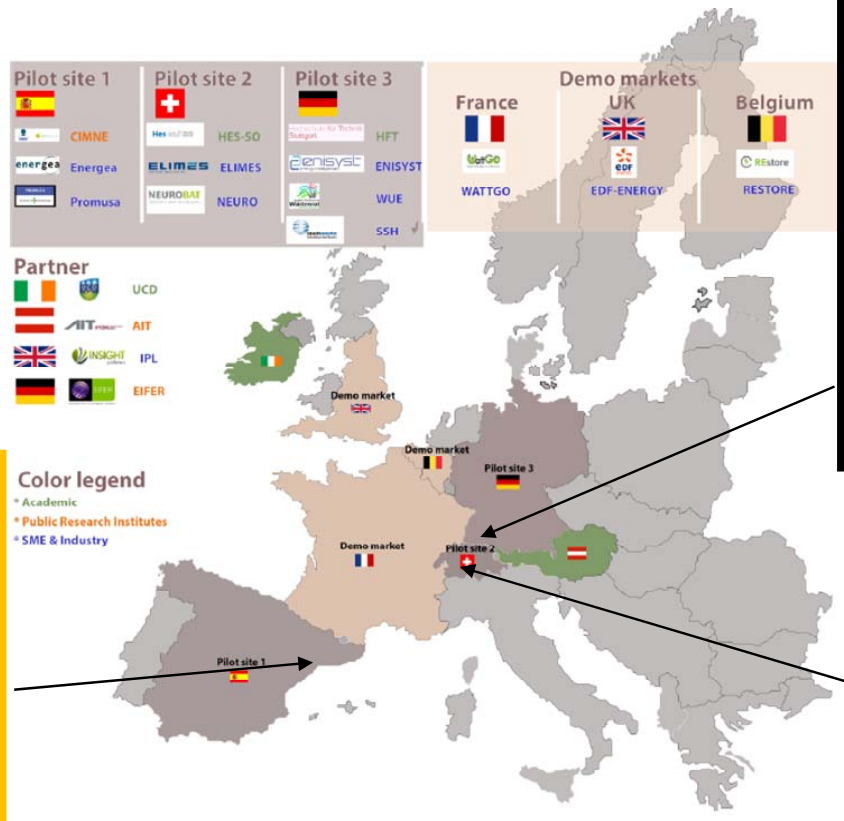
Putting demand response services into practice in blocks of buildings.

Sim4Blocks

energea

Overall vision of SIM4BLOCKS project



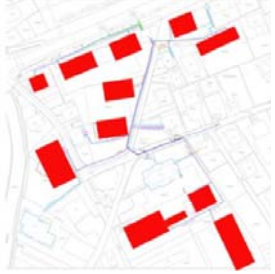
Wüstenrot: 3 Use cases

Heat pumps(HP), PV, solar thermal, electricity & heat storage, biomassboiler, low temperature district network

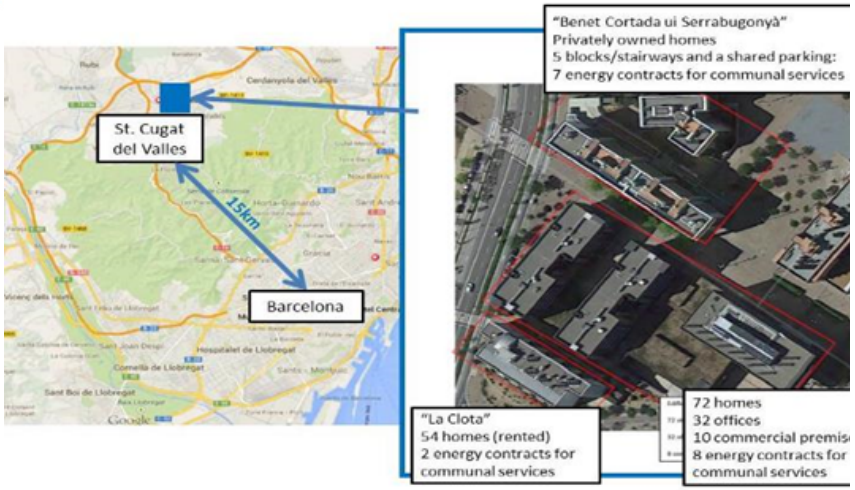
St Cugat: 3 buildings (residential & commercial)

Condensing boilers, solar thermal, micro turbines, gasfired HP, cooling system, heat storage

Naters: 13 Buildings (residential & commercial)



HP, electrical heater, heat storage, low temperature district network



Pilot site of ST. CUGAT DEL VALLÈS

Actors/Roles

- Residential tenants
- Commercial (offices)
- Energy utility, Maintenance company, Company owning the buildings

USE CASE 1: DR Electrical service. Shift **appliances** manually according to price signals.

➡ ***Tenants will access web portal to search tips to save energy and money.***

USE CASE 2: **DR Thermal service**. Control energy used in generating heat and DHW and to carry out recommended energy saving actions.

➡ ***Tenants will receive messages via web or WhatsApp when thermal energy (Heating or DHW) is cheap.***

USE CASE 3: Direct load control of electricity use of heat pumps in Volpelleres office spaces

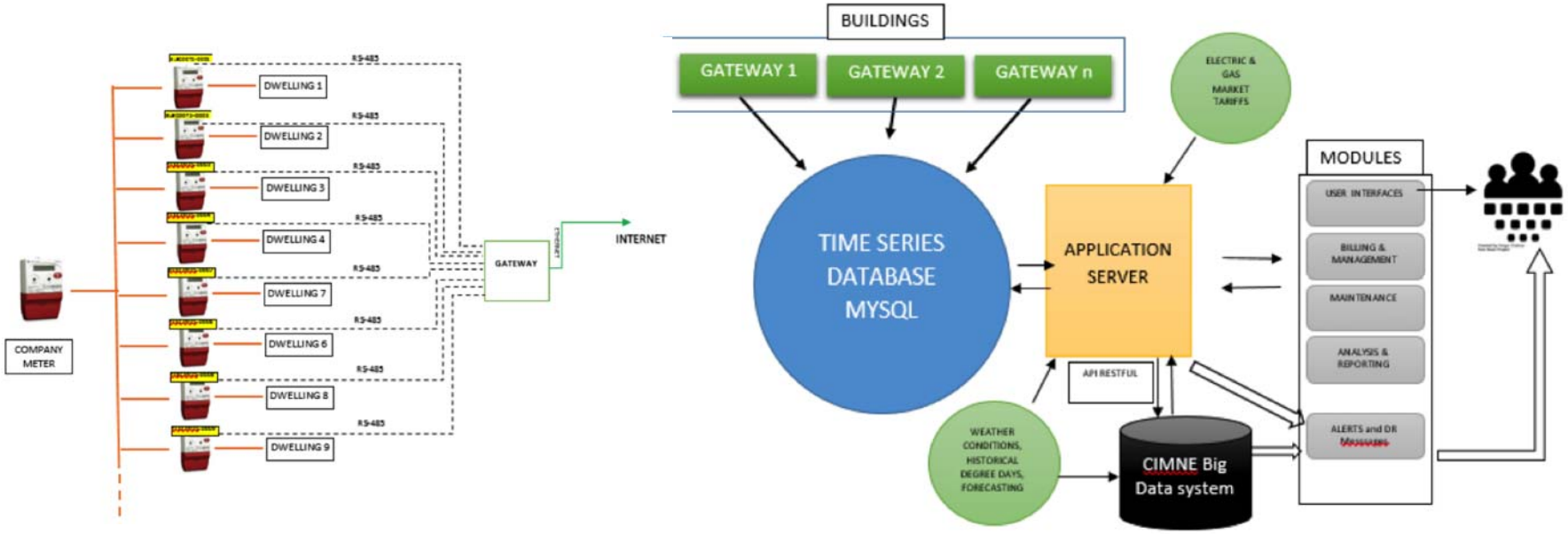
➡ ***Office heat pumps run during times of low wholesale market spot prices***

➡ ***Test of more short-notice balancing services (e.g. Frequency Restoration Reserve (FRR)).***

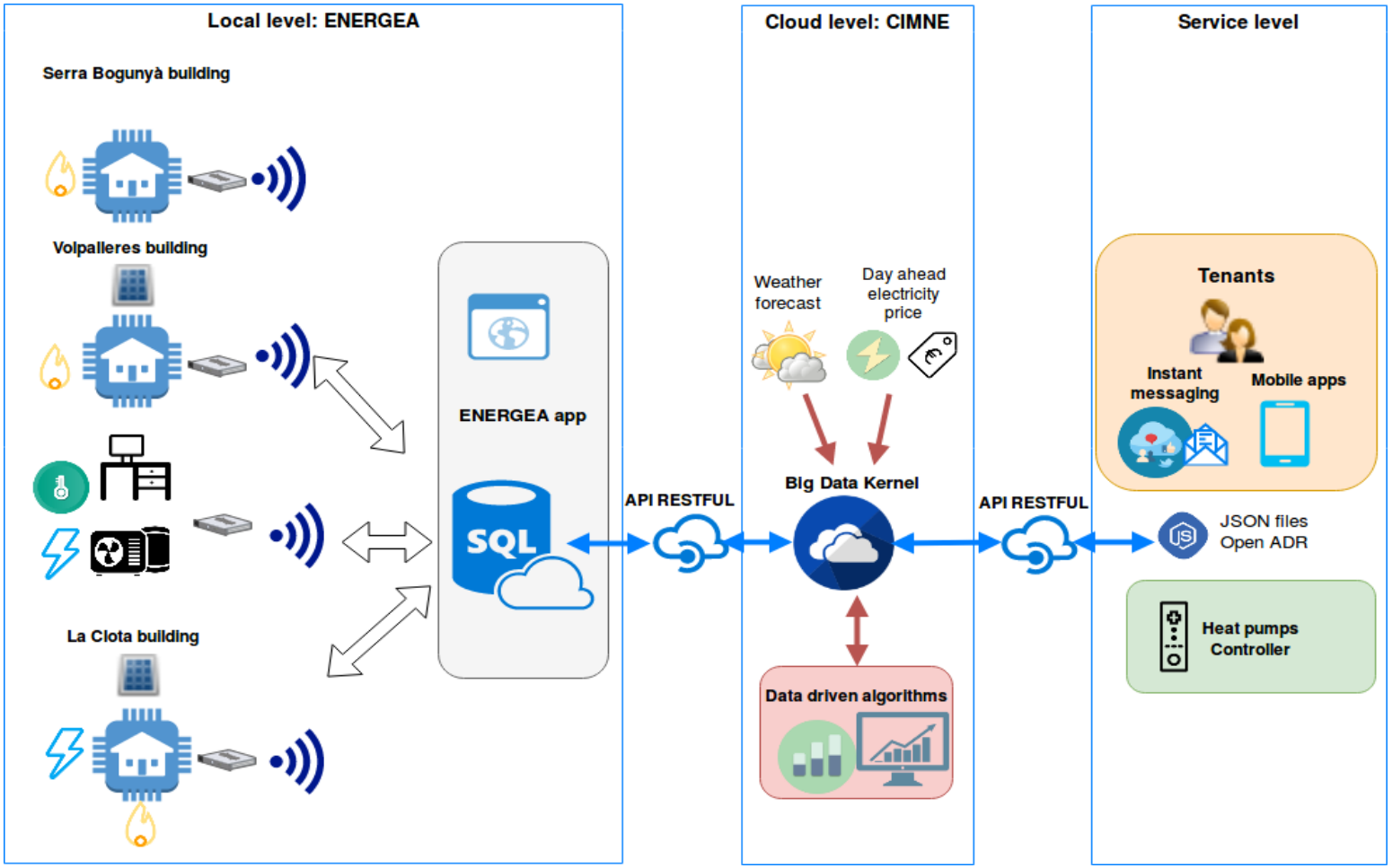
Structure of the data collection and processing and interfaces

The **Clota building** as pilot for DR electrical services. smart electricity meter in each dwelling

With the DR Service we would like to provide real time information to the tenants so that they can shift their load to the hours when the electric price is more favourable



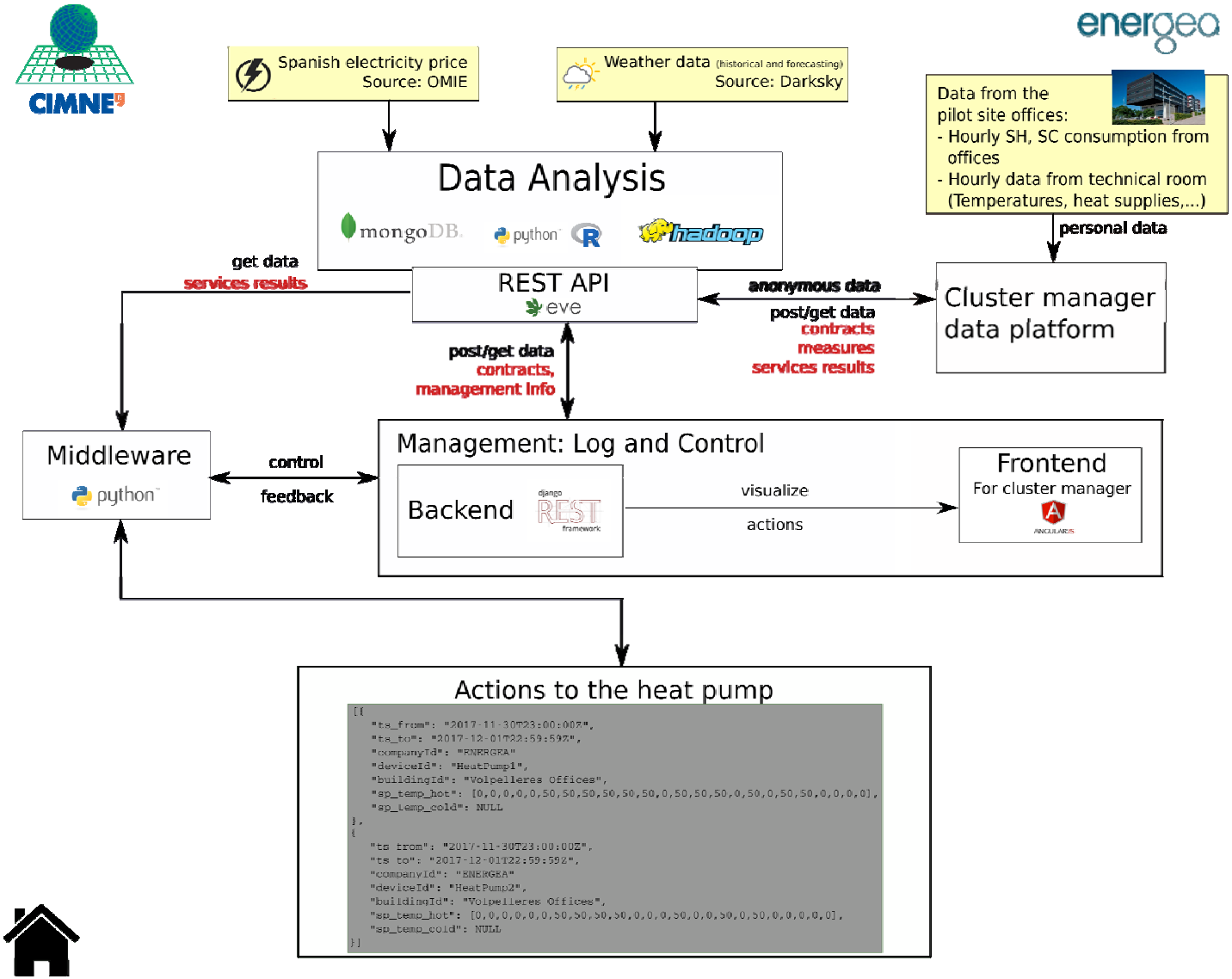
ICT architecture



Demand response optimization at building level

- CIMNE and ENERGEA are using a combination of a linear grey-box model (storage tank) and black-box models (space heating/cooling loads) with exact optimization applied in St Cugat.

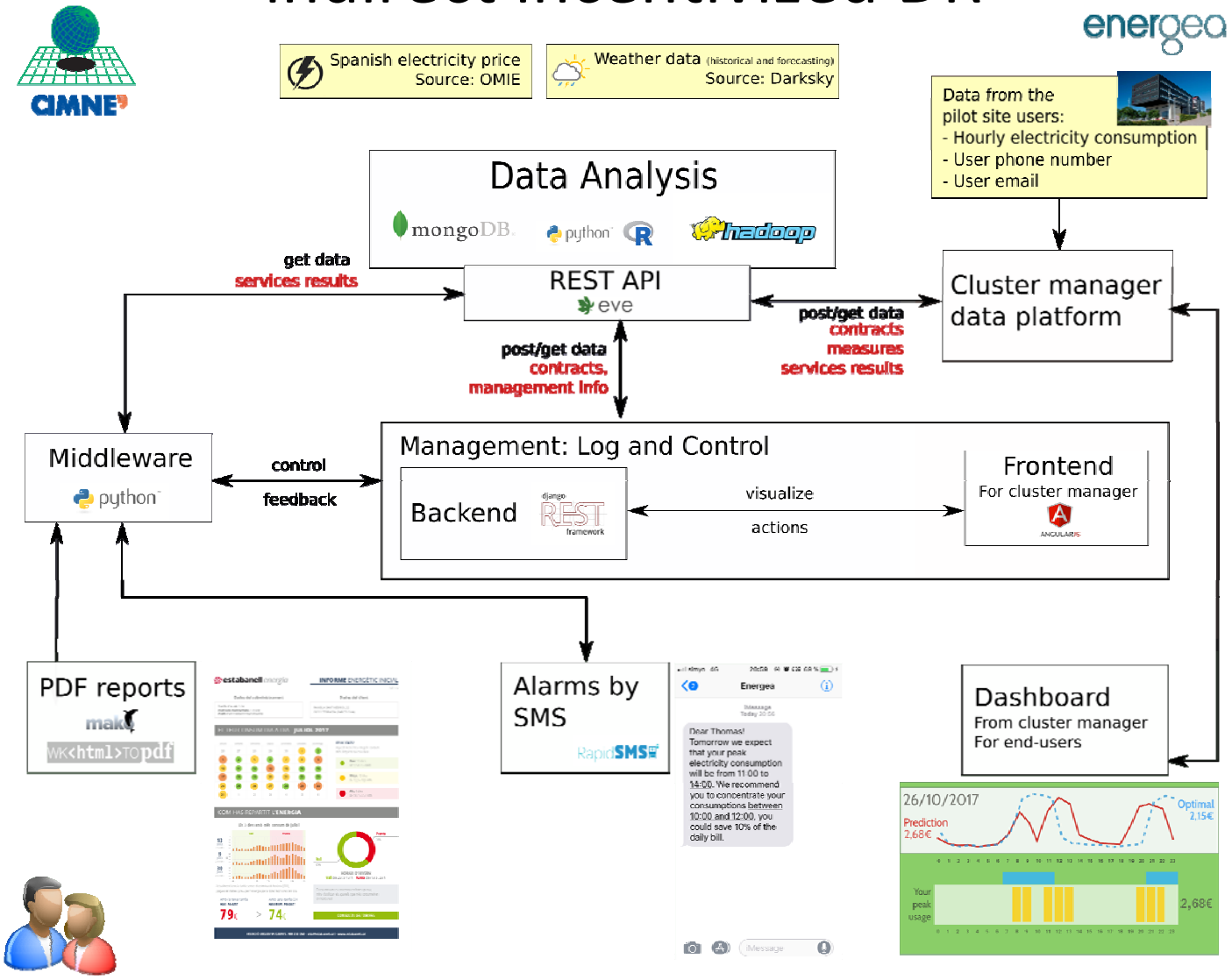
Direct load DR



Demand response optimization at building level

For indirect incentivized DR services CIMNE is implementing user behaviour models (machine learning) to forecast electricity the load profile of each user and suggest changes in their behaviour based on the day-ahead electricity price.

indirect incentivized DR



Moltes gràcies

visit Sim4Blocks website:

www.sim4blocks.eu

www.3e-energea.com

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