

Chapter 3.9

From Operational Dashboards to E-Business: Multiagent Formulation of Electronic Contracts

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ABSTRACT

The unprecedented advancements witnessed in the field of information and communication technology over the last couple of years are significantly affecting the nature and magnitude of B2B interactions as well as their operational effectiveness and efficiency. However, interaction and contracting among global enterprises continued to be challenged by the difference of laws, authentication requirements, and endorsement constrains. With the rapidly increasing proliferation of mobile devices, wireless communication systems, and advanced computer networking protocols, the deployment of electronic contracting platforms and applications has provided many opportunities to enterprises, dictated new axioms for doing business, and gave rise to new paradigms. Together with the increasing institutional transformations, technological advancements motivated businesses

to engage in an interactive process of contract formulation and negotiation.

INTRODUCTION

The use of Internet technologies is enhancing distributed business processes through improved information generation, retrieval, and storage, cost reduction, disintermediation, and the transformation of organizational boundaries. The resulting global repositories of generic, volatile, and heterogeneous data originating from different systems are significantly affecting B2B interaction (Chrysovalantou & Petrakis, 2004; Daniel, 2003; Klusch, 2001) and are resulting in alternative e-business models, strategies, and enabling frameworks.

The use of such technologies in e-business allows firms to integrate core and support business processes and enhance information sharing

efficiency. It addresses connections among enterprises (B2B) as well as between enterprises and customers (B2C) by speeding information processing and responsiveness and shifting the emphasis from optimizing the efficiency of individual enterprises to optimizing the efficiency of a network of enterprises in pursuit of improving competitive advantage (Xirogiannis & Glykas, 2007).

According to Lumpkin and Gregory (2004), there are seven e-business models that account for the vast majority of business conducted online. Commission-based models are used by businesses (third-party intermediaries) to provide services for a fee such as brokerage services. Advertising-based models are used by companies that provide content and/or services to visitors and sell advertising to businesses that want to reach those visitors. Markup-based (merchant) models are used by businesses that add value in marketing and sales (rather than production) by acquiring products, marking up the price, and reselling them at a profit for both wholesalers and retailers. Production-based (manufacturing) models are used by companies that add value in the production process by converting raw materials into value-added products. In this respect, the Internet adds value to this model by lowering marketing costs and enabling direct contact with end users to facilitate customization and problem-solving. Referral-based models are used by firms that steer customers to another company for a fee. Subscription-based models are used by businesses that charge a flat fee for providing either a service or proprietary content such as Internet service providers. Fee-for-service based models are used by companies that provide ongoing services similar to a utility company. Unlike the commission-based model, the fee-for-service model involves a pay-as-you-go system because activities are metered, with payment being made only for the amount of service used such as the application service providers.

However, the capacity of these e-business

models to facilitate an organizational migration towards dynamic e-business and ERP applications will be improved with the existence of enabling platforms mainly electronic payment and contracting systems. Because dynamic e-business allows organizations to integrate systems across intranets, extranets, and the Internet in a dynamic fashion and permit them to modify existing systems quickly and easily when the business process requires (Andrew, Sagnika & Shao, 2006) enabling systems align e-business technologies with organizational processes and competitiveness.

Within the context of globalization and organizational transformations, firms are starting to use information technology as instruments to support their trading relations, manage their contractual matrix of rights-and-obligations and reduce risk. Electronic contracting that provides the means for a high level of automation of the contract establishment, contract management, and enactment processes presents significantly more opportunities to the trading parties (Angelov & Grefen, 2004; Sallé, 2002). However, the growing multiplicity of data modeling and organization tools, content representation algorithms, ontologies, vocabularies, and query languages that account for heterogeneity and global information overload is promising firms to gain much faster and cheaper processing than traditional contracts.

While different approaches are being used to conceptualize the context of electronic contracts, the basic aim of this article is to address the context of electronic contracting by using multiagent concepts to develop a framework that describes the process of formulation of these contracts using Sudatel as a case study.

ELECTRONIC CONTRACTING

Electronic contracting involves the exchange of messages between (the concerned parties), structured according to a prearranged format so

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