OpenData Sant Cugat: A platform to integrate city's building energy information with public data

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Research projects about energy information systems (2009-21):

2009-2012 RÉPENER: Control and improvement of buiding energy efficiency by means of repositories. Plan Nacional I+D+i Coordinator: *ARC Ingeniería y Arquitectura La Salle*

2011-2014 SEMANCO: Semantic Tools for Carbon Reduction in Urban Planning. 7º Programa Marco / Coordinator: *ARC Ingeniería y Arquitectura La Salle*

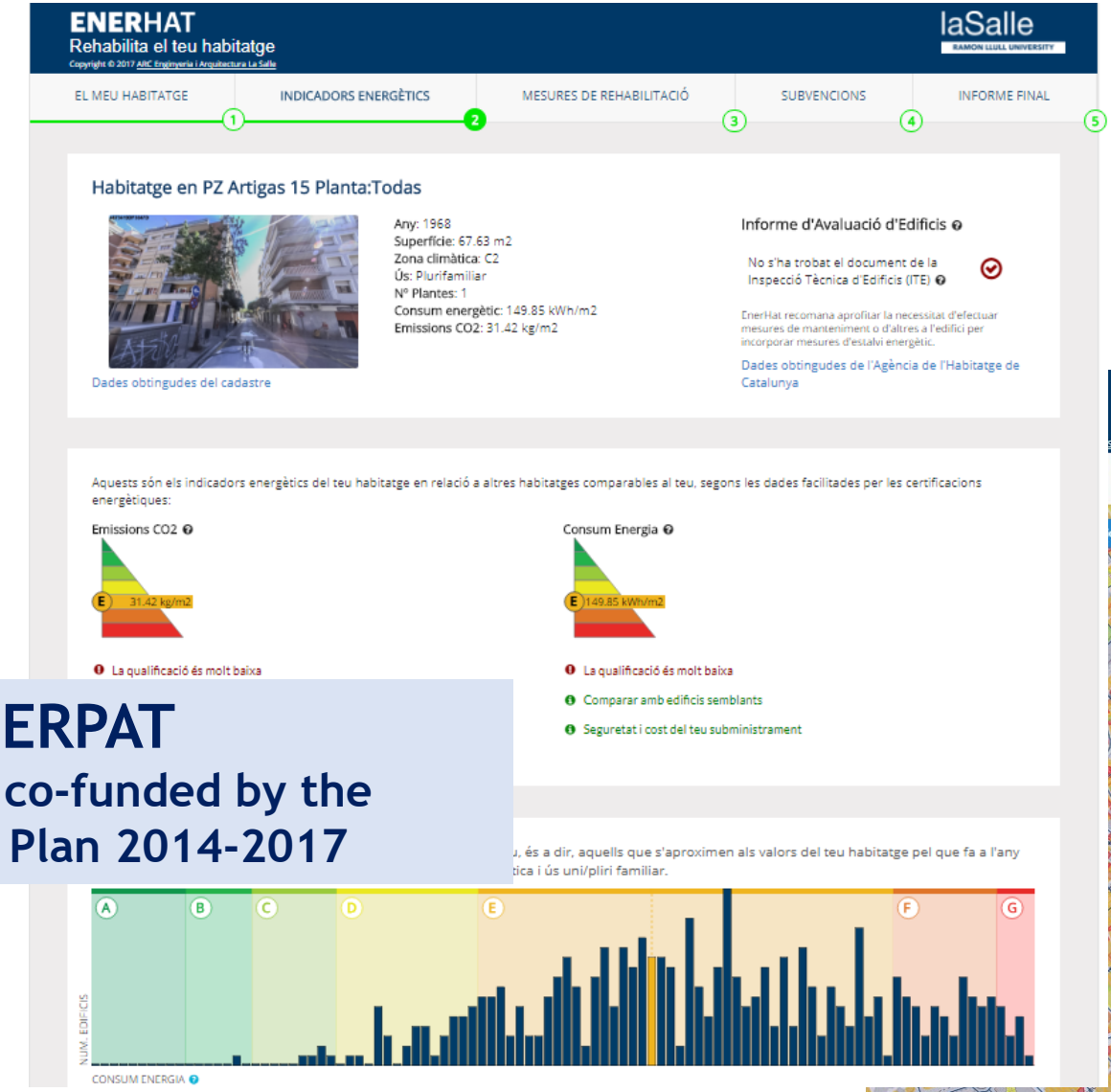
2013-2016 OPTIMUS: Optimising the energy use in cities with smart decision support system. 7º Programa Marco / Coordinator: *National Technical University of Athens*

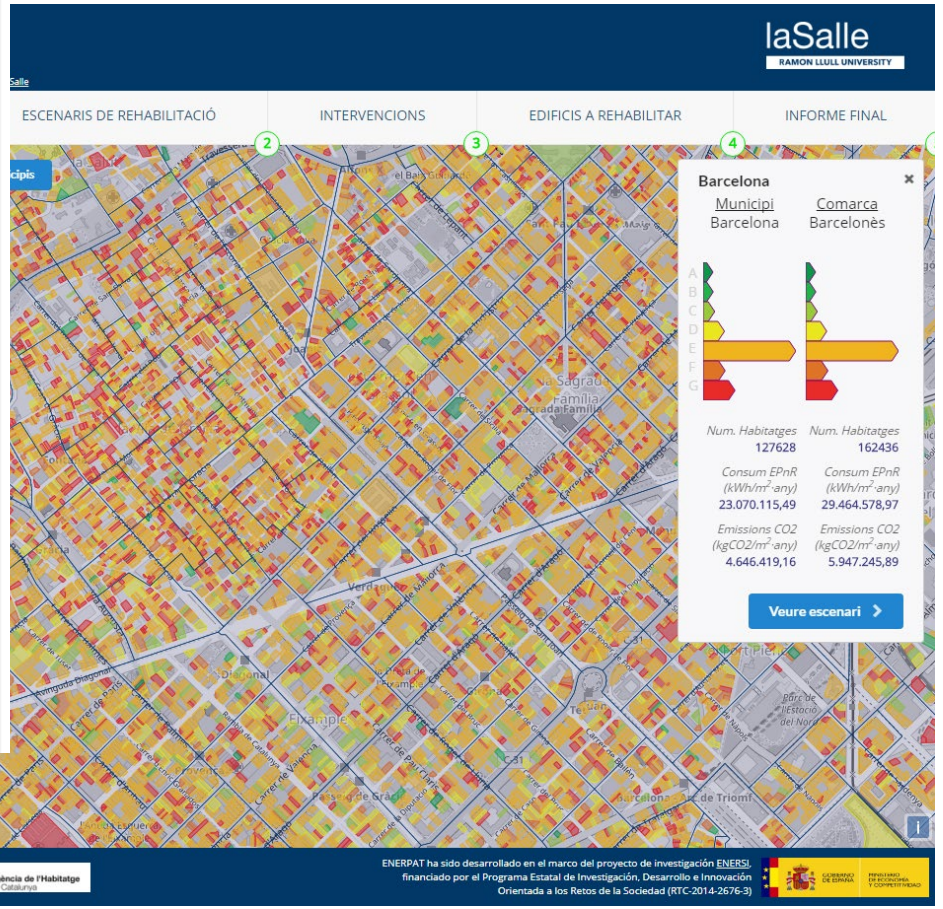
2014-2017 ENERSI: Energy services platform based on the integration and analysis and analysis of data from multiple sources. Plan Estatal I+D+i / Coordinator: *Innovati Networks*

2017-2019 Open Data Sant Cugat. Contract with Sant Cugat del Vallès municipality / Coordinator: *ARC Ingeniería y Arquitectura La Salle*

2021-2024 RETABIT: Multi-dimensional data driven services to foster residential building retrofitting programmes in the implementation of SECAPs. Plan Nacional I+D+i Coordinator: *ARC Ingeniería y Arquitectura La Salle*

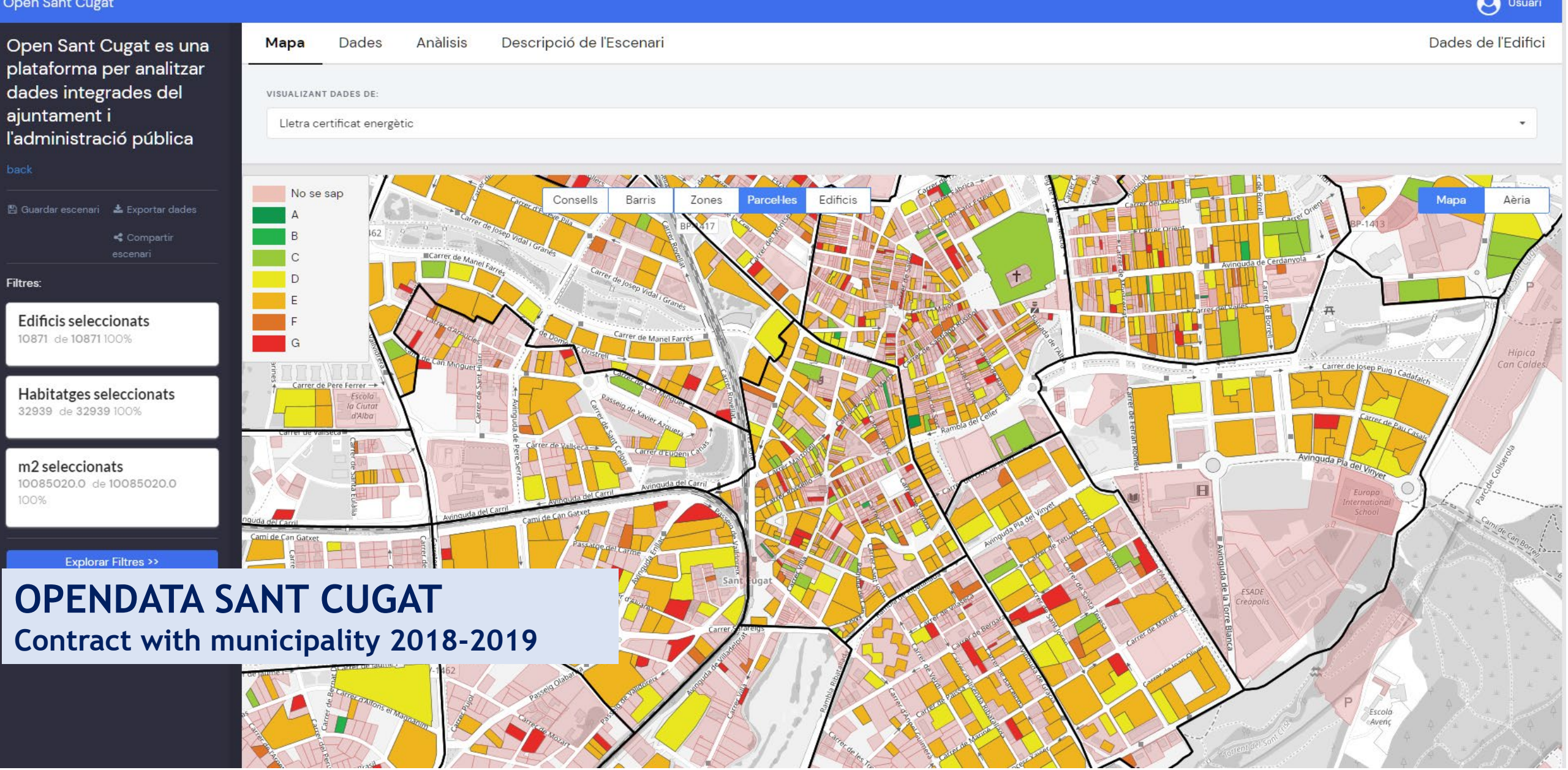
SEMANCO
Semantic Tools for Carbon Reduction in Urban Planning
FP7 2011-2014





ENERHAT/ ENERPAT

Research project co-funded by the Spanish Research Plan 2014-2017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OPENDATA SANT CUGAT
Contract with municipality 2018-2019

Data about buildings in the municipality of Sant Cugat del Vallès (Barcelona) **is segregated and dispersed** among departments and supra-municipal public administrations.

For example, building permits, building equipment inspections, building energy certificates, building technical inspection and water consumption, are managed by different city departments.

The consequences of this dispersion of the data are:

1. It hinders the communication between city departments

- Technical and administrative staff are not aware of data managed by other departments
- Generating reports spanning across departments requires a lot of efforts

2. It prevents citizens and companies from exploiting public data

- Citizens cannot access information about buildings (licenses, performance, consumption, etc.) in a single access point
- Companies cannot make market analysis to identify business areas

For example: **which building permits have been granted in the last two years in a district?**

OpenDataSantCugat is a platform that integrates data generated by municipal departments and data provided by other institutions (cadastre, energy certifications, etc.).

1. **Facilitate data management within a department**, and across departments, by integrating data to answer questions that cut across different areas

How many licences have been issued in the last two years in a city neighbourhood?

OpenDataSantCugat is a platform that integrates data generated by municipal departments and data provided by other institutions (cadastre, energy certifications, etc.).

1. **Facilitate data management within a department,** and across departments, by integrating data to answer questions that cut across different areas.

2. **Providing citizens and businesses with access to public information**, so that they can use it to make decisions on issues that affect their property and to adopt business strategies, respectively.

How many licences have been issued in the last two years in a city neighbourhood?

What is the potential for improving the energy efficiency of my home?

Data from city departments

WFS — GIS

Access — Environment

Excel — Urban quality

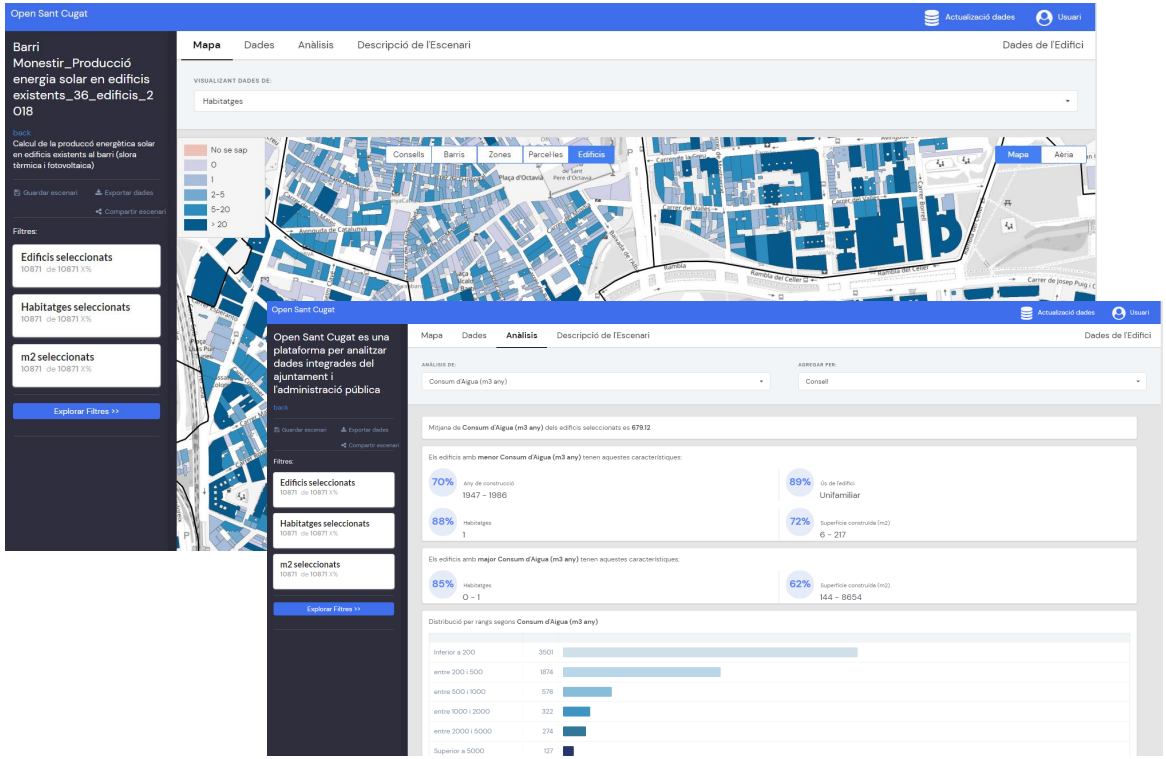
Excel — Technical services

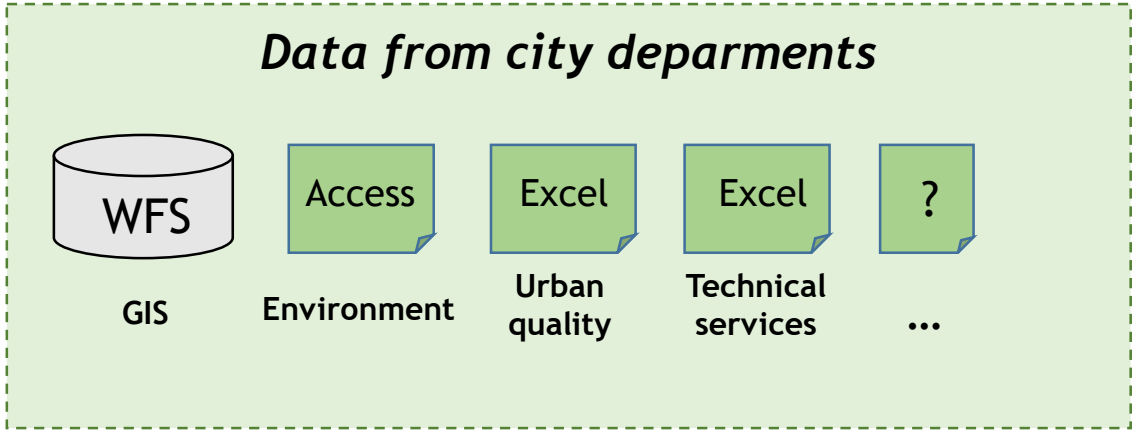
? — ...

Open Data from public agencies

- Energy Performance Certificates
- Building Inspections
- Cadastre
- Solar radiation maps

Open Data Sant Cugat





GIS

Neigbourhood borders **49 records**

Geometry of the neigbourhoods

Environment

Solar and water inspections **1,003 records**

First Occupancy Licence, Solar and water ordinances, Swimming pool surface, Solar installations (power, collector surface...), Energy production...

Urban Quality

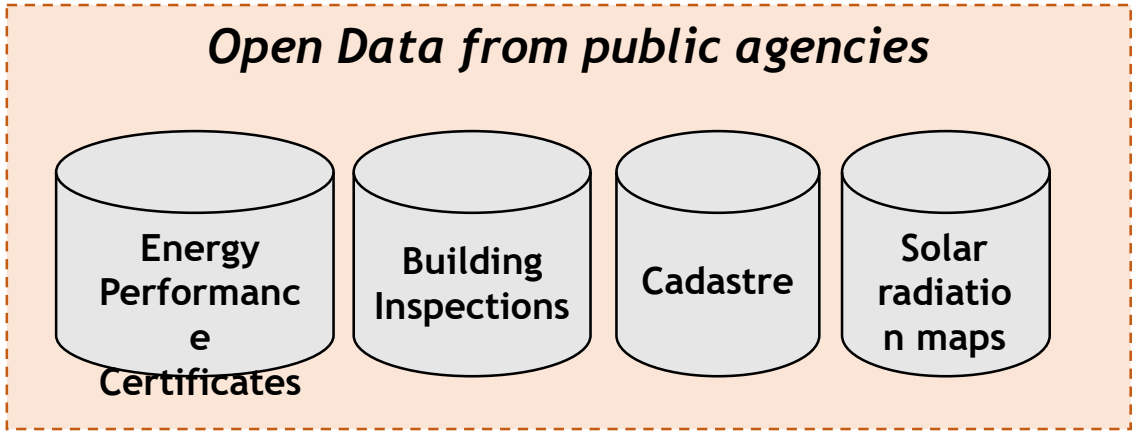
Water consumption by dwelling **37,461 records**

Monthly/quarterly cubic metres per dwelling (aggregated on a yearly basis)

Technical services

Building permits **625 records**

Permits details such as year of issue of the license



Catalan Institute for Energy

Energy performance certificates **6,238 records**

Emissions, demand, consumptions, construction characteristics...

Catalan Housing Agency

Catalan Housing Agency **146 records**

Has ITE or not, Resolution, Defect level

Cadastre

Building general data **10,823 records**

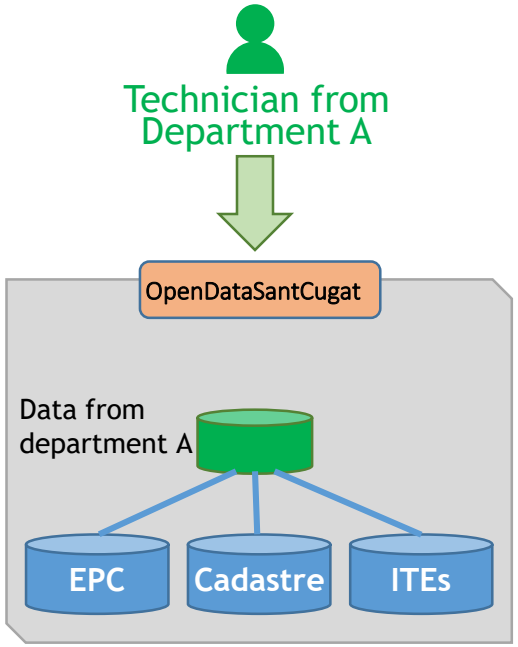
Building use, surface areas (residential, office...), number of dwellings, geometry, blocks, plots.

Barcelona Metropolitan Area

Solar and thermal potential **34,398 records**

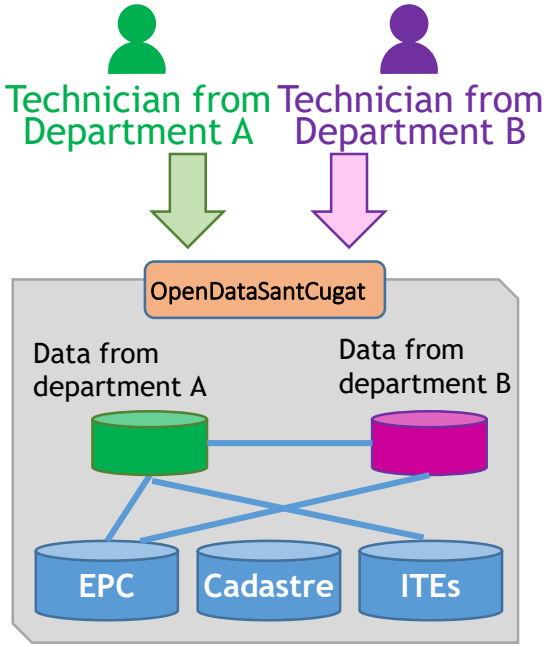
Electricity production estimations, photovoltaic capacity, collector surface area

Analysing department data



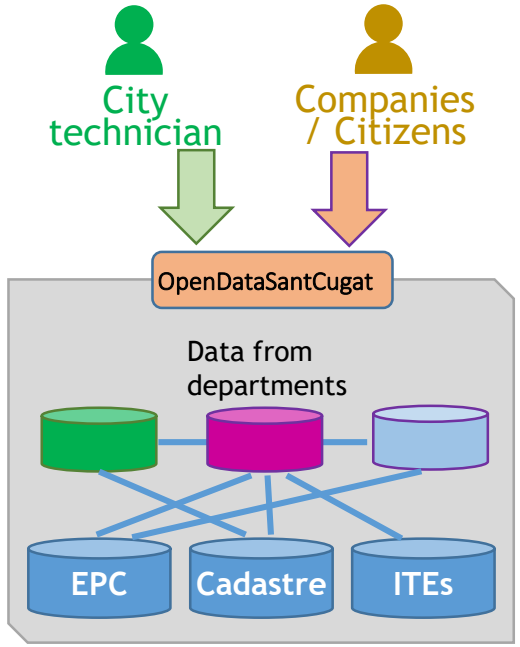
The technician accesses and analyses his data in conjunction with data from other institutions.

Interdepartmental collaboration



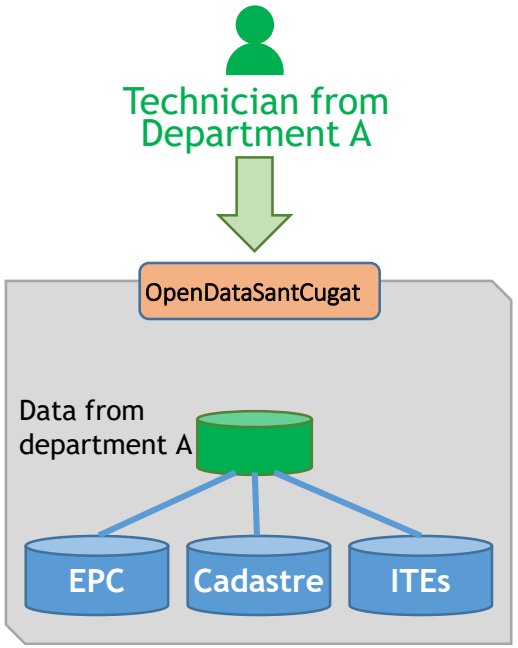
Technicians from different departments access and analyse data from different departments in conjunction with data from other institutions.

Collaboration with citizens



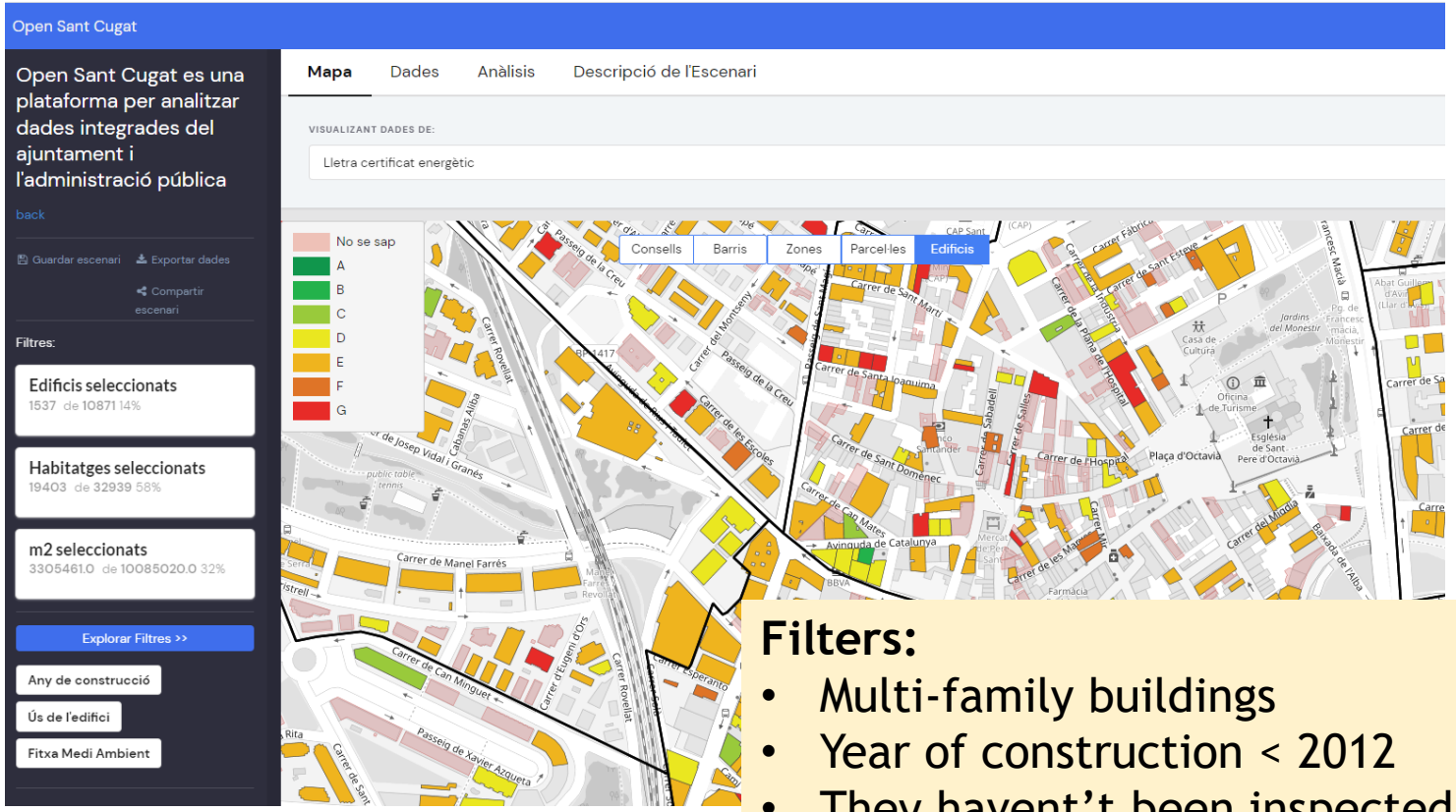
Citizens and businesses access and analyse data from different departments in conjunction with data from other institutions.

Analysing department data



The technician accesses and analyses his data in conjunction with data from other institutions.

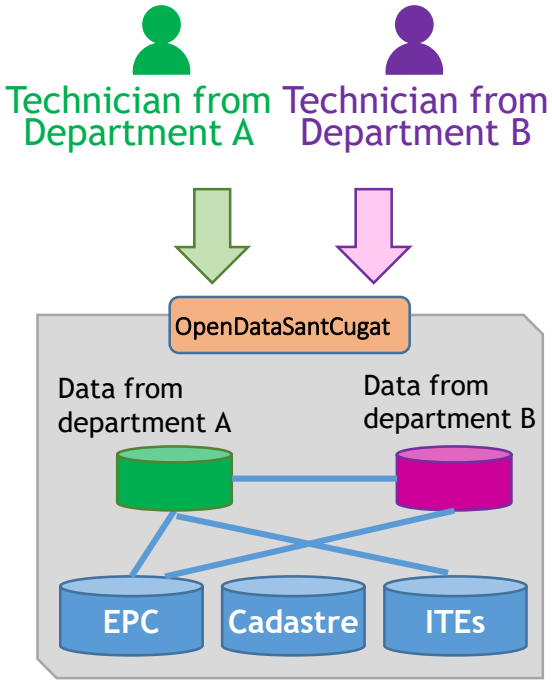
Where to carry out the following facility inspections?



Filters:

- Multi-family buildings
- Year of construction < 2012
- They haven't been inspected

Interdepartmental collaboration



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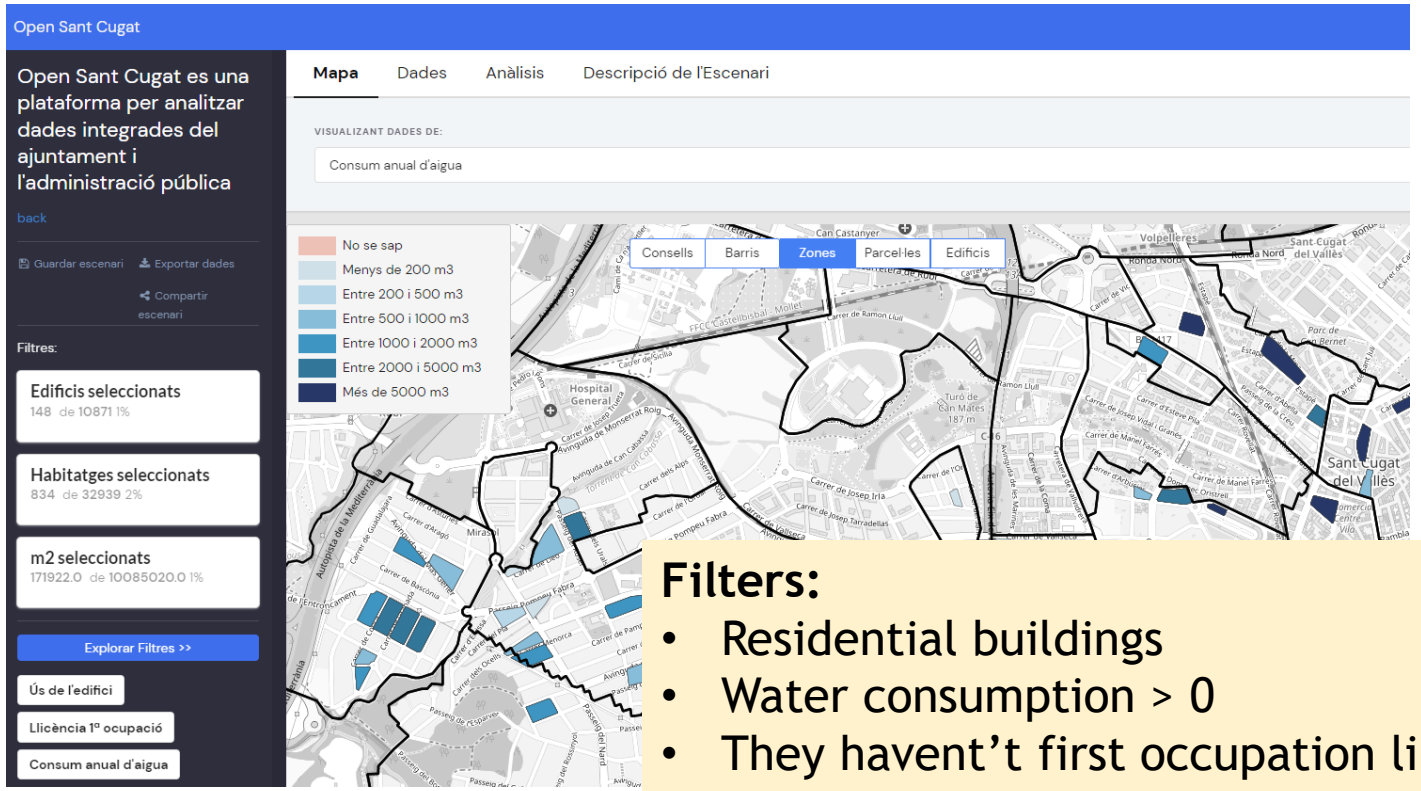
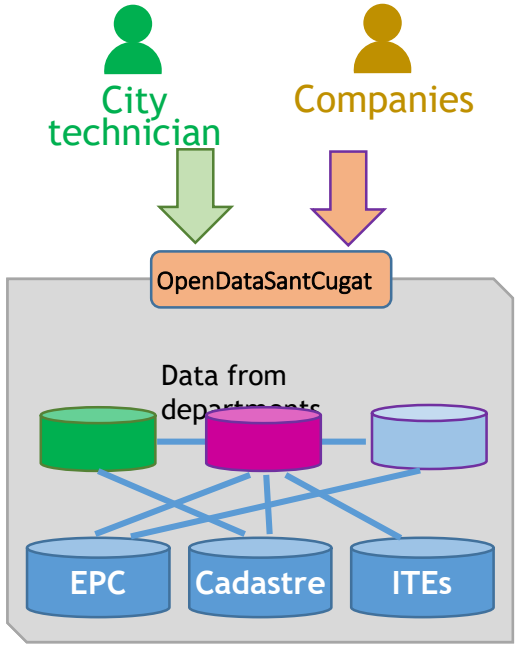
Which buildings have an irregular situation (e.g. there is water consumption, despite not having a first occupancy licence)?



Filters:

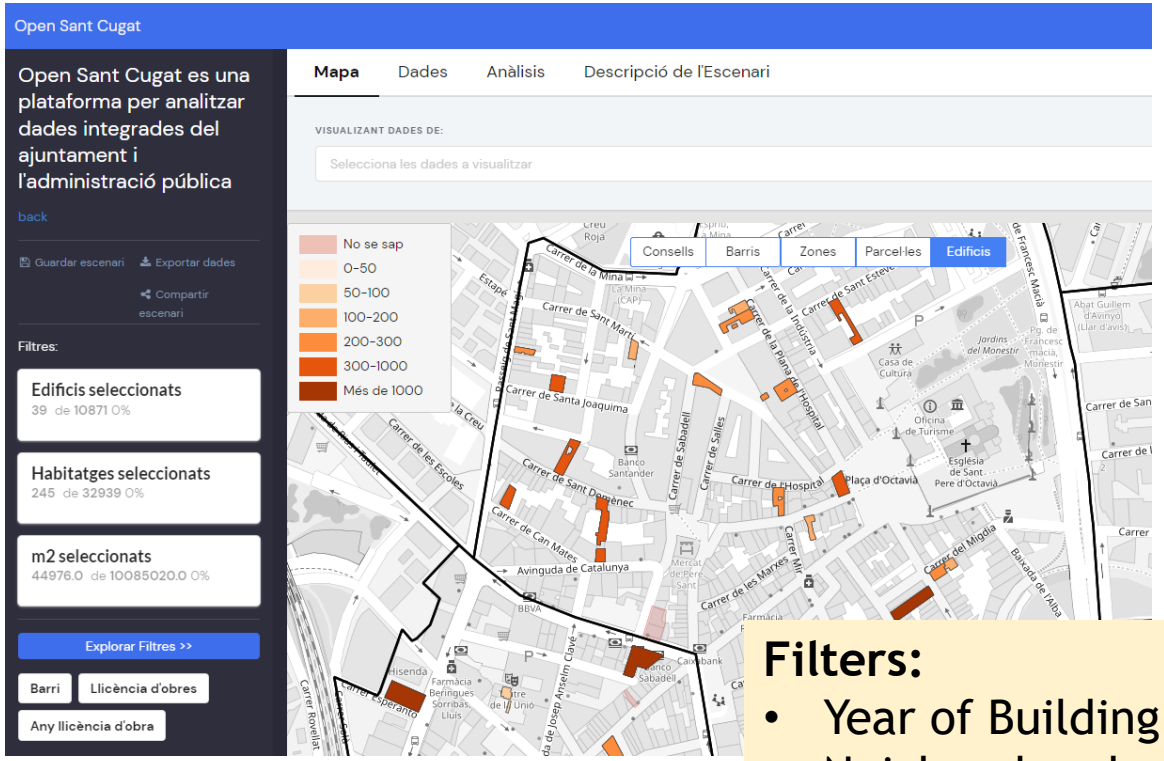
- Residential buildings
- Water consumption > 0
- They havent't first occupation lincense

Collaboration with citizens



Citizens and businesses access and analyse data from different departments in conjunction with data from other institutions.

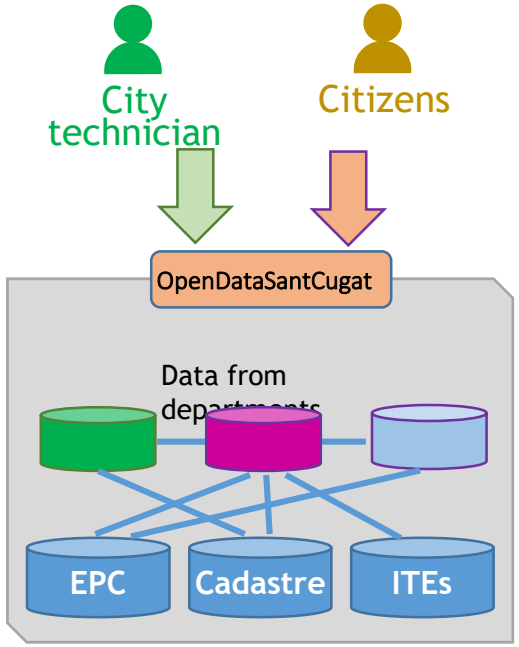
Businesses ask the city how many planning permissions have been granted in a neighbourhood over the last two years



Filters:

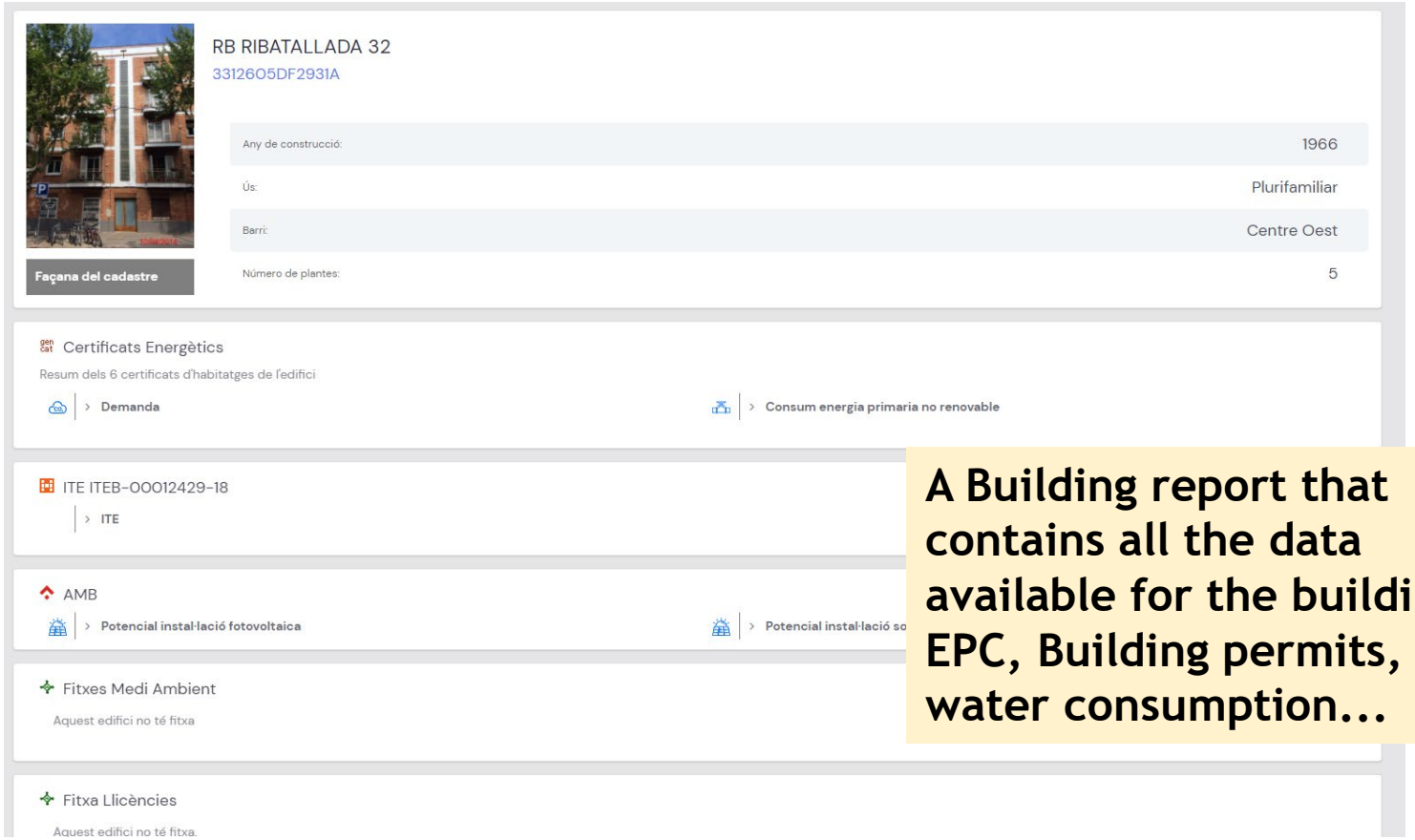
- Year of Building permit > 2018
- Neighourhood = Centre

Collaboration with citizens

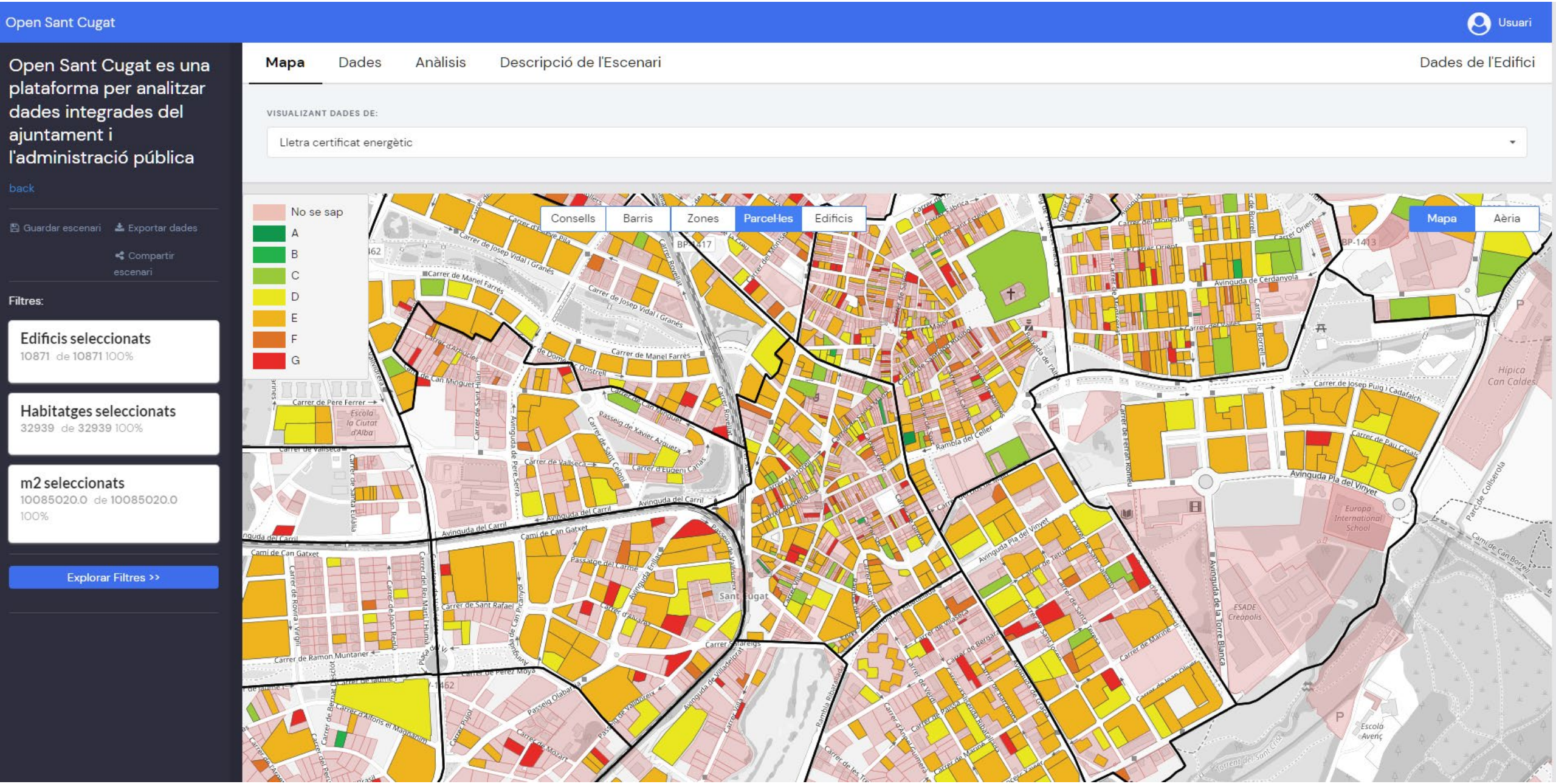


Citizens and businesses access and analyse data from different departments in conjunction with data from other institutions.

A citizen wants to know the information the municipality has about a house/building in which he/she lives.



A Building report that contains all the data available for the building: EPC, Building permits, water consumption...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Conclusions

Public administrations need this sort of platforms; however, there is a lack of an overall strategy to: 1. harmonize the data management within city departments and 2. to integrate open data in their working processes. This prevents the exploitation of the open data and hinders open governance.

OpenData Sant Cugat is a prototype of a platform which shows the potential of the integration of interdepartamental data and open data. However, it is necessary to count with robust technological solutions, which can be replicated in multiple municipalities, and sustainable over time.

Acknowledgements

Developing Team

Leandro Madrazo
Álvaro Sicilia
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Marta Salgado
Anna Bohigas

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With the support ot the technical staff of the municipality of Sant Cugat del Vallés

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Thanks for your attention!

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