

Service Delivery Platforms in Mobile Convergence

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INTRODUCTION

The demand for enriched multimedia content and entertainment services in mobile networks is being largely driven by the emergence of mobile broadband. A key problem for institutions attempting to capitalize on these new channels for service delivery is a capability to deploy many multimedia services rapidly and cost effectively. Traditional approaches in deploying new services have largely focused on discrete systems for each new service, often termed point solutions or silos. Recent emerging standards coupled with implementation constraints have led to the development of a more strategic approach. Such an approach involves the creation of a service delivery platform (SDP), capable of delivering a broad range of content and services from a host of multimedia applications. Several initiatives are attempting to lay the foundations for the architecture and framework for SDP solutions that support the emerging multimedia and entertainment services for mobile devices. Recent initiatives include platforms based upon the IP multimedia system (IMS), Parlay X, and IT standards-based designs.

A central characteristic of the SDP approach to mobile service delivery is the capability to supply numerous services to mobile users with observed reductions in elapsed effort to bring these services online; this also bestows cost reduction and speed to market. The benefits of a service delivery business model are applicable to the mobile operator, mobile customers, and external third-party developers. Customers are offered more services quickly, while third-party developers are able to focus on core capabilities of their intended service, collectively offering benefits in terms of time to market and reduced cost. The business benefits illustrate why this service delivery approach is recently gaining increased attention by mobile operators globally.

In this article we outline the fundamental principles of a service delivery platform and the business model to be addressed in mobile convergence. The emerging standards and reference architectures are presented, and their shortcomings are discussed. We outline the key requirements that a service delivery platform is expected to address from an operator perspective and summarize the key technol-

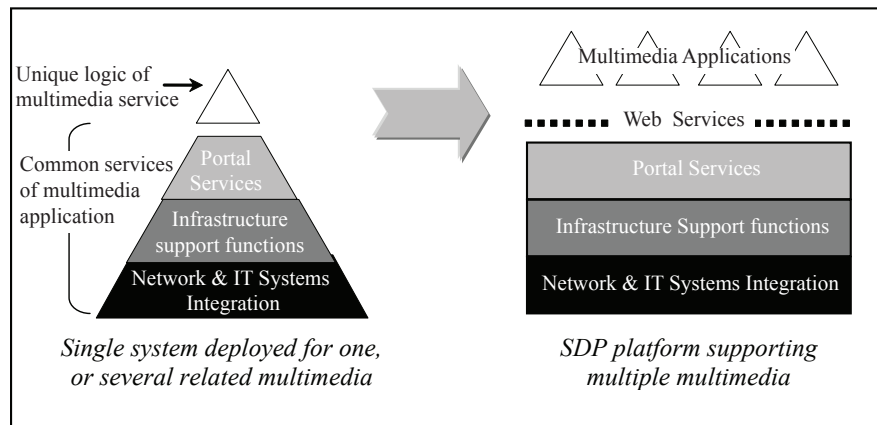
ogy design points. We also outline several future trends in how this emerging mobile technology is being deployed in various application scenarios. This involves straightforward mobile news services, through gaming, and complex interactive multimedia scenarios for the mobile device. These new services make further convergent demands upon three technology domains: the mobile network, IT systems, and the content/media sources.

BACKGROUND

Traditional approaches to deploying new multimedia services involve development of a discrete system to deliver one or a related set of services. This approach involves the development of several common functions required by the multimedia service. A recent trend by many operators globally is deployment of one common service delivery platform that supports multiple applications. The SDP is intended to contain all the common functions and services that a wide range of applications may require in order to deliver its service or function. Figure 1 illustrates the change in design philosophy (Pavlovski & Staes-Polet, 2005), where traditional deployment involves development of common delivery functions for each (or a related set of) multimedia service(s). The SDP approach transforms this by combining the common functions used by multimedia services into one platform that may be exploited by a range of multimedia applications.

Generally, the term convergence, when used in the context of mobile networks, is used to denote the rationalization of internetworking technologies and protocols. An additional form of convergence is related to the convergence of several operational and business domains—more specifically, the convergence of information technology systems, the networks, and media/content applications. Such integration imposes additional complexity, and the service delivery platform is ideally suited to address this type of convergence. This notion of convergence and applicability of the service delivery platform is recently gaining widespread attention, with several aspects of these emerging service delivery

Figure 1. Transformation to service delivery platform



platforms actively studied within research and industry (Hanrahan, 2006; Deckers, 2006; Kimbler, Stromberg, & Dyst Appium, 2006).

Mobile devices such as cellular phones, portable digital assistants, and tablets are becoming increasingly adorned with new services and media format. The fundamental business problem is to successfully integrate the network, information technology, and content applications in a unified manner that ameliorates costs for mobile operators, while supporting rapid deployment of new services in a cost-competitive manner.

SERVICE DELIVERY PLATFORMS

The method used to construct service delivery platforms is based on either a network-centric or an information technology centric (IT-centric) view of the problem domain. Platforms based on the Parlay X or IMS standards and frameworks may be categorized as network-centric; there are several notable examples (Pailer, Stadler, & Miladinovic, 2003; Akkawi, Schaller, Wellnitz, & Wolf, 2004; Magedanz, Witaszek, & Knuttel, 2005; Hanrahan, 2006). In contrast, several broader attempts have been discussed in the literature that apply an IT-centric design (Pavlovski & Staes-Polet, 2005; Hwang, Park, & Jung, 2004; Pavlovski, 2002b). These platform design styles largely reflect the heritage of the originating body. Moreover, IMS and Parlay X have emerged from network standards bodies, while the other works reflect practical IT experiences in building service delivery platforms for mobile operators.

Regardless of the approach taken, the underlying business model remains the same. In this section we first outline this business case, and then present the two strategies in addressing the service delivery model, outlining the benefits and shortcomings of each design viewpoint.

The Service Delivery Business Model

The principle advantage of an SDP for mobile operators is the ability to reduce the cost for deploying new services, while increasing the potential for generating revenue (Deckers, 2006). It is suggested that around one-third of the effort required to introduce a new service is attributed to developing the unique business logic of the service (Pavlovski & Staes-Polet, 2005). This means significant capability is common to a range of services and may be placed into a consolidated platform (see Figure 1). By combining this common functionality within the service delivery platform, the cost for building the platform is amortized since this may now be leveraged by several applications.

Since the SDP is deployed by a mobile operator, external third parties are then able to develop applications that deliver mobile content. The third-party developer may now focus on building the unique business logic associated with the intended multimedia service or content, and is able to reduce the costs by leveraging a set of common capabilities within the service delivery platform.

The service delivery business model for mobile applications has its origins with the *iMode* service (Pavlovski, 2002a), where the platform enables third-party application providers to deliver their content or service, via an *iMode* service platform, to mobile users. While the technologies have changed considerably over time, the service delivery business model has largely remained constant. The elementary model contains three entities: the mobile network operator, mobile customers, and external third-party developers. The mobile operator (alternatively this may be an MVNO) hosts the SDP and provides a set of common services to the external third-party developer from which to build multimedia applications. The mobile operator owns and maintains the relationship with mobile customers and is able to bring this consumer market to the external third-party developer. A key benefit

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