Open Source Policy

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Abstract
This paper describes about Open Source Policy, Need, and Purpose, benefits like strategic, economic and social. It explains about the key points of the national OSS policies of South Africa, United Kingdom, Denmark, Brazil, Venezuela, Peru and India. It provides suggestions and conclusion.

Introduction
An open source enables the users to view and modify the source code. Source code is a set of computer instructions used in the creation and development of software. When the source code is viewed by other users and developer, who can make improvements to it, the modified versions of the same software are then further re-distributed with authorization to subsequent users to do similar things. The rationale behind the open source philosophy is simple – collaborative efforts and co-creation by different people sharing their individual knowledge enhances progress and facilitates development of better software.

According to Free Software Foundation (FSF), free software is matter of the users’ freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

- The freedom to run the programme, for any purpose
- The freedom to study how the programme works, and adapt it to your needs. Access to the source code is a precondition for this
- The freedom to redistribute copies so one can help their neighbour
- The freedom to improve the programme, and release your improvements to the public, so that the whole community benefits. Access to the source code is a precondition for this.

Need for an Open Source Policy
Negligible Marketing Efforts
The developed countries have benefited the most whereas the developing economics have to shell out a part of their foreign reserves, both at government and personal level, to procure the proprietary software. Further, they have to continue to pay for system maintenance, up-gradation of software and skilled manpower to manage these systems.

Prolonged Usage of Proprietary Software
Every country has established an existing ICT infrastructure. A huge amount of investment goes into procuring hardware, and developing skills sets. Since there is an already existing infrastructure, organizations hesitate to switch over to another operating system, which greatly affects future procurements of new software, or operating systems. As decision makers in any organization have a tendency to conform to system they are familiar with, the manpower to support those systems is another consideration.

Therefore, after reviewing all the benefits OSS offers, there is a clear need for governments to formulate policies that will give the right momentum on the uptake of OSS in the local economies and, in turn, allow them to take advantages of the resulting benefits.

Purpose of OSS Policy
The objective behind the formulation of an OSS policy should be clearly outlined and should be in conformity with the national policies. Specific motivations behind a policy would greatly affect the approach towards its execution. For instance, if the aim of a policy formulated by a country is to reduce imports and save foreign exchange, then the obvious approach would be to convert existing infrastructure to OSS. If the intention is to build local capacity, then the obvious
choice would be to promote education so that the country can groom its local talent for future. Governments must set definite targets, which will provide the right pace and direction to the policies it wants to formulate.

There are three significant reasons for government support of OSS

**Cost Reduction**
Expenditure by the governments on technology is extremely high and therefore, the idea of an established viable OSS alternative to proprietary software is appealing because it leads to cost reductions as it provides a bargaining position and it replaces more expensive proprietary software.

**Preservation of Foreign Currency Reserves**
For most governments, especially of developing countries, proprietary software is an import, which takes away a part of foreign reserves. For instance, India has to import operating and business application like Microsoft Windows, Abaqus, Hypermesh, Quickheal Anti-Virus, Norton Anti-Virus, Photoshop, Oracle Solaris, etc. which are widely used. Other than this, industry specific software is also imported.

**Government Endorsement**
Government support to OSS is sure to have a far-reaching impact in general because it will eventually legitimize and promote OSS in many areas. Therefore, government promotion of OSS is now an established worldwide trend, as is evident from the report prepared by Centre for Strategic and International Studies (CSIS), and it is unlikely to be reversed.

**Benefits of Open Source Policy**
The governments of countries around the world, like India, Brazil, South Africa, Vietnam, Malaysia and China have either started to adopt, or have started to feel the need for, specific policies on Open source Software. In order to understand the reason to develop an OSS policy, it becomes essential to understand its importance or benefits. OSS has strategic, economic and social benefits which are listed below:

**Strategic Benefits**
*Helps to develop local industry*
OSS helps in the ability to use and develop software. Many a time developing nations are unable to participate or utilize the Information and Communication Technologies (ICTs) as the costs involved of both, hardware and software are high. The fundamental feature of minimal or zero licensing cost and free redistribution of OSS help to eradicate this situation. Since anyone can obtain OSS without having to pay high licensing costs, this in turn decreases the overall infrastructural costs.

**Discourages imports which leads to enhanced foreign reserves**
A major portion of proprietary software industry is based in a few developed nations. Companies primarily based in the United States develop a large part of the world’s operating systems and business applications. Other countries that need to use these software end up importing the critical software. The large cost of these software places an enormous burden on financial resources of a country.

**Enhances national security**
The binary format causes mistrust and suspicion, as there is always a possibility of a remote hacker tampering with the data. Countries like China and Germany prefer to use OSS in sensitive areas like defence. The reason for this shift is that they have the access to the code and the liberty to modify it according to their own military requirement.

**Reduces copyright infringements**
Software piracy is a global problem. A country with poor or weak laws on IPR raises economic issues and concerns for foreign investors. The commercial software companies are reluctant to enter into markets where software piracy is rampant as it is a major revenue loss for them.

**Enables localization**
Countries where English is not the commonly spoken language have been at a great disadvantage when it comes to spreading ICT. Most of the time proprietary software makers are not interested in producing or developing a localized version of their software if the country or the language is not economically viable for them, which increases the barriers to ICT usage.

**Economic Benefits**
*Increases competition*
The established software market has high entry barriers as it requires huge investments in terms of both time and money. This has limited the competition to a few large established organizations as they were the ones who had the financial capabilities and the requisite manpower. OSS breaks this entry barrier as software companies have an already developed prototype of software or already existing basic software, which are rich high quality base of software to develop.

**Reduce total cost of ownership (TCO)**
OSS applications help in saving money in several ways, with minimal licensing fee being a key consideration, as it is freely distributed. Other than this, OSS lowers costs through, *inter alia*, better security in comparison to commercial software, where
the source code is kept secret; and ease of administration.

**Enhances security**

No operating system can be fully secure. However, factors like development method and source code, greatly affect the security of any software system, as they are core components of software. These very factors determine as to how easy or difficult it is to breach or hack any software.

**Achieves vendor independence**

Many organization find themselves tied to their existing software vendors because of the basic reason of patent restrictions or large investments that the private companies and governments have made in setting up their respective infrastructure including the training of the manpower to use that software.

**Customizing to organizational needs**

One of the basic factors that may motivate the Indian companies for using OSS is that customizing foreign software to the need of Indian customers requires specialized knowledge of that foreign software. Apart from the software, an additional amount needs to be spent by the customers for procuring updates of the software. Thus, it becomes cost effective both for companies who do not have to spend money on training the professionals in foreign code and for the end customer who gets access to cheaper software and updates.

**Professional expertise**

Big companies have experts and professionals who can work on development of these projects as the skills required in implementing solutions in small business are different from those required to implement complex programs. These companies may then be able to afford to hire IT professionals like they hire accountants. This will bring about change in management of work and also allow small business to have access to technology.

**Cater to professional requirements**

It is not only business but professionals like lawyers, architects, doctors who may also initiate the use of OSS and get them modified in ways which are more customised to their needs as the professional organizations evolve. This would not only facilitate the work but also provide that added security from their work being copied or downloaded as the features of the software are as per their specific needs.

**Social Benefits**

**Enhanced access to information**

This is one benefit, which is often ignored or overlooked by the proponents of OSS policy. OSS represents knowledge comprising largely of rules, procedures and methods of manipulating data. The proprietary software codes are like black boxes. One can use them but can never know what goes on inside. This scenario always limits the scope of development of local IT Industry. In contrast with OSS, the local IT industry works on top of a knowledge pool created by people from around the world.

**Some National OSS Policies**

All countries have different reasons to promote OSS, which are peculiar to their country. Some countries like Singapore are promoting OSS by offering tax benefits. On the other hand, Germany promotes OSS, by entering into an agreement with IBM that offers discounts on IBM machines with pre-installed OSS.

According to the CSID (Centre for Strategic and International Studies) till date, numerous countries have initiated internal process about formulation of specific policies. Australia, Bahrain, Belgium, Brazil, Bulgaria, Canada, China, Denmark, Finland, France, Germany, Indonesia, Italy, Iceland, Malaysia, Norway, Philippines, Poland, Portugal, South Africa, Sweden, Tanzania, United Kingdom, United States and Venezuela are some of the countries who have a policy in place to promote or encourage use of OSS. Whereas Argentina, Austria, Chile, Colombia, Costa Rica, Hong Kong, Thailand, India, Japan, Netherlands, Pakistan, South Korea, Singapore, Spain, Taiwan, Thailand, Ukraine and Vietnam have proposed policies for the usage of OSS which are at different stages. The OSS policies of some countries are being outlined below:

**South Africa**

South Africa defined as OSS strategy on 11 June 2003. South Africa is proud to be amongst the countries that have adopted OSS policies.

Some key points of this strategy are outlined below:

- **Official statement of recognition**: Since it is a fairly new and unknown concept even to the policy makers, therefore, in order to promote and adopt OSS, providing official recognition and legitimacy would give it greater sanctity.
- **Designation of a specific government agency**: It is essential to appoint one lead agency to look after the creation, coordination, communication and execution of the OSS policy. Mere policy on paper is meaningless without enforcement and a specific government agency would ensure proper implementation.
- **Realisation of social importance**: The basis of the policy should not be only economic benefit. It is essential to highlight the social benefits like enhanced self-reliance, and developing local talent. A wholesome policy is one that takes care of both the economic and social needs of a country.
• **Phased implementation:** In a country, which has limited local capacity in terms of both talent and financial resources, a policy should be implemented in phased manner in order to spend the national resources (talent and finances) prudently and plug the loopholes simultaneously.

**United Kingdom**
The first paper of the government was published way back 2002 by the Office of the e-Envoy (OeE) which set the target to promote the use of OSS in the public sector and e-government best practice through exchange of experiences across the Union.

The key decisions and justifications thereof in UK’s policy on OS in government are:

• UK Government would consider OSS solutions alongside proprietary ones in IT procurements. This would provide value for money for procuring a solution, be it proprietary or OSS. Contract decisions to be taken on a case-to-case basis.

• It would only use products for interoperability that support open standards and specifications in all future IT developments. To ensure interoperability of systems, the e-Government Interoperability Framework (e-GIF) is mandated across the public sector.

• It will consider obtaining full rights to bespoke software code or customizations of Commercial off the Shelf (COTS) software it procures wherever this achieves best value for money. Thus, the ownership of bespoke and tailored software code vests with the government. It provides flexibility in the development, enhanced and integration of the systems as well as security to government systems from internet attacks.

• Explore further the possibilities of using OSS as the default exploitation route for Government funded R & D software. This will help maximize return on public investment or public funding for R&D software.

**Denmark**
Denmark’s Board of Technology, published a report in October 2002 on the benefits of using OSS over proprietary/commercial software, use of these software in desktop and server and also took into consideration pricing ease in usage and support systems. This report stated that OSS was as excellent alternative to commercial software primarily because of the following factors.

- Open standards supported by OSS;
- Lower costs involved when upgrading;
- Security of OSS better when compared with proprietary software.

**Brazil**
Governments of other South American countries, who are contemplating a shift to OSS and related policies, are looking up to the Brazilian government. A great number of computers in the Brazilian government use the Linux operating system that is available freely. Increasingly, Brazil’s government ministries and state-run enterprises are abandoning Windows in favor of ‘open-source’ or ‘free’ software, like Linux.

**Venezuela**
The Venezuelan government in December 2004 announced its intention to shift to OSS with an objective to save millions of dollars in license fees paid by government top procure software such as Microsoft Windows and Office. According to official figures, Venezuela paid USD 7.5 million in license fees during 2004. In this regard, it has issued a decree, which involves three phases of migration beginning with central government, then regional government and finally municipal government/. Central ministries covered in the first phase intend top complete the shift within two years. For this purpose, an OSS academy in the city of Merida has been formed.

**Peru**
The Congress of Peru passed legislation in October 2005 titled, Bill Number 1609 which is known as Free Software in Public Administration. This required public bodies to use OSS as an alternative to proprietary software. It gives an option to public instructions to opt for OSS, which some consider to be more stable, resistant to hackers as well as viruses, in comparison to proprietary software. In order to encourage the hardware industry, the above mentioned legislation forbids public bodies to purchase those computers, which function on only one software platform. This is primarily in order to prevent ‘limiting information autonomy’. 

**India**
There is no specific legislations in India dealing with OSS though Free Software Foundations of India, submitted an opinion in the year 2003 under s 87(2) of the Information Technology Act 2000 to the Department of Information Technology, Government if India. In spite of no specific government policy, OSS has been able to make significant inroads in the country. Certain state governments have been entering into agreements with private companies, for instance, the Centre for Development of Advanced Computing (C-DAC), IIT Bombay and IBM India have signed an agreement to institute an Open Source Software Resource Centre (OSSRC). C-DAC, IIT Bombay and IBM would jointly undertake activities to foster OSS development and facilitate the understanding of OSS by imparting training. In addition, the state government of Madhya Pradesh has also decided to use Linux software in its official IT program, which includes its e-governance (Gyandoot) and computer-enabled school education (Headstart) initiatives, to bring the benefits of IT right to the doorsteps of the people.

Indlinux.org – an organization of software technicians, who are motivated for the cause of computer literacy
and have the talent for writing scripts and have access to know-how for free OSS technologies, have joined hands to create a national level, collaborative effort for localizing Linux to Indian languages. In pursuance of this endeavor, Indlinux.org launched its very first Gnome CD that supports most of the major Indian languages. Punjabi, Marathi, Bengali, Malayalam, Hindi and Gujarati among others, are supported in this freeware version of Gnome.

In 2003, the Government of Maharashtra (GoM) introduced OSS for e-governance in areas like treasury management, citizen facilitation centers, document journey management system and the land records management system. The state of Uttaranchal signed an e-governance Memorandum of Understanding (MoU) with IBM in February 2004 to focus on OSS technology, as well as a university programme MoU to develop local IT talents. The state government has focused on evolving a strategy to make available more resources for critical sectors like infrastructure, education, and health and employment generation. Some of the applications that IBM would help develop and deploy, based on the IBM e-governance framework are:

- Municipal services applications for birth and death records, property tax, water tax;
- Smart card based application for the Food and Civil Supplies Department and the Social Security Department;
- Health services applications to integrate government hospitals in the state.

Under the University Program MoU, IBM will help in developing a platform for providing technical education that would aid the government in establishing a pool of high quality people in software technologies. This program has been implemented in select colleges with the primary objective of training engineering and technically qualified students to become IBM certified professional.

*Shiksha* India Trust, an initiative of Confederation of Indian Industry (CII) has recently signed a MoU with Red Hat Inc, the world’s leading provider of OSS solutions to modernize the Indian education system. Under the agreement, Red Hat and *Shiksha* will make the latest in IT and educational content available to educational institutions across India.

The former President of India, Dr. Abdul Kalam Azad is also a supporter of OSS. In a speech delivered at Navy’s Weapons and Electronic System Engineering establishment in July 2004 in New Delhi, he called for the usage of non-proprietary software especially by the military to ward off cyber security threats. He urged the defense engineers to work as much as possible on an OSS platform. The emphasis was on the OSS platform. The emphasis was on the fact that India should strive for self-reliance in software required for the development of critical weapon systems reminding that technology embargos were imposed on India when nuclear devices were tested.

**Suggestions**

Different countries have different reasons, ranging from security to economic, to adopt OSS in their own countries. It is critical to determine the national socio-economic context and framework prior to formulating a policy while learning from lessons of other nations as well. Below are some recommendations for an OSS policy that may work for India:

(i) Government may promote software based on open source solutions especially if these software like Linux are useful for society at large. Such programmes can then be made available for use by third party, by making the source code available, under a license that will not restrict or hamper any further development of a software;

(ii) A nodal agency or department should be established to focus on OSS and interoperability in e-government applications. This agency should work towards bringing together senior officials of different ministries and agencies planning e-government systems and thereafter, prepare a draft paper on guidelines for the development, use and sharing of low cost interoperable applications of OSS across public agencies as well as oversee enforcement;

(iii) Government should sponsor computer education programs at grassroots level. It should encourage mass shift to cost effective open source software. This, in turn, would produce a computer literate generation at macro levels, which would participate in the economic growth of the country.

(iv) Government can support organizations like FSF that set the standards for OSS and its usage. It promoted well, these organizations can then come forward to facilitate its open source program.

**Conclusion**

The positives of OSS are immense for any country. However, these benefits can manifest only if a policy can truly capture the spirit of OSS, which has inherent ability to give the right boost to the economy of developing country.

In a nutshell, the logo of FSF of India explains the core reason behind promoting OSS through policies. This organization has chosen ‘charkha’ morphed into a computer CD as its logo which according to the Director, FSF-India signifies ‘weave your own code’ in keeping with the spirit of Mahatma Gandhi’s message of ‘weave your own cloth.’ The basis or true spirit behind this message is ‘self-reliance’ which is the guiding factor behind propagation of open source code by various governments and large corporations worldwide.
References
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5. Section 3 (k) of the Patents Act 1970: a mathematical or business method or a computer program per se or algorithms is not an invention.
6. Effective April 2005, definition of s 3 (k), existing before the amendment, was restored.
9. GNU General Public License, Version 2, s 6.
10. Ibid, s 11.
11. Ibid, s 12.
12. source: Red Hat India.
20. Ibid, s 49 (1) (a).
22. Copyright Act 1957, s 22.
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