

Hes·so

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Smart Destinations and multi-modal Mobility: *A new way to discover a city*

Internet of Things Workshop

**CERN – OpenLab
7th November 2017**

Why an Open Ecosystem for Smart Cities?

What really matters to build an IoT solution

1

- brings the right standards for developing “Smart” apps/services

2

- allows your city to join forces with others to build a sustainable market

3

- it's not just about technology

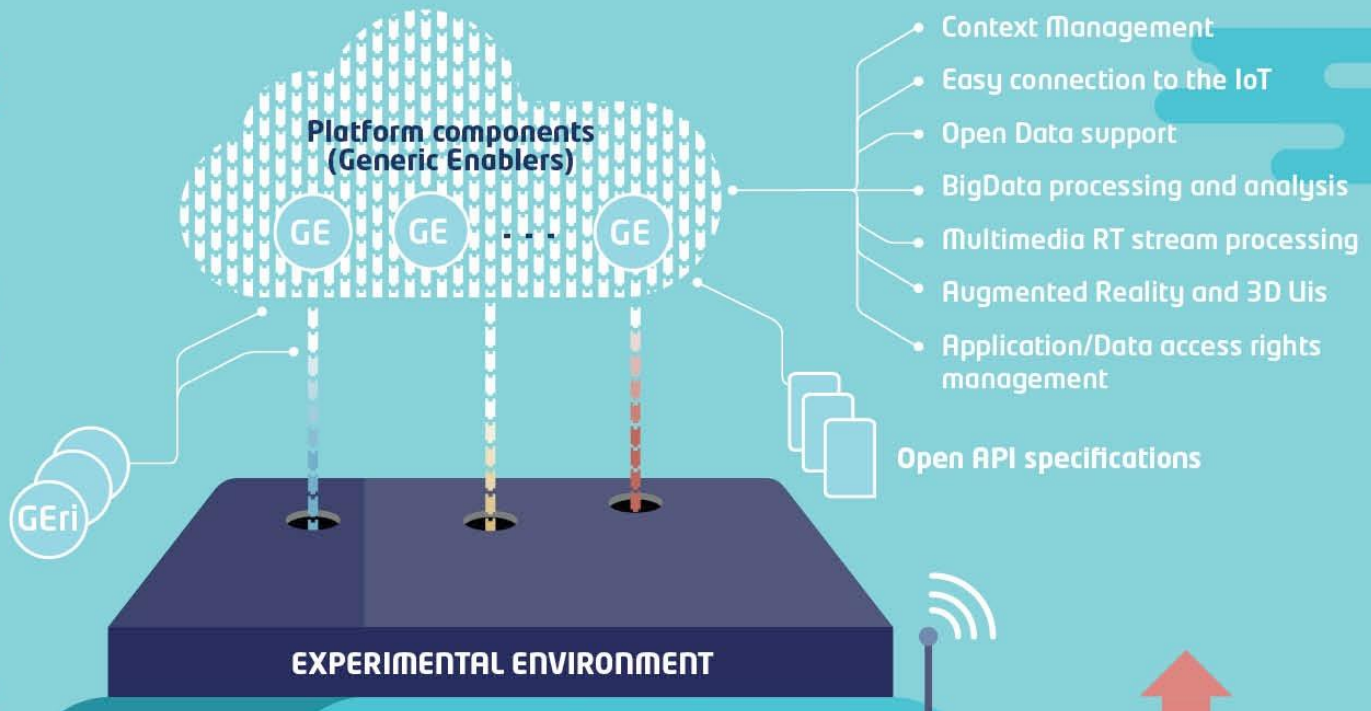
FIWARE

The offer in short

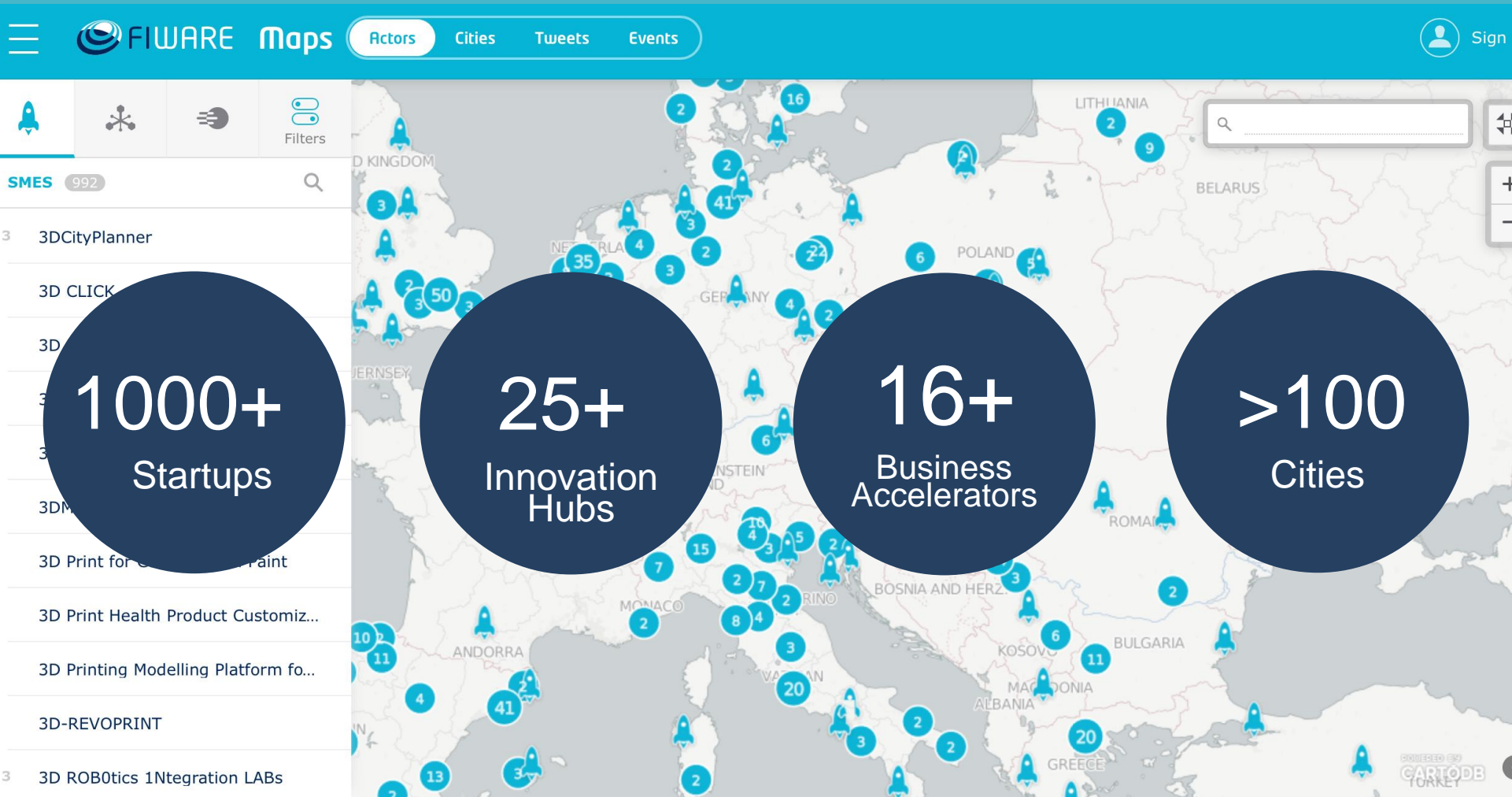


FIWARE is a software platform providing Enhanced OpenStack-based cloud hosting capabilities + a rich library of components implementing a number of added-value functions offered "as a Service"

Open Source reference implementations of GEs



An OPEN, SUSTAINABLE & GLOBAL ECOSYSTEM



IoT Business ideas start by “Things”

But let abstract from things... Let use FIWARE

- Data-driven / Context

- Smart Queries

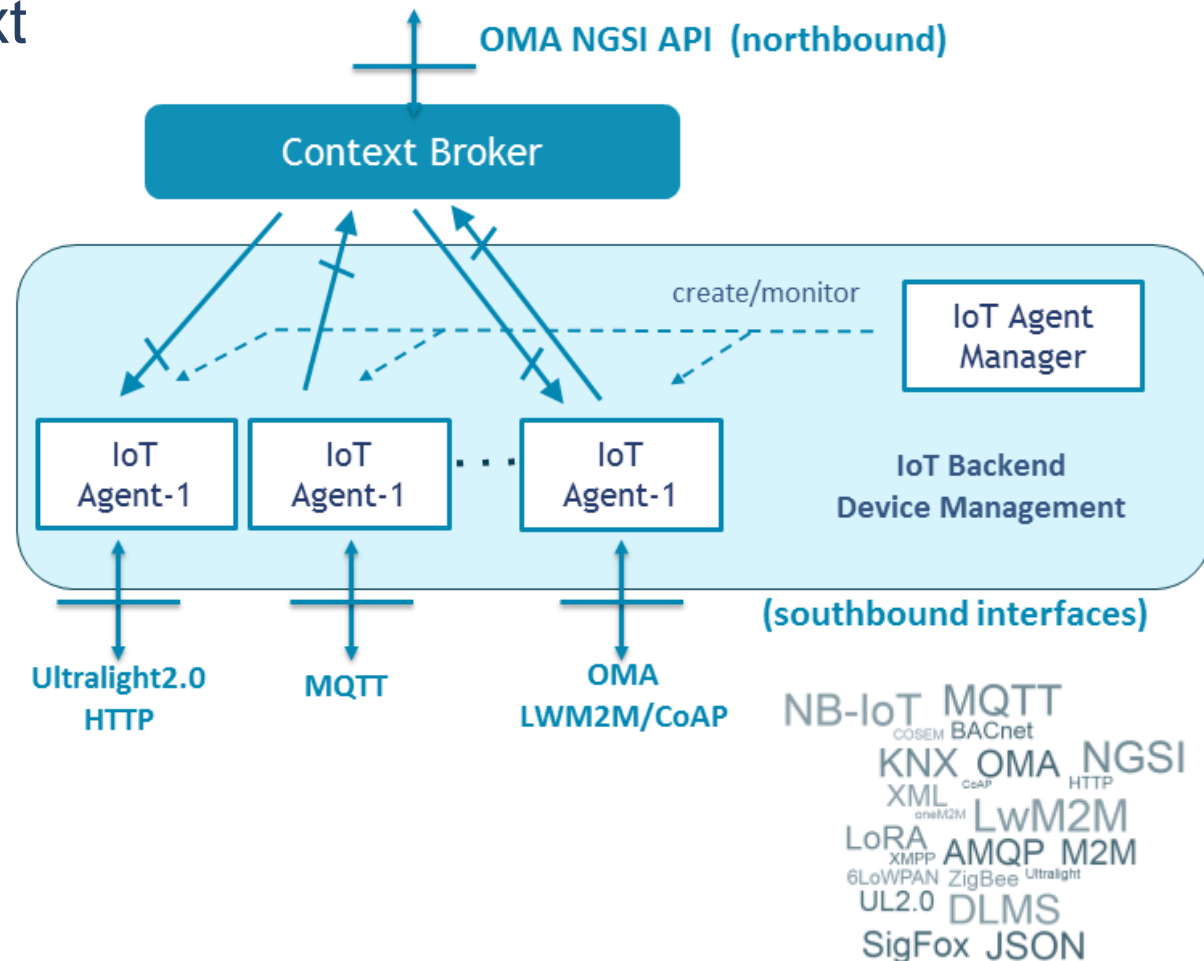
- Time
- Location
- Frequency

- Extensible

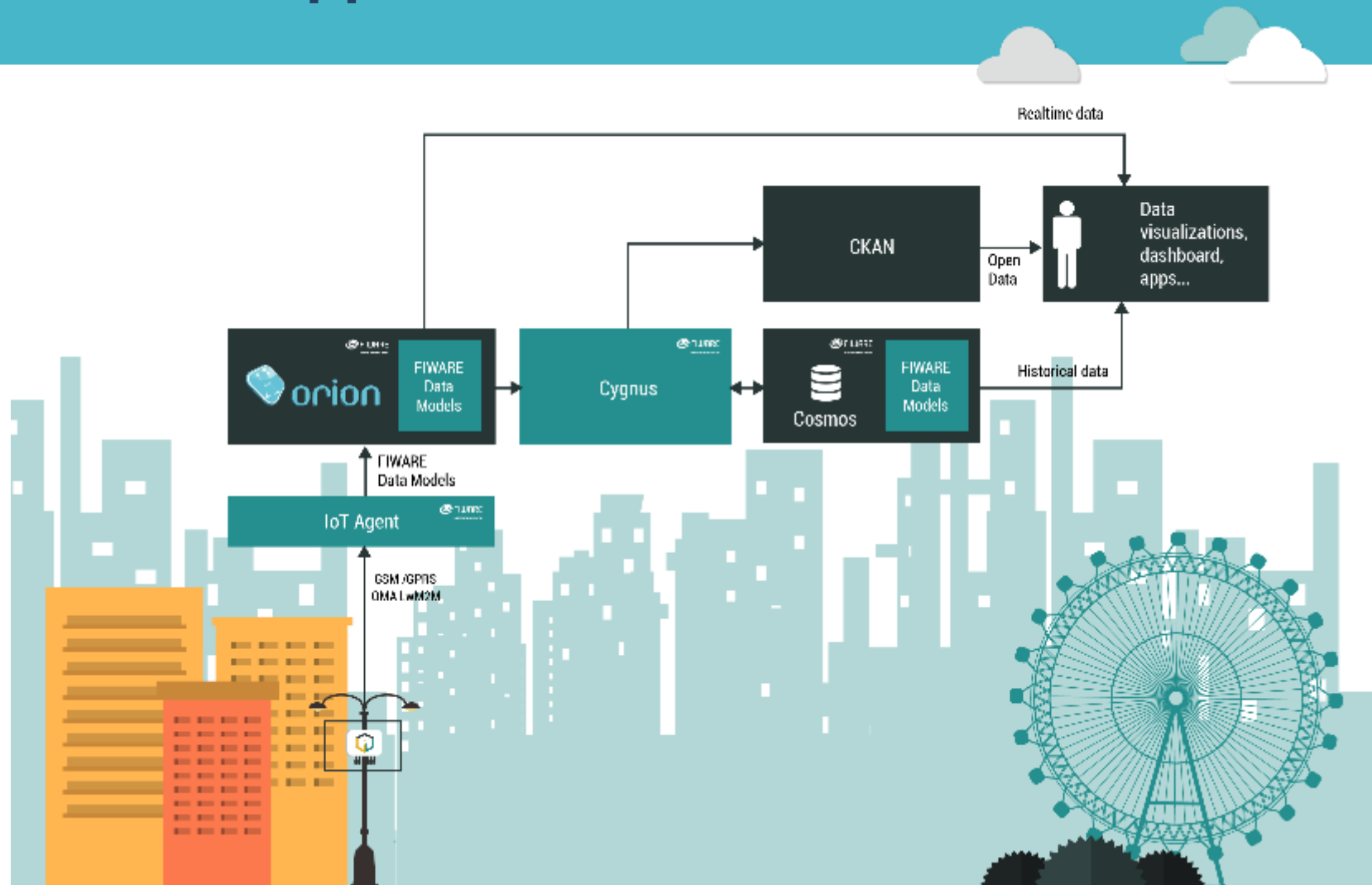
- Harmonized

- Only one integration

- Multiple Protocols
- Multiple Suppliers



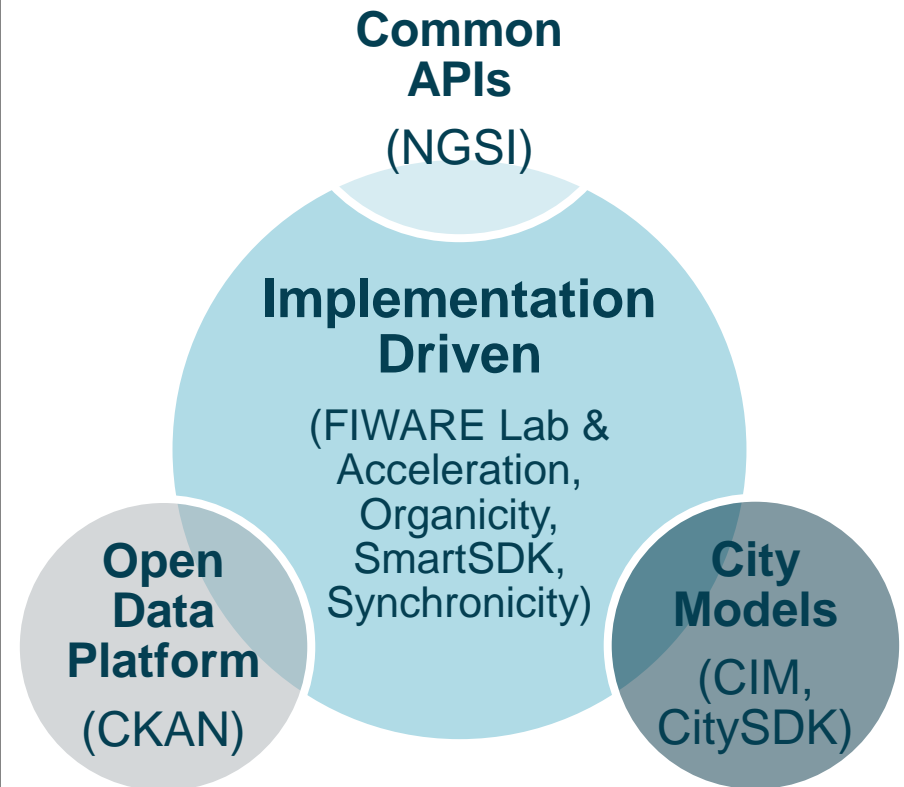
Brings the right standards for developing “Smart” apps/services



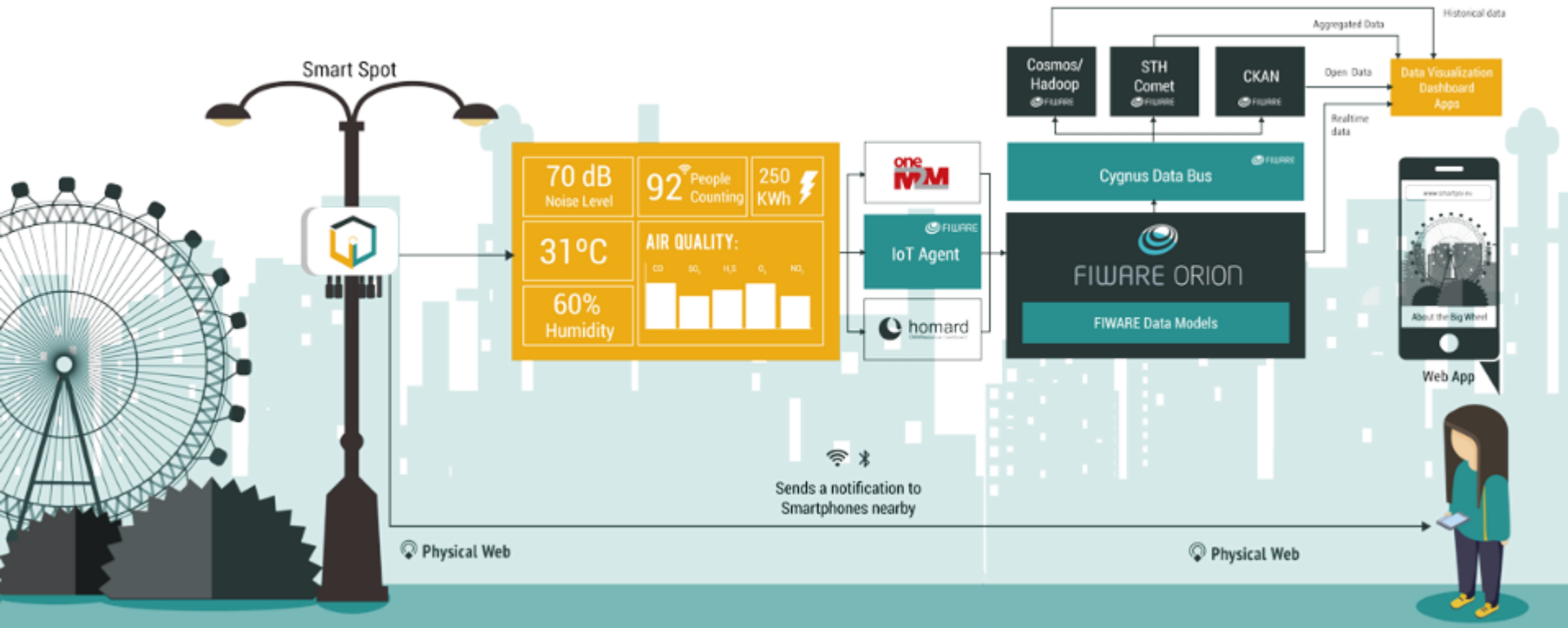


The vision of the Open & Agile Smart Cities initiative is to create an open smart city market based on the needs of cities and communities.

FROM THE OASC VISION

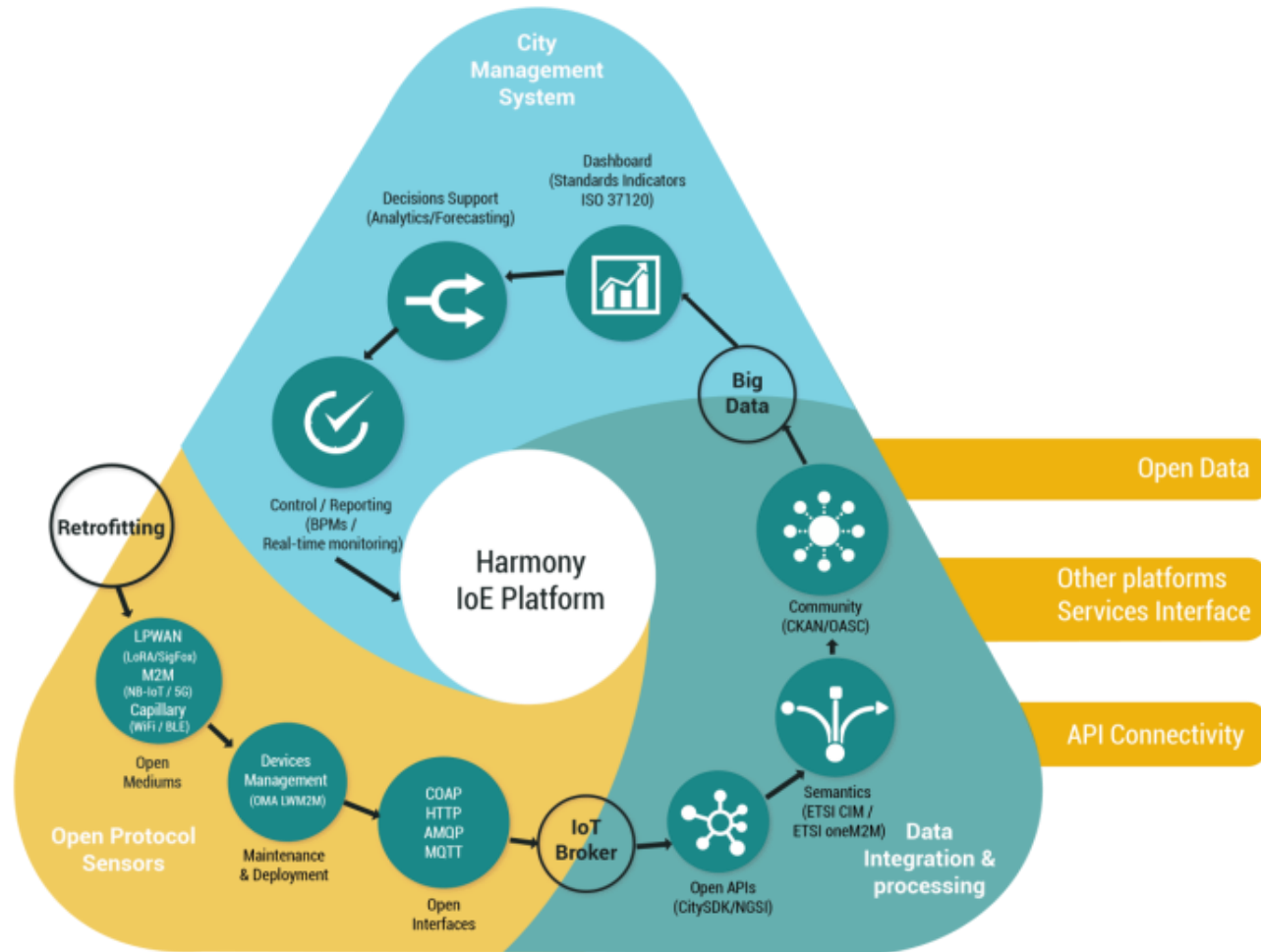


Smart City Platform based on FIWARE / oneM2M Open Standards for Open Environments



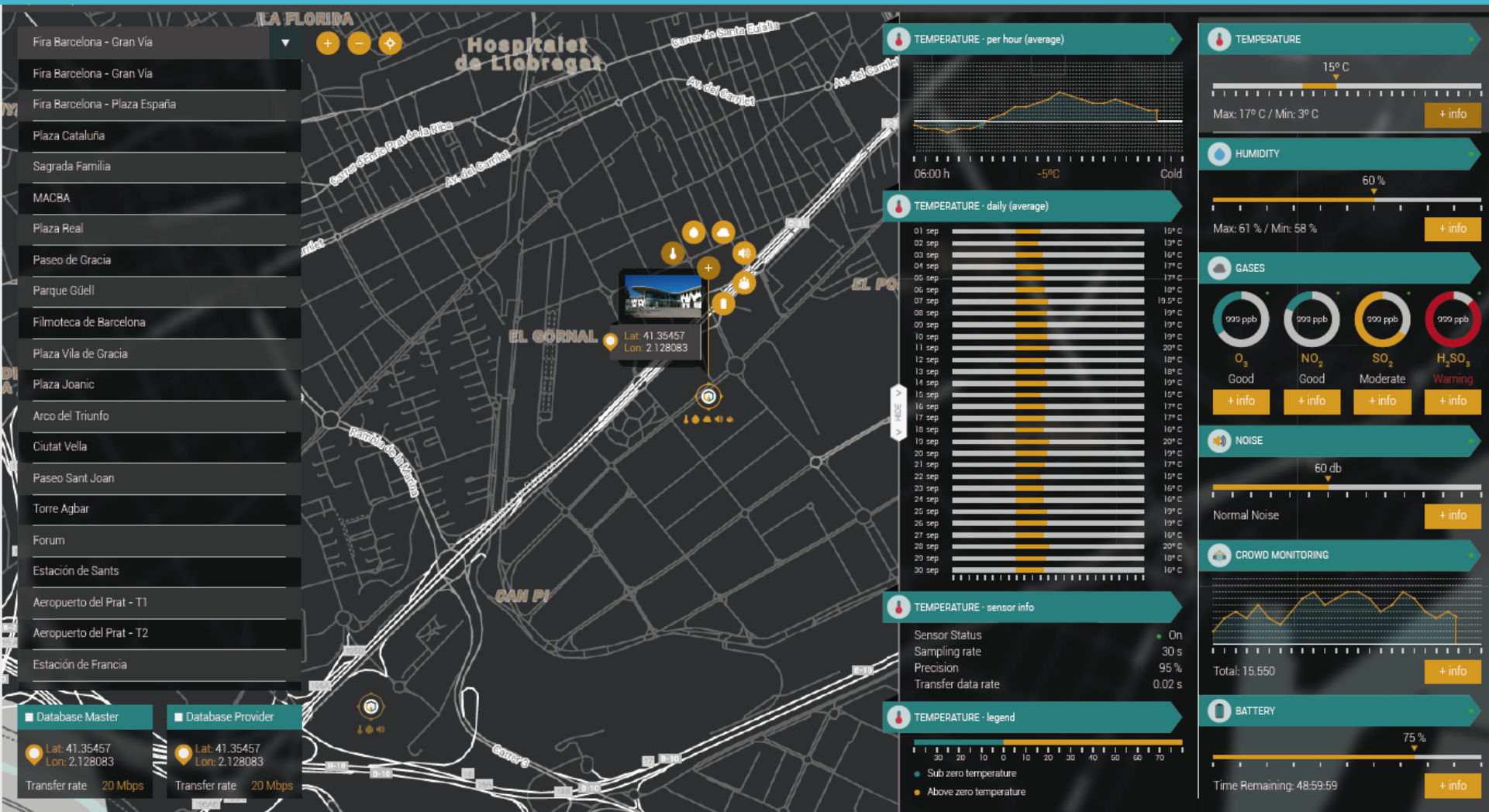
Smart City Platform based on FIWARE / oneM2M

Full lifecycle summary to integrate and exploit data



Smart Cities Platform Dashboard

Open Standards & platforms: The way to grow



An aerial, high-angle photograph of a busy city street. The street is filled with pedestrians walking in various directions. On the right side, there are multi-story buildings with light-colored facades and numerous windows. A yellow banner with the text 'SISTEMA SOLAR' is visible on one of the buildings. The overall scene depicts a vibrant, urban environment.

SMART SOLUTIONS

Smart City experiences
Multi-modal mobility & Smart Destinations

Mobility Lab (Switzerland)

Mobility experiences



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE



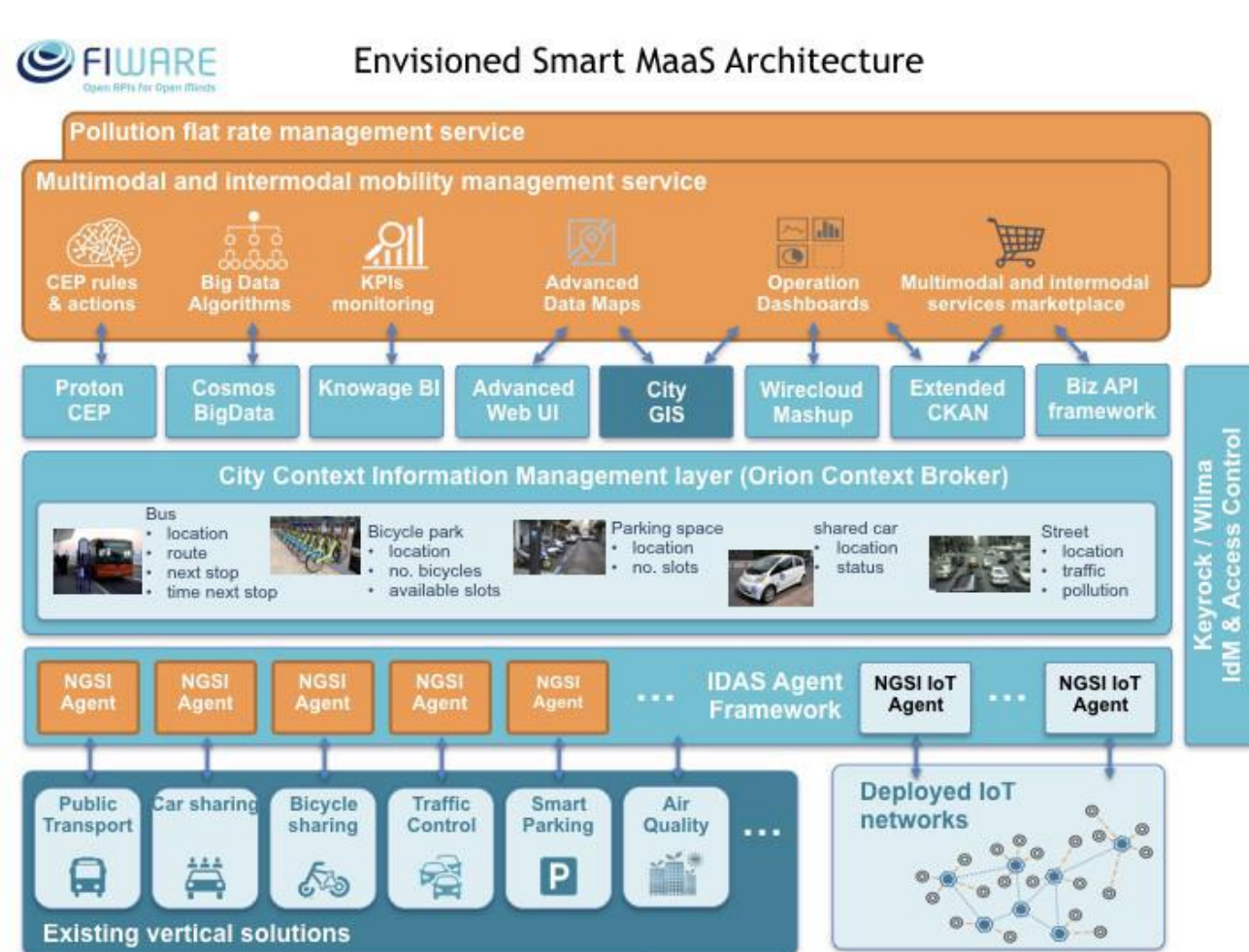
CANTON DU VALAIS
KANTON WALLIS



VILLE DE SION

Smart Mobility

Multi-modal mobility



- New Business Models
- Context-aware solutions
 - Time
 - Location
 - Frequency
- Multi-stakeholders & cooperative
- Harmonized via Data Models

Smart Mobility

New sensing capabilities (Nomadic Sensing)

Our proposition :

- Improve the existing mobile infrastructure for data collecting and analysis

- UX designs



Smart Mobility

New sensing capabilities (more context data)



■ Monitoring pollen

■ Air Quality

■ Noise etc.

Smart Mobility

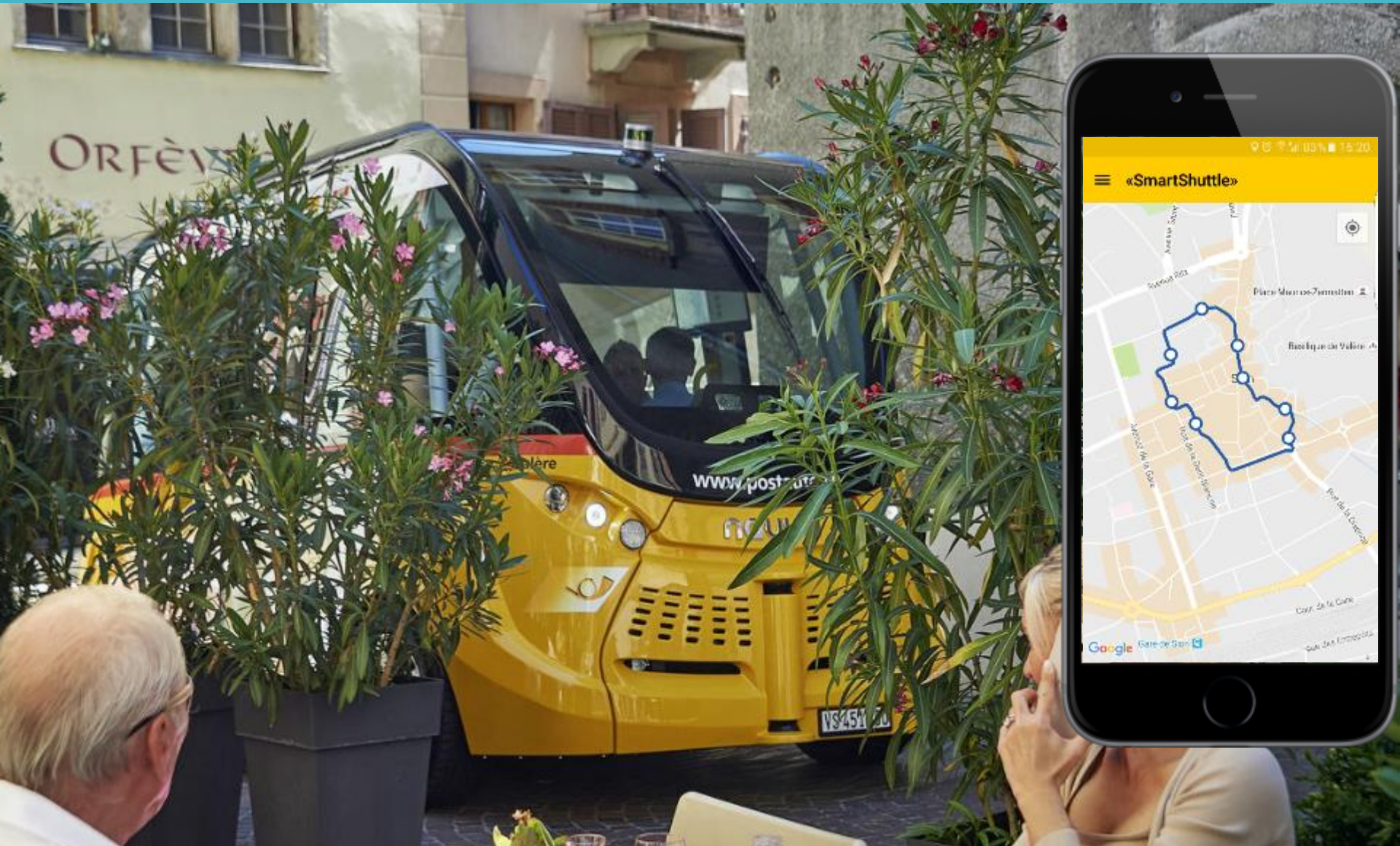
New ways to pay (Check in Be Out)



- User doesn't have to worry about tickets
- User always get the best price based on their use
- It's seamless and easy to use
- *For the future : dynamic pricing, data analysis, ...*

Smart Mobility

New services and ways to think (Smart Shuttle)



Smart Solution designed for people

SMART POI

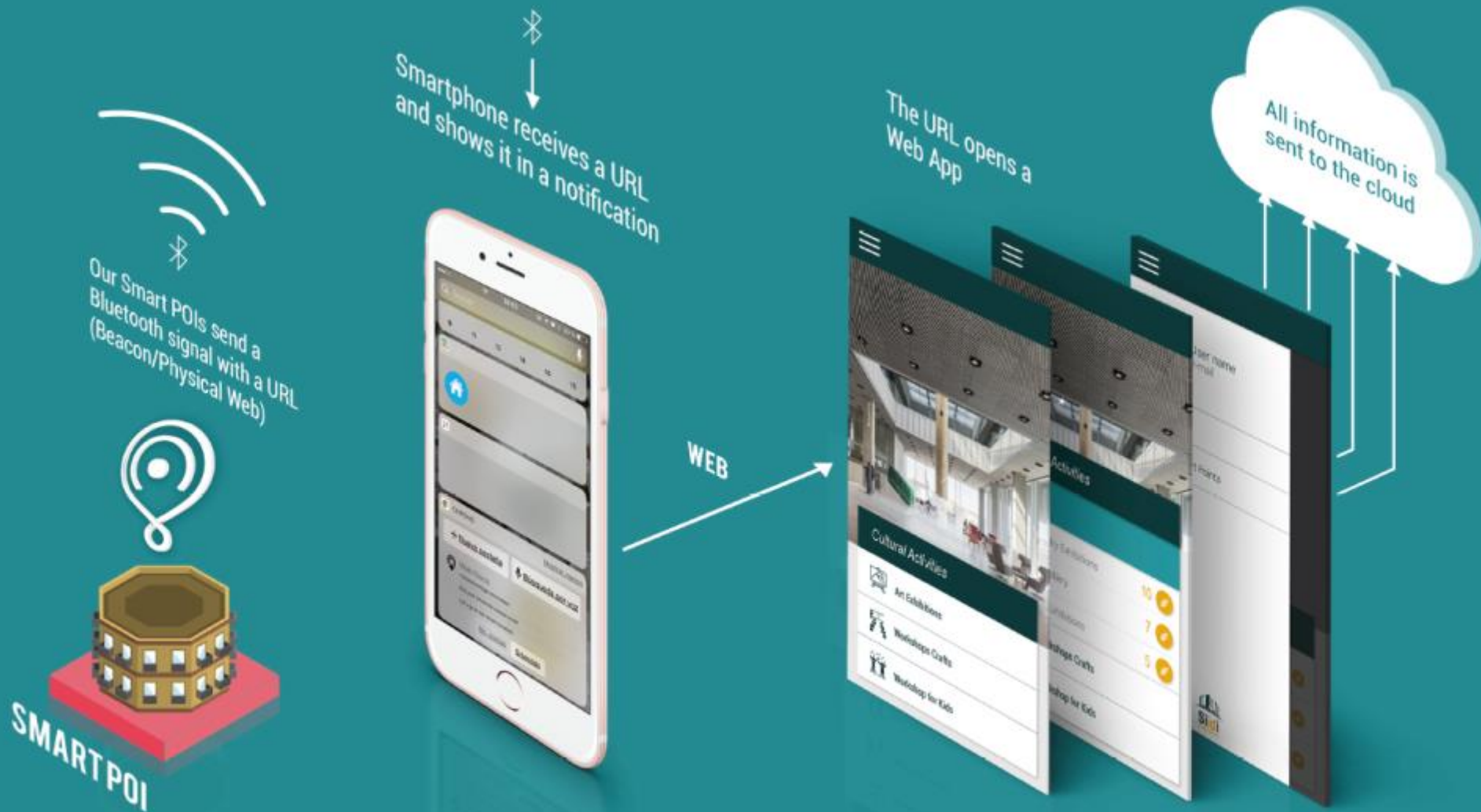


Smart Destinations

An example of FIWARE-ready IoT Solution

Interacting in Smart Cities

Engage users using Beacons and Physical Web

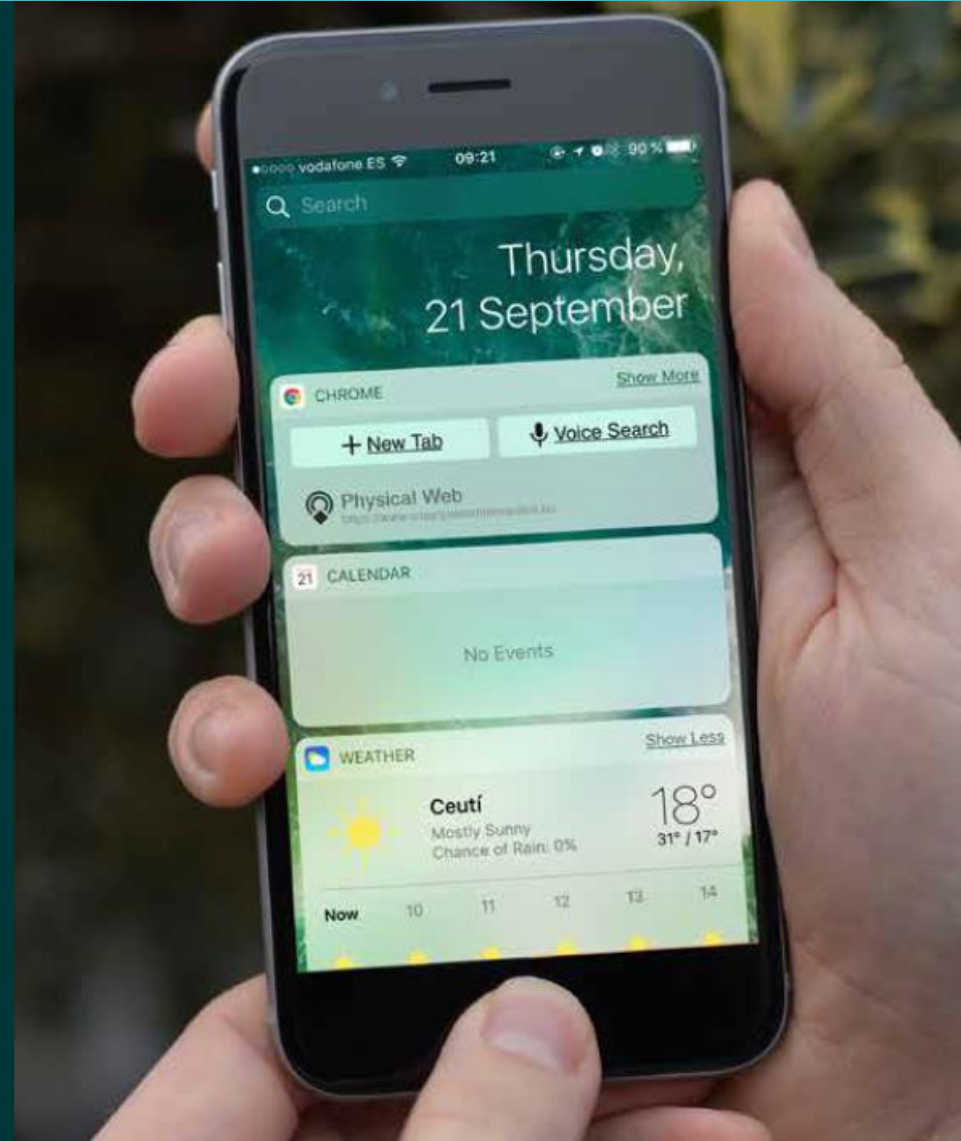


Interacting in Smart Cities

Engage users using Beacons and Physical Web

Human Interactions

(Physical Web)



Interacting in Smart Cities

Engage users using Beacons and Physical Web

CO-CREATION APP



TOURISM EXPERIENCE


Building Smart Cities Ecosystem

Environmental Monitoring & Open Data

SMART CITY ECOSYSTEM



Open Data
Transparency & Communication



Environmental Monitoring
Sustainable City



Tourism
Agile Experience



Co-creation Point
Participative citizenship



Open Interfaces
Interoperability

Smart POI

Sensors & Physical Web ready to be used



M2M

Scalable
Maintenance
(Remote Management)

WiFi



Human
Interactions
(Physical Web)

WiFi

BLE



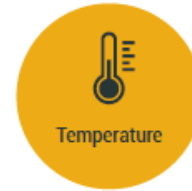
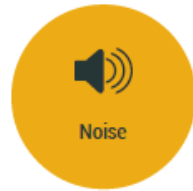
Sensing & Monitoring
(Internet of Things)

I2C

SPI

GPIO

ADC



Smart POI

Sensors & Physical Web ready to be used

Sensing & Monitoring

(Internet of Things)

Noise pollution
monitoring
(30dB - 130 dB)



Crowd monitoring
(Wi-Fi devices)



Measure energy
consumption
(non-invasive)



Air Quality monitoring
NO₂, CO₂, SO₂, NO, O₃,
temperature & humidity
(Calibrated sensors)

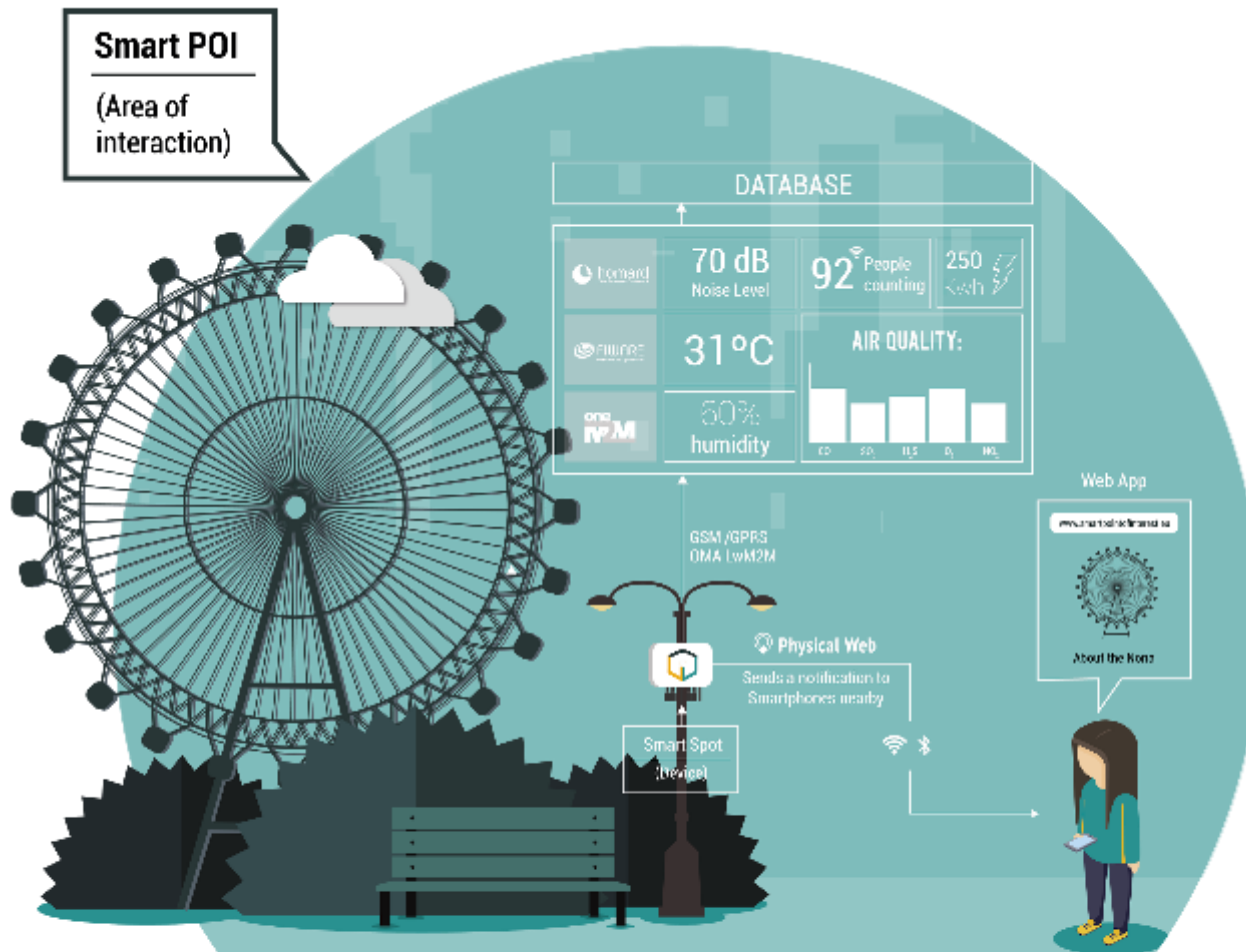
Smart POI

Sensors & Physical Web ready to be used



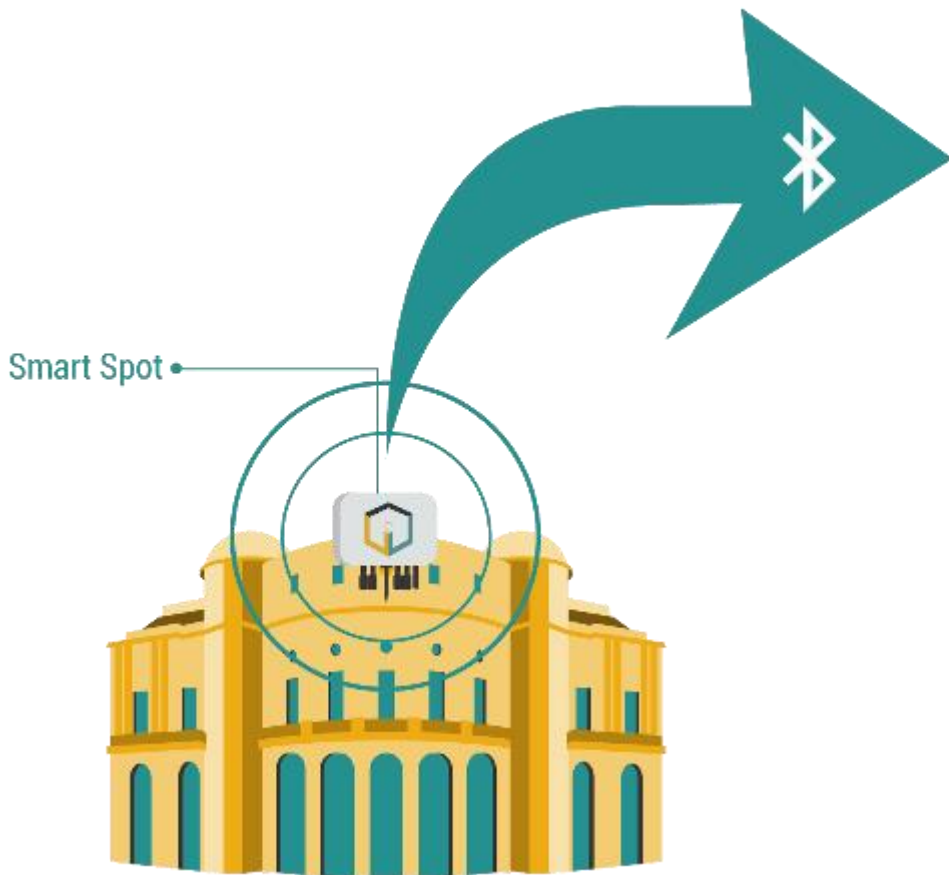
Smart POI infrastructure Overview

Areas for interaction, sensing and feeling



User experiences

Smart Destinations – Open to new experiences



Other experiences

Smart Destinations – Accessible Tourism

- Tourism deployments
 - Physical Web for guided tours in open air and historical places
 - › Accessible and multilanguage
 - › Agile Experience



Smart POI infrastructure Example

Co-Creation Experiment using Physical Web

- Co-creation Experience
- 300 user interactions per week
- 17 Smart POIs
- Working properly 24/7 in Winter
- M2M connectivity / management (FIWARE)
- Indoor and Outdoor





Thanks for your attention!

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