Component-Expert Architecture for Supporting Grid Workflow Construction Based on Knowledge

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Abstract: In this paper we present the current status of Automatic Application Builder used in K-Wf Grid environment as a tool for conversion of abstract workflows into the ready to execution ones. Workflows in K-Wf Grid are constructed in the multi-layer approach, what means that there are several steps in the way of their construction. AAB is one of the tools used in that way and it is based on the Component-Expert Architecture approach where an expert system is used for selection of the most suitable components or services requested by the application. Since, K-Wf Grid is knowledge-oriented environment then AAB extensively derive benefits from that during its decisions.

1. Introduction

Grid systems become more complicated as well as more powerful then ever. The number of services ready to be used for grid applications is growing every day but simultaneously users' requirements are getting more complicated too. From the computational point of view workflows are natural step following contemporary production grid systems basing mostly on independent running batch jobs, run on big amount of distributed CPUs. However, the popular idea of world-wide interdisciplinary communities sharing services makes the whole approach even more complicated. Going into more details, independent-developed services should be easy shared and reusable by all authorized users within grid virtual organizations. Moreover systems should be auto-adaptable and new execution of applications should be able to automatically exploits the new services which better fit to the computed problem. But because of large complexity of grid systems and constant evolution of grid systems there must be some support service providing whole knowledge about the