An Agent Based Approach to Coordination of Resource Allocation and Process Performance

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Background

Energy is a vital or essential input in many processes in todays world. Nowadays the life is hard to visualize without television, air conditioners, warm houses, refrigerators etc. Due to the dependence on energy, there has always been a problem of allocating adequate resources from the energy domain for meeting the appetite of energy on the process side. But the main issue is to balance energy versus process performance in order to achieve equilibrium state between process and energy domain. The balance is useful in a sense that there is no way of improving one side without worsening the other. The more efficient use of energy resources might save energy and by creating a balance between process requirements and resources, an optimised process performance can be achieved. Our research will address this above-mentioned issue in greenhouse problem domain but it will also be applicable to other processes requiring energy.

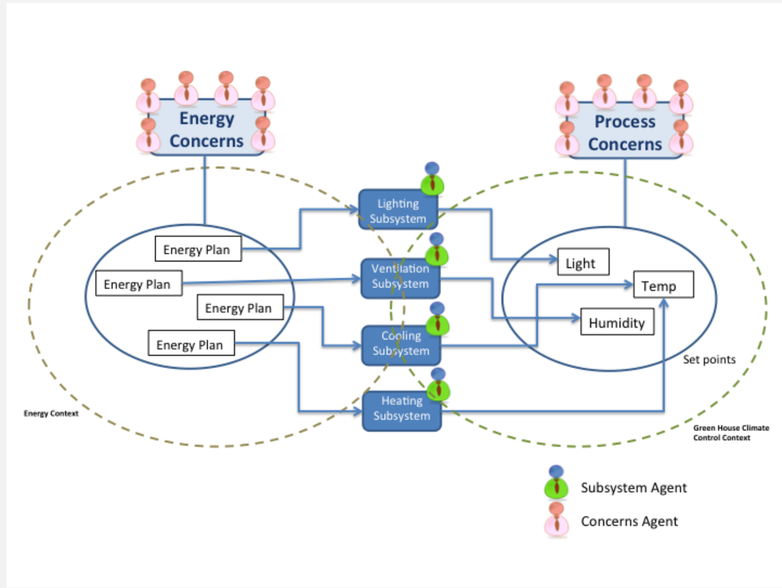
Problem Statement

This PhD project An Agent Based Approach to Coordination of Resource Allocation and Process Performance is focused on the task to develop a coordination mechanism for balancing the assignment of resources in the energy domain to the requirements of the process domain. That is; the goal is to develop an architecture that helps to create a balance between the energy and process domain by negotiating with the energy domain in order to fulfill the requirements of the process domain in a dynamic environment. Thereby optimizing the process performance in accordance with the availability of energy resources in an efficient manner.

Research Questions

1. What are the structural and behavioral properties of an agent based architecture that can support coordination of resource allocation and process requirements?
2. How can emergence of an acceptable and sufficient resource allocation with regards to process performance be observed?

Project Diagram



Project Duration

11th November 2013 - 10th November 2016

PhD Student

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