Using Multiagent Based on Fuzzy Reasoning Approach to Solve Project Team Work Allocation Problems

Yee-Ming Chen, Cheng-Wei Wei

Department of Industrial Engineering and Management, Yuan Ze University

ABSTRACT: *When a new project starts, the right selection of people integrates into a work team in order to carry on the project is of very importance. The success of a project is greatly due to the personal responsibility of each team member, and to an adequate communication, collaboration and co-operation among the team members. Nowadays, the project team formation process is typically performed by a manager based on past experience and available information (though frequently uncertain and dynamic) about the cognitive characteristics of the potential team members. The dynamic and continuously changing nature of construction project team justifies the need for decision support tools with high adaptability and handling of uncertainty which is featured by multi-agent techniques for human resource allocation. An Agent-based Project Management System (AbPMS) is proposed to simulate the interaction of a team member with other team members and with the tasks of a project. Meanwhile, the system is based on the software (Belief, Desire, Intention [BDI]) agents which are used for modeling social human behavior at work, where human characteristics are represented by a set of fuzzy values, model the interaction between the agents to generate the possible performance of a work team are modeled by fuzzy rules. This paper presents the project team agents and techniques in AbPMS and discusses a sample case applying these techniques for the project allocation initialization and human resource management in the urgent state. We use AbPMS platform to perform scenarios of stimulus/response agents in order to solve specific problems, such as project durations, task quality and adaptive allocation emergency response.*

KEYWORDS: *Multiagent systems, BDI, Fuzzy, Project Management.*

1. Introduction

1.1 Research motives

Any project is in need of participation by members within a group and successfully executing jobs to finish one project is of very importance. Making a well-organized team is no easy, because many factors need consideration and evaluation. Factors that are necessarily considered during project running are given as follows: