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The Numerous Connotations Of Open Source Technology

Thanga Durai S

Assistant Professor, Dept. of C.S., New Horizon College, Kasturi Nagar, Bangalore, Karnataka, India

ABSTRACT*:* Open source software is becoming the most interesting 'new' phenomenon of the entire information technology landscape, generating a level of interest similar to that of the first moments of the Internet. However, as we will show in this document, the open source software phenomenon is not historically new, although in recent years it has reached a critical mass, which has allowed it to enter the mainstream software market. With the growing popularity of Open Source, software engineers have accepted the idea of a no-cost development platform for all applications. The emergence of the Free and Open Source Software is an important frontier of Information Systems. The impact of Free and Open Source Software on society, business, education, and research is rising. In this paper, we briefly reviewed the evolution of OSS and elaborated the terms Open Source Software. We discussed the principles, benefits of Open Source Software, Comparison between Closed Source Propriety Software (CSPS) and Free and Open Source Software (FOSS) and moreover, we discussed the future trends and survey results of Free and Open Source Software.

KEYWORDS: Open source software, free software, Closed Software

1. INTRODUCTION

1.1 WHAT IS OPEN SOURCE?

Open source refers to any program whose source code is made available for use or modification as users or other developers see fit. Open source software is usually developed as a public collaboration and made freely available. Open source software refers to applications developed in which the user can access and alter the "source" code itself.

1.2 OPEN SOURCE SOFTWARE: GENERAL CONCEPTS

OSS are computer programs in which the source code is made available to the general public for use and/or modification from its original design free of charge, i.e. open. Open source programs are typically created as a collaborative effort in which programmers offer the user a flexibility of use and share the changes within the community.

The term 'software' refers to two different but related things; *Source code:* a set of human readable and understandable instructions that comprise the 'recipe' from which an executable program can be made and *Object code:* the actual executable program which is compiled of machine readable source code.

Recent development in IT has heightened the need for change among software users. For instance, the software flag has changed its direction from commercial adaptation strategy, whereby a product is only available from a single vendor into bazaar approaches where sustaining the system is shared among community. The availability of source code and sovereignty of modifying source code helps the individuals and organizations to feel OSS more convenient to them.

Furthermore, Open Source Software (OSS) has also proved to be appropriate technologies that promote self-enhancing diversity of production models, communication paths, and interactive communities by fearing lawful action from legal firms. Therefore, OSS community from different locations is motivated to contribute into the software that is online and the user receives assistance from different point for free.

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II. EVOLUTION OF OPEN SOURCE

2.1 HISTORY OF OPEN SOURCE

The idea of building software within a cooperating community, where the source code was made available so that everyone could modify and redistribute it began with the GNU project at MIT in the early 1980s. The intention was to provide freedom relating to software systems. In 1985 the Free Software Foundation (FSF) was pioneered by Richard Stallman to generate some income for the free software movement, not restricting itself to GNU.

Free software, as defined by the FSF, is a program that grants various freedoms to its users. A free software program provides its users with

- ✓ Freedom to run the program for any purpose
- ✓ Freedom to study and adapt the code for personal use
- ✓ Freedom to redistribute copies of the program, either gratis or for a fee
- ✓ Freedom to distribute improved or modified versions of the program to the public

III. ADVANTAGES OF USING OPEN SOURCE

a) Core software is free

If you're just getting started in online business, cost can be a major factor. Using Open Source software can really cut down on your initial capital outlay. It's also my firm belief that the Open Source community has helped to rein in prices on commercial software over the years.

b) Evolving software

As mentioned, some Open Source software projects can have huge communities of programmers involved, allowing for the rapid implementation of new features and security fixes. The communities of users and programmers are also invaluable resources for asking questions relating to troubleshooting and suggesting enhancements

c) Encourages hands on

When you're short on cash, you are more than likely to want to make modifications to software yourself. I'm no programmer, but the use of Open Source software has encouraged me to go beyond the user interface; to dig into code to try and understand what it does and to make minor edits. As a business owner, it doesn't hurt to understand a little of the voodoo that goes on behind the scenes in the software you use on your site.

d) Not tied to a single vendor

If you purchase a commercial application, you can then become reliant on a single company to solve your problems and maintain the software - which can also be very expensive. Some commercial software companies may only provide support and upgrades for a limited time before you need to fork out for any further enhancements or assistance.

e) Greater Security & Quality

Open source software is available publicly. A large amount of developers globally contribute and analyze the code making it more secure and constantly increasing the quality. The peer review process drive excellence in design.

IV. THE PRINCIPLES OF OPEN SOURCE SOFTWARE

Open source doesn't just mean access to the source code. The distribution terms of open-source software must fulfill with the following criteria:

a) Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

b) Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately

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obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

c) Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

d) Integrity of the Author's Source Code

The license may restrict source-code from being distributed in modified form *only* if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

e) No Discrimination against Persons or Groups

The license must not discriminate against any person or group of persons.

f) No Discrimination against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

g) Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

h) License Must Not Be Specific to a Product

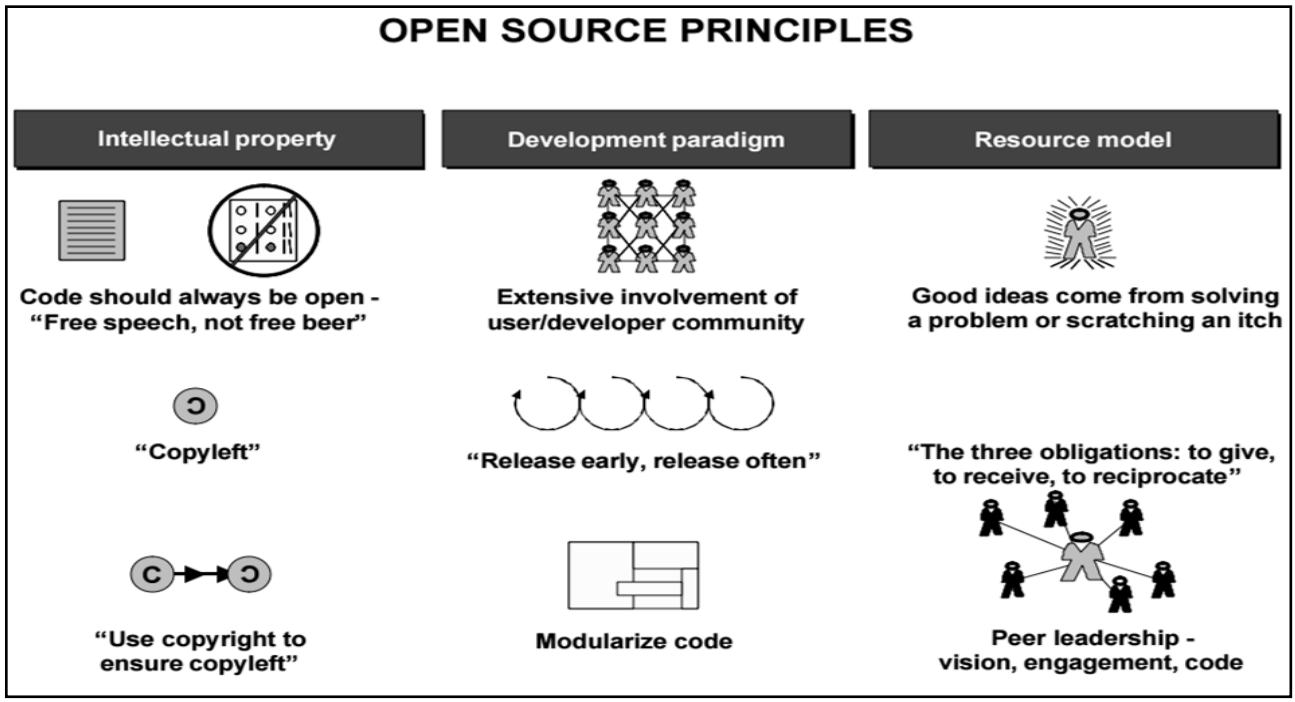
The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

i) License Must Not Restrict Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

j) License Must Be Technology-Neutral

No provision of the license may be predicated on any individual technology or style of interface.



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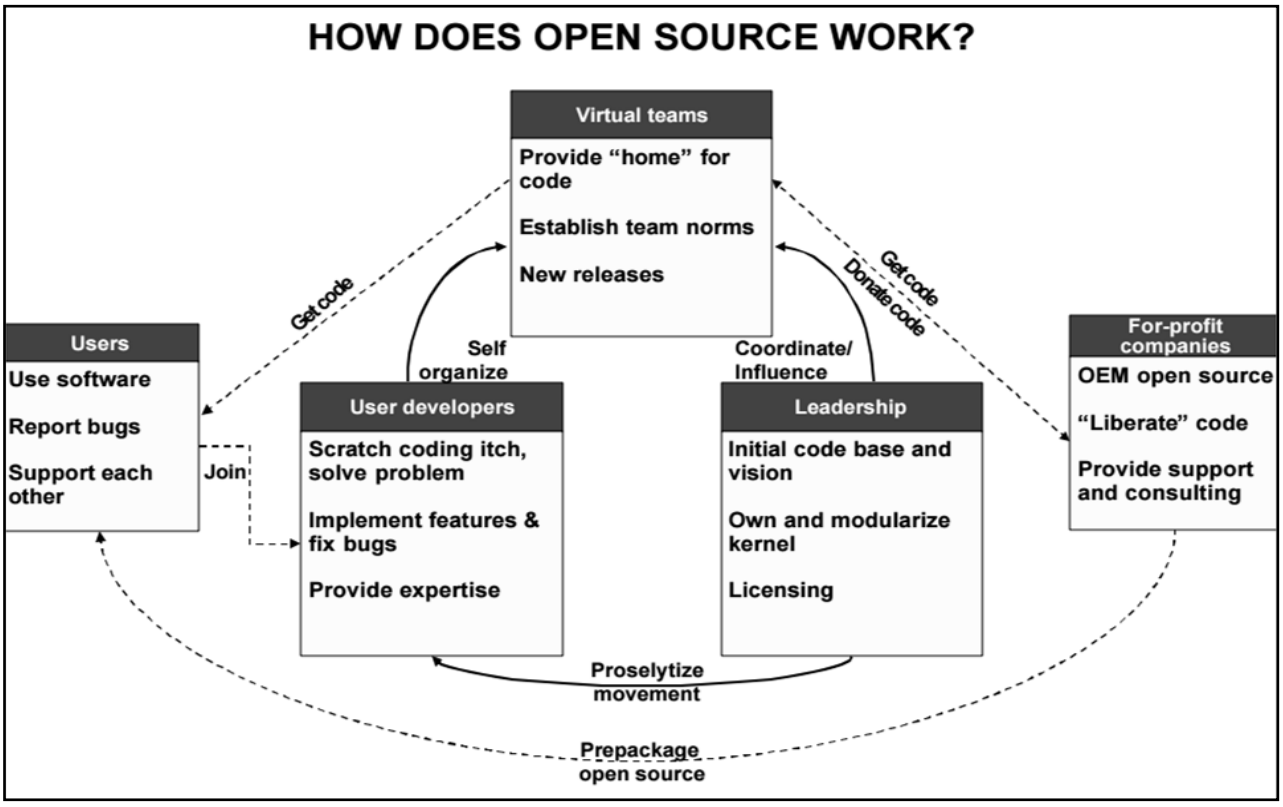

V. APPLICATION OF OPEN SOURCES

- ✓ Accounting
- ✓ Content Management Systems
- ✓ CRM (Customer Relationship Management)
- ✓ Desktop Environments/ Shell replacements
- ✓ Email Clients
- ✓ Encoding, Conversion & Ripping Tools
- ✓ ERP
- ✓ File sharing & FTP
- ✓ Graphics-Design & Modeling Tools
- ✓ Messengers & Communication Clients
- ✓ Project Management
- ✓ Reporting Tools
- ✓ RSS
- ✓ Web Browsers

5.1 LIST OF COMMERCIAL OPEN SOURCE APPLICATIONS WITH TOOLS

APPLICATIONS	OPEN SOURCE TOOLS
Cloud management	Abiquo
ecommerce	Abiquo
Reporting Tools	Actuate
Enterprise Content Management, Web Content Management	Alfresco
Data Backup / Recovery	Bacula

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ERP and CRM	Compiere
Office Productivity	Lotus Symphony
RDBMS	Ingres Database
Software Development Tools for C, C++	Sun Studio
Web Development	LAMP
Server and client Linux distribution	Ubuntu

5.2 EXAMPLES OF OPEN SOURCE

APPLICATION SOFTWARE	OPERATING SYSTEMS	PROGRAMMING LANGUAGE
7-Zip Eclipse GIMP Chromium Blender Mozilla Firefox Open Office	Android Linux FreeBSD ReactOS Haiku FreeDOS	Perl PHP Python Ruby PHDL Prolog

VI. OPEN SOURCE V/S CLOSED SOURCE

OSS has been in direct competition with the Proprietary software which is 'Closed Source'. In case of the OSS, the user gains the right to grant the license further, whereas in case of a closed source, he merely gets the right to use it. The source code of closed source software is considered to be a trade secret and money is made with each copy sold. On the other hand, OSS may be distributed freely, but the support services may be chargeable. The Closed Source group presses the point that OSS is available for exploitation to people with malicious intent. To counter this, Open Source supporters argue that this also opens up the software for rapid patching whereas in case of closed source, the security is through obscurity which is also prone to failures.

The licensing theory of OSS lays out that when the author develops the code, he automatically owns the copyright of that work and also the right to grant a license. When he grants the license to somebody, he is actually granting permission to use his copyrights. In case of violation, the licensee might just own a copy of the work and hold no copyright to distribute or modify it. The contribution of code to a project may be under explicit licensing like the Apache Contributor License Agreement or implicit like the open source license. Some examples out of more than 1400 unique licenses include GNU GPL, MIT License, Eclipse Public License, Mozilla Public License etc.

Comparison between Closed Source Propriety Software (CSPS) and Free and Open Source Software (FOSS)

FEATURE	CSPS	FOSS
User can run the software	yes	yes
Source code is available to user	no	yes
Multiple users on multiple machines are allowed	no	yes
User can modify the source code	no	yes
User can redistribute the software	no	yes

VII. 2015 FUTURE OF OPEN SOURCE SURVEY RESULTS

This year's ninth annual Future of Open Source Survey received 1300 responses and revealed that corporate open source use and participation has reached an all-time high!

Perceive sound our panel of open source experts discuss the following 2015 survey results:

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78% of respondents said their companies run part or all of its operations on OSS
66% said they take an open source-first approach to software
64% of companies currently participate in open source projects
Over the next 2-3 years, 88% of companies are expected to increase contributions to open source projects
55% believe open source delivers superior security compared to proprietary solutions

VIII. CONCLUSION

Open Source can be used by anyone and because it has no copyright claims, so users are free to use, change, and improve the software, and to redistribute it in modified or unmodified forms. Pervasive Computing is to make our lives easier because we can interact with computers. Besides that, we can easily give the computer commands and the computer will grant your wish. In this paper, we elaborated the meaning of Free and Open Source Software. We described the evolution, benefits, principles, and future of Free and Open Source Software. From the study that we have conducted, it has come to our notice that OSSD is similar to its traditional counterpart in many aspects, but there are many areas in which it differs tremendously and these features make it different from the CSSD. As a concluding remark, we can say open source software is a competent alternative to Closed Source Software.

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