Open Source

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INTRODUCTION

Open source is a philosophy and a methodology associated with free and collaborative, creation, modification and use of software applications and operating systems. The term "open source" was coined in 1998 at the "Open Source Summit" in Palo Alto, California in an effort to standardize both the idea and a word or phrase for it. Shortly thereafter, the "Open Source Initiative" (OSI) was formed and sought to promote the idea of free applications (specifically, free source code) to the public (Tiemann, 2009).

Open source is characterized by a particular creation process associated with the development of software and/or operating systems. It is protected by specific licenses which allow users and developers the ability to freely modify, upgrade, use and distribute the products as they wish (von Krogh & Spaeth, 2007). Although not relegated to a hierarchical structure, a project manager generally emerges and leads the initiative by keeping things organized and moving forward while volunteers offer their talents by designing, coding, debugging, beta testing, and utilizing the product (Crowston & Howison, 2006). Volunteers can also offer feedback and provide technical support, either in-person, via phone, or in online user forums. This process can end in the free proliferation of an open source product, which users can modify and improve according to their specific needs. Although open source products can have imperfections, the user isn't paying for those deficiencies like they sometimes do with commercial products (Schnackenberg & Vega, 2010). At times, open source products can also lead to a profitable venture if the software is sold to a company and marketed commercially. O'Neill (2012) notes that open source can be viewed as a change agent. It has altered the way software and operating systems are produced and marketed, and has even modified the way knowledge is created. In this way, open source has also redefined business and marketing models around the world (Bonaccorsi, Giannageli, & Rossi, 2006; von Krogh & Spaeth, 2007).

BACKGROUND

An excellent example of this is the way in which open source has made deep inroads into the realm of mobile technologies (Chao, 2011). While "free" applications for mobile devices – smart phones, cell phones, tablets, etc. – are available for download, they are not open source products. These "free" applications, or "apps" are merely trial or limited versions of more complete products that users are tempted to buy in order to get the most complete functionality (Schnackenberg, Vega, & Heymann, 2014). True open source mobile applications come complete to the user when downloaded, and their source code is available for altering (Syer, Nagappan, Hassan, & Adams, 2013). In fact, the operating system of the Android smart phone itself is open source (Butler, 2011). Presently, the number of open source mobile applications (apps) available to download on smart phones that assist the user in completing day-to-day activities is growing exponentially. It is likely that smart phone, cell phone, and tablet users all search for free, open source, "apps" before they download the ones that are commercially produced. Given that, it is clear that open source has indeed impacted mobile technologies and will continue to do so for the foreseeable future.

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In many senses, open source is a prevalent common practice of the hacker community (Sarma & Matheus, 2015; Soderberg & Delfanti, 2015), and a strongly held belief of technological idealists (Lakhani & Wolf, 2007). It is perhaps a type of high-tech grassroots movement. Open source products and applications are a manifestation of these practices and beliefs from which lay people can benefit. In his book, *The Cathedral and the Bazaar*, Raymond (2005) famously likens the culture and the creation process of open source to a bazaar, or an open market, where everyone has some unique goods to offer that all interplay for the benefit of the whole. Raymond contrasts this to the very hierarchical way in which ancient cathedrals were built. Despite its philosophical underpinnings and model of operations running entirely counter to conventional wisdom about how knowledge is created and how traditional business models function, the open source movement has taken a strong foothold in our technological culture (Weber, 2005).

Issues, Controversies, Problems

Several challenges with open source and open source products exist with varying degrees of frustration for developers and users (Meeker, 2008). The following is a description of some of the most prevalent issues with open source:

- **Confusing Licensure:** For the most part, OSS is free to modify for individual user needs. *Copyleft* is a term commonly associated with open source. It is a form of licensing that makes use of copyright law to ensure that a software, and its subsequent upgrades, can always be freely modified by users (van Holst, 2013). Different open source products, or different versions of open source products, can carry varying restrictions and usage policies. It is difficult to tell which software you can modify in what ways because there is no consistency in the licensing policies. At times, it could be risky to utilize certain software in a particular way, or combine other software for a specific function, or to even create an entirely different product, for fear of violating licensing restrictions. To read all of the varying agreement policies that a developer or group of developers can attach to open source software can be extremely time-consuming and frustrating;
- **Collaborative Creation Process Doesn't Necessarily Mean That the Product Will Be Better:** One of the great attractions of the open source movement is that products can be modified by a developer or group of developers (Tapscott & Williams, 2006). The idea of software creation being a community process is novel to the computer application industry. While most commercially produced software is highly propriety and the source code and creation process quite secretive, open source products are a highly collaborate event. Admittedly, the idea of making software free and open to the public is an enormous, and attractive, economic and philosophical shift. However, sometimes too many individuals on a project can make the process inefficient and the product inferior. This phenomena is commonly referred to as "Brook's Law" (Brooks, 1886) and is particularly applicable when it comes to working on source code. Computer coding is a very detail-oriented, careful skill and often if one programmer makes an error when coding, it is difficult for another programmer to find and fix it. In this way, a piece of software can become either unfriendly to use or at worst, dysfunctional. Indeed, sometimes adding more software developers to a project doesn't necessarily make the product better;
- **Open Source Products Are Complicated to Use:** Linux-based products were originally designed for people who understand the concept of what makes Linux work.

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