

Support for Project Planning by an Agent-Based System

A Position Statement

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Markus Zanker

Universität Klagenfurt

Institut für Wirtschaftsinformatik und Anwendungssysteme

Produktionsinformatik

Universitätsstraße 65-67, 9020 Klagenfurt, Austria

markus.zanker@ifit.uni-klu.ac.at

Agent-based systems and their potential impact on the business world is of high interest to our research group. Beside issues in configuration and model based diagnosis we are working on project planning and scheduling. Similarly to classical planning and scheduling tasks in production (e.g. scheduling in job shops) the problem domain in project planning and scheduling consists of activities, resources and a number of goals and constraints which have to be regarded. Primarily differences emerge out of the dynamic nature of projects. They can be attributed a kind of non-routine character, because the sequence of steps taken to fulfill the expected goals are not fixed from the beginning of the project. Though project members usually benefit from prior experience in realizing similar tasks projects cope mainly with one-time jobs. Therefore the process of planning and scheduling of medium-size projects (20 to 50 participants) poses already a demanding problem of high complexity that is only weakly supported by currently available project management tools.

Our industry partners have made the experience that support for the process of task allocation itself is only weak or nonexistent. Most of the commercially available tools are only able to visualize the planned activities and to describe how these activities are allocated to resources. However an interactive environment with decision support for project managers is highly desirable. Further on support for continual plan repair actions necessitated by disturbances in the scheduling environment is badly needed. The poor assistance for project decision makers provided by project management tools is partly due to non adequate models of the problem domain. Contrarily to an automated shop floor environment in development projects (e.g. software or product development) human agents are mainly accomplishing creative and diverse tasks which can not be easily compared to highly defined manual or

automated tasks performed during one step of a production process.

As competition on markets intensifies and time to market becomes increasingly important, the need for effective support for the planning and scheduling of unstructured tasks, as they are usually performed during development projects, grows. Project managers therefore need adequate tooling to make project plans, handle change-requests and deliver realistic scenarios for decision support in negotiations among different team leaders. Further on team members can be distributed over different locations. In addition knowledge about duration and effort of activities is distributed among project participants and incorporates different degrees of uncertainty.

In our opinion these aims are only achievable, if we use techniques already successfully applied in (closely) related areas. The workshop „Agent Based Systems in The Business Context“ matches therefore fully with our interest. On the one hand we feel that it is worth thinking about applying techniques from standard workflow management systems to those continuously changing project organisations; and on the other hand we are looking for ways to further integrate concepts from agent-based research with classic planning and scheduling strategies.