



**Sustainable Smart Cities and  
the journey from Data to Knowledge**

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# SUSTAINABLE DEVELOPMENT GOALS



**SUSTAINABILITY IS NOT JUST ABOUT ENVIRONMENT**



## SDG 9 IN THE EU: INDUSTRY, INNOVATION AND INFRASTRUCTURE

R&D expenditure in 2019



**2.2%**  
of GDP

+ 0.1 percentage point  
since 2014



**0.08 g**  
per euro

- 11.1%  
since 2013

Air emissions intensity  
of industry (PM2.5) in 2018

Collective passenger transport in 2018



**17.1%**

of total inland passenger-km

- 1.0 percentage point  
since 2013

ec.europa.eu/eurostat

## SDG 11 IN THE EU: SUSTAINABLE CITIES AND COMMUNITIES

Recycling of municipal waste in 2016



**45.3%**

of total waste generated

+ 6.1 pp  
since 2011



**14.5 µg/m³**

- 19.9 %  
since 2010

Concentration of particulate  
matter in 2015  
smaller than 2.5 µm

Disturbance by noise in 2016



**17.9%**

of population

- 1.8 pp  
since 2011



**5**

per  
100 000 persons

- 18 %  
since 2011

People killed in road  
accidents in 2016

ec.europa.eu/eurostat

## SDG 3: GOOD HEALTH AND WELL-BEING IN THE EU in 2016

Life expectancy at birth



**81.0 years**

+ 0.8 years  
since 2011

**78.2 years**  
+ 0.9 year  
since 2011

**83.6 years**  
+ 0.5 years  
since 2011

**67.5%**

of population feeling in  
(very) good health

- 0.4 pp  
since 2011



Self-perceived health

Unmet need for medical care



**2.5%**

of population aged  
16 and over

- 0.9 pp  
since 2011

ec.europa.eu/eurostat

## SDG 5 IN THE EU: GENDER EQUALITY in 2020

Gender employment gap



Women's employment rate is

**11.3**

percentage points lower  
than men's.

- 0.3 percentage points  
since 2014



Men earned

**14.1%**

more than women.

- 1.6 percentage points  
since 2014

Gender pay gap in 2019

Woman in senior management



**29.5%**

of board members are women.

+ 7.3 percentage points  
since 2015

ec.europa.eu/eurostat



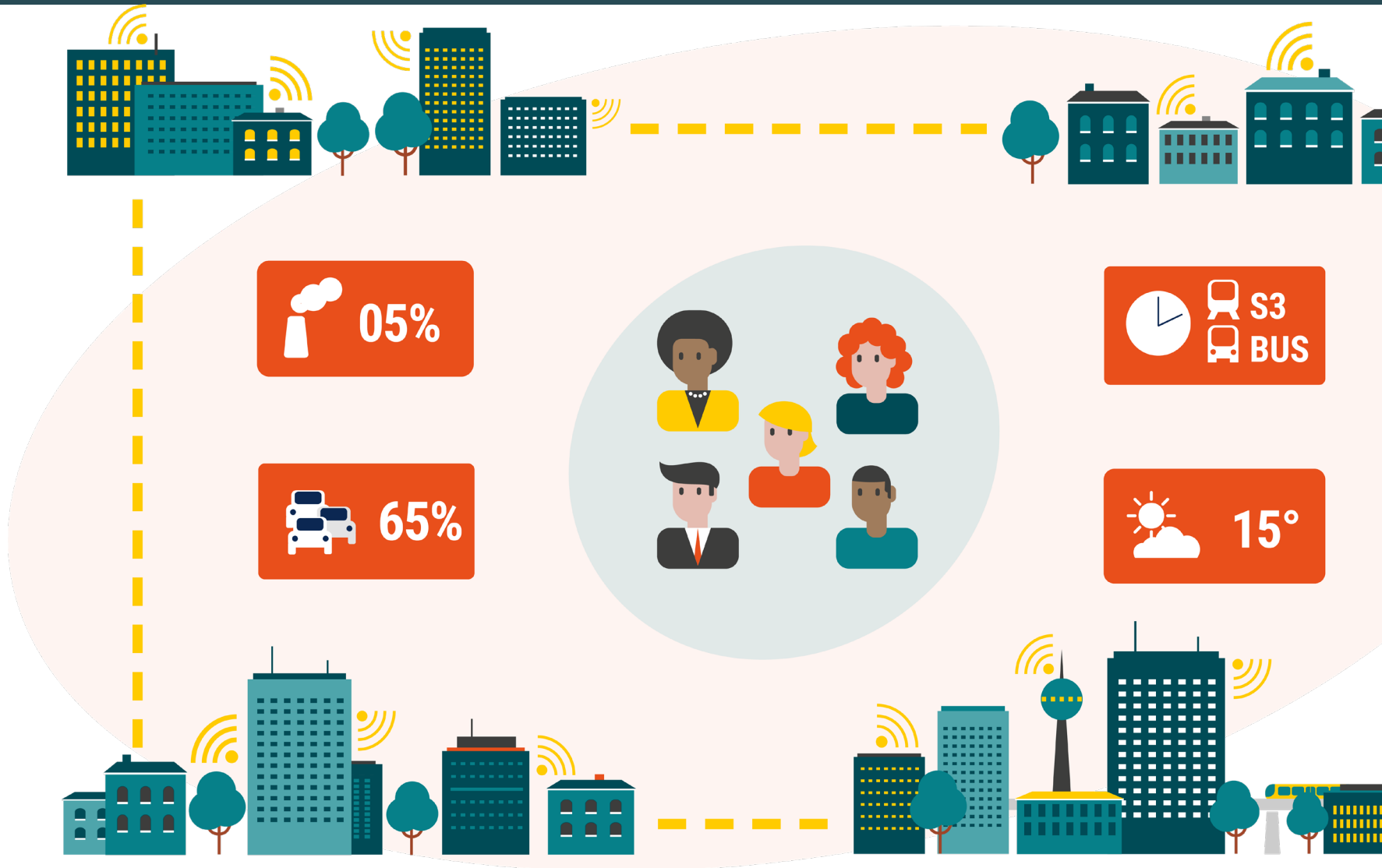


# THE JOURNEY FROM DATA TO WISDOM

[IMAGE CREDITS: [HTTPS://EN.WIKIPEDIA.ORG/WIKI/DIKW\\_PYRAMID/](https://en.wikipedia.org/wiki/DIKW_Pyramid/)]



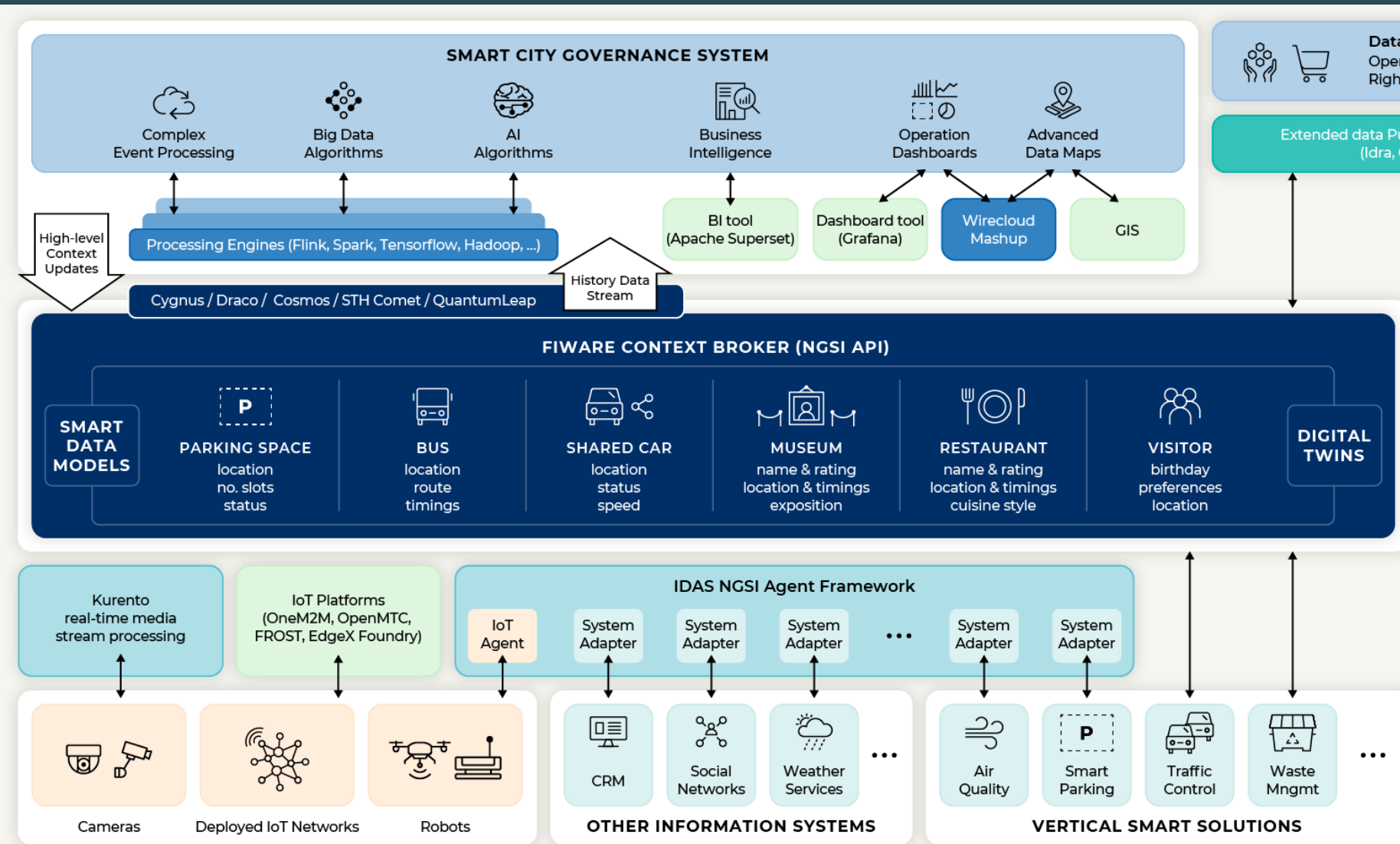
# DATA (& SOURCES)



- + Sensors
- + People
- + Businesses
- + ...



# FROM DATA TO INFORMATION



- + Data governance enables information
- + Models are key to read data
- + Context is key to make sense out of data
- + Silos limit knowledge creation



# FROM INFORMATION TO KNOWLEDGE

Air Quality

 17.0 AQI

Noise Level

 42.4 dB

Charging Stations

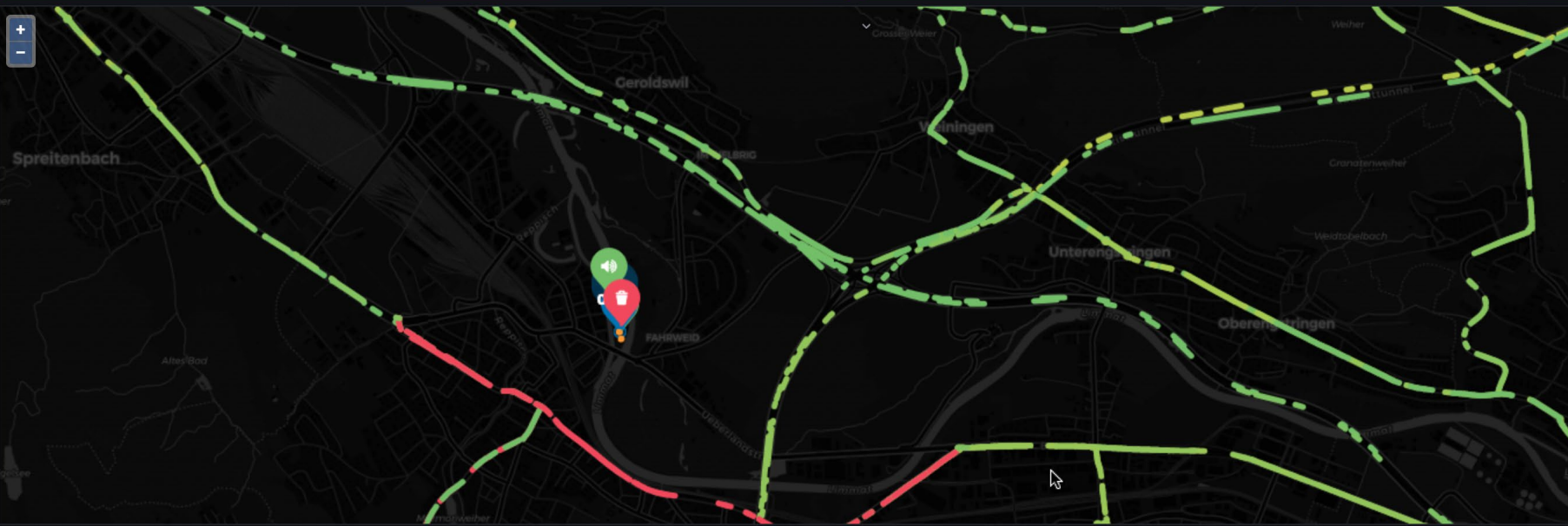
 50%

Parking Spots

 33.6

+ Use information to answer “why”

+ You need more data to validate your “model”



Street Lights

 0

Traffic Level

 9.40%

Waste Containers

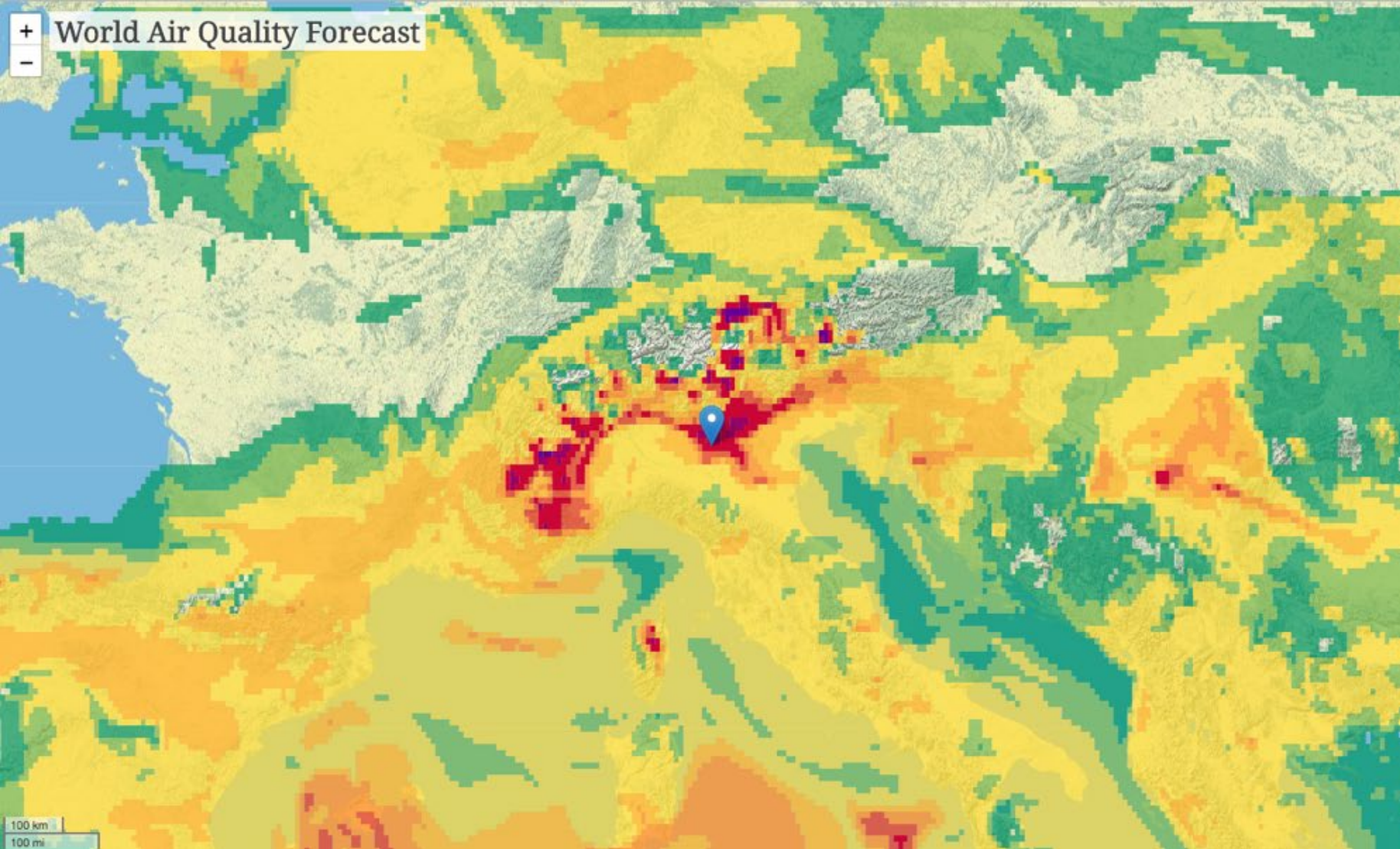
 95.0%

Temperature

 ° 29.4



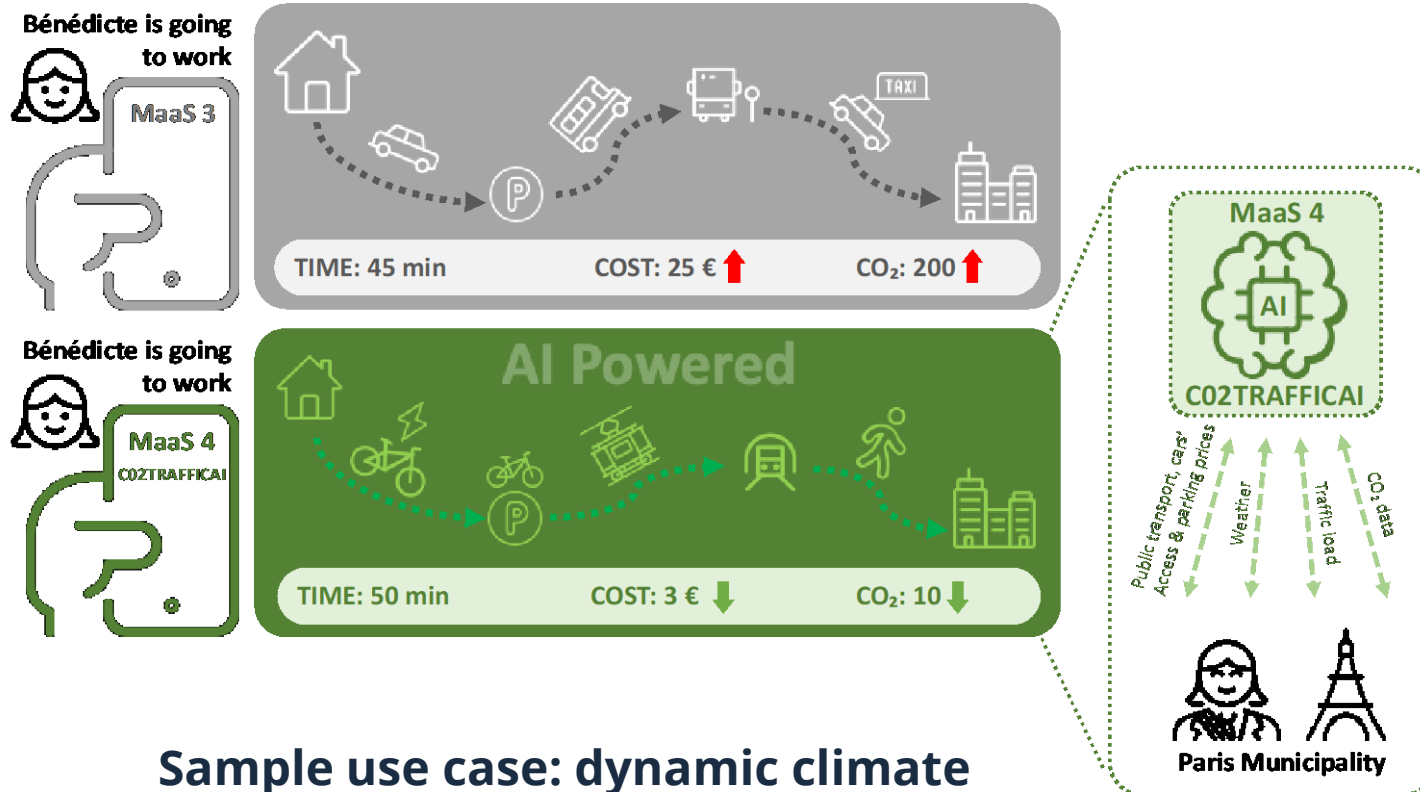
# FROM KNOWLEDGE TO WISDOM



- + Wisdom is essentially about forecasting and impacting the forecast
- + Your data is likely to not be enough
- + Your models are likely to not be enough



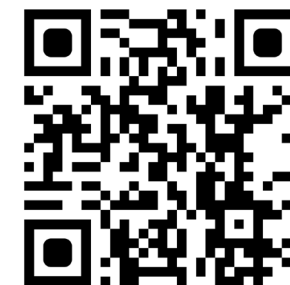
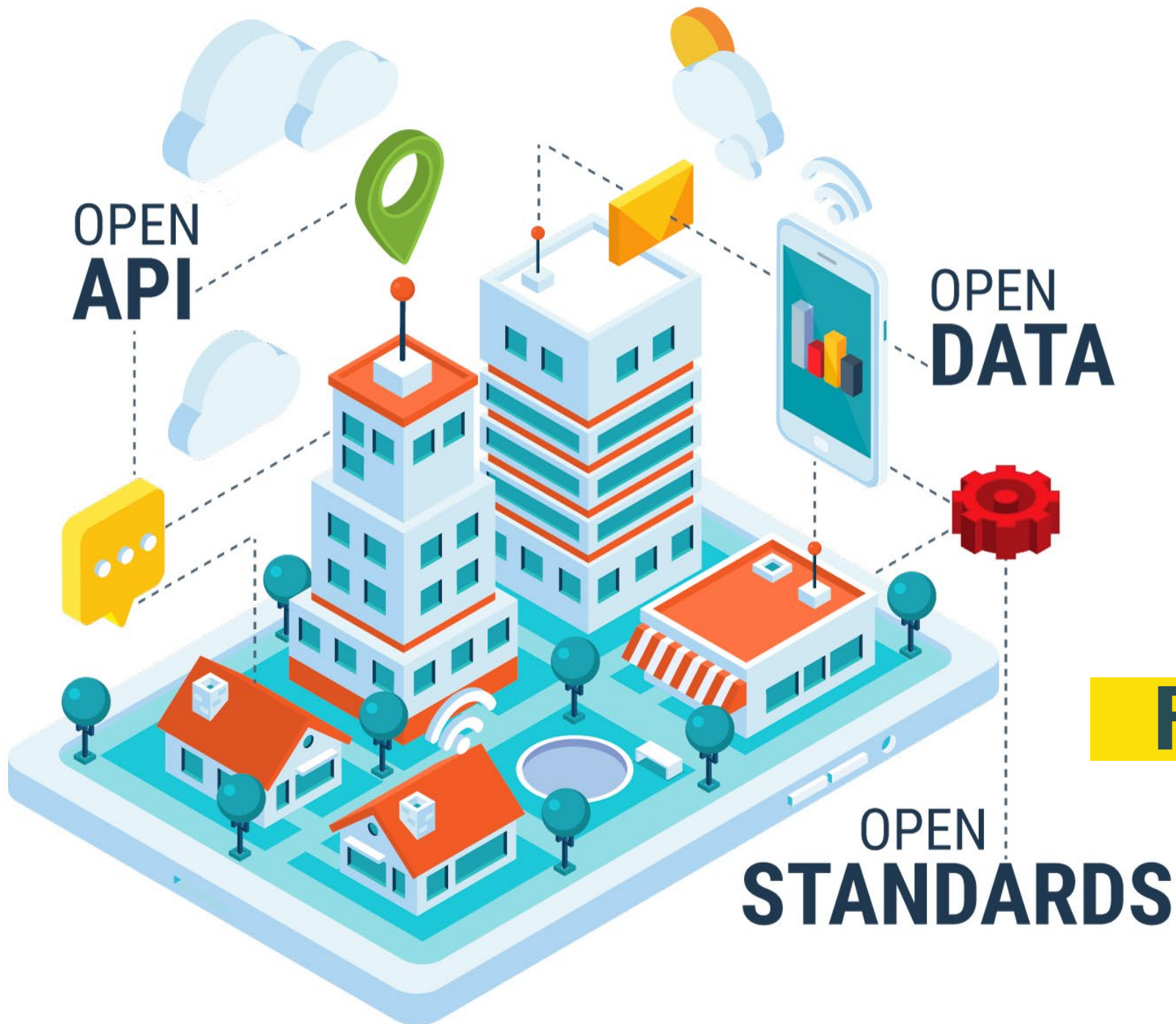
# A CONCRETE EXAMPLE: USING AI TO REALIZE OPEN MASS



**Sample use case: dynamic climate impact aware multi-modal trip**

- **Open MaaS enabling components**
  - Active demand management
  - Pillar for policy-driven MaaS
- **AI-powered decision support**
  - Advanced CO<sub>2</sub>/GHG monitoring
  - Scenarios for policymakers
  - Recommendations and planning for mobility users
- **Multi-stakeholder vision**
  - City, transport operators, citizens
  - Sharing data, insights, AI models





**CREATE OPEN  
SOLUTIONS  
FOR SUSTAINABLE  
CITIES**





**THANK YOU FOR YOUR ATTENTION**

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