## **Smart Street Lighting for Smarter Cities**

TVILIGHT

## CityManager CMS

V06.02.2025

Who we are? Specialist in Smart Outdoor Lighting



We enable cities to take full control of their Lighting Infrastructure based on Open Standards

### **Global Presence: Smart Streetlights Operational Across 1000+ Cities**



### Monitored & Managed by CityManager and Supported by Tvilight Service Desk

Selected Smart Street Lights Projects (individual level monitoring & control)

- Dortmund (DE) 44.000+
- Dutch Railways (NL) 10.000+
- Odos (GR) 10.800+
- Luxembourg City (LU) 9.000+
- Helmond (NL) 10.000+
- Jaipur (IN) 7.500+
- Chattogram (BD) 7.500+
- Seoul (KR) 4.000+
- Indonesia (ID) 2.000+
- Sohar Port + Muscat (OM) 1.500+

https://tvilight.com/case-study/

## **Urban Streets**

## **Industrial Zones**

## **Residential Areas**

## Train Stations / Railway Lines

## **Ports / Sea Terminals**

## School / University Campus

## **Bicycle Roads**

## **Outdoor Parking**

## **Public Parks**

## **Smart Lighting Solutions**



### Single Platform to Manage RF Mesh and IoT Networks





## Integrated Batch & Individual Light Point Control



### **CityManager Central Management System**





- Secure platform, accessible from anywhere, at any time. ISO and NEN certified CMS server infrastructure
- Monitor, manage and control citywide streetlights with intuitive interface
- Open API, TALQ and uCIFI compliance ensure vendor-neutral interoperability

Weblink: https://tvilight.io/



### **Open, Secure & Interoperable**



## Vendor neutral system

- Open API and TALQ compliance ensure easy integration with thirdparty applications
- Successful integration examples:

- Cisco Kinetics
- SixData luxData.light
- Thorn UrbaSens
- Montad Moon
- Dynniq ImCity
- Osram Lumldent
- Bee Smart City
- Siemens / Atos

### **Manage Streetlights Remotely**



# Intuitive web interface renders total control

Secure cloud hosted platform, accessible from any web browser, from anywhere, at any time

Easy-to-understand and easy-touse application interface help manage streetlights effortlessly

ISO and NEN certified infrastructure

## **Control Citywide Lighting**



# Fine-tune lighting as per the demand

- Create custom groups or manage individual streetlights
- Adjust lighting requirements based on:
  - Profiles
  - Specific days
  - Certain events
  - AstroClock
  - Ambient light sensor
  - Human movement (motion sensing)

### **Fine-Tune for Sustainability and Safety**



# High level of control over streetlights

Reduce energy consumption and limit CO2 emissions and light pollution with dimming schedules and motion sensors

Adapt lighting with ease to balance sustainability and citizens' comfort and safety

### **Adjust Streetlight Colours**



# Create the right ambience

- Choose from a broad spectrum of colors or any shade of white to find the right tone (RGBW)
- Adjust colours based on:
  - Profiles
  - Specific days
  - Certain events
  - Human movement (motion sensing)

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Available with Zhaga IoT and NEMA IoT Controllers

### **Citywide Maintenance Overview**



# Identify alerts/ alarms at a city-level

Know the precise location where the maintenance operator should act

 Reduce truck-rolls and subsequent expenses

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Smart City Lighting © 2012 – 2025



# Achieve proactive maintenance

- Get near real-time information of luminaires
- Automatic alerts/ notifications when faults/ outages arise
- Reduce truck rolls by knowing the exact reason of the failure

### **Daily Reports on Lighting Infrastructure's Health**



## Keep citywide lighting upto-date

- Receive automated emails containing vital information:
  - Fault light report

- Daily savings report
- Daily consumption report

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Helps plan maintenance

### **Smart Street Lighting Analytics**



# Gain insights to optimise lighting

- Track lighting performance, status, energy consumption, savings of each luminaire
- Heatmap to identify busy areas / spots
  - Insightful graphical data helps make actionable plan to meet sustainable goals

### **Smart Street Lighting Analytics**





### **Smart Street Lighting Analytics**



### **Advanced Energy Monitoring**



## Detailed information about luminaire health through D4i standard

- Luminaire/ controller operating hours
- Power usage for specific day, week, month or year

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- Driver temperature
- Input voltage

- Input power
- Input current
- Power factor

### **Visualise Entire City's Lighting**



# Beautiful visualisation of citywide lighting

- See when the citywide streetlights precisely turn on, adjust brightness and turn off between sunrise and sunset
- Visualise lighting for the future days/ events

### **Listen to Your City's Heartbeats**



## Valuable heatmaps

- Measure people's movement during different hours at night
- Identify areas / spots that are getting popular

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Spot trends / patterns to optimise street lighting levels

### **View Network Formation**



# See how devices are connected to each other

Helps optimise or troubleshoot coverage issues

### **Historical Reports & Logs**

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## **Detailed historical data**

Address existing faults by tracking similar issues that had occurred in the past

View a detailed log on CityManager

### **Create a Safe Circle of Light for Citizens**



# Set neighbour lighting triggers with ease

On the map view, locate and set the corresponding streetlights that will trigger upon human detection

Helps create a safe circle-of-light, boosting safety perception of road users

### **Different Map Views for Better Perception**



# Understand your lighting terrain

- Map view (with terrain option)
- Satellite view:
  - Tilt view
  - 360° street view (if available)



### Welcoming Login



# Refreshing login screen that inspires

- Dynamic login screen
- Customisation option available

### **Right Control with the Right Person**

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				Profile			yes	yes	yes	yes	yes	
				Group			yes	yes	yes	yes	yes	
				Monitor			yes	yes	yes	yes	yes	
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## Simple user rights

### management

- Decide who can access CityManager
- Define the level of permission:
  - Read only access
  - Admin access
  - Custom access:
    - Device management
    - Lighting profile creation

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Analytics only

### **Rules Engine to Interoperate City Infrastructure**



## **Customisation on**

## demand

We will help you build customised logics, conditions, and events to generate alerts, alarms or triggers actions

Imagine streetlights turning warm bright when fog hits your town or when visibility drops significantly

Inter-connect CCTV/ traffic lights with streetlights via API

### **CityManager with Your Own Branding**



## Version to reflect your own brand

For premium partners/ customers, we can customise and help with your own branding

## Mobile App to Support Commissioning & Maintenance





# Scan & Go for easy commissioning

Make device commissioning easier/ hassle-free for the field crew

 Available for both <u>Android</u> and <u>iOS</u> platforms



### Web App for Maintenance Crew



## Maintenance App for field

### crew

Helps field crew check light points during times when they would normally be turned off, e.g., due to AstroClock

- Fetches all the connected light points near the crew through GPS
  - Eliminates time-consuming and inefficient maintenance process

- Web application ensures easy accessibility from any device
- Weblink: <u>Maintenance App</u>

### Web App for Local Businesses



# LightSwitch for external users

- Temporary authorisation of external users to control pre-defined light points
- Web application ensures easy accessibility from any device
- External users, e.g., a shop owner can regulate lighting levels based on a festive events

- Encourage citizen participation
- Weblink: <u>LightSwitch</u>

### **New Features with Regular Updates**



# Addressing your needs is our priority

Features and functions are introduced regularly based on our customers' feedback and requests

### **Project Example – RF Mesh with Motion Detection** (CitySense Plus)



### **Project Example – Neighbour Triggering**



### **Project Example – Information Layers**



### **Project Example – Analytics**



### **Project Example – Heatmap**



### **Project Example – Notifications**



### **Project Example – D4i Data**

RGBW Eco Lamp (0740211006A1)       X         Online status: ONLINE       Image: 03/08/2023 - 15:14										
General Settings	Network	Reports	Changes	Luminaire						
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Smart Driver Information A										
Control Gear Information (DALI MB 0) -										
Device type D4i Smart Driver										
Serial Number	375	93956003349138	841							
GTIN	405	4052899999664								
OEM ID	N/A	N/A								
HW Version	1.1	1.1								
SW Version	2.1									
Integrated DALI Bus Power Supply (DALI part 250 MB 201) Luminaire OEM Info (DALI part 251 MB 1) Energy Reporting (DALI part 252 MB 202, 203, 204) Control Gear Diagnostics & Maintenance (DALI part 253 MB 205)										
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## **Project Example – Adding Devices --- Remotely or On-Site**

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### We Are Here to Support You



## 24x7 Service Desk

- You have your own portal where you can avail
  - Information request
  - Demo project request
  - Technical assistance
  - CMS feature request
  - Technical suggestion
  - Replacement/ return request

- Knowledge repository
- Support Desk

### **Features** to Improve Day-to-Day Operations...





### Perfect Controllability

Whether Mesh devices or IoT devices or both, the platform offers seamless controllability to the users



#### Map-Based Visualisation

Each connected luminaire is represented on a graphical interface on Google Maps, coordinated with GPS

### **Features** to Improve Day-to-Day Operations...





#### Accurate & Real-Time Data

The platform provides automatic analysis and evaluation of lighting data including status reporting and failure alerts



### Automatic Failure Reporting

The platform can identify several lighting-related faults and automatically send failure reports to the concerned personnel

### **Business Case – Dortmund, Germany**

#### **Overview:**

- Location: Germany
- Client: City of Dortmund
- Status: 44.000 full operational smart street lights

### Major Results & Benefits:

- Energy Savings: An average 65% every night
- CO2 Reduction: 1757 tonnes in 6 months
- Enhanced Safety: Improved public and traffic safety with precise illumination
- Cost Efficiency: Reduced maintenance costs through proactive fault alerts
- Smart City Ready: Open standards and APIs allow easy integration and future expansion

# 

### "I can wholeheartedly recommend this lighting system to other cities," Mr. David Obenaus, DEW21

"The system fully meets and exceeds the original vision and requirements," Mr. Meinolf Pflug, Dortmund Civil Engineering Office

#### **Partners:**



## Business Case – Olympia Odos, Greece

#### **Overview:**

- Location: Greece
- Client: Olympia Odos
- Status: 215 km highway, connecting Athens and Patras, has smart Aldriven street lights deployed which adapt illumination based predicted traffic and weather conditions

### Major Results & Benefits:

- Energy Savings: 54% energy savings
- CO2 Reduction: Over 1702 tonnes of CO2 reduced in the last 6 months
- Enhanced Safety: Artificial intelligence ensure optimal light levels based on predicted traffic and weather conditions, boosting safety for drivers
- Cost Efficiency: Remote monitoring and control capabilities from the Tvilight's light management platform enabled efficient maintenance practices, ensuring reduced downtime and overall associated costs
- Future Ready: Open API-based solution opens endless possibilities for the client to integrate various IoT systems to make the motorway safe and modern yet sustainable



"The openness and flexibility of the system proved to be very beneficial, allowing us to integrate artificial intelligence for adaptive lighting," **Olympia Odos S.A.** 

#### **Partners:**



### **Business Case – Dutch Railways**

#### **Overview:**

- Location: the Netherlands
- Client: ProRail
- Status: 10.000 platform lights, across 400 stations are equipped with motion sensors and are fully operational

### Major Results & Benefits:

- Energy Savings: Over 40% energy savings
- CO2 Reduction: Nearly 94 tonnes in 6 months
- Enhanced Safety: Adaptive lighting increases safety for passengers and railway personnel
- Reduced Light Pollution: Positive impact on nearby residents and wildlife
- Cost Efficiency: Proactive maintenance with remote monitoring reduces costs

### Partners:





"We wanted to achieve a few things – lowering energy usage and lighting pollution while ensuring public safety. Tvilight's solution combined this beautifully," **Eelco Krakau, Contract Manager, Prorail** 

"Motion sensor street lighting aligns perfectly with our sustainability goals. It's been instrumental in reducing our carbon footprint, making our stations eco-friendly." **Maurits Pigeaud, Systems Engineer** 

### **Business Case – Münster, Germany**

#### **Overview:**

- Location: Germany
- Client: City of Münster
- Status: All street lights on a 27 km bicycle path are equipped with motion sensors and are fully operational

### Major Results & Benefits:

- Energy Savings: Over 70% reduction in energy usage
- CO2 Reduction: Significant decrease in carbon footprint
- Enhanced Safety: Optimal illumination for cyclists and pedestrians, when and where needed
- Environmental Impact: Reduced light pollution, benefitting nocturnal ecosystem
- Recognition: Winner of German Bicycle Prize for Infrastructure

#### **Partners:**





"The system is very sustainable, and we also have less light emission, which excellently results in protecting the animal world," Andreas Groot-Kormelink, Office for Mobility and Civil Engineering of the City of Munster

"I actually go jogging every other day – and I've stumbled quite a few times. At least now I can see where I'm running. That's really nice," **One of the locals** 

### **Business Case – Helmond, the Netherlands**

#### **Overview:**

- Location: the Netherlands
- Client: Municipality of Helmond
- Status: 10.000 controllers and sensors across main and secondary roads, pedestrian and bicycle paths, residential areas, university and automotive campuses are deployed and fully functional

### Major Results & Benefits:

- Energy Savings: Nearly 70% energy savings
- CO2 Reduction: Over 310 tonnes of CO2 reduced in the last 6 months
- Enhanced Safety: Improved overall safety with optimal illumination
- Environmental Impact: Reduced light pollution, benefitting citizens as well as nocturnal ecosystem
- Smart City Ready: Open API enables the city to incorporate diverse IoT applications to support smart city needs
- Cost Efficiency: Reduction in operating and maintenance costs thanks to precise control over lighting infrastructure and automatic fault notifications and luminaire health data



"Motion-sensing street lighting helps, because it allows to have just as much or as little light as needed. With Tvilight, Helmond preserves citizen safety with maximum energy savings," Alfred Groote, Public Lighting Manager at the Municipality of Helmond

#### **Partners:**

heymans

### Business Case – Chattogram, Bangladesh

#### **Overview:**

- Location: Bangladesh
- Client: Chattogram City Corporation
- Status: 4.800 smart controllers operational and potential project extension for 20.600 light points

### Major Results & Benefits:

- Energy Savings: Over 30% energy savings
- CO2 Reduction: Over 90 tonnes of CO2 reduced in the last 6 months
- Enhanced Safety: Smart profiles and built-in ALS sensors ensure the streets remain well-lit always, boosting safety for public
- Cost Efficiency: Reduced maintenance costs thanks to total control over the public lighting infrastructure and proactive fault alerts from the system
- Smart City Ready: Open API-based solution lays a solid foundation the municipality to move towards its Smart City goals

#### **Partners:**





"With smart street lights that turn ON according to the ambient lighting level, it is a major benefit for the city in terms of improving safety of the Citizens during the overcast days," Engr. M Mahbub Hussain, Managing Director of Trademajestic Limited

### **Business Case – Jaipur, India**

#### **Overview:**

- Location: India
- Client: Jaipur Development Authority (JDA)
- Status: 7500+ IoT and RF Mesh motion sensor-based smart street lights deployed across the city, including the urban and rural areas

### Major Results & Benefits:

- Energy Savings: 55% energy savings
- CO2 Reduction: Over 487.8 tonnes of CO2 reduced in the last 6 months
- Enhanced Safety: The solution ensured consistent illumination, improving safety and deterring unwanted activities
- Cost Efficiency: CityManager and a special request Citizen App from Tvilight, streamed streetlight management, reducing frequent manual inspections and accelerating maintenance response, lowering operational costs
- Future-Proof Investment: Scalable solution enables Jaipur well-prepared for future growth, including total freedom to integrate other smart city applications





"Our city is benefiting in every aspect – from safety and security, to easy access to information, to overall improvement of our image and a stepping into the "Smart City" arena.," **Shikhar Agrawal, Government of Rajasthan** 

### **Selected Case Studies**



Motion Sensor Smart Street Lighting in Belgium

Light on demand at Sohar Port & Freezone, Oman

Learn more



Largest Sensor-based Smart Lighting Project in India

Learn more

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Learn more

### **Selected Case Studies**



Starry Night on the Island of Texel, NL



Intelligent Lighting at famous Van Gogh village, NL



### On-Demand Lighting in Park space, NL



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Learn more

### **Selected Case Studies**



### Adaptive Street Lighting Across Dutch Train Stations

Learn more



Adaptive Lighting Enhances Cycling Experience, DE

Learn more



Solar Street Lights with Motion Sensors, Middle East

Learn more

## Like it.

# Why not give it a try?

## Want to learn more?

Need a quick demo?

Contact us at: sales@tvilight.com

# We look forward to working with you!

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## CityManager















Light Planner

City Cabinet

Passport

Commissioning Export



