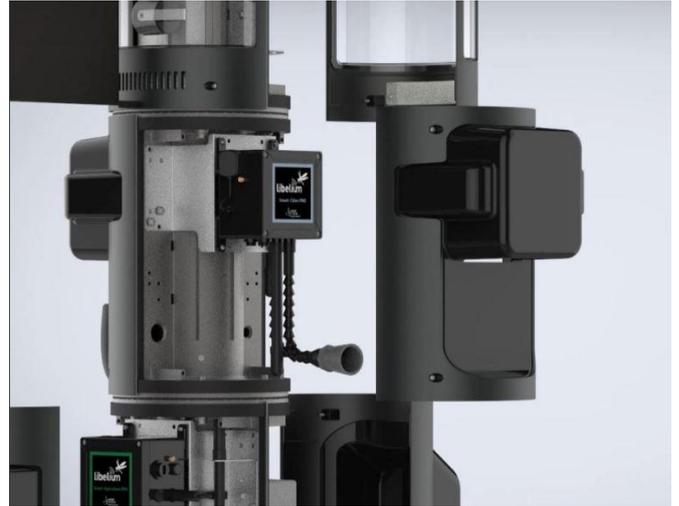
The streetlight poles are installed in two strategic points on the California State University Fullerton campus: next to the library and in one of the parks. Thanks to Libelium technology, the streetlight is able to regulate its brightness or switches the light on or off depending on the natural luminosity. The ultrasound sensor detects an approaching subject, and the ambient control probes measure the air quality to inform users about the environmental conditions on campus. There is also a meteorological station to get local climate information.

Libelium technology brings digitization to campus

ENE.HUB chose **Libelium's IoT technology due to the flexibility offered by its core**. The Plug & Sense! is based on the same board that allows the incorporation of a wide range of IoT applications: from smart city to precision agriculture, safety or environmental quality.
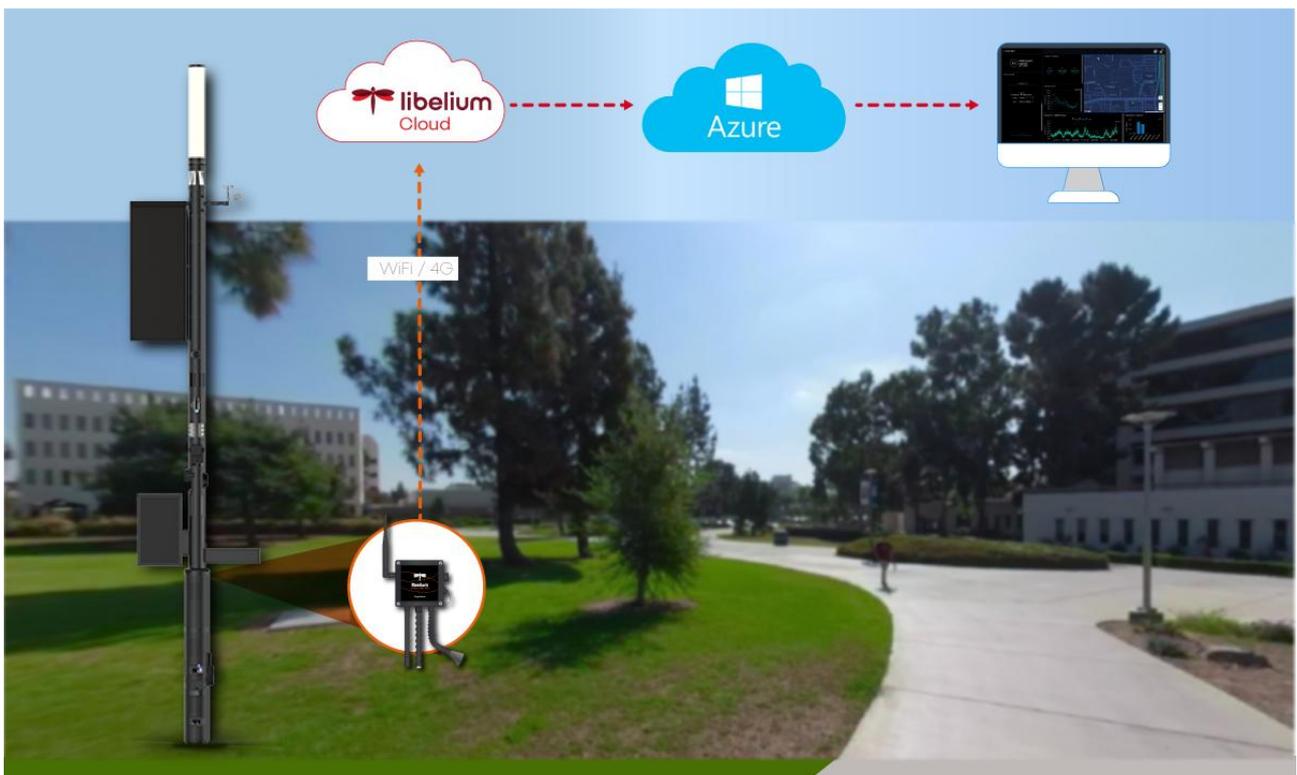
The SMART.NODE™ is a modular, innovative and comprehensive solution that eliminates the barrier of having dozens of connected devices mixed with traffic signs and posters. The smart street light gathers them **all in a single pole and frees the landscape of visual pollution**, cables and redundant signs since the SMART.NODE™ can include with speakers, banners and digital displays.

A single software platform to analyze all data

All data is collected within the [online platform e3](#), the data belongs and is owned by the campus. This platform is presented in **a simple dashboard that organizes the data received** from the different integrated technologies into eight main categories:

- Transport
- Energy
- Communications
- Health
- Environment
- Security
- Audiovisual
- Others

Libelium sensors **send the information both over WiFi and 4G to e3** through Libelium Cloud. It is a very useful service in large deployments in order to check that all installed devices and all probes on each device are working properly. Once the data is consolidated, the connectors send it **to ENE.HUB's Azure cloud with a single HTTPS call**.

The diversity of data that can be visualized and analyzed on the platform helps to generate relationships, trends and discover **new actionable information** through the different visualization graphs.
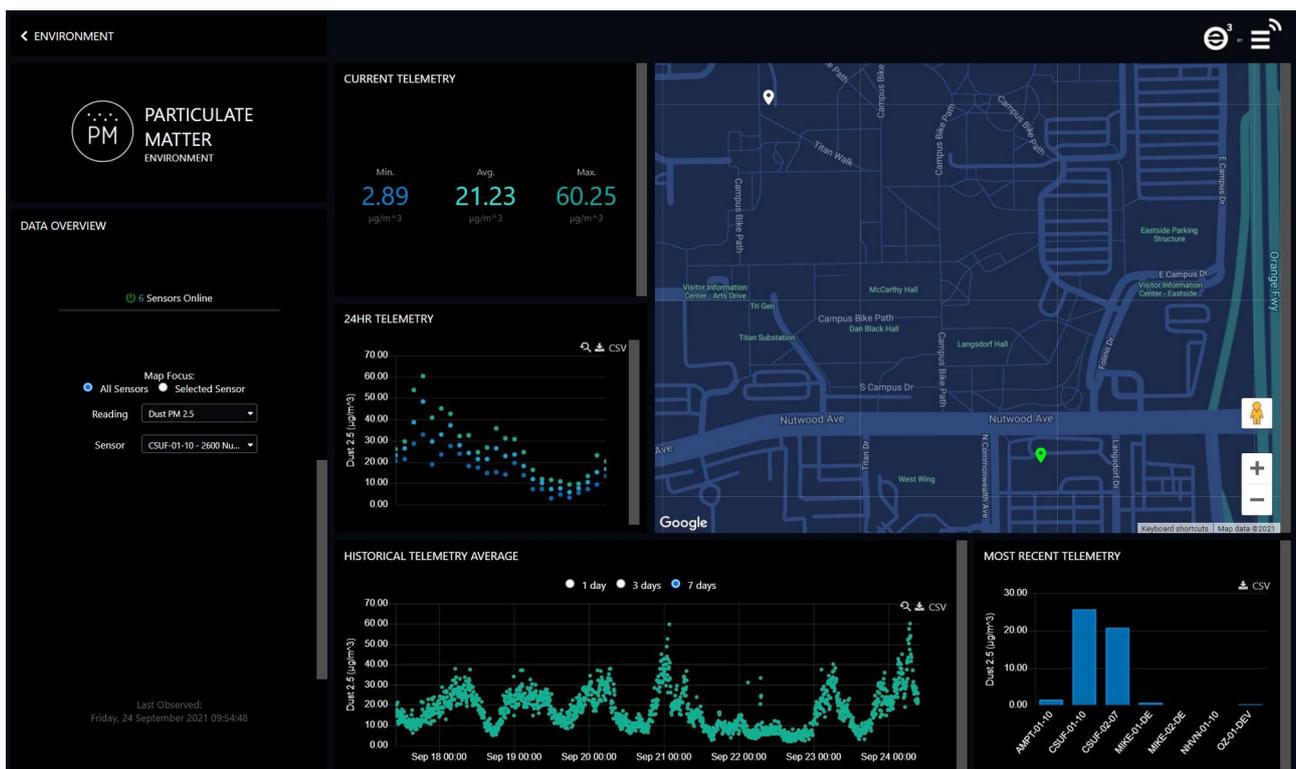
"The goal is to keep the campus up-to-date to attract more engaged students. The digital solutions help universities to **create and maintain the next-generation campus** that continually modernizes iteratively over time," said Cal State Fullerton officials.

ENE.HUB has already installed SMART.NODEs™ with Libelium's intelligent technology in different settings, such as shopping malls, parks, streets and universities in southern California, Sydney and Texas.

This IoT project contributes to achieve the following Sustainable Development Goals:

More info:

- For technical details on Smart Cities PRO solution: Smart Cities PRO Technical Guide.
- WiFi Networking Guide: libelium.com
- 4G Networking Guide: libelium.com
- Read more about Libelium sensor product lines in the Waspmote, Waspmote Plug & Sense! Sensor Platform and Meshlium Gateway websites.

References:

- GI2025 initiative: calstate.edu
- ENE.HUB website: ene-hub.com
- ENE.HUB project for California State University, Fullerton: ene-hub.com