Chapter 25
Android for Enterprise Automated Systems

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ABSTRACT

In this chapter, various aspects pertaining to the open operating system Android OS such as its history, architecture, features, and utility for business purposes will be introduced, following which the role of Android in enterprise management will be explained. The chapter will be concluded by a detailed report of the BYOD approach that uses Android for industrial control and automation. Since mobile devices have become progressively more powerful and accessible, mobile computing has greatly changed our daily lives. As one of the most popular mobile operating systems, Android provides the tools and API for Android developers to develop Android applications. Android is an open source operating system for mobile devices. Today its primary use is lodged in the mobile phone industry. During the recent past years, many projects have been created, with the objective to elevate Android to other platforms, such as sub-notebooks or embedded systems.

INTRODUCTION

The world of smartphones has developed rapidly in the recent years following the evolution of new technologies. Older mobile phone models are merely used to make phone calls and send SMS (short message) but nowadays, with the new features that can be embedded in mobile phones, they can be used to perform sophisticated tasks and answer professional needs. The needs of different users can now be filled with the mobile phone. Growth specifications and other advanced characteristics are now offered by mobile companies to attract users to the products they manufacture.

The request for access to corporate information and applications through mobile devices such as devices running Android, Apple's iPhone and iPad, Windows 7 Mobile or Blackberry, manufactured by the Canadian company RIM (Research in Motion), are surging as consumers' preferences and behaviour become a top priority for the company's workforce.

The strikingly rapid rate of adoption of these technologies around the world has left many business managers wondering how to effectively position their firms to benefit from the dominant trends. The drive for mobility is part of the business technology agenda for most companies today.

Android is one of these technologies, which are spreading all over the world. It is an open source mobile operating system (system source is published) developed by Google company. Google produces the software and it can run in almost every mobile device of many manufacturers. In fact, there exist popular Android tablets as well. Android is a Linux-based software system; and similarly to Linux, it is a free and open source software. This means that other companies can utilize the Android operating system developed by Google and implement it in their mobile devices.

INTRODUCTION TO ANDROID

1. Android Overview

1.1. What Is Android?

Android is an open source mobile phone and embedded device operating system developed by the Open Handset Alliance (Open Handset Alliance, 2009). This system is based on a Linux kernel, adapted to the architecture of mobile phones, with a virtual machine for running Java-based applications. The main advantage is that it is easily compatible because it is based on a popular language: Java.

1.2. Why Android?

Android is already the top smartphone operating system in the world. Google Financial Results Second Quarter 2011 reported that Android activated devices reach 500,000 per day (Google Financial Results Second Quarter, 2011). According to Douglas, Android is active in over 135 million devices in the word by 2011 (Douglas Perry, 2011); Justin Grove claimed that in 2012, about one third of the population owned a smartphone in the United States (US) (Justin Grove, 2013). Several many other researchers have claimed that Android is the most popular OS (Eric Abent, 2014; Amit H. Choksi, Jaimin J. Sarvan & Ronak R. Vashi, 2013), and is progressively taking over the appliances market as well. Android is essentially a software stack designed specifically for mobile devices that includes an operating system, middleware and key applications. Supported by Google in 2005, today the Android OS is one of the most popular operating systems for mobile phones and mobile operators around the world. Today, the Android operating system is a world bestseller platform smartphones.

Android provides many API's (Application Programming Interfaces) for developing your own applications. The real beauty of Android lies in the fact that these APIs are available by using the Java, which is one of the most used programming languages. Furthermore, Android features a Plug-in for the Integrated Development Environment (IDE) Eclipse, making it easy to develop and debug your applica-

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