

New Horizons of Free Software: An Indian Perspective

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Abstract

Free Software has been quietly but steadily making inroads into the world of software. While this process is important, nowhere are the ramifications potentially so productive as in a country like India. India is rich in programmer resources, but is otherwise poor. India's governments, institutions and the industry require a huge quantity of software, but due to a variety of reasons—including intellectual property rights and costs—it had been hitherto not possible to produce software for these requirements. These limitations are adequately addressed in the Free Software model, making it a key enabler in the development process for India.

Introduction

Information and Communication Technologies (ICTs) have been a mixed blessing for many Third World countries. On the one hand, ICTs bring a number of immediate and perceivable benefits to most societies. On the other hand, they result in dependencies on external entities over which these countries have little or no control. While it is clear that ICTs are necessary for a country to step into the third millennium, it is less clear what the specific problems are—for the day and for tomorrow—that these technologies bring in.

One of the most enduring artifacts of ICT is software. Endowed with several unique characteristics, software epitomizes the unique combination of power, efficiency, and opportunities of ICT. Some developing countries such as India have been able to make a global impact by its software strengths—essentially its large pool of trained human resources. Others—African countries, for instance—have been marginalized on account of a dearth of trained manpower.

The last two decades have seen the emergence of a few software superpowers—giant global corporations—that have cornered a significant proportion of the world's software market. These corporations have effectively utilized the proprietary model of software development—where the software is *owned* by the corporation—while the user only purchases the right to *use* the software (that too for a limited period in some models).

Even while many nations have anti-monopolist measures for tangible goods, the intangible nature of

software has meant the absence of such safeguards of the rights of citizens. As information monopolies continue the consolidation of their market segments, many societies, people, and countries find themselves at a loss how to defend the interests of their own constituencies.

Software Alternatives

The proprietary model of software development, although the dominant model today, is by no means the only successful paradigm. The Free Software mode of software development provides a countervailing paradigm that is both increasingly visible and extremely successful. The chief differentiating factor of the Free Software mode of software development is that Free Software is always accompanied by its source code and has a licensing scheme that is usually a variant of the GNU General Public Licence (GPL), which together confer a set of powerful benefits to the user.

Much confusion has arisen from the use of the word 'free', and much has been made of the distinction between free beer and free speech. Thankfully, this confusion doesn't exist in most non-English languages, where '*software libre*' has now become both visible and easier understood.

Free Software (used here in the broadest sense, and inclusive of the 'Open Source' label as well) empowers the user, providing her with a variety of 'freedoms', including the freedom to use the software, study it, modify it, and redistribute it, as well as guaranteeing that the product can never lose these freedoms.

While these freedoms are themselves extremely important, their collective import, especially for larger organizations, including governments, is far reaching. This paper examines these vis-à-vis developing countries in general, and India, in particular.

Developing countries share several attributes: poverty; lack of education; opaque governments; malnutrition and epidemics; and poor respect for human rights, to list some. While the well-known aphorism, “you can’t eat software”, is indeed true, it is increasingly being recognized that ICTs can play an important role in addressing development priorities and can improve the quality of life of some of the poorest sections of human society. This paper argues that *software libre* is in a position to make this happen, and is perhaps the only way to protect the rights of peoples and communities, for today and tomorrow.

The Ethical Dimension

Humankind has, in the centuries of its evolution, come up with several universal ethical values: truth, beauty, freedom, courage, justice, peace and harmony. Of these, the one that has most influenced the destinies of nations is freedom. Freedom has been described variously as “the power to act, speak or think without externally imposed restraints” or as “the right to choose”.

It is interesting to note that while countries, in general, are enhancing freedoms available to its citizens (improving human rights; supporting democracy as the nearest-to-ideal for governance), one glaring exception, where freedom is actually being curtailed, relates to software. The emergence of information monopolies not just limit choice, but also tend to stifle the emergence of alternate paradigms. In software, where the marginal cost of reproduction approaches zero, there is a clear risk of larger companies imposing ‘invisible’ barriers against alternatives (for example, by using private application programming interfaces (APIs) not known to competitors, or evolving custom ‘extensions’ to commodified standards, thereby limiting the users’ freedom of choice).

Software libre provides a truly ‘free’, morally desirable alternative, by making it possible for alternative products and services to emerge, even where they would be infeasible from purely profit oriented market dynamics. This is, of course, not accidental: Free Software has evolved to be a framework of complementary set of software building blocks that are available at low- or zero-cost, thereby making it possible for the further development in the same manner. In short, *the freedoms enshrined in Free Software, together with its much lower costs, allows*

it to break the profitability barrier, thereby allowing alternative products to emerge even where market dynamics dictate otherwise.

The Legal Political Dimension

From a pragmatic sense, the most important point of distinction between proprietary and *software libre* has to do with its politico-legal aspects. First, Free Software removes much of the licensing nightmare associated with proprietary software (for example: per copy, per seat, per CPU, timebased activation), and actually ‘liberates’ software as also the users. Second, the freedoms associated with Free Software becomes tremendously important in some contexts—e.g., for a government, on account of factors such as sovereignty, autonomy and information security. Third, it allows for modification and maintenance by any qualified entity, thereby avoiding the vendor ‘lock-in’ associated with most proprietary software. Finally, Free Software allows new software to be evolved or modified from earlier software, reusing code where required with the guarantee of inalienable rights to the fully developed artifact.

For India, this dimension perhaps overshadows most other advantages of Free Software. Governments are taking steps to implement IT enabled services in India’s provinces. These efforts do not, in most cases, fully take into account the ramifications of such government decisions. At least in some cases, intellectual property related disputes with local companies have already come to light. One wonders how these governments—which are presently finding it difficult to deal with small local companies vis-à-vis licensing issues—will be able to deal with the giant software global corporations and yet ensure that the interests of its own people are protected.

As software entrenches itself as a prime enabler of governance, it is extremely important for governments to understand this dimension. The *software libre* model is the only solution that will protect the rights of governments and its people. The following quote, reproduced from *A Rebuttal to Meyer’s “The Ethics of Free Software”*, available at <http://www.advogato.org/article/94.html>, makes this point amply clear:

Having the source is about people, the everyman and everywoman, keeping a stake in the software technology that’s fusing with, running and controlling their everyday lives. It’s not about exercising power, it’s about the freedom and ability to exercise that power when needed.

The Technology Dimension

The foregoing discussion on ethics or legal aspects of *software libre* would have been only of academic interest if the products of the model were merely as good as those of the proprietary model. However, it can safely be said now that the genre of software produced by *software libre* is thought (by programmers, and, lately, by the industry as well) to be technologically superior.

User perception of software quality is dependent on a number of parameters: performance; features; the presence and number of bugs; presence of security holes; ability to incorporate users' own requirements; availability of patches and fixes; and the availability of a community of users who can help novices.

Software libre scores high on almost all of these metrics. It is interesting to note that the proprietary stream highlights the 'fact' that "Free Software is unsupported". Even when legally and technically correct, the statement is especially ironic in the context of Southern countries, including India. While users pay the same price (in most cases) for products in the South and the North (although, by Human Development Index standards, the relative price is many times more in the South than in the North), the 'support'—which has already been factored into the price—is virtually nonexistent in Southern countries (where telephone infrastructure itself is nonexistent in many situations). Most people who buy shrink wrapped software in India *never use telephonic support*.

Other observers have pointed out how the superior quality of *software libre* is not an accident. On the contrary, this superiority has to do with its development methodology, which features the following practices:

- Large numbers of programmers involved
- One or more maintainers, who alone can change code in the repository
- Peer review of code
- Parallel testing/debugging by numerous users
- Bug reporting by hundreds of users
- A sense of ownership of the code
- Recognition to chief contributors in documentation

Security by obscurity, long promoted by proprietary companies, is clearly a very poor substitute to parallel testing and peer reviews, all by a community of programmers who feel a sense of ownership in what they do.

The Economic Dimension

If the fruits of ICT should benefit a significantly large section of humankind, some kind of a democratization of computing ('computing for the masses') is required in Southern countries. There are several obstacles to such an initiative, the most important of which are the lack of funds for hardware and software, and the lack of basic infrastructure. While the latter is outside the scope of this paper (although this is being addressed by development programmes based on both internal resources and external aid), the former is something that can be addressed by *software libre*.

While free as in free speech is very important, almost equally important for the South is free as in free beer. The relatively low cost of *software libre* products—for now and for the future—is an important consideration that can influence the decision to adopt it. While exact figures for the savings by using Free Software vary, what is clear is that there *are* substantial savings, even when the relatively large costs of creating trained manpower for free platforms (which may not exist in most places) are factored into the analysis.

It is important to realize that the 'price' of software is different from its cost. Several proprietary companies are known to offer substantial discounts on the list price of their software, especially to institutional buyers such as governments or schools. While this results in a temporary reduction in the funds outflow, there is no guarantee that—once the lockin has happened—the vendor will not increase prices. *The cost of proprietary software is high, no matter what its price: freedom has been lost.*

Other Dimensions

Software libre is socially desirable from several other aspects as well. Some of these are examined below:

Education India has an edge over most other countries in IT, since it has a large pool of trained human resources in the area. In order for India to continue to maintain this edge, it is important to ensure that its students have access to the latest technologies and practices in IT. Free Software *is perhaps the only example of live code that is available for students to examine*. No surprise that many premier institutions in India already use such source code for teaching their students.

Globalization and Market Penetration While some communities are able to utilize globalization to further their own interests, most communities in the South are vulnerable—through loss of livelihoods,

and markets—to the relentless process of globalization.

Globalization brings with it the tendency for businesses to shift to globally competitive locations. It is difficult to resist this process, as the rubber and coconut farmers in the Kerala province of India have realized to their dismay.

It is important to empower smaller formations (microcompanies, programmer cooperatives) that can provide localized solutions to local problems of communities where possible. While globalized solution development (for both free and proprietary models) will continue to exist, micro-initiatives will surely have a role in contributing to self-sufficiency and autonomy of smaller communities scattered over the globe. *Software libre* can be an important enabler of this process.

Cultural Diversity That the world faces the risk of a ‘global monoculture’—where a specific culture emerges as globally dominant—and that IT in its present form would contribute towards this process, has been pointed out by several researchers. The absence of localization of software has been raised as one factor that contributes to this process, as has been reported from Iceland.

In India, where over 500 languages are spoken, and where there are over a dozen distinct scripts, the problem of preservation of cultural diversity assumes importance. From direct experience, proprietary software vendors will develop localized versions if—and only if—this move makes commercial sense. If not, the community is doomed never to use computers in their own language. This is the reason why in Kerala one of the most eagerly awaited developments is that of a Malayalam font on *software libre* platforms (work for which is under way at present).

Gender Women form one of the most vulnerable sections of most Southern communities, having to bear, as they do, the additional burdens of cultural taboos, childbearing and weaning, and minding the household. All this has meant that, by and large, the average Southern woman is far removed from computers and the Internet.

There are, however, many initiatives that are trying to bring women into the technological mainstream, generally in the form of IT enabled services. The *Kudumbasri* experiment in Kerala, for example,

organizes women to carry out data entry operations. While there is an element of subsidy to these organizations at this time, they will definitely need to become financially viable within a short time.

For organizations of women, as well as for individual women, *software libre* could prove to be a true liberator—it doesn’t carry any licensing penalty, is extremely cost effective, is lightweight, is easy to locate and download (as opposed to purchasing a product, and getting it installed by an external technician), and is free of unnecessary features that make some proprietary software overly complex. It would not be an exaggeration to say that *software libre*, in general, is more woman friendly than proprietary software.

In Conclusion: From Subaltern to Mainstream

Software libre has moved from the fringes of computing to its mainstream. The values underpinning it have provided it with a vision that is only now—nearly 25 years after its founding—being realized in its entirety.

This paper has argued that for national governments and concerned individuals alike, *software libre* is a better option on account of its inherent ethical vision. For national governments, *software libre* protects their autonomy and sovereignty, whereas for the individual, it provides the freedom to choose. For enterprises and organizations, *software libre* provides a pragmatic balance between economics and functionality.

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