Mobile Payment is Taking Shape

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A continuing trend in the payments market has been the declining share of all payments made by cash, but APACS projects that cash use in the UK will still account for 62% of all payments in 2009 [Apacs03]. Moreover, still 98% of all micro-payments, i.e. low value payments from € 5-10, are cash payments [EU2003]. Mobile payments will take their share of cashless payments for various reasons, in particular in the area of low value payments. According to a study of Frost and Sullivan, mobile payment will achieve a volume of USD 25 billion in Europe by 2006 [Frost02].

An extended three-domain model as depicted in figure 1 is best suited to fulfill the business and user needs, as well as technical requirements. Most importantly, building on the three-domain model allows all players to leverage the existing business relationships and infrastructure found in the areas of banking, card issuing, merchant acquiring, and telco customer services.

In this extended model, enhanced security is achieved through payer authentication in the GSM network when the consumer uses his or her mobile phone to confirm a payment. GSM networks provide a strong, chip-based user authentication and almost ubiquitous access [GSM03] to a large customer base. A high penetration of that large customer base is possible as no special devices or additional software is needed. In the issuer domain, the wallet servers manage consumer data (IDs, account numbers, spending limits, address, preferences, etc.), enhance usability, authenticate consumers and enable quasi-anonymous payments.

In order to achieve wide spread acceptance and economies of scale, a new payment scheme must meet merchant expectations, which are different for low value versus high value purchases and on-line versus POS trades. Therefore, it is necessary to address micro- and macro-payment services within one scheme. The merchant acquirer routes authorization requests to the respective interchange network using a micro-payment authorization protocol (e.g. Encorus IPAP, Interoperable Payment Authorization Protocol) designed for micro-payment and e.g. ISO8583 derivatives [ISO87] or equivalent protocols for macro-payment.

In the interchange domain, the payment processor guarantees interoperability through a mobile payment protocol (e.g. Encorus IMPP, Interoperable Mobile Payment Protocol) between wallet and merchant servers. Furthermore, additional services such as foreign currency exchange, transaction clearing, and settlement can be offered centrally.

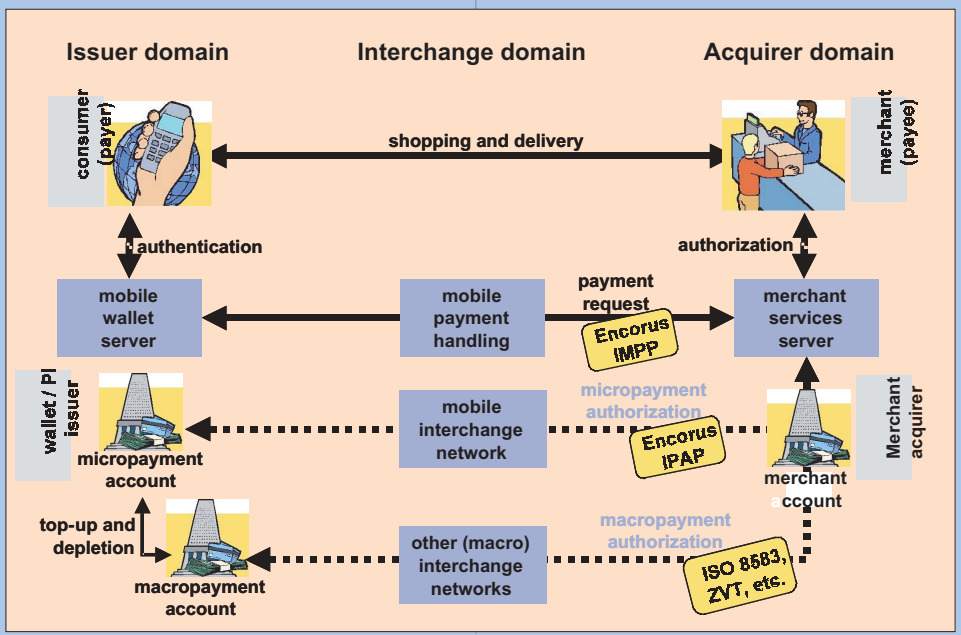

Figure 1: Mobile micro- and macro-payment.

The role-based model described above does not restrict a stakeholder to take only one single role and therefore supports a wide range of business setups.

We have seen that the technical issues can be resolved by a three-domain payment architecture using a mobile payment protocol. The presented approach combines the strong user authentication of GSM networks, the cost efficiency of micro-payment, and the flexibility and worldwide acceptance of existing macro-payment schemes.

The challenges that are currently discussed lie on the business side concerning the distribution of roles, customer ownership, merchant relationships, and business rules such as fee distribution and liabilities. For mobile network operators it is a matter of inevitable growth to offer mobile wallet services and a micro-payment instrument. Financial

institutions can easily leverage their existing merchant infrastructure and macro-payment instruments. As soon as volumes get significantly high, banks are expected to expand into the market of micro-payment issuing as well. Traditional credit card processors are in the best position to offer interchange payment services due to their experience in transaction processing, clearing and settlement.

Recommendations in the EU Blueprint [EU03] and standardization attempts of the GSM Association [GSMA03] and most importantly Simpay [Sim03] point towards the introduction of interoperable mobile payment schemes that include micro- as well as macro-payments. An adapted three-domain architecture combined with a mobile payment protocol is best suited to leverage the existing business relationships and payment infrastructure, to fulfill the specific needs of micro-payments, and to support attractive consumer services. Next-generation mobile payment is taking its shape.

References

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