

**DEVELOPMENT OF AGENT BASED MODELING: CASE STUDY ON
SWISS GERMAN UNIVERSITY CLASSROOM'S ELECTRICAL USAGE**

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Lately electrical energy consumption is being the concern in the enterprises facility operation. To measure and replicate the electrical energy usage, the experiment should be conducted. Meanwhile, conducting the experiment on the campus building in the same way as the other experiment which should isolating the environment to the outside world is nearly impossible to do. The agent based modeling and simulation offer the good alternative to doing an experiment a computer program that could be replicate the real world environment, in this case is the SGU. This study aims to studying the characteristic of agent based model in simulating the electrical usage in SGU, the differences between the agent based simulation and empirical data calculation, and studying the electrical usage of SGU's classroom. The simulation is intended to replicates the real usage of the SGU classroom. The comparison between the simulation result and manal calculation, and participation of the expert are conducted to test the model's validity. The result shows the simulation is not replicating the classroom usage, but the simulation is replicating the usage of the electrical energy. Also, the electrical energy usage in SGU it not determined by the number of classroom is being use.

Keywords: Agents, agent-based model, model, simulation, state, statechart, watt.

DEDICATION

This thesis is dedicated to my mom, my father, and my sisters.



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