Chapter 4

Openness—Evolution of Mobile Communications: A Cloud View

Sebastian Thalanany
U.S. Cellular, USA

ABSTRACT

In this chapter, the author reveals the role of openness, specifically standardization, in the mobile cloud – a cornerstone for an open, inter-operable realization. The discussion of mobile communication, the 4G mobile network, mobile cloud, and the openness in the mobile cloud are covered in this chapter.

INTRODUCTION

Technology enhancement continues to enable widespread connectivity. Mobility is an integral component of consuming and producing content, promoted through a wide array of connectivity choices. A choice of experiences enables proliferation, with a diversity of mobile devices and multimedia services. Service experience, in a connected world, is elemental, and one that has universal appeal. In this web of connectivity, both mobile devices - user facing - and machine type devices - non-user facing - are the two broad categories of information transactions.

Openness is an essential ingredient that fosters an unencumbered flow of information across entities: user-facing and non user-facing. Standardization is an integral component of openness. Indispensable – for the realization, preservation, and expansion of the Internet of Things – a paradigm, where the tethered and untethered entities interact and transact to provide an attractive service experience, in the ubiquitous Internet. Distribution – ubiquitous creation and consumption of information and intelligence.

DOI: 10.4018/978-1-60960-613-8.ch004
Services of all sorts are rendered through the availability of resources of connectivity and the execution of applications of interest of a consumer or producer of information. Typically, the execution may either be localized to a device or separated through connectivity between a requesting device and a remote server. For allowing the execution and the experience of a service on a device, with limited resources – mobile device – independent of location, would be through connectivity to an operating system, in a network server. The relatively unconstrained resource availability and management capabilities, resident in a fixed network has the potential of rendering a consistent user-experience across disparate geo-locations of user connectivity. Experience consistency is likely to be more uniform across different devices since the execution environment for service rendering remains unchanged. Mobile cloud - an integral component - a part of the cloud paradigm (Hartig, 2009).

A consideration in the preservation of a consistent user-experience, in the cloud, is the notion of grid computing, where the performance of the network servers is sustained through the participation of additional servers on a resource demand driven basis. For example, if a popular service is launched by users, additional servers may be required to meet the computing demands for a sustained experience.

The compelling aspect of the cloud paradigm is the ability of any connectivity enabled device - mobile or fixed - to provide an attractive user experience, independent of location. Users are empowered to access their favorite services, independent of device type - mobile or fixed - enabling virtually unlimited usage scenarios. A few examples include homes, libraries, cafes, airports, trains, planes, automobiles, etc. Cloud mobility - remote processing and storage - paves the path towards widespread user-centric information accessibility.

This chapter reveals the role of openness, specifically standardization, in the mobile cloud – a cornerstone for an open, inter-operable realization.

**MOBILE COMMUNICATIONS**

**Evolution: A Shifting Paradigm: Circuit to Packet**

The origins of mobile communications are rooted in the provision of voice services. The conversational, real-time, and the small information payload nature of voice media demanded and allowed the use of circuit-switched paradigm. Inherited from the fixed telephony world, it has worked well for decades, with widespread adoption. On the other hand, the explosive, ubiquitous, and continuing growth of the Internet has ushered in an era of multimedia services - a packet-switched paradigm – one that enables a distribution of transport paths and mixed-media (voice, data, and video). This shift allowed flexibility and adaptability in the formulation of architectural models towards larger capacities, mixture of real-time and non-real-time media, lower costs, and higher rates of information transactions.

**Internet and Mobile Telephony**

The Internet has been established as a global fabric, for the creation, delivery and consumption of multimedia services - a fabric that utilizes the distributed nature of the packet-switched paradigm. The pervasiveness of this model has influenced the evolution of mobile communications, through the adoption of the same vision. The IP (Internet Protocol) has been extended to the edges of the mobile network, beginning with 3G (Third Generation) systems – a vision that is being extended beyond 3G. Pivotal - extension enabling mobile broadband.

Mobile telephony, with voice-centric services, inherited a tightly controlled business and opera-
Related Content

**Blended Learning Revisited: How it Brought Engagement and Interaction into and Beyond the Classroom**
[www.igi-global.com/chapter/blended-learning-revisited/52542?camid=4v1](www.igi-global.com/chapter/blended-learning-revisited/52542?camid=4v1)

**Assessing Online Courses in Health Education: Training a 21st Century Health Workforce**
[www.igi-global.com/chapter/assessing-online-courses-in-health-education/163568?camid=4v1a](www.igi-global.com/chapter/assessing-online-courses-in-health-education/163568?camid=4v1a)

**Hybridizing Online Learning with External Interactivity**
[www.igi-global.com/chapter/hybridizing-online-learning-external-interactivity/40367?camid=4v1a](www.igi-global.com/chapter/hybridizing-online-learning-external-interactivity/40367?camid=4v1a)

**Social Media-Enhanced Phones for Productive Learning of South African Postgraduate Students**
[www.igi-global.com/article/social-media-enhanced-phones-productive/65086?camid=4v1a](www.igi-global.com/article/social-media-enhanced-phones-productive/65086?camid=4v1a)