Chapter LII
Agent Based Product Negotiation Models in Mobile Commerce

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ABSTRACT

This chapter brings out various issues in M-Commerce and describes various agent-based product negotiation models in mobile commerce environment. The negotiation models discussed are based on auctions, trade off, argumentation, contract Net, bilateral and game theory. Mobile commerce (M-Commerce) is an emerging manifestation of Internet electronic commerce that bridges the domains of Internet, mobile computing and wireless telecommunications in order to provide an array of sophisticated services to mobile users. The usages of M-Commerce services in commercial activities are expected to dominate the world. Commercial activities through wireless are gradually changing the daily practice and future possibilities. This opens many new possibilities, opportunities and challenges in mobile commerce. Using software agent technology by providing intelligence, autonomous, customized, adaptable and flexible services, can enhance M-Commerce activities. The agent technology supports Component Based Software Engineering (CBSE) thereby allowing software developers to create dynamic software architecture for m-commerce applications.

MOBILE COMMERCE

M-commerce (mobile commerce) is an evolving area of e-commerce, where users can interact with the service providers through a mobile and wireless network, using mobile devices (PDA's, mobile phones, laptops, etc.) for information retrieval and transaction processing. E-commerce (electronic

commerce) refers to the field of marketing, buying, selling, distributing and servicing different products and/or services over the Internet. It aims at using electronic business applications for the purpose of commercial transactions. M-commerce is always reliable and easy to access as compared to e-commerce since wireless handheld devices are easy to carry anywhere because of miniature size and low weight.

The wide deployment of wireless networks, mobile technologies and the significant increase in the number of mobile device users have created a very strong demand for emerging mobile commerce applications and services. It opens new avenues for businesses. Many researchers assume wireless technology supporting m-commerce will change the global economic environment to a large extent.

Characteristics of M-Commerce

The dynamic development of mobile commerce and the increasing integration in the Internet have opened up an entirely new research and development field (George, 2002). Several frameworks have emerged to define the wide range of mobile computing applications, characteristics and services. One such framework presents classes of mobile applications ranging from retail, auction, financial services, advertising, and inventory management to mobile office, distance education, and data center. Another framework groups mobile services into goods, services, and content for consumer e-commerce, and activities among trading partners (Keng, 2001).

The m-commerce is characterized by mobility, ubiquity and localization (Shaffer, 2000, Ishara, 2003). Ubiquity is achieved since the users are mobile (carry cell phones or other mobile devices from place to place) and has the ability to receive information and perform transactions at any time and any location. The technologies like Global Positioning System (GPS) or Time of Arrival (TOA) enable m-commerce users to access information and services specific to their location. Mobile devices in an m-commerce environment are typically operated by and configured for a single user and thus services can be personalized.

M-Commerce Applications

Following are the kinds of applications provided in m-commerce: B2C (Business to consumer)/ C2C (Consumer to Consumer) m-transactions services such as stock trading, mobile banking and location based advertising. B2B (Business to Business) m-transactions such as access to B2B e-commerce marketplaces, access to bilateral online trading systems, and banking services. Personal life management of everyday activities, such as e-mail, chatting, instant messaging, entertainment, multipurpose remote controls, and information services such as weather forecasts and news updates. Mobile office support using e-mail, calendar, groupware and information services. Mobile operations for sales force support, field service management, fleet management, and remote monitoring.

M-Commerce customers may be more demanding and less enduring than e-commerce users (Irvine, 2001). Mobile users require value-added services that can be feasible or non-feasible according to existing technologies and m-commerce constraints such as, performance, reliability, security, ease of use, bandwidth, etc.

Following are the advantages of m-commerce. Customers are very easily accessible since most mobile device users walk around with their gadgets; hence sellers can communicate with the buyers immediately. Commerce activities' using mobile devices increases customer satisfaction, cost savings; offers new business opportunities. Commerce services can be personalized and the user can have control over the transactions. M-commerce enhances customer and seller relationships since communication is ubiquitous.