

Supporting optimization of business-to-business e-commerce relationships

William Kuechler Jr.^{a,*}, Vijay K. Vaishnavi^b, David Kuechler^b

^a Department of Accounting and Computer Information Systems, University of Nevada at Reno, Reno, NV 89557, USA

^b Department of Computer Information Systems, Georgia State University, Atlanta, GA, USA

Abstract

Much current e-commerce subscribes to very simple interaction models. Many of the potentialities of e-commerce are identical to those that have been under study for some time in the field of automated workflow management systems. In this paper, we describe a new workflow interoperability model, the *monitored-nested model (MNM)*, and show that it can support optimized, extended e-commerce transactions that are not supported by current models.

Like other interoperability models, MNM is dependent on process activities, and thus is brittle under real-world conditions of process evolution. This is overcome by augmenting the model with goal-based meta-data and the use of a coordination inferencing algorithm. © 2001 Elsevier Science B.V. All rights reserved.

Keywords: Workflow; E-commerce; E-business; Inter-organizational systems

1. Introduction

Recent studies by technology consulting groups predict more than one fourth of all business to business (B2B) purchases will be transacted on the Internet by 2004—a dollar volume 10 times that of Internet consumer purchases. The explosion in Internet-based B2B is driven by economics—the Internet offers the potential for reduced prices for goods and reduced transaction costs, but this is not simply derived from the Internet as a communications infrastructure. The capability for (relatively) inexpensive electronic B2B communications has existed for some time in highly evolved form, as witnessed by

EDI. Newer, Internet based e-marketplaces as they are currently conceived overcome some of the problems encountered with traditional EDI, and constitute essentially a *better-cheaper-EDI*.

As business-to-business e-commerce moves closer to its full potential, it will progress beyond a *better-cheaper-EDI* to the support of business relationships that match or exceed the dimensionality of non-electronic relationships. However, support and optimization of such relationships require more sophisticated models of interaction than those currently in use.

1.1. Beyond EDI to online trading communities

Traditional EDI is a one-to-one technology: buyer and seller must locate each other and then perform substantial work to link their systems. The new

* Corresponding author.

E-mail addresses: kuechler@unr.edu (W. Kuechler), vvaishna@gsu.edu (V.K. Vaishnavi), dkuechler@gsu.edu (D. Kuechler).

Internet-based online trading communities, such as Ariba [1], i2 [7], and CommerceOne [3], in addition to enabling B2B transactions so facily that they have been termed e-commerce vending machines [12], are true markets. Within each community, an ontology—common business processes and electronic documents including product definitions and pricing—is defined in a standard language (XML) and published for universal access. Product offerings and prices from multiple suppliers can be electronically scanned and processed at very low error rates leading to predictions of billions of dollars per year in procurement cost savings.

1.2. Improving online trading communities

The efficiency of many operations in e-commerce transactions is less than optimal because they operate from *very simple relationship models*. Essentially, current online trading communities automate the most basic *order–receive–pay* scenario:

- The purchaser electronically scans the marketplace and chooses a product
- The price, quantity and a delivery date are agreed upon using standardized XML-described order documents.
- An electronic invoice is sent from supplier to purchaser at (or about) the time of delivery
- The purchaser schedules automated payment on confirmation of delivery

Notice that there is *no provision in this scenario for multi-party transactions and no provision for exceptions*. As e-commerce matures, we believe online trading partner relationships will rapidly push

toward the sophistication and complexity found in non-automated business relationships, which are desirable *precisely for* their ability to *integrate the efforts of multiple legally independent entities while accommodating exceptions and changes*.

In the basic order–receive–pay scenario, transactions between companies are considered to be atomic, that is, no detail on the execution of the transaction is available. The lack of detail makes it impossible for companies to interact with the richness that current manual relationships possess. For example, delays in production are hidden until the delivery date is exceeded. Or, changes in specification that appear minor to one party but are significant to another remain unknown until the delivered product is closely inspected, possibly on the assembly line floor!

1.3. Workflow management system concepts and e-commerce

Workflow management systems (WfMS) are software systems that facilitate, augment and sometimes control the flow of work within and (for our purposes especially) between organizations. As inter-organizational WfMS become increasingly common and as the interaction between WfMS becomes increasingly web-based, much automated workflow enactment becomes by definition electronic commerce [22].

The notion that *automated business processes, executed over the Internet between multiple organizations, are the future of electronic commerce* is at the core of the visions of authors from many fields. It also figures prominently in the literature of many commercial Internet marketplace-hosting organizations (see Fig. 1). According to Sheth et al. [17],

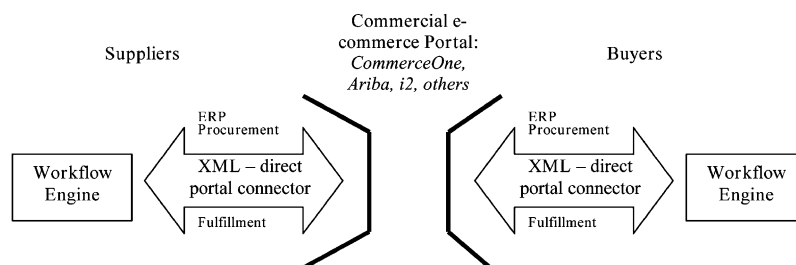


Fig. 1. Commercial e-commerce service providers view of interorganizational workflow. A composite view taken directly from the marketing literature of commercial e-marketplace hosting organizations [1,3,7].

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