ABSTRACT

Mobile technologies and more precisely apps have disrupted technology scenario. Bring your own application (BYOA) is a new trend that has emerged after the “bring your own device” (BYOD) vogue. However, and in spite of its intrinsic benefits, the trend presents also several caveats and Enterprise app stores are seen as a way to tackle these risks. In this paper, authors present ModEAS, a system designed to serve as a modular and scalable architecture when developing a middle scale or personal Enterprise app store.

Keywords: Application Store, Bring Your Own Application (BYOA), Bring Your Own Device (BYOD), Mobile Applications, Mobility, Personal Devices

1. INTRODUCTION

IT has been considered fundamental for the development of productivity and knowledge-intensive products and services (Soto-Acosta, Martinez-Conesa, & Colomo-Palacios, 2010). Radical changes have marked the mobile industry since the first commercial 3G mobile phone was launched by NTT DoCoMo in 2001 and the emergence and rapid growth of smartphones have instituted radical structural changes (Hsieh & Hsieh, 2013). Thus, mobile service business has moved into a new epoch due to the explosive growth in mobile application (“app”) services available at “App Stores” (Kim, Park, Kim, & Lee, 2014). In spite of its apparent novelty, these are not the first attempt to provide mobile content; for instance, i-mode launched in 1999 can be considered a valid precedent (Cuadrado & Dueñas, 2012). Nowadays the two leading approaches in the area are Apple AppStore for iOS and Google Play (formerly known as Android Market). The Apple App Store is a digital application distribution platform or open market for iOS developed and maintained by Apple while the later was a similar proposition developed to distribute Android apps. However, the landscape seems to evolve. And one of these innovations is the trend towards Enterprise or Corporate App Stores. According to Gartner (Finley, Redman, P., Prentice, B., & Buchanan, S., 2013), by 2017, 25 Percent of Enterprises Will Have an Enterprise App Store and for 2013 Enterprise App stores is one of the trends to watch for CIOs (Costello & Prohaska, 2013) as well as

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the whole IT industry (Gartner, 2012). Also, software vendors are getting more and more interested in cloud oriented mobile applications (Colomo-Palacios, Fernandes, Sabbagh, & de Amescua Seco, 2012). In any case, in the next future Gartner believes that many organizations will deliver mobile applications to workers through private application stores (Finley et al., 2013; Gartner, 2012). Enterprise app stores promise at least a partial solution but only if IT security, application, procurement and sourcing professionals can work together to successfully apply the app store concept to their enterprises (Finley et al., 2013). Bring your own application (BYOA) is a new trend that has emerged after the bring your own device (BYOD) phenomenon that can be viewed as a symptom of the so-called ‘consumerisation’ of IT” (Gedda, 2012). If employees perceive that they can do their jobs more effectively using an application downloaded to their own tablet or smartphone, then they will simply expense it, giving rise to the BYOA trend (Walters, 2013).

In spite of its multiple concerns (Miller, Voas, & Hurlburt, 2012; Morrow, 2012; Thomson, 2012), BYOD and BYOA are a fact that almost none can ignore. In this new scenario, Enterprise App stores can increase the value delivered by the application portfolio and reduce the associated risks, license fees and administration expenses (Finley et al., 2013). However, Enterprise App Stores also present some challenges, for instance, according to Gartner, (Finley et al., 2013), a dynamic selection of apps is mandatory to keep users interested in visiting the store.

Given that scenario, authors present MoDeAS, a modular and scalable architecture to consider when developing a middle scale or personal Enterprise app store, as well as some use cases and issues to have into account depending on its usage context (or range), such as rich Internet applications (Colombo-Mendoza, Alor-Hernández, Rodríguez-González, & Colomo-Palacios, 2013) for clients and administrators. The novelty of the proposal is based on the scalability and adaptability of the application, ranging from enterprise-wide to personal app stores but also on the security of the data that can be recovered by means of software mechanisms.

2. ARCHITECTURE AND IMPLEMENTATION

Instead of creating a closed system, authors decided to analyze and identify the main different elements involved in an application store and develop a set of functionalities, following best practices such as object-oriented design, to create flexible and extensible modules with low coupling and high cohesion. This resulting set of functionalities is provided as an API (Application Program Interface) that can help to create a wide set of tools, such as a personal application classifier/organizer, a web based application store or a desktop application for remote management of that web application among others.

An application store is intended to distribute software in a free or paid manner among a narrow or wide set of users, so in a first approach, it is possible to identify two main elements in the system: applications and users. Requirements are as follows:

- **Security:** The system should be safe from hackers, preventing data leaks or license thefts. Considering that ModEAS could implement a pay system, and it could store sensitive data about the registered users, it is a very important issue.

- **Reliability:** This point has two meanings. Related to technical aspects, the system should provide a mechanism to prevent data loss or corruption. In a mid-scale Enterprise or in a personal environment, a RAID (Patterson, Gibson, & Katz, 1988) may not be available, so a software method to mitigate corruption or data loss based on existing solutions was designed. Related to the user of the application store, is very important to establish a trust in the system. In this case, ModEAS offers the possibility of establish secure communication methods.
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