

# LESO-PB

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## **Simulating stochastic demand of resources in an urban neighbourhood**

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### **ABSTRACT**

The consumption of resources within an urban neighbourhood depends on the behaviour of its occupants. To understand the randomness of this behaviour and its effect on the demand of resources calls for the development of a set of stochastic models which are discussed here. This includes models for presence and interactions with lights, blinds and electrical and water appliances as well as solid waste production. The theoretical approach of each model has been chosen based on a priori hypotheses. Data has been collected to check their consistency with reality and to further refine them. The purpose of these models is to offer a reliable prediction of occupant behaviour at the community scale to more accurately predict the thermal and electrical energy demands of buildings as well as the consumption of water and the production of liquid and solid waste resources; the latter potentially being fed back.

The development of the stochastic models is part of project SUNtool [1], a project funded by the EU that, after its completion next year, will provide a software capable of simulating the resource flows of an urban neighbourhood entered by its user.