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Importance of Open Source Software's for Libraries : An Overview

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ABSTRACT

Open source software is software that users can run, copy, distribute, study, change, share and improve for any purpose. Open source library software does not need the initial cost of commercial software and enables libraries to have greater control over their working environment. Library professionals should be aware of the advantages of open source software and should be involved in their development. They should have basic knowledge about the selection, installation and maintenance. Open source software requires a greater degree of computing responsibility than commercial software. Library professionals do not think seriously about the advantages of open source software for automation and hence are reluctant to use it. They do not have the expertise to support open source software.

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KEYWORDS: Open Source Software, installation, automation, Library Technology, Information Technology

1. INTRODUCTION

Open source software is a cruicial for innovation, collaboration,and cost effectiveness, enabling developers to build upon existing code, sharing knowledge and adopt software to specific needs, all while fostering a community-driven approach to development.

Open Source Software's(OSS), term was coined by Eric Raymond. it is the software for which the source code is freely and publicly available, though the specific licensing agreements vary as to what one is allowed to do with that code. Open source software(OSS) has gained importance worldwide and in the last few years, open source has triggered a vast volume of research and has entered the mainstream software market, with the adoption of packages such as Linux(operating system), mySQL(relational database), PHP, Perl, Python(scripting and programming languages), Apache Web Server and the Zope content management system and many more.

Open source software is often very collaborative, with community members releasing new open source versions with improved features or fixed bugs. Open-source copywriters often release software under a license that allows users to change or use it however they choose and to install it on as many computers as they want. Users can use the software for educational, domestic, commercial or public administration purposes.

2. HISTORY OF OPEN SOURCE

The ope source movement started in the 1980's with Richard Stallman who resigned from MIT found GNU project. Unix is an operating system, whose functionality, he wanted to copy and build upon, but it required community effort. Wanting it to be a free software, he created a different kind of copuright licence, which he termed "copyleft". Milestones in the history of open source software are :

- 1983 - Richard Stallman formed GNU project;
- 1985 - Creation of Free Software Foundation;
- 1991 - Development of Linux kernel in Linus Torvalds;
- 1998 - Open Source Initiative(OSI) formed by Eric Raymon.

3. IMPORTANCE OF OPEN SOURCE SOFTWARE'S:

Open source software's is important not only to software developers and coders but also to other professioals because it encourages users to collaborate, modify and expand existing software. The other type of software, proprietary or closed source software, often uses source code that only one developer, team or business can see and control. Users can't build on the existing software or manipulate it to better suit their needs.

With open source software people from a variety of professions and interests can benefit and develop altenative versions that they release back to the public.

Open source software(OSS) has gained significant importance in today's digital landscape, providing numerous benefits to developers, business, and the broader technology community. Here are the top reasons why open source – the software, the communities, and the philosophy – is so cruicial:

Importance of Open Source Softwares:

1. Helps in innovation and research
2. Support startups and solopreneurs
3. Assists in training software developers
4. Improves software quality as aresult of public scruitiny
5. Drives better accountability of software supply chain
6. Speed up problem-solving in software development process
7. Supports cybersecurity testing

4. INNOVATION AND FLEXIBILITY :

4.1 Access to Source Code : Open source software allows developers to exaeymine, modify and build upon the underlying code, fostering innovation and adaption to changing requirements.

Cuatomization: Users can tailor the software to their specific needs, adding new features or addressing limitaions, leading to more agile and responsive solutions.

Rapid Development: The collaborative nature of open source development allows for faster bug fixes and feature development, as multiple developers can contribute simultaneously.

4.2. Cost Efficiency :

Free Software: Many open source software solutions are available at no cost, reducing licensing fees and other expenses for organizations.

Reduced Maintenance Costs: The community-driven nature of open source often means that support and maintenance and readily available, reducing the need for expensive vendor support.

4.3. Transparency and Security :

Open Review : The open nature of the source code allows for transparent review and scrutiny by the community, leading to faster identification and resolution of security vulnerabilities.

Community Security : A large and active community of developers can contribute to security audits and bug fixes, enhancing the overall security of the software.

4.4. Collaboration and knowledge sharing :

Community-Driven Development : Open-source projects are typically developed and maintained by community of developers, fostering collaboration and knowledge sharing.

Learning and Skill Development: Developers can learn from experienced contributors and contribute their own skills to the project enhancing their knowledge and abilities.

Open Source as a Learning Platform: Open source projects provide valuable learning opportunities for developers of all levels, from beginners to experts.

4.5. Agility and Vendor Lock-in Avoidance :

Technology Ability : Open-source software allows organizations to be more agile and responsive to changing needs, as they are not tied to a single vendor.

Vendor Independence : Organizations can choose from multiple vendors or even develop their develop their own solutions, avoiding vendor lock-in and increasing flexibility.

4.6. **Example of Open -Source Software** : Linux operating system, Apache web server, MySQL data base management system, Python programming language, and many other software tool and frameworks.

5. POPULAR OPEN SOURCE SOFTWARE'S

- **Linux –** Linux is a Unix-Based operating system used predominantly in server. Linux was created by a student in 1991 along with other developers around the world. Linux operating system is free to use and everyone has the freedom to contribute to its development.
- **Apache –** It is a leading server software and scripting language on the web.
- **VLC media player** : The VLC media player is a portable, open source media player and streaming server. The program is compatible with mobile platforms and with various operating systems.
- **7-Zip: file compression –** 7-Zip is open source software and most of the source code is under the GNU LGPL license. It is a file archiver with a high compression ratio.
- **Google Android :** Android is an open source, mobile device operating system. Google released Android's source code so users could access information and create variants of the operating system, accessories and port devices. Android releases its code to avoid failures within its programmes.

- **FileZilla –** It is an FTP client with a fast cross-platform FTP, FTPS and SFTP client with lots of useful features and an intuitive graphical user interface.
- **LibreOffice**: LibreOffice is the latest in a long line of open-source office suite programs. It includes several applications that handle word processing, presentations, spreadsheets, formula editing, flow charts and databases.
- **Firefox browser** : The Firefox browser, or just Firefox, is an open-source web browser that uses the Gecko rendering engine, another open-source software, to display web pages.
- **WordPress**: is a content management system with customizable themes, accessible features and plug-in architecture. Plug-in architecture is a system designed to support bundles that increase a program's functionality.
- **Blender –** It is a open source 3D graphics and animation software.
- **OpenOffice.org –** an office suite software with word processor, spreadsheet, and presentation capabilities, now forked to LibreOffice after lock-in claims from companies which supported OpenOffice.
- **Perl –** A programming/scripting language.
- **PHP** – A widely used open source general-purpose scripting language.
- **SendMail –** e-mail software.
- **Speak Freely –** Internet telephony software.
- **Thunderbird** – Thunderbird is a full-featured email, RSS and newsgroup client that makes emailing safer, faster and easier than ever before.
- **Wikipedia** – Online encyplopaedia open for anyone to update and revise content.

6. ADVANTAGES OF OPEN SOURCE SOFTWARE'S

The benefits with open source software are as follows :

- **Lower Software Costs**: Open source solutions generally require no licensing fees. Expenditure can be for media, documentation, and support, if required.
- **Lower Hardware Costs**: In general, Linux and open source solutions are elegantly compact and portable, and as a result require less hardware power to accomplish the same tasks as on conventional severs(Windows, Solaris) or workstations. So they are less expensive.
- **Escape Vendor Lock-in**: Frustration with vendor lock-in is a reality and with ongoing license fees, there is lack of portability and the inability to customize software to meet specific needs. Open source exists as a declaration of freedom of choice.
- **Support:** Open source support is freely available and accessible through the online community via the Internet. Many tech companies also support open source with free online and multiple levels of paid support.
- **Unified Management:** Specific open source technologies such as CIM Common Information Model) and WBEM(Web Based Enterprise Management) provide the capability to integrate or consolidate server, service, application, and workstation management for powerful administration.
- **Scaling/Consolidation Potential**: Open source applications and services can often scale considerably as they have multiple options for load balancing clustering.

7. OPEN SOURCE LIBRARY SOFTWARE(INTEGRATED LIBRARY SYSTEMS)

OSS represents an exciting opportunity for libraries rather than forcing a library to depend on products which may not fully meet its needs. Open source allows the library to participate directly in the development of its systems and innovate services in a manner consistent with the values of librarianship. Open source software is software licensed to users with freedom to run the program for any purpose, to study and modify the program and to freely redistribute copies of either the original or modified program(without royalties etc.). Open source software are also termed as libre software, free software, FOSS, FLOSS and they are reciprocal to proprietary software, closed software(Bretthauer,2002).

8. OPEN SOURCE SOFTWARE FOR LIBRARIES:

8.1. Library Automation:

8.1.1 Koha : Integrated Library System

Koha is a promising full featured open source ILS(Integrated library system) currently being used by libraries all over the world. For those of you out there unfamiliar of what an ILS is, well, it is a system of keeping track of the operations of a library-payroll, expenses, purchases, and most importantly, keeping track of the various media being checked out by the librarians patrons. Many smaller libraries cannot afford to purchase, install, and maintain an ILS, is a Koha is a perfect alternative. Koha is built using library ILS standards and uses the **OPAC (Online Public Access Catalogue)** interface. In addition, Koha has no vendor-lock in, so libraries can receive tech support from any part they choose.

8.1.2 NewGenLib

NewGenLib (New Generation Library) is an Integrated Library Automation and and Networking Solution Developed by Verus Solutions Pvt.Ltd.and The Kesavan Institute of Information and Knowledge Management, India. In March 2005, NewGnLib version 1.0 was released and versions 2.0 and 2.1 have come up later. On 9th January 2008, NewGenLib has been declared Open Source Software under GNU GPL Licence by the Verus Solutions Pvt.Ltd, Hyderabad, India.

8.1.3 Evergreen

Evergreen ILS is another option when researching open source ILS options. Developed by Equinox Software, Evergreen is a robust, enterprise level ILS solution developed to the capable of supporting the workload of large libraries in a fault-tolerant system. It tool standards compalint and uses the OPAC interface, and offers many features including flexible administration, work-flow customization, adaptable programming interfaces, and because it open source, cannot be locked away and can benefit from any community contributions.

8.1.4 OpenBiblio – OpenBiblio is an open source integrated library system. The software is popular with small and rural libraries worldwide due to its simplicity, extensive language support, and good documentation. OpenBiblio is an easy to use, open source, automated library system written in PHP containing OPAC, circulation, cataloguing, and staff administration functionality for the particular interest to small libraries with limited technical expertise and resources of less than 50,000 volumes.

9. DIGITAL LIBRARY

9.1 Greenstone Digital Library Software

The Greenstone digital library software is an open-source system for the construction and presentation of information collections. It builds collections with effective full-text searching and metadata-based browsing facilities that are attractive and easy to use. Moreover, they are easily maintained and can be augmented and rebuilt entirely automatically. The system is extensible: software "plugins" accommodated different document and metadata types. The aim of the Greenstone software is to empower users particularly in universities, libraries and other public service institutions, to build their own digital libraries.

9.2. Dspace – Dspace is an open source repository application that allows you to capture, store, index, preserve and distribute your digital material including text, video, audio and data. Dspace provides a way to manage your materials and publications in a professionally maintained repository to give them greater visibility and accessibility over time. Dspace design and developed by Massachusetts Institute of Technology(MIT)Libraries and Hewlett-Packard (HP). Dspace was designed as an open source application that institutions and organizations could run with relatively few resources. It is to support the long-term preservation of the digital material stored in the repository. It is also designed to make submission easy. Dspace supports submission, management, and access of digital content. It is now freely available to research institutions world-wide as an open source system. There are over 1000 digital repositories worldwide using the Dspace application for a variety of digital archiving needs. Dspace is most often used as an institutional repository a platform that provides access to research output, scholarly publications, library collections, and more.

9.3 Eprints – Eprints is an open source software packages for building open access repositories that are complaint with the Open Access Initiative Protocol for Metadata Harvesting. It shares many of the features commonly seen in Document Management systems, but is primarily used for institutional repositories and scientific journals. Eprints has been developed at the University of Southampton School of Electronics and Computer Science and released under a GPL license.

9.4 Fedora – Fedora is an Open-Source digital repository management system based on the Flexible Extensible Digital Object and Repository Architecture(Fedora). The Fedora repository system is open source software licensed under the Mozilla Public License. It required Sun Java Software Development Kit, v1.4. Optionally one can use MySQL or Oracle 9i to create relational database. It works both on Windows and Unix versions of O/S.

9.5 Invenio - Invenio is a free and open source software suite for management of digital library or document repository on the web. Invenio software developed, maintained, and used at the CERN Document Server. It allows to run electronic preprint or digital library server, online library catalogue or a document system on the web. Functionality includes data acquisition, classification, indexing, storage, release, and distribution. It uses Apache/WSGI, Python, and MySQL. It complies with the Open Archives Initiative Metadata Harvesting Protocol(OAI-PMH) and uses MARC 21 as its underlying bibliographic standard. It is a free software issued under GNU-GPL license.

10. SOME IMPORTANT POPULAR LIBRARY MANAGEMENT APPLICATIONS

10.1 A Tutor [http://atutor.ca/] - A tutor's is an Open Source technology and cost effective tool for both small and large organizations, presenting their instructional material on the Web, or delivering fully independent online courses. It is an Open Source Web-based **Learning Content Management system(LCMS)** designed with accessibility and adaptability in mind.

10.2 Drupal[http://www.drupal.org/] - Drupal is a free and open-source content management framework written in PHP and distributed under the GNU General Public License that allows to easily organize, manage and publish content, with an endless variety of customization. It is a content management platform powering millions of websites and applications. It's built, used, and supported by an active and diverse community of people around the world.

10.3 Joomla [www,joomla.org/] - Joomla is a Content Management System(CMS), which enables to build Web sites and powerful online applications. 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.

10.4 Moodle [https://moodle.org/] - Moodle is freely Open Source software for learning, under the GNU General Public License designed to provide educators, administrators and learner with a single robust, secure and integrated system to create personalised learning environments. Moodle is built by the Moodle project which is led and coordinated by Moodle HQ, an Australian company of 30 developers which is financially supported by a network of a 60 Moodle partner service companies world wide. It provides the most flexible tool-set to support both blended learning and 100% online courses.

10.5 CORAL [https://library.nd.edu/] - CORAL is an open source Electronic Resources Management System developed at the University of Notre Dame licensed under a GPLv3 license. It is web-based and runs in an Apache, MySQL, PHP environment. It delivers modules to manage resources, licensing, organizations(publishers, vendors, societies, etc.), and statistics. These modules link resources to licenses and providers, but they can be implemented independently. It also allows integration with different link resolvers(currently only SFX)

CONCLUSION

So, it seems that there are some very powerful solutions available today that could be used to create a much more resourceful library. By using open-source software in the library, money that otherwise would be spent on software solutions can be used for other important resources, such as purchasing additional media resources(books, journals, etc.), or can be used to hire educated, technical support that provides patrons with the know-how to better use already existing resources. In addition, this free software is constantly being updated, changed, and customized to meet the library's needs. While all of this is fine and dandy, and Sounds like the win-win solution for your library, there are still pitfalls and hurdles we'll need to overcome. Hopefully, this article provides some introductory information as to how to wean your library off of traditional computing products and dive into the pool of open source resources available today.

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