Smart City

Health Energy Transportation Environment

Institute for Information Industry
Republic of China (Taiwan)

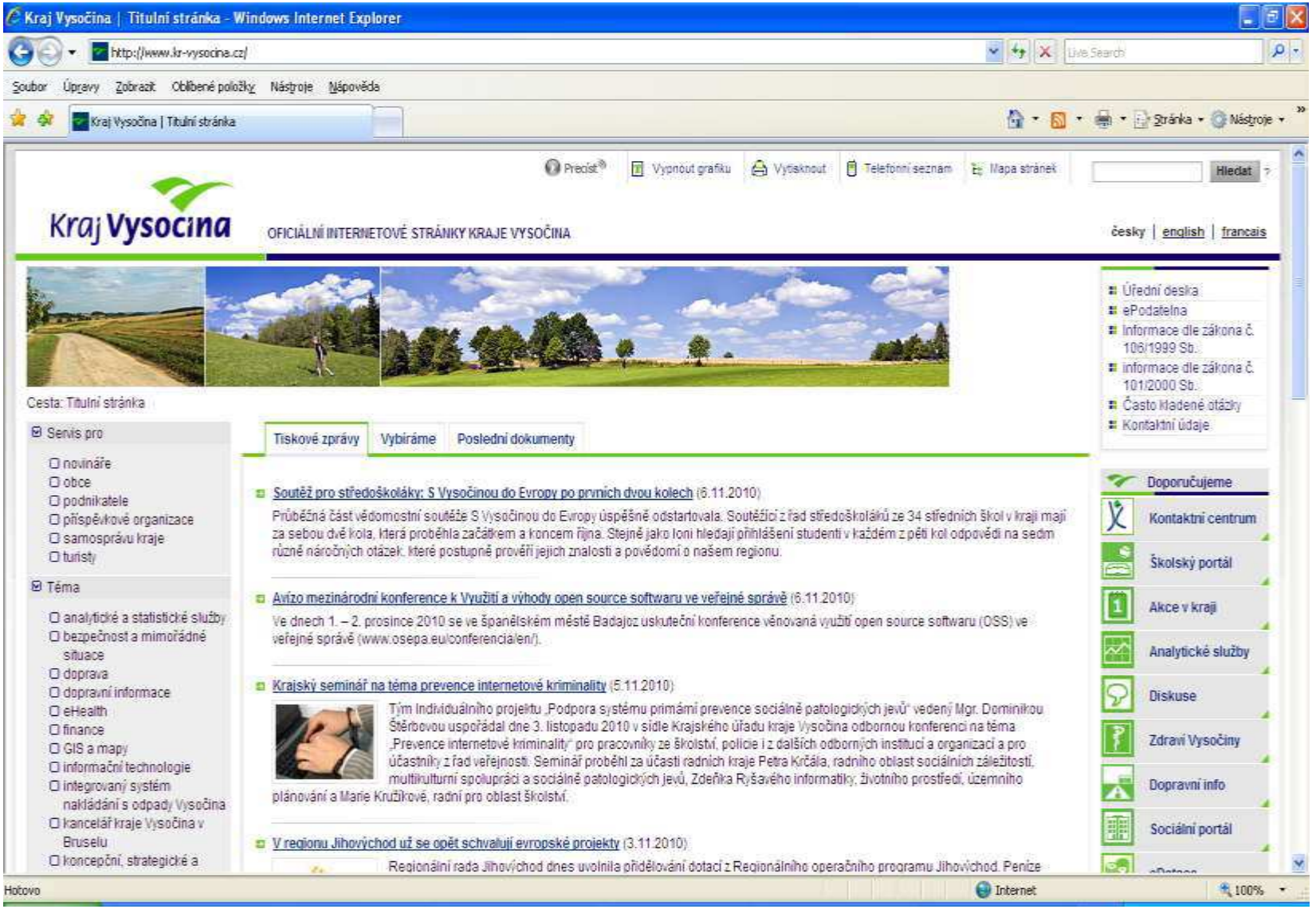
April 03, 2017

1. e-Registration System for Hospital Network

- **Proven solution in Vysocina, Czech Republic and Asia**
  - **Czech Republic successful e-Registration system implementation and operation in Vysocina Regional Hospitals with +57,000 users**
    "2011 Best e-Government Service" prize awarded in Nov. 2011
    (1) Jihlava Hospital, system operation started in June 2011
    (2) Pelhrimov Hospital, system operation started in Feb 2012
    (3) 3 hospitals, system operation started in June 2012

- **More than 30 hospitals with e-Registration System, Integrated Hospital Information System implemented in Taiwan, China, Vietnam**

More than 57,000 Users
2011 Best e-Government Award, Czech



Hospital Internet-Registration/System Benefits

1. Citizens

- Make appointment any time, places, devices via Internet
- Know doctor expertise, schedule and hospital news easily
- Reminding appointment
- No more long waiting for diagnosis or treatment
- Make appointment to multiple city hospitals
- Referring from Clinic/GP system

2. Doctors / Nurses

- Know up-to-date patient appointment list and symptoms
- Flexible setting session maximum registration number
- Make patient next appointment in hospital
- Know patient visiting pattern by gender, age,.. etc.
- Know attended, canceled, no show patient number

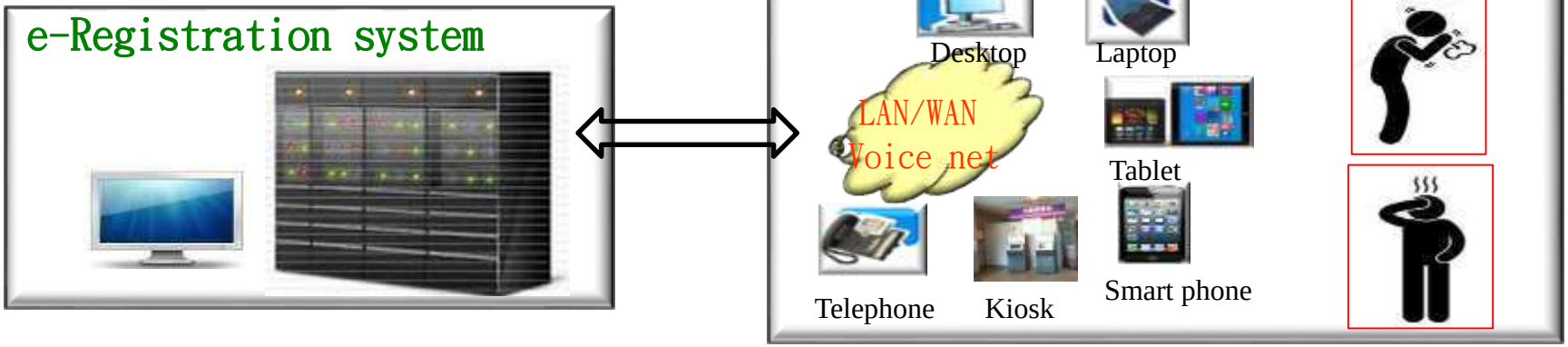
3. Government / Hospital Executives

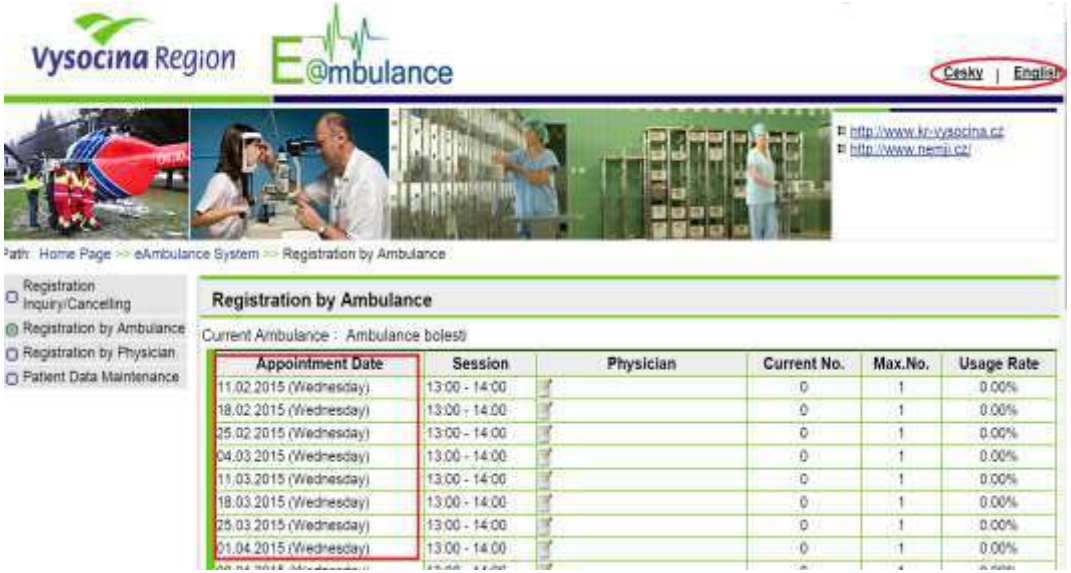
- Offer versatile appointment services to citizens
- Know patient visiting pattern by age, gender, area, profession ,etc.
- Know patient service loading number by hospital, unit, doctor, time interval, etc.

4. Hospital Counter Staff

- No need to re-type patient demographic data, etc.
- No need to generate patient visiting statistic report manually

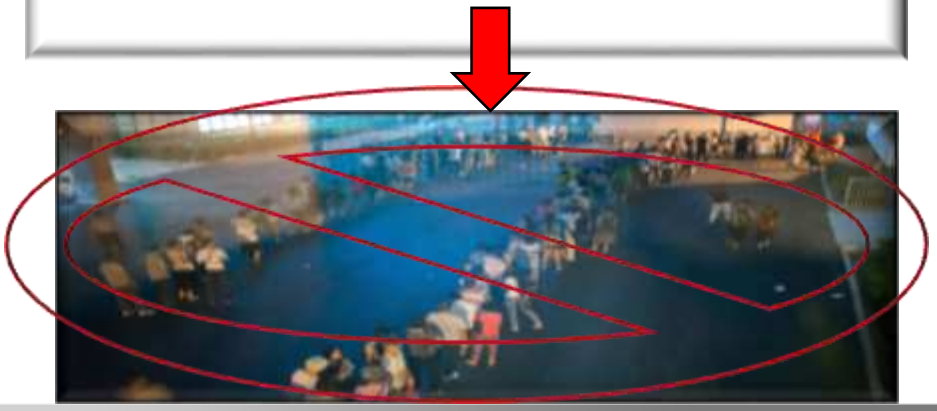
Benefits: Citizens



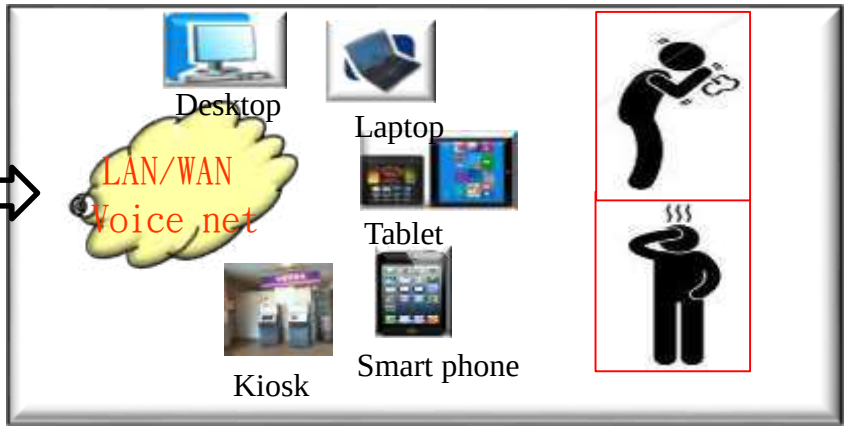


Make appointment

- any time
- any places
- any devices



Benefits: Citizens



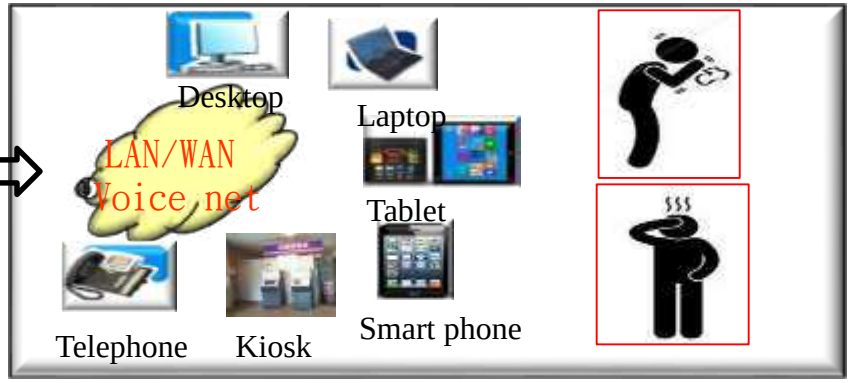
Your Appointment Information :

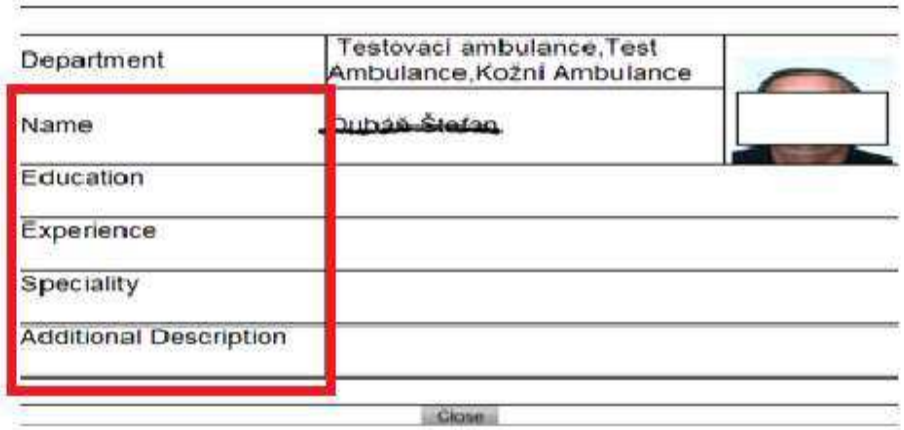
1. Appointment Date/Session: 27.03.2013(Wednesday)15:00 - 16:00
2. Ambulance: Test Ambulance
3. Physician: Dubáň Štefan
4. Sequence: 1
5. Max.No.: 11

No more long waiting:

- Know the visiting time

Benefits: Citizens



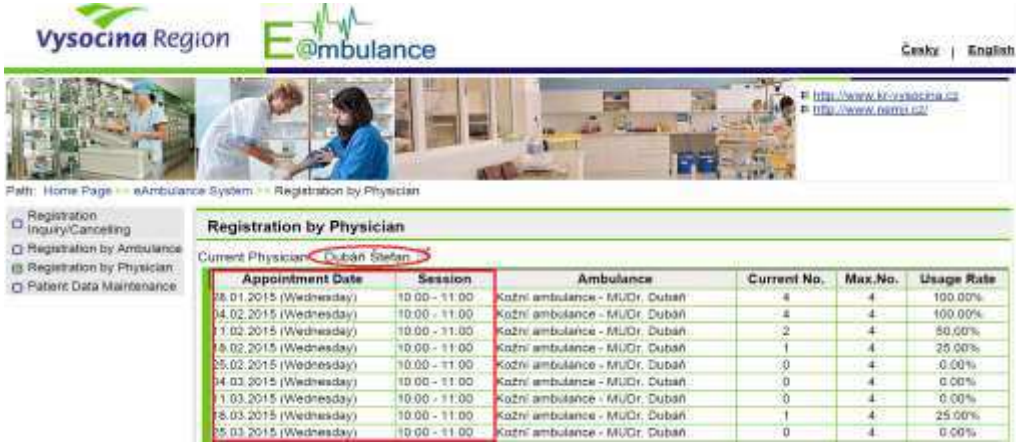


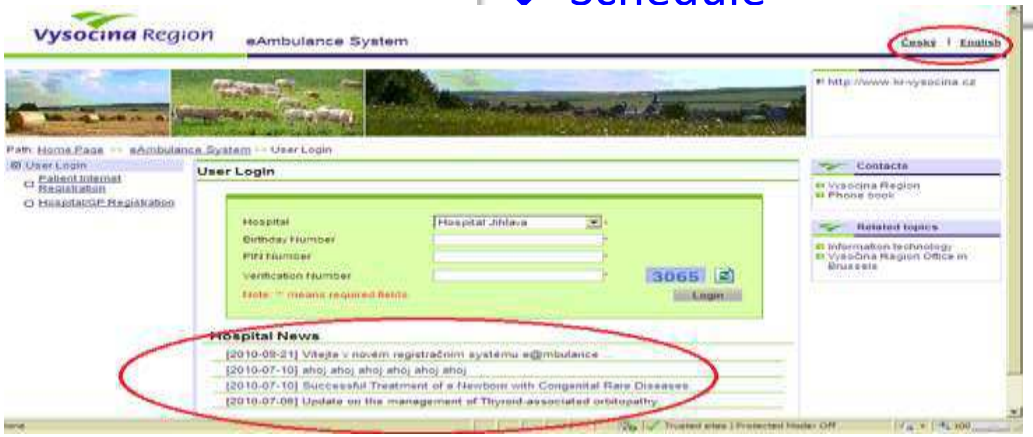
Know :

- Doctor expertise,
- Doctor schedules
- Hospital News

Make appointment to expected:

- Doctor
- Schedule

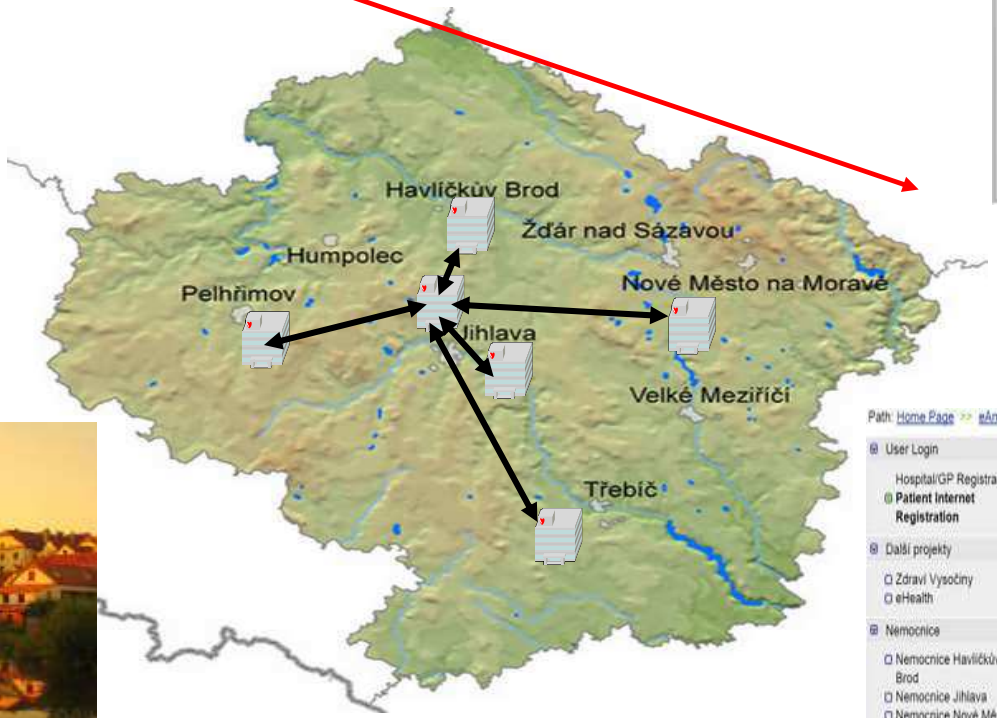


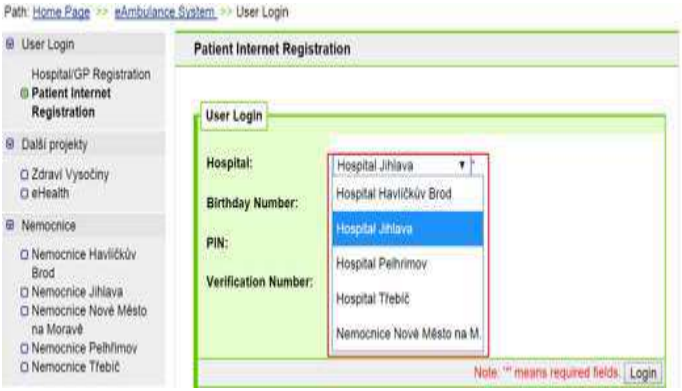


Hospital group or multi-location support for City and Region

1. Karlovarský	8. Královéhradecký
2. Plzeňský	9. Pardubický
3. Ústecký	10. Vysočina
4. Středočeský	11. Olomoucký
5. Praha	12. Jihomoravský
6. Jihočeský	13. Moravskoslezský
7. Liberecký	14. Zlínský

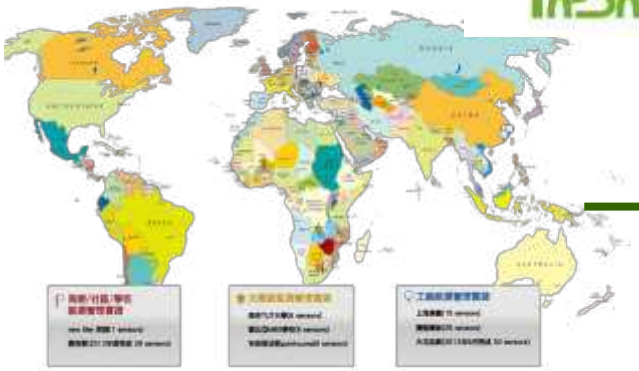
- Hospital group
  - Hospital Jihlava
  - …
- Multi-location
- Integrate with local GP system





2. Intelligent Energy Management System (IEMS) Cloud-based In-Snergy Provides 4+1 Solutions

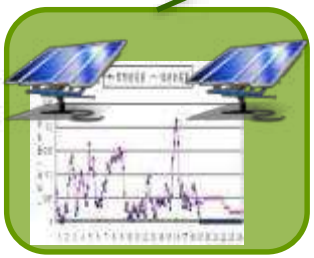
Global Services



Green IOT Cloud Services

Strtaus

Green IOT Applications



In-Solar

Renewable Energy Solutions

Ectuary

Enterprise Energy Management Solutions

iFamily

Smart/Green Home Solutions

In-Light

Smart Lighting Management Solutions

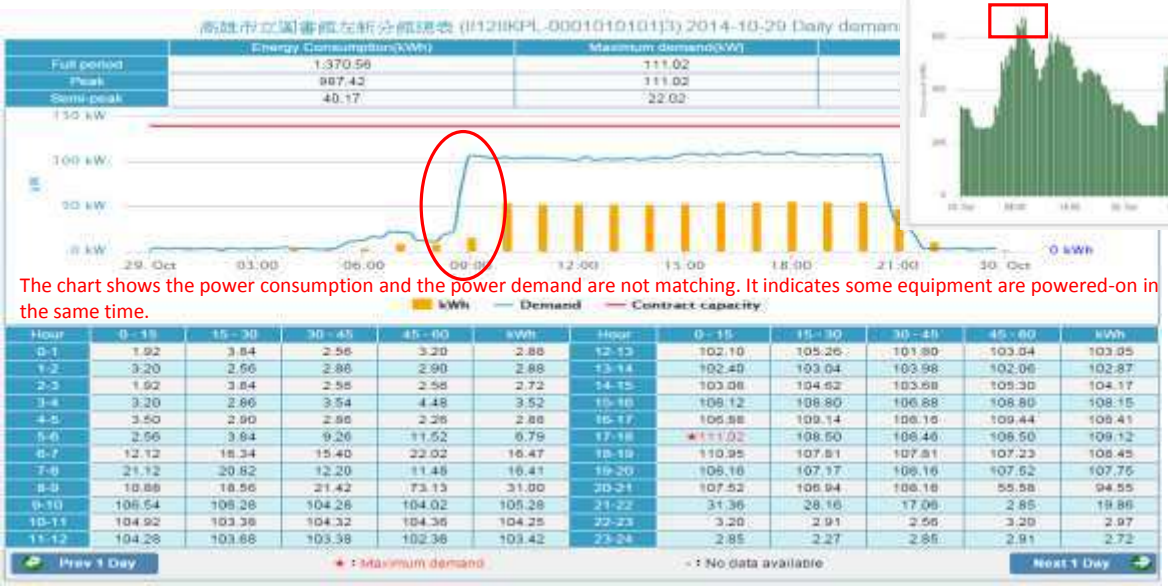
Cloud-Based Intelligent Energy Management System (IEMS)

World 2011 R&D 100 Awards – More then 45 International Patents

In-Snergy (Internet Smart energy):

- Green IOT(Internet of Things) Platform
- Internet-based cloud technology offers always-on 24 hours a day year-round service in monitoring and optimizing electricity usage environment to raise power usage efficiency and help to ensure comfortable outdoor and indoor environments
- Simple, adaptable, ready-to-use energy monitoring and management solution, applicable in various environments
- A scalable cloud platform, that is easily installed to offer the desired features based on end-customers' needs
- Capable to interact with and manage large-scale sensor equipment
- Based on Open data communication interface (JSON/ SOAP) that can easily integrate with commercially available sensor devices, electric meters, and others
- **More than 370 users worldwide in Europe, Africa, Asia**

2.1 Successful 12% Power / Cost Saving through Demand Power Management and Energy Efficiency Implementation in Factory in the Philippines - 2014



	Energy Consumption(kWh)	Maximum demand(kW)
Full period	1,370.56	111.02
Peak	987.42	111.02
Semi-peak	40.17	22.02

150 kW
100 kW
50 kW
0 kW
0 kWh
29. Oct
03:00
06:00
09:00
12:00
15:00
18:00
21:00
30. Oct
kWh
Demand
Contract capacity

The chart shows the power consumption and the power demand are not matching. It indicates some equipment are powered-on in the same time.

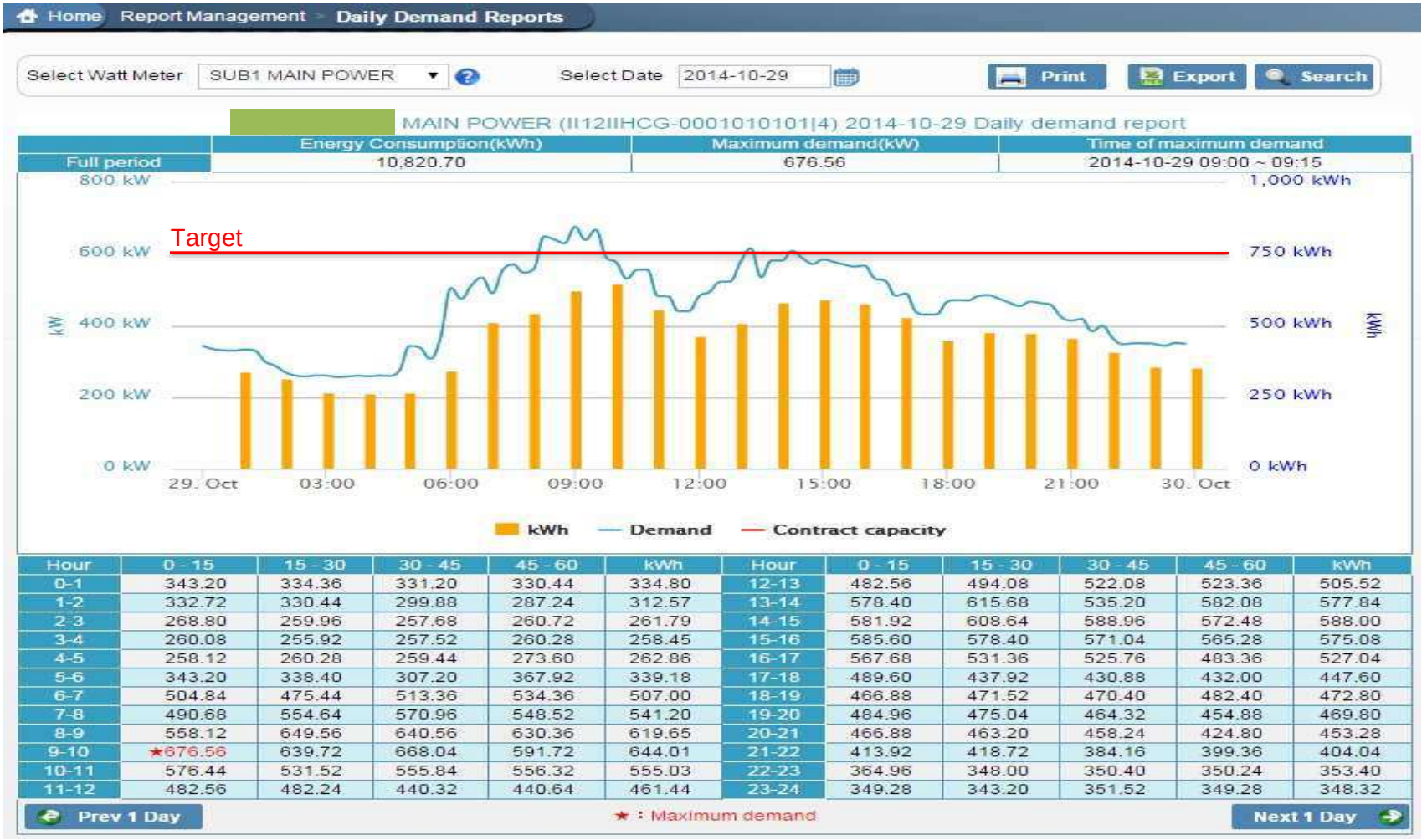
Hour	0~15	15~30	30~45	45~60	kWh	Hour	0~15	15~30	30~45	45~60	kWh
0-1	1.92	3.84	2.56	3.20	2.88	12-13	102.10	105.26	101.80	103.04	103.05
1-2	3.20	2.56	2.88	2.90	2.88	13-14	102.40	103.04	103.98	102.06	102.87
2-3	1.92	3.84	2.56	2.56	2.72	14-15	103.08	104.62	103.68	105.30	104.17
3-4	3.20	2.86	3.54	4.48	3.52	15-16	108.12	108.80	106.88	108.80	108.15
4-5	3.50	2.90	2.86	2.26	2.88	16-17	106.88	109.14	108.16	109.44	108.41
5-6	2.56	3.84	9.26	11.52	6.79	17-18	★111.02	108.50	108.46	108.50	109.12
6-7	12.12	18.34	15.40	22.02	16.47	18-19	110.95	107.81	107.81	107.23	108.45
7-8	21.12	20.82	12.20	11.48	16.41	19-20	108.16	107.17	108.16	107.62	107.76
8-9	10.88	18.56	21.42	73.13	31.00	20-21	107.52	106.94	108.16	55.58	94.55
9-10	108.54	108.28	104.28	104.02	105.28	21-22	31.36	28.16	17.06	2.85	19.86
10-11	104.92	103.36	104.32	104.36	104.25	22-23	3.20	2.91	2.56	3.20	2.97
11-12	104.28	103.68	103.38	102.38	103.42	23-24	2.85	2.27	2.85	2.91	2.72

Prev 1 Day
★ : Maximum demand
- : No data available
Next 1 Day

The peak demand power was caused by the power-on of the waste water treatment plant WWTP

IEMS System Display – Report Management (Sample)

- **Daily power demand report: Hourly records of power consumption and time of *maximum demand, with trend diagrams**



Home > Report Management > Daily Demand Reports

Select Watt Meter: SUB1 MAIN POWER | Select Date: 2014-10-29 | Print | Export | Search

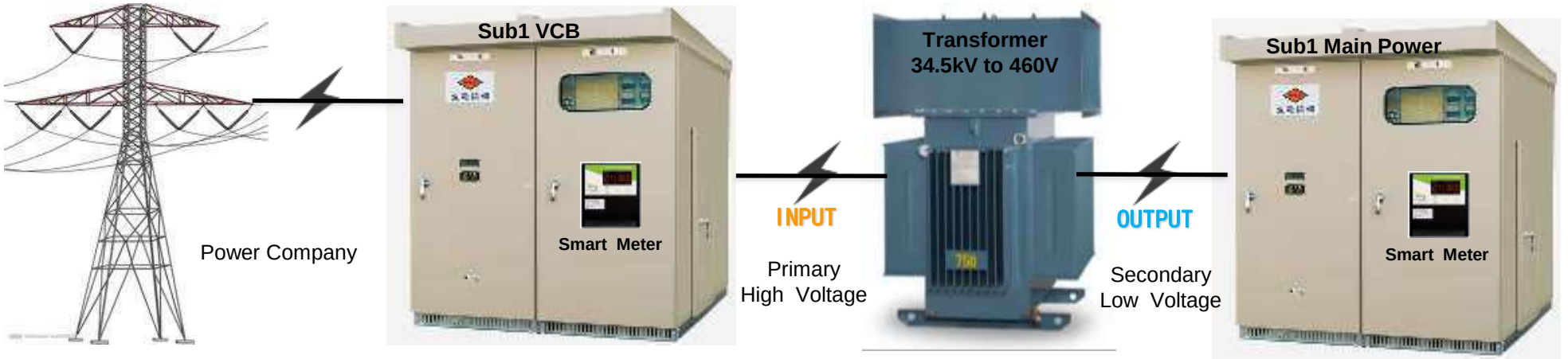
MAIN POWER (II12IIHCG-0001010101|4) 2014-10-29 Daily demand report

	Energy Consumption(kWh)	Maximum demand(kW)	Time of maximum demand
Full period	10,820.70	676.56	2014-10-29 09:00 ~ 09:15

Hour	0 - 15	15 - 30	30 - 45	45 - 60	kWh	Hour	0 - 15	15 - 30	30 - 45	45 - 60	kWh
0-1	343.20	334.36	331.20	330.44	334.80	12-13	482.56	494.08	522.08	523.36	505.52
1-2	332.72	330.44	299.88	287.24	312.57	13-14	578.40	615.68	535.20	582.08	577.84
2-3	268.80	259.96	257.68	260.72	261.79	14-15	581.92	608.64	588.96	572.48	588.00
3-4	260.08	255.92	257.52	260.28	258.45	15-16	585.60	578.40	571.04	565.28	575.08
4-5	258.12	260.28	259.44	273.60	262.86	16-17	567.68	531.36	525.76	483.36	527.04
5-6	343.20	338.40	307.20	367.92	339.18	17-18	489.60	437.92	430.88	432.00	447.60
6-7	504.84	475.44	513.36	534.36	507.00	18-19	466.88	471.52	470.40	482.40	472.80
7-8	490.68	554.64	570.96	548.52	541.20	19-20	484.96	475.04	464.32	454.88	469.80
8-9	558.12	649.56	640.56	630.36	619.65	20-21	466.88	463.20	458.24	424.80	453.28
9-10	★676.56	639.72	668.04	591.72	644.01	21-22	413.92	418.72	384.16	399.36	404.04
10-11	576.44	531.52	555.84	556.32	555.03	22-23	364.96	348.00	350.40	350.24	353.40
11-12	482.56	482.24	440.32	440.64	461.44	23-24	349.28	343.20	351.52	349.28	348.32

Prev 1 Day | ★ : Maximum demand | Next 1 Day

Transformer Efficiency Diagnosis and Analysis (Sample)



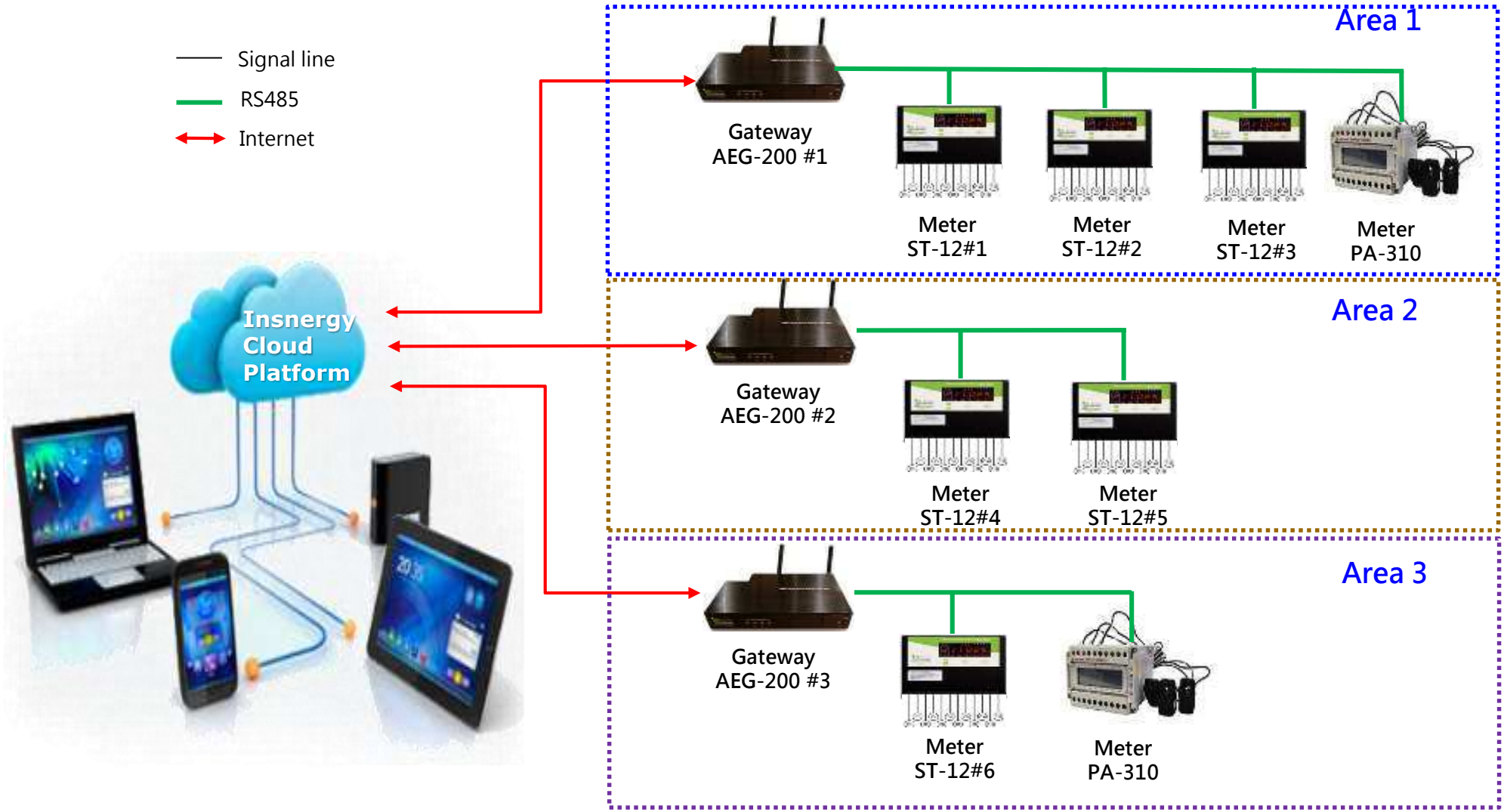
- Input=587.32 kW
- Output=415.27 kW
- System Loss=587.32-415.27=172.05kW
- 172.05/587.32*100%=29%

Transformer Loss

29%

13

IEMS System Architecture



3. e-Ticketing of City Bus, Metro and Other Applications

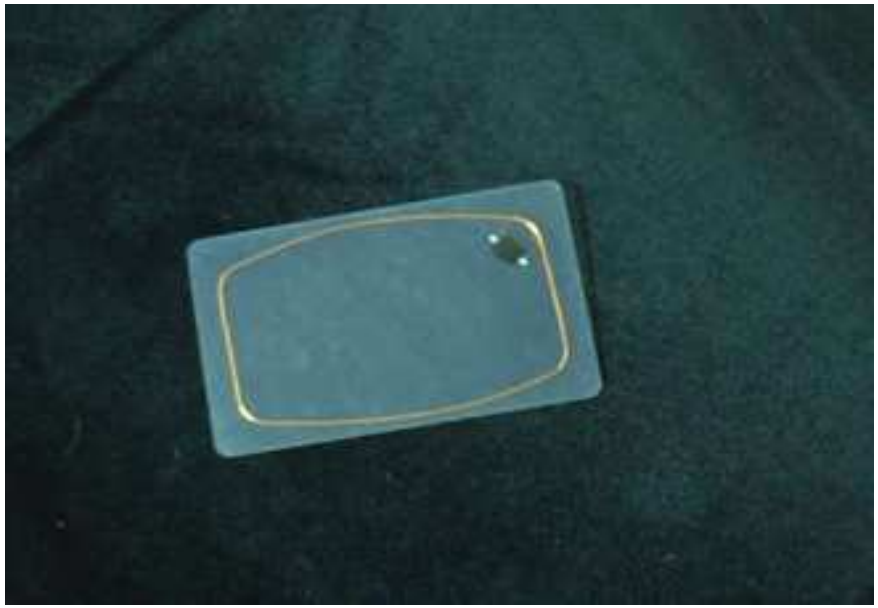
(1) Smart EasyCard for Taipei MRT

(2) Bus

(3) Smart EASYCARD

- A contactless IC card with an embedded chip and wired antenna. Its functions include data storage, logical operations, security, and more.

- Usage area: MRT, buses, trains, parking lots and merchants, etc.



EASYCARD Milestones

2000	• EasyCard Corporation established
2002	• EasyCard launched on public transport systems
2006	• Co-brand cards issued with auto top-up service
2007	• More than 10 million cards issued
2010	• Small-value purchase service launched
2012	• Second-Generation EasyCard launched
2016	• More than 65 million cards issued

(4) Best Practice of Taiwan for EBRD project – AFC System for Pitesti City Bus, Romania

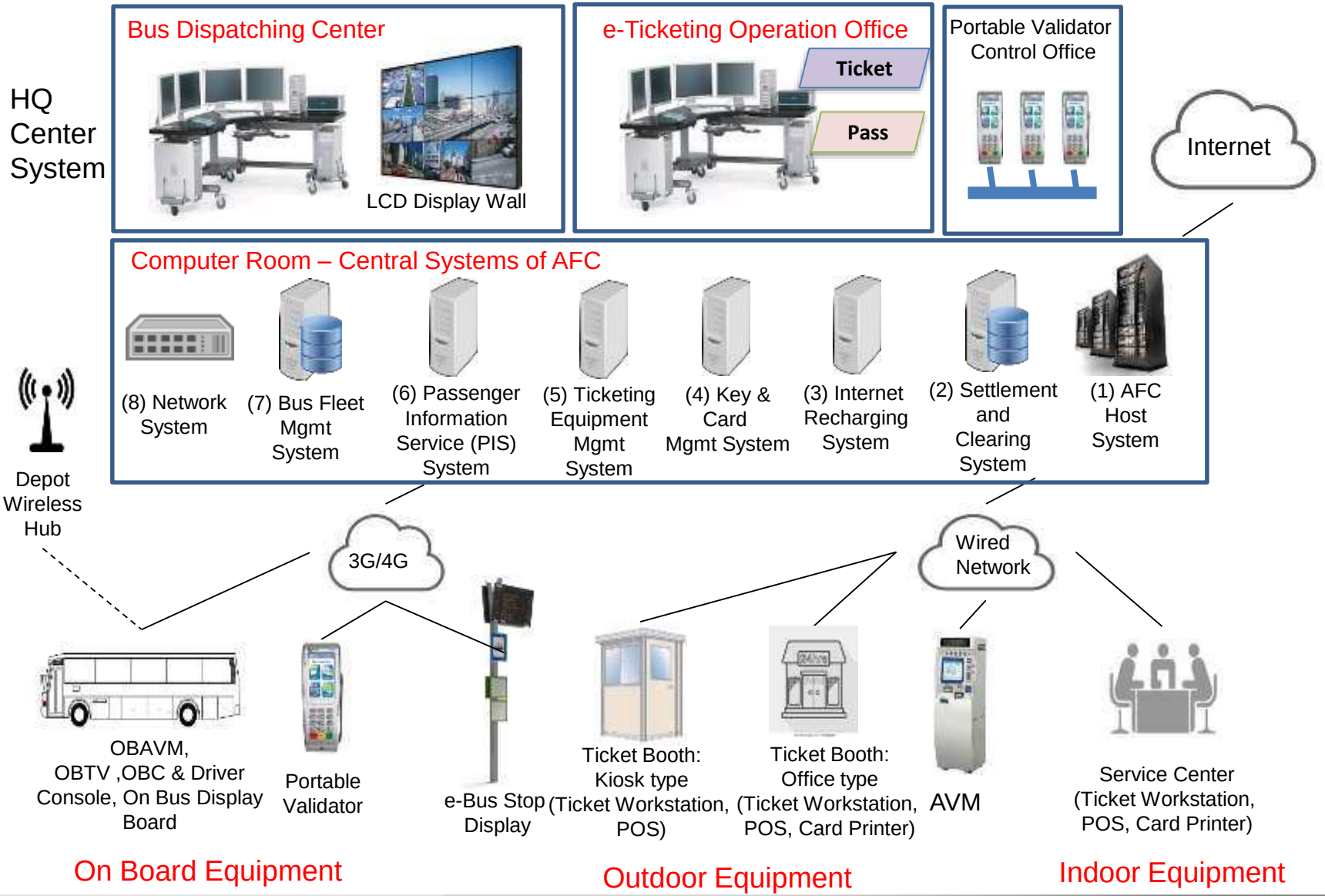


A. The European Bank for Reconstruction and Development (EBRD) is helping to modernize public bus transport in the Romanian City of Pitesti with 13 million EURO loan to the City.

B. The EBRD loan will allow the city to upgrade its aging fleet with the purchase of 70 new environmentally friendly buses. The loan will also be used to introduce an **Automated Fare Collection System (AFC), using Contactless Smart Card.**

C. Through EBRD tendering processing, III consortium, integrating the members of e-Ticketing experts, has awarded the contract in 2015 to contribute the successful best practice of Taiwan for the City of Pitesti for city bus transportation.

(5) AFC System Architecture for Bus



(6) Expected Benefit of the AFC System

1. Benefit for Client
   (1) Reducing the usage of paper tickets and passes, environmental friendly
   (2) Facilitating transportation planning
   (3) Enhancing the customer's service quality
   (4) Increasing operation revenue
   (5) Supporting tariff changes
   (6) Supporting future operation expansion
2. Benefit for passengers
   (1) Efficient validating and reloading
   (2) Flexible tariff
3. Benefit for city government
4. Other transportation operators and service providers in the future

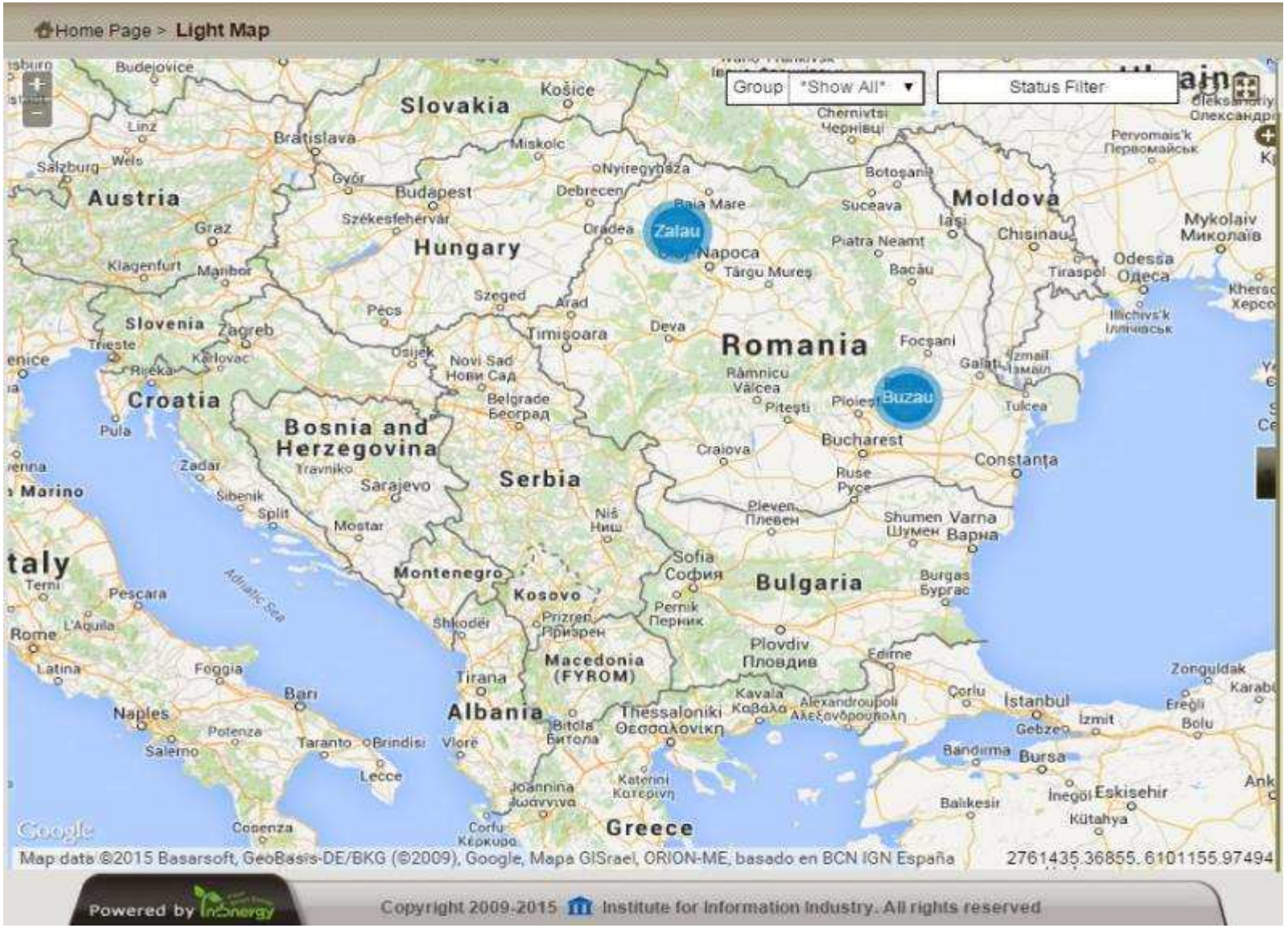
(7) AFC System Financial Analysis - Cost and ROI

1. Investment Cost : 3,600,000 Euro (System equipment and installation, 70 Buses)
2. Operational Cost Before AFC System : 33,700 Euro/month
3. Operational Cost with AFC System : 52,500 Euro/month,
4. Monthly Operational Cost increase after the implementation of AFC system, mainly for the system maintenance and operation:18,800 Euro
5. Revenues from sales of tickets: 3,360,000 Euro/year, 280,000 Euro/Month
6. Subsidy of ticket selling from City Government will be 90% of total revenue 3,360,000x0.9 = 3,024,000/year, annual contribution to the AFC system=3,024,000x20%=604,800, 50,400 monthly

	A. The additional monthly expenses incurred with the implementation of AFC system	B. Reduction of the cash leakage rate	C. Revenue increase with the reduction of the cash leakage rate 280,000x leakage rate	D. Monthly profit and loss after adding the revenue from the reduction of the cash leakage rate C-A	E. Annual profit and loss after adding the revenue from the reduction of the cash leakage Rate Dx12(Month)	F. ROI by year Investment Cost : 3,600,000 Euro /E	G. ROI by year including subsidy from City Government 3,600,000/(E +604,800)
1	18,800Euro	6.714%	18,800Euro	0	0	----------	5.95 year
2	18,800Euro	10%*	28,000Euro	9,200Euro	110,400Euro	32.6 year	5.03 year
3	18,800Euro	20%*	56,000Euro	37,200Euro	446,400Euro	8.06 year	3.42 year
4	18,800Euro	30%*	72,000Euro	53,200Euro	638,400Euro	5.64 year	2.90 year

*The estimated reduction of the cash leakage rate will be ranged from 15~30% after the implementation of AFC.

4. Intelligent Lighting Monitoring and Control - System Lighting Map, Romania, 2015

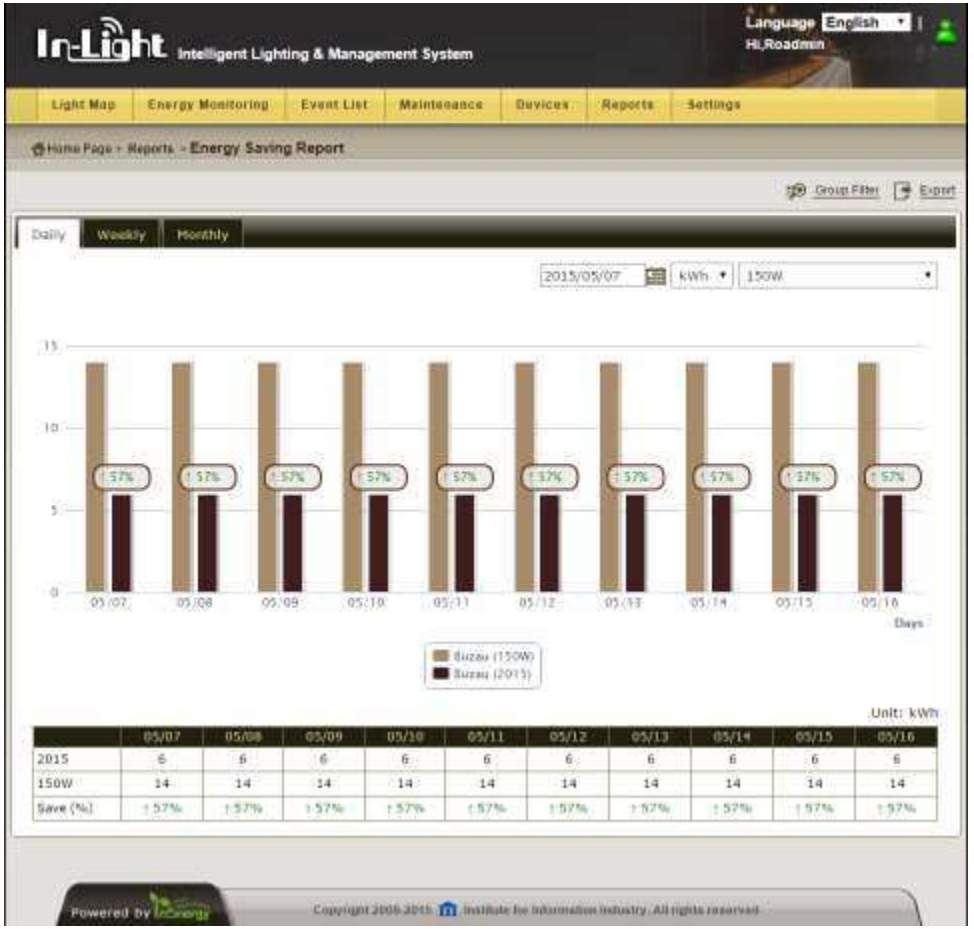


(1) Lighting Photos Buzau , Romania

Before the replacement of LED lighting, the lighting was High Pressure Sodium/HPS). The HPS lights were not bright, and the road were not bright either.

After the Installation of LED Lighting, The brightness of road has improved Substantially.

(2) Power Saving Statistics – Buzau

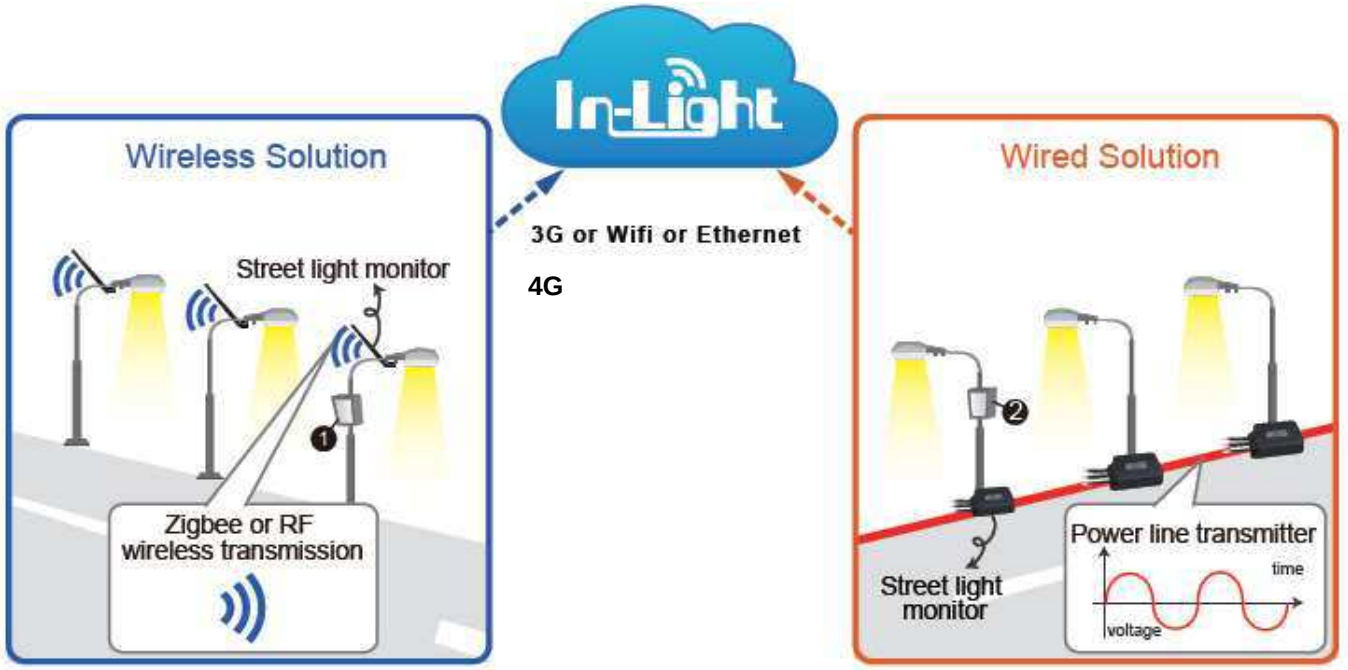


1. 7 100W LED street lights replaced 150W HPS lights
2. 2015-5-7 to 26，the daily total power consumption of LED lights was 6 kWh. Comparing to the original 150W HPS lights with daily total power consumption 14 kWh，
   Power Saving = (14-6 = 8) / 14 kWh = 57%

(3) Thanks from the Deputy Mayor for the Successful Implementation of the LED Lighting and Intelligent Monitoring System

(4) LED Lighting Photos Zalau

(6) LED Street Lighting Single Control

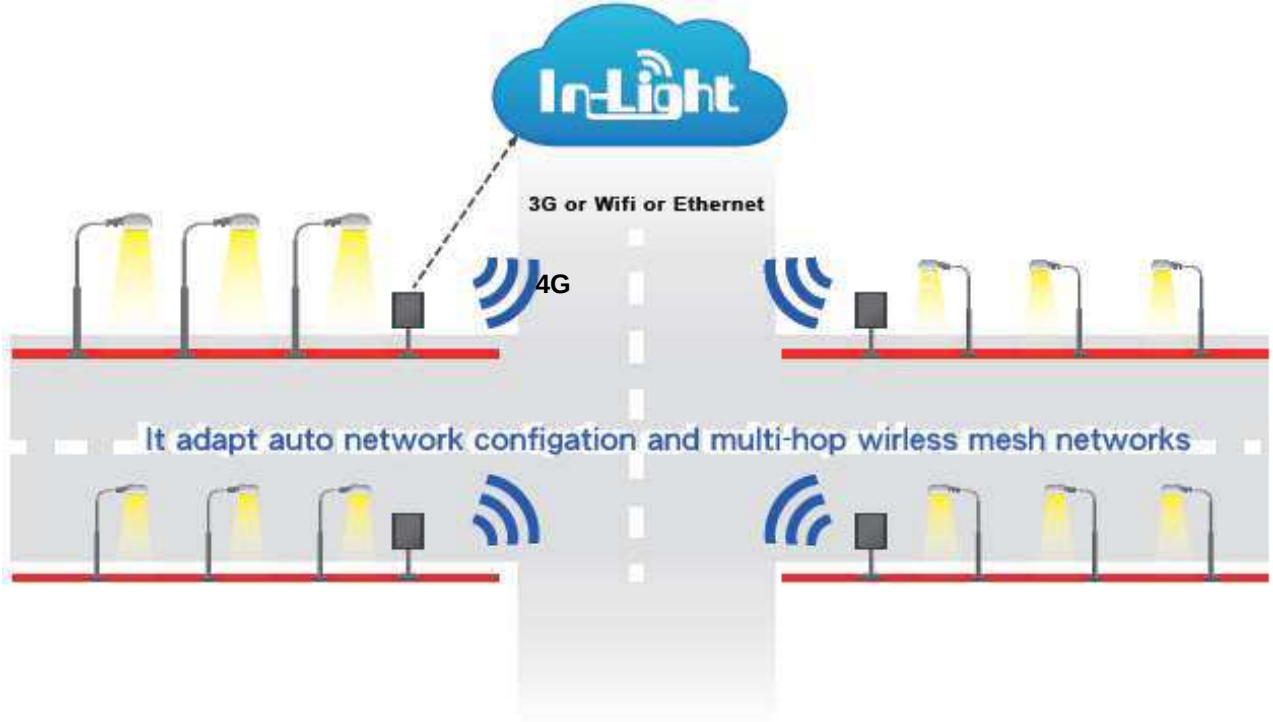


PS1: Street Light Data Collect Box: Contains the communication module and wireless gateway

PS2: Street Light Data Collect Box: Contains the communication module and PLC gateway

This version offers control for individual lights. Each light can be 100% controlled for activation, deactivation, dimming, and scheduling. It also offers both wired and wireless communication solutions and is suitable for control required of individual light.

(7) Circuit Monitoring and Control



Based on electric circuits, this version's street light monitoring control has the ability to remotely control or schedule the operation of street lights of entire circuits. Compared with the single-light control, this version significantly reduces equipment and installation costs and is more suitable for circuit-based with control required field.

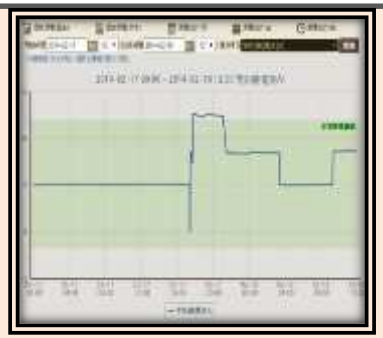
(8) Functions / Features

Map management

- Street light information
- Real-time power consumption monitoring
- Error event management
- Supported maps: Google Map, ArcGIS, Bing Map, Open Layer

Street light curriculum vitae

- Health status of devices
- Error event history
- Analysis of possible reasons of errors
- Suggestions for trouble shooting



Intelligent diagnostics

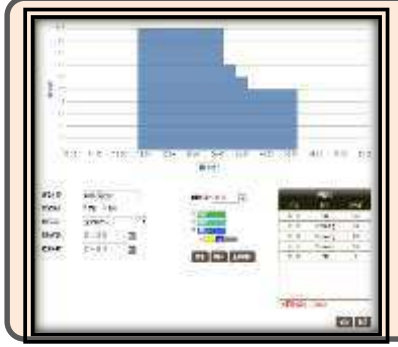
- Big data analysis
- Green expert rule engine
- Historical profile

Repair management

- Management of repairing notification
- Maintenance of the service personal lists of warranty company
- Repair history management

System Statistics

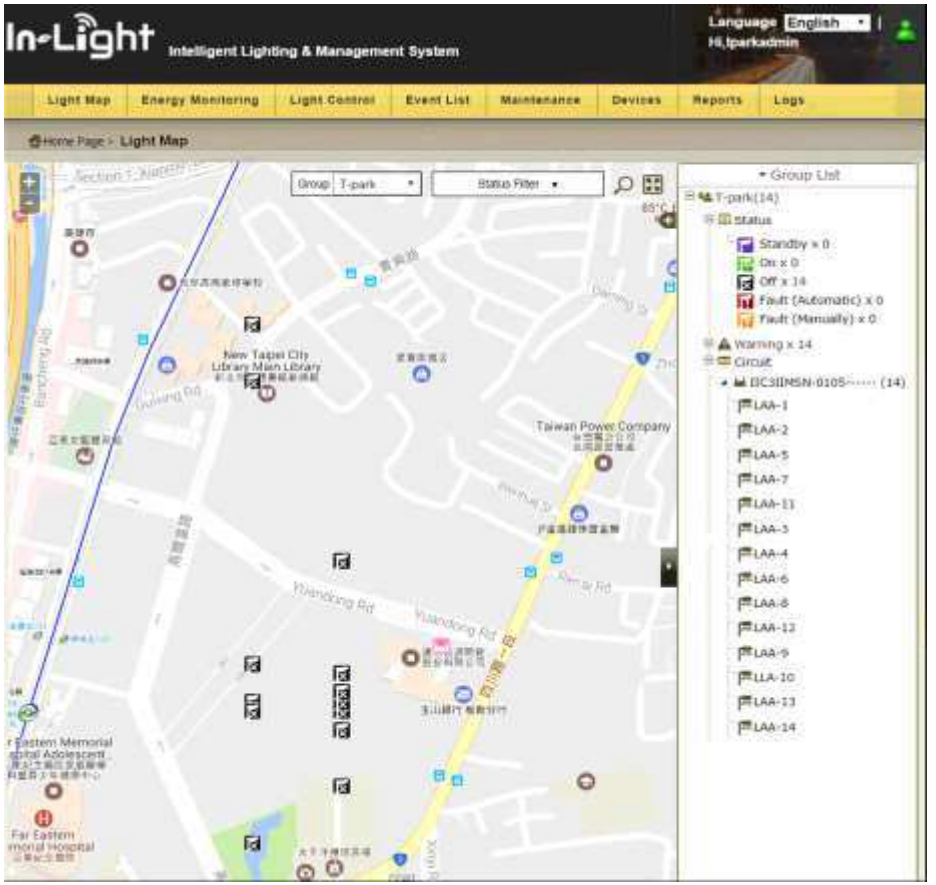
- Statistics of power consumption
- Statistics of street light life hour
- Statistics of error reasons
- Statistics of cumulative carbon emissions



Intelligent control

- Single street light management
- Street lights group management
- Scheduled on-off time, light sensing management

(9) Sample Display – Front Page



- System operation status diagnose for Internet and networking, Light on-off time, and power

ISSS 2017, Hradec Kralove