

# Chapter 81

## Service Discovery Techniques in Mobile E-Commerce

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### ABSTRACT

*With the rising number of web services in mobile E-commerce, service discovery has become an important feature in the future of E-commerce for mobile users. A service in the network can be any software or hardware entity that a user might be interested to utilize. Service discovery is the action of finding appropriate service provider for a requested service. When the location of the demanded service (typically the address of the service provider catering services such as shopping, auctions, edutainment, etc.) is retrieved, the user may further access the service and use it. Service discovery is an emerging field in the area of ubiquitous and pervasive computing owing to its mobile devices with limited resources. There are various service discovery techniques and protocols (proposed or/and already implemented) particularly tailored to specific set of objectives. With service discovery, devices may automatically discover network services including their properties, and services may advertise their existence in a dynamic way. This chapter discusses various mobile E-commerce issues with major focus on service discovery issue. It elaborates on syntax and semantic based various service discovery mechanisms and concludes with future directions to service discovery mechanism.*

### MOBILE E-COMMERCE

**Mobile E-commerce** is trading of goods, services or information irrespective of location, using hand held devices for communication between all neces-

sary parties to complete the necessary transactions in a wireless environment mostly through the Web. Today's technology has advanced to a state, that hand held devices not only register the names and numbers but also track the user location and are a substitute for wallets and credit cards, in future they are bound to replace and go further, that they may

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very well turn into intelligent assistants capable of anticipating many of the wishes and needs, such as automatically arranging for taxis to come and pick after business meetings or providing with summaries of relevant news and messages left by colleagues. But, for all these changes to happen, key issues of interoperability, usability, security, and privacy, one need to be continuously updated.

**Mobile e-commerce** facilitates mobile application services like banking, payment, auctioning, ticketing etc.

The attributes of **mobile e-Commerce** as discussed in (Varshney, 2003) are ubiquity, convenience, connectivity, personalization, localization, automation and adaptation. Ubiquity: easier information access in real-time anywhere anytime since user devices are portable and mobile. Convenience: devices that store data and have Internet connections. Instant connectivity: easy and quick connection to Internet and other mobile devices and databases. Personalization: preparation of information for individual consumers as per their needs. Localization of products and services: knowing where the user is located at any given time and match service to them and provide quality services. Automation: Proactive services to be provided. Adaptation and intelligence: **Context** aware operations to be handled in the changing market environment.

Quality characteristics as defined (Nandini & Sunilkumar, 2009) that model attributes of **mobile E-commerce** system are as follows.

- Reliability: refers to a set of attributes that bear on the capability of the software to maintain its performance level under stated conditions for stated period of time.
- Functionality: refers to a set of functions and specified properties that satisfy stated or implied needs. It also refers to the existence of these functions and services that support end users interaction via the mobile system.
- Efficiency: capability of the system to provide appropriate performance relative to

the amount of resources used under stated conditions.

- Scalability: the performance of the system should be the same even with the increase in network traffic.
- Flexibility: The system must be able to accommodate the dynamism in the E-market.

Following is the list of the **mobile e-commerce** applications (B2B, B2C) (Manvi, 2003) Mobile financial applications, Mobile advertising, Mobile inventory management / Product locating and shopping, Proactive service management, Wireless re-engineering, Mobile auction, Mobile entertainment services and games, Mobile office and Mobile distance education.

## ISSUES IN MOBILE E-COMMERCE

The major issues in **mobile E-Commerce** can be broadly classified with respect to mobile devices, Wireless middleware and communications infrastructure (Hawick & James, 2004; Peter et al., 2002). Some of the issues with respect to mobile devices (Samaras, 2002) are as follows:

- Ultimate (physical) form(s) of mobile client devices
- Personalization of information presented to the user on mobile device
- Design of user interfaces for mobile devices that convey better required information, get the feedback from the user, facilitate customization and personalization.
- Design of applications for use on different mobile devices
- Acceptance of protocols or systems for mobile device communication.
- Mobile device upgradeability.
- Reduce processing power with usage of better processors that have clock rates suitable for computing applications on mobile devices.

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