# Chapter 97

# Adopting Open Source Software in Smartphone Manufacturers' Open Innovation Strategy

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## ABSTRACT

*We are witnessing the rapid adoption of smart mobile devices globally, especially smartphones. Unlike cell phones, most computer functions can be performed by smartphones. The established players of cell phones have lost their grip on the market, and new players have quickly captured the market's interest. Open source (OSS) can be viewed as a kind of open innovation where a company outsource software needed to the community, or alternatively, a company can contribute its software to the community after turning it to open source software. This chapter discusses the open innovation and adoption of OSS in smartphone industry. The development OSS and its use in smartphones will be presented. The competition between proprietary and OSS operating systems for smartphones will be discussed as platforms or operation systems shape the smartphone industry.*

## INTRODUCTION

Recent advancement of information and communication technology on mobile communication has changed the way people communicate, interact, and carry out their daily activities. The new era of wireless multimedia communication with smartphones has replaced old cell phones. Major players in the cell phone industry such as Nokia has lost their market shares and new players such as Apple (iPhones) and Samsung (Android phones) dominate the market.

Smartphones are very handy. Although they cannot replace all desktop or laptop's functionalities, they can be carried around conveniently as multipurpose devices. There are a myriad of applications (apps) that can run on smartphones and thousands of new apps are created everyday. The main advantage of smartphones is its ability to connect to the Internet from anywhere, enabling their users to have a complete Internet experience, stay in touch with their families, friends and colleagues, checking emails, making reservations, checking the traffic condition and so forth. Travelling with a smartphone is very helpful. With a digital map app, finding a place is much simpler in comparison to conventional methods. The map can also enlighten us to the location of ATM machines, restaurants, gas stations and others. While traveling, a person with a smartphone can easily navigate his/her way through unfamiliar routes and keep in touch with family and friends through social networking such as sharing photos with Instagram or video chatting with Skype.

The heart of a cell phone or smartphone is an operating system (OS), a system that controls and manages all resources. As companies that produce cell phones rely on conventional innovation, where they rely on vertically integrated research to foster new technologies (innovations) for competitive advantage, most OSs for cell phones are proprietaries. Consequently an attempt to introduce open source OS in cell phones such as mobile Linux was not very successful since companies producing cell phones need to adopt Open Innovation for their core technology. According to Chesbrough, Vanhaverbeke & West (2006) "Open Innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively." This means companies can adopt external technology such as OSS in advancing their technologies and markets.

Open Source Software (OSS) is free software that provides its users with freedom to use, replicate, modify, and distribute for any purpose. Unlike proprietary software where the executable code is commercially distributed under a copyright law, the source code of OSS is available and a user has freedom to modify the source code, creating another version or an extended version of the software.

OSS proponents often state that it offers significant benefits when compared to typical commercial or proprietaries software. Commercial software typically favour visible features (marketing advantage) over harder-to measure qualities such as stability, security and similar less glamorous attributes. In short, although OSS visible features may not be as good as the commercial one, OSS quality is normally high. OSS developers are evidently motivated to focus more on quality rather than visible features. For many developers, peer review and acclaim are important. They definitely prefer to build software admired by their peers where clean design, reliability and maintainability, with adherence to standards is highly regarded. "The Open Source community attracts very bright, very motivated developers, who although frequently unpaid, are often very disciplined" (Peeling & Satchell, 2001).

Nowadays most smartphone vendors have adopted OSS in their Open Innovation strategy to expand their business. Open source OS for smartphones such as Android have been widely accepted and in fact has been a dominant OS for smartphones since a few years ago. Interestingly, some smartphones vendors that used proprietary OS, developed and intend to use open source OS such as Maemoo and MeeGo (Nokia), and webOS (Palm). Tizen, an alternative open source OS, has been developed by Samsung, Intel and Linux Foundation. Some old OSS players have released open source OS for smartphones such Firefox OS from Mozilla and Ubuntu Touch from Canonical.

This chapter discusses the Open Innovation and adoption of OSS in smartphone industry. The development of OSS and its use in smartphones will be presented. The competition between proprietary and OSS operating system for smartphones will be discussed as platforms or operation system that shape

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