Internet of Things
World Forum

Smart City Tour Overview

Joel Curado, Cisco S+CC team

jcurados@cisco.com

Barcelona, Spain • February, 2014

Hosted by CISCO

Cisco and the City of Barcelona

Key Barcelona Objectives

CITIZENS

Technology as a means to increase Citizens inclusion and quality of life.

ECONOMIC DEVELOPMENT

Foster innovation – and knowledge based jobs – thru new policies and business-friendly initiatives

Attract FDI thru flagship political initiatives

Sustainability & self-sufficiency as key pillars on Barcelona vision

INTERNATIONAL BRANDING AND LEADERSHIP

Leverage Barcelona as a world-class tourism hub

Active participation on EU Steering Committees, Metropolis, UN Habitat, Cideu

Key Cisco Objectives

Barcelona as a living lab for global Smart+Connected Communities program

Test new solutions, partnerships, business models, etc

Scale the deployment citywide

Replicate the deployment worldwide in other cities

Replicate the architecture in other vertical industry segments

Urban Transformation: 22@Barcelona

Urban Regeneration: Transforms Industrial Land into an Innovation District

- Industrialize city processes, develop innovative services
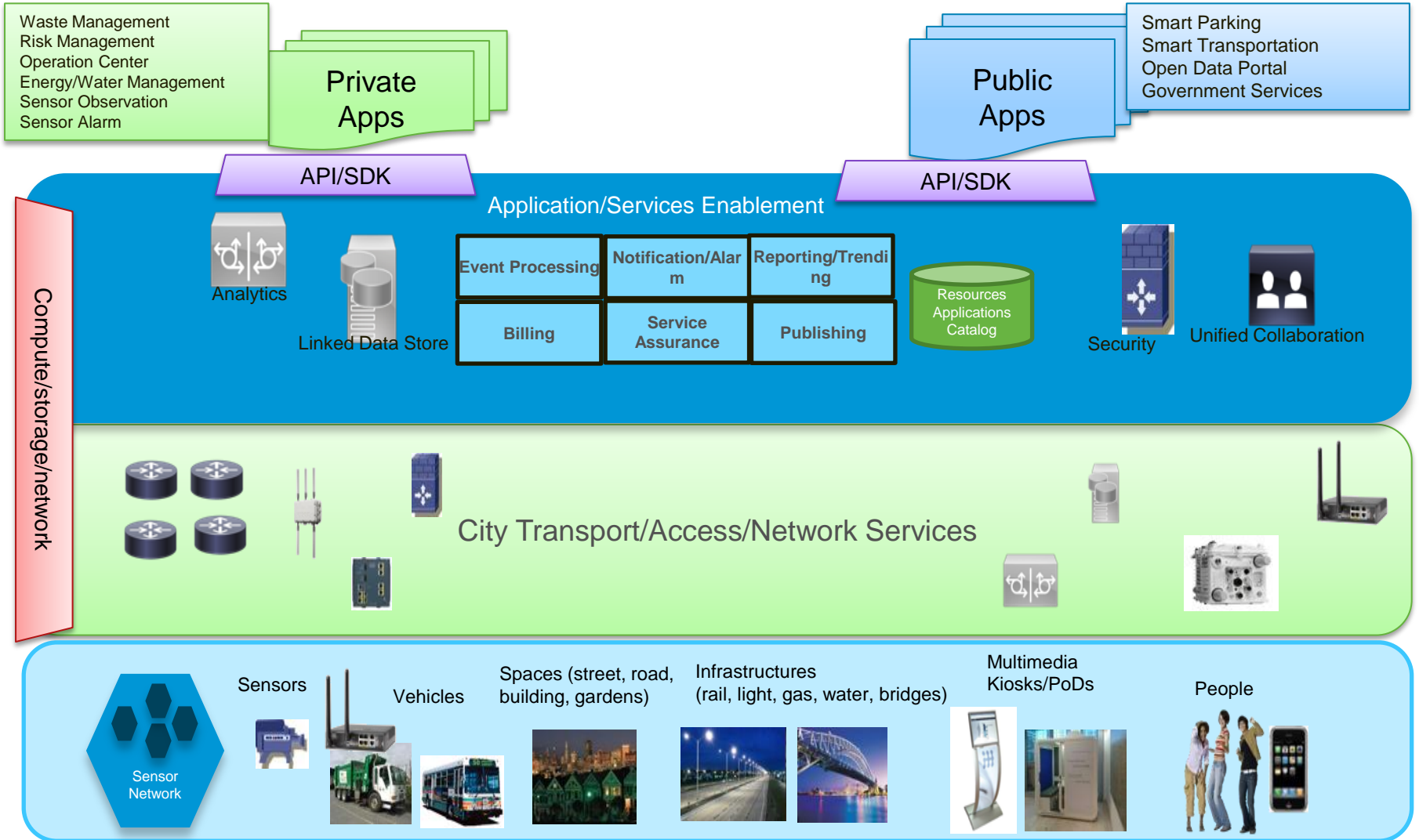
- 130,000 new jobs, 4,500 new firms

- 56,000 new workers

- Transforms 200+ acres

- Innovation clusters manage **the ecosystem**

Cisco's City Infrastructure Management (CIM)

Waste Management
Risk Management
Operation Center
Energy/Water Management
Sensor Observation
Sensor Alarm

Private Apps

Public Apps

Smart Parking
Smart Transportation
Open Data Portal
Government Services

API/SDK

API/SDK

Application/Services Enablement

Analytics

Linked Data Store

Event Processing	Notification/Alarm	Reporting/Trending
Billing	Service Assurance	Publishing

Resources Applications Catalog

Security

Unified Collaboration

Compute/storage/network

City Transport/Access/Network Services

Sensor Network

Sensors

Vehicles

Spaces (street, road, building, gardens)

Infrastructures (rail, light, gas, water, bridges)

Multimedia Kiosks/PoDs

People

The demos

Temperature, humidity, dust, noise and gases Sensors
- In Born District
- Solertia sensors

Location Analytics
- In Arts hotel and
- In Born District

Parking Management
- In Born District
- Streetline sensors

IP-enabled Watering System
- In Turo Parc

IP-enabled Waste Containers
-Urbiotica sensors
-in Born District

Smart Citizens
A Crowdfunding initiative to deploy Arduino-based outdoor sensors – Habitat Urba

Smart Lighting
- In Arts Hotel - Philips
- Longer term on Ave Paral.lel
- In Born district

Intelligent Bus Stop
- Digital Kiosk with Cisco 819 router in partnership with JCDecaux

Connected Bus
- 3 TMB buses with 819
- 2 connected bus with FOG pilot

Partners

- JCDecaux
- Streetline
- Urbiotica
- SmartLightVision
- Smart Citizen
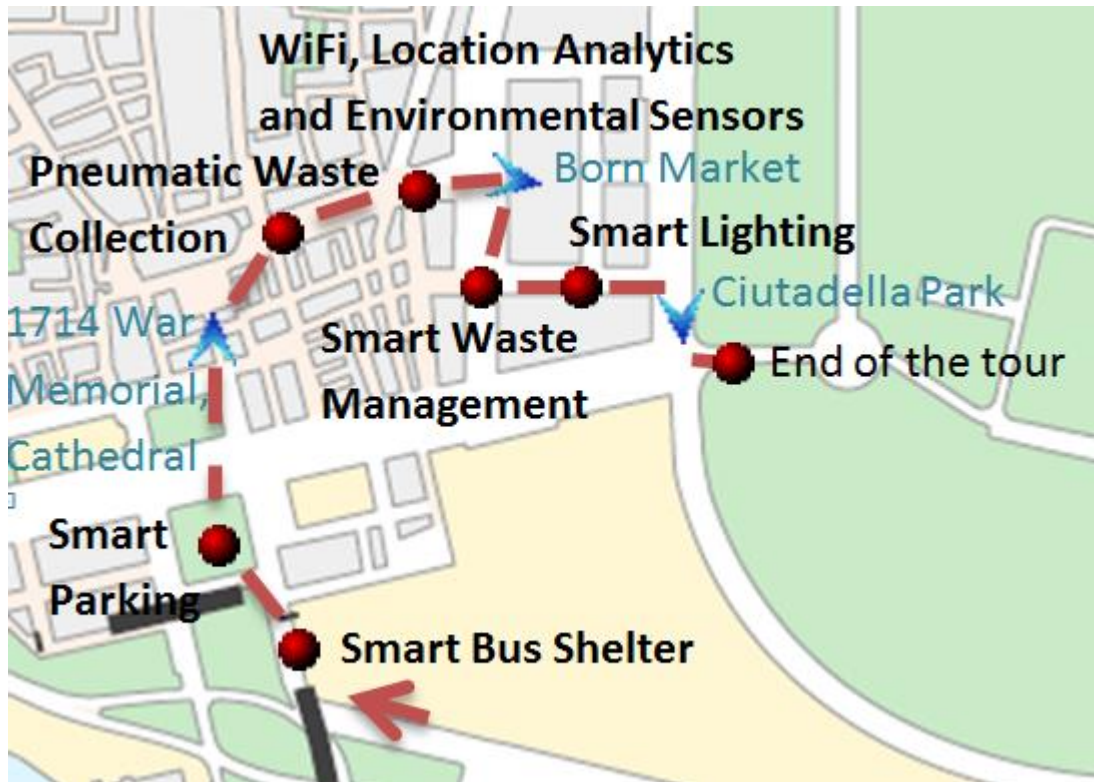- Elevate Digital
- Philips
- Prysm

Route

Starting point: Smart Bus Shelter in *Pla del Palau* Street
End of the tour: Ciutadella Park entrance
Approximate duration: 40 min (with historical explanations about *el Fossar de les Moreres, Santa Maria del Mar* Cathedral, Born Market and Ciutadella Park included)

Smart City Tour: El Born   6

01 Smart Bus Stop

- Interactive touchable screen which displays useful information for citizens/visitors
- Applications: Bicing, trip planner, information about nearby services/tourist attractions
- Connected to City fiber ring and public WiFi network to provide connectivity, location analytics from citizensaround the bus stop are and featuring USB ports to charge mobile devices


Smart City Tour: El Born

02
Smart Parking

Parking sensors

They detect the presence of a vehicle and provide real time information about on-street available parking spaces
• Pilot project with some sensors in different areas of the city

Goals:
❑ Advantages for the city: More efficient traffic management and better control of parking and possible infractions as well as revenue collection
❑ Advantages for the citizens: real time information that will allow time saving and a better driving and parking experience in cities

Smart City Tour: El Born   8
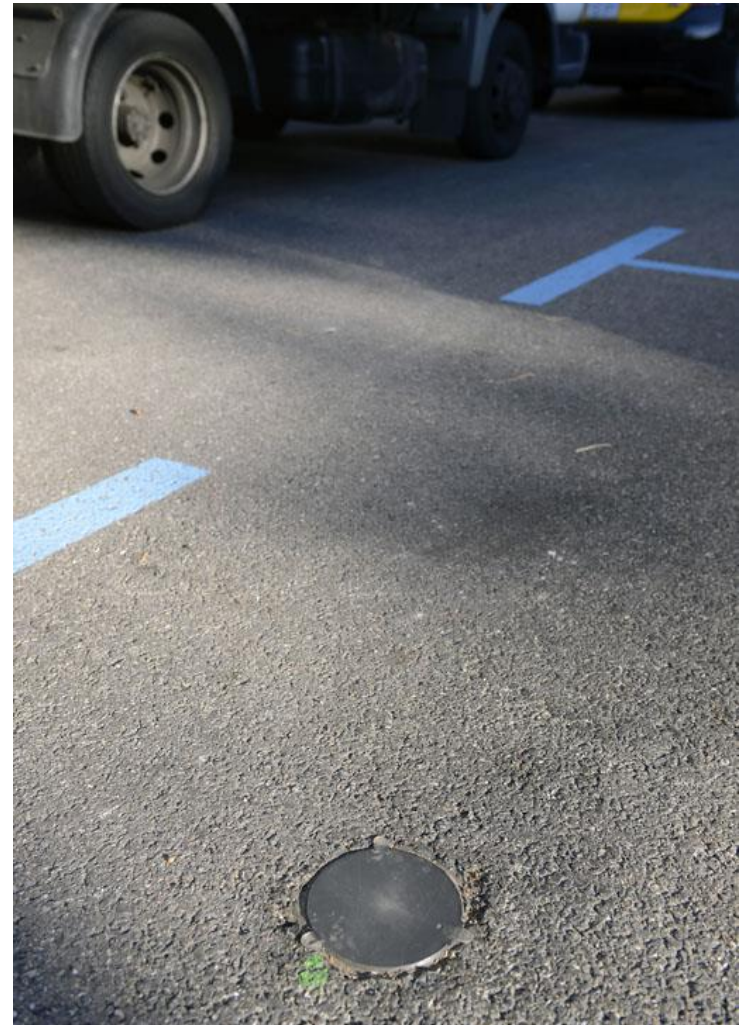
03 Pneumatic waste collection

- Underground storage and suction system
- Most suitable system given the characteristics of the area (narrow streets) although it is also implemented in other areas of the city

❑ Advantages: Better waste management implying an improvement in citizens' environment

04 WiFi, Environmental Sensors, Location Analytics

- **Municipal WiFi network:** integration of the existing Optical Fiber and WiFi networks and enlargement of the capacity and capillarity (+500 access points)
- **Thermal sensor** (people counter) (pilot stage)
- **Environmental Sensors**: Connected through our City Wi-Fi network, they provide real time information of temperature, air quality and sound levels in the city through a online platform to citizens
- **Location Analytics:** Provide City Planning, Retail and Tourism use case information for tourists, through a single platform and allows reporting features for city operators to improve decision making in cities

❑ Goals in terms of benefits for the city: Collect real time information about the flow of people in a specific area as well as noise and pollution levels data that will allow to improve the public services related to security, tourism, etc. provided to citizens and visitors


10
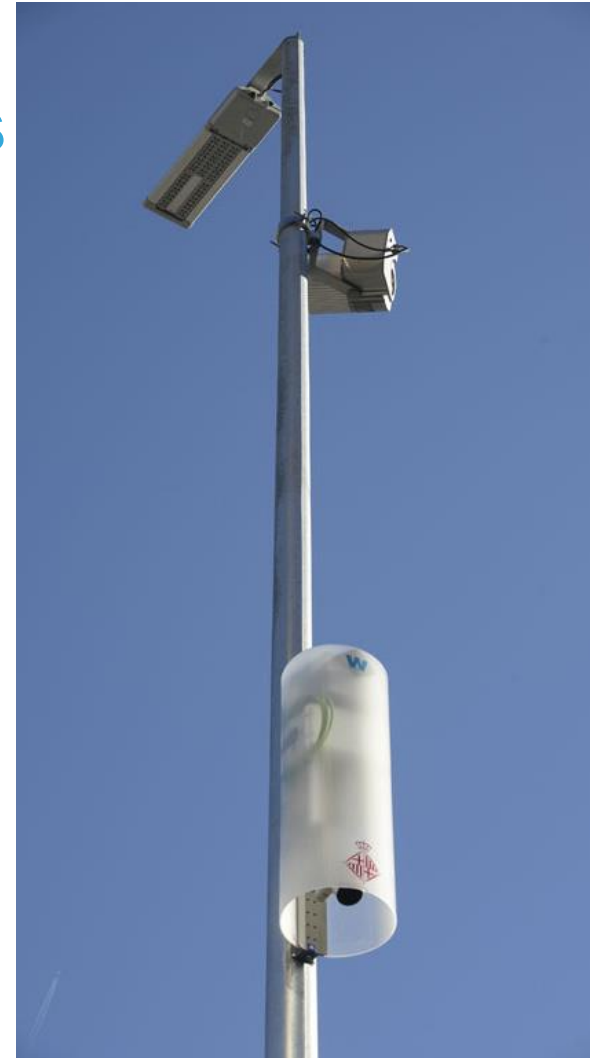
05 **Smart Waste Management**

- **Containers with sensors** that, through the municipal network, provide real time information about the waste levels
- Pilot project

❑ Advantages: Optimization of collection routes, more efficient waste management collection in the city

11

06   **Smart Lighting**

- **Connected** trhough our ruggedized Swicht on the street cabinet layer, it is connected to the lighting controller of the Lamp Post, allowing the Light company to control the light, turn it on, off, dim the light on the lamp post
- Pilot project

❑ <u>Advantages:</u> Optimization of eletricity usage, more efficient policy definition and safety and security features for citizens in the city
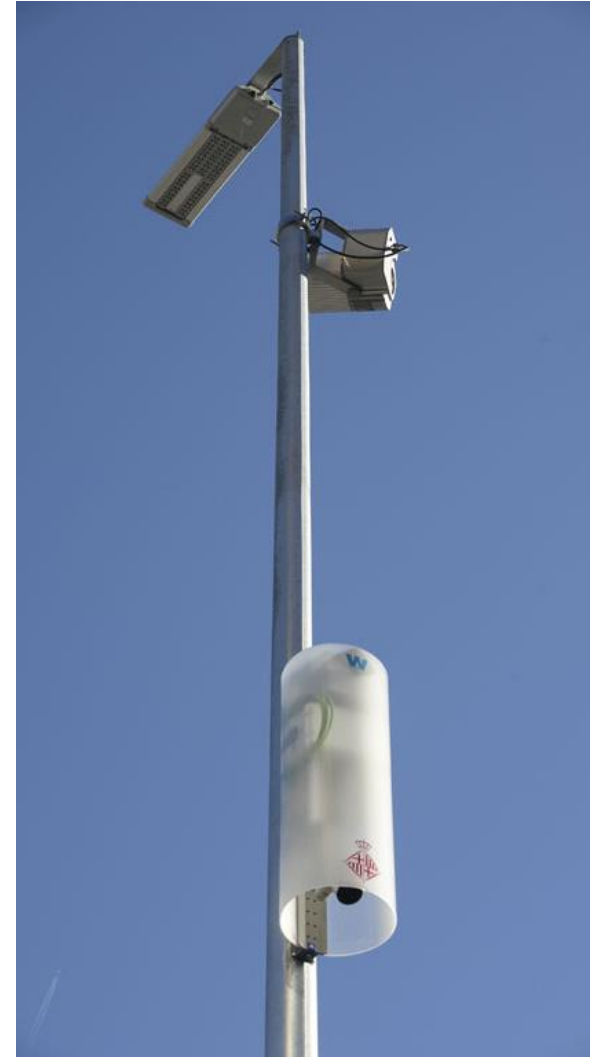
07 Smart Citizen Kit

- **Connected** trhough our MSE and City Wi-Fi network the Smart Citizen Kit provides us real time information of environmental data as well as location tracking of where the kit is located through our location analytics

❑ <u>Advantages:</u> Provides temperature, humidity, air quality, light and noise information to city operators

Thank you.