Open Source Tools for Varied Professions

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Abstract

Purpose: *The popularity of open source software in contemporary world with the emergence of globally distributed base of developers, contributors and users has given new identity to the present software development industry with growing use of freely available software tools along with the source code by non-profit organisations, universities and commercial establishments to suit their varied requirements. The success of such software tools is evident with the growing number of downloads and users from diverse professions. The present paper makes an attempt to explore some of the most Prominent Open Source tools used for highly specialised professional tasks in the fields of Business Management and Health.*

Design/Methodology/Approach:

Six most prominent open source tools available in both categories have been identified and discussed based on the popularity owing to number of downloads and prominent features that catch user attention for using such software.

Implication:

These tools not only provide means for managing resources in a more sophisticated manner but also provides ample opportunity for non-profit organisations and commercial establishments to attain their goals by taking advantage of prominent features and utilities of such software.

Research Limitations:

The paper only highlights prominent open source software tools available in two fields based on their specialised utilities best suited for professional requirements and operations. The scope can further be extended to reveal user satisfaction by way of analysing the experiences of working with such software in different setups.

Keywords: *Open Source Software, Business Management, Health.*

Paper Type: *Article*

Introduction

The open source software Movement has gained momentum over time and has revolutionized software development approaches throughout the world especially with the distributed developer base and frequent updates. The availability of source code to tailor and

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customize the software to suit needs and requirements of users in different setups has given new dimensions to software development approaches and as such has captured the attention of software developers, information and computer professionals throughout the world. A large number of open source applications are already in the market deriving support and adoption from world bodies like UNESCO, WHO etc besides many Open Source Organizations and forums coming together to conduct research for enhancing the features and functionalities of Open Source Software systems. Multinational corporations, nonprofit research institutes, university libraries, and individual organizations are all using open source software to gather, organize and provide access to information. Open Source software has brought powerful information management tools within reach of organizations that could have never afforded to purchase comparable commercial products (**Dunlap, 2006).**

Open Source advocates argue that OSS is primarily a development methodology grounded in the philosophy of making source code open and free to all who want it. Users and developers co-exist in a community where software grows and expands based on personal needs. These enhancements make the project more globally desirable as it fits more and more requirements. Linus Torvalds, the epitome of the open source developer says:

- Release early and often
- Delegate everything you can
- Be open (Raymond, 2001, **as cited in Grodzinsky, Miller & Wolf, 2003)**

Open source software (OSS) products have rapidly acquired a notable importance among consumers and firms all over the world. They are mostly developed and distributed through online social networks. However, their innovation and development has to face up the existence of free-riders which can benefit from the knowledge developed in the online social network and identifying the factors that moderate the opportunistic behavior in OSS development and distribution for facilitating the OSS innovations (**Casaló, Flavián & Guinalíu, 2008)**

Open source software has the seemingly useful feature that at any point, any one with appropriate technical skills can modify the code and take the project in a direction that diverges from the direction others are taking it (called 'code forking'). **Grodzinsky, Miller and Wolf (2003)** stresses that open source project leaders and developers must show a great willingness to take in new ideas, evaluate them thoughtfully, and respond constructively in order to nurture both the idea and the developer of the idea.

User participation is indeed both direct and indirect in the OSS development context. Some users actively take part in the development work by commenting on the existing solutions, which has been identified as a typical form of user participation in OSS development, others have acquired a consultative role in the development work (**Livari, 2009).**The European Commission's (2001) **(as cited in Spinello, 2003)** open source study declared that this software "permits a greater rate of innovation, with greater efficiency."

Objective

The study is undertaken to identify and describe most popular open source tools in Business Management and Health, which best suits the professional demands in two fields.

Scope

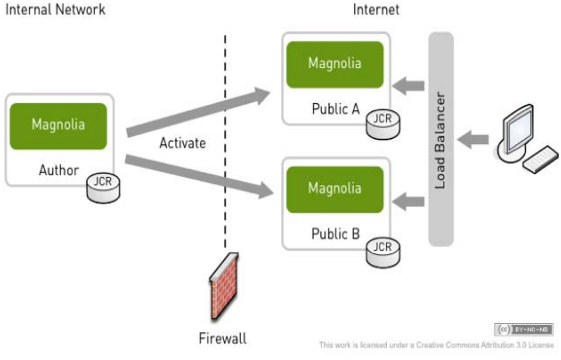
Open Source Software utilization has found its place as a success in almost all disciplines and specializations. However, the present study is confined to Open Source Software tools in the fields of Business Management and Health.

Open Sources tools in Business Management

- **Magnolia CMS** (http://www.magnolia-cms.com/)

Magnolia CMS is an open-source Web Content Management System that focuses on providing an intuitive user experience in an enterprise-scale system. Its combination of ease-of-use and a flexible, standards-based Java architecture has attracted enterprise customers throughout the globe and is widely being used both by government and private enterprises in more than 100 countries.

Magnolia CMS is distributed as two web-applications, one acting as the authoring instance and the other as the public environment. This allows for better security, having one application inside your firewall and one outside. It also enables clustering configurations.



Author instance is where all authors work. It typically resides in a secure location such as behind a corporate firewall, inaccessible from the Internet. The author instance publishes content to public instances.
Public instance receives the public content and exposes it to visitors on the Web. It resides in a public, reachable location. You can have more than one public instance, serving the same or different content.
Public instances that receive the activated content are known as subscribers. Any number of subscribers can subscribe to a single author instance. Subscribers are key to building high-availability, load-balanced environments. Magnolia CMS stores all content (web pages, images, documents, configuration, data) in a content repository.

- **SugarCRM (http://www.sugarcrm.com/crm/)**

SugarCRM is open source Customer Relationship Management software for companies of all sizes. It can easily be customized and integrated with other software to allow companies to build and maintain flexible systems. Its core functionality includes sales force automation, marketing campaigns, support cases, project management, leads, opportunities, accounts etc. Ideal for small and medium-sized companies, large enterprises and government organizations, Sugar can run in the Cloud or on-site. It comes in different edition like Sugar Ultimate, Sugar Enterprise, Sugar Corporate, Sugar Professional, & Sugar Community Edition. With over five million downloads and more than 500,000 users, SugarCRM has been recognized for its success and innovation by CRM Magazine, InfoWorld, Customer Interaction Solutions and Intelligent Enterprise.

SugarCRM comes with complete marketing and sales force automation features. It helps to share data across individuals and teams, while monitoring business performance and provides a central hub to manage and share all customer service issues to ensure that customer cases are

handled efficiently and effectively. Open-Source CRM platform lets users quickly and easily customize the system to streamline business processes to match specific requirements.

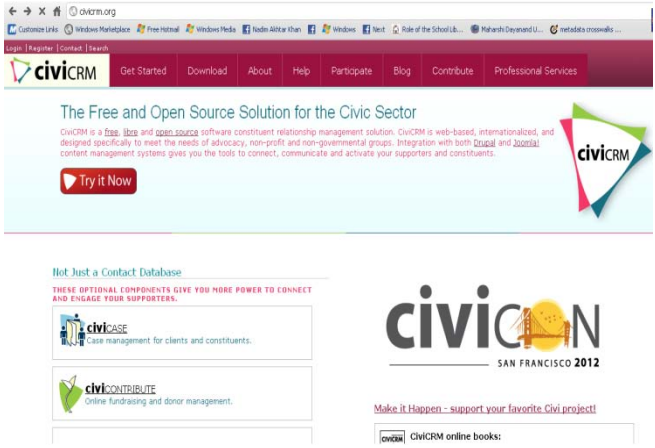
- **Tomato CMS (http://www.tomatocms.com/)**

TomatoCMS is an impressive open source Content Management System powered by Zend Framework, jQuery and 960 Grid System. It allows customization of themes rapidly and easily without need of HTML knowledge. Its flexible module system helps to choose the best and most needed components in maximizing target. Drag and drop widget system helps to construct website in minute. Like module system, tomato CMS provides suite of widget that can be flexibly customized. It is designed to operate under many server structures: from share host (micro code), dedicated server and above all, cluster server. It provides many solution to optimise your website: opcode (eAccelerator, xCache, APC), database (memcached, filecached,..), database balancing (Replicate, Shard), web balancing (LVS, Big IP) and resource servers, static servers, etc.

- **CiviCRM: A Free and Open Source eCRM Solution (http://civicrm.org/)**

CiviCRM is a free, libre and open source constituent relationship management solution. It is web-based, internationalized, and designed specifically to meet the needs of advocacy, non-profit and non-governmental groups. It allows to record and manage information and execute transactions, conversations, events or any type of correspondence with each constituent and store it all in one, easily accessible and manageable source. It is designed for the civic sector. It integrates directly into the popular open source Content Management systems Drupal and Joomla. Registration and visitor interactions are logged directly into the system, including end-user maintenance of their own addresses and custom fields. It can store data in many localized

formats and has been translated into a number of languages - including French, Spanish, German, Dutch, and Portuguese. It is affordable and cost effective.



- **Opentaps(http://opentaps.org/)**

Opentaps Open Source ERP + CRM is a fully integrated application suite that help management of business more effectively. It supports ecommerce, Customer Relationship Management, Warehouse and Inventory Management, Supply Chain Management, and Financial Management to Business Intelligence and mobility integration. It supports physical products, digital and downloadable products, variant products and configurable products. It provides Integration with major payment gateways with Browser-based email server. It provides for Customer services and case management. It manages marketing campaigns, including outbound emails and call management, tracking code reporting and management facilities. It provides Integration with Asterisk open source Voice over IP (VOIP) system and with GetResponse email marketing with module. It has also Support for Value Added Taxes (VAT) through VAT module.

- **Joomla (http://www.joomla.org/)**

Joomla is an award-winning content management system (CMS), which enables one to build Web sites and powerful online applications. Many aspects, including its ease-of-use and extensibility, have made it the most popular Web site software available. Best of all, it is an open source solution that is freely available to everyone. It is the most popular open source CMS currently available as evidenced by a vibrant and growing community of friendly users and talented developers. Its roots go back to 2000 and, with over 200,000 community users and contributors. Its powerful application framework makes it easy for developers to create sophisticated add-ons that extend its power into virtually unlimited directions. The core Joomla framework enables developers to quickly and easily build Inventory control systems, data reporting tools, application bridges, custom product catalogs, integrated e-commerce systems, Complex business directories, Reservation systems and Communication tools.

Open Sources Tools in Health

- **OpenEMR(http://www.oemr.org/)**

OpenEMR is a certified electronic health records and medical practice management application with fully integrated electronic health records, practice management, scheduling, electronic billing and interoperability. OpenEMR is licensed under the GNU, General Public License (General GPL). It is a free open source replacement for medical applications such as Medical Manager, Health Pro, and Misys. Its features support EDI billing using ANSI X12. Its main features include Multilanguage Support, free Upgrades and online support, electronic Billing (includes Medicare),document management, Integrated practice management, e-Prescribing, Insurance tracking (3 insurances),Easy to customize, Easy Installation,Voice recognition ready (MS Windows Operating Systems),

Web based (Secure access with SSL certificates) Integration with external general accounting program SQL-Ledger, Built in scheduler, multi-facility capable, prescriptions by printed script, fax or email.

- **Hospital OS Software(http://www.hospital-os.com/en/)**

Hospital OSS is a Hospital Information System for managing hospital operations. It is a Client - Server software in which the server works as a central unit that stores all of the information and the clients are the units that feed the information into the server. Hospital OS Server uses the Linux operating system and PostgreSQL as the database. Both Linux and PostgreSQL are open source programs available for download on the Internet. The Client software is developed by using Java and it can be used with Windows XP, 7, MacOS, Ubuntu and other operating systems that have the Java Virtual Machine installed. Hospital OS is being designed to support "Registration, Medical Records, Patient Screening Counter, X-Ray Laboratory, Pharmacy, Medical Statistics, IPD cashier, One Stop Service Point and system administrator.

- **OpenMRS (http://openmrs.org/)**

Open Medical Record System (OpenMRS) was created in 2004 as a open source medical record system platform for developing countries. It is a software platform and a reference application which enables design of a customized medical records system with no programming knowledge (although medical and systems analysis knowledge is required). It is a common platform upon which medical informatics efforts can be built. The system is based on a conceptual database structure which is not dependent on the actual types of medical information required to be collected or on particular data collection forms, so can be customized for different uses. Its main features include Central concept dictionary, Security, Privilege-based access, Patient repository, Multiple identifiers per patient, Data entry, Data export, Standards support, Modular architecture, Patient workflows, Cohort management, Relationships, Patient merging, Localization / internationalization, Support for complex data, Reporting tools, Person attributes.

- **Connect (http://www.connectopensource.org/)**

CONNECT is an open source software solution that supports health information exchange both locally and at the national level. CONNECT uses Nationwide Health Information Network standards and governance to make sure that health information exchanges are compatible with other exchanges being set up throughout the country. This software solution was initially developed by federal agencies to support their health-related missions, but it is now available to all organizations and can be used to help set up health information exchanges and share data using nationally-recognized interoperability standards.

➢ **PHYAURA EHR (https://www.phyaura.com/)**

PHYAURA EHR community edition is free and open source software which allows all healthcare practitioners in the United States to document clinical notes, schedule office visits, and bill for medical services, all without any vendor lock in. The PHYAURA community and open source software was built to create a collaborative platform for healthcare practitioners, developers, vendors and staff members aimed at improving the healthcare technology experiences and ultimately patient care. The PHYAURA community is a quick and easy way to read answers to commonly asked questions and post questions that have not already been addressed. Its core practice management software and electronic medical records software is written in open source code conforming to the GNU General Public License. This is the one of the most efficient methods to collaborate and provide a community based EMR.

➢ **OsiriX radiologist workstation (http://www.osirix-viewer.com/)**

Another example of open-source software success is the OsiriX radiologist workstation. This full-featured radiology viewing and interpretation system integrates 3D and web-access features that are rarely included in commercial workstations that cost tens of thousands of dollars each. OsiriX has been specifically designed for navigation and visualization of multimodality and multidimensional images: 2D Viewer, 3D Viewer, 4D Viewer (3D series with temporal dimension, for example: Cardiac-CT) and5D Viewer (3D series with temporal and functional dimensions, for example: Cardiac-PET-CT). The 3D Viewer offers all modern rendering modes: Multiplanar reconstruction (MPR), Surface Rendering, Volume Rendering and Maximum Intensity Projection (MIP). All these modes support 4D data and are able to produce image fusion between two different series (PET-CT and SPECT-CT display support). The OsiriX open-source approach encourages doctors to write their own extensions for image analysis and workflow automation. Because radiology workstations are regulated as medical devices by the FDA, a number of commercial vendors now offer FDA-registered versions of the free open-source OsiriX for a fraction of what proprietary workstations cost.

Conclusion

Open Source has been growing in popularity owing to its lower cost of development, ease in downloading and installation with no licensing issues. GOOGLE, FACEBOOK, Sun Microsystems, and RedHat are just a few very successful companies using the collaboration of open source software in their products and services **(Open Source Technology, 2012).** Open-source software offers incredible benefits in all fields of human progress including ethical advantages, access, innovation, cost,

interoperability, integration, standardization, support and safety. Business Management and Health stand no exception to this scenario. Huge amount is being spent for implementing the electronic health record system owing to EMR license prices and maintenance of commercial Content management systems and these costs tend to recur, while financial advantage of Open Source Software become obvious. Secondly, OSS being generally supported by worldwide users enable companies to reach a broader user base. With more reputed organizations like WHO, UNESCO and other companies adhering to OSS for carrying their vital business and professional operations the success of OSS is becoming more evident.

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