EDITORIAL

Open Source Software: The Silent Revolution

Knowledge increases when shared – so goes an old saying. A modern (and somewhat cynical) equivalent would perhaps be 'Information proliferates when shared'. Sharing information, of course, has never been as easy as it is at present – what with the advent of e-mail (and particularly with the ability to forward mails with just a click). Paradoxically, however, there seems to be a conspicuous decline in the quality, and most certainly the quantity of information worth sharing. Perhaps things are not so bad, but what other impression can anyone form when most of us begin and end our working day by cursing the flood of spam mails while deleting unwanted mails. Unfortunately, this is quite often the least of the problem; as many of us whose hard-disks have experienced crashes (that too, following Murphy's law, just before the final version of the important manuscript/project report could be saved), due to attacks by malicious computer viruses would testify.

So strong is the negative feeling elicited by these internet-related matters that most often they completely overshadow many of the positive developments. Of course, it is not as if we are unaware of the major exciting innovations that make big splashes. In almost every researcher's daily activities, Hotmail/Yahoo, Netscape/Mozilla and of course Google (and/or their clones) seem to contribute to a significant extent. Undoubtedly, the spectacular progress in genomics and bioinformatics is mainly due to the web-based technologies of sharing results – i.e. the free availability of data on sequences and structures of biomolecules, and of softwares tools for sophisticated analysis and visualization of the data. And these are, indeed, very major successes and do deserve all the adulation that they get.

While the high quality of these services and products is commendable, much more praiseworthy is the spirit that makes the offerings freely available to all. Think a little more, and you will realize that it is not just these big players that are public-spirited; there is this nearly unlimited supply of excellent quality software for doing almost anything that can be done on a computer – produced by an unlimited number of developers, of course. What is remarkable is that many of these software packages that have been developed single-handedly and with substantial effort and creativity, have been made freely available for use.

And when one begins thinking about this aspect, one cannot but be overwhelmed by the sheer magnitude of the contribution towards public good made by this (mostly) nameless, faceless, unsung army of volunteers – the developers of free/public domain/open source software packages. It is not just the high quality nor the remarkable diversity, nor the sheer ingenuity, but even the amount of hard and painstaking efforts that have gone into the making of these is truly remarkable. The phrases 'hard, painstaking' and 'unsung, nameless' are most likely to evoke images of gaunt, serious and silent (nerdy types!) novices of some religious order, pecking away in isolation at their keyboards during unearthly hours. Nothing can be farther from the truth; those who have had a chance to read the manuals, web pages or e-mail exchanges related to many of the free software projects will readily describe the community of free software developers as an exuberant, witty and highly talented bunch of revellers with an admirable (though sometimes rather risque) sense of humour – who seem to be having great fun in doing what they are doing. The fact that the product turns out to be excellent seems almost incidental.

What are the factors that make people create things and give them away (almost) freely? There will be many different answers of course. Earning goodwill is surely a powerful motive. Making a small amount of money (that too, using one's own talent and hobby) is also one of them; the 'shareware' concept left it to the conscience of the downloader to send some money to the developer. As is typical of the community, 'shareware' soon led to 'pizzaware', 'beerware' and other such wares! The most common motive probably would be to earn admiration from peers, as succinctly expressed in one of the quotes: 'Don't want money. Have money. Want admiration'.

And admiration they certainly deserve – especially those who develop utilities that are so often used (file compression or zipping, for example). Unfortunately, however, they seem to become victims of their own success! These packages work so well and are used so regularly that they become invisible, unnoticeable and taken for granted. Just as the names of inventors of technologies underlying photocopying machines, cable TV and cellphones remain

mostly unknown to most users, even the IT professionals would find it difficult to name the developers of many of the small and highly used packages.

The field is not without its superstars and demigods, however. Names of Linus Torvalds (the pioneer of linux, the operating system actually on way to world domination) and Richard Stallman (of the GNU initiative and one of the major spirits behind the free software movement) are the names far too well known to warrant more details here. Equally famous are the various consortia/groups that work on projects too large for any single individual – the X window system that provides graphical interface to various versions of unix, or the apache web server that runs a major proportion of the websites in the world. For scientific typsetting, there is the unsurpassable TeX, originally developed by Knuth. There was a time when the appearence of an accepted manuscript in a leading mathematical journal could be reduced to two months from two years if the authors were willing to send a document set using TeX. As an aside, TeX, Linux and many other packages have contributed in a major way to the booming sector of 'knowledge economy' in India. The centres for manpower training for effective and efficient use of linux and related open source softwares are coming up in many places, and vendors who collect, compile and attractively package on CDs theme-specific packages can also be seen in a few places. The typesetting (using TeX, of course) of scientific and technical manuals especially in European languages is being increasingly outsourced to India, so it seems (now whether to regard this too as another example of India providing techno-coolies is a debatable issue).

While the widely acknowledged superiority of many of the freely available (open source) software over commercial ones is something to rejoice about as the triumph of Davids over Goliaths, there is something quite inevitable and unsurprising about it. Many of the softwares are large and complex, and their components can interact with one another in often unanticipated ways. Very large-scale testing is therefore essential – and what better way to recruit testers than by giving away software for free? As has been said, the most powerful of the human tendencies is for finding faults with something done by others – and the more subtle the fault and the faster one finds it, the more is the joy. The rapid increase in the reliability of

free softwares is by now so well accepted that even the evaluation versions of commercial softwares are being given away for free. The other reason for the superiority of free software is even more obvious – it is the labour of love, the joy of working on a problem of one's own choice, and the luxury of working at one's own pace. No wonder that the salaries of the programmers in the IT business are called 'compensations' – the employers have a lot to compensate for!

Where does India, Indians, India's scientific and technical establishments figure in all this? Perhaps the rank is very similar to that one finds when one examines India's scientific performance. There are sporadic sparks of innovation (the ingenious shellsock and the story of its battle with the obdurate attitudes that tried to curb it follows a typical Indian script). One does see at least a few Indian names in the long lists of contributors that accompany some of the high profile open source packages. The efforts of C-DAC and a few other groups in making Indian language word processing software freely available are praiseworthy. However, one will be hard-pressed to think of a truly world class open source software (something worthy of the IT superpower that India is supposed to be!) fully developed in India.

This is a little surprising. After all, making freely available the fruits of one's knowledge to others is inherent in the Indian tradition – it is considered noble, in fact a sacred duty to give away knowledge freely. An extreme view is adopted by some of the practitioners of traditional medicine, who believe that their proficiency would diminish should they start demanding payment for having performed their duty! In any event, this is one of the few fortunate instances that India's traditional strengths are in perfect harmony with the modern ones, and the openness of economy, openness in knowledge availability and openness of opportunities is sure to spur the open source software movement even faster. In the meanwhile, one can always exult in the very welcome demonstration of the innate goodness of creative people provided by the continued rapid growth in the availability of free, powerful, diverse and high-quality software packages witnessed since the beginning of the internet era.

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