



# Cagliari Connect: The intelligent platform at city service

Laura Marrani

*Marketing Manager – Fastweb*

SmartCity Expo World Congress | Barcelona 15-17 nov. 2022

Cagliari

# Agenda

Scenario

Partnership

Requirements

- Urban Microclimate monitoring
- The Heat Map
- Video Surveillance
- Public WiFi extension
- Tourist Flow Monitoring & KPI

Solution Benefits

Timeline

Click icon to add picture



picture



# Scenario

Click icon to add picture



## #PNRR

### BANDO GREEN COMMUNITIES

**Missione 2**  
Rivoluzione verde e Transizione ecologica

**Componente 1**  
Economia circolare e Agricoltura sostenibile



**129 milioni di euro per la sostenibilità energetica, ambientale, economica e sociale delle comunità locali**

## OBIETTIVI PER LO SVILUPPO SOSTENIBILE

<b>1</b> SCONFIGGERE LA POVERTÀ 	<b>2</b> SCONFIGGERE LA FAME 	<b>3</b> SALUTE E BENESSERE 	<b>4</b> ISTRUZIONE DI QUALITÀ 	<b>5</b> PARITÀ DI GENERE 	<b>6</b> ACQUA PULITA E SERVIZI IGIENICO-SANITARI 
<b>7</b> ENERGIA PULITA E ACCESSIBILE 	<b>8</b> LAVORO DECENTO E CRESCITA ECONOMICA 	<b>9</b> IMPRESE, INNOVAZIONE E INFRASTRUTTURE 	<b>10</b> RIDURRE LE DISUGLIANZE 	<b>11</b> CITTÀ E COMUNITÀ SOSTENIBILI 	<b>12</b> CONSUMO E PRODUZIONE RESPONSABILI 
<b>13</b> LOTTA CONTRO IL CAMBIAMENTO CLIMATICO 	<b>14</b> VITA SOTTACQUA 	<b>15</b> VITA SULLA TERRA 	<b>16</b> PACE, GIUSTIZIA E ISTITUZIONI SOLIDE 	<b>17</b> PARTNERSHIP PER GLI OBIETTIVI 	<b>OBIETTIVI PER LO SVILUPPO SOSTENIBILE</b> 

Click icon to add picture



**UNIONE EUROPEA**  
Fondi Strutturali e di Investimento Europei



# Project Partnership



UNIVERSITÀ  
DEGLI STUDI  
DI CAGLIARI



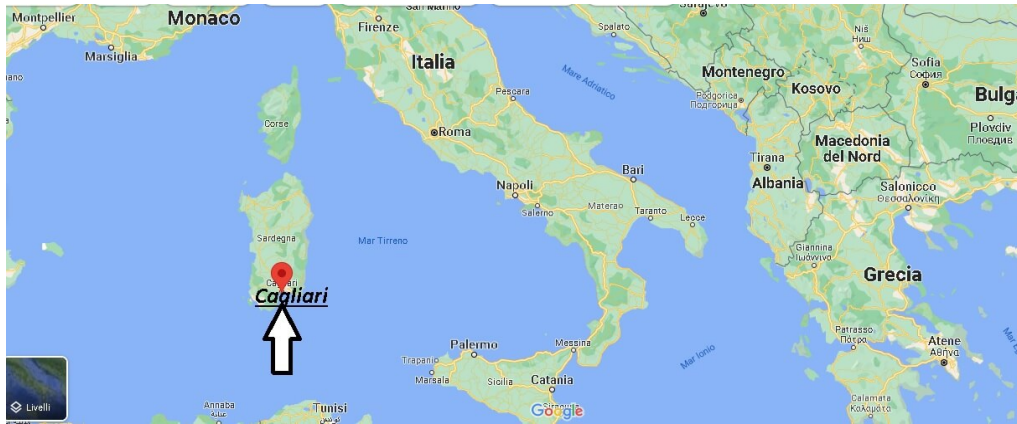
# FASTWEB

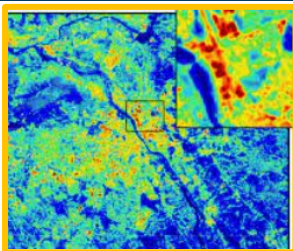
Click icon to add picture



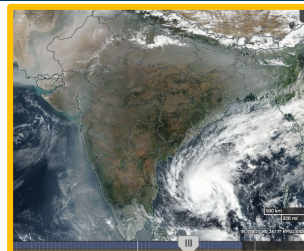
UNIONE EUROPEA  
Fondi Strutturali e di Investimento Europei

# Cagliari





Urban microclimate  
monitoring



Air quality and presence  
of pollutants



Expansion of the city  
video surveillance



Expansion of the  
city WiFi network



Tourist flow monitoring  
in the main areas of the city

# Urban Microclimate Monitoring

Network of **sensors** to monitor urban **microclimate**.

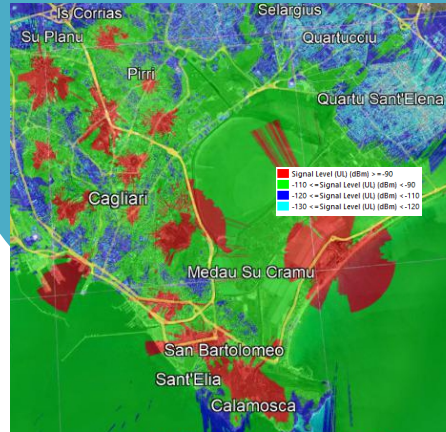
**250** meteo stations

**Radio LoraWan** protocol used

**15** predefined points (GateWay)

**Control Room** to monitor **urban heat islands**

Click icon to add picture



Click icon to add picture



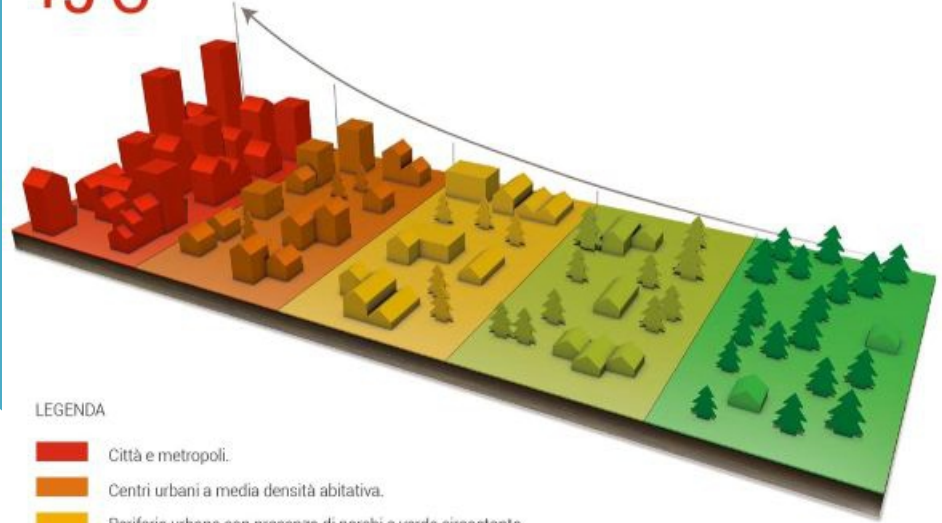
# The Heat Map

- The Heat Map refers to the **temperature increase** moving from rural areas to the city center.
- **Up to 5 degrees warmer** microclimate within urban areas than the peripheral ones.
- This phenomenon is also determined by a **progressive elimination of green areas**
- It can generate various negative consequences that can be reflected on

Click

AUMENTO DI TEMPERATURA  
NELLE CITTÀ FINO A

**+5°C**



LEGENDA

- Città e metropoli.
- Centri urbani a media densità abitativa.
- Periferie urbane con presenza di parchi e verde circostante.
- Aree rurali, coltivazioni - poco antropizzata
- Area naturale scarsamente o per nulla antropizzata.

■ Signal Level (dBA) (dBm) > +90  
■ -110 <= Signal Level (dBA) (dBm) < +90  
■ -120 <= Signal Level (dBA) (dBm) < +110  
■ -130 <= Signal Level (dBA) (dBm) < +120



dashboard

- Home
- Stato sensori

Atti Dei Sensori

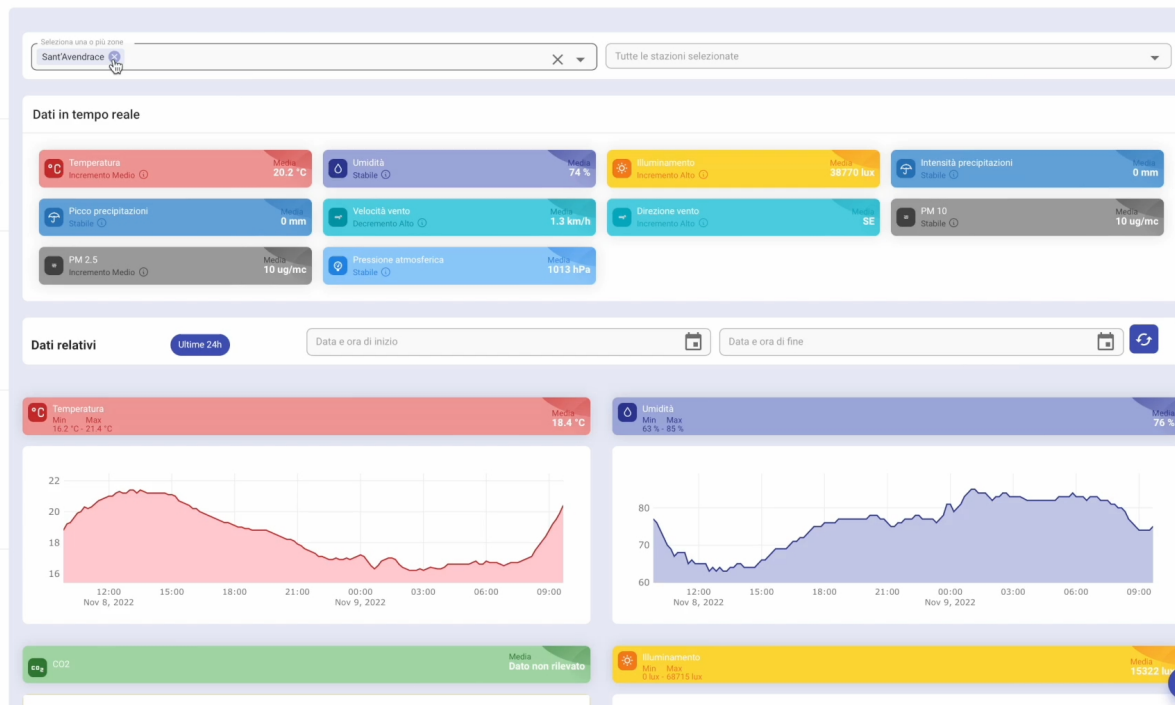
- Globale
- Metriche

IS

- Mappa punti di monitoraggio
- Mappa dati real time
- Mappa storica animata

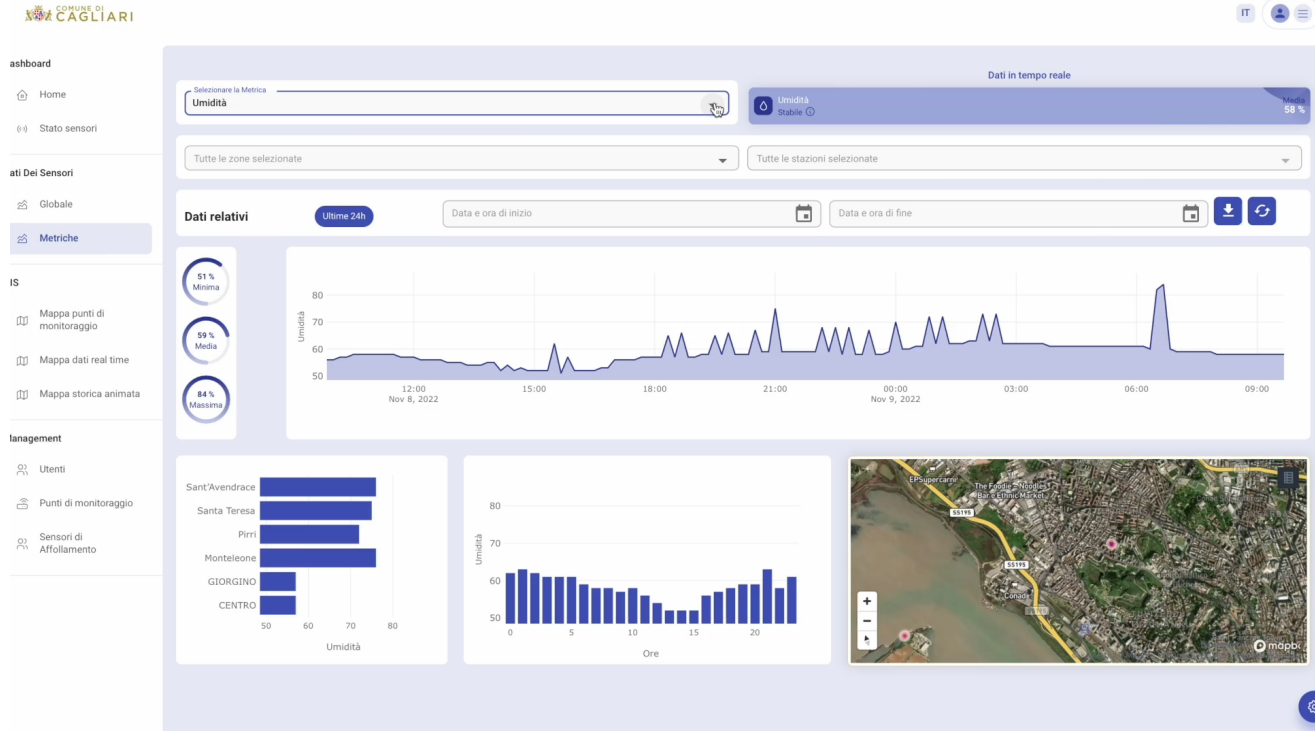
Management

- Utenti
- Punti di monitoraggio
- Sensori di Affollamento



# Temperature Metric

# Air quality





# Benefits

Click icon to add picture



Constant monitoring of Cagliari climate and environment

City map redefinition (green areas, buildings...)

Air quality control

Implementing strategies for adaptation to climate change  
and energy efficiency

Click icon to add picture

# Video Surveillance

Expansion of the VDS with about **50 nodes**

Focus on **schools** and **Movida** areas

VDS on existing urban poles a/o new ones will  
be installed

Connection to **Control Room** will be made in  
**optical fiber**

Click



re



Click icon to add picture



Dashboard

- Home
- Stato sensori

Mappe Dei Sensori

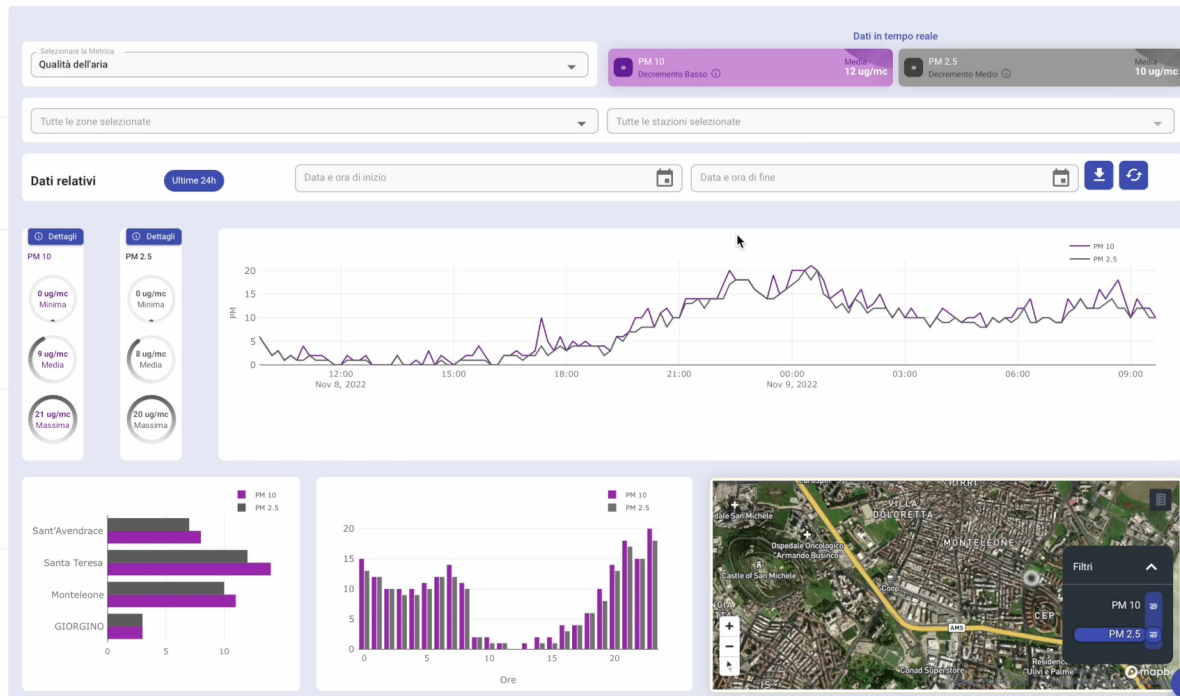
- Globale
- Metriche

Visualizzazioni

- Mappe punti di monitoraggio
- Mappe dati real time
- Mappe storica animata

Gestione

- Utenti
- Punti di monitoraggio
- Sensori di Affollamento



# Monitoring Points



Click icon to add picture

EUROPEA  
Fondo di Sviluppo e Coesione  
Fondo di Sviluppo Europeo

# Benefits

Click icon to add picture



Security surveillance improvement

Public safety

Click icon to add picture

Signal Level (dBSm) > -90  
-110 <= Signal Level (dBSm) < -90  
-120 <= Signal Level (dBSm) < -110  
-130 <= Signal Level (dBSm) < -120

# PUBLIC WIFI EXTENSION

Installation of **Access points** with **Public Internet navigation** function

Expansion to city parks, historic center, municipal building, schools

Expansion possible thanks to the fiber optic connections and relative points

Click icon to add picture





# Benefits

Click icon to add picture



Citizens costs connection reduced

Wi Fi expansion in areas before not covered

Click icon to add picture

Signal Level (dBM) > -90  
-110 <= Signal Level (dBM) < -90  
-120 <= Signal Level (dBM) < -110  
-130 <= Signal Level (dBM) < -120





Click icon to add picture

EUROPEA  
Fondo di Sviluppo e Coesione  
Fondo di Investimenti Europei

# TOURIST FLOW MONITORING

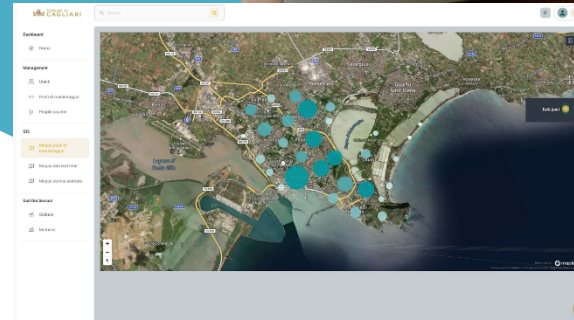
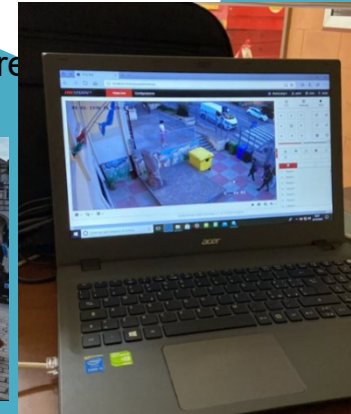
Monitoring of people flow in specific areas of interest

Study of tourist flow

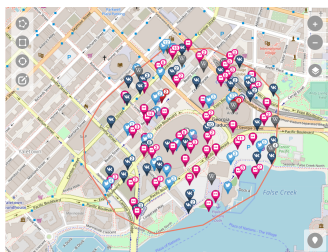
Indication of crowding grade

Sniffer devices that counts passively connected devices

Click icon to add picture

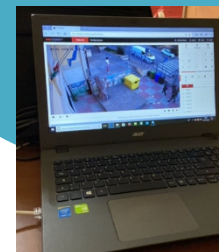
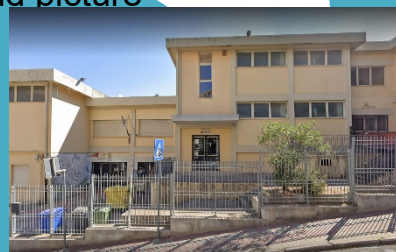


## Events Monitoring



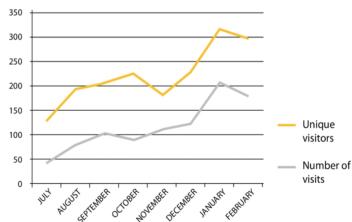
Click icon to add picture

## Improve accessibility and security

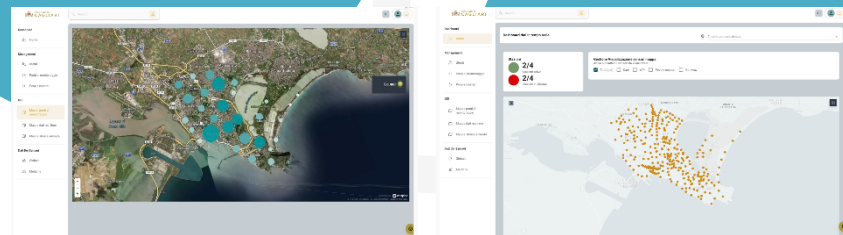


Click icon to add picture

## Number of unique visitors



## Interactive Dashboard



# Abinsula Sensors Used

Sensors (cases, hardwares, connectors) must offer a guarantee of **durability** and **reliability**



Click icon to add picture

Dashboard

- Home
- Stato sensori

Dati Dei Sensori

- Globale
- Metriche

Mappe

- Mappa punti di monitoraggio
- Mappa dati real time
- Mappa storica animata

Gestione

- Utenti
- Punti di monitoraggio
- Sensori di Affollamento

Dati in tempo reale

Selezionare la Metrica: **Affollamento**

Affollamento Decremento Alto 4 pers.

Tutte le zone selezionate Tutte le stazioni selezionate

Dati relativi **Ultime 24h** Data e ora di inizio Data e ora di fine

2 pers. Minima  
6 pers. Media  
20 pers. Massima

GIORGINO

# Benefits

Click icon to add picture



Implementation of tourists/citizens services thanks to data collected

Click icon to add picture

Signal Level (U/L) (dBm) > +90  
-110 <= Signal Level (U/L) (dBm) < -90  
-120 <= Signal Level (U/L) (dBm) < -110  
-130 <= Signal Level (U/L) (dBm) < -120

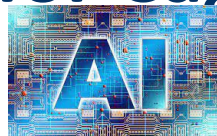
# Project Benefits for Cagliari's city



Cagliari **environment improvement** thanks to constant data monitoring



Tourist flow monitoring and more control on public events and city attractions



Implementation of **AI** based on huge amount of sensors data collected



**Sensors** net improvement that allows **more security** controls for citizens



Air quality improvement thanks to focused actions based on data



**Public WiFi** coverage expansion



**City planning** redefinition



**Control Room** monitoring and **intervention** based on data collected



**UNIONE EUROPEA**  
Fondi Strutturali e di Investimento Europei

# Timeline





**UNIONE EUROPEA**  
Fondi Strutturali e di Investimento Europei

# Thank You!

Laura Marrani

*Marketing Manager – Fastweb*

*[laura.marrani@fastweb.it](mailto:laura.marrani@fastweb.it)*

*[www.comune.cagliari.it](http://www.comune.cagliari.it)*

**Cagliari**