Introduction to the HICSS'97 MiniTrack on Formal Aspects of Digital Commerce

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Global information infrastructures are rapidly becoming a reality. Such worldwide networks help companies to operate not only on a local or regional level, but also on a global level. Especially for small and medium enterprises (SMEs) this would offer tremendous opportunities to do global business electronically.

Digital commerce includes all aspects of the conduct of commerce (i.e., doing business in the broadest sense) which are essentially mediated by computer and communications systems. This includes all phases of commercial activity, including marketing, opportunity finding, sales, negotiation, contract formation, monitoring of contracts, customer support, etc.

The purpose of this mini-track on formal aspects of digital commerce is to focus research and foster discussion on digital commerce, especially formal, technological, theoretical aspects.

We understand the term electronic commerce to include all types of commerce through electronic media, including electronic mail, multi-media and the like. Indeed, given the current convergence of computer networks with other forms of communication media, the notion of electronic commerce might also include various forms of images, audio and video (e.g., the digital counterparts to fax, telephone, and television).

By digital commerce, we mean to focus on the subset of electronic commerce where the communication is recognized symbolically ("understood") by the computer -- enabling applications where the computer is able to make inferences about the content and structure of the communication, and thereby facilitate and mediate commercial trade. More specifically, this implies that the symbols of the communication are formalized in some way, having an explicit syntax and semantics. EDI is an elementary example of this. However, in the course of this mini-track, we would like to envision much more dramatic and exotic examples. A short list of potential topics is the following:

- open edi
- digital auctions and markets
- digital shopping, with preference representations
- digital marketing, with customized offerings
- digital contracting
- digital bureaucracies (client-friendly)
- digital money
- digital negotiable instruments
- ontologies for digital commerce
- formal logic foundations for digital commerce
- linguistic aspects of digital commerce
- computer mediated trade negotiations
- intelligent agents in commerce
- automated agencies and trusted third parties

This year, eight papers were accepted for this mini-track on electronic commerce, from Europe, North America, and Australia, forming two sessions of four papers each. The first session has an application-driven emphasis, focusing on inventory (Johnston and Lee), contracting agents (Robinson), formalized trade terms (Fockens, Mitrakas and Tan), and bureaucratic regulations (Lee). The papers are as follows:

- "The Role of Electronic Commerce Technologies in Just-in-Time Replenishment" by Robert Johnston and Ruby Po Wan Lee
- "Electronic Brokering for Automated Contracting of Software Applets", by William Robinson
- "Facilitating International Electronic Commerce by Formalizing Incoterms" by Arjan Fockens, Andreas Mitrakas and Yao-Hua Tan
- "Navigating Among Bureaucratic Agencies: A Messenger Model", by Ronald Lee

The second session is more theoretical, focusing on illocutionary aspects (Covington), deontics (Ryu, and Tan and Thoen) and semantics (Kimbrough):

- "Speech Acts in Electronic Communication, with Special Reference to KQML and ANSI X12" by Michael Covington
- "Relativized Deontic Modalities: An Aspect of Formal Business Communication", by Young Ryu
- "Modeling the Dynamics of Transferable Obligations in Business Procedures", by Yao-Hua Tan and Walter Thoen
- "Electronic Commerce, Subatomic Semantics, and the Stabbing of Caesar", by Steven Kimbrough

Together, these two sessions provide an interesting and suggestive perspective of potential "intelligent" systems applications for electronic commerce.