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A review of Open Source Software and Open Source Movement in Developing Countries

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Abstract: Open-source software abbreviated as OSS is computer software that is available with source code and is provided under a software license that permits users to study, change, and improve the software. For the commercial software the source code and certain other rights are normally reserved for copyright holders, i.e. the company who develops the software. A group of people in a collaborative manner often develops the Open source software, not under the roof of a large organization. This strategy makes open source software cheap, reliable and modifiable if needed.

In this context we shall discuss mainly the features of Open Source Software, differences of open source and free software and open source software movement in Indian perspective.

Keywords: OSS, Free SW, Open Source Movement

I. INTRODUCTION

Open Source's software offers significant benefits, compared to typical commercial products. Commercial products often stress on advancement and updation of visible features for getting marketing advantages. It is very difficult to measure qualities attributes such as stability, security, reliability etc. in case of Commercial Software. Commercial software put notices basically on the quality of mostly used features. Whereas Open Source software developing community consists of very bright, very motivated developers, who are mostly unpaid but are very disciplined to their work. In addition to that all the users of Open Source software have access to the source code of the software and debugging tools.[1]. For this reason the users can suggest the developers about the bugs by feedback or they can fix the bugs if possible by modifying the source code and even can enhance the software by providing actual changes to the source code. Because of the availability of source code and right to modify the code by users, sometimes the quality of software produced by the Open Source software development community exceeds the quality of same type software produced by purely commercial organisations.

Development of an Open Source Software by the developer of an community is considered as a research

challenge. Authors are likely to consider it as a 'win' if they are able to reduce the complexity and improve the maintainability of the developed software compared to the available software in the market.

The willing of the development of an Open Source software comes from the willing of development of a software for personal or group use. As the software is used by the development group so they prefer robustness before adding some extra features. This makes a Open Source software without having unnecessary features and complexity and easy to use by user. As the source code is available the users can modify the code if they need some extra features to be added to the software and thus have not to face to the developers of the software for that new features in some newly released versions. This also reduces the cost of buying the software which is not possible for commercial software as the user have to buy new versions to avail newly added features.

In this paper Section II describes the features of Open Source Software, Section III describes the differences between open source and free software, Section IV describes Open Source movement in Indian Perspective, Section V draws the conclusion.

II. FEATURES OF OSS

A source software has several features of their own. Some of the features of Open Source Software are discussed below[1].

Free Redistribution: License of the software should 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 should not require a royalty or other fee for such sale.

Source Code: The source codes are open. The executable program or software should be accompanied

with source codes so that it can be easily distributed or modified as needed.

Derived Works: Any person may modify, or update, or reuse the source code as required. The derived works also should be published and is allowed to redistribute under same term and condition as the license of the original software.

Author's Source Code Integration: Configuration management or change management is very tough for this kind of software. The license may restrict source code for modification but it allows the distribution of patch files with source code for modification. The derived work may come up as new version or release under the same license.

No Discrimination Against Persons or Groups: There are no such limitations or restrictions for selecting persons or group for modification or up gradation. For getting maximum benefit, the maximum diversity of persons and groups should be equally eligible to contribute to open sources.

No Discrimination against Fields of Endeavor: it may not restrict the program from being used in a business, or research. But it does not permit to be used commercially.

Distribution of License: The rights automatically distributed with the program to the co developers with out the need for additional license by those parties.

License Must Not Be Specific to a Product:

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.

License Must Not Restrict Other Software: There is no restriction for other software to be open source that are distributed along with the licensed open source software.

License Must Be Technology-Neutral: The license may not highlight or refer any individual technology or style of interface. It should not bind with any specific hardware or software of Proprietorship Company.

III. BENEFITS OF OSS

Open Source software has significant benefits compared to typical commercial products. Commercial products typically favour visible features which gives marketing advantage. Some of the benefits a user gets by using a Open Source Software is enlisted below[2].

Reliability: The pattern with closed-source software (Commercial S/W) is typically that a defect report needs to be filed and then there will be a delay before the vendor determines when or whether to issue an updated release. For OSS the user may debug the defect, and may change according to their need.

Stability: In the real world, no business is static and software changes to meet new requirements. A choice to use Open Source software can provide a counter to the pressures to upgrade for the vendor's commercial purposes but cannot shelter every user from any change. Having access to the source code can allow a business to choose to support itself on an old version where necessary and we believe that in general it gives more options and choice to the users. Nonetheless, some upgrading and maintenance effort will always be needed.

Auditability : Benefit of Open Source software is its auditability. Commercial software compiles its users to trust the vendor when claims are made for qualities such as security, adherence to standards and flexibility of future changes. It will be treated as simple claims if the codes are not available. But by publishing the source code, authors make it possible for users of the software to have confidence that there is a basis for those claims

Cost: Most current Open Source projects are also available free of royalties and fees. It includes some features related to cost enlisted below.

- Zero purchase prices for maximum cases.
- No restriction for number of copies to be used, reducing administrative overhead.
- Claimed reduced need for regular upgrades (giving lower/nil upgrade fees, lower management costs)
- Claimed lower vulnerability to security breaches and hack attacks, viruses reducing systems administration load
- Claimed ability to prolong life of older hardware while retaining performance. No force to upgrade hardware, that is some time coming up with closed source softwares.

Flexibility and Freedom: Software flexibility is about being able to choose solutions suitable for the needs of the users. As requirements in the business change, solutions should not be unreasonably constrained by software. This kind of software is very flexible. The business houses may change software by themselves according to their new requirement without incurring additional cost. It is a great freedom, because they don't

need to call the vendor for minor modification, up gradation or changes.

IV. OPEN SOURCE VS. FREE SOFTWARE

Source code is available with Open-source software (OSS) and certain other rights normally reserved for copyright holders are provided under a software license that permits users to study, change, and improve the software[3]. Open source licenses meet the requirements of the Open Source Definition. There are some conceptualized differences of OSS with free software. Free Means Freedom, Not Free of Charge. Although large amount of free software is indeed free of charge, as most of the developers of free software are volunteers. There are free software which the user has to buy to use it. Free software can be commercial; but this type of software should be contrasted with "proprietary software," not "commercial software." Some free software licenses are copy left licenses, which states that anyone can redistribute the software to any number of users under the same license and also includes the source code. The dominant copy left license is the GNU GPL (General Public License). Free software license also permits the user to modify the source code and redistribute the improved version to other.

Open source is the crop generated from the free software movement, but focuses on practical benefits without touting moral issues. In fact, most open source licenses are free software licenses, but some are too restrictive to qualify [3].

V. OPEN SOURCE MOVEMENT

The Free Software Movement started by Richard Stallman in 1983 with the GNU project. The main goal of the free software movement is to give freedom to computer users by replacing software which has restrictive licensing terms, mainly commercial software developed by large software firms with free software. Most members of the free software movement believe that the freedoms are required to create a decent society where software users can help each other, and to have control over their use of a computer. Open source movement comes from the free software movement. The main principle behind the open source movement is that user must get the whole thing, both executable software and the source code when s/he is buying the software by paying price. When s/he has bought the software s/he became the owner of the copy. If needed he can improve

the source the code to add some extra features without buying an improved version of the same software from the same company.

Basically open source movement is very much important for the computer users of under developed and developing countries [4]. The knowledge or technology should not be property of any individual or company. It is also not true that the intellect that the software firms own is the ultimate. There are so many intelligent persons working in different levels of the society who has the ability to develop software may be more useful than the commercial software.

Sometimes the companies of commercial software are launching a new kind of software which is nothing but the advanced version of previously released software; but the new version requires new or advanced hardware. So a user wants to use the advanced version is forced to buy the new hardware. Or may be the reverse that a person buys a new system with advanced configuration; but the old software is found to be incompatible to install in the new system. So, he is forced to buy a new version of software. Sometime these kind of artificial crises are made for marketing strategies of those companies related to hardware and software. But it is not desirable or economically bearable for poor people mainly living in under developed and developing countries. But everybody in the society should have the right to be blessed with new technologies as we are social beings. For breaking that kind of situation the open source software movement started up and slowly spread over the whole world mainly in the developing countries. So OSS can be treated as the most useful weapon for the movement of free software, but both are not same.

Here some Populer OSS are listed[5]:

- Operating system: GNU/Linux, FreeBSD
- Office suite: Open Office, EasyOffice,
- E-mail: Evolution, Thunderbird
- Browser: Firefox, Conqueror, Galeon
- Database: MySQL, PostgreSQL.

Here some statistics of market share of Windows and Linux Operating system are shown comparing the year 2008 and 2009. [6]

Table I: User Share of Windows and Linux

	Windows	Linux
2008	90.6%	0.9%
2009	75%	3%

Here a graphical representation of the fluctuation of users of two web browsers namely Internet Explorer and Firefox are shown from July 2008 to July 2010.[7]

Table II: User Share of IE and Firefox

	Internet Explorer	Firefox
July 2008	68.57%	26.14%
July 2009	60.11%	30.50%
July 2010	52.68%	30.69%

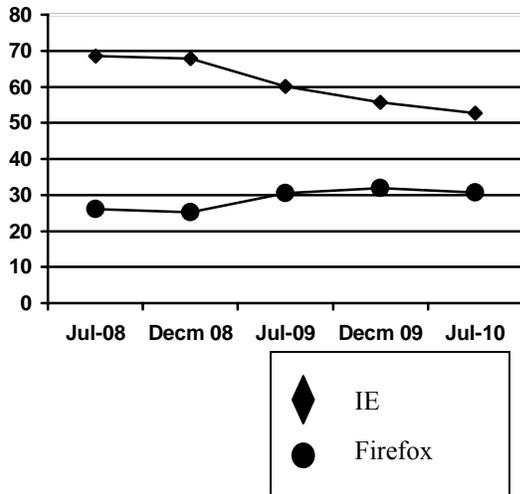


Fig. 1: Graphical representation of User Share of IE & Firefox

Here a statistics of the percentage of users of Open Office and MS Office in different countries is displayed according to market review in February 2010[8].

Table III: User Share of Open office and MS Office

Country	OpenOffice	MS Office
Germany	21%	72%
France	19%	76%
Italy	18%	81%
Canada	11%	79%
Australia	10%	78%
USA	9%	75%
UK	9%	80%
Brazil	8%	85%
Russian Federation	6%	76%
India	5%	88%
China	0.20%	68%

VI. OPEN SOURCE MOVEMENT IN INDIA

India is a developing country and has a large number of software professionals working in different national and multinational companies. India has urged the respect from the world as a growing giant in the service sector. Several software companies belong to developed countries do outsourcing through Indian companies. It means there are so many intellectual brains in India related to software field.

In India several organizations are working on OSS and had already developed some software of that kind. The remarkable organizations are Open Source Software Resource Center (OSSRC) established by IBM with Center for Development of Advanced Computing (CDAC) and the IIT-Bombay with the following objectives.

1. Foster significant OSS development in India by establishing a development portal and initiating significant proof of concept project.
2. Develop high-quality training programs around OSS technology along with associated certification processes.
3. Training in development of good quality content in various areas of education and general awareness, by offering OSS-based authoring tools and mark-up languages, teacher training and setting up a content repository.

A few months after the formation of OSSRC, the Government of India set up a National Resource Center for Free Open Source Software (NRCFOSS) at CDAC – Chennai. The first major activity of the center was resource and knowledge consolidation, and providing a forum for FOSS practitioners to come together. A comprehensive portal was also established (ossrc.org.in).

Some explored OSS developed in India are given below in following areas [5]:

- **Content management systems:** Drupal and Websphere
- **Learning management systems:** Moodle
- **Audio editing and management:** Audacity
- **Video editing:** Kino
- **Diagram creation and editing:** Dia
- **Image manipulation:** Gimp
- **3-D animation, etc:** Blender.

VII. INITIATIVES FOR ENCOURAGEMENT OF OPEN SOURCE MOVEMENT

Open source movement is a social movement and can be treated as a protest against commercial software. But as most of us are habituated in using commercial software in our day to day life, most of us fear to change to a new software. Several actions should be taken from the Government as well as people associated with open source movement to make the users aware of this movement. Some suggestive measures are enlisted below to encourage the open source movement.

- a) Government must encourage the development of open source software by providing sufficient funding to the project groups.
- b) Government must encourage the use of open source software in its different major and minor sectors.
- c) Hands on Training, seminars must be organized to encourage the users to use open source software.
- d) The syllabus in schools and colleges must be modified by including open source software for learning and using.
- e) Helping agencies and groups must be formed to listen to the complaints and suggestions of the users and necessary action should be taken on immediate basis.

VIII. CONCLUSION

Open source movement is a social movement. All people of the world must be blessed with the advancement of technology to improve their lifestyle. Technology must not be indoored in some companies for their business profit. When a person buys some software he has the right to get all the things related to the software including source code not only executable file. Licencing must not prevent him to modify the source code and to develop a new version or a new software using the previous one. So, Open source software movement must be encouraged by the government and persons related to social movement to make it popular to all labels of users in our society. Research on new fields of applications, developemnt of new advanced software, better than commercial one and modifying syllabus with the inclusion of open source software can make the movement fruitful.

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