



REACH - NEXT GENERATION DATA INCUBATOR

Movincity: Evidence-based mobility action plans to reach SDGs



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Problem to solve



URBAN HEAT ISLANDS ANALYSIS



URBAN MOBILITY AND TOURIST IMPACT ANALYSIS



IMPROVE AIR QUALITY & FIGHT AGAINST CLIMATE CHANGE

Mobility and firecrackers, what most pollutes the air in the Fallas de València

- The Measura Association and València per l'aire carry out a study that shows that the PM₁₀ of the big week are double the usual
- They suggest "checking the quality and quantity of the firecrackers that are burned"



87% of the Valencian territory, exposed to pollution levels that exceed what is allowed to protect crops

Valencia Plaza

Tourism generates 80% of the garbage on the beaches of the Mediterranean

"This environmental problem is threatening the good health of marine ecosystems and can lead to the loss of biodiversity. It can also have enormous economic impacts," says one of the researchers.



IN THE NETWORKS

1. The controversial speech of the "Torquemada" by Vox: "Artificial fertilization replaces the natural act of procreating and introduces third parties into the male-female couple"

Valencian beaches accumulate an average of 665 plastics per 100 meters

The Ministry of Ecological Transition concludes that this waste represents 71% of the garbage that affects t



Valencian beaches accumulate an aver

Violet Peraita Valencia | 10 · 05 · 21 | 04101

On the Valencian coast there is an average of 665 plastics per 100 meters of beach, which represents 64.3% of the total objects found on the coast in 2020. This is stated in the annual report corresponding to this period of the General Directorate de la Costa y el Mar, dependent on the Ministry for Economic Transition, which annually evaluates twenty-six

MOST VIEWED

VALENCIA
The Arena Va
the water eq
to irrigate the

Tourism in Valencia, under examination

Limited public toilets, dirt in the streets or shortage of hours and contents in museums are the main complaints of tourists visiting the city



Datasets



Human experience **dataset** from
Valencia.

CONTAINED DATA

- Ratings about Points of Interest
- People objectives
- People traceability
- Nationality

&



Contextual and social data

CONTAINED DATA

- Sonometry network VLCi
- Population Figures and Demographic Censuses
- Quality of life level
- Statistics on tourist movements



&



Environmental data: Services through
satellites **Sentinel 3** y **Sentinel 5P**

CONTAINED DATA



Climate Change
Service



Atmosphere
Monitoring Service

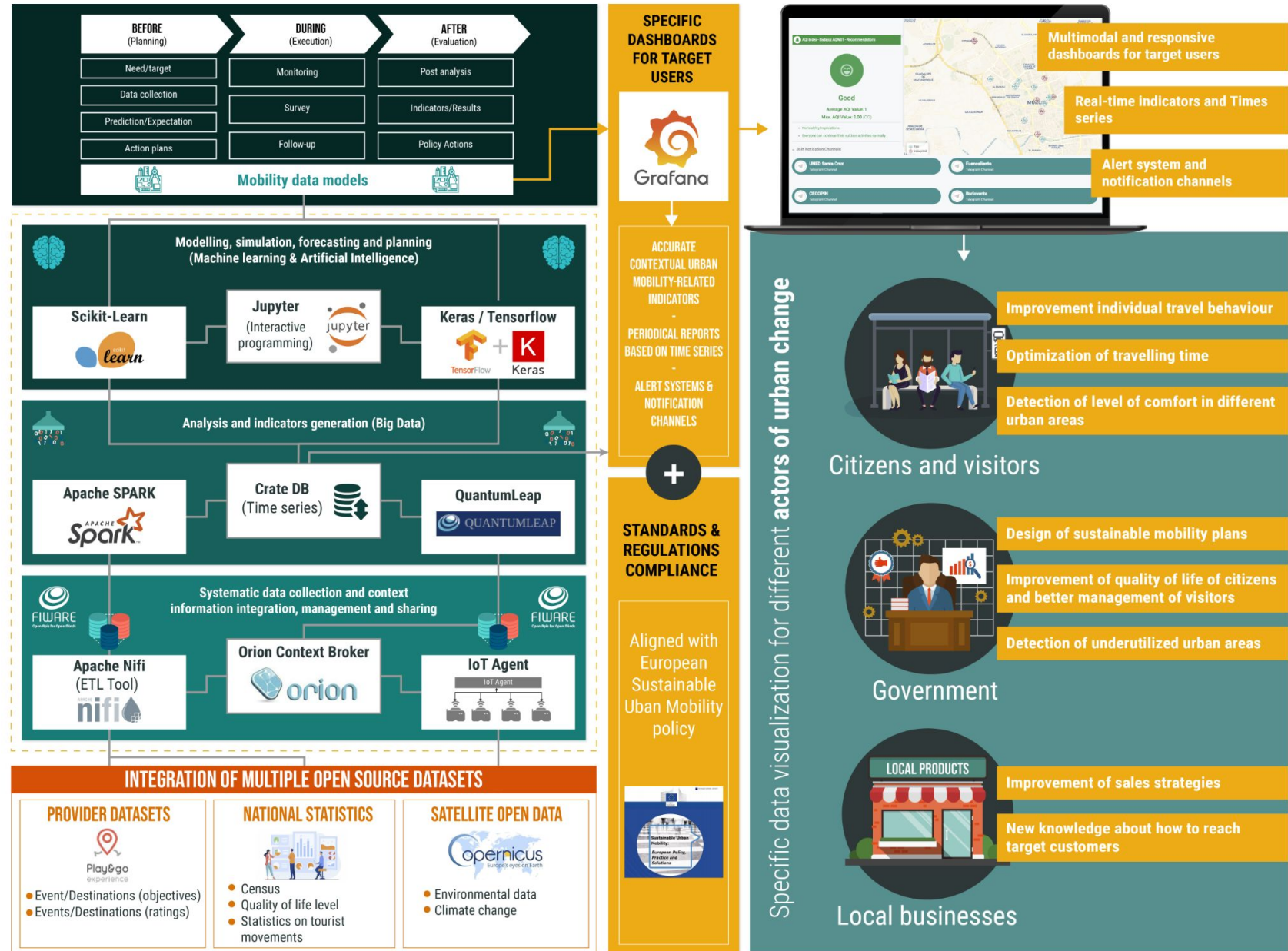
- Land surface temperature
- PM10
- ...

- SO₂
- O₃
- NO₂
- ...



POC

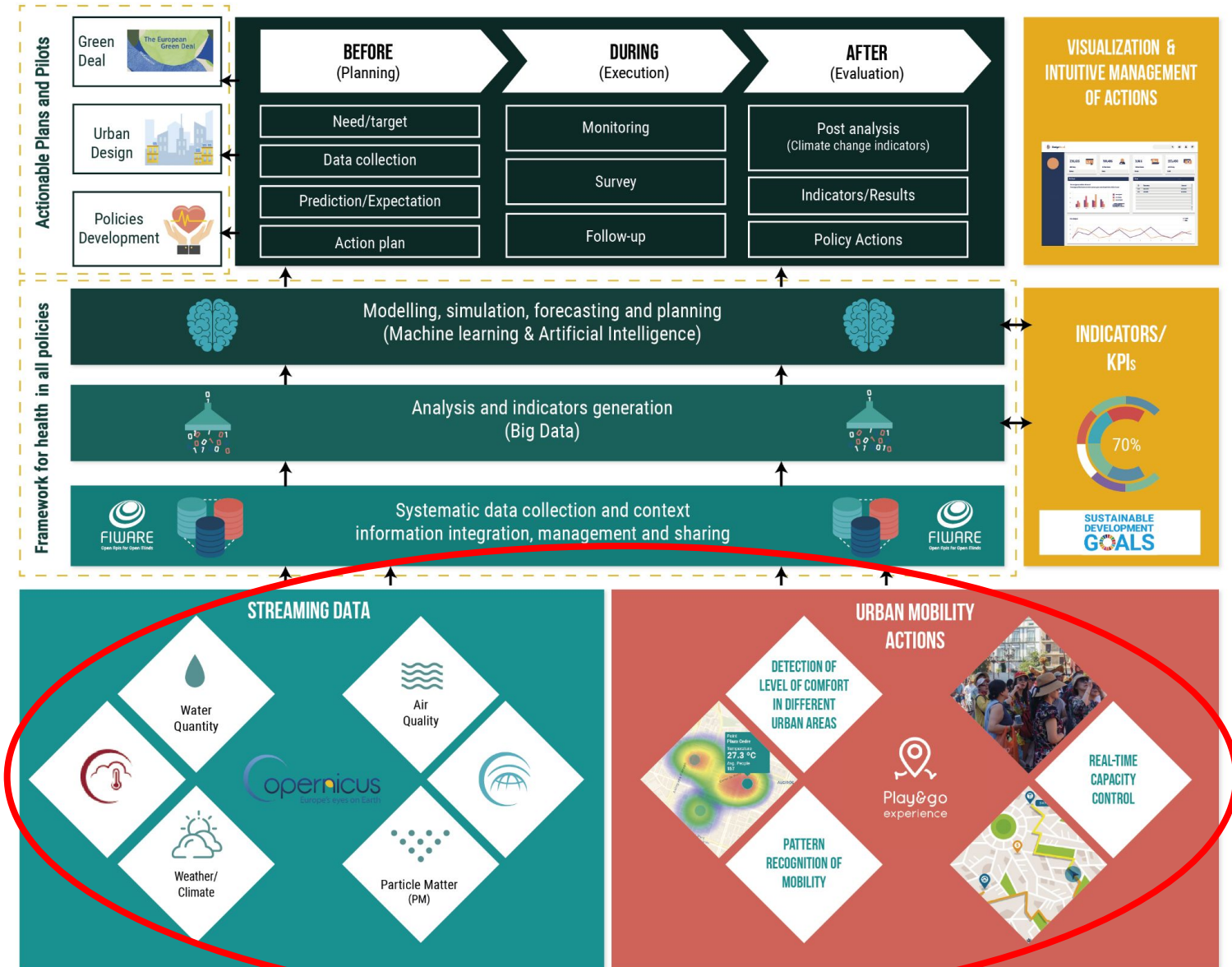
Model and measure the benefit and impact of Play & Go solutions through evidence, data and KPIs / indicators.



POC

Correlating the increases in urban mobility, crowds, temperature and air quality data with data obtained from different Copernicus services and Measurement Stations to measure the impact obtained:

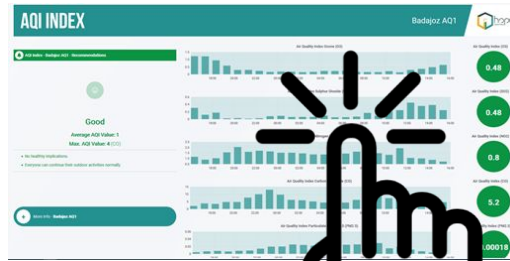
- Climate Change Service (Sentinel 3)
- Atmosphere Monitoring Service (Sentinel 5P)
- Measurement Stations data
- Play&Go data sheet



POC

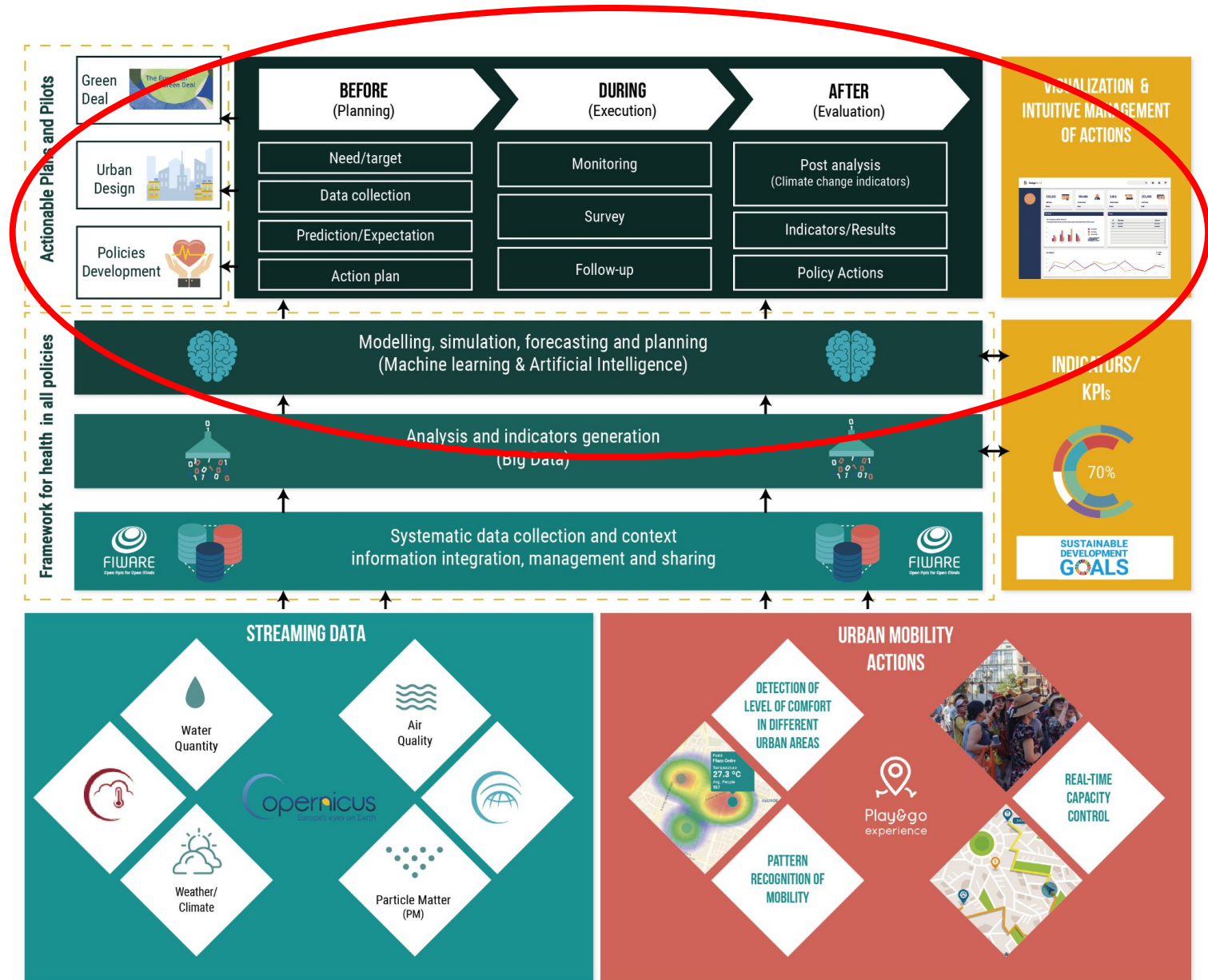
Models and quantification of a specific action **correlating urban mobility**:

- AI algorithms (modeling) of the impact
- Extrapolate, transfer and understand the weight of actions in the fight for climate change.



Examples:

<https://opendata.hopu.eu/>



Architecture



SCALABILITY



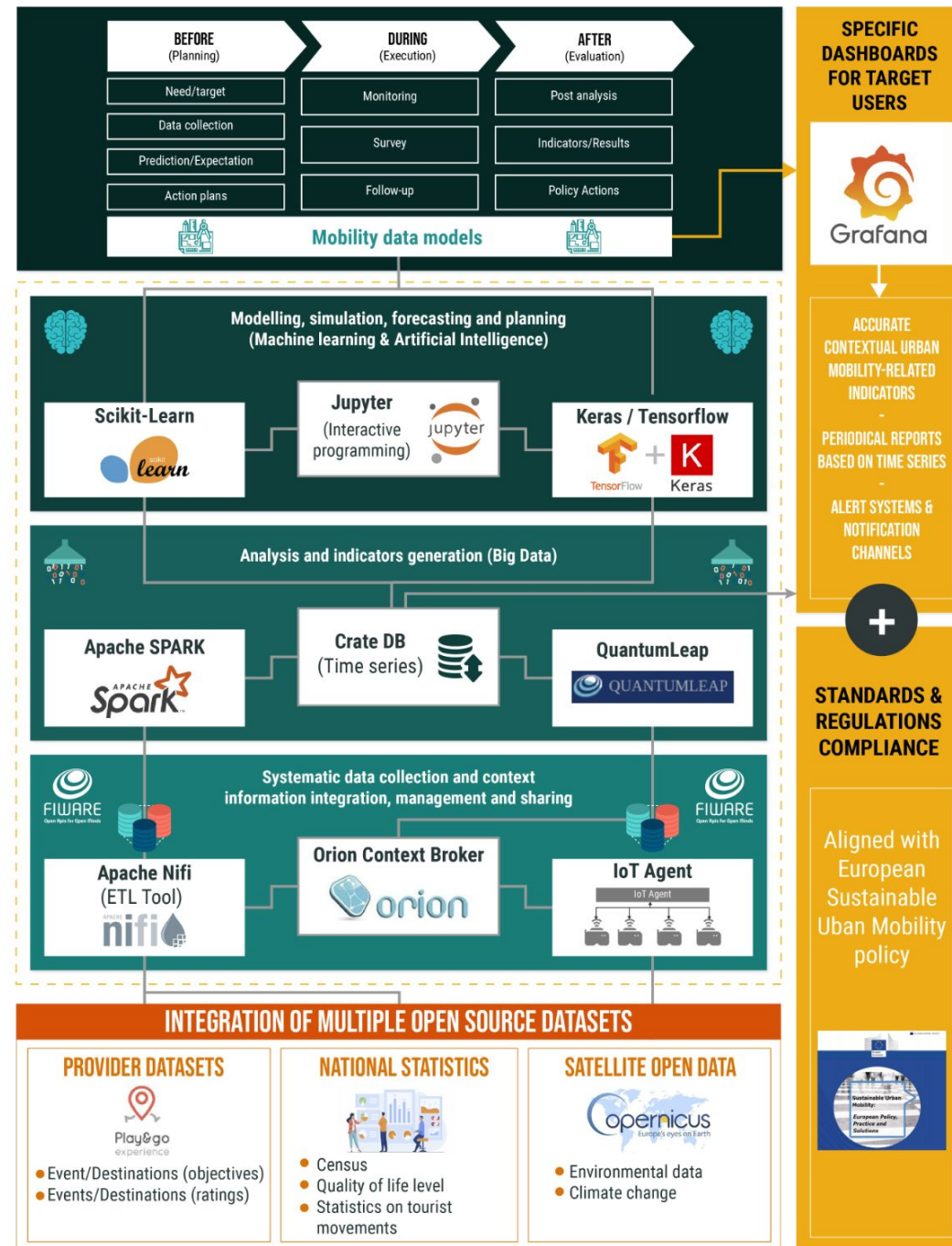
DATA INTEGRATION



DATA PERSISTENCE



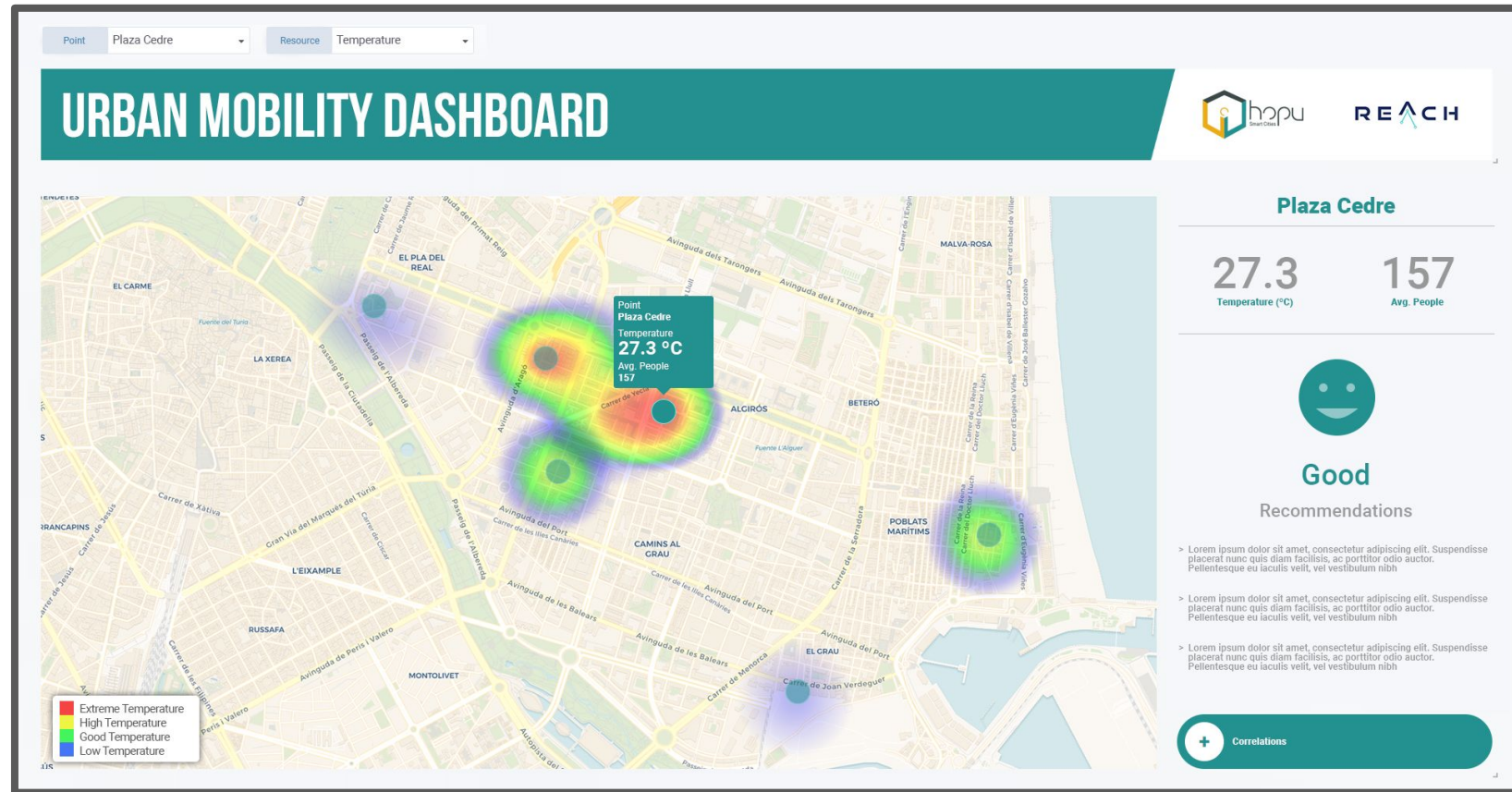
FLEXIBILITY



Mockups

MAIN DASHBOARD

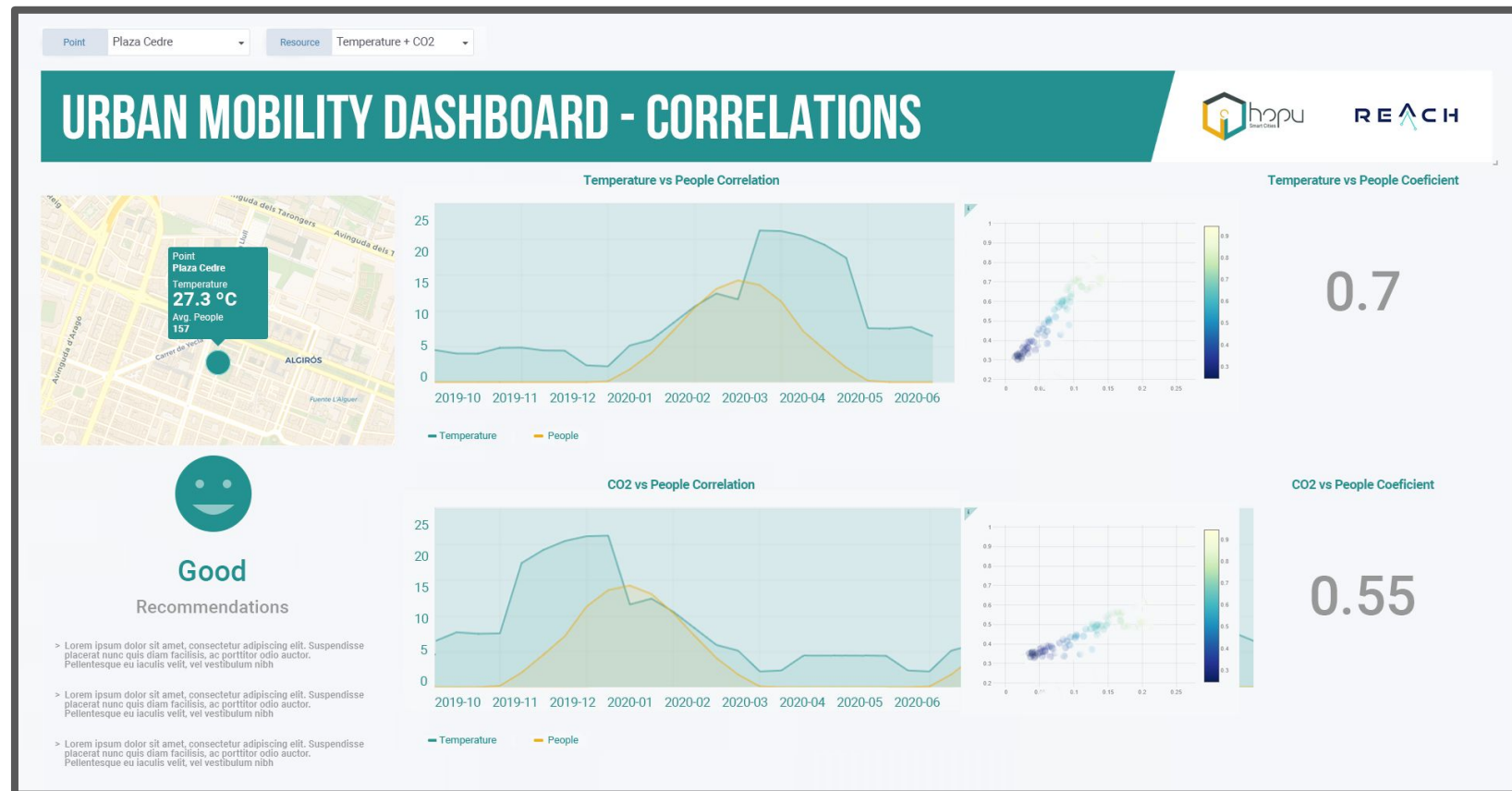
- **Heat Map:** That shows based on the indicator selected in this area.
- **Point information:** Represents relevant values such as:
 - Indicator selected value.
 - Number of people.
- **Menu:** With access to other dashboards like Correlation.



Mockups

CORRELATIONS

- **Map:** Shows the selected point with its information.
- **Recommendations:** Shows the recommendations based on the selected indicators.
- **Historical Correlation:** Graph and Scatter Plot panel of the correlation based on the selected indicators.
- **R Value:** Correlation coefficient between indicators selected and people in this point.



Machine Learning

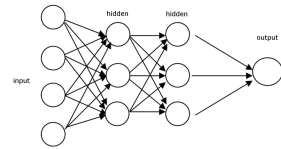


ARTIFICIAL INTELLIGENCE



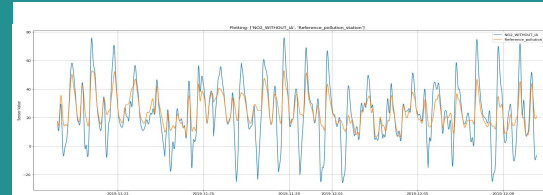
NEURAL NETWORK - LSTM

- Classifying, processing and making predictions based on time series data.

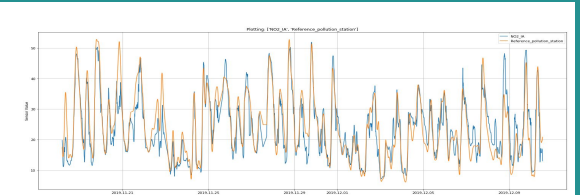


USE CASE BY HOPU

Reference raw data



Data with AI models



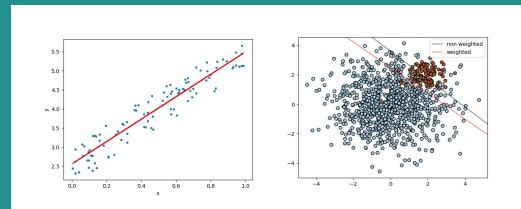
- Reference data
- Sensor data

In these graphs you can see the operation of the sensors **without AI** and **with AI**, and how this is much closer to the **reference data** of a **pollution station**.



SELECTION OF ALGORITHMS

1. Random Forest
2. Support Vector Machine
3. Gaussian Process
4. ...



Machine Learning

INPUT

userid	latitude	longitude	pointOfInterest
22a4xC6EToi25Ksjv	3,94666E+14	-3,79764E+14	Convent de Jerusalem-MatemÀtic
24NBXPk32FAa2jLtA	3,94654E+14	-3,66385E+14	Joaquim Costa-Borriana
27o8NAT2EBfP5jKu6	3,94715E+13	-3,75523E+14	Casual Hoteles - Valencia Vintage
27sGyDarugmNWEBDQ	3,94739E+14	-3,87793E+14	AzcÀrraga-Ferran el CatÀlic
29gXmdt8uxwazMQqh	3,9479E+14	-3,76277E+14	Serrans-Elis Furs (Pl.)
2DDqDb59wDFLkiwKY	3,94665E+14	-3,66871E+14	Joaquim Costa-Comte d'Altea
2EDZomnkSu2JHMo3a	3,94662E+14	-3,78745E+14	Pelai-MatemÀtic Marzal
2FM8XXjENJXmajAFo	3,9476E+14	-3,80185E+14	Bosseria-Tossal
2FkWAJJZ6cYVwic3g	3,94637E+14	-3,67056E+14	Regne de ValÀncia-Duc de CalÀbria
2HCcKYIEkifxi3AWm	3,94594E+14	-3,7633E+14	Cuba-Literat AzorÀn
2Kn5YWTte2sh8A8B	3,94714E+14	-3,82705E+14	Pilar (Pl.) - Patrocinada por Arroz De
2P5ftATM6Sg6Sdtie	3,94654E+14	-3,66452E+14	Joaquim Costa-Borriana
2PZC3fjsYfTCCk5Ye	3,94658E+14	-3,68311E+14	Almirant Cadarso-Comte d'Altea
2PbsJJP3ES3KrBMXw	3,94642E+13	-3,84805E+13	Pintor Segrelles (Pl.)
2RutZbgennR68y75F	3,94636E+13	-3,34787E+14	Arquitecte Alfaro-Francesc Cubells
2SdgRwSoEGAJh47DH	3,9496E+14	-3,81577E+14	CamÀ-de Montcada-Pintor Jacoma
2W8bN5s9C698bDAe	3,94711E+14	-3,7947E+14	Oest
2Wc9vPi4PaTZiIEfj	3,94485E+14	-3,91111E+14	SegÀrvia (Pl.)-Doctor TomÀs Sala
2YD5kKwFzZMFTvr2Q	3,94809E+14	-3,46788E+14	Tarongers-Universitat PolitÀcnica
2ZHHmSthFpoWrbLIp	3,94689E+14	-3,29727E+14	Barraca-Columbrets

userid	rate	comment	date
qT6RXcnpKgf3MoyGA	5		23/02/2018 19:46 B
pyAM4DWciKwQ3gXCB	5		25/02/2018 16:43 C
Cxi2LZ28FZkqjvD	5		26/02/2018 12:16 S
LSf8mSg4rW5wqNj	3		26/02/2018 12:19 C
kb3s5sQttyAyt4mFi	5		26/02/2018 12:30 R
nfhS8xbqRe6W8eTQA	5		26/02/2018 12:45 S
ghIW3sAQozhFX2gXc	5	MerecÀ-a el ninot indultat	18/03/2018 12:55 S
avDgzvRo7RMziySc7	5	Juanvi president!	27/02/2018 13:48 A
wjXgAdorgB28NdT2	5	carla es una crack	28/02/2018 9:00 G
KY4Xr77deQovTgikR	5	la millor	28/02/2018 13:10 B
Xsat9BXWcn873iCi	5	muy bonita!!!	13/03/2018 15:41 C
myTeyQp7KGfi4E9bS	5	Mejor falla	28/02/2018 22:33 C
ERlppSPo56PWzM8	5	la millor festa del mà'n. Amb moltes ganes!	01/03/2018 13:05 N
iH759oA67wv4EXZc	5	la millor falla del mon sencer	01/03/2018 13:48 R
ibaeTemFENWYR6P4W	5		01/03/2018 20:40 R
bkQogXf74PLvIAZ4	5	À¡Felicidades Valencian@!	03/03/2018 21:03 N
9bTKknPhersT6yJJK	5	Che que boooooooo!	04/03/2018 14:05 N
2hxvvtH3GzQxcy7fwv	5	la falla infantil 2 premi de ingen i grasia i 2 premi de sect	16/03/2018 13:13 P
ex9FyuXq5uQ7HacDI	5	es un espectÀculo que nadie se puede perder... la entra	04/03/2018 22:12 C
iTegD4WZTyaGqbpjE	5	La millor!! 8Y¡,8Y¡,8Y¡,	10/03/2018 10:36 L



PLAY&GO LOCATION DATA MODEL



FIWARE Standard
Data model



Clustering by
areas / POIs



Average of data
by areas / POIs



Add people counting
data to different areas

OUTPUT

```
1 {
2   {
3     id: "POI12345",
4     name: "Joaquim Costa-Borriana",
5     type: "PointOfInterestObserved",
6     location: {
7       type: "structuredValue",
8       value: {
9         latitude: 3.9465,
10        longitude: -3.6638
11      },
12      metadata: {}
13    },
14    people: {
15      type: "number",
16      value: 47,
17      metadata: {}
18    },
19    temperature: {
20      type: "number",
21      value: 21,
22      metadata: {}
23    },
24    humidity: {
25      type: "number",
26      value: 12,
27      metadata: {}
28    },
29    03: {
30      type: "number",
31      value: 37,
32      metadata: {}
33    },
34    502: {
35      type: "number",
36      value: 52,
37      metadata: {}
38    },
39    ...
40  },
41  ...
42 }
```

Machine Learning



EXPECTED RESULTS



Optimization of
travelling time



Design of sustainable
mobility and tourism plans



Detect underutilized
urban areas



Improvement sales
strategies

Machine Learning



DATA QUALITY



Calibration and validation
of sensor data.



Detection of errors and
anomalies in data (outliers).



Association and
classification of similar data.
Clustering techniques.



IEEE P2510 standard on
sensor data quality.



RISKS



Using technology to create
a **sustainable world**.



Open Data and
Citizen Science.



30 Kms of satellite
data accuracy.



People counting
data to different areas

PROTOTYPE



FEATURES



LAS NAVES



FIWARE compatibility
with **VLCi**



With the support of **Visit
València Foundation**



With the support of **Las
Naves Foundation**

Team

EXPERIENCE

A team committed to create a sustainable model for cities



JAVIER SÁNCHEZ

UX EXPERT


 **MASTER IN CREATION OF VIDEO GAMES**
& graduate in graphic design

 **+4 years**
Experience in UI / UX and frontend development



ARTURO HARO

SOFTWARE ENGINEER

 **COMPUTER ENGINEERING**


 **+3 years**
Experience about FIWARE as a smart city ecosystem



IRIS CUEVAS

CTIO



 **INDUSTRIAL ENGINEERING**
(Chemist) and expert in Quality Control

 **+4 years**
Experience in quality and new materials



DR. ANTONIO J. JARA

CEO

 **PhD / MBA**
MBA & Computer engineer


 **+10 Years**
In entrepreneurship, in-situ data management & IoT



SONIA TOVAR

INFORMATION MANAGER

 **MASTER IN INFORMATION TECHNOLOGY**
Information systems management and Business Technology.

 **+5 years**
In data management.



EDUARDO ILLUECA

CIO

 **MASTER IN BIOINFORMATICS**
& graduate in Biochemistry & Industrial PhD Student

 **Awarded**
Prize for the Best academic record in Bioinformatics



DIEGO POLLÁN

STRATEGIC MARKET ANALYSIS

 **MBA IN INTERNATIONAL MANAGEMENT**
& graduate in Business Administration And Management

 **Excellence Program**
Participant of Scholarships "Internationalisation" by ICEX



THANKS

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