



Security for Smart Cities

Active CyberSecurity and BigData Analytics: Data Flows and Events

Cristina de la Maza

cmaza@redborder.com

Smart Cities



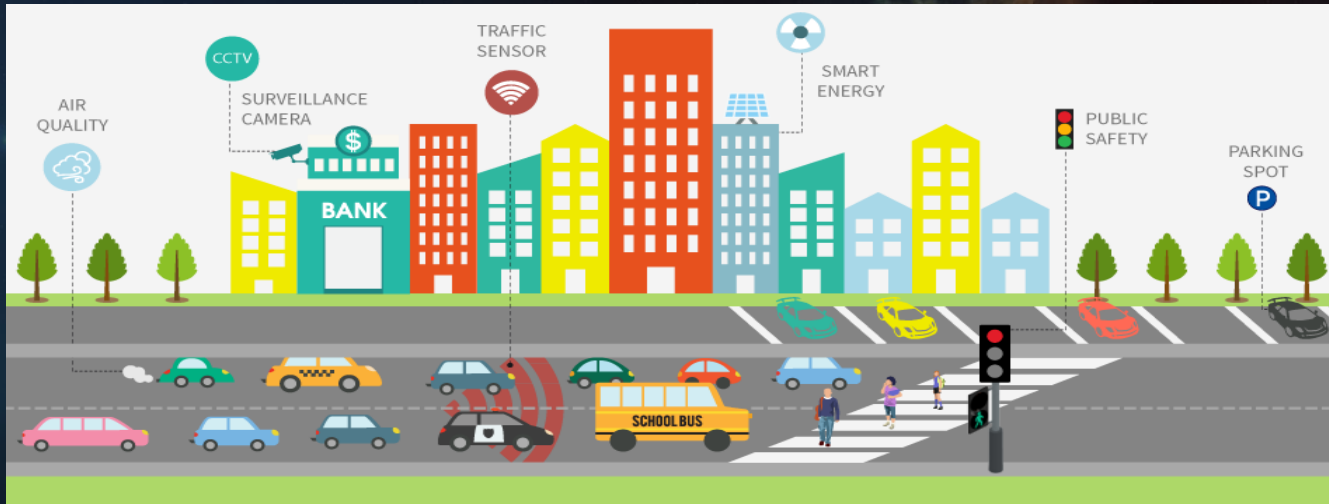
“Manage basic services such as transport, electricity, running water or cleaning, and **create productive models based on ICT to manage cities in a more sustainable and efficient way**”

- Achieve {
- ✓ Administrative Efficiency
 - ✓ Improvement of the quality of life
 - ✓ Improvement of city services (Mobility, Lighting, ...)
 - ✓ Infrastructure optimization
 - ✓ Improvement of citizen governance

Smart Cities Data Sources

1. Traffic and Infrastructure Management

- Smart Parking
- Traffic Congestion
- Signaling and Infrastructure
- Structural Health



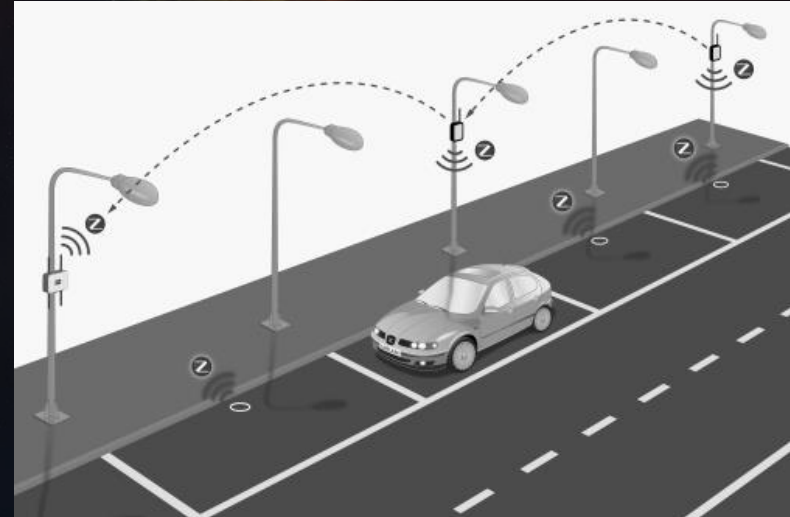
Smart Cities Data Sources

2. Environment

- Air Pollution
- Noise Urban Maps
- Explosive and Hazardous gases

3. Resource Management

- Smart Lighting
- Waste Management
- Smart Grid
- Tank Level
- Potable Water Monitoring



Smart Cities Example: Smart Santander

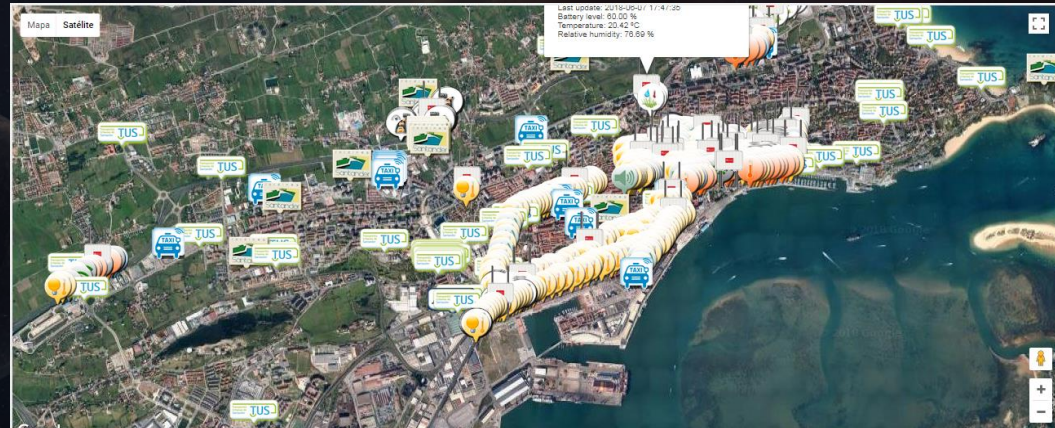
Deployment of 12.000 sensors across the city to obtain metrics across various fields

- **Environmental Monitoring**
- **Outdoor Parking area management**
- **Mobile Environmental Monitoring**
- **Traffic Intensity Monitoring**
- **Guidance to free parking lots**
- **Parks and Gardens irrigation**



Smart Cities Shortcomings

- A large investment in equipment and communication systems for devices has been performed, without paying any attention to key issues like cybersecurity.
- There is a real need to offer new innovative and efficient cybersecurity solutions within this type of scenarios.
- It is precisely here where redborder wants to offer an added value with the current platform and with a view for future needs.



Smart Cities: Vulnerabilities

Smart Cities

Vulnerabilites:

“The intention is to achieve more efficient cities as well as to improve the overall quality of citizens’ life. However, the Smart City concept also raises important security and privacy concerns.”

“Many of these innovations are implemented without subjecting them to strict tests and without paying enough attention to aspects such as cybersecurity”



Smart Cities

Vulnerabilities



Smart Cities Recent CyberNews

The cyber security threat to transportation

Special Reports 12 Oct 2017

SmartCitiesWorld talks to Barry Einsig, global automotive and transportation executive at Cisco, about the implication of cyber threats and how to address the challenges



Why Are Cities So Vulnerable to Cyber Attack?

LINDA POON MAR 30, 2018

Cybersecurity expert Cesar Cerrudo predicted ransomware attacks like the one that paralyzed Atlanta's city government. City leaders everywhere should understand this threat, he says—and how it could have been a lot worse.

Smart cities are wide open to cyber-attacks, experts warn

Tel Aviv conference sounds alarm about risk of hacking, which increases the more interconnected a city's digital resources become

By URVASHI VERMA

18 February 2018, 1:02 pm | 1



31 shares

TECHNOLOGY

Smart Cities Are Going to Be a Security Nightmare

by Todd Thibodeaux

APRIL 28, 2017

Smart Cities Recent Example

- Security Researchers at the **University of Michigan** hacked nearly 100 traffic lights connected to a wireless network.
- CONCLUSION: The vulnerabilities of the system were ‘**not a fault of anyone device or design choice**, but rather...a systemic lack of security consciousness’

Intelligent Machines

Researchers Hack Into Michigan's Traffic Lights

Security flaws in a system of networked stoplights point to looming problems with an increasingly connected infrastructure.



Traffic hack: Researchers gained control of these traffic lights after hacking into a system of nearly 100 networked intersections.

The background of the slide is a deep space scene. It features a large, dark planet with a blueish-grey surface in the upper left. In the lower center, there is another planet with a dark surface and a small, dark moon. To the right of the center, there is a vibrant, glowing nebula with orange, yellow, and blue hues. The background is filled with numerous small, distant stars.

How can we face these vulnerabilities?

**Smart Cities: redborder in
action**

redborder in action – Use Case

redborder integrated with a **Smart City** platform

- Objectives:**
1. To collect heterogeneous data from different data sources, which combined with self-generated data and analysed, will provide a set of high-level performance indicators.
 2. To ensure security within the Smart City context.

Data sources: Traffic, Parking and Environmental Data.

redborder in action – Use Case

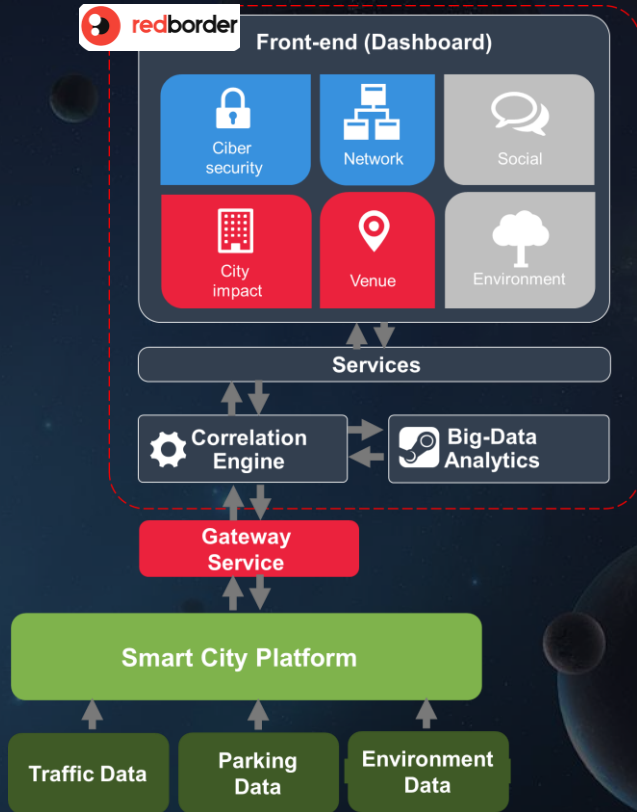
Data Sources:

- **Traffic Data.** Sensors deployed along the main streets for a better management of the traffic.
- **Parking Data.** Sensors deployed inside the car parks for a better management of the parking and offering a better user service.
- **Environmental Data.** Data related to temperature, light and noise in order to inform citizens about the environmental situation.



Use Case Deployment – Data Analysis

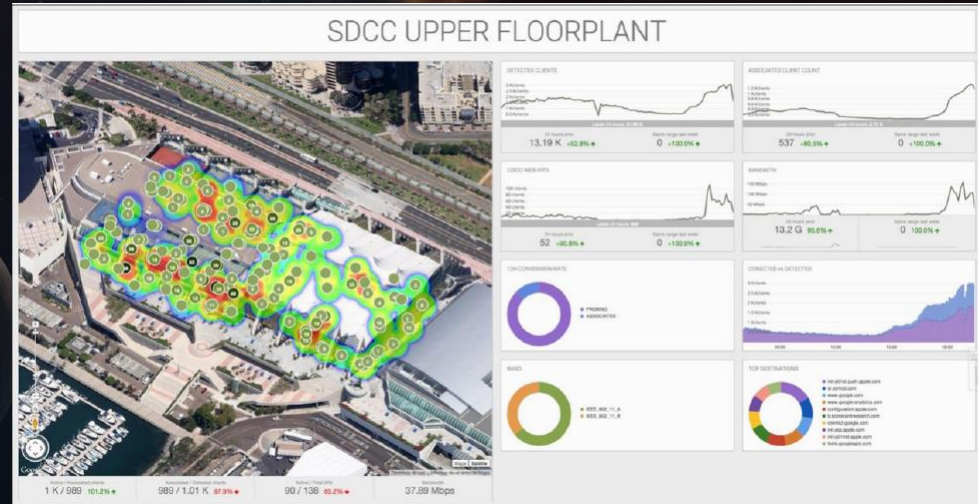
Architecture



Outputs:

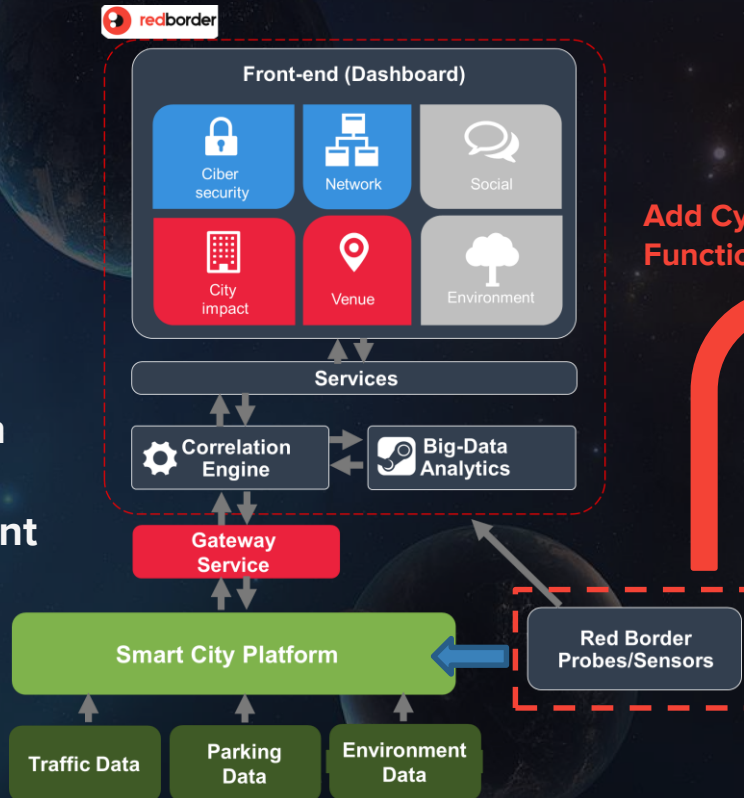
Some measurements presented in Dashboards:

- The car occupation within a certain Parking
- The Temperature
- The Noise intensity
- The light
- The temporary period of parking allowed for each of the vehicles

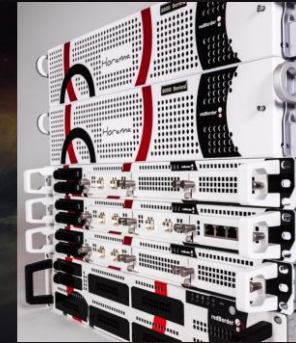


Use Case Deployment – Cybersecurity

Security
Information
and Event
Management



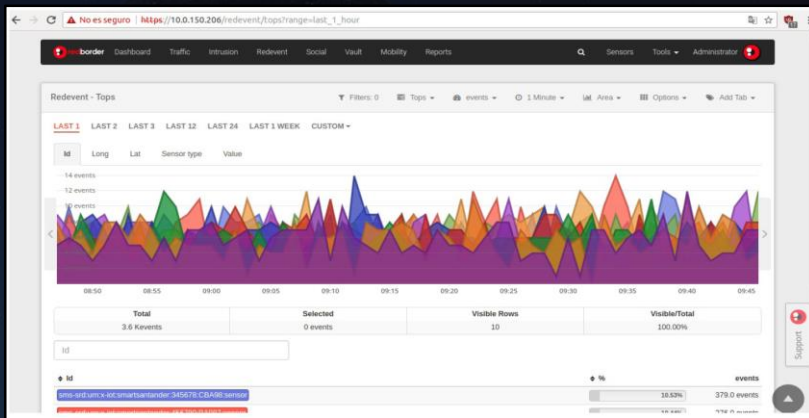
Add Cybersecurity
Functionalities



Intrusion
Detection and
Prevention

Use Case Results

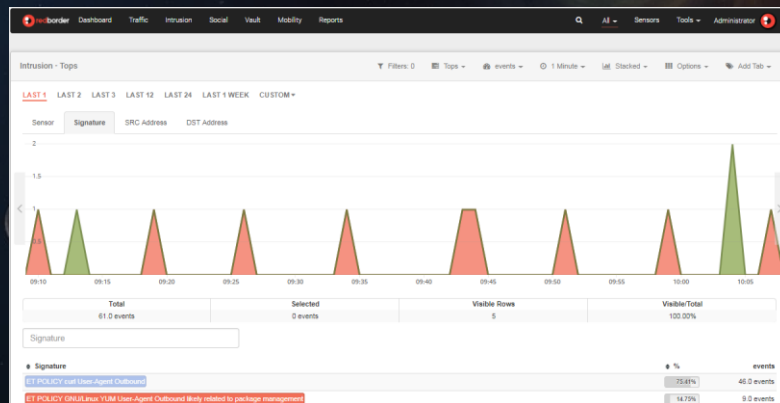
KPIs



Location
(Mobility)

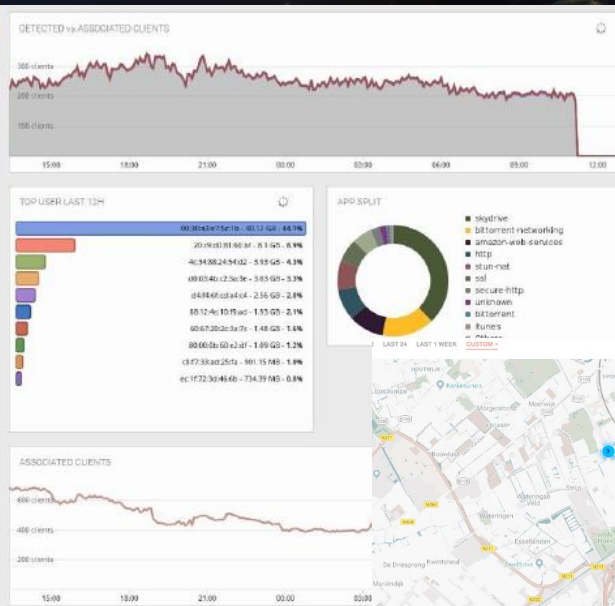
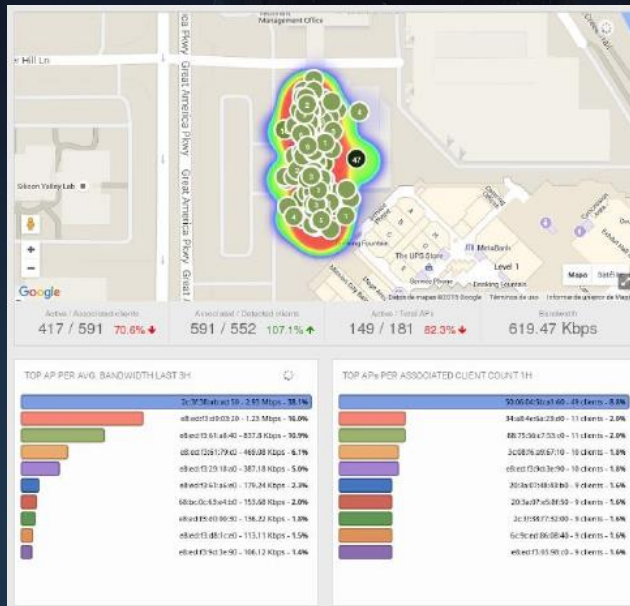


Security Events
(Intrusion)

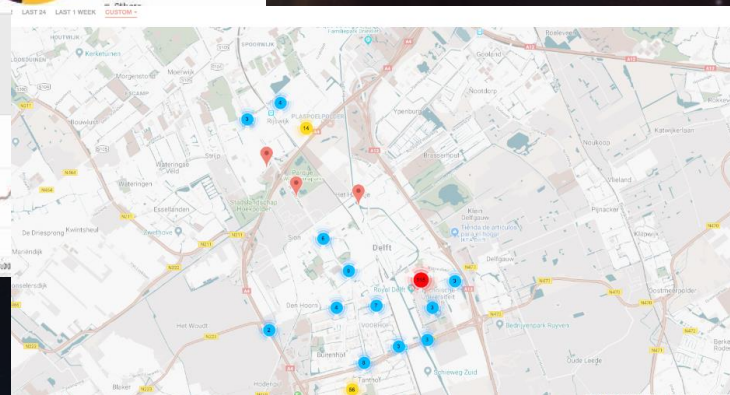


Use Case Results

Location



KPIs
(Temperature, Noise, Light)



Use Case Results



KPIs
 (Public Opinion)

Smart Cities: Conclusions

Smart Cities Conclusions

- Smart Cities present **a huge market opportunity**.
- Smart City models should **boost development while not compromising on data privacy and security**.
- Smart city deployments involve **multi-faceted developments** including **critical and complex ICT** implementations.
- However, increasing **ICT complexity implies increasing vulnerability**, both to malicious attacks and unintentional incidents.
- By having **robust security and information protection** framework and policies in place, **safety for both citizens and enterprises can be ensured**.
- It is now important to **develop the good practices identified so far**, to build on and conceptually enhance the suggested solutions.



THANK YOU

Follow us



redborder.com