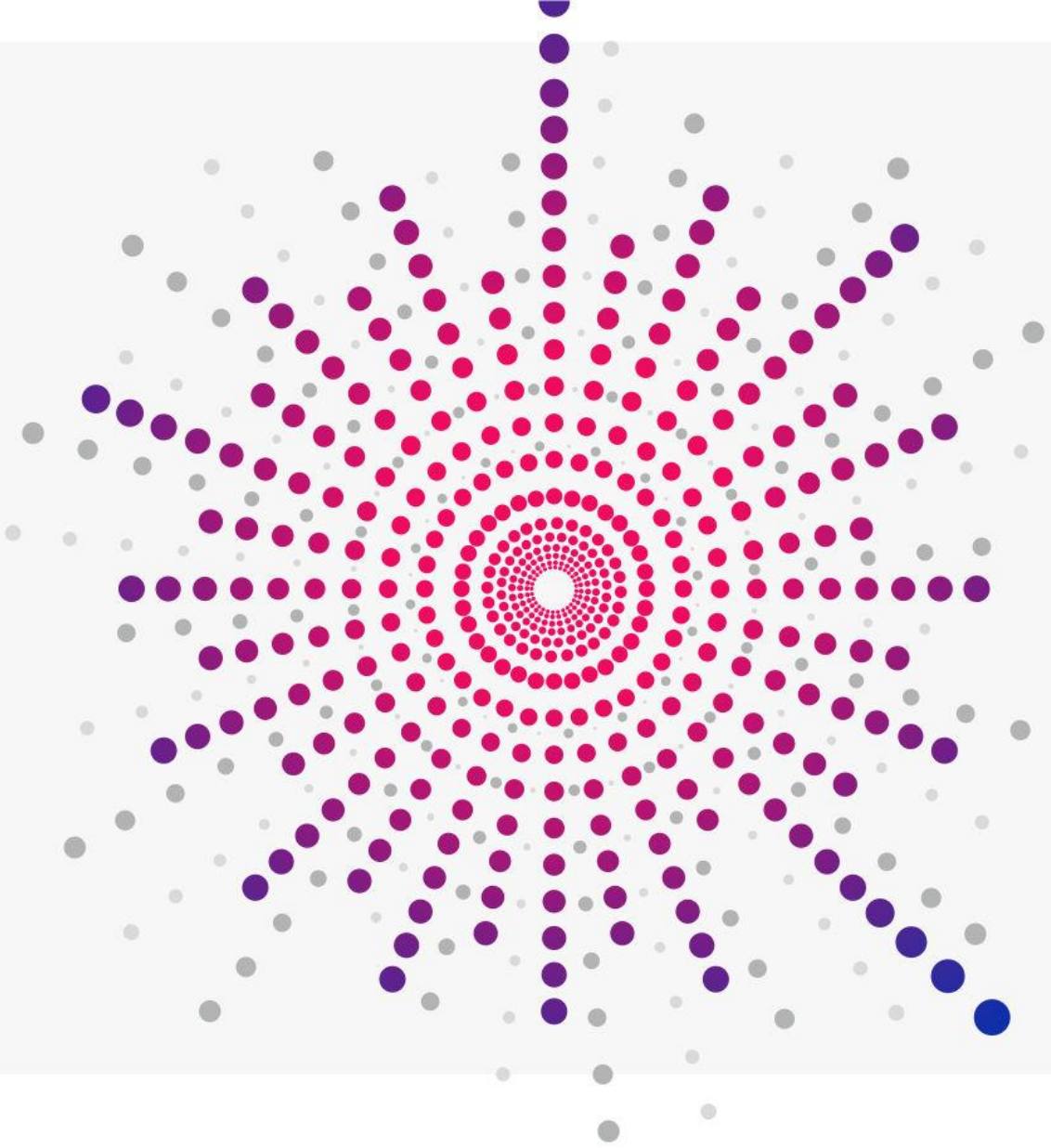

BD4NRG
Big Data for Next Generation Energy

LSP10 – Predictive and Prescriptive Analytics for improved EPCs Reliability

Pablo Marcos / VEOLIA

VEOLIA

12/12/2023

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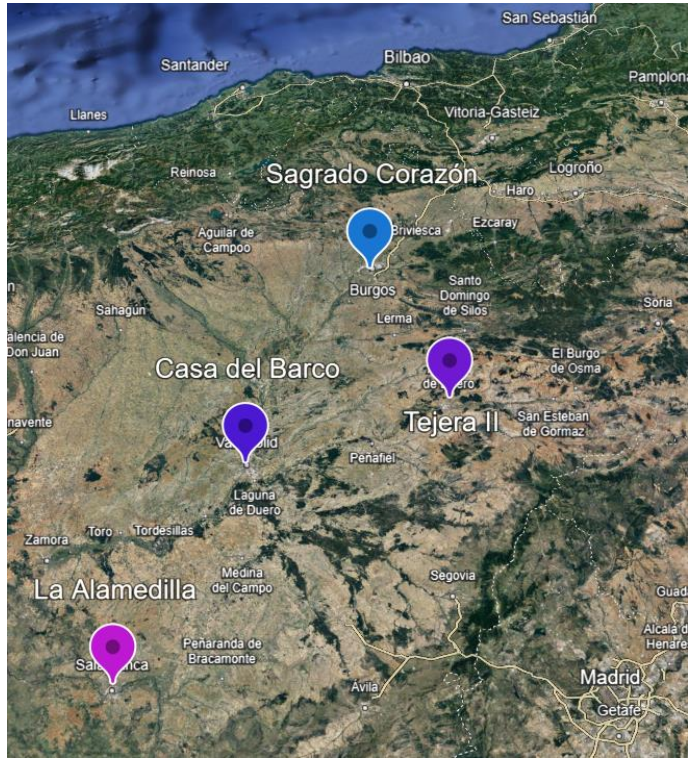
Introduction to LSP10. Veolia Pilots

VEOLIA designs and deploys solutions for **water**, **waste** and **energy** management, participating in the sustainable development of cities and industries.



[Administration]
Casa del Barco
(Valladolid, ES)

[Healthcare]
La Alamedilla
(Salamanca, ES)

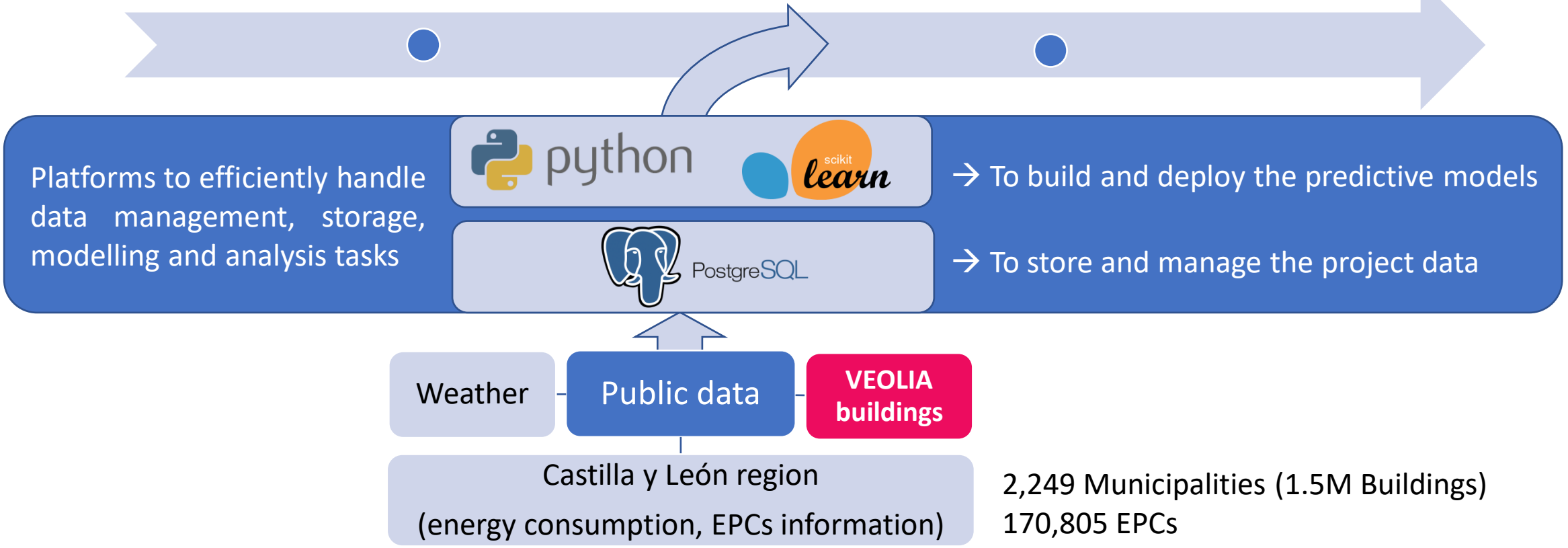
[School]
Sagrado Corazón
(Burgos, ES)

[Residential]
Tejera II
(Burgos, ES)

The Challenge. Specific components

Current EPCs are **static**, not considering real energy data and contextual information.

This LSP makes use of varied data to apply Big-Data techniques to come up with **dynamic** EPCs.



2,249 Municipalities (1.5M Buildings)
170,805 EPCs

Specific actors / Stakeholders

- **Data Providers:** VEOLIA - Pilot leader → Providing essential data and maintaining its quality to result evaluation

Beneficiaries → BD4NRG, which relies on data provided by VEOLIA. In return, VEOLIA achieves more accurate results while using much less time.
Expectations → Focus around contributing significantly to the project's success by providing essential data and maintaining its quality.

- **Technology Developers:** CARTIF - Internal technology developer → Advancing the technical aspects of BD4NRG, developing, training and successfully implementing models for analytical services.

Beneficiaries → BD4NRG, which depends on technologies developed
Expectations → Centred on effectively leveraging the developed technologies and seamlessly implementing them within the project framework.

- **Public Entities:** EU Member States - External stakeholders → Monitoring energy forecasts and assessing the effectiveness of BD4NRG

Beneficiaries → Data providers and technology developers.
Expectations → Validation and participation in activities related to validation and evaluation.

The Analytics Services. Key Components

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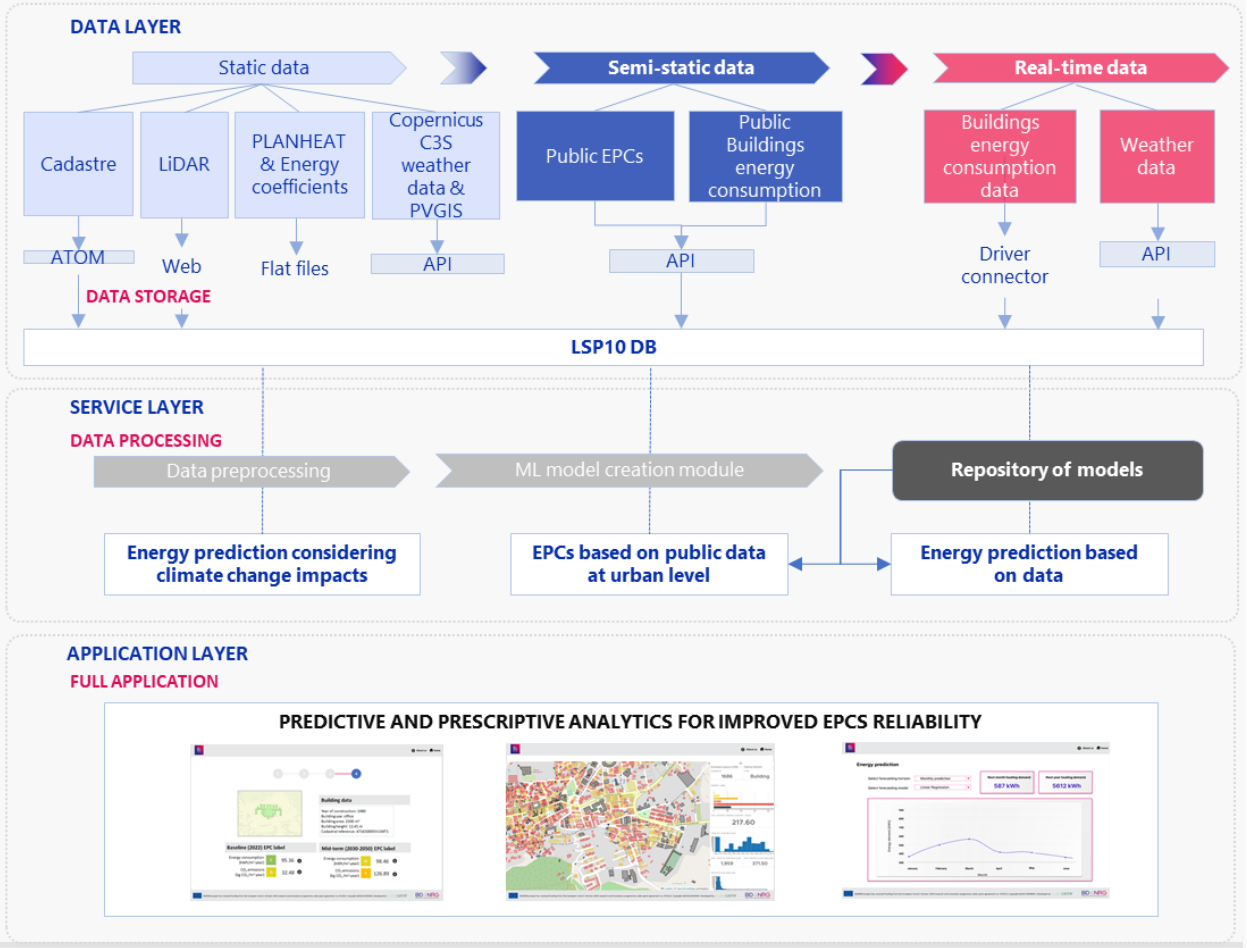
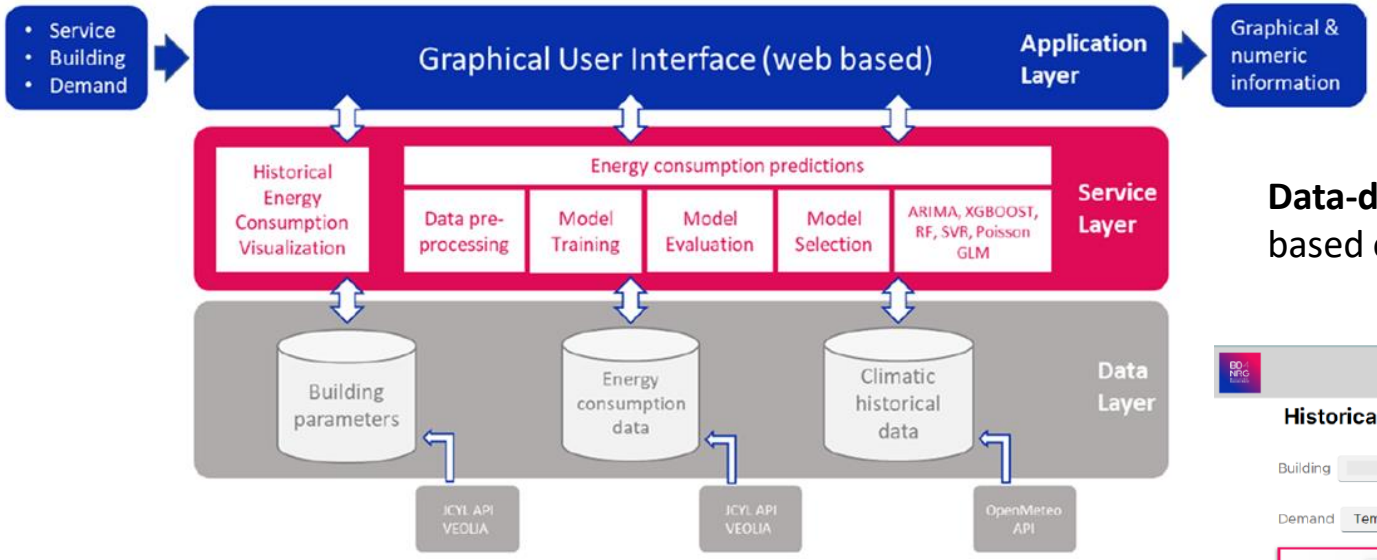
→ **3 advanced analytics services**:

1. **Energy prediction based on real data**
2. **EPC estimation based on public data at urban level**
3. **Energy prediction considering climate change impacts**

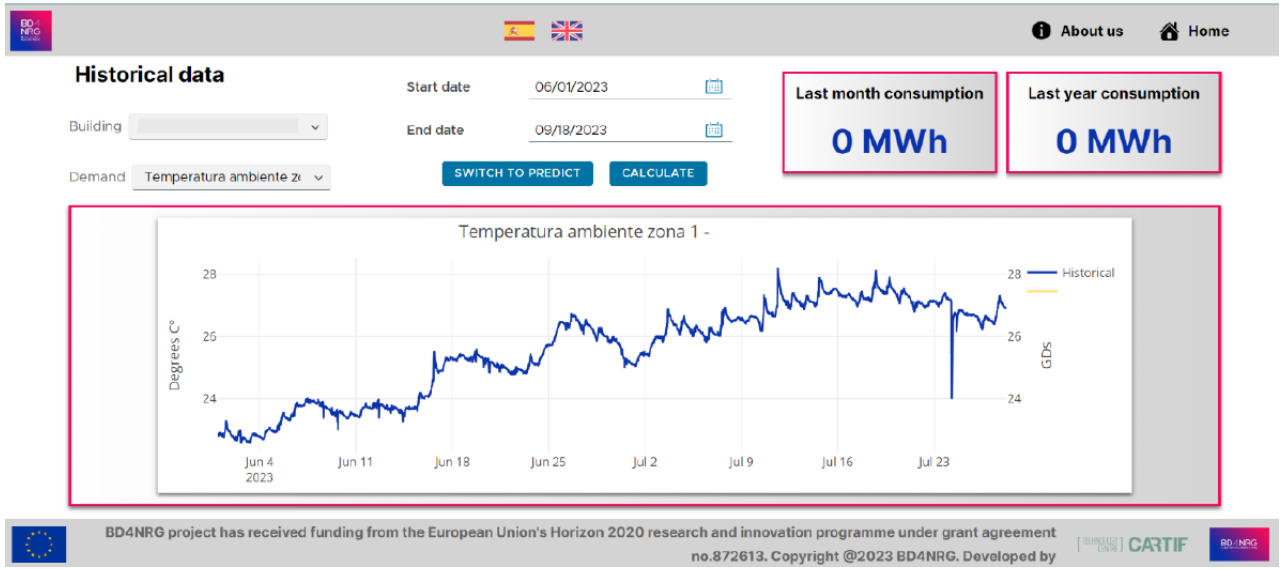


The Analytics Services. Key Components. Results

Energy prediction based on real data 1



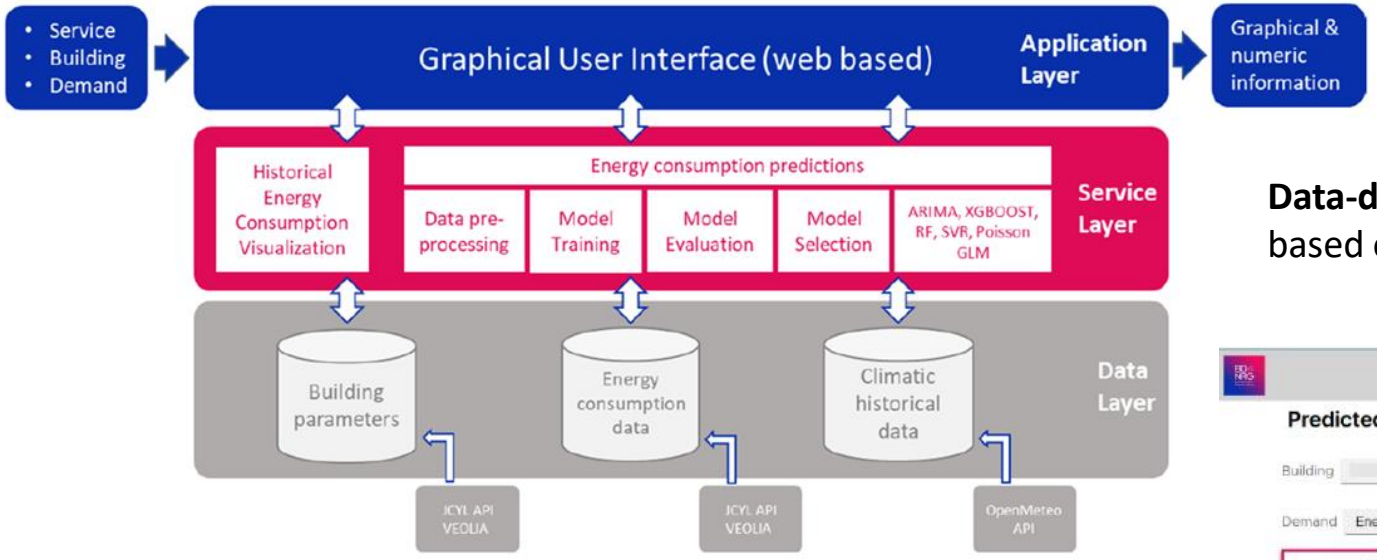
Data-driven energy prediction applications to adjust energy demand based on monitored information



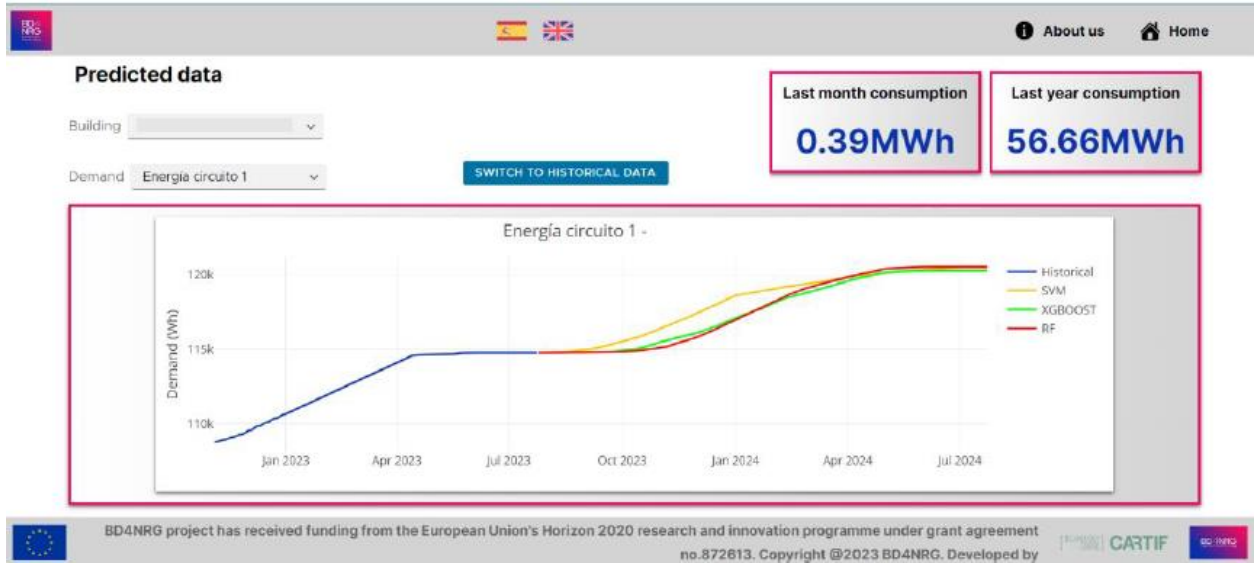
→ To **increase confidence in energy demand predictions included in the EPCs** by incorporating advanced forecasting methods and monitored information.

The Analytics Services. Key Components. Results

Energy prediction based on real data 1



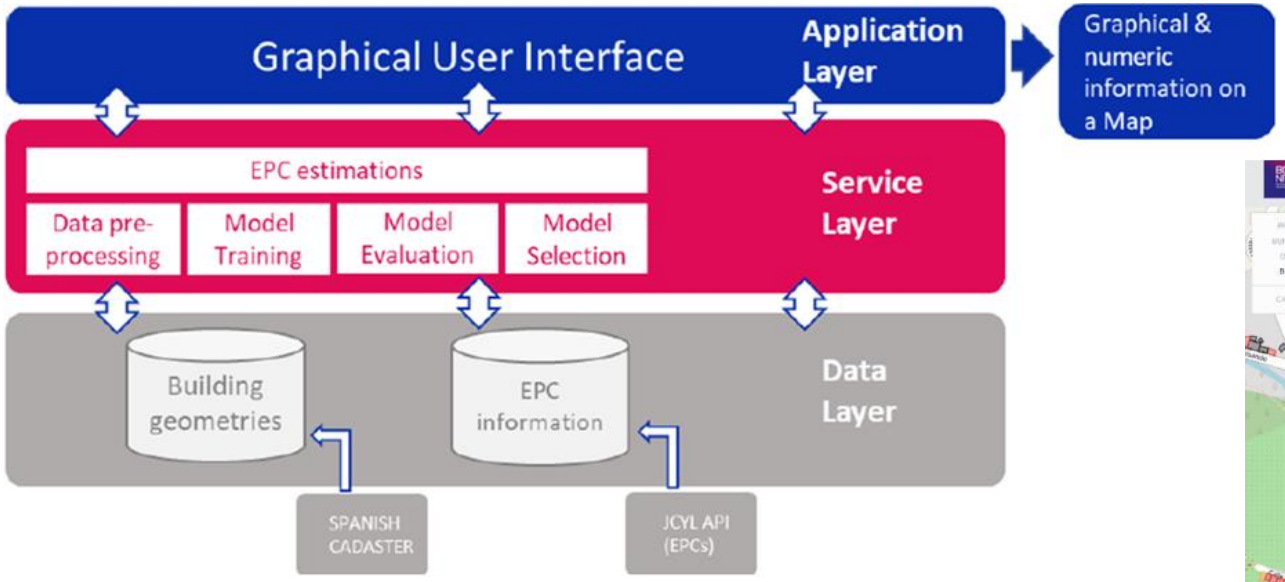
Data-driven energy prediction applications to adjust energy demand based on monitored information

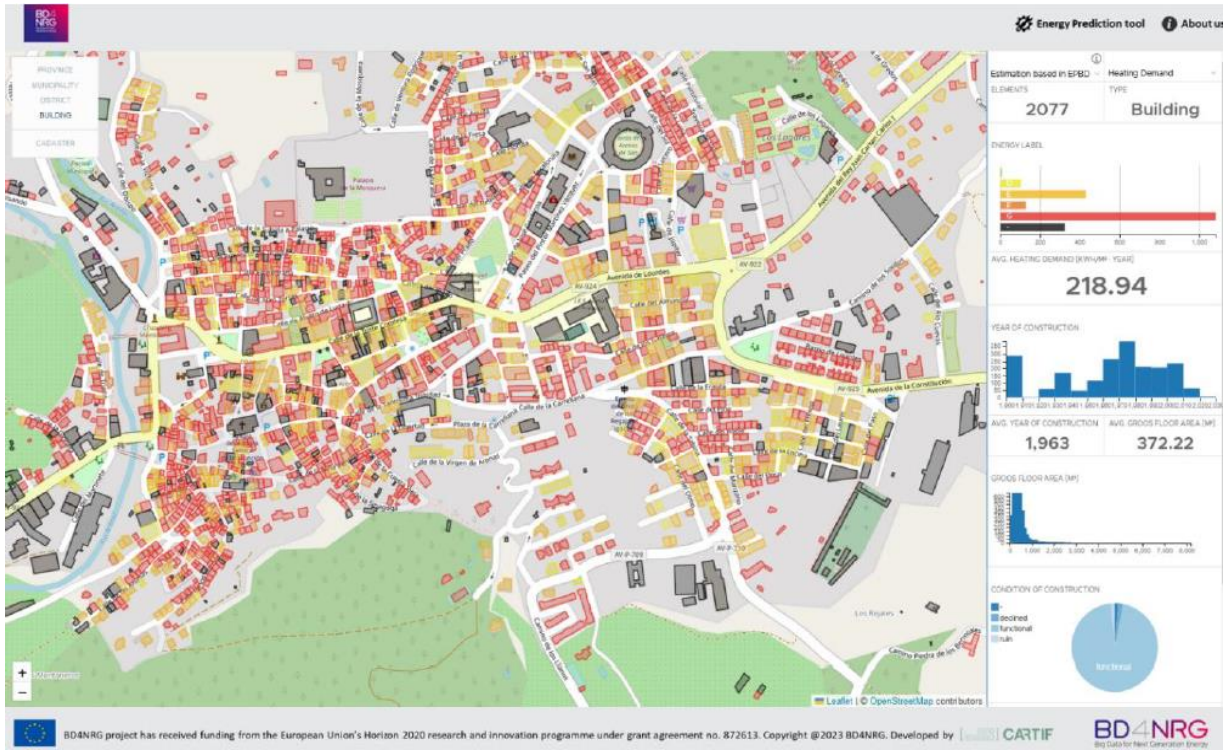


→ To **increase confidence in energy demand predictions included in the EPCs** by incorporating advanced forecasting methods and monitored information.

The Analytics Services. Key Components. Results

EPC estimation based on public data at urban level 2



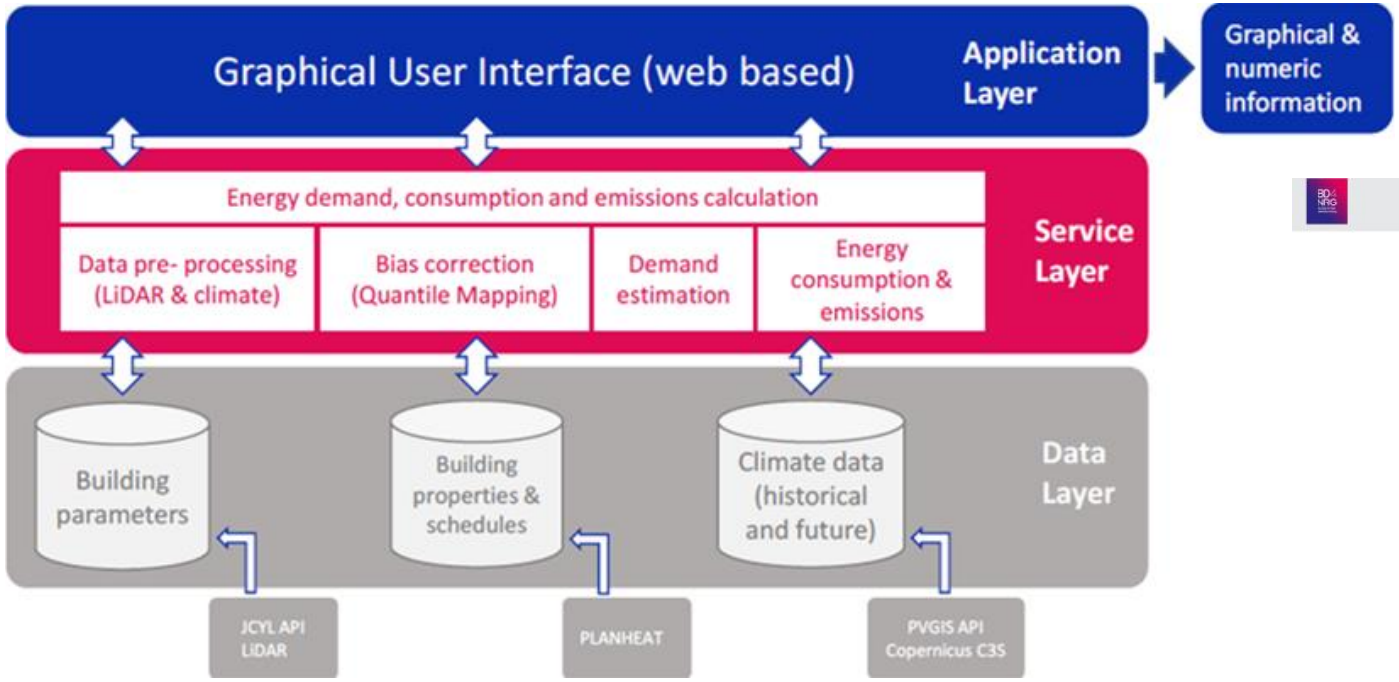


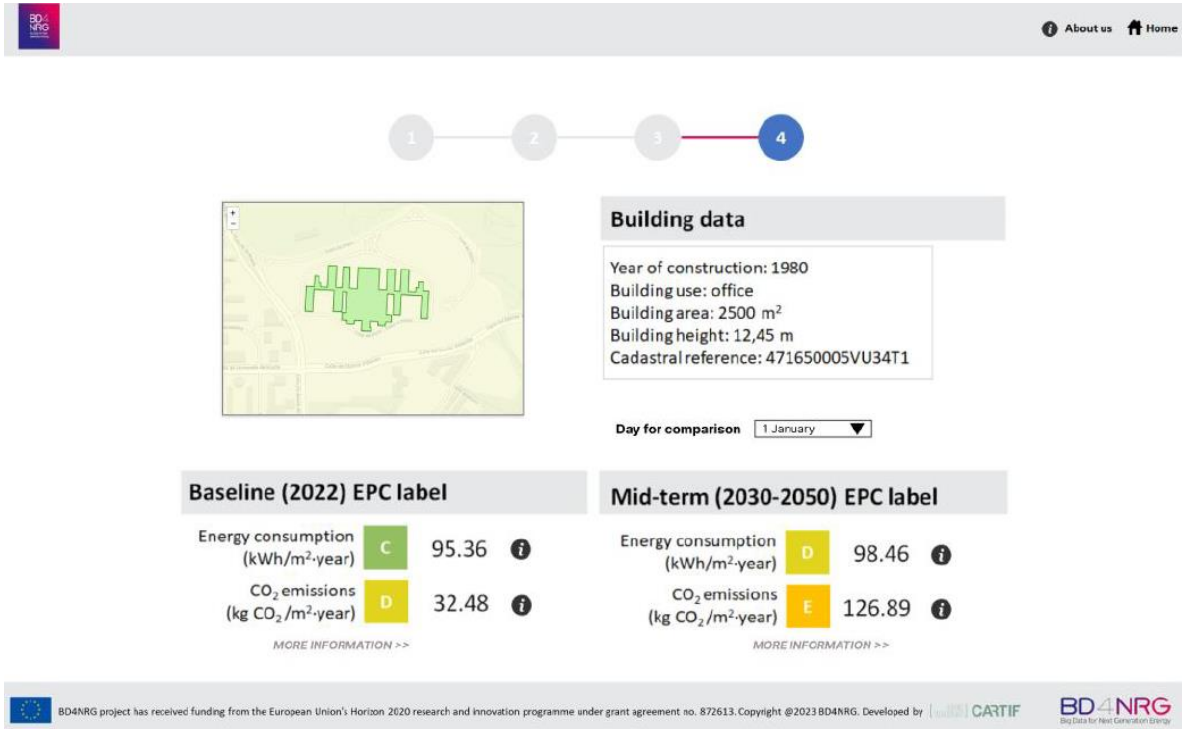
→ To calculate an **estimation of some of the parameters contained in Energy performance certificates.**

→ A method to detect possible inconsistencies in EPCs values for existent and new EPCs.

The Analytics Services. Key Components. Results

Energy prediction considering climate change impacts 3





→ To obtain a future value of energy demand **to anticipate the impacts of climate change** making possible to **define and adapt feasible retrofitting scenarios**.

The Aftermath of Assessment

How BD4NRG was integrated in the pilot' activities?

- **Operational impact:** This initiative revolutionizes Energy Performance Certificates (EPCs) by employing predictive and prescriptive analytics, setting new standards in the field.

- **Technical impact:** Based on the use of forecasting techniques and modelling, covering data every hour, it is enhanced the reliability of EPCs and positions LSP10 at the forefront of energy prediction and management.

- **Business impact:** The Energy Prediction BD4NRG services not only benefit energy management but also stimulates the energy retrofitting industry, offering added-value and cost-effective solutions through improved EPC reliability.

Thank you!

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