

INCAS: a legal expert system for contract terms in electronic commerce[☆]

Yao-Hua Tan^{*}, Walter Thoen

Erasmus University Research Institute for Decision and Information Systems (EURIDIS) and Erasmus Center for Electronic Commerce (ECEC), Erasmus University Rotterdam, P.O. Box 1738, 3000 DR Rotterdam, Netherlands

Abstract

Electronic commerce is doing business via electronic networks. Paper-based trade documents such as, for example, request for quotation, purchase order or invoice are replaced by electronic messages, in particular Electronic Data Interchange (EDI) messages. These electronic messages are not only transmitted much faster than paper-based documents, but they can also be processed automatically by computers. An example of this automated processing of electronic messages is electronic contracting and negotiation where the actual trade contract is on-line negotiated and concluded via an electronic network. We present the legal expert system INCAS that can provide on-line explanations about the use of Incoterms in trade contracts. Incoterms stipulate which party (buyer or seller) is responsible for arranging and paying transport of the goods, and arranging the documents necessary for this transport (e.g. export and import clearance documents, certification of origin, quality certificates etc.). INCAS is implemented in the programming language Prolog. We also explain how the defeasible reasoning capability of Prolog is essential for modelling the reasoning about the Incoterms. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Electronic commerce; Regulations; Trade procedures; Incoterms; Legal reasoning; Deontic logic; Defeasible logic

1. Introduction

Electronic commerce is doing business via electronic networks. Paper-based trade documents such as, for example, request for quotation, purchase order or invoice are replaced by electronic messages, in particular Electronic Data Interchange (EDI) messages. These electronic messages are not only trans-

mitted much faster than paper-based documents, but they can also be processed automatically by computers. For the efficiency gain of electronic versus paper-based messages this automated processing is perhaps more important than the electronic transmission of the message (see Ref. [13]). Currently, the automated processing of electronic messages is restricted to automated entering of data in the company's database and simple processing such as, for example, automatic invoicing or calculation and payment of VAT. But one can imagine more advanced types of processing. For example, basic legal inferences could be made from an electronic message. For example, if one becomes the new owner of a good by receiving an ownership document for this

[☆] This research was partially funded by the "Nationaal Programma Informatietechnologie en Recht (ITER)" (National Program for Information Technology and Law) of The Netherlands Organisation for Scientific Research (NWO) under project number 01437325.

^{*} Corresponding author.

E-mail address: ytan@fac.fbk.eur.nl (Y.-H. Tan).

good, it might be convenient that the processing system automatically makes the inference that as new owner you are liable in case of damage incurred by the goods, and that from this observation it subsequently infers automatically that insurance has to be arranged for these goods. A more sophisticated type of automated processing of electronic messages is electronic contracting and negotiation where the actual trade contract is on-line negotiated and concluded via an electronic network. In principle this negotiation process could be done by autonomous software agents that are instructed by a human user how to negotiate for him. However, in most cases the electronic negotiation process will probably be semi-automated where the human user is also involved and takes the final decision. Also, here automated processing can be very helpful, for example where the computer analyses the content of the contract and provides what-if analyses to explain to the user what his liabilities and risks are if he agrees to a proposed contract. For example, in most cases trade contracts contain terms for the type of delivery of the traded goods. These terms, the so-called *Incoterms*, stipulate which party (buyer or seller) is responsible for arranging and paying transport of the goods and arranging the documents necessary for this transport (e.g. export and import clearance documents, certification of origin, quality certificates, etc.). There are 13 different terms. Usually, these terms are included in the contract only by reference to an abbreviated code without any further explanation. For example, the term EXW (“Ex Works”) says that the seller has the obligation to make the goods available at his premises to the buyer. The buyer is obliged to arrange and pay transport of the goods from the seller’s premises to his own premises. Furthermore, under EXW the buyer bears all the risks of damage of the goods during transport. A very popular term is FOB (“Free On Board”), which says that the seller is responsible for transport of the goods until they have passed ship’s rail at the named port of shipment. The seller is also responsible for clearing the goods for export, and bears all the risks of damage of the goods during transport until the goods have passed the ship’s rail. After the ship’s rail all obligations for transport of the goods and arranging the necessary documents are for the buyer. Differences between Incoterms can be very subtle.

For example, the only difference between FOB and FAS (“Free Alongside Ship”) is that under FOB the seller is responsible for everything until the goods have passed the ship’s rail, whereas under FAS he is responsible for everything until just before the ship’s rail. Hence, under FOB the seller has to arrange export clearance of the goods, but not under FAS. For further details on the Incoterms the reader is referred to Appendix A. When negotiating the delivery terms of a contract on-line it would be very helpful when the negotiator could consult an on-line automated expert system that gives some explanation about the meaning of the specific delivery term proposed in the contract. In this article we present the system INCAS that provides this service.

Incoterms were developed by the International Chamber of Commerce (ICC). In 1936, when Incoterms were first published, the initial objective of the ICC was to make available to traders a means to avoid the worst causes of friction resulting from the diversity of interpretation of legal terms in international commerce. The ICC is not the only organisation to offer standard legal terms for international commerce. National rules like those included in the US Uniform Commercial Code are also used in international commerce.

Some forms of electronic commerce, e.g. open EDI, support the use of standard business procedures. Open EDI enables short term or ad hoc commercial transactions between organisations. A business procedure is the set of mutually agreed upon rules that governs the activities of all parties involved in a set of related business transactions. Business procedures in electronic commerce are envisaged to be publicly available, remotely accessible and directly executable [2, pp. 84–87][19, pp. 27–30]. When designing trade procedures it is essential to take into account certain legal considerations that interrelate with the type of the transactions in question. Since Incoterms have been so widely accepted and in some cases constitute part of commercial practice, they should be taken into consideration when designing these procedures [14].

The emergence of electronic commerce applications has sparked yet more ICC initiatives [10,12][18, pp. 249–259][19, pp. 249–264][24]. ETERMS, an initiative of the ICC, aims at putting legal problems of electronic commerce into a broader perspective

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