LIGHTING & INVESTMENT: SMARTLY CONNECTED
A smart city is....

...a city or group of cities that use innovative *information technologies* and the *involvement of its inhabitants* to sustainably develop its built and natural environment, digital infrastructure, and the quality and efficiency of its services.

- high quality and efficiency
- environmental and economic sustainability
- deep involvement of inhabitants
### The smart city landscape

#### Traffic and Transportation
- Traffic management
- E-parking
- E-ticketing
- City cards
- Bike sharing
- Electric buses

#### Security
- CCTV
- Video surveillance
- Panic alarm
- Fire alarm

#### Data networks
- WIFI
- E-governance
- Public data
- Municipal open data
- City apps
- Sensor networks

#### Utilities
- Street lighting
- Waste management
- Energy management
- Water management
- Smart grid

#### Buildings
- Sensors
- Parking
- Occupancy patterns

### Functions
- Traffic management
- E-parking
- E-ticketing
- City cards
- Bike sharing
- Electric buses
- Public transport management

### Issues
- CCTV
- Video surveillance
- Panic alarm
- Fire alarm

### Our Offer
- WIFI
- E-governance
- Public data
- Municipal open data
- City apps
- Sensor networks
- Street lighting
- Waste management
- Energy management
- Water management
- Smart grid

### Examples
- Sensors
- Parking
- Occupancy patterns
Smart Street Light System as “Smart City Enabler”

- Wireless Wi-Fi System
- Smart Lighting System
- Multimedia Info Release System
- Public Announcement System
- Smart Security System

Smart Street Light Net
Key issues:

• Fragmentation (*too many projects, too many suppliers*)
• Lack of competence (*too many „smart“*)
• Missing operational and business model
• Lack of ecosystem

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– *these we can solve all*

*We offer you partnership vs. buyer-supplier modell*
Challenges in Lighting of Cities

**High Power Consumption**
- Traditional street lamps consume a vast amount of energy
- The accumulated electricity price exceeds the normal level
- Improper management results in a waste of resources

**Expensive O&M Costs**
- It is difficult to manage a massive number of street lamps
- Preventive maintenance costs are high

**Low-quality City Lighting Service**
- City lighting service is of low quality under adverse weather conditions
- Residents complain about lighting services
Long term vision and short term successes:

- Setting development goals
- ICT and other tools are assets not goals!
- No generic solutions, local context is key
- Changing the cities’ operating model
- High quality and efficient solutions
- Environmental and economical sustainability

We as an **integrator** help You to become a smart city...
We develop with you:

I. Operational framework and analysis

- Service portfolio
- Data stock
- Partners
- Forms of collaboration
- Forms of financing

Operation analysis

- Partnership process
- Structure of operation
- Legal framework

Operational model

- Funding models
- Operation financing
- Development financing

Business model
We develop with you:

- Overview
- Planned operation
- City audit
- Overview of existing strategies
- SWOT
- Future vision
- Goal matrix

II. Strategy planning

III. Action plan

- Actions
- Program management
- Financing model
- Monitoring development
- Detailed program plan
We develop for you:

**LED Street Lighting**
- Dimmability
- Smart control
- Data sensors
- Efficiency
- Photovoltaic power supply

**Function Modules**
- Multimedia display
- Traffic Information Screen
- Micro base station
- Wi-fi
- DSRC Internet of Vehicles

**Extended Function Modules**
- Environmental monitor
- Vehicle power charging post
High Power Consumption
- Traditional street lamps consume a vast amount of energy
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LED Lighting saves up to 80% of energy compared to traditional technologies

Dimmability further increase energy efficiency
Solutions for street lighting challenges

Expensive O&M Costs
- It is difficult to manage a massive number of street lamps
- Preventive maintenance costs are high

Smart Lighting system offers easy maintainance

- Compliance with industry standards
- Decoupling from street lamps, providing strong universality
- Zero installation costs
- Real-time status monitoring
- Real-time fault reporting
- Service life statistics
- GIS-based visual management
Solutions for street lighting challenges

Low-quality City Lighting Service

- City lighting service is of low quality under adverse weather conditions
- Residents complain about lighting services

Multi-level control capabilities, lighting adjusted to environment: daylight/night light, date and time.
Connecting more than Street Lamps, smart lighting communicates with other networks

End-to-End Security Solution: Ensuring IoT Data Security

Sensor and Actuator Layer
Network Layer
Platform Layer
Lighting pole becomes the carrier of smart city equipments, building a scalable architecture for city IoT.

**IoT Services**

- ✓ Smart control over LED lamps
  Adjusts the brightness of LED lamps flexibly, reducing power consumption

- ✓ Centralized sensor installation
  Centrally installs multiple sensors including wind speed, temperature, humidity, and air quality sensors

- ✓ Distributed sensor installation
  Connects the street lamp controller (installed on a street lamp pole) to allow access of sensors installed in other positions

- ✓ Charging piles
  Provides wired and wireless access modes for pile vendors

**Traditional Network Services**

- ✓ Wi-Fi coverage and backhaul
  Provides 2.4 GHz public Wi-Fi access
  Offers backhaul channels for all services provided by smart street lamp poles

- ✓ Video surveillance
  Integrates video surveillance cameras

- ✓ Outdoor LED display
  Enables advertisement pushing, environment information publication, and emergency information release
Examples from INESA
LED Street lighting

Definition
Functions
Issues
Our Offer
Examples
Function Modules

Multimedia Display

Traffic Information Screen
Function Modules

- Micro Base Station + WIFI
- Photovoltaic Power Supply
- Smart control
- DSRC Internet of Vehicles
Extended Function Modules

Definition

Environmental Monitor

Vehicle Power Charging Post

Functions

Issues

Our Offer

Examples
Extended Function Modules

- Intelligent Dustbin
- Manhole Cover Monitor
- Comprehensive Urban Management

Real-time Monitor
Remote Control
Multi-Model Communication
Operation Statistics

Examples

Definition
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NEXT STEPS