Emirates Energy Star

Reducing the Carbon Footprint of UAE

November 2013

Emirates Energy Star in the Context of Smart City

ICT Enabled Smart Cities

ICT based solutions can be applied to various functions such as

- ICT for energy savings in buildings
- ICT enabled security services
- ICT enabled telematics
- ICT enabled services for food storage and delivery
- ICT enabled services for health care
- ICT enabled smart education systems
- ICT enabled smart Government
- ICT enabled smart Finance systems
- ICT enabled smart Transport systems

DUBAI
WORLD CENTRAL

ICT

PACIFIC CONTROLS

Dubai World Central

DUBAI INTERNATIONAL AIRPORT

ICT

PACIFIC CONTROLS

Dubai International Airport

Terminal 3

meydan

ICT
Pacific Controls Energy Services Initiative

PACIFIC CONTROLS

Meydan

The most important new business, sporting and lifestyle destination in Dubai

Reducing the Carbon Footprint of UAE

KAUST

ICT
Pacific Controls Energy Services Initiative

PACIFIC CONTROLS

King Abdullah University of Science and Technology (KAUST)

EMAAR

PACIFIC CONTROLS

EMAAR


Ministry of Interior
Directorate General of Civil Defence
24x7
DUBAI CIVIL DEFENCE
24x7 Direct Alarm System

منهجية عمل النظام
Methodology

FACP fault

Fire alarm

عطل بمضخة الحريق
Fire pump fault

تسرب غاز
Gas leakage

انذار/ عطل بالمصعد
Lift passenger stuck

انخفاض مستوى منسوب المياه
Water tank low level

Managed City Governance Service Oriented Architecture

Emirates Energy Star

Ubiquitous Managed Services Solution Across Business Verticals


CCTV Monitoring


Public Safety


HealthCare


Facilities Control


Industrial process parameters


Parking Control


Waste Management


KIOSK Monitoring

Numerous Forms Of Smart Services..

Managed services
- Portfolio management
- Event management
- Analytics

Provisioning
- Services
- SIM profile configuration
- Network configuration

Controls
- Activation
- Deactivation
- Privacy
- Security

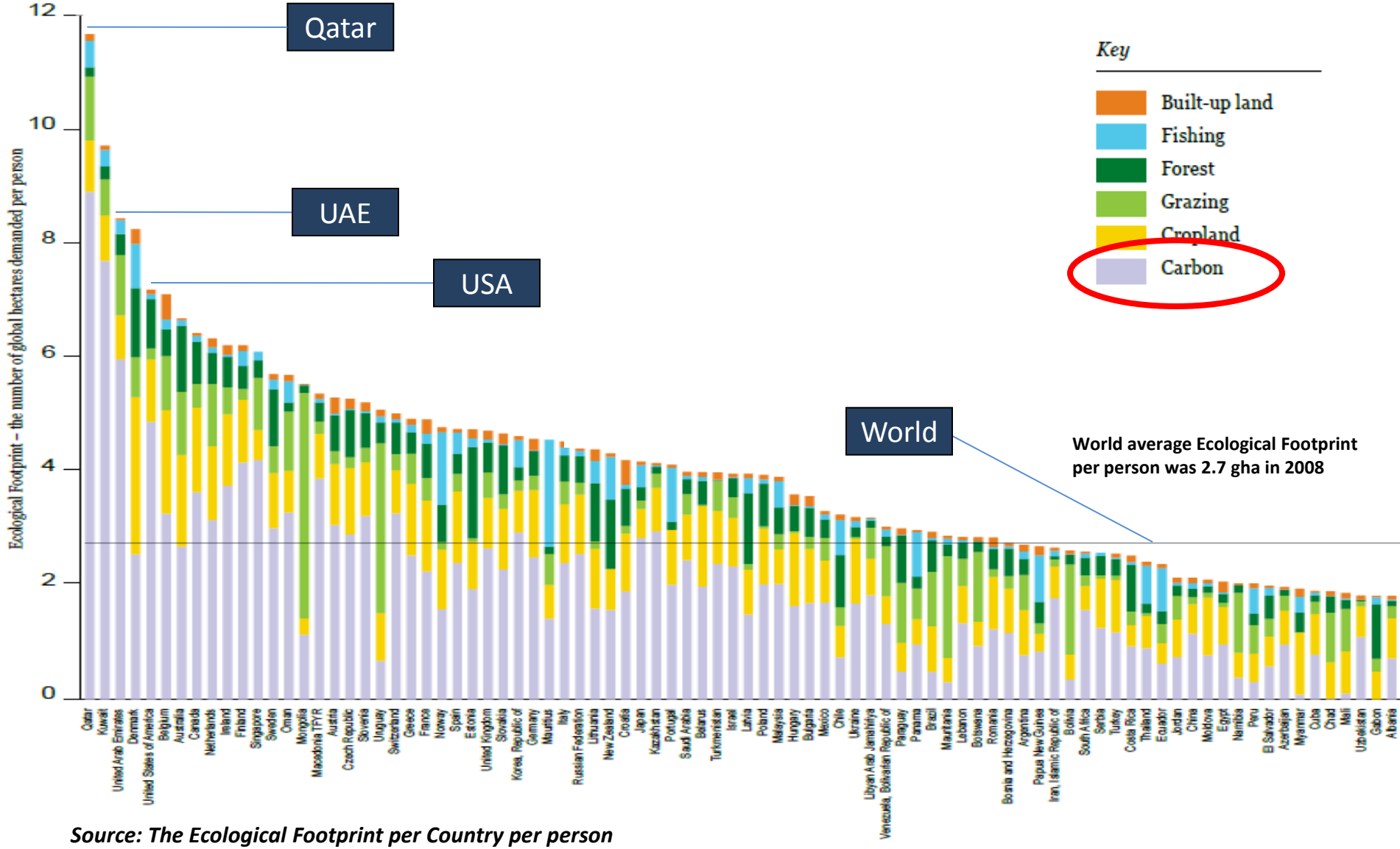
Transaction Mgmt.
- Visibility
- Billing
- Reporting

Galaxy and Gbots forms enterprise city centric cloud architecture to enable smart services ecosystem and collaboration opportunities

More than 7 billion devices and sensors exist for M2M application

UAE's Ecological footprint

Emirates Energy Star



World average Ecological Footprint per person was 2.7 gha in 2008

Source: The Ecological Footprint per Country per person (WWF Living Planet Report 2012 – Summary)

Khaleej Times

Wednesday, December 7, 2011
Dubai, United Arab Emirates

Nationwide project to cut power use in buildings

Devices connected to etisalat network to be installed in buildings

Nissar Hoath

ABU DHABI — Etisalat in partnership with a private IT solution company on Tuesday launched a pilot project connecting all buildings in the country through a technology that will reduce carbon footprint by up to 30 per cent.

The project called Emirates Energy Star with a revolving budget of Dh300 million was jointly launched by etisalat and Pacific Controls in the Capital, with the support and patronage of the Ministry of Environment and Water.

"The UAE has a significant carbon footprint due to unabated energy consumption that is creating immense ecological, social and environmental pressure. The Emirates Energy Star programme will leverage on machine-to-machine (M2M)-based technologies to effectively help reduce the carbon footprint of the country through efficient energy consumption management," said Abdullah Ebrahim Al Ahmed, Business Solutions senior vice-president at etisalat.

Under the project, devices linked with Etisalat networks and Pacific Controls Command Control Centre will be installed in buildings that will control the power consumption of electrical appliances. The system will also evaluate and measure power consumption by each building.

According to Al Ahmed, the first phase of the project has already witnessed a large number of government entities signing up for the initiative. Over 15,000 buildings across the country have been connected to the system.

Pacific Controls executive chairman Dilip Rahulan told *Khaleej Times* that the target was to connect 350,000 buildings to the system within five years.

He said: "Many government establishments, including ministries, have shown interest in the project and have already signed up. The Ministry of Public Works has signed up to link 9,000 buildings across the country. The target is to connect almost all 350,000 buildings and infrastructure to the system in five years."

Sougata Nandi, Abdullah Ebrahim Al Ahmed and Dilip Rahulan at a press conference at the Etisalat Head Office in Abu Dhabi on Tuesday. – *KT photo by Nezar Balout*

Rahulan further added that buildings consume 60 per cent of the energy produced in the country. "On average, a building consumes energy worth Dh1 million to Dh2 million annually and a single big hotel in Dubai consumes energy worth $40 million annually. With the full implementation of this project, these will be dramatically reduced. This will also help save energy and reduce carbon footprint of the country," he said.

> **A single big hotel in Dubai consumes Energy worth $40 Million annually**
>
> **Dilip Rahulan**
> Executive Chairman
> Pacific Controls

Abu Dhabi alone has to allocate $1.3 billion for energy every year, and to set up a power plant, it takes four years with huge investments.

Al Ahmed said all Etisalat clients that are building owners, contractors, real estate companies, government entities and infrastructure owners like utilities and airports will be signed up to collaborate and leverage the resources of the Emirates Energy Star offering.

"The initiative will optimise their operations, reduce their utilities' consumption and service costs, increase the running efficiency of their assets and have the capability to remotely manage them in real time," he explained.

The project will give a star rating for building owners to encourage them reduce power consumption. "It comprises five successive levels based on the energy efficiency improvements achieved through the programme, beginning with one star for a minimum of 10 per cent and ending with five star for 30 per cent and above reduction in carbon footprint," he said.

nissar@khaleejtimes.com

Emirates Energy Star

Emirates Energy Star program,
inaugurated by
H.E. Dr. Rashid Ahmed bin Fahad,
the UAE Minister of Environment & Water
on December 2011, Abu Dhabi

Emirates Energy Star

Emirates Energy Star

A national level energy efficiency program, deployed via a unique public-private partnership between Etisalat and Pacific Controls to reduce the carbon footprint of UAE, showcasing to the world the commitment we have made to save planet earth from the impact of climate change.

EES reduces the carbon footprint of the UAE by optimizing utility usage in buildings, without compromising on occupant comfort conditions.

EES will enable UAE to be the first in the World to not only reduce but also monitor and report on its carbon footprint in real time.

UAE will be the first in the World to utilize ICT based M2M technology to "Save the climate at the speed of light".

Managed Services for a Smart City

Emirates Energy Star

Managed Services for a Smart City

Emirates Energy Star

In-depth diagnosis

+ Identify cause of alert
+ Identifying potential problems
+ Identifying remedies

Maintenance management

+ Identify the asset details
+ Maintenance histories
+ Past potential problems
+ MTBF / MTBR

Data Analysis

Analysis by Subject Matter Expert (SME)

Anomaly

Managed Services for a Smart City

Emirates Energy Star

1. **First possible response**
   No action required however kept under observation
2. **Second possible response**
   Resolve problem remotely
3. **Third possible response**
   Dispatch technician with informed job card

Verification and compliance

M2M Ecosystem

ICT Network

Integration

Service Providers

Third Party Application Developers

Facilities Management

End Users

Measurement & Verification

Continuous Commissioning

Energy Analysis

Fault Detection & Diagnostics

Dashboards & Reports

Maintenance Management

Alarm Management

Carbon Footprint Analysis & GHG Accounting

OEM

Asset Performance Management

Database

Enterprise Application

Security System

Vehicle Tracking Device

Vehicle Tracking System

Cameras

KW Meter

KW Meter

SIM

Temperature Sensor

Pressure Sensor

Occupancy Sensor

AHU

Chillers

Fire Alarms

Power Meter

Smoke Detector

Humidity Sensor

Flow Meter

ATMs

Boilers

Signage

FAHU

UPS

Pumps

Generators

HVTS

M2M value-added services

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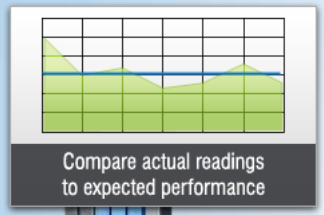
Report to supervisory controller or service provider for further mitigation

Real-time monitoring

Continuous adjustment of system parameters

GHG accounting

Data-trending



Compare actual readings to expected performance

PACIFIC CONTROLS

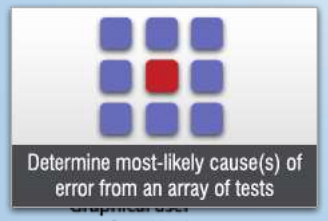
Galaxy

PLATFORM OF PLATFORMS

Carbon-emission reports

Rule-based algorithm to determine possible errors

What-if analysis



Determine most-likely cause(s) of error from an array of tests

Control-logic development & deployment at site

Performance analysis

Benchmarking

Financial analysis

Program overview

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A Smart City will monitor and control all facilities from one Global Command Control Center

Emirates Energy Star – Project Performance from November 2011

29,137 tonnes of CO_2 saved

which is equivalent to planting **6,257 trees**

Emirates Energy Star

Total To–Date savings

Cash : AED 17.6M

kWh : 49.2M

Total area managed by EES : 16.2M sq. ft.

Average % savings across all facilities

18%

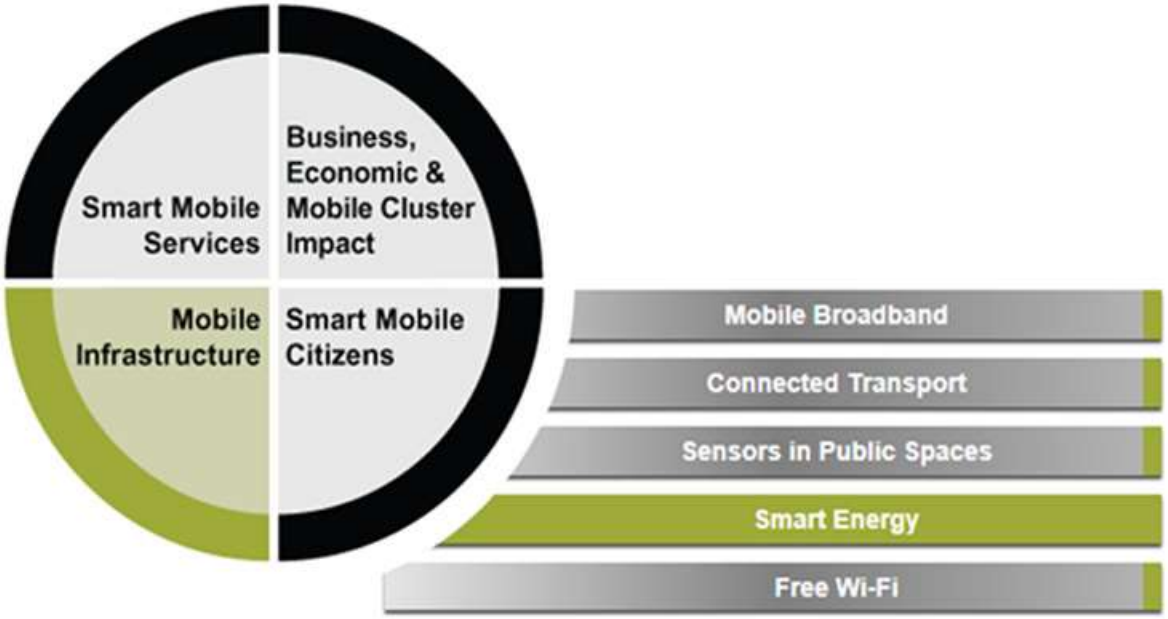
Return on Investment : 10 months

Types of industry verticals breakdown

Public, Government & Education	29
Banking & Finance	27
Construction & Infrastructure	18
Wholesale & Retail	18
Communications & Media	16
Conglomerates	10
Health & Hospitality	9
Energy & Oil	3
Airlines & Logistics	1

Reducing the Carbon Footprint of UAE

Quantifies the deployment and use of ICT and mobile technologies for smart city infrastructure and services



Smart Energy

Smart meters deployed in households

This indicator measures the use of smart meter technology to inform users about their energy consumption in homes, as % of total households with installed smart meters

Smart meters deployed in public and commercial buildings

This indicator measures the use of smart meter technology to inform users about their energy consumption in public and commercial buildings, as % of total buildings with installed smart meters

EES equipments details

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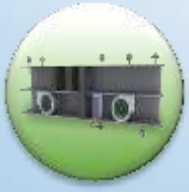
Chiller
225

Package units
190

Pump
370

FAHU
170



AHU
440

FCU
2100

Energy meter
300

VFD
50

Water meter
1

Sensors
350

Participants

Emirates Energy Star

EES Global Command Control Center

Emirates Energy Star

Emirates Energy Star

Reducing the Carbon Footprint of UAE

PACIFIC CONTROLS
باسيفيك كنترولز

اتصالات
etisalat