Pragmatic aspects in computer-supported negotiations of virtual enterprise contracts

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ABSTRACT

In todays modern world, business organizations must concentrate on their core business ideas in order to remain competitive and at the same time outsource other functionality. The specialized enterprises need to network with other enterprises for the provision of competitive services. The result is a networked business organization, a virtual enterprise. The virtual enterprises are based on contracts that define the purpose of the virtual enterprise, the participants in it, and the rules of the virtual enterprise. The contract is expressed in an electronic form, as an eContract. Connecting organizations through the Internet requires new infrastructure support which consists of partner discovery and management of virtual enterprise life-cycle. A breeding environment is used to gather partners together and help through the early phases of the life-cycle, such as contract negotiation.

Pragmatic aspects in the virtual enterprise negotiations consist of issues like modeling the goals of participating enterprises, different social aspects in the negotiation process itself, and the execution of the negotiation process. The enterprises control their actions in a business domain using policies. The policies dictate which negotiations are taken part of and which issues are important in them. Social aspects include modeling and taking into account the business environment that an enterprise has. The enterprise might want to favor certain strategic partners that it already has. In the negotiation process itself it is important to solve dependencies between different issues or variables. Another important issue in the negotiation process is using a contract language to model the contract.

As a result of this work, we expect to create tools for enterprises to use during negotiations, and automating negotiation in routine cases, when entering business networks. The tools are used to model business policies and to help factor in the environment. A rule based system will provide the policy information for the automated negotiation system which will help in calculation of expected utility and risk in a given negotiation situation. Providing such assistance will help a decision maker in an enterprise to determine if joining a virtual enterprise is worth wile or not and what negotiation issues are important to consider.

The formal basis for the negotiation system will be in distributed constraint satisfaction problems (DCSP). Virtual enterprise negotiations are an extension to the basic DCSP model with multiple constraints for each agent (participant in a VE) and multiple variables. In the case of VE negotiations each agent has its own constraints for the variables and not all variables are shared by all parties. Social aspects have an effect on the behaviour of a negotiation strategy of an enterprise. When a business is participating in multiple simultaneous virtual enterprises, it cannot be only self-interested, but it needs to take into account the goals and needs of its valued partners.