



Negoisst: a negotiation support system for electronic business-to-business negotiations in e-commerce

Mareike Schoop^{*}, Aida Jertila, Thomas List

Informatik V (Information Systems), RWTH Aachen, Ahornstr. 55, Aachen 52056 Germany

Received 19 February 2003; received in revised form 26 February 2003; accepted 26 February 2003

Abstract

Electronic negotiations can range from simple offer exchanges to complex communicative acts concerning packages of products and services. In contrast to dominant approaches aiming at automating the negotiation process (e.g. auction models), we introduce the notion of negotiation support for human negotiators conducting complex electronic negotiations. The negotiation support system *Negoisst* for business-to-business electronic commerce is presented that is based on theories of communication and information systems and that combines communication and document management. *Negoisst* has been successfully validated for e-negotiations in the construction industry.

© 2003 Elsevier B.V. All rights reserved.

Keywords: Negotiation support; Business-to-business electronic commerce; Communication modelling; Co-operative work; Ontologies

1. Introduction

An e-commerce transaction in the business-to-business sector follows a general three-phase pattern [33,38]. Firstly, the business partners need to find each other. Thus, the first phase is that of *searching* for products and suppliers (on the buyer's side) or for customers (on the supplier's side). Having derived a list of potential partners, the searcher will start talking to one or many companies about contract details. Thus, the second phase is that of *negotiating* a business

^{*} Corresponding author. Tel.: +49-241-8021511; fax: +49-241-8022321.
E-mail address: schoop@cs.rwth-aachen.de (M. Schoop).

agreement. If the negotiations are successful, the outcome will be a business contract that each company needs to process. Thus, the final phase is that of *fulfilling* the contractual obligations including payment and logistics.

Information technology (IT) can support each of these phases. For example, keyword search or semantic search engines based on ontologies and semantic web technologies can assist companies in finding suitable business partners [2,16]. Structured exchange of electronic messages or electronic forms (representing offers) or electronic auction models can be the medium for electronic negotiations between the business partners [4,22]. Electronic payment systems, logistics and scheduling systems, or monitoring systems can be used for processing the contract and fulfilling the contractual obligations [29,45].

This paper is about the second phase of a business transaction and deals with electronic negotiation support. In the following section, the three dominant models of electronic negotiations will be discussed. Our integrated approach to negotiation support consists of three integration steps. Section 3 will present the integration steps including the conceptual and formal foundation. These concepts are the foundation for the negotiation support system *Negoisst* which forms the core of the paper and will be introduced in Section 4. A typical usage scenario will be presented in Section 5 to illustrate the system elements of *Negoisst*. The results of the extensive evaluation experiments will be discussed in Section 6 before concluding remarks and an outlook to future work will be presented (Section 7).

2. Electronic negotiations

During business negotiations, the business partners try to arrive at an agreement that is acceptable to both partners. In the simplest case, the interaction consists of one bid by the supplier and a computation of the best bid from a set of competing bids. A more complex process can involve the exchange of various offers, requests, counter-offers etc. and might take place over a considerable number of days or weeks. Electronic negotiations (e-negotiations) can thus be conducted using different negotiation models.

The three main models of electronic negotiations are *electronic auctions*, *negotiation agents*, and *negotiation support*.

Quantitative approaches aim at automating the negotiation process to enable an efficient negotiation process in terms of finding an economic optimum. Both electronic auctions and negotiation agents are quantitative approaches. *Electronic auctions* work according to the general auction principles, i.e. bids concerning defined criteria such as price are placed on a good to be purchased or sold before a predefined end when the best bid is computed according to a transparent algorithm. There are different variations of electronic auctions [3]. Both single-attribute auctions and multi-attribute auctions have been proposed for and applied in different application areas such as the tourist industry, the financial market, or for trading perishable goods [4,15,48,49]. *Negotiation agents* take over parts of or the whole negotiation process for the human principal [7,8,17,25,26]. There are a number of problems of automated approaches [20,35]. The main problem is that they concern only standardised products that can be described in detail to ensure comparability of offers and requests which means that current automated approaches cannot support the purchase of more complex goods. Therefore, auctions and agents alone do not

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات