Chapter 9
Delivering SMS-Based Mobile Services Using SOA

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ABSTRACT

Over the past several years, mobile communications and architectures that support them have come into the mainstream for enabling businesses to communicate better with their customers. This chapter presents a mobile services design based on service oriented architecture (SOA) principles that was successfully used to implement mobile banking. The engineering methods used to design and deliver SMS-based mobile services using SOA are reviewed, and some of the practical challenges that were encountered with the implementation are explored. The capacity for this solution design to support native, thick-client mobile applications is also examined.

INTRODUCTION

The rapid increase in technology channels that can be used to reach customers has provided businesses with many new opportunities, but at the same time has created challenges related to expanding existing channel platforms and increasing their complexity. Accordingly, software architectures have recently had to adapt more readily to changing business needs. Over the past several years, mobile communications – and architectures that support them – have come into the mainstream for enabling businesses to communicate better with their customers. This chapter presents a mobile services design based on service oriented architecture (SOA) principles that was successfully used to implement mobile banking.

A critical consideration when providing mobile services to customers is selecting the channels that will be supported. Some of the options include the short message service (SMS), mobile Web, and native mobile phone applications. As might be expected, each technology has its strengths and weaknesses. SMS is ubiquitous, standardized, and supports push-based services; however, it is quite limited in the length and presentation format of

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information. Mobile Web browsing can provide richer content and interaction facilities, but must try to accommodate a wide range of handset devices and also requires connectivity to a 2.5 or 3G network. Native applications that run on mobile phones have the potential to provide rich user interfaces and off-line access, but they are tightly coupled with the mobile phone hardware and operating system environments, and the handset makers or telecommunications carriers may restrict access to applications.

Another important consideration is the solution architecture approach used to implement the selected mobile channels. Core systems, such as ERP or banking platforms, may provide their own proprietary gateways that allow customers to access services over multiple channels, including mobile devices. Channel platforms that can provide multiple back-end applications with support for specific channels are also available commercially. In general, off-the-shelf solutions require less effort to implement, but are less flexible and are very dependent on the solution provider. Alternatively, channel implementations can be built on top of open service-oriented environments in conjunction with other business applications. This approach is more flexible, but may require significantly more resources than packaged solutions.

While the decision regarding which channels to support will usually be driven by marketing strategy and the business environment, the solution architecture often will depend on the number of channels to be supported and the complexity of the systems environment to which they will connect. On one hand, using off-the-shelf solutions may be suitable for companies that have a relatively simple systems environment, require less flexibility, or do not have the resources to support customized solutions. On the other hand, companies that have more complicated needs, have taken an open systems approach, and have more significant development capabilities may be better served by homegrown solutions.

The solution presented here delivered banking services to retail customers using the SMS mobile channel, and was built upon an open SOA platform. SMS was selected as the initial mobile channel to be implemented due to its broad appeal and accessibility. The channel implementation was built on top of a SOA development platform because it was already in place, and had been successfully used to implement Web-based channels. This previous implementation provided the bank with existing business services that could be reused for the mobile channel, and development expertise with the SOA channel platform.

This chapter reviews the engineering methods used to design and deliver SMS-based mobile services using SOA and examines the challenges that were encountered with the implementation. It presents a practical and proven design that can be reused as the basis for similar types of mobile service implementations in the future. Furthermore, it considers how the design can be extended to support additional mobile channels such as native, thick-client mobile applications.

The structure of the chapter is as follows. The next section summarizes prior research related to SOA-based mobile channel implementations. The third section describes the solution's business context and highlights key technical considerations. The fourth section provides an overview of the design of the SMS channel services. The fifth section reviews challenges and concerns that were encountered during the implementation, and their relation to the design. The sixth section briefly covers how the solution design could support other mobile channels. Finally, the conclusion highlights key takeaways and suggests areas for further research. Note that due to confidentiality considerations, specifics related to the bank's business strategy and systems environment have been excluded from the discussion.