

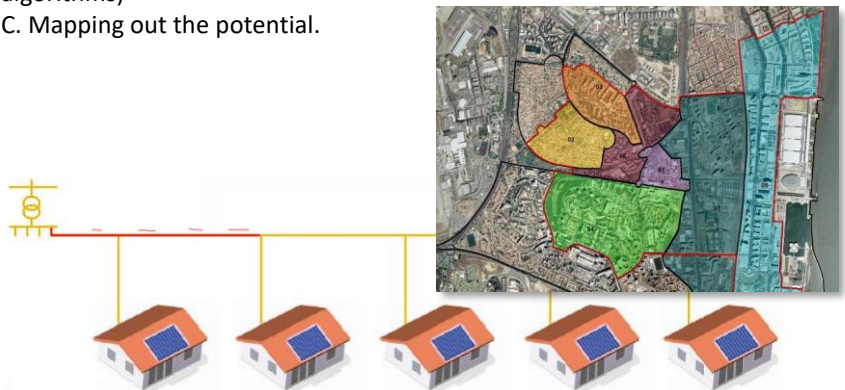
FIRST

Mapping flexibility of urban energy systems

Motivation

Research project to examine the potential for energy flexibility at a level of an existent neighborhood in Lisbon in order to find to what extent the provision of flexibility from the consumer side could be facilitated. It begins with the estimation of shifting potential of volumes of electricity consumed for short or long periods of time at individual level of buildings as a response to grid tariffs and/or renewable availability. It then draws on the distribution to urban energy systems encompassing a larger chain of buildings within the neighborhood domain to estimate the potential for energy flexibility at the community level. Given the breadth and complexity of this research topic, the team will focus the inquiry on a number of three hierarchically related research activities:

- Study of potential for energy flexibility at individual building level (load shifting of typical buildings);
- Study of potential for energy flexibility at community level (load shifting with algorithms)
- Mapping out the potential.



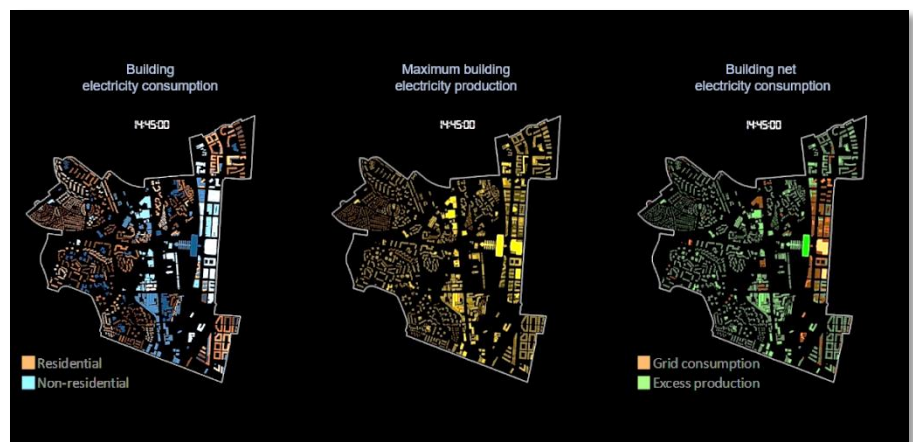
Optimization with a tool which uses a GPS and a GA4S (in the case of the community approach) to find the operation starting times of the controlled devices that minimize the electricity costs.

Project Co-Funded by:

FCT
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REPÚBLICA PORTUGUESA
AMBIENTE E TRANSIÇÃO ENERGÉTICA



Partnership



Web page

<http://in3.dem.ist.utl.pt/first/#outputs>

Project Duration

2018 - 2019

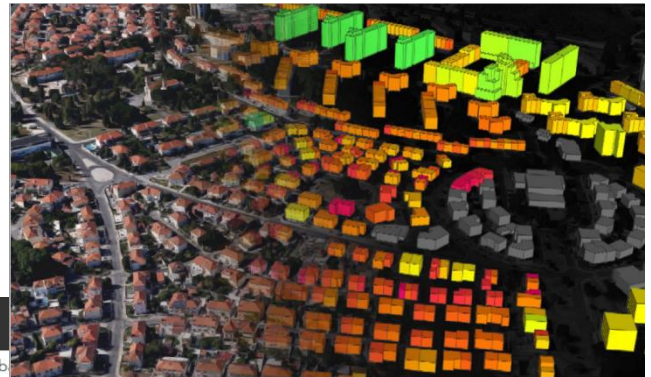
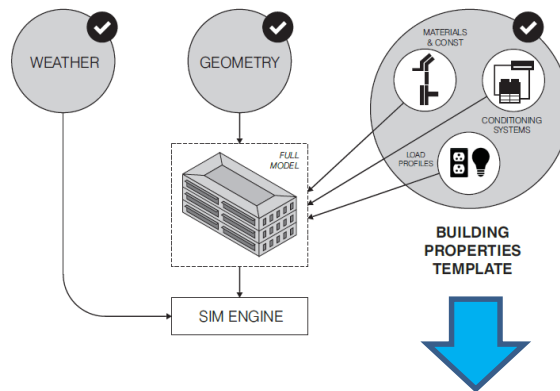
Objectives

Develop a city dashboard for:

- Analyze urban interventions
- Evaluate alternative scenarios
- Aid in decision making
- Promote new services and business models
- Buildings
- Mobility
- Energy Grid

Methodology

- Characterize the energy services use for each household
- Physical Modelling using EPlus
- Data driven model using clustering on smart meter data
- Monitoring during Winter and Summer time
- Data from Energy Certificates



FIRST - Mapping Flexibility of Urban



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