



# SMART CITY



## SMART CITY STRATEGY



### VISION

To make DSOA a leading smart community

### MISSION

To develop a fully integrated sustainable and happy community through collaboration, innovation, and technology

### VALUE

We Collaborate  
We Innovate  
We Integrate

## SMART CITY DIMENSIONS



### SMART ENVIRONMENT

Compliance with international green standards

### SMART PEOPLE

Nourish human capital

### SMART ECONOMY

One of the top investment destinations in the Middle East for business

### SMART MOBILITY

Fully integrated, convenient, green, 24x7 public transportations

### SMART LIVING

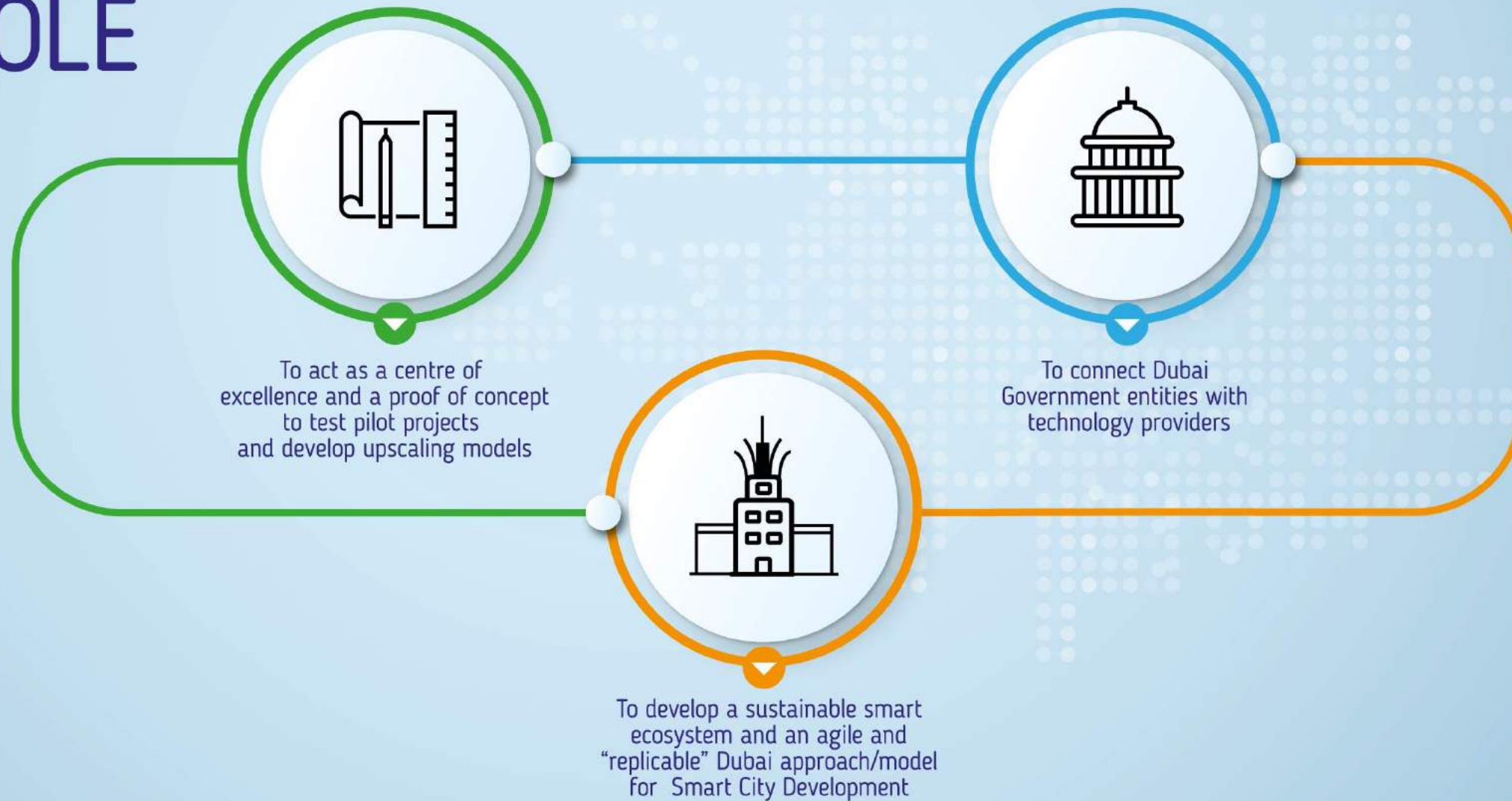
One of the top 5 living communities in the UAE

### SMART GOVERNANCE

Community engagement and transparency through digital government services



# DSOA'S PRIMARY ROLE







# SMART ECONOMY



# SMART DUBAI CITY ACCELERATOR

A program launched in **2016**

**1<sup>st</sup>** of its kind in  
the region

Operated by  
**Startupbootcamp**

Accelerate **40** ventures  
in **3** years at cost of  
**AED18<sup>million</sup>**

## Aim:

- To identify solutions that build:
- ▶ Smart living, homes & buildings
  - ▶ Smart transportation & logistics
  - ▶ Smart urban planning & maintenance

## Participants:

Startups developing solutions that make cities smarter and tackle congestion, waste, and energy challenges.

## Tech focus:

- ▶ Internet of Things (IoT)
- ▶ Sensor Technology
- ▶ Big Data
- ▶ Virtual Reality

Powered by







# INTEL IGNITION LAB AT A GLANCE

Located in  
Dubai Technology  
Entrepreneurship  
Centre (DTEC)

Promotes novel **IoT solutions** and develops  
**smart inventions**

Focuses on smart **cities**,  
smart **homes**, and  
smart **transportation**

The Ignition  
Lab hosts intensive  
workshops and training  
sessions for the following:



## Students:

Conducts workshops  
for schools using  
Intel Genuino Boards  
and the Sensor Kit.

▶ **55**  **students**  
from **11** different  
GEMS **schools**

## Tech enthusiasts:

Arranges lab tours for the tech-  
savvy youth to fan their passion  
for current technology trends.

▶ **16**   
universities & schools

## Government entities:

Conducts advanced workshops  
for government entities which  
enable members to understand  
best practices and challenges  
in their field of expertise.

## Startups:

Provides mentorship, training,  
feedback and technical advice  
to technology startups.



# UAE 5G INNOVATION LAB

## Platform:

To test the compliance and feasibility of deploying 5G in accordance with global standards.



## Collaboration with:

- ▶ Universities
- ▶ Private Companies
- ▶ Government entities



## Hub:

For research and development of integrated environmental systems.



## Forum:

To prototype, test and validate early 5G and Internet of Things (IoT) equipments and services.







# INTELAK

A CROWDSOURCING PLATFORM  
TO ENHANCE THE TRAVELING  
EXPERIENCE THROUGH AVIATION  
AND TRAVEL TECHNOLOGY.







# SMART ENVIRONMENT





# GREEN ROOF



First implemented  
in **2011** in TechnoPoint  
HQ & Operations Center -  
**2000 SQ MT**

Number of green  
rooftops has increased  
by **30%** compared  
to **2014**



Total green space  
within DSO amounts  
to **1 MILLION** sq mt -  
**14%** of the **7.2 SQ MT**  
total area

Aim is to increase  
green rooftops and  
walls to a staggering  
**2800 SQ MT**







# GREEN WALLS



## BENEFITS



Provision of urban ecological habitats



Reduction of thermal loading to buildings - lower heating and cooling costs



Lower CO<sub>2</sub> emissions



Reduction of heat island effect - less reflected heat



Storm water attenuation, via rainwater harvesting systems



Recharging the Local Hydrological Cycle



Humidification through Evapo-transpiration from foliage



Air purification - plants are efficient filters of pollution



Noise attenuation - quieter buildings and streets



Positive urban psychology - uplifting effect on those who see it

More than **75 sq mt** of walls of buildings have been landscaped and covered with greenery

## AIM

To increase Green Walls to **350 sq mt** respectively



# SMART IRRIGATION

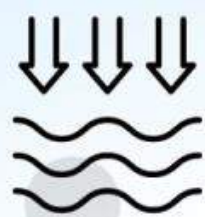


UAE's **1st**  
of-its-kind water  
saving subsurface  
irrigation system

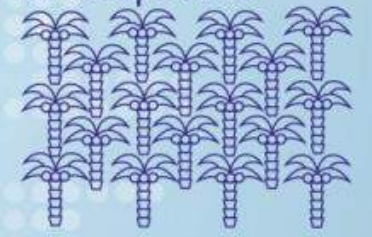


Reduced irrigation  
water consumption  
levels and operational  
costs by **55%**

Achieved **30-40%**  
irrigation savings



The innovative system  
currently waters more  
than **3,000** palm  
trees and more than  
**70,000 sq mt**  
landscape area



Aim is to implement this  
system across all green areas:  
**50,000 sq mt** by 2017  
**950,000 sq mt** by 2020

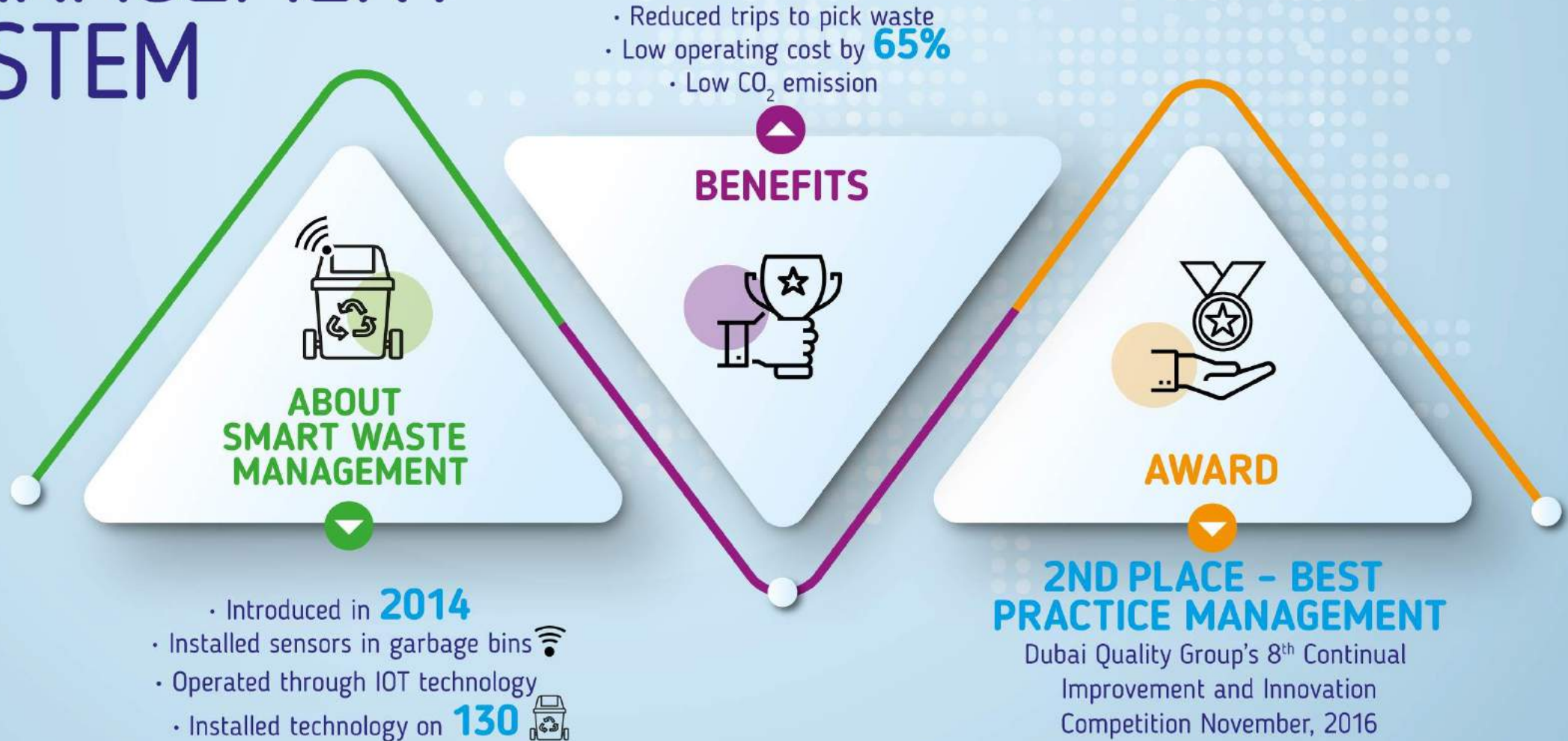
As of today, subsurface irrigation  
implemented for **50%** grass areas.







# SMART WASTE MANAGEMENT SYSTEM





# SMART POLE

DSOA HAS DEVELOPED 4 TYPES  
OF SMART POLES LOADED  
WITH 17 UNIQUE FEATURES:



## BENEFITS OF INTELLIGENT STREET LIGHTS

- MAINTENANCE COST ↓ 42%
- ENERGY COST ↓ 35%

## OTHER FEATURES

- ▶ Solar Setup
- ▶ Controlling The Infrastructure
- ▶ Dimmer
- ▶ Communicating Through the Grid
- ▶ Reporting & Maintenance Scheduling
- ▶ IoT Gateway
- ▶ Centralized Management of Services
- ▶ CO<sub>2</sub> Level
- ▶ Humidity Level Display
- ▶ Temperature Display
- ▶ Wind Direction





# LED LIGHTING



Replaced  
**15,785** (till 2016)  
traditional lights  
with LED lights



Reduced power  
consumption by  
**23%**

PHILIPS CREE

lucibel  
Lighting innovation

conlux  
smart energy solutions

GENERAL LED





# SEWAGE WATER TREATMENT



Current sewage  
treatment plan generates  
**3 BILLION** gallons of water



Reduced water  
costs by **70%**



Saves precious  
ground water  
resources



# LEED PLATINUM CERTIFICATION



80 points



85 points



DSOA BOASTS OF TWO BUILDINGS THAT HAVE RECEIVED THE PRESTIGIOUS LEED PLATINUM CERTIFICATION.

The following features helped DSOA secure a LEED Platinum certification for its HQ and building structure:

- ▶ 92% Alternate Transport: Bus, Carpooling, Electrical Cars & Bicycles
- ▶ Native Plantation and Green Roof
- ▶ 100% Irrigation Through Recycled Water
- ▶ Energy performance of 86% on the Energy Star Portfolio Manager
- ▶ LED Lights & Occupancy Sensors
- ▶ Exemplary Water Performance
- ▶ 90% of Waste is Segregated and Diversified
- ▶ 100% of Electronics and Furniture are Recycled
- ▶ Integrated Building Management System
- ▶ Water Cooled Chillers
- ▶ Smart Waste Management
- ▶ Smart Pest Control
- ▶ Energy Management System







# SOLAR POWERED SMART MASJID



The **1<sup>st</sup>** public building  
powered by solar and  
renewable energy

Solar panels generate  
a yearly power of  
**39,280 kWh**

Save **20,818 kg**  
of CO2 emission

Save **AED 17,480**

Surplus generation  
of **29,425 kWh**






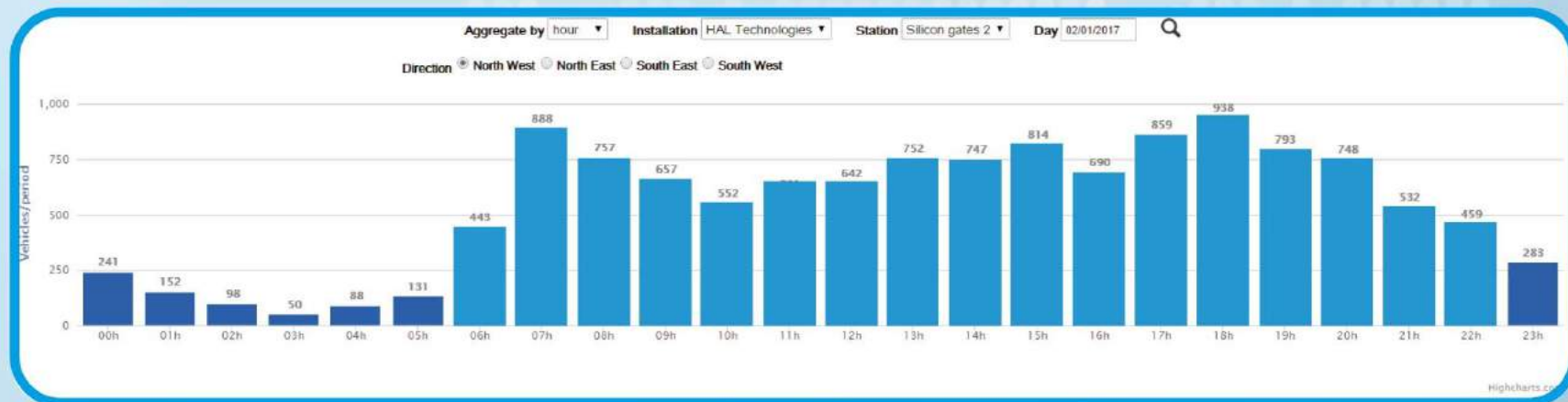
# SMART LIVING



# TRAFFIC CONTROL SENSORS



Smart sensors collect and transmit data which in turn helps in maintaining the traffic flow.







# COMMUNITY FARM

Launched  
the community  
farm initiative in  
November **2016**



Plots are  
provided to  
residents for  
vegetable  
plantation



As of today  
**400** plots were  
provided and are  
all occupied **100%**



Space allocated  
**400** plots of  
**4X2** sq mt



# SILICON PARK



## About Silicon Park:

- Cost **AED 1.3** billion
- Set for completion in **Q1 2019**
- Designed to be a comprehensive smart development
- Includes specifications from the ITU's smart sustainable city index



## Smart street features:

- Charging docks
- Bus shelters
- Smart lighting
- Smart building controls
- Green buildings
- Renewable energy sources
- Autonomous vehicles
- Electric car infrastructure



## Highlights:

- **150,000 m<sup>2</sup>** total area
- **7000** estimated total population
- **700** estimated number of companies
- **2,000** parking spaces



## Residential:

- **46,000 m<sup>2</sup>** of residential space
- **3** residential buildings
- **235** apartment units



## Offices:

- Online business set-up
- **71,000 m<sup>2</sup>** of offices space
- **585** offices
- **8** office buildings connected via bridge
- **8** Boutique office buildings designed for company headquarters



## Hospitality:

- The first Radisson Red Hotel in Dubai by Carlson Rezidor
- **171** rooms
- **59** furnished apartments
- **300** eating business centre Capacity



## Retail:

- **25,000 m<sup>2</sup>** leasable retail space
- **85** retail units
- **29** cafés and restaurants
- Air conditioned terraces



# SILICON PARK

SPANNING AN AREA OF 150,000 SQUARE METERS, "SILICON PARK" IS SET TO BECOME THE **1st** SMART CITY PROJECT TO TAKE SHAPE AT DUBAI SILICON OASIS



## SMART COMMUNITY & PUBLIC REALM SERVICES

- Community Portal
- Smart Urban Furniture
- Smart Signages and Wayfinding
- Location Monitoring
- Smart Home and Home Security
- Teleworking
- Smart Parking
- Universal Access and Payment



## SMART INFRASTRUCTURE SERVICES

- FIXED Broadband
- WI-FI NETWORK
- Hosting and Cloud
- Cellular broadband
- Wireless Sensing Network/IOT
- Teleworking



## SMART FACILITIES SERVICES

- Smart Building
- Water Source Monitoring
- Smart Irrigation Management
- Smart Metering and Analysis
- Smart Waste Management
- Smart Lighting



## SMART SAFETY & SECURITY

- Integrated Security Center
- District CCTV
- Access Control
- LBS Emergency Response



## INTEGRATED OPERATIONS CENTER

- SCADA/IBMS
- Smart FMS
- Energy Management
- Visitor and Event Management
- Analytics and Visualization



## DSO AUTHORITY SERVICES

- GIS
- E-learning
- Centralized Govt. Services
- Noise Sensing
- Flood Sensing



سلطة الواحة دبي للإسكان  
Dubai Silicon Oasis Authority



# GREEN BUILDING

THESE PROJECTS  
ARE COMPLIANT WITH  
THE DSOA GREEN BUILDING  
REGULATIONS  
AND SPECIFICATIONS:



DSOA TOTAL GREEN  
BUILDINGS 57 NOS.



Sustainable Cities



Water Efficiency



Energy & Atmosphere



Materials & Resources



Indoor Air Quality



Innovation & Design Process



CERTIFIED : 26 - 32 pts



SILVER : 33 - 38 pts



GOLD : 39 - 51 pts



PLATINUM : 52 - 69 pts





# SMART SURVEILLANCE DRONE



## About Smart Surveillance Drone:

- Rolled out the smart drone as a security surveillance measure
- Follows the Remote Piloted Aerial Vehicles guidelines issued by the DCAA



## Features:

- Records audio and video in real time
- Captures flawless still photographs
- Equipped with a Terrestrial Trunked Radio (TETRA) system
- Enables handset-to-handset calls and locating of handsets through GPS
- Complete confidentiality in communication (built-in end-to-end encryption mechanism)



Camera



SMS



Microphone





# SMART BENCH

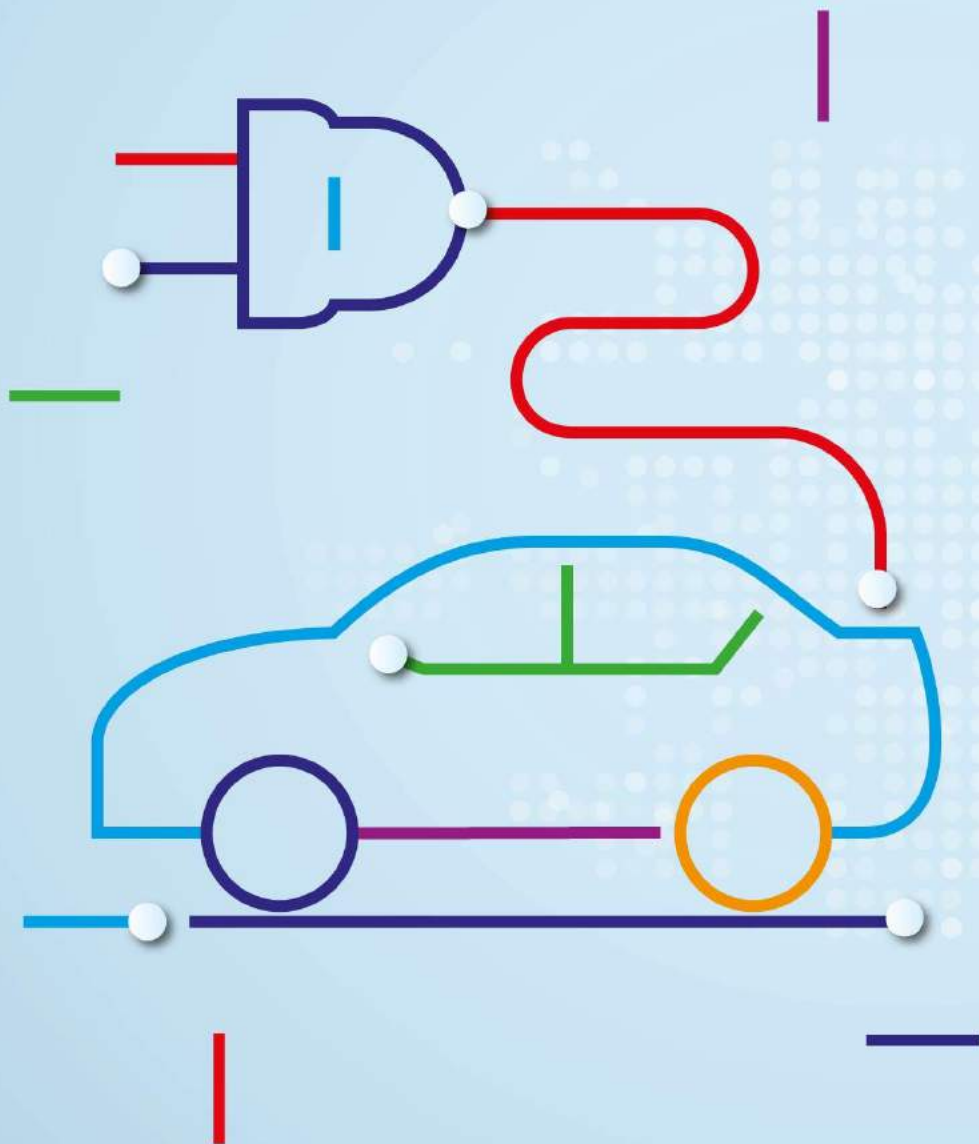
100% Solar powered smart bench located in DSOA's villa park with many features from advanced device charging to data gathering



## FEATURES

-  Photovoltaic modules
-  Wireless charging
-  Battery pack
-  USB charging
-  Sensors
  - Temperature (-45° - +60°)
  - Humidity 10% - 100%
  - Device charging counters (cable and wireless)
  - Energy production & consumption
  - Internet connections counter & data traffic usage
  - Battery status
  - Rain sensor - shuts down bench if heavy rain
  - System sensor - analyses every device inside the bench
-  Ambient light
-  Cooling system





# SMART MOBILITY



# EV CHARGING STATIONS



Installation of the first charging station outside DEWA in **2015** at DSOA headquarters, the Two Towers and Cedre Community Centre



EV charging station installed in Operations & Facility Centre



**5** charging stations



The **1<sup>st</sup>** to introduce free EV charging





# ELECTRIC CARS



Replaced fuel enabled cars with electrical cars



**10%** of DSOA's vehicles are electric



Aims to further reduce CO<sub>2</sub> emissions by **20%** to reach a total of **72,000** tons by **2020**



RENAULT





# HUMAN CROSSING



## Problem:

**20%** of road accidents in Dubai involve pedestrians

Dubai Statistics Centre [www.dsc.gov.ae](http://www.dsc.gov.ae) - Traffic Accidents and Injuries - Emirate of Dubai 2012-2014

**2016** Volkswagen ME found that majority of pedestrian accidents are caused due to ignored zebra lines



## Idea:

To promote pedestrian safety by engaging drivers emotionally

### What's Human Crossing?

A digital LED overhead crossing that displayed names of students when passing underneath it

**For whom?** School Students



**Where was it installed?**  
GEMS Wellington Academy located in DSOA

### Which technology was used?

2,000 pieces of RFID chips and Motion Tracking Technology programmed with individual students'



## Reach:



**10.2 million print & online circulation within and outside the UAE**



**70 blog mentions**



**1.4 million total video views across social media platforms**



**47 print clippings**



## Awards:

- Best Use of Initiative for Improved Traffic Safety
- Smart City Initiative of the Year
- Best Road Safety Innovation Campaign

Public Relations awards for the online film "Adam" and news circulation:

- Best Digital PR Campaign (Gold)
- Best Use of Social Media/ Digital PR (Silver)
- Social Responsibility & Environmental PR (Bronze)
- Four Bronze awards for Outdoor, PR, Digital PR & Media





# DUBAI'S SMART MOBILITY TEST BED

DSOA & RTA will collectively achieve milestones by presenting to the world significant innovations in the field of Smart Mobility.

DSOA acts as a test bed for trials and operations of Smart Mobility technologies.

RTA has partnered with DSOA to be its R&D Center for new mobility technologies which leverages DSOA's Centre of Excellence (CoE).



## SCOPE:

- Integrating Smart Mobility Systems
- Leveraging DSOA's CoE
- Conducting Smart Mobility proof of concepts such as:
  - ▶ Self Driving Vehicles
  - ▶ Shared Mobility



# AUTONOMOUS CARS

DSOA AND THE ROADS & TRANSPORT AUTHORITY (RTA)  
HAVE JOINED HANDS TO ENHANCE THE SMART MOBILITY CONCEPT  
IN DUBAI BY DEDICATING ROUTES FOR THE MOVEMENT  
OF RTA'S SMART AUTONOMOUS SHUTTLE AT DSO

## Objective:



To reduce the  
carbon footprint



Preserve a healthy  
environment



Provide clean air  
for the people

- Cleaner
- Safer streets
- Efficient power generation & transportation
- More free time







# SMART PEOPLE



# DIPLOMA IN INNOVATION TOWARDS SMART CITIES

LAUNCHED IN 2014  
AND RUNS FOR 4 MONTHS



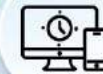
The diploma  
comprises of  
modules in  
4 areas:



Creating the  
Future City



Driving  
Human-Centered  
Innovation in a  
Smart City



Digital  
Innovation  
and Technology  
Disruption



From Vertical  
to Integrated  
Management

The diploma  
covers the  
following  
topics:



Economy



Governance



ICT



Environment



Health



Education



Security



Mobility



Infrastructure



People



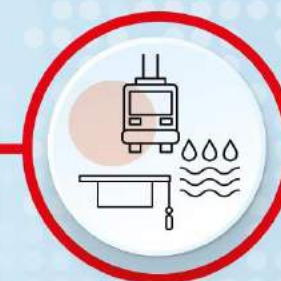


# MASTERS IN CITY SCIENCE

THE 1<sup>ST</sup>-OF-ITS-KIND MASTER'S  
DEGREE IN SMART CITY



Covers technological,  
social and sustainability issues



Provides an  
all-encompassing view  
of the development of the  
city including subjects such  
as water, food, waste, transport,  
education and energy systems



Sponsored **13** students  
from different government  
entities including three of  
DSOA's high-potential  
employees in relevant fields



The graduates were  
required to submit their  
smart city capstone projects -  
currently being explored for  
further development under  
the Smart Factory





# CONNECTED VEHICLES

FOR ROAD SAFETY TESTBED AND PILOT



## Project Goals

Demonstrate feasibility and benefits of connected vehicle technologies for road safety

Demonstrate effectiveness and benefits of Derq's connected vehicle solutions

Increase readiness for deployment of connected and autonomous vehicle in a smart city



## Examples of applications to be piloted



Basic safety messages for connected vehicles

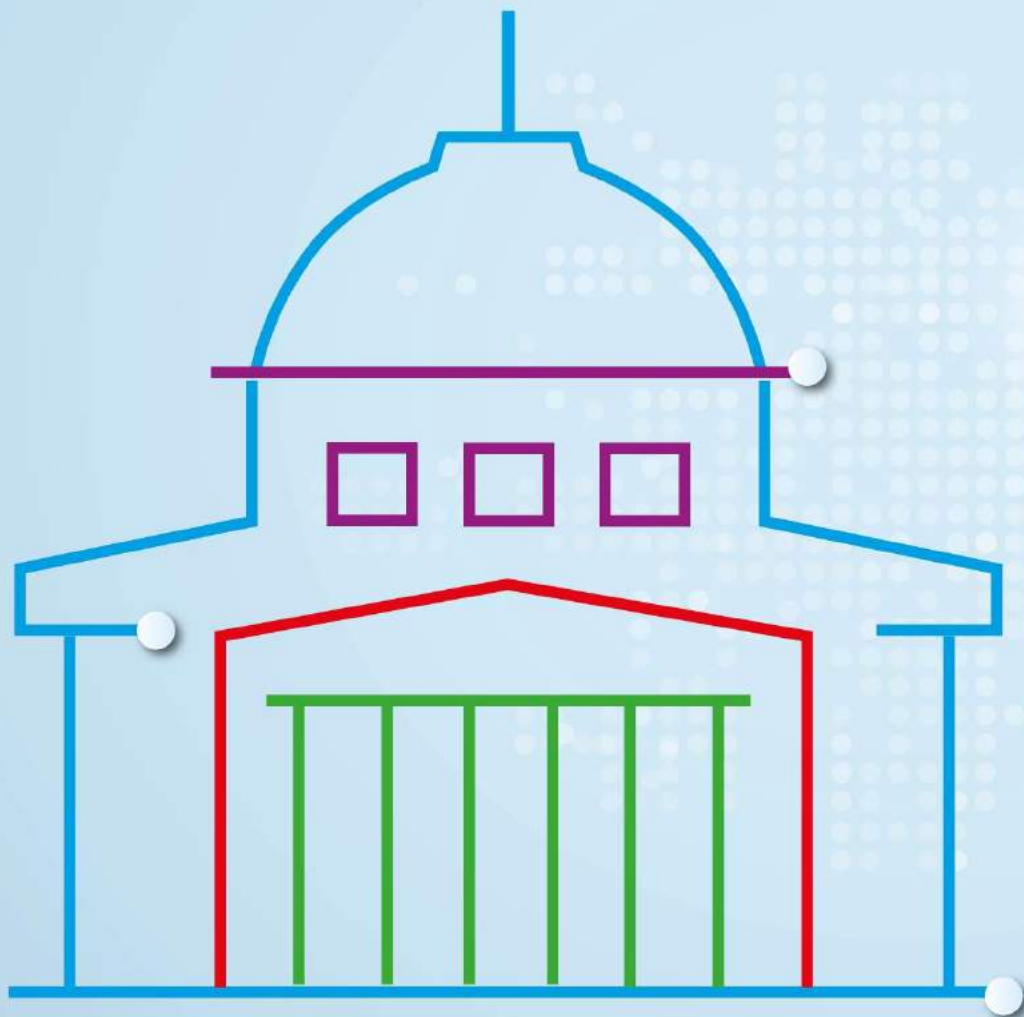


Intersection monitoring and analysis



Intersection collision prediction and warning





# SMART GOVERNANCE