# Chapter 6.10
# Universal Approach to Mobile Payments

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## INTRODUCTION

An old saying coming from the telecom world states that nothing can be really considered as a service unless you are able to charge for it. The last several years have seen a boom in interest in mobile commerce, mainly due to the high penetration rates of mobile phones. Furthermore, there is evident the need for a real-time, open, and trusted payment service that can be used any time, anywhere, and that can handle any transaction in any currency. Such a service would promote not only content creating activities but would empower the electronic and mobile commerce area and kick-start new innovative services. The time is right for such a mobile payment service, because the infrastructure, the business models, and other conditions that favor its existence are realistic and in place (Vilmos & Karnouskos, 2004). Up to now, we have witnessed the rise and fall of several efforts in the area, ranging from realizing simple intangible good purchases, up to interaction with real points of sale (POS) and person-to-person (P2P) transactions. Day by day, new trials are initiated, targeting different sections in the MP area; however, there is still no solution that is open and widely accepted. In this article, we first introduce the reader to the mobile payment area, present the guiding forces behind it, and subsequently examine such an open, secure mobile payment approach that has been successfully designed, implemented, and tested. Furthermore we identify some midterm future trends that we consider will be of high importance to the further development of the area.

## BACKGROUND

Payments are the locomotive behind the business domain and heavily depend on trust and security. A global study by Little (2004) estimated that

m-payment transaction revenues would increase from $3.2 billion in 2003, to $11.7 billion in 2005, and to $37.1 billion in 2008 world wide. Mobile payments are seen as the natural evolution of existing e-payment schemes that will complement them (Heng, 2004). The increasingly popular ownership of mobile personal, programmable communication devices worldwide promises an extended use of them in the purchase of goods and services in the years to come (Mobey Forum, 2003). Security in payment transactions and user convenience are the two main motivation reasons for using mobile devices for payments.

The context of mobile payments can be defined as follows: Any payment where a mobile device is used in order to initiate, activate and/or confirm this payment can be considered as a mobile payment. A mobile payment solution can be used in multiple applications and scenarios. The simplest scenario involves only the user, the device and a single payment processor, such as a mobile operator, bank, broker, or an insurance company. The user identifies himself or herself to the mobile device through secure identification mechanisms, including physical possession and password or even via biometric methods; the device then authorizes the transaction to the payment processor for the money transfer. More complex transactions involve at least one additional party, the merchant. In this case, the merchant may be affiliated with a different payment processor; therefore the two payment processors must be able to interoperate.

Based on the amount to be paid we can have different categorization of mobile payments. Generally we have:

- Micropayments: These are the lowest values, typically under $2. Micropayments are expected to boost mobile commerce as well as pay-per-view/click charging schemas.
- Minipayments: These are payments between $2 and $20. This targets the purchase of everyday's small things.
- Macropayments: These payments are typically over $20.

Currently, there are several efforts at the international level to accelerate and solidly support emerging mobile payment solutions. Most of the heavyweight companies that deal with hardware or software products for the mobile market and companies such as the mobile network operators (MNO) and financial service providers try via international fora and consortia to define the guidelines to which such a system should comply. The aim is to produce an approach that is widely acceptable and that would reach a global audience and not address just a specific customer base or isolated scenario. Towards this end, several consortia have aroused such as Simpay (www.simpay.com—ceased operation in summer 2005), Starmap Mobile Alliance, Mobey Forum (www.mobeyforum.org), Mobile Payment Forum (www.mobilepaymentforum.org), Mobile Payment Association (mpa.ami.cz), Paycircle (www.paycircle.org), Mobile electronic Transactions (www.mobiletransaction.org), and so forth. Apart from these "pure" mobile payment consortia, whose work directly affects the mobile payments, there are also other actors that indirectly are evolved with the mobile payment area and come from the financial/banking sector. Karnouskos (2004) provides an overview of these consortia.

For mobile payments to succeed, several requirements need to be addressed. Simplicity and usability largely determines whether users will use a service. This includes not only a user-friendly interface but also the whole range of goods and services one can purchase, the geographical availability of the service, and the level of risk the user is taking while using it. A promising mobile payment service should be offered widely and in a transparent fashion covering the biggest range of mobile payment transactions such as person to person (P2P), business to consumer (B2C), and business to business (B2B), domestic, regional and global coverage, low- and high-value payments. It