

# WHY FOSS



Political, Socio-Cultural, Pedagoical and  
Economic arguments for Free and Open  
Source Software

February 2009

# What is FOSS



FOSS stands for *Free and Open Source software*

- Software – consists of programs (series of instructions to the computer)
- Source Code – the actual series of instructions written by the software programmer
- Open Source – where the source code written by the programmer is in the public domain - it can be 'seen' by any person

also see

[http://en.wikipedia.org/wiki/Free\\_and\\_Open\\_Source\\_Software](http://en.wikipedia.org/wiki/Free_and_Open_Source_Software)

# Free Source Software



Free software – Software in which user has following freedoms

1. Freedom to use (this is also there when proprietary software is bought)
2. Freedom to study source code (this freedom requires source code to be Open)
3. Freedom to modify the code
4. Freedom to distribute the code

Thus 'Free' refers to these freedoms pertaining to the source code. Free term does not mean 'no cost' or 'gratis' ('Mukta' software and not 'Mufta' software)

# Free and Open Source



Software released under a licence that meets these conditions is called Free and Open Source Software. There are templates for such release of software, for e.g. GPL (General Public License) <http://www.gnu.org/licenses/gpl.html>

Thus FOSS does not refer to a way of programming, or the quality of software or the commercial aspects of the transaction but only the contract between the software developer and the user.

FOSS can be developed and sold to a buyer, however the seller cannot restrict buyer from using, studying, modifying and distributing the software.

# Nature of 'Intellectual Property'



There are basically 2 kinds of assets – tangible and intangible

Tangible assets (property) are subject to certain socially accepted rights – for example the right to private property.

The same property cannot belong solely to more than one person. The government will protect the right of the 'owner' to peaceful possession and act against anyone who threatens such possession

# Knowledge can belong to all



Knowledge is intangible asset

There is a strong pressure to make the property laws apply to knowledge which is really not appropriate

However, Knowledge can be shared amongst many people without any person suffering any loss due to such sharing

George Bernard Shaw explained this simply – *If I have an apple and you have one, if we exchange our apples, we will still have one each*  
*However if I have an idea and you have another, then when we share our ideas, each of us will have 2 ideas each.*

# Knowledge should be shared



Thus society gains greatly by the free sharing of knowledge. The creator of knowledge also gets some rights, but these are not as absolute as property laws (copyright law, patent law are less restrictive. For e.g. Gandhiji's writings are now released into the public domain where anyone can use it without paying any royalty to Navjivan Trust, whereas any property owned by him/his successor will not be so released)

Digital knowledge goes one step even further. Sharing digital knowledge is extremely simple (copy paste!) **and conversely restricting sharing of digital knowledge is difficult**

Hence property laws should not apply in the same manner to digital artifacts including software

# Knowledge liberates and hence should not be itself be enslaved



The sanskrit saying ' **Sa Vidya Ya Vimukyate**' is in this vein – Knowledge is that which liberates.

Knowledge itself should be liberating and should not be captured and held closely (Ramanujacharya shouting out the 'secret' to salvation from the temple top! )

In fact the most common way of creating knowledge is to use existing knowledge and extend it – thus knowledge is always getting collaboratively created/enhanced

(Newton's Quote – “I stand on the shoulders of giants..”)

# FOSS – Mukta or Swatantra software



Software, as a form of digital knowledge should be as much as possible free to be shared, collaboratively created, modified for the benefit of society

Hence digital freedom is an important freedom and as society becomes more and more dependant on digital representations, software freedom will be critical

This is the political argument for FOSS

# Proprietary document formats



Proprietary Software also often uses document formats that are proprietary. For e.g. the .doc, .xls and .ppt formats used in MS Office are all proprietary. These formats are not open or available to others.

What this means is that the knowledge and cultural resources of society which belong to all, get trapped into proprietary formats and can get lost to humanity.

Using Open formats that are endorsed by Open Standards consortium is essential to ensure that our own knowledge remains freely shareable

# Economics of FOSS



Since FOSS can be distributed without much additional expenditure, its marginal costs tend to be nil.

The marginal cost of distributing proprietary software is also nil, still the vendor sells the  $n$ th copy of the software at a price. To allow this, vendor needs to hide the code (else people may still make copies unauthorisedly).

This is the proprietary software 'royalty' model

# Poor countries make rich richer



The cost of one Windows Vista operating system\* is around Rs 6,000 and that of a single Microsoft Office 2007 license is around Rs 12,000 (retail prices)

If each household in India bought one of each for their home computer, it would mean Indians gave Microsoft Rs 432,000 crores. If each of the 1.3 million government schools in India did the same, the government would pay 2,340 crores to Microsoft

Oracle, Computer Associates, Sun Microsystems, IBM, Microsoft and many other such software companies are globally headquartered in the US, these royalties end up there (\*Every computer user needs to also have the operating system software. Almost all of us also need and use 'office applications' like word processors, spreadsheets etc.)

# Economics of FOSS



A FOSS encourages local enterprises – since the source code is available, local entrepreneurs can provide software modification/ enhancement/ customisation at a price and also provide training, support and maintenance services.

In the case of proprietary software, only the vendor can provide support and maintenance and only vendor releases software upgrades - this is like the East India company model – Indians provide cheap labour to create software / ITES and import the finished goods from multinational vendors

In countries where FOSS has been adopted, it has given impetus to local industry and employment. Hence Governments need to promote FOSS as a local industry support process

# FOSS and local language



FOSS encourages local efforts since the source code is available, Hence local language customization is possible with efforts of many people. Indlinux.org is an FOSS community effort in India to develop Linux in Indian languages

CDAC has released Open Office in major Indian languages – by taking the popular Open Office application and developing the local language extensions – they call it Bharteeya Open Office

In the case of proprietary software, only the vendor can provide local language extensions – if the 'market' for such local language is not seen to be 'big enough' the vendor would not invest the required effort – for eg for languages such as Tulu or konkani, FOSS communities can develop software

# Language and knowledge command Power



Increasingly the development of language will depend on its digital presence. The dominance of English has increased since most knowledge on the internet is in English – for eg Wikipedia the popular 'Free' encyclopedia on the internet has more than 27 lakh articles in English and 6,294 in Kannada (Hindi has 25,255)!

Hence to protect and promote Indian languages, promoting FOSS is important (Japan, France, Germany, China, Russia; Internet and other software applications as well as digital information have been developed in local languages)

To protect and promote both local language and local knowledge, institutions like NKC/SKC or Language development authorities must adopt and promote FOSS localization efforts and local language portals (Kannada Wikipedia). Kerala is promoting Malayalam computing in a major way

# FOSS – a Pedagogical imperative



## What does 'learning computers' mean

Is it only to learn 'how to use' software applications OR is it how to write/modify programs

The NCF 2005 clearly recognises 'Constructivism' as a critical component of learning process. Children learn 'by doing'. Traditional 'rote learning' methods fail to help child learn.

Similarly to really learn about software, children need to be able to study and also modify source code – this is not possible in the case of proprietary software. Hence schools should avoid proprietary software and should use FOSS  
(this is not far fetched thinking – children are far faster in learning ICTs and can get into programming much quicker than adults)

# Vendor lock-in issue with proprietary software



Secondly when children are only used to proprietary software in schools, they grow up without awareness to FOSS and hence continue using proprietary software.

(Microsoft gives its operating system Windows and its office application MS Office at very low or even zero price to schools - a Brazillian official called Microsoft a drug pusher for this reason - giving free samples to hook the user)

Under Microsoft 'Project Shiksha' it trains government school teachers in Karnataka and in other places, on MS platforms only and prevents other technologies from being taught in these centres – this is both an ethical and a pedagogical issue

# Vendor lock-in issue with proprietary software



A second issue in vendor lock-in is also political. Most of the large proprietary software vendors are based in one country (Microsoft, Oracle, Computer Associates etc are all USA based), hence if they can only sell their software in other countries with US Government permission

Cuba for example could not get copies of software of US companies due to US embargo. (Cuba has recently decided to migrate to GNU/Linux platform)

Hence to protect national sovereignty, reliance on such foreign products, which cannot be locally produced, needs to be minimised

# Diversity – a pedagogy principle



At the very least government school teachers and students must be taught FOSS in addition to proprietary software, this is also required by the diversity of learning pedagogical principle

However, since FOSS gives the learner all the opportunities that proprietary software gives (to use the software) and gives more important opportunities (to study and modify the source code), there is little justification to teach proprietary software in schools

# Socio-cultural principle



FOSS is produced by communities of software developers across the world – thus it is a “collaborating, decentralized and bottom-up production model” - in contrast to proprietary software production which is secretive, competitive and top-down (single vendor based)

FOSS production hence is a new economic model of knowledge creation and sharing, with important social implications

FOSS portals like [www.sourceforge.net](http://www.sourceforge.net) represent the fruits of such global collaboration efforts

# Security



Since Proprietary software source code is not available, this can make the user potentially vulnerable to spyware installed by the vendor. Hence many public sector organizations, specially defence establishments insist on open source, which they can study and ensure that it is free of spyware (also World Bank – Satyam episode)

Secondly, since only the vendor of proprietary software can provide security patches, it makes users relatively more vulnerable to virus/worm/trojan attacks while patches can be available from the global community of FOSS developers for FOSS – which can be much quicker

On the specific case of Windows and Unix / GNU-Linux, many security experts opine that the architecture of Windows makes it more vulnerable to viruses compared to GNU/Linux

# FOSS for public sector



The Public Sector functions on the principles of openness / transparency, sharing, creating and promoting 'common' spaces and resources, collaboration, public good and equity

FOSS also shares these principles.

Hence the public sector should adopt and promote FOSS

\* Public sector – government, NGO, CBO, PSUs,  
Academic institutions

# Public Tank and bottled water



Imagine – a group of villagers digging a public tank that will provide water to all freely versus the shop in the village selling bottled water. While the shop and the bottled water it sells, do have their place in society, the government and infact the entire public sector should support and participate in the provision of water through the public tank – it can't be 'neutral' between these two water sources

Similarly, when we have free software developed for public use and proprietary software available on per use royalties, the public sector should clearly support, adopt and promote free software – this is a basic requirement of equity. **Government cannot afford to be 'neutral' and treat it as a mere technology issue, ignoring its social, political, ethical and pedagogical aspects**

# Practical Angle



There are several working options to proprietary software on your computer. Thanks to the efforts of the community of FOSS software developers, we have many good alternatives.

Governments of countries like Brazil, Peru, Venezuela, Cuba, Vietnam, South Africa and the provincial/local governments of several more countries have clearly preferred FOSS in policy and program

In India, governments of Kerala, Tamil Nadu, Assam, Haryana, Karnataka, Delhi have opted for FOSS in many areas.

Indian Ministry of Information and Communication Technology has published a policy on Open Standards, which recommends open source

Many companies too have seen the economic benefits of FOSS – ICICI Bank, LIC, groups in TCS, Kirloskar etc use FOSS on their desktops

# Popular FOSS alternatives



Operating system	Microsoft Windows	Ubuntu GNU-Linux
Word Processor	Microsoft Office - Word	Open Office - Writer
Spread Sheet	Microsoft Office – Excel	Open Office - Calc
Presentation	Microsoft Office – Powerpoint	Open Office - Impress
Email client	Microsoft Outlook	Mozilla Thunderbird
Internet Browser	Microsoft Internet Explorer	Mozilla Firefox
Photo editing	Adobe Photoshop	Gimp Editor
Video viewing	Media Player	VLCC
Database	Oracle Database	Postgress / MYSQL
PDF editor	Adobe	PDFedit

Ubuntu GNU/Linux, Firefox and Open Office are being used by **millions** of users all over the world and in India (this should set at rest any doubts about their usability or robustness)

# FOSS and you



How you can support and participate in Free Software movement

Develop FOSS applications

Maintain and debug FOSS software

Test FOSS applications

If you don't think yourself suitable for such 'technical roles' ... you still can choose FOSS for your own computer

A 2 phased movement may be easier than one big bang approach

1. Move to Open Office, Mozilla Firefox and Thunderbird (if you use Outlook) on Microsoft Windows and make these default applications

After a couple of months once you get comfortable, you can

2. move the operating system itself to Ubuntu GNU/Linux. Open Office, Firefox and Thunderbird are available on GNU/Linux and are identical in use to their Windows versions

# Join the movement



<http://fsf.org>

<http://fsf.org.in/>

<http://www.ubuntu.com/community/ubuntustory/philosophy>

<http://foss.in>

<http://freed.in>

<http://indlinux.org>

<http://sourceforge.net>

<http://public-software.in>

[http://en.wikipedia.org/wiki/Free\\_software](http://en.wikipedia.org/wiki/Free_software)

Indian Public Sector institutions

<http://nrcfoss.org.in>

<http://home.nic.in/>

<http://cdac.in>