USAGE
project

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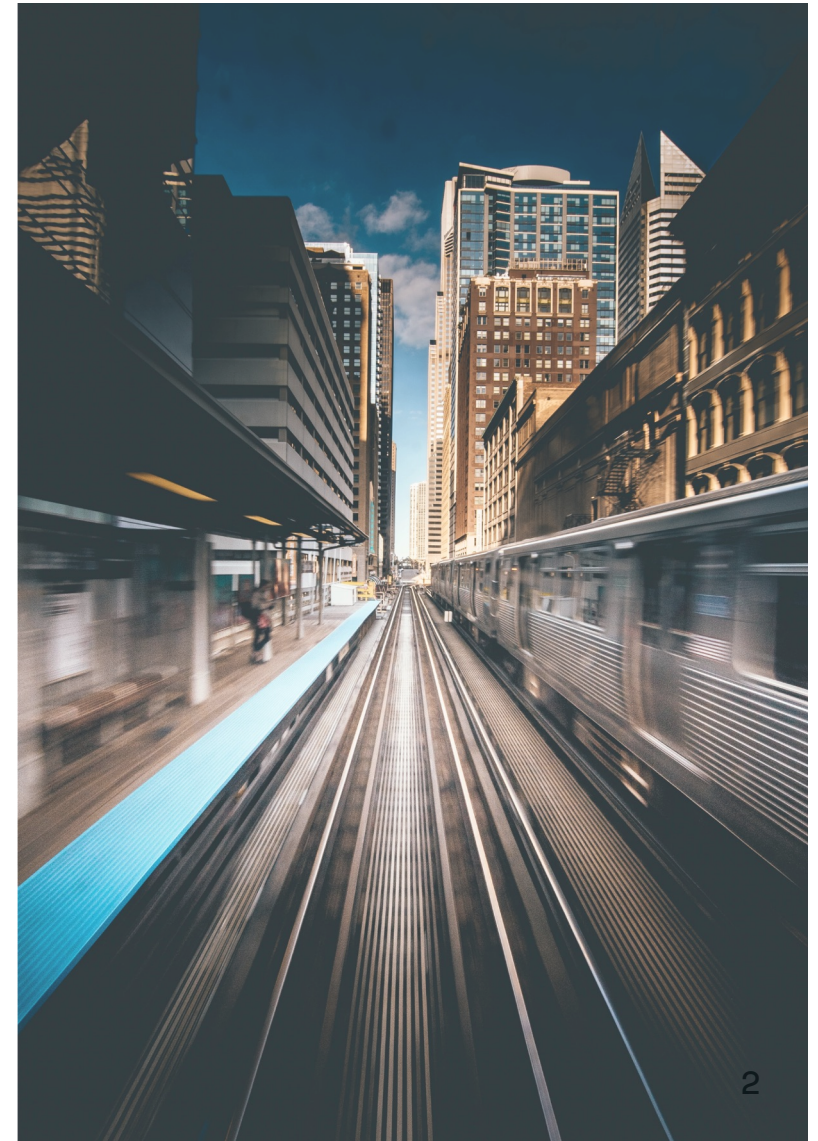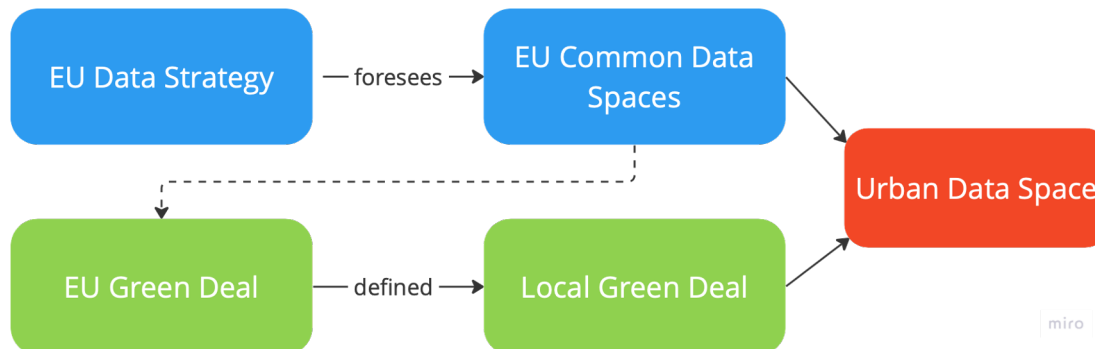
Resources

USAGE

Urban Data Space for Green Deal

Marshalling EU cities 'twin' transition
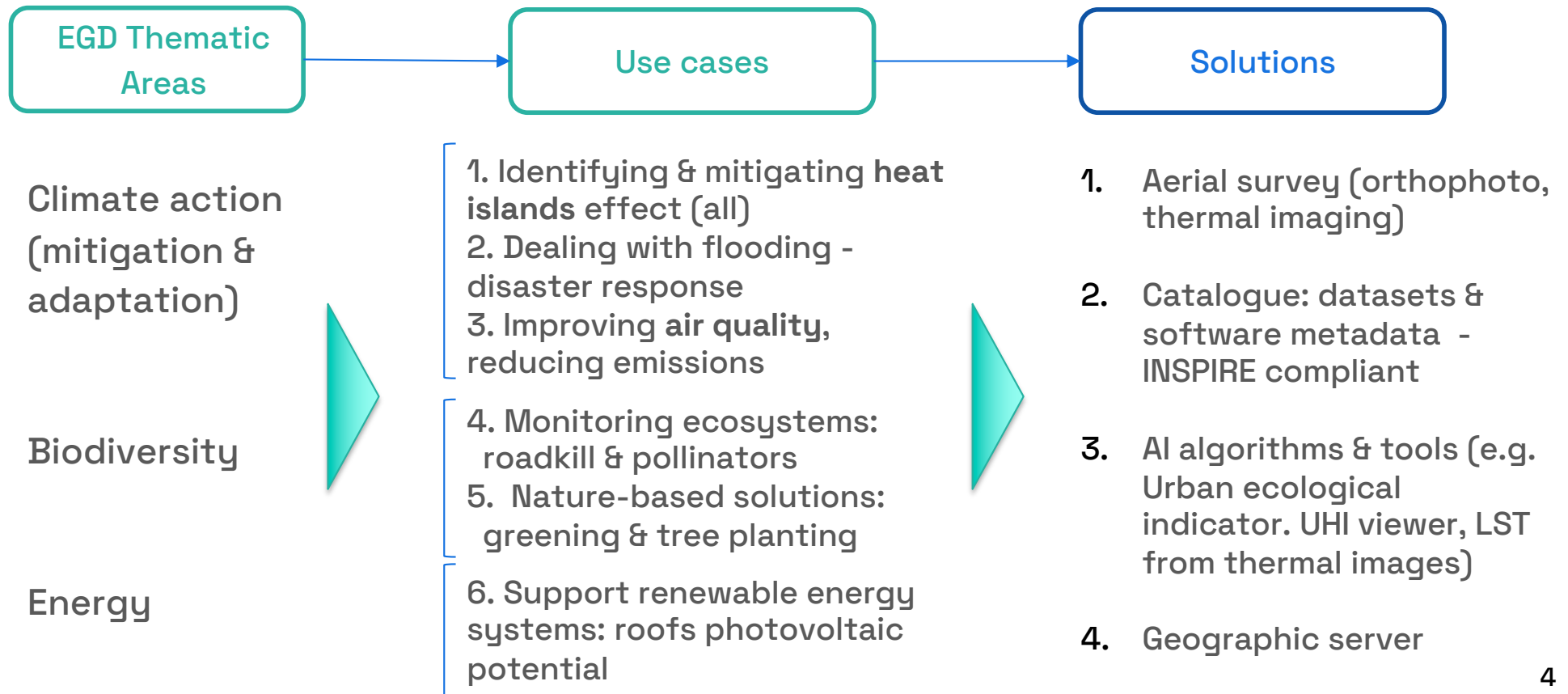
Cities are called on to lead the Twin Transition:

- Activate participation of all stakeholder groups

- Exploit the potential of data to effectively support Green Deal actions at local level

EU Data Strategy —foresees→ EU Common Data Spaces → Urban Data Space

EU Green Deal —defined→ Local Green Deal → Urban Data Space

miro

Point at issue

How can data spaces enable cities to address climate challenges?

USAGE approach & solutions

EGD Thematic Areas → **Use cases** → **Solutions**

Climate action (mitigation & adaptation)

Biodiversity

Energy

1. Identifying & mitigating **heat islands** effect (all)
2. Dealing with flooding - disaster response
3. Improving **air quality**, reducing emissions

4. Monitoring ecosystems: roadkill & pollinators
5. Nature-based solutions: greening & tree planting

6. Support renewable energy systems: roofs photovoltaic potential

1. Aerial survey (orthophoto, thermal imaging)

2. Catalogue: datasets & software metadata - INSPIRE compliant

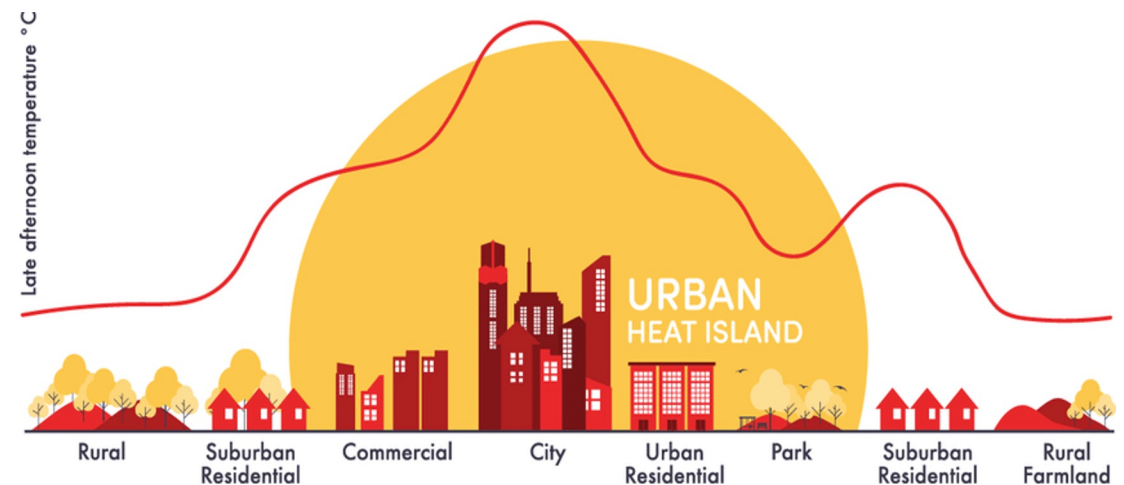3. AI algorithms & tools (e.g. Urban ecological indicator. UHI viewer, LST from thermal images)

4. Geographic server

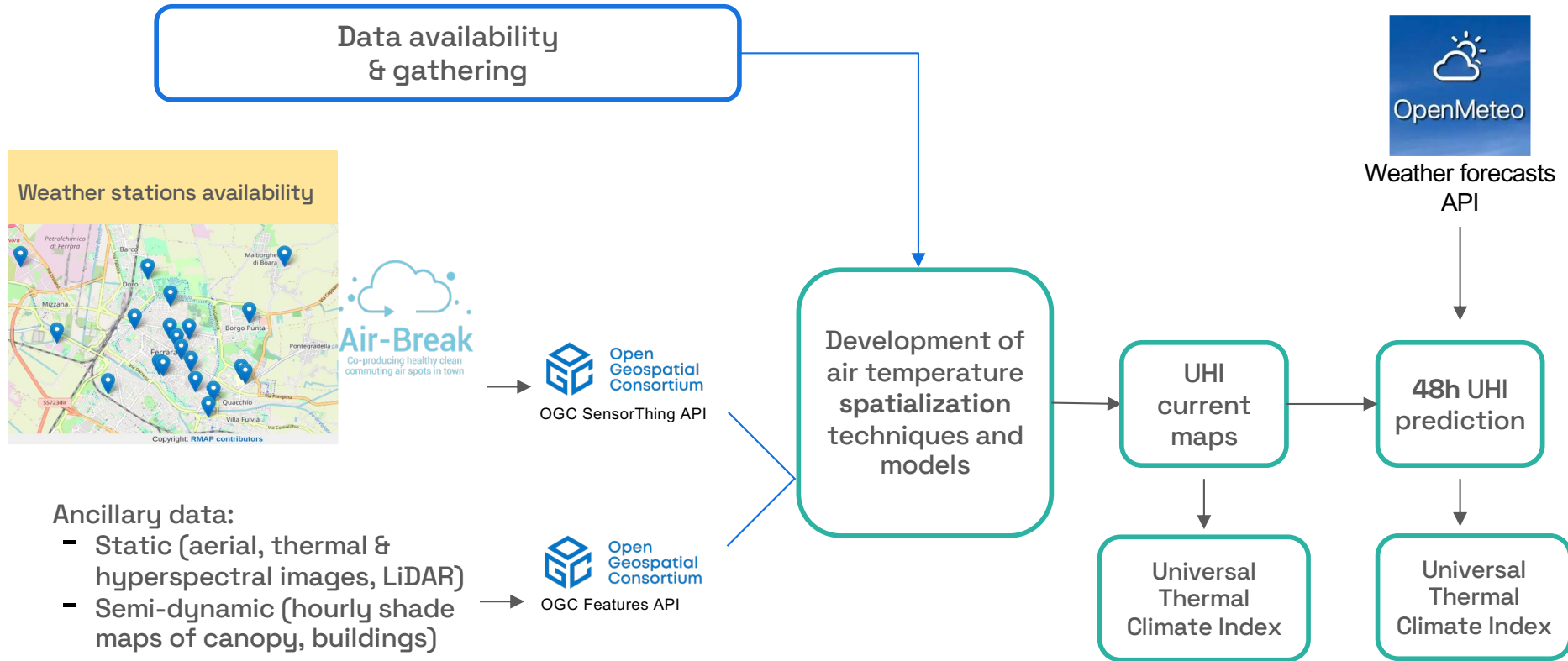# Urban Heat Island (UHI) estimation use case

Challenges

- Highly built-up cities are warmer than surrounding areas
- Rising temperatures and air current anomalies – urban heat island
- Different types of data need to be integrated to identify and accurately estimate the location of urban hot spots
- Large amounts of data, once available, need to be used and constantly updated
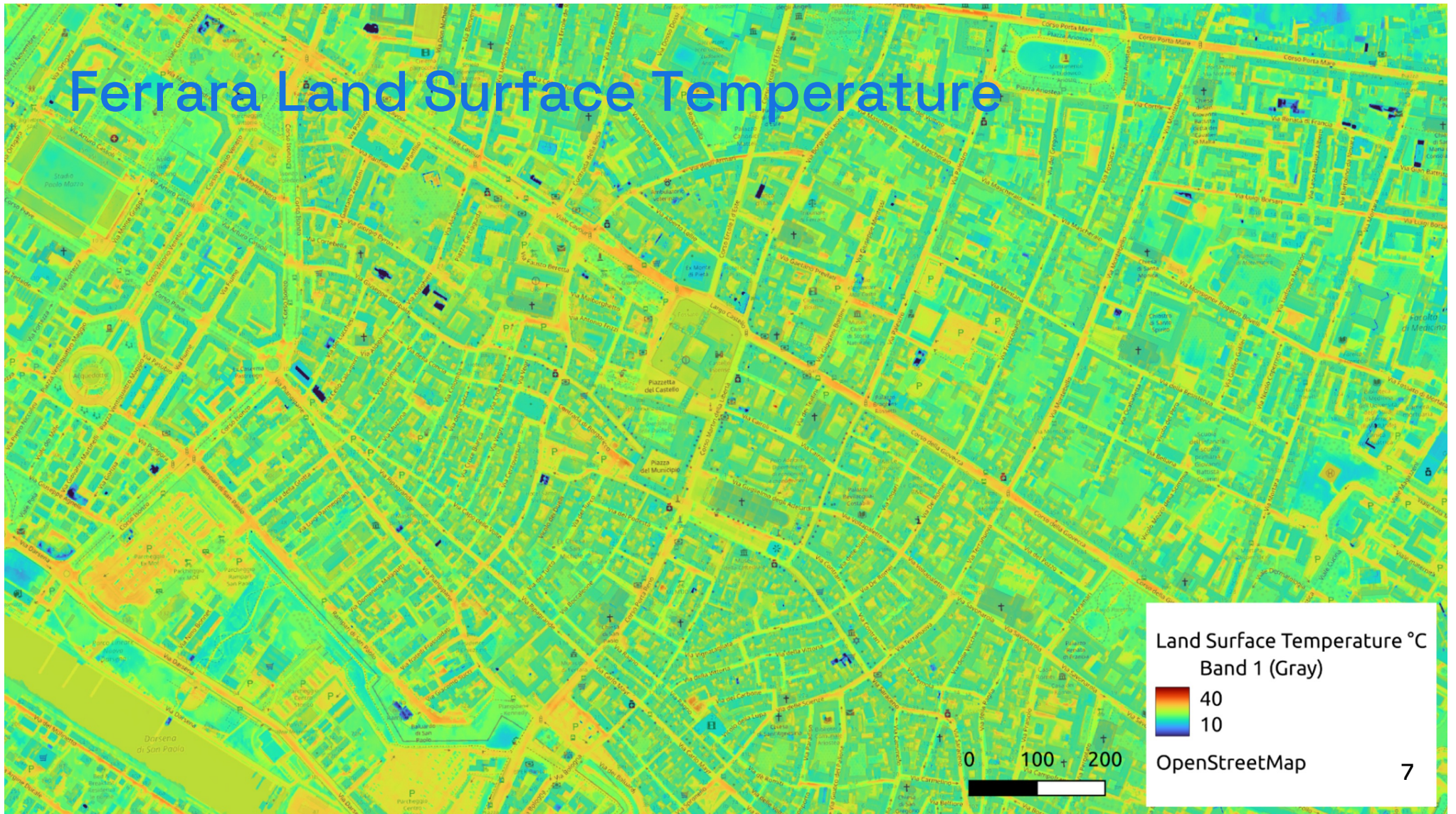

source: https://community.wmo.int/en/activity-areas/urban/urban-heat-island

UHI estimation in Ferrara

Data availability
& gathering

Weather stations availability

Air-Break
Co-producing healthy clean
commuting air spots in town

Copyright: RMAP contributors

Open Geospatial Consortium

OGC SensorThing API

Ancillary data:
- Static (aerial, thermal & hyperspectral images, LiDAR)
- Semi-dynamic (hourly shade maps of canopy, buildings)

Open Geospatial Consortium

OGC Features API

Development of air temperature **spatialization** techniques and models

OpenMeteo

Weather forecasts API

UHI current maps

48h UHI prediction

Universal Thermal Climate Index

Universal Thermal Climate Index

6

Ferrara Land Surface Temperature

Land Surface Temperature °C
Band 1 (Gray)

40
10

OpenStreetMap

0   100   200

7

USAGE at a glance

Coordinator: Universidad Politécnica de Madrid

Duration: 36 months (August 2022 - July 2025)

Enable universal access to city-level environmental and climate data for everyone, following FAIR principles

Evaluating available architectures, components, data; Developing standard-based solutions (AI-driven tools, data models)

Pilot and validate solutions in four middle-sized cities: Ferrara, Graz, Leuven and Zaragoza
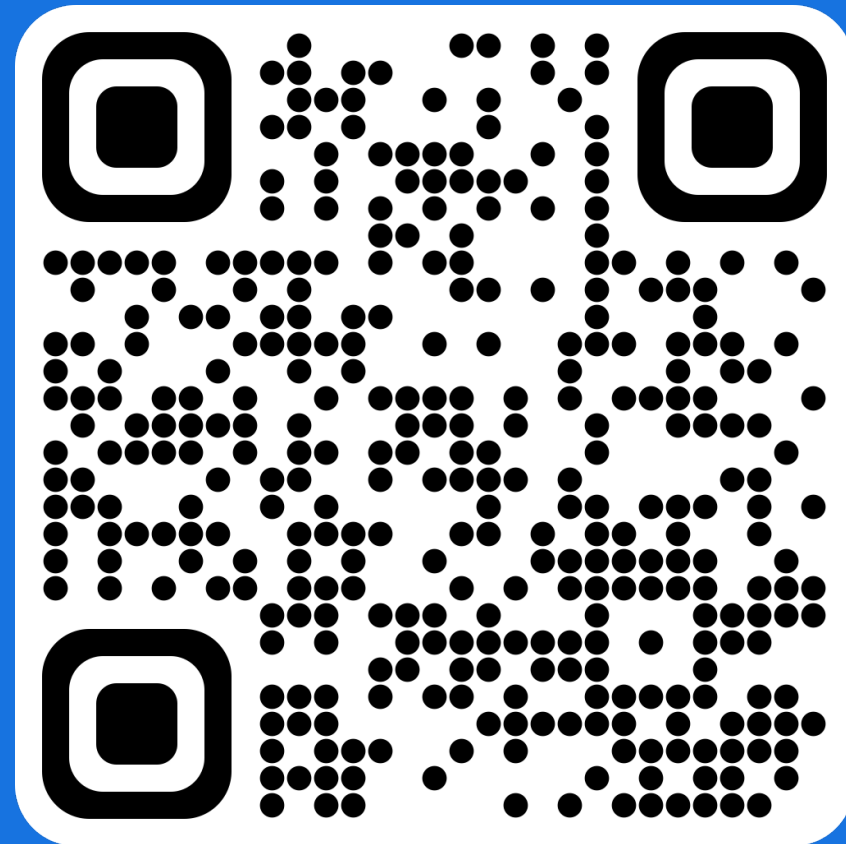
Take home messages

Data Spaces have the potential to:
- support data-driven actions to tackle climate challenges ➤ ensuring accurate & updated information throughout the entire policymaking process, esp. agenda setting and policy implementation
- spur the collaboration between various city stakeholders

It is important:
- Clarify the goal(s) and governance: converge roles and relationships to foster wider participation, of private sector & citizens
- Ensure 'No DS's an island'

Thank you!

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