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Smart City: potential & challenges

Dialoghi per l'innovazione • 2
#SMARTCITY

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DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE

Smart City: potential & challenges

1. Smart City Concept
2. Smart City Services
3. Roadblocks and Challenges

Smart Cities Concept

Bridging Innovation with Societal Needs

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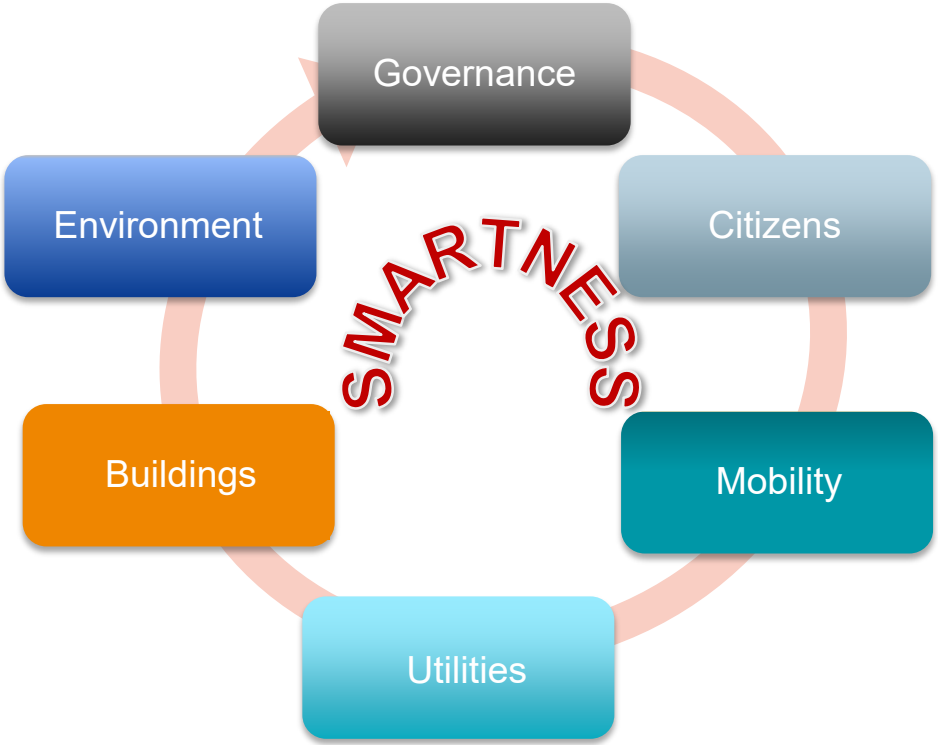
Smart Cities concept

The 6 pillars of city smartness

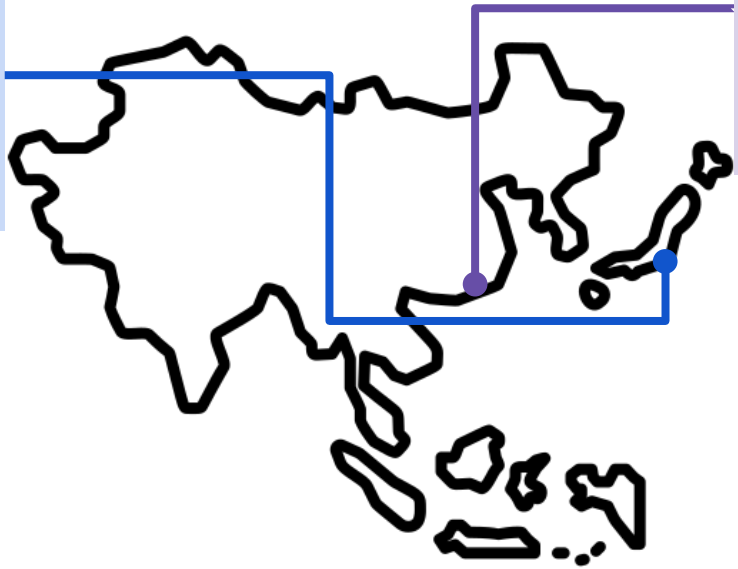


Smart City Services

Examples from the globe

Fujiwasa, Japan

The Fujisawa Sustainable Smart Town (SST) deals with **energy conservation**, with additional focus on community, mobility, security, and healthcare. IoT sensors, controls, and networking support this initiative.



Hong Kong;

City I&T Grand Challenge
Smart lamppost pilot scheme (led lighting, Wifi+5G, traffic monitoring, positioning service, environmental monitoring)

Boston, MA

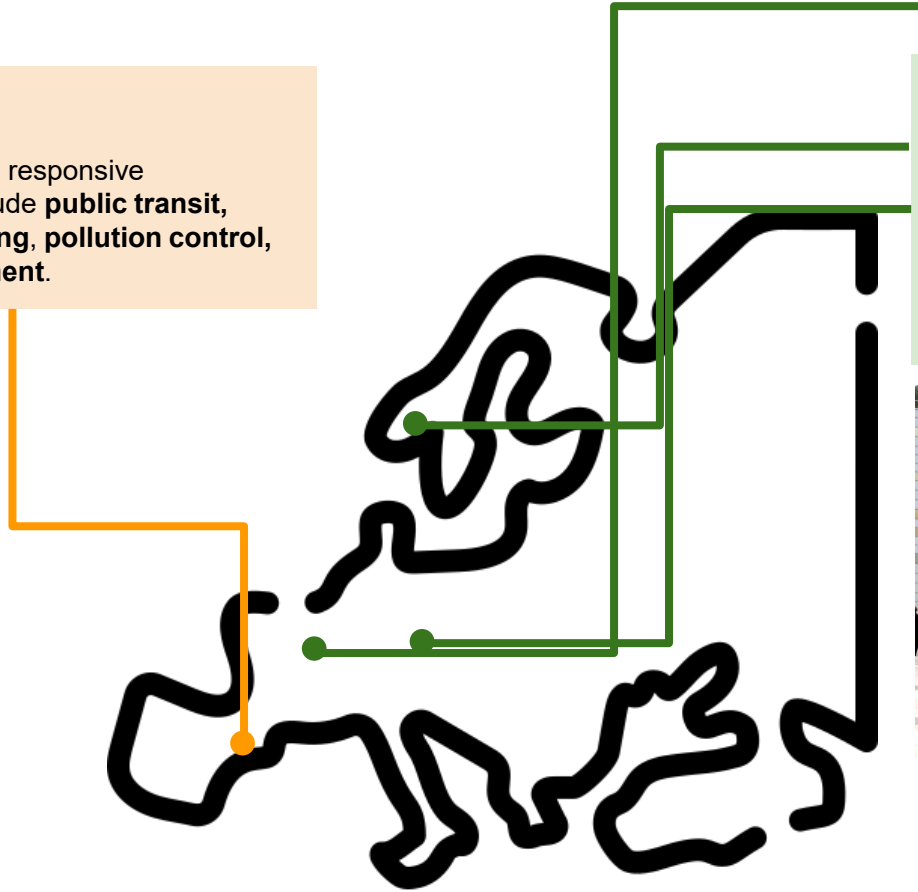
The BOS:311 **mobile application** allows residents to instantly report city issues (e.g., potholes, blocked drains, and faulty street lights). As soon as a report has been submitted, the app forwards the report automatically into the city's work order system.

New York City, NY

ShotSpotter is a gun fire detection system. The sensors working collaboratively can detect the geolocation of weapons fired. The data collected by the sensors can also be used to assess trends and crime hot spots in urban areas

Barcelona, Spain

The city has deployed responsive technologies that include **public transit, parking**, **street lighting**, **pollution control, and waste management**.



Oslo, Norway; Dresden and Klingenthal, Germany; Paris, France; London UK, …

Green City Solutions' **City Tree** combines plant life and IoT technology to improve air quality in tight urban spaces. The City Tree is a bioengineered vertical 12ft stand that is able to purify the air around it with a capacity equivalent to 275 trees

Icons available at www.flaticon.com

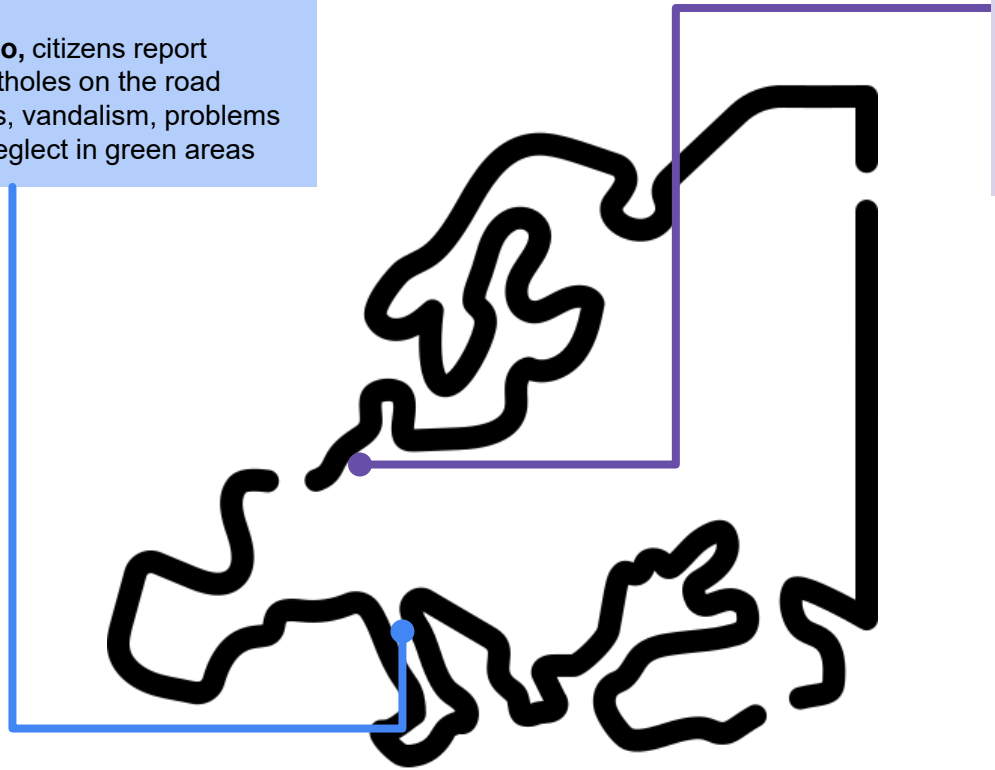
Image available at: https://content.assets.pressassociation.io/2018/03/22093802/e1cb2927-e87b-42a5-94e9-9d2e0403fd7b-1366x768.jpg

Italy

WeDo Decoro Urbano, citizens report abandoned waste, potholes on the road surface, illegal posters, vandalism, problems with road signs and neglect in green areas

Amsterdam (NL)

Amsterdam Smart City Challenge
Mobypark app: owners of parking spaces rent them out to people for fee.
Data generated from this app can then be used by the City to determine parking demand and traffic flows in Amsterdam

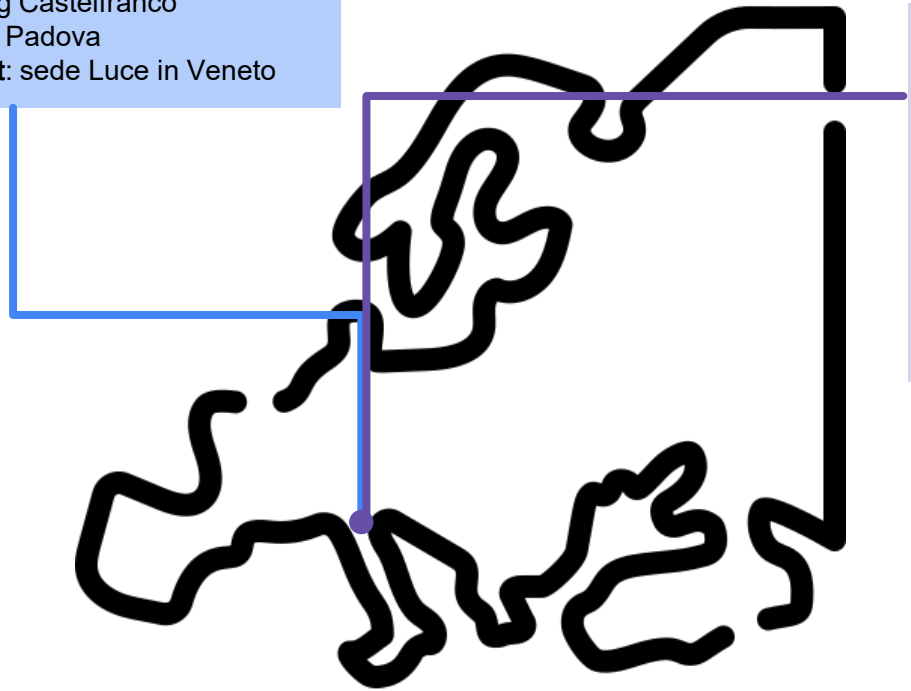


DOMHO

Italy – Regione Veneto

IoT for human-centric living environments
Residential: co-Housing Castelfranco
Nursing home: lab HIT Padova
Business environment: sede Luce in Veneto

https://domho.it



Safe Place

Italy – Regione Veneto

IoT Systems for Healthy and Safe Living Environments

Safe Space&Objects: bakery in Mestre (VE)
Safe Path: library in Piazzola sul Brenta (PD)
Safe Air: rehab gym at UNIPD
Safe Talk: PoC of application
Safe Place: classroom in La Fenice (PD)

https://www.safe-place.it/progetto/

POR 2014/2020
FESR / REGIONE DEL VENETO
UNIONE EUROPEA
REGIONE DEL VENETO

Un moltiplicatore di opportunità.
Da non lasciarsi sfuggire.

Comfort and healthiness of living environments

- Closed room
  - CO2 < 600 ppm
  - CO2 >1000 ppm
  - CO2 >2500 ppm

- Smart comfort control algorithm finds the configuration that provides the desired comfort level by minimizing the power consumption of Heating Ventilation Air Conditioning (HVAC) system

Roadblocks & Challenges

Smart City

- **From IoT Observatory 2018***
  - **36%** of Italian municipalities have started at least one Smart City project from 2016 to 2018*.
  - **80%** of the projects **stop at the experimentation phase**
  - The projects launched are more robust, innovative and structured

- **From Smart City Observatory 2023+**
  - Smart City market: 900 millions of euro **(+ 23%, compared to 2021**)
    - Public lighting (24%), smart mobility (21%), smart metering & smart building (12%)
  - 39% of municipalities have started at least one Smart City project in 2022
  - **89%** want to **continue investing in new initiatives** for the Smart City
  - 41% of municipalities say they intend to invest in Smart City initiatives in the next three years

**Osservatorio Internet of Things della School of Management del Politecnico di Milano, presentata al convegno "Buon compleanno Internet (of Things)".*
+ Osservatorio Smart City: "Smart City: andare oltre la "Terra di Mezzo", 2023

Roadblocks

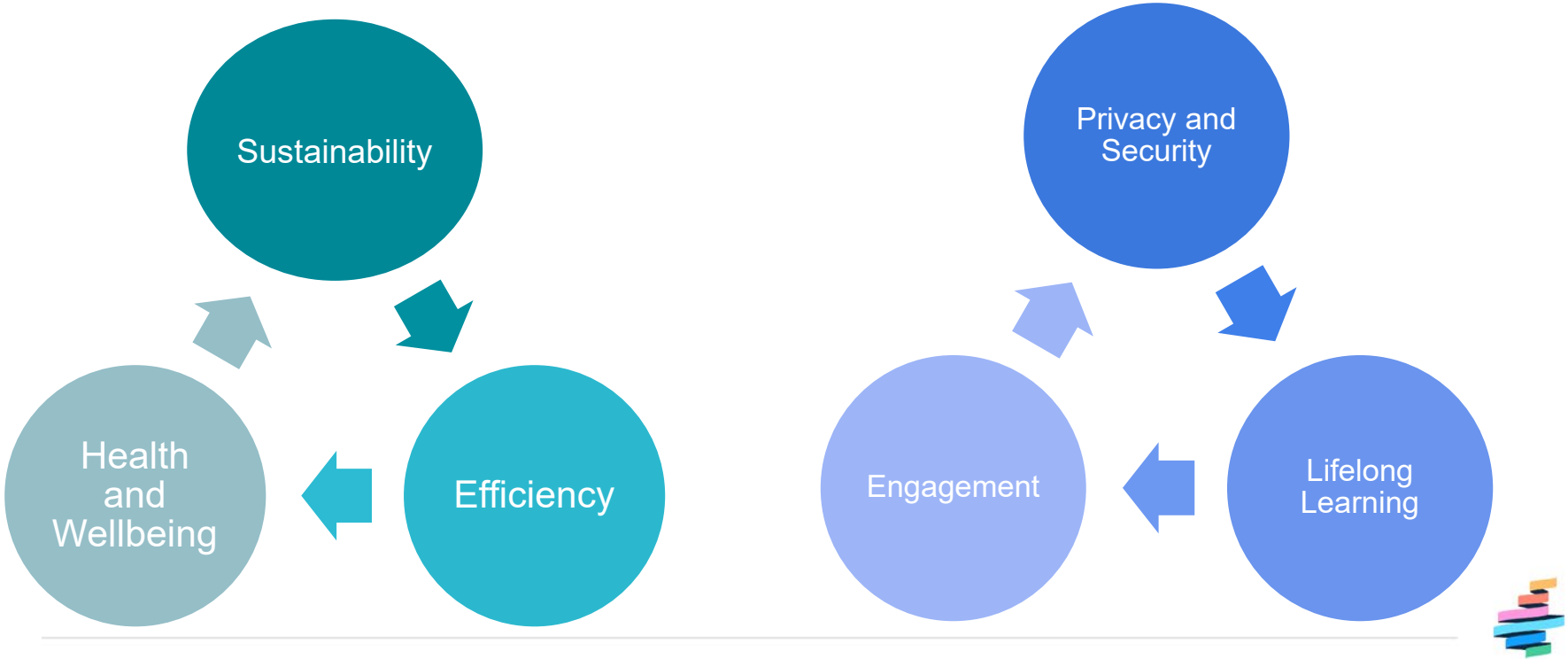
Financial aspects
Lack of money for investments with long-term returns
Lack of clear business model

Political issues
Decision-making responsibility
Data ownership
Fragmentation

Technical impairments
Plethora of heterogeneous non-interoperable technologies
Need for skilled workforce

Data Privacy and Security
a lot of private information can leak from (or wormed out of) a sensors, IoT devices, databases → privacy from design is necessary

Unified Vision for Smart Cities



The secret ingredient: collaborative ecosystem

Smart cities thrive on **collaboration between different sectors of society**

This includes partnerships between **government**, **industry**, **academia**, and the **community** to co-create solutions that are sustainable and responsive to the needs of all citizens

GRAZIE PER L'ATTENZIONE!

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