Data Management Issues in Electronic Commerce

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1. INTRODUCTION

Electronic commerce (e-commerce), in its most general definition, refers to selling and buying using electronic means over a computer network. In this context, it is not an entirely new activity; its genesis is traced back to the Electronic Data Interchange (EDI) activity in the 1960's. EDI [1] refers to the set of activities that are related to the electronic facilitation of the transactions between vendors (merchants) and buyers (customers) (purchase orders, waybills, manifests and schedules). The current context of electronic commerce, sometimes referred to as "Internet commerce" [2] due to its dependence on the Internet as the underlying platform, is significantly wider.

There are many different forms of electronic commerce activity. Some forms of these, such as the procurement control environments, are very close to basic EDI in its various manifestations [3]. Other activities take the form of single "electronic storefronts" [4] or "virtual shopping malls". There are significant commonalties in all of these forms, which suggest the establishment of a common infrastructure:

- Electronic commerce is a distributed application. The vendor catalogs as well as other related information are distributed across the network.
- Vendor catalogs, which currently include text and images, will have full multimedia capabilities with the inclusion of advertisement videos and audio "talk-overs". These are sometimes referred to as *smart catalogs* [5]. Catalog servers may increasingly be DBMS-based.
- Some of the alternatives involve multiples catalog from different vendors, and can potentially be heterogeneous. Interoperability of catalog servers, which are called *virtual catalogs* [5], is important.
- The provision of electronic catalogs makes comparative shopping possible. It would be desirable to specify items that one looks for and be informed when they become available. This requires intelligent querying, which may be based on the emerging agent technologies, and non-pull-based data delivery.
- Security of financial transactions and their trustworthiness is a common issue to all e-commerce applications.
- The set of actions that are carried out during the commerce transaction can be modeled and managed as a workflow.

2. PANEL SCOPE

This specifications given in Section 1 point to a number of components that have traditionally been studied within the database community. However, it is not clear whether, from the perspective of data management, electronic commerce establishes a new research domain or whether it is just another distributed application that poses interesting distributed data management problems. A debate on this question is important and timely because of the significant recent e-commerce activity in both industry and academia. Fairly soon this activity is likely to generate its own momentum and papers will appear solving "problems." It makes sense to debate the research framework at this early stage. The panel addresses this question. Towards this end, the panelists have been asked to respond to, in addition to the above stated fundamental one, the following questions:

1. What are the 3 most important research problems in electronic commerce data management that you would be willing to assign to Ph.D. students (one problem/student)?
2. What are 3 other problems that you would like to get resolved, even if they don't have the same depth.

3. PARTICIPANTS

The panelists represent a cross-section of academia and industry, and a balance between North American and European activities. In alphabetical order, the panelists are the following: Karl Aberer, GMD-IPSI (Germany), Serge Abiteboul, INRIA Rocquencourt (France), Adam Boswroth, Microsoft (USA), Darko Hrelic, IBM (USA), Arthur Keller, Stanford University (USA), and moderator M. Tamer Özsu, University of Alberta (Canada)

4. REFERENCES

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