Dolphin Streetlight Telemanagement

Wolfgang Stripf
Senior Consultant R&D
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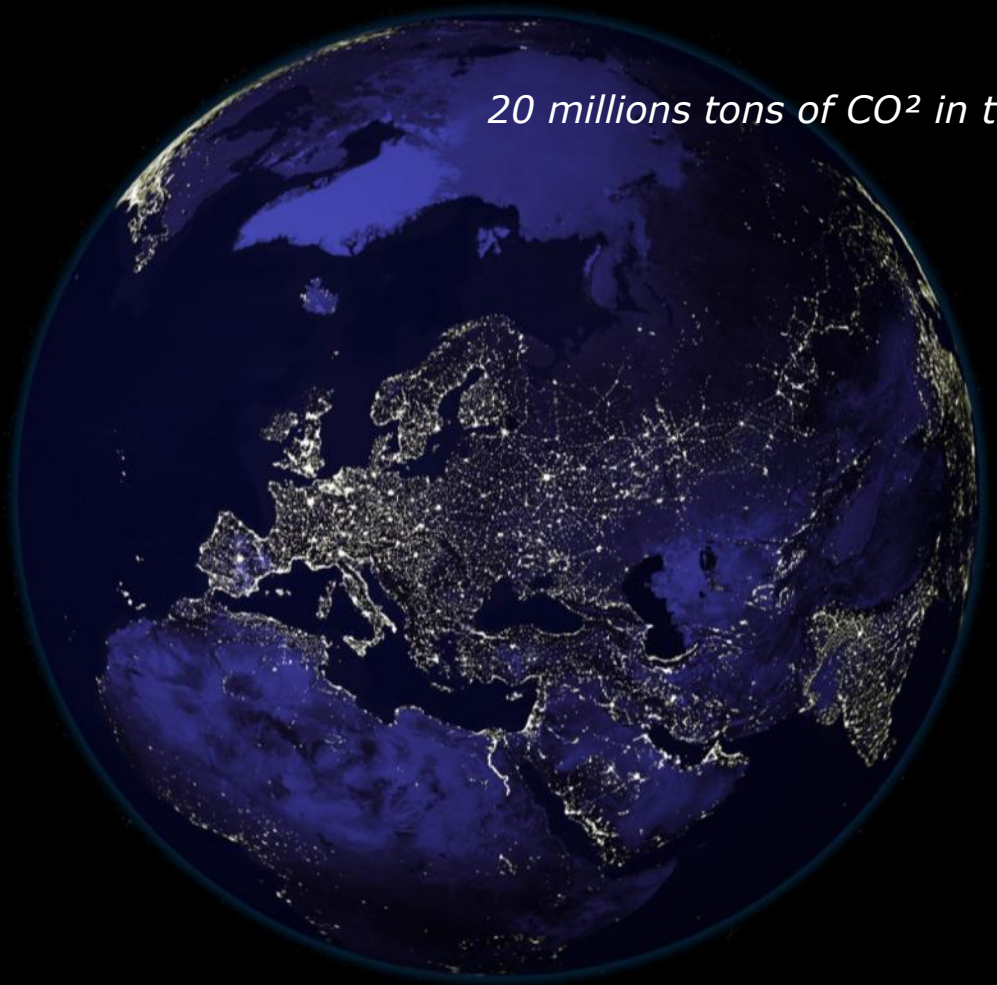
zenaro
TOMORROW'S LIGHT

Context

90 million streetlights in Europe

… are responsible for
20 millions tons of CO^2 in the atmosphere each year



Each streetlight consumes an average of 615 KWH per year
contributing to emit 220 KG of CO^2 each year !

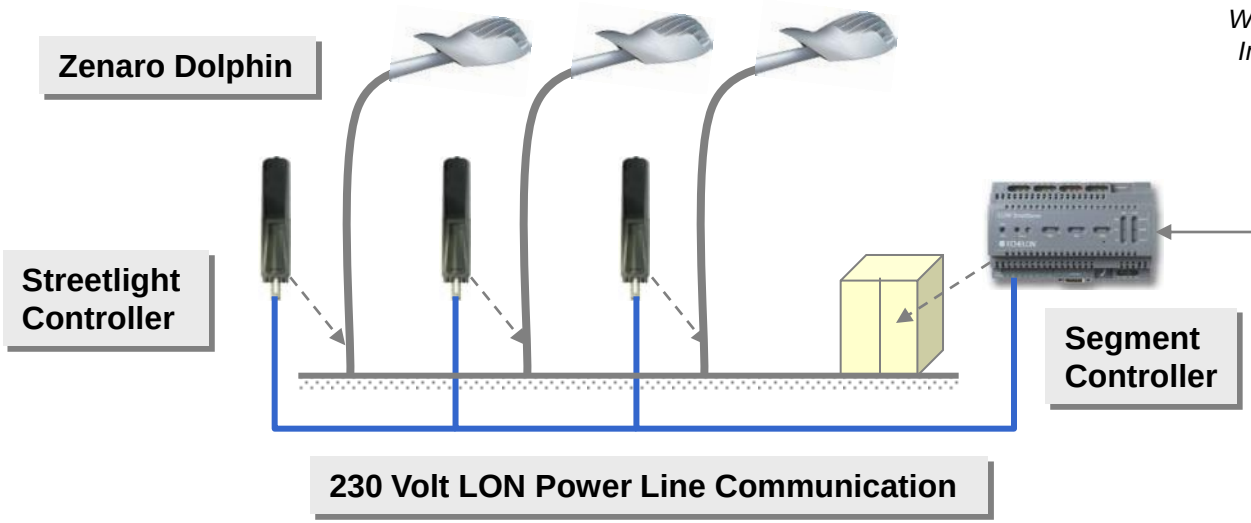
Comfort & control in the city

- Lighting is a way of city beautification
- It brings comfort and safety for all citizen
- Street-lighting management allows a global energy consumption control

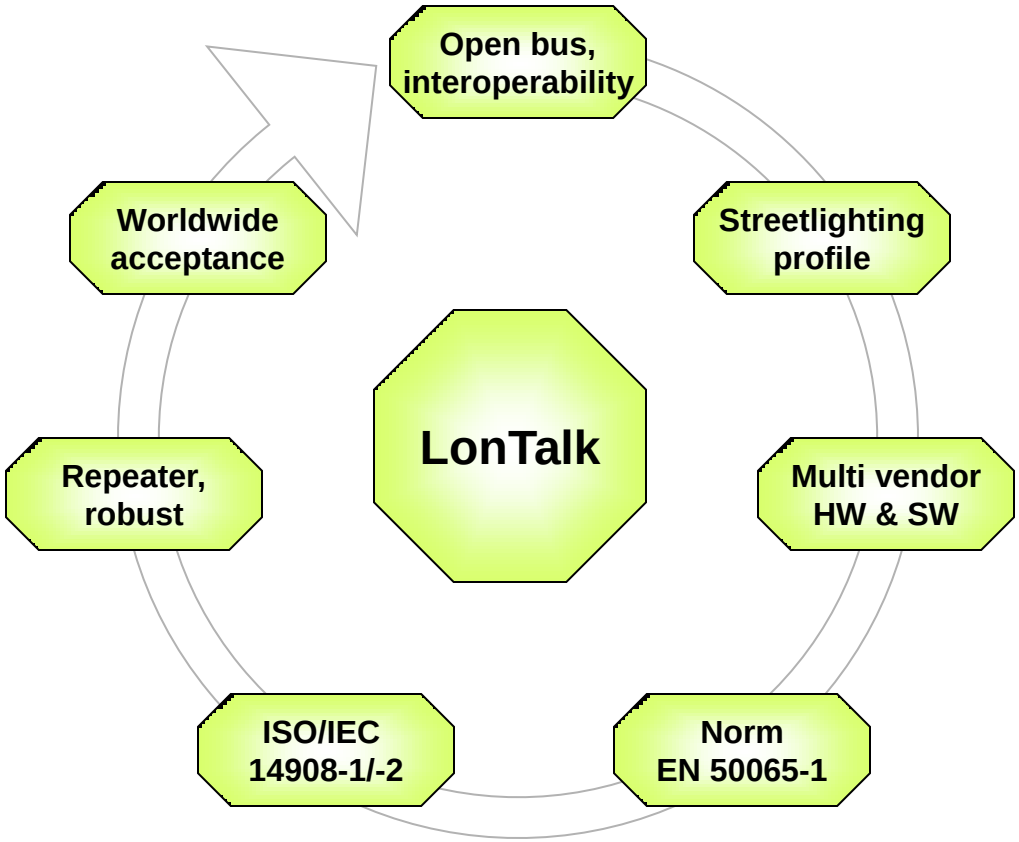
Concept of Telemanagement (segment)

Centralized city streetlight monitoring & control:

- Configuration of streetlights
- Scheduling of ON/OFF and dimming phases
- Status reports:
  - On/off, dimming degree, failures
  - Power consumption
  - Power-on hours
- Alarms in case of failures



Media and protocol (LonTalk)



EN 50065-1: Signalling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz
ISO/IEC 14908-1/-2: Open Data Communication in Building Automation, Controls and Building Management -- Control Network Protocol

Media and protocol (LonWorks)

Media: Power Line Communication (PLC)

- Information exchange via the existing electrical power network (110 – 230 V)

- Street lighting market in favor of the LonWorks® network technology
  - Proven-in-use and trusted technology
  - Open, manufacturer independent protocol specification: IEC 14908-1/2, EN 50065-1
  - Interoperability of network devices via application profiles, such as "street lighting"
  - Large number of sensors, actuators and infrastructure components available (e.g. wireless, routers)

- LonWorks guarantees robust communication between the partners
  - Segment Controller (SC), preferably the "SmartServer" and
  - Street Lighting Controllers (SLC) such as Citylone SL42 through
  - Low speed transmission channels (frequencies) and a repeater option within SLCs

- Echelons SC "SmartServer" builds up an intelligent gateway to web oriented
  - Data acquisition,
  - Monitoring, and
  - Control systems,
  - Based on modern Java and XML software technologies, and
  - Office communication such as GPRS (modem) and Ethernet/Internet (wired/wireless)

Streetlight controller SL42 (Citylone)

Version SL42-ED-1T

Streetlight controller SL42: On/Off

Functional specifications

- Safety first: Light is ON at module power ON (default)
- Parametrive Algorithms fonction of lamps type, ballast types and power.
- Safety cooling timer before next switch ON.
- Real time metering (current, cos φ,…)
- Total power consumption and bulb hours record.
- Alarm "voltage" or "current" if out of range
- Alarm “lamp failure” (based on power metering).

Hardware specifications

- Insulated output for an auxiliary elements or a second lamp. Max 500W - 3A – 230V.
- RJ9 Input (accessory running test plug after installing)
- Grey box / Cover translucend

Streetlight controller SL42: On/Off

Lamp failure detection (option)

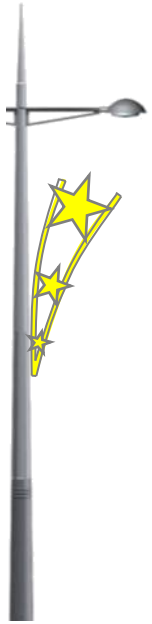
- Allows failure detection on the auxiliary output
- The nodes signal which lamp on the pole is failing
- The two lamps can provide status
- Maximum power on the auxiliary output 500 W – 3A – 230V

Only one node for two lamps

Streetlight controller SL42: 0-10V (Dimming)

Applications:

1 lamp 0-10V + 1 lamp ON / OFF
at the auxiliary ouptut



1 lamp 0-10V
+ Christmass lighting

Streetlight controller SL42: 0-10V (Dimming)

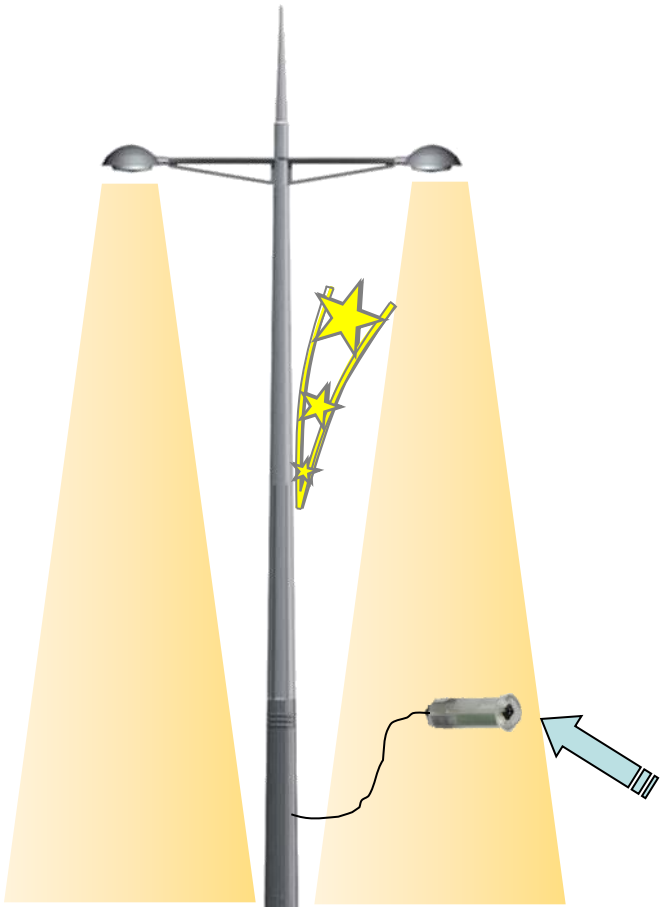
Functional specifications

- Same caracteristic of the ON/OFF node
- Dimming command from 0 to 100% of the parametered dimmer time range.
- Dimming orders are applied progressively according to a parametered ramp (except 0% and 100% orders which are applied immediately)

Hardware specifications

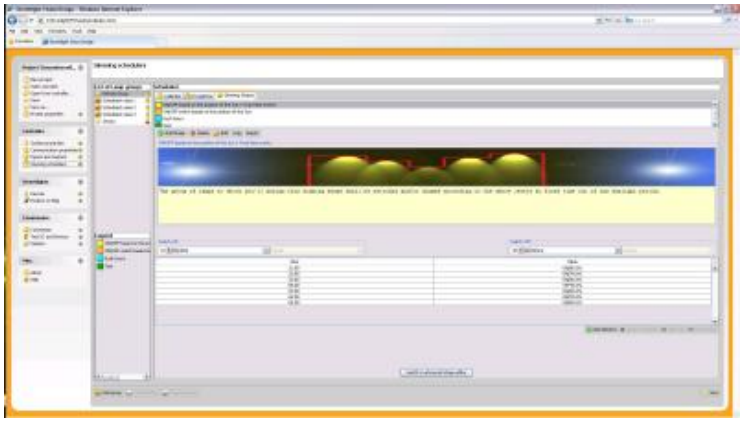
- 1-10 volt ouptut, ballast power supplying by the node
- Grey box / Cover translucend
- Auxiliary output max : 3A – 230V - 500W

Streetlight controller SL42: Accessories



Test accessory after installation

Segment Controller



Key features

- Realtime Operating System
- Realtime clock that get synchronized automatically
- Astronomical clock to determine dawn and dusk from GPS positioning
- Easy programming of the ON, OFF and DIMMING commands at fixed time or time related to dawn and/or dusk.
- Supports up to 150 LonWorks-enabled Streetlight Controllers
- Sends data records on alarm, once a day or on event
- Upstream Communication through a GPRS modem, Wi-Fi network, ADSL network or Radio modem
- Records up to several months of historical data in case of non-communication
- Web Software for the configuration of the Segment Controller and the Test of each Streetlight Controller in real-time

Segment Controller (details)

ON/OFF switch, dimming

- Sunrise or sunset related time with delays, or
- Fixed times
- Single lamps or group of lamps

Automatic data collect

- Local data log up to months (30 MB)
- Automatic data collect (no manual polling)
- GPRS cost optimization (UMTS not necessary)
- Local and centralized alarms

Inputs for measurements and Outputs to control

- Integrated I/Os for door open, main supply control, photo cell
- MODBUS extensions for additional data measurement

Configuration and remote control

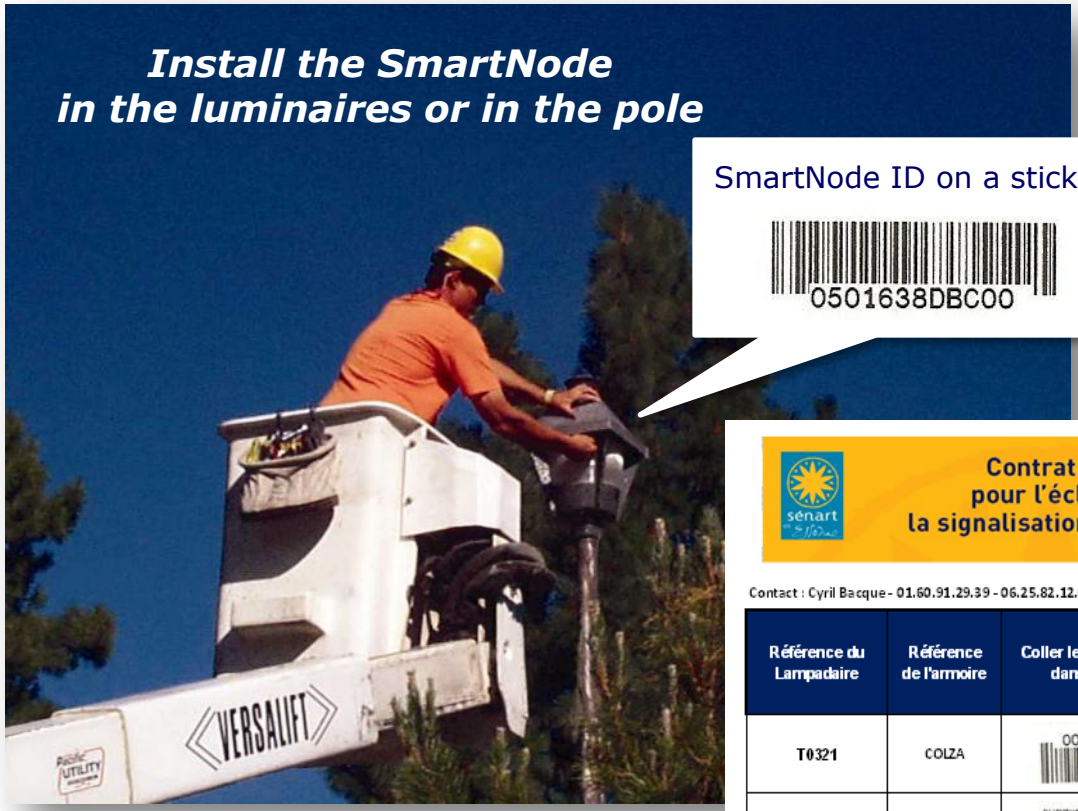
- Realtime through standardized protocol
- Streetlight.Vision DESIGN software
- Streetlight.Vision DATA COLLECT and WEB PORTAL software

Powerline Interface

- EIA709 (LonWorks) is standardized in EU, USA, China
- > 40 million devices communicating via LonWorks and PL
- Bi-directional comm. for Data Collect, Alarms, Remote Control

GPRS: General Packet Radio Service (packet oriented mobile data service for Internet and point-to-point protocol; > 200 countries)
UMTS: Universal Mobile Telecommunications System (3rd generation = 3G)

Simple installation process, step 1: install node



SmartNode ID on a sticker

0501638DBC00

Contrat de partenariat
pour l'éclairage public et
la signalisation lumineuse tricolore

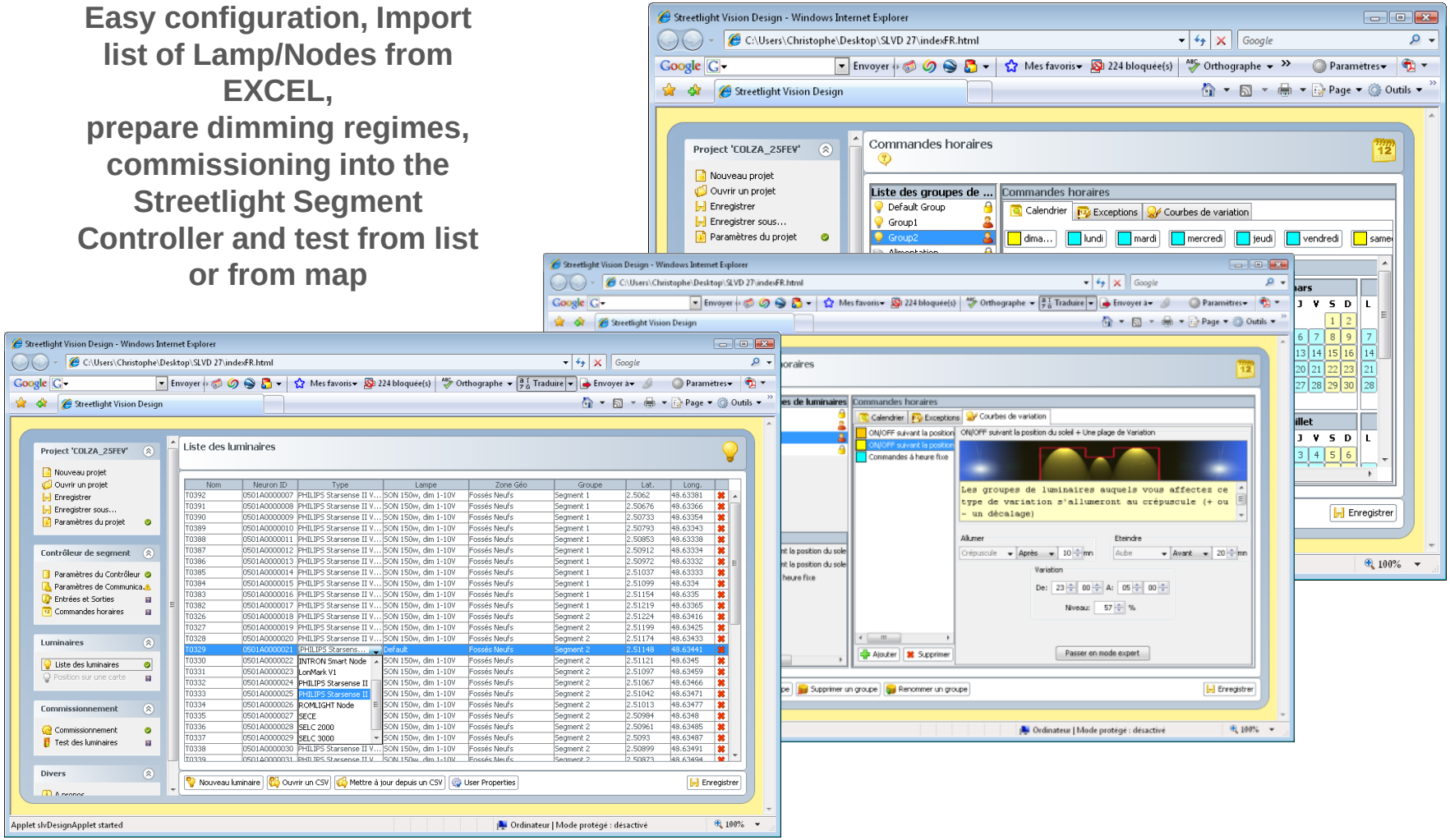
Contact : Cyril Bacque - 01.60.91.29.39 - 06.25.82.12.08 Date : 25 Février 2008

Référence du Lampadaire	Référence de l'armoire	Coller le "sticker" du Nœud dans cette colonne	Adresse	Position GPS		Puissance de la lampe	Type
T0321	COLZA	0501639750		E2,51280	N48,63365	150	SON
T0322	COLZA	0501638DBC00		E2,51303	N48,63379	150	SON
	COLZA	050163884800		E2,51306	N48,63404	150	SON
T0324	COLZA	0501639F8A00		E2,51279	N48,63418	150	SON

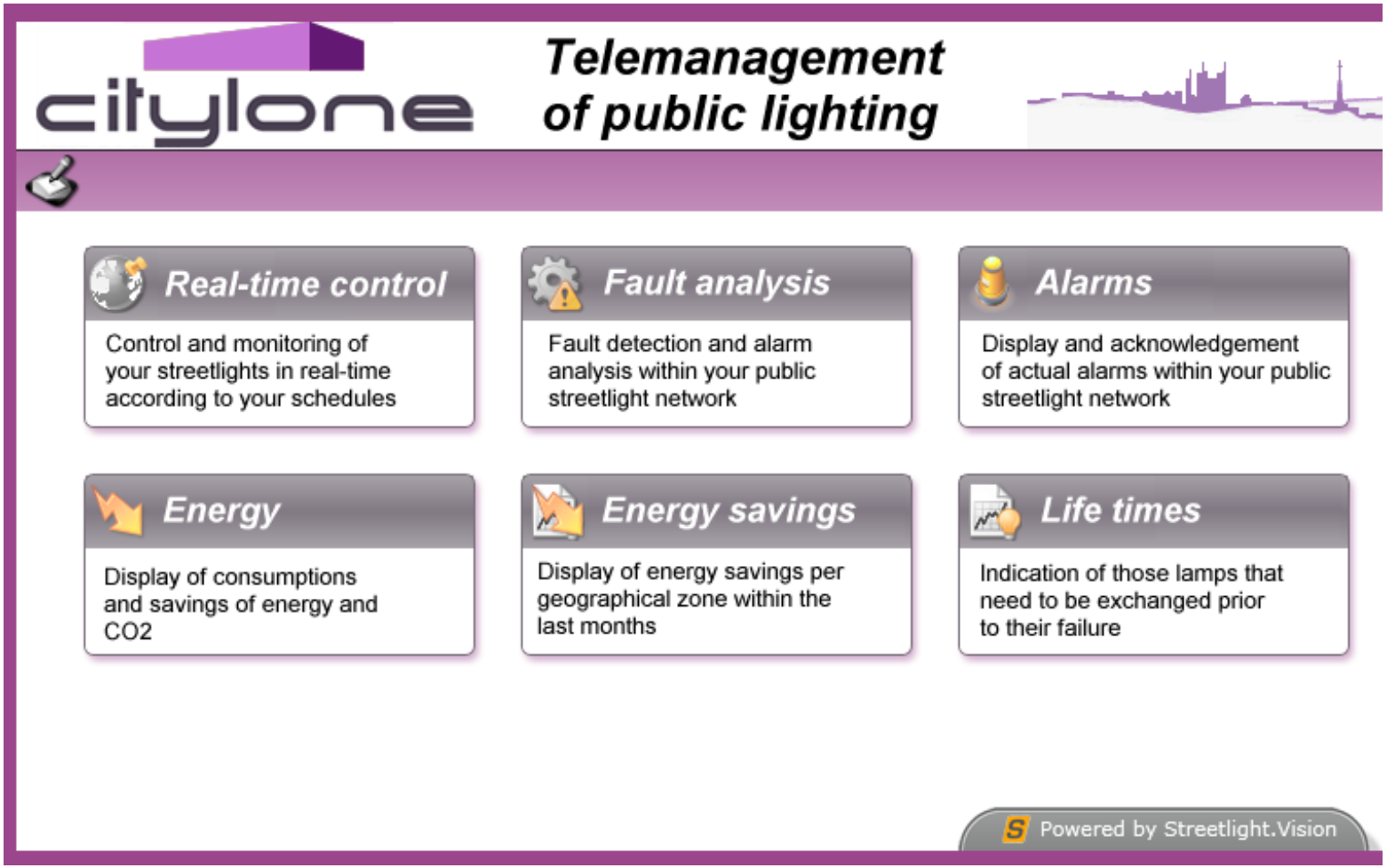
Ballast/Node stickers are
placed here by installer

Simple installation process, step 2: configure

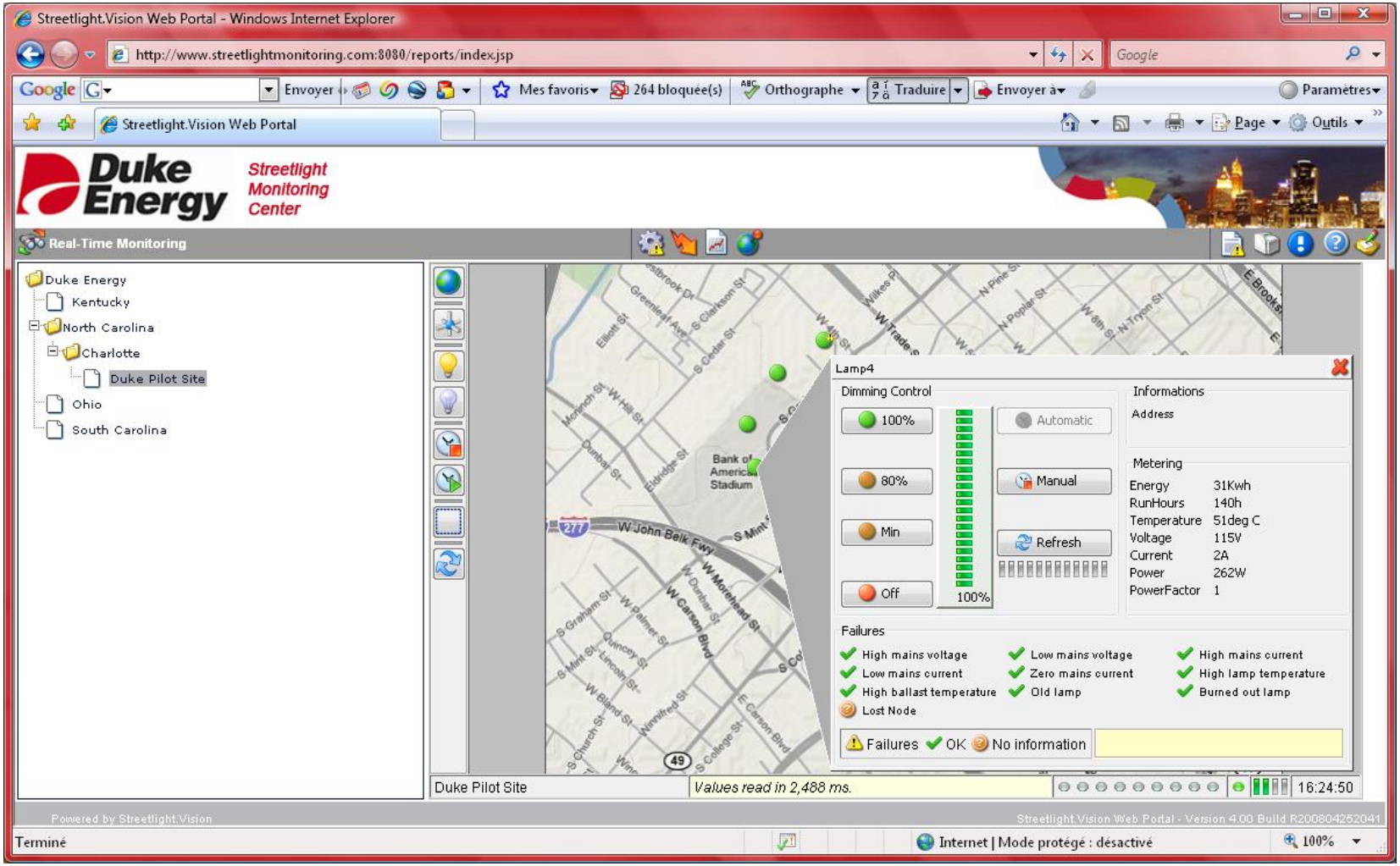
Easy configuration, Import list of Lamp/Nodes from EXCEL,
prepare dimming regimes, commissioning into the Streetlight Segment Controller and test from list or from map



Simple installation process, step 3: subscribe

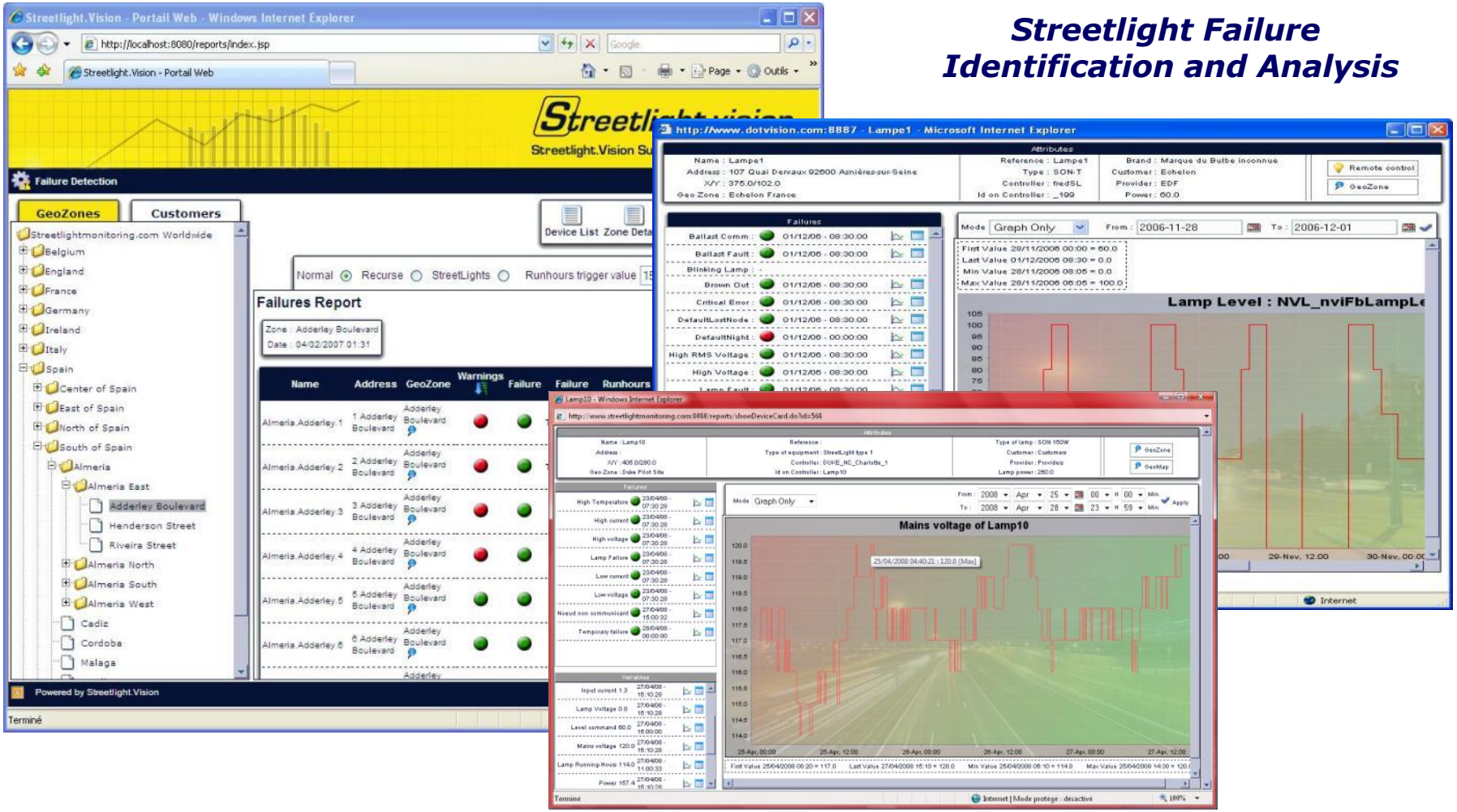


Simple installation process, step 4: test

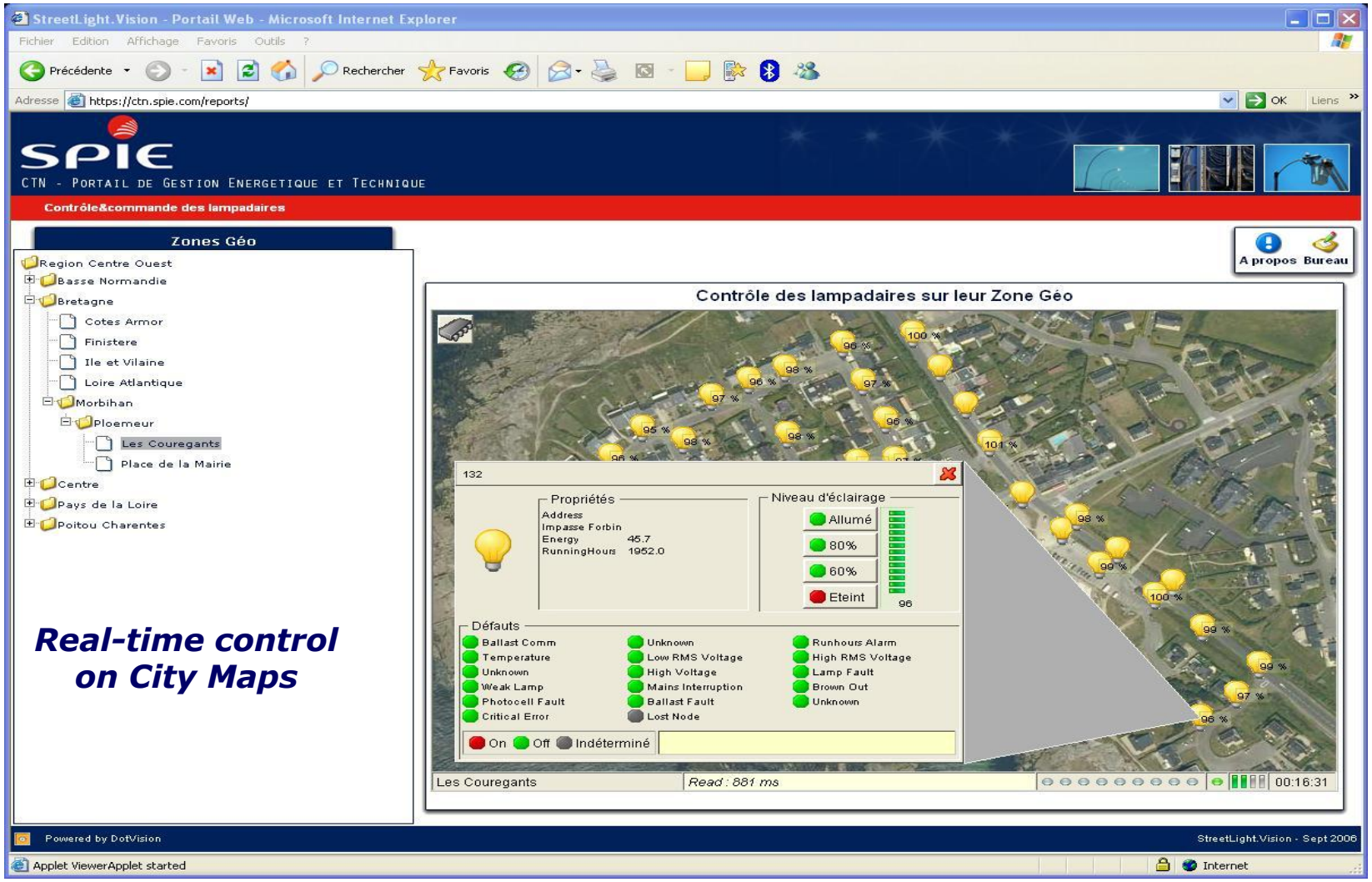


Simple installation process, step 5: diagnose

Streetlight Failure Identification and Analysis

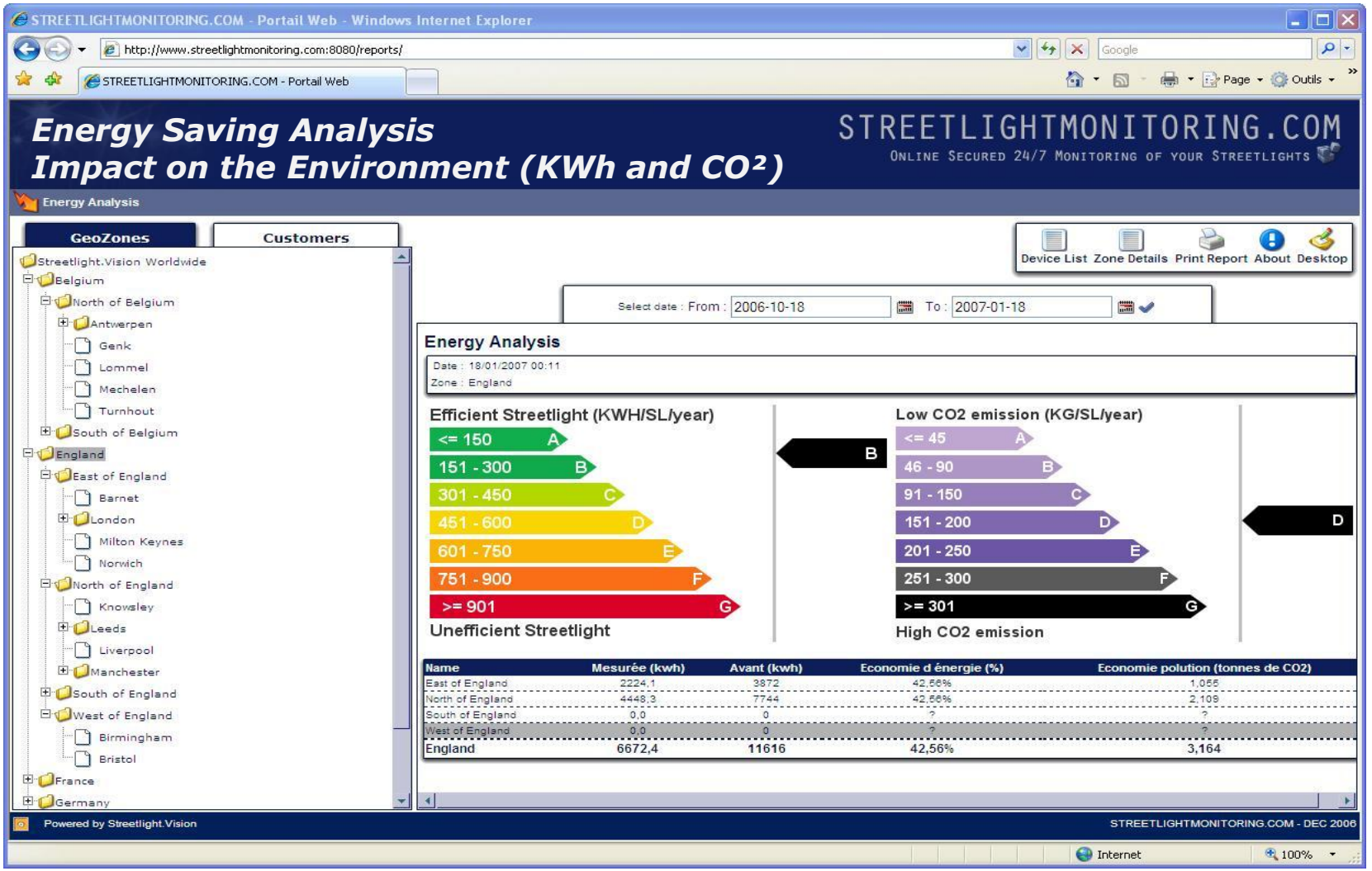


Simple installation process, step 6: control



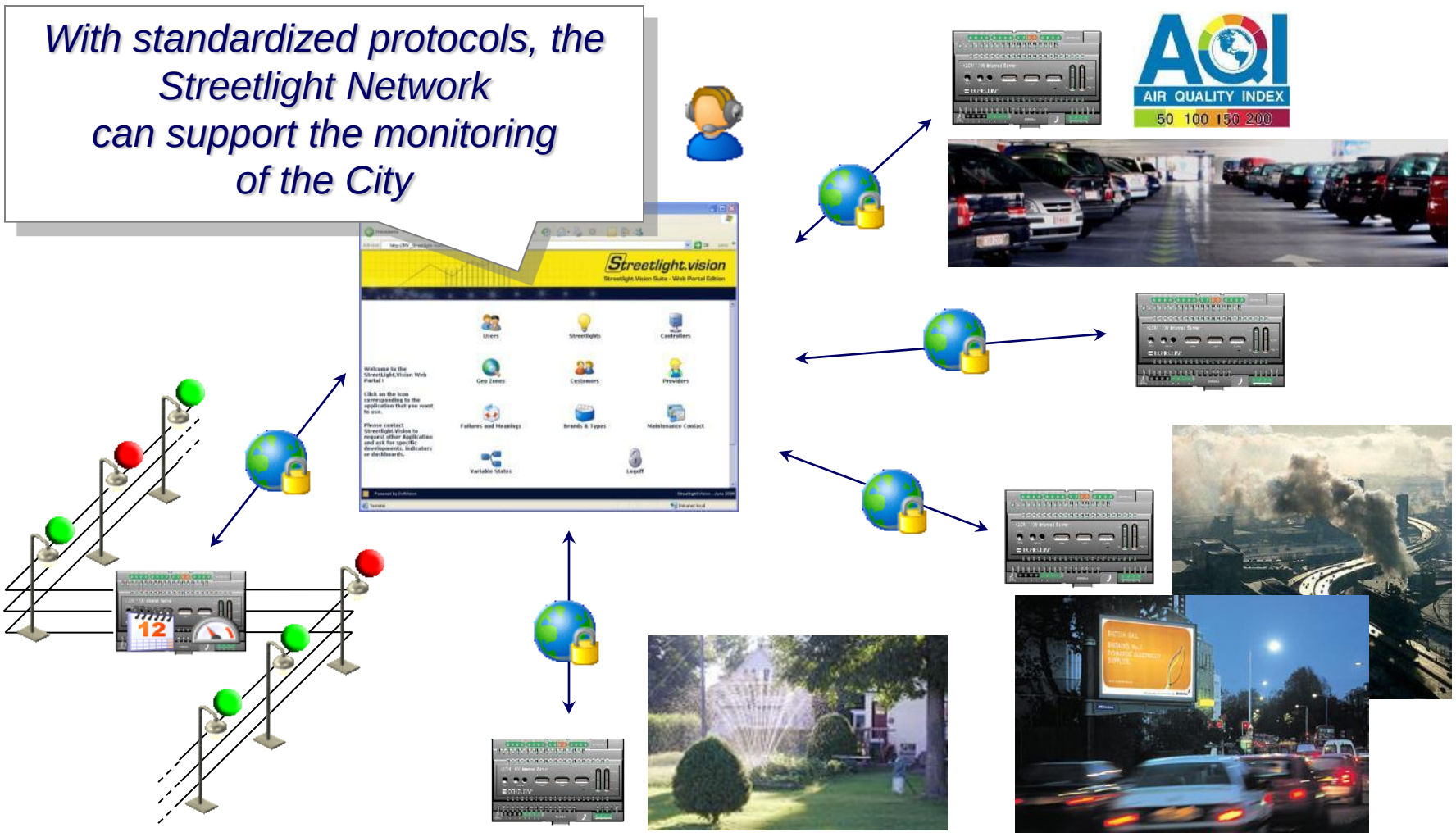
Real-time control on City Maps

Simple installation process, step 7: statistics

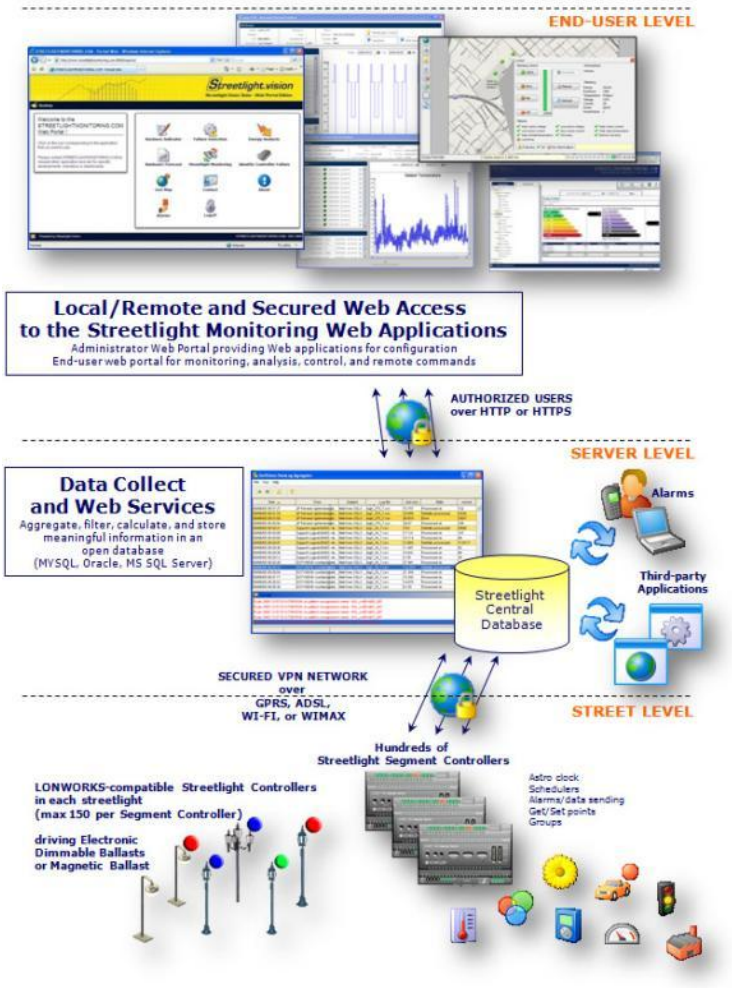


Next steps: Opportunities

With standardized protocols, the Streetlight Network can support the monitoring of the City



Summary



Key benefits:

- **Up to 50% of Energy and associated CO^2 Savings (dimming)**
- **Remove Night Patrols (automatic idetification)**
- **Reduced number of incoming calls from unsatisfied citizens (anticipate failures)**
- **Increased urban security and safety (fast repair)**
- **Reduced light pollution (dimming)**
- **Reduced liability issue (recording)**
- **Reduced installation costs (simple, fast)**
- **Less onsite trips to reduce maintenance costs and associated CO^2 emissions (remote monitoring)**
- **Be under control anytime (web server access)**
- **A multi-brand solution (no dependency)**
- **Get ready for the future (standards: LON, WEB)**
- **Integrated into your existing Information System**

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Possible Streetlight Controllers (SLC)

Key features

- **Can be installed at the bottom of the pole (SCS, Philips, Citylone, SELC 3000, Intron)**
- **Can be installed only in the luminaire (SELC 2000, Philips, Romlight, SCS, Intron, Citylone)**
- **Remote control : ON and OFF (all)**
- **Lamp failure automatic identification (all)**
- **High/Low mains Voltage alarms (SELC, Philips, Romlight, Citylone)**
- **High/Low main Current alarm (SELC, Philips, Romlight, Citylone)**
- **Temperature measurement and alarm (SELC, Romlight)**
- **Measures Voltage, Current, Power, Power Factor (Philips, Romlight, Citylone)**
- **Measures main Voltage and lamp Voltage (SELC)**
- **Measures cumulated Energy consumption (SELC, Philips, Romlight, Citylone)**
- **Measures cumulated number of burning hours (SELC, Philips, Romlight, Citylone)**
- **Measures cumulated Energy consumption (SELC, Philips, Romlight, Citylone)**

Street Light Luminaires and Power Supply

Dolphin
48W – 120W

Sylph
48W – 60W

Street Light Dolphin

Key features

- Unique Design
- Several Power Consumptions, 48W, 60W, 90W and 120W
- Night time energy saving mode by step dimming
- Continuous dimming integrated with 1-10V interface
- Three different optics, optimized for Street Lighting
- Light Color 3000K and 5000K
- Integrated overheating protection
- Long lifetime > 50.000h(L70)
- 5 years warranty
- No UV or IR radiation

Street Light Sylph

Key features

- Slim and cost effective Design
- Several Power Consumptions, 48W and 60W
- Night time energy saving mode by step dimming
- Continuous dimming integrated with 1-10V interface
- Three different optics, optimized for Street Lighting
- Light Color 3000K and 5000K
- Integrated overheating protection
- Long lifetime > 50.000h(L70)
- 5 years warranty
- No UV or IR radiation

Street Light Power Supply Unit

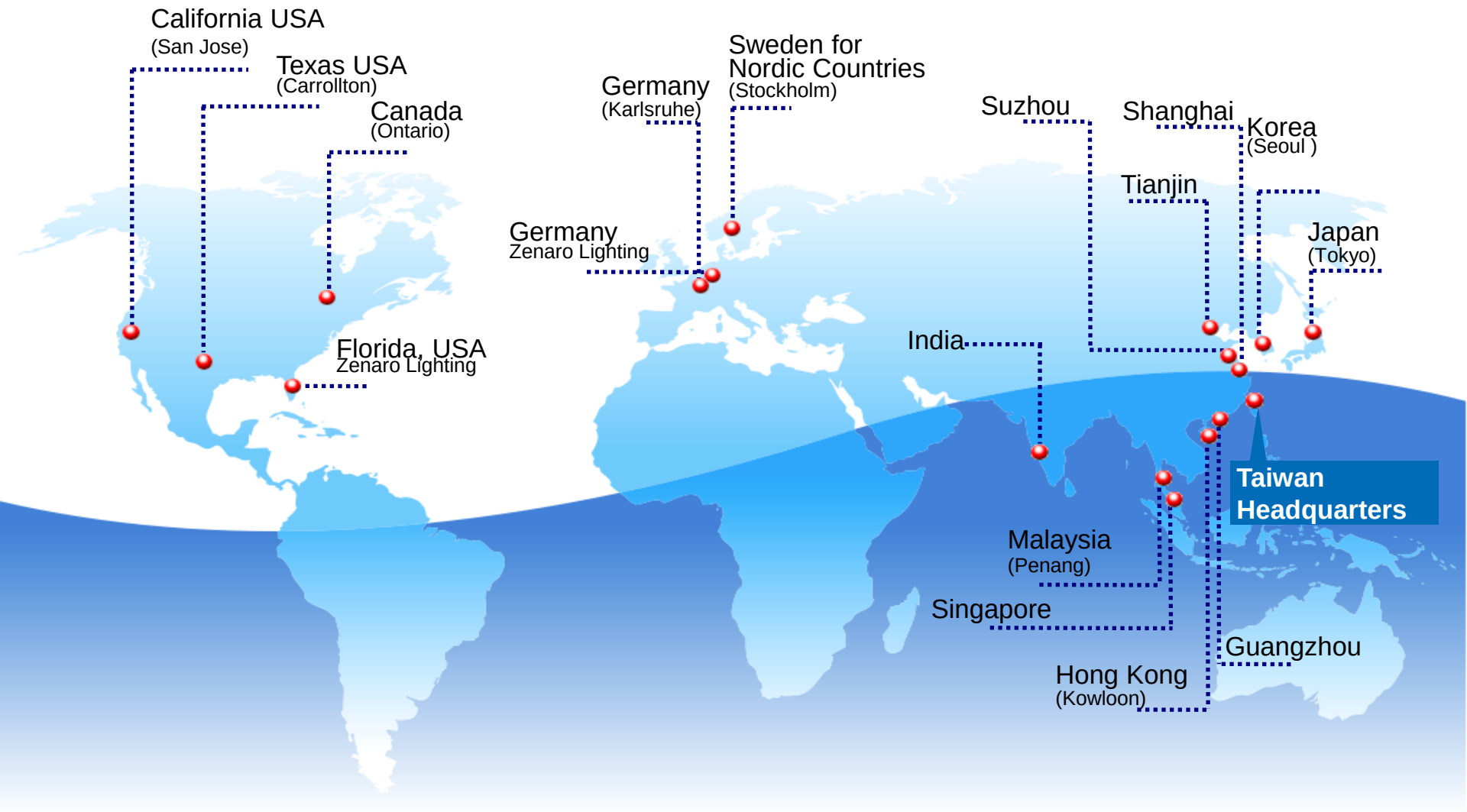
Key features

- Several Power Consumptions, 48W, 60W, 90W and 120W
- High Efficiency > 92%
- Night time energy saving mode by step dimming
- Continuous dimming integrated with 1-10V interface
- IP65 Housing
- EN 61347-2-13 22
- Integrated overheating protection
- Long lifetime > 80.000h
- 5 years warranty
- Made in Germany

Everlight Overview

Founded	1983
IPO	1997
Business Focus	Design, Manufacture & Marketing of Optoelectronics Components and Modules
Headquarters	New Taipei City, Taiwan
Employees	>6,400 globally
Plants	Tucheng (Taiwan) Miao-Li (Taiwan) Su-Zhou (China) Zhong-Shan (China)

Global Network



Thank You For Your Attention

LCC GmbH
Siemensallee 84, 76187 Karlsruhe, Germany
Phone: +49-721-82447-3
Fax: +49-721-82447-40
info@zenarolighting.com
www.zenarolighting.com