

Free Software Projects in Public Enterprises of Kerala

**A compilation of Free Software Usage
in Public Enterprises of Kerala**



Society for Promotion of Alternative Computing & Employment

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SPACE, Society for Promotion of Alternative Computing and Employment is an initiative of a community of software professionals and technologists aspiring to build a novel IT industry that is creative and socially relevant. SPACE envisages to bring the benefits of Information and Communication Technologies (ICT) to a larger section of society by promoting employment and development through FLOSS. It aims to address the special needs of Kerala such as local language computing and will act as a link between Kerala and the FLOSS Community around the world.

Table of Contents

Introduction.....	1
Successful Free Software Projects from Kerala.....	3
Sutharya Keralam.....	5
Program Performance Monitoring System.....	6
Management Information System for ICDS.....	7
IT implementation in KTWFB.....	8
DC* Suite.....	9
Kerala PWD-Wings Portal.....	10
ERCMPU.....	11
Calicut University Computerisation.....	12
Institutions Promoting Free Software in Kerala.....	13
Keltron.....	15
National Informatics Centre.....	16
C-DIT.....	17
CDAC.....	18
Relevance of Free Software in India.....	19
Introducing Free Software.....	21
Free Software and Developing Nations.....	23
Applying Free Software.....	26
Governments for Free Software.....	29
Conclusion.....	31

Introduction

Free and Open Source Software (FOSS) is gaining increased attention the world over for a variety of reasons including robustness, cost-effectiveness, flexibility, lack of legal encumbrances, and most of all, for the freedom that this genre of software embodies. In India too, there have been significant advances in the use of FOSS operating systems, products and principles.

Kerala was the first Indian State to explicitly provide a place for FOSS in its official policy, especially for domains such as e-governance and education. Kerala's civil society and the media have already been sensitized on the potential of FOSS for the development of the State, leading to extensive public debate on issues relating to technology choices.

Although Kerala has tried out numerous e-governance initiatives, it is not widely known that several of the successful initiatives are FOSS-based. SPACE thought it important to create an inventory of successful e-governance projects based on FOSS, so that it would inspire more of such projects in the future. This was the main driver for the present study of FOSS in Public Sector, and this report is an effort to take forward the public debate on technology choice to new realms.

While we have tried to document the experiences of projects we could identify, this is not perhaps an exhaustive inventory of FOSS-based projects in Kerala. In this study, we have attempted to present basic parameters such as FOSS technologies used, the size of the project and details of the development team for every project. We hope that this information would be of value to policy-makers in taking more informed decisions on technology.

This study reveals us that the use of FOSS in Kerala is much more widespread than what most of us had imagined. Many developers seemed to have silently deployed FOSS in Kerala's public sector without much publicity nor debate, while many decision-makers seem to have silently promoted FOSS-based solutions development. This report is a collection of some of these unsung stories. We are sure this report will encourage more people to follow the path of FOSS in the Public sector and in the Government.

Satish Babu
Executive Secretary
SPACE



Successful Free Software Projects from Kerala



1 Sutharya Keralam (Transparent Kerala)

Synopsis

Sutharyakeralam is a Right to Information initiative of the Government of Kerala, aimed at bridging the gap between the public and the Government, and thereby ensuring transparency and efficiency in the functions of the Government. This project is a part of the Kerala Fast Forward Programme. This project was developed by Centre for Development of Imaging Technology (CDIT¹), completely on Free software technologies.

Project Details

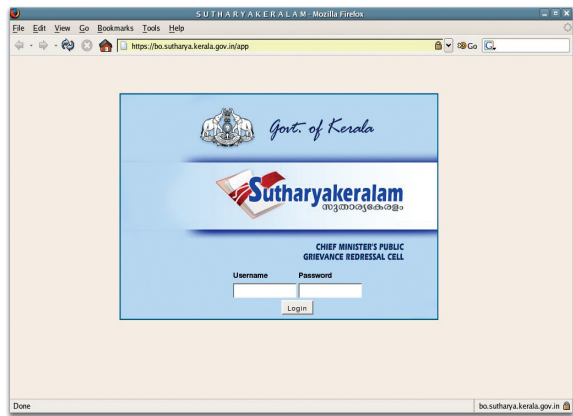
A call centre, an online public interface to collect and track complaints from public, and the live webcast of Chief Minister’s Office, are the highlights of this initiative.

The Sutharyakeralam project is developed and maintained by CDIT, a Public Institution under the Government of Kerala. The web & call centre interfaces of Sutharyakeralam is developed by OST (Open Source Team), a special team for free software development in CDIT. Now Sutharyakeralam is handling an average of 50 complaints per day through its web interface and around 60-70 calls through the call center interface.

Video Streaming of Chief Minister’s Office is done by using VLC streaming server . The project streams MPEG4 Video through HTTP protocol using two VLC streaming servers². The first one is for transmission of camera raw stream from CM's office and the second one is for live web cast of compressed video. The project was done by CDIT in association with Linuxence Information Systems³.

¹ www.cdit.org
² www.videolan.org
³ Linuxence Information Systems Pvt. Ltd. is a GNU/Linux-based enterprise based in Thiruvananthapuram providing free software solutions.

“CDIT always supports free software for e-governance. The selection of free software for live webcast minimised the total cost of the project to a large extent. Now we are thinking about creating a facility for video conferencing of various departments with free software packages” says Upesh Kumar.P.M, member of development team.



At a Glance

<i>Client</i>	--	Govt. of Kerala
<i>Developed by</i>	--	CDIT
<i>Team Size</i>	--	4 developers
<i>Development Time</i>	--	3 months
<i>Technologies</i>	--	PHP, MySQL, Apache, VLC, GNU/Linux
<i>User base</i>	--	
State Wide, ~50 complaints/day through web and ~70 calls/day through Call centre interfaces		

2 Program Performance Monitoring System (PPMS)

Synopsis

PPMS is a system developed by Keltron (Kerala State Electronics Development Corporation) for tracking the performance of various departments as part of the Modernising Governance Program initiated by Government of Kerala.

Project Details

Program Performance Monitoring System (PPMS) is a large project that addresses all sectors of governance. The system is developed by Keltron and built with the popular PHP/MySQL solution.

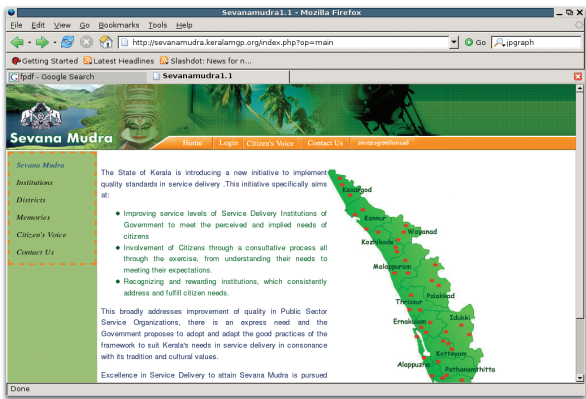
PPMS consists of 4 modules. The first project PPMS1 is a performance monitoring system for 17 government departments. It covers a total of 93 initiatives of these departments, 50 of them in the first phase. The system uses result base management methods to measure performance.

PPMS2 is for the monitoring a set of service delivery projects. It addresses performance monitoring of 2584 institutions statewide, like schools and community health centers. It mainly deals with fund flow management, administrative payment orders etc.

The Third module is a human resource module named e-bandham. It monitors attendance, leave, travel allowances etc, of program support executives. The fourth module Sevanamudra, is a Quality Improvement Program & Performance Certification Mechanism for government institutions.

In the first stage, it covers 42 institutions. “All these projects need statewide implementation. So it is a must that we avoid softwares that need heavy licensing costs in order to reduce the expenses. Another issue is cross platform compatibility. PHP and MySQL are very popular packages that meets all requirements that

are very easy to study and code. We also used many PHP packages like FPDF (free PDF), which allows one to generate reports in PDF formats without the use of Proprietary Softwares , JpGraph, a Graph creating library in PHP for generating graphs etc.” says Uma, team leader for the project.



At a Glance

<i>Client</i>	--	MGP Department, Govt. of Kerala
<i>Developed by</i>	--	Keltron
<i>Team Size</i>	--	5 developers
<i>Development Time</i>	--	28 months (ongoing)
<i>Technologies</i>	--	PHP, MySQL, Apache, GNU/Linux
<i>User base</i>	--	
PPMS1: 17 Departments, 93 Initiatives		
PPMS2: 2584 Institutions, Statewide		
ebandham: statewide		
Sevanamudra: 42 institutions, statewide		

3 Management Information System for ICDS

Synopsis

Management Information System (MIS) for Integrated Child Development Services(ICDS) is a World Bank funded project developed by C-DAC for Department of Social Welfare, Kerala for measuring qualitative and quantitative improvement of Anganwadi centers in the state.

Project Details

MIS for ICDS⁴ is a tool for the monitoring and reporting of health and nutrition status of children, women and girls at the 12,000 anganwadi centers in 163 blocks across the state.

The Software front end is developed with QT Designer⁵, a comprehensive application development framework in GNU/Linux. For database this project uses PostgreSQL⁶, a powerful, free software relational database system. The system basically creates various analysis & monitoring reports based on user entered data. The report generation is done with Kugar⁷ reporting tool which is a part of Koffice suite.

“We need to deploy this software in State Program Monitoring Unit, all district offices & 163 blocks. Free software is the only affordable solution for an e-governance project where large scale deployment is needed ” says Sasi.P.M, Additional Director of e-Governance Section in CDAC.

“This was our first free software project. We found QT an excellent tool but Kugar was not stable at the time we started. We had to spent a lot of time in studying the developing platform because of the absence of familiarity and proper guidance", he added.

The software got appreciation from World Bank and other users. In the first phase it is deployed in State and District Program Monitoring offices. In the next phase, it will be deployed at the block level. All systems are working on GNU/Linux with C-DAC providing the necessary training for using it.



At a Glance

Client	--	Dept. of Social Welfare, Govt. of Kerala
Developed by	--	CDAC
Team Size	--	8 developers
Development Time	--	24 months
Technologies	--	QT, java, PostgreSQL, Kugar reporting tool
User base	--	12000 Anganwadi centers in 163 Blocks. Implemented in District Offices, 8.4 million beneficiaries

⁴ Management Information System for Integrated Child Development Scheme

⁵ <http://www.trolltech.com/products/qt/>

⁶ <http://www.postgresql.org/>

⁷ <http://www.koffice.org/kugar/>

4 IT implementation in KTWWFB

Synopsis

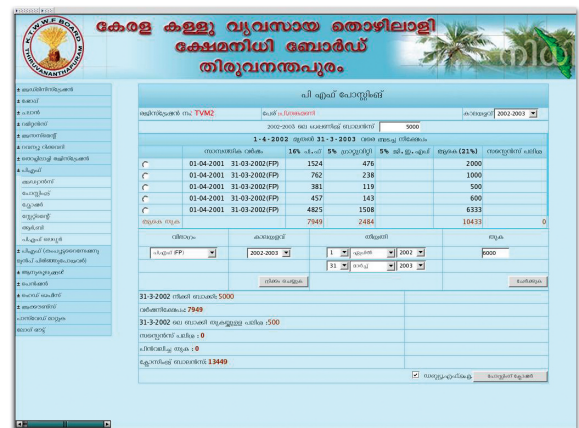
It is the system developed by CDAC to manage Provident Fund, Pay rolls, leave, Fund distribution etc of KTWWFB (Kerala Toddy Workers Welfare Fund Board)

Project Details

The highlight of this project is that it is the first Malayalam Unicode supported E-governance project.

The project uses Java, Apache Tomcat Web server and postgresSQL Database. The project is implemented in State and District level offices. There are 13 offices statewide.

“There were some issues in the rendering of Malayalam Unicode in browser at the time of our project. So we tuned Mozilla to enable indic language support.” Says Sasi.PM, Additional Director of e-Governance Section in CDAC. “This free software project helped us to replicate the same code base for IT implementation at Tailoring Workers Welfare Fund Board, which helped in saving a lot of time and cost for that project” he added.



At a Glance

Client	--	Kerala Toddy Workers Welfare Fund Board.
Developed by	--	CDAC
Team Size	--	9 developers
Development Time	--	18 months
Technologies	--	Java, Apache Tomcat server, PostgreSQL, GNU/Linux
User base	--	

Statewide in all district offices

5

DC* Suite (District Collectorate Suite)

Synopsis

DC* Suite is an integrated set of applications covering all areas of work in the District Collectorate. It is developed by NIC (National Informatics Center) for Government of Kerala.

Project Details

DC* suite was conceived as a complete suite for automating and managing functions at a district collectorate. It creates a systematic way to handle file flow in the office. The project is implemented using popular PHP/ MySQL, Apache, GNU/Linux solutions.

Handling of file movement is the backbone of DC*Suite. This project integrates around 20 applications in district collectorates. Now it is on trial run at Palakkad district Collectorate. It will be deployed in all district collectorates after completion of the project.

“After the success of this project we used the same technology for two other major projects, one for Centralised Allocation Process and the other for MESSAGE, a similar file flow handling system for the State Secretariat. “ says Prasad Varghese, a developer of DC suite.



At a Glance

Client	--	Govt. of Kerala
Developed by	--	NIC
Team Size	--	10 developers
Development Time	--	24 months (Ongoing)
Technologies	--	PHP, MySQL, Apache, GNU/Linux
User base	--	
Statewide. Now implemented in Palakkad District.		

6 Kerala PWD-Wings Portal

Synopsis

Kerala PWD- wings web portal⁸ was developed by Inapp⁹ for Kerala Public Works Department for automating various activities of PWD (Public Works Department).

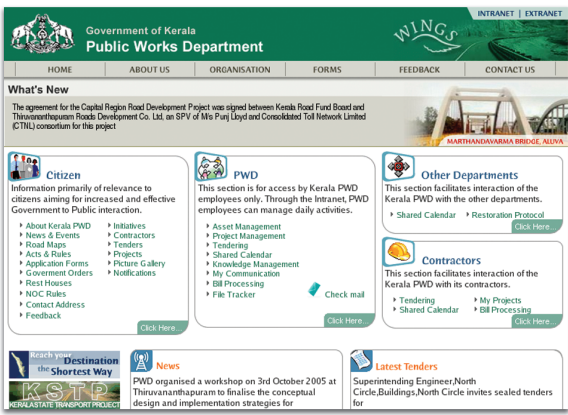
Project Details

This project aimed at automating various functions of PWD and is built on Java Technology on GNU/Linux System.

“The PWD went through an elaborate decision making process to select Free Software. Mr. Babu Jacob IAS, the PWD Principal Secretary and Mrs. Lida Jacob IAS, the PWD Secretary, gathered opinions and information from all vendors including Oracle and Microsoft. A final discussion was held in the presence of the representatives of Free Software, Microsoft and Oracle to decide on the platform.”

“Once the platform was selected and implemented, the PWD have taken it upon themselves to propagate it. They are in the process of moving desktops to GNU/Linux based OS.” Says Amarnath Raja of Inapp.

The project provides various interfaces to PWD Employees, PWD Contractors and the public; it tracks bills, tenders, files, payments etc. The project uses Apache web server, Jakarta-Tomcat Application Server, PostgreSQL database server and Postfix mail server. It also uses GNU mailman for Mailing list.



At a Glance

<i>Client</i>	--	PW Department, Govt. of Kerala
<i>Developed by</i>	--	Inapp
<i>Team Size</i>	--	5 developers
<i>Development Time</i>	--	12 months
<i>Technologies</i>	--	Apache Web server, Jakarta-Tomcat, PostgreSQL ,Java, Postfix, Mailman GNU/Linux
<i>User base</i>	--	
Statewide. PWD Employees, PWD Contractors, Public, KSEB, Water Authority, Telecoms, Public users		

⁸ <http://keralapwd.net>
⁹ <http://www.inapp.com>

7

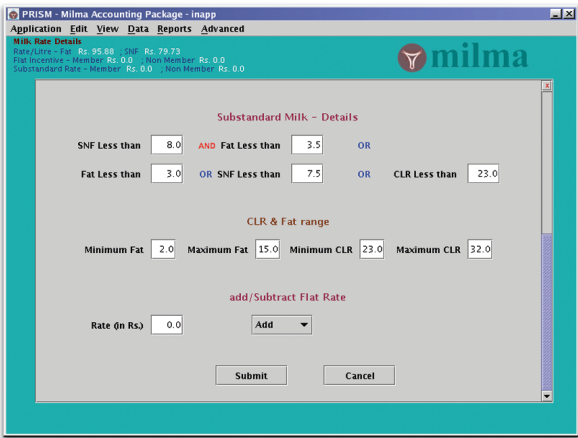
ERCMPU

Synopsis

This is a stand-alone application developed for automating the daily activities in ERCMPU¹⁰ societies including the financial activities, reports, MIS reports etc.

Project Details

Milma Prism was developed by Inapp for Milma, Eranakulam. It is used for automating various financial activities in Milma societies. It is developed using Java technology on GNU/Linux platform. It is implemented in Milma societies statewide.



At a Glance

<i>Client</i>	--	ERCMPU
<i>Developed by</i>	--	Inapp
<i>Team Size</i>	--	4 developers
<i>Development Time</i>	--	18 months
<i>Technologies</i>	--	MySQL, JAVA, GNU/Linux
<i>User base</i>	--	
MILMA Societies, Statewide		

¹⁰ ERCMPU is the Eranakulam Regional Co-operative Milk Producers' union Ltd. <http://www.milma.com/>

8 Calicut University Computerisation

Synopsis

Calicut university took the initiative to develop softwares for computerisation of Finance and Examination sections. Development was done completely in house and with extensive use of free software.

Project Details

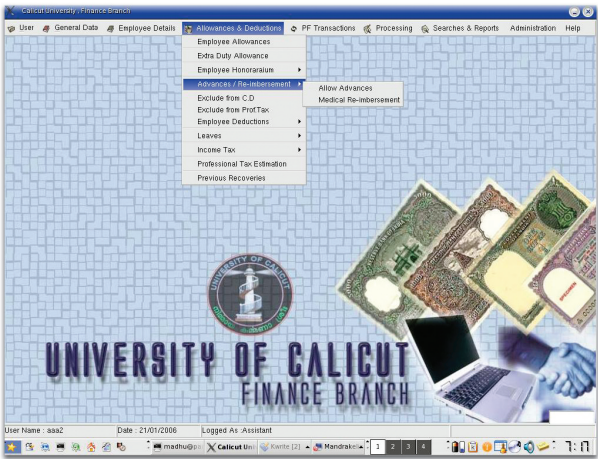
3.5 lakh students and around 2000 staff members of Calicut University today enjoy benefits of computerisation, Finance and Examination sections being the main beneficiaries. The entire project was done in house using free software.

Computerization of Examination section today helps University in the registration of students for exams and in issuing marklists. The project will cover all courses and manage entire workflow relating to exams in two months time. Around 50 terminals running GNU/Linux has been provided for the project, which will soon be expanded with 50 more terminals. Around 200 staff members are working with this system.

Employees of University including those in sub centers of University in Malappuram, Kozhikkodu, Palakkadu and Trissur districts need not wait for their monthly pay cheque. Thanks to computerisation in Finance section, their salary will be credited to their Bank accounts with out any paper work. All these vital systems are powered by free software like GNU/Linux.

The development team says that from their experience, GNU/Linux system is very stable and powerful for handling large scale computerisation like the one they did in their University. The major hurdle they faced in development was lack of technical support when they started the project in 2003. According to Mr. Madhu, System Administrator,

Calicut University "By using GNU/Linux, we have already saved 4 lakh rupees in Operating system cost and another 10 lakh in application software cost, and the savings are bound to increase in the coming years."



At a Glance

<i>Client</i>	--	Calicut University
<i>Developed by</i>	--	In house
<i>Team Size</i>	--	2 - 5 developers
<i>Development Time</i>	--	18 months
<i>Technologies</i>	--	Python, GTK+, PostgreSQL
<i>User base</i>	--	
All students (3.5 lakhs), all employees (~2000)		



Institutions Promoting Free Software in Kerala



Keltron (Kerala State Electronics Development Corporation) is a pioneer in providing Free Software solutions and supports for various Government or non-governmental agencies in Kerala. The Software development team and Web services team of Keltron are working on various Free Software projects. Apart from the MGP project cited earlier, the Web service team has done around 60 websites till date in PHP/ Mysql, among which 20 are major projects.

Projects

Web ERP

This project is aimed at providing a web based Enterprise Resource Planning software for internal operations in KELTRON. It works on PHP /MySQL.

Website of Chief Electoral Officer, Kerala

This project is also based on PHP/MySQL. This project has a huge database of 20 million records of the entire electoral rolls of the State. The total record size is 9GB. This website is available at <http://ceokerala.com>

Industrial Resource Locator

Industrial Resource Locator is essentially a database of resources available for industrial activity in Kerala. This facility also provides a host of support and information services for use by potential investors. It is also built on the PHP/MySQL solution with GNU/Linux. The project is available at <http://www.resourcekerala.org>.

Webhosting in GNU/Linux

Keltron's web services team also provides web hosting in GNU/Linux. Keltron Provides hosting in a Red hat Enterprise server with Apache/MySQL & PostFix mail.

Public Prosecutor Office Linking

This project is an ongoing project by the Software Development team. This project uses PHP & PostgreSQL database. A four-member team is working on the development of this project. The project aims at

linking State Secretariat & Public Prosecutor cells.

Accident Case Monitoring

This project is also based on PHP and PostgreSQL by the Software Development team of Keltron. This ongoing project aims to provide an interface for monitoring of accident cases for State Insurance.

Computerisation of Records room in Kerala Secretariat

This project is also an ongoing one based on PHP and PostgreSQL. This project aims to provide a mechanism to handle files in the Records room of Kerala Secretariat.

Other Projects

Some of the notable projects developed by Keltron in FOSS are

- *CADA Information System for Command Area Development Authority, Thrissur
- *Guest House Reservation system for Tourism Department, Kerala
- *Plan Monitoring Scheme for Scheduled Tribe Department, Kerala
- *Kerala Law Department, Secretariat website

2 National Informatics Centre, Kerala

National Informatics Centre, under Ministry of communications and IT, Government of India is providing IT solutions for State and Central Governments in India. NIC Kerala is doing a lot of its projects on Free Software. As like the DC*Suite project, some notable projects of NIC in Free Software are listed below.

Projects

Press Information Bureau (PIB)

Thiruvananthapuram Website

PIB website is designed by using Mambo, a popular Content management system in GNU/Linux. “The use of Mambo has reduced development time very much” said Asha Varma and Geetha, developers of this project. The project only took 4 man months for development.

CLAIMS

Computerisation of Lok Ayuktha Information Monitoring system (CLAIMS) is for the Computerisation of Courts & offices of Kerala Lok Ayuktha. It is an information retrieval system for court cases, monitoring of assets and liabilities of public servants, automation of the establishment, and a library management system. CLAIMS uses PHP, MySQL and Apache solution with GNU/Linux.

Inpatient Monitoring System (IMS)

Inpatient Monitoring System (IMS) for Medical College Thiruvananthapuram is a system that maintains information about the patients admitted to Sri Avitam Thirunal Hospital. It also facilitates decision making by providing various statistical and analytical reports. The Project works on Intranet and is developed with PHP and MySQL in GNU/Linux. It took only 45 days and 2 developers for its development.

DCI net

DCI net is an Employee Empowering portal in intranet for District Collectorates. It uses GNU/Linux,

Apache, PHP and PostgreSQL. It has notice board and calendar applications on intranet for Employees empowerment. The Project is now implemented in Wayanad District. The total Development time of this project was 2 months with one developer.

Treasury Information Management (TRIM)

TRIM is a computer based system to provide various treasury services to Government departments and the public. It is developed using PHP, MySQL and Apache. The project's URL is <http://treasury.kerala.nic.in/>

Ruralsoft-Kerala

It is an online system monitoring Central Government assisted scheme of Rural Development department. It is also uses the PHP and MySQL based system. The project URL is <http://ruralsoft.kerala.nic.in/>

System for Common Allotment Program(CAP)

It is an Intranet based system for the decentralised allotment of candidates for admissions to Engineering and Medical Courses in Kerala. The system is developed using PHP and MySQLThe project took a development time of 6 months by 3 developers.

Diary net

This is a web enabled system for Diary Cooperatives in Waynad Disrict. This is developed using PHP and MySQL.

The Open Source Team in C-DIT(Centre for Development of Imaging Technology) have done various efforts for promoting Free Software in public sector through Free Software consultancies to Government Institutions, Public and Staff training programs, local language computing and content creation in free formats. The focus of OS Team in free software is mainly in 3 areas. Free Software support for C-DIT's internal needs, Public awareness campaigns, and Development and deployment.

Projects

Training initiatives

C-DIT is conducting a one day bimonthly course in 'Migrating from windows to free software & linux system administration & networking' course. Around 1100 people (17 batches) have successfully completed C-DIT's Migration to GNU/Linux Training courses, and 32 people (4 batches) have passed GNU/Linux system administration Course till November 2005. The Basic Course covers Introduction, Familiarisation and basic applications of GNU/Linux. They also conduct GNU/Linux trainings for Government Departments and institutions like IT Department, VSSC, RTTC¹¹, LIC¹², Vigilance Department etc. and for some Engineering colleges. They also conducted one week specific training on Bioinformatics Applications on GNU/Linux for ICAR¹³.

Nila Malayalam Editor

C-DIT Developed a Malayalam Unicode supported editor named Nila. It is developed using GTK¹⁴. Now C-DIT is in the second phase of its design named Kaveri.

Intranet Website for VSSC

C-DIT developed an Intranet website for Vikram Sarabhai Space Center (VSSC) with PHP, MySQL and

Apache. The project took 2 months for development by a single developer. For this project C-DIT used a free software content management system and customised it for the needs of VSSC.

Registration module for KINFRA parks

C-DIT's Open Source Team created an Entrepreneur Registration and Handling Module for Kinfra¹⁵ website. It was done in PHP and MySQL.

Server Implementations in CPCRI

C-DIT's OST implemented Web server, Proxy server, Firewall setup etc in CPCRI¹⁶ (Central Plantation Crops Research Institute) Kasargod.

Other Initiatives

Kairali GNU/Linux

C-DIT created a custom Fedora-based distribution named Kairali GNU/Linux with linguistically customised interface.

LiTE

LiTE centre is constituted by C-DIT for the promotion of Free and Open Source software among the public through the public and private entrepreneurs.

¹¹ RTTC - Regional Telecom Training Center

¹² LIC – Life Insurance Corporation of India

¹³ ICAR - Indian Council of Agricultural Research

¹⁴ GTK - Gnome Tool Kit

¹⁵ Kerala Industrial Infrastructure Development Corporation

¹⁶ CPCRI - Central plantation Crops Research Institute

The E-governance Department of CDAC (Centre for Development of Advanced Computing), Formerly (ER & DCI), Thiruvananthapuram, have done various projects on Free Software. They have done significant projects like Management Information System for Integrated Child Development Scheme, and IT implementation of Kerala Toddy Workers Welfare Fund Board fully using Free Software. Some other projects by CDAC are listed below.

Projects

Tailoring Workers Welfare Fund Board

CDAC is taking up a significant project for the computerisation of Tailoring Workers Welfare Fund Board. The project is developed on Java, Jakarta Tomcat Webserver and PostgreSQL database. This project benefited from the IT implementation project in Kerala Toddy Workers Welfare Fund Board project by using same code base. The development time of this project was 18 months by a team of 5.

Server Implementations

CDAC also has expertise on Server implementations in GNU/Linux. They have done various server implementations in Learning Resource Center Calicut and Thiruvananthapuram. They have also developed a smart card reading facility using C programming language in GNU/Linux platform in Learning Resource Centres.



Relevance of Free Software in India



1 | Introducing Freesoftware

What is Free Software?

Free Software is a category of software which can be used, copied, studied and modified and redistributed by the user. The meaning of the word 'free' in free software is similar to its meaning in free speech, free people and free country and should not be confused with its other meaning associated with zero-cost. Therefore, in Indian languages, it is appropriate to call it Swatantra Software. In this document, we shall call it simply Free Software.

Free software is a 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 program, for any purpose**
 - * **The freedom to study how the program works and adapt it to your needs.**
 - * **The freedom to redistribute copies so you can help your neighbor**
 - * **The freedom to improve the program, and release your improvements to the public, so that the whole community benefits**
-

A program is a free software if users have all of these freedoms. Thus, users should be free to redistribute copies, either with or without modifications, either gratis or charging a fee for distribution, to anyone anywhere. Being free to do these things means (among other things) that you do not have to ask or pay for permission.

Beginning of Free Software

In the early days of computing, it was customary for programmers to share software. The programs one person wrote could be made use of or modified by anyone else, which benefited everyone. Software development was thus a community effort. In the late 1970s, however, software companies started imposing restrictions on users, and users were prevented from sharing, let alone modifying, programs. They did this by withholding the software's source code (human readable form of software) and/or by making them enter into restrictive (and at times, even humiliating) legal contracts such as user license agreements and non-disclosure agreements. By the 1980s, restrictions on software became widespread, and the computing community was no longer free to co-operate in using and altering software for specific needs. This scenario forced Richard M. Stallman to initiate a creative resistance called the GNU project in 1984. Today, it is a global movement with several thousand programmers and others involved in the development and use of Free Software.

The Free Software Movement in India

Free software was widely used in academic institutions in India for a long time. By the late 1990s, with the advent of Internet in the country, free software became more popular. Users groups started coming up in various parts of the country. Indian developers started contributing to free software movement and India became an active player in this community. The Free Software Foundation of India (FSF India) was inaugurated by Dr. Richard M. Stallman on July 21, 2001. FSF India strives to promote the concept of free software in our society. It also works for the development of free software in

1 | Introducing Freesoftware

India. One of the major initiatives undertaken by FSF India is localisation¹⁷ of free software for various Indian languages. Today the free operating system GNU/Linux is available in several Indian languages, including Hindi, Marathi, Tamil and Malayalam.

About GNU/Linux

GNU/Linux is currently the most popular free Operating System¹⁸, although it is not the only one. Other Free OS's like FreeBSD are also widely used in specific situations. GNU/Linux has earned a reputation for stability, security and versatility. GNU/Linux and other free operating systems are now being used heavily to deploy Internet servers. Free softwares like Apache are more popular than their proprietary counterparts. Day by day they are getting wider acceptance. GNU/Linux today comes with Graphical User Interfaces (GUI), which are very simple and interesting to use¹⁹. It comes with thousands of applications for common use. There is more than one word processor, even office suite, to choose from. Free email clients, web browsers, movie players and so on are available for day to day use.

¹⁷ Localisation means making the software capable of handling local languages effectively

¹⁸ Operating system is basic software required for using a computer

¹⁹ A GUI helps computer users to give instructions and run programmes by using a mouse to select them from a menu instead of having to remember the commands and typing them.

2 Free Software and Developing Nations

The major contribution of Information Technology (IT) to society is the ease with which information can be accessed, copied or modified. But "owners" of proprietary software want to curb this freedom and withhold the potential social benefits of this technology by controlling what users (even governments) can do with software. In the Free Software Movement, we believe that computer users (including governments) should control the software they use. You should have the freedom to study what the program really does, to change it, to redistribute copies, and to publish improved versions. Free Software is software that lets the users have these freedoms, while non-free proprietary software keeps users divided and helpless. In addition to its bad social effects, the cost of using proprietary software causes great harm in countries such as India where many people are economically disadvantaged. Proprietary software tends to concentrate wealth, and thus increases poverty and contributes to the 'digital divide'. Free software does not mean the price is always zero; - people often do pay for copies. But since people can redistribute free software to each other if they wish, those who are short of money can get it at zero price, if they really want to.

Digital Exclusion and Free Software

The role of Information & Communication Technologies (ICT) in common man's life is increasing. However, the majority of the Indian population is excluded from reaping its benefits. Major barriers here are cost of access to ICT infrastructures and lack of software in local language.

The cost of ICT applications is primarily due to two costs; the hardware cost and the software cost. While hardware costs have been coming down and are inevitable to a certain extent, software costs have acted as a major constraint in using ICT applications in

developing countries. Free software doesn't exclude people on the basis of financial status. By using free software, the government can establish IT infrastructure at a lower cost. And access can be provided to every one. Another issue is support for local languages and culture. As free software comes with its source code and the right to modify them, it is easy to add support for local languages. Local language support can be added to free software without depending on any one else. Free software already has support for several Indian languages, and there are efforts to create support for several more. Local developers and local software companies are involved in this.

Free Software and Development of Local IT Industry

India has a strong IT industry which provides services to clients across the world. Most of them provide solutions on proprietary software provided mostly by various multinational companies. These platforms are like black boxes. We can use them but we can never know what goes on inside. We can only be users of these boxes. This scenario always limits the scope of development of local IT industry. With free software, the local IT industry will be building on top of a knowledge pool created by people around the world. For example, the GNU/Linux Operating System is a collaborative work by people around the world. The local IT industry can learn from free software and use free software tools to develop new solutions. For example, a local company can make an Indian language version of the GNU/Linux OS without permission from anyone else.

Proprietary software companies, which are interested only in maximizing profits and their long term survival, will not be interested in the development of the local IT industry. They aim to

2 Free Software and Developing Nations

boost their profits by making the local industry depend on them for information and tools. They cannot be expected to support any local industry which could become a serious business threat to them.

Around the world there are several local IT industries coming up using Free Software. For instance, there are various GNU/Linux OS distribution companies in India, Brazil, China and Japan. Free Software Co-operatives in Brazil are very interesting entities. Small scale IT companies are formed in Brazil providing various free software based solutions. Another compelling reason for governments to support free software is to save their revenue and use their funds for developing local industry. In many of its e-governance programs, the Chinese government has taken steps in favour of local free software industry rather than foreign proprietary vendors. This has helped to reduce the cost of development, and to empower the local IT industry. The French government also has decided to support open standards and free software for promoting local small and medium scale software companies. This is particularly relevant for India also. The government is the major domestic consumer for the ICT industry in India. This is a good opportunity for the SME sector in the country. These industries can grow by using and developing free software, and in the process contribute towards global free software resources.

Empowering Local Business, Social Organisations and E-Commerce

In today's globalised and information intensive economy, the use of IT is essential for development. Industries and social organisations, whether small or big, are trying to harness the possibilities of new

technologies. Unfortunately, the cost of access to technology is often very high for users from developing countries. Also, there is strong discrimination in terms of right to access of new technologies. Even though free software is not about the cost of software, the ideals behind it ensure that every one has access to it whether you can pay or not. One will be able to get free software for marginal or even zero cost from the Internet or the local free software community. This is of advantage to business and home users from countries like India. Various free softwares for ERP²⁰, CRM²¹, Finance, E-Commerce etc. will add value to local industry. Organizations like UNCTAD have realised the importance of free software in trade and development. In its E-Commerce and Development Report 2003, the relevance of free software is discussed in detail.

Another important issue is discrimination in access to technology. Till recently, there were serious restrictions on the export of strong encryption technologies. This prevented proprietary software companies from USA from making these technologies available to people from other parts of the world. These kinds of discrimination do not happen in free software. It is very interesting to note the reasoning behind the German Federal Ministry of Economics and Technology's support to GNU PG, free software for encryption. It says, "The funding will ensure both private and business users the availability of a highly secure cryptographic software at a reasonable price". By supporting GNU PG, the German government is making the software available not only to the citizens of Germany, but to businesses and people all around the world.

Free Software and National Security

With proprietary software it is almost impossible for the user to know what goes on inside the software. The

²⁰ Enterprise Resource Planning

²¹ Customer Relations Management

2 Free Software and Developing Nations

user just has to trust the software. As a consequence, governments around the world are deploying free software in sensitive areas. Since the source code is available for everyone to see, there is hardly any chance for malicious programs to get into free software. The decision by the German government to support the development of GNU PG encryption program is a good example for the trust people have in free software.

Technological Independence

The freedoms guaranteed by free software ensure that the user is not tied to any single one. He has the right to modify and use the software to suit his requirements. This is of importance to all states. Free software enables everyone to study how software works and to build on it. New solutions can be found by modifying what is already available.

Consider the case of the commonly used free office suite²², Open Office. An Indian version of Open Office can be built without having to depend on others. The source code of Open Office is available for any Indian to study, modify and distribute. If India wants to modify GNU/Linux for its own needs, it does not have to ask permission from any organisation or entity. All these are impossible in the proprietary regime. All around the world, governments consider free software as the right tool for local development of technology, industry and economy, which, at the same time, contribute to the development of humanity through sharing of knowledge across borders.

Social Ownership of Knowledge

Digital information technology contributes to the

²² An office suite consists of a few applications, like word processor, spreadsheet and presentation software, that are of use in a usual office environment.

world by making it easier to store, retrieve, copy and modify information. Computers promise to make this easier for all of us. However, the system of copyright gives software programs "owners", most of who aim to withhold software's potential benefit from the rest of the public. They would like to be the only ones who can copy and modify the software that we use. The copyright system is not appropriate in many fields, including software. It grew up with printing, a technology for mass production of copies. Copyright fits in well with this technology because it restricted only the mass producers of copies. It did not take freedom away from readers of books. An ordinary reader, who did not own a printing press, could copy books only with pen and ink, and few readers were sued for that, even if anyone tried to copy by hand. Digital technology is more flexible than the printing press: when information is in the digital form, you can easily copy it to share it with others. This is a benefit that the new technology gives, and it is this benefit that is being withheld from society when copyright laws meant for an older technological environment are enforced. Its very flexibility do not fit with a system like copyright, which is the reason why increasingly nasty and draconian measures are now used to enforce software copyrights.

An additional threat is now being posed to software developers (whether proprietary or free) in the form of software patents. While software patents have been implemented in the US, this is being seriously debated in the European Union. Many groups, including the Free Software Movement, are opposing the introduction of software patents because of the serious restrictions they can impose on innovation in software development. There is bound to be pressures on India from large proprietary software companies to implement software patents. The Government of India has to take care that it does not fall into the trap.

3 Applying Free Software

Education

Free Software can be a valuable resource in education. Not only can it be technically or pedagogically superior to proprietary alternatives, but it can also promote values we want students to attain through education, like: **Freedom and Cooperation**

Indian culture always stood for these values. Sharing of knowledge and its use for development is an integral part of our society. We tell our children that Knowledge is something that increases through sharing. We encourage our children to help each other in learning by sharing acquired knowledge. Proprietary software tells the opposite. It sees knowledge as an economic commodity only. For them, Knowledge is something to be controlled for narrow economic advancement.

IT education with proprietary softwares and its secret codes often reduce it to a mystic ritual rather than a logical art. Though it serves the interests of proprietary companies, society will be the loser in the long run.

Considering the fact that education plays an important role in defining the future society, it is essential that we avoid proprietary technologies and promote free software. The Government should adopt a policy of not using proprietary technologies in schools and colleges. We should create an empowered society with free software.

Local Language Computing

As most of the development in software takes place in developed countries, and English has become a universal language, most softwares talk only English. This restricts the English-illiterate population in India

from benefiting from ICT, and contributes further to increasing the digital divide.

By taking free software and adding support for local language, the benefit of ICT can be taken to a larger section of Indian population. Community efforts are underway to add local language support in free software. Free software support is available for many Indian languages like Hindi, Malayalam, Tamil, Bangla and so on. Government initiatives in this regard can help in accelerating these efforts. Government organisations like CDAC should make their work in local language computing available to society at large as free software.

e -Governance

E-Governance is an area where free software plays an important role. There are social and practical reasons which favour free software in governments. As e-governance is going to reach all citizens of the country, the choice of technology has to be made after careful deliberations. Some of the issues specific to e-governance are outlined in the Bill proposed in the Peruvian Congress by Congressmen Edgar Villenueva. The e-governance system should address the following needs

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- * **Free Access of citizens to public information**
- * **Permanence of public data**
- * **Security of the State and of the citizens**

To guarantee free access to information for citizens, it is indispensable that the format for data storage be not tied to a sole provider. The use of standard and open formats guarantees such free access, making possible the creation of compatible software.

3 Applying Free Software

To guarantee the permanence of public data, it is indispensable that the use and maintenance of software do not depend on the goodwill of the providers, nor on monopoly conditions imposed by them. It can be guaranteed only by the availability of the source code.

To guarantee national security, it is vital to have systems that are devoid of elements that allow remote control or the transmission of non-desired information to third-parties. Therefore, it is required to have systems whose source code is freely accessible to the public, so that its inspection by the State, the citizens and a great number of freelance experts in the world is allowed.

Taking into account all these aspects, it is clear that free software is the ideal solution for e-governance. As free software belongs to society, it guarantees all the factors mentioned above. In addition to those mentioned here, issues like digital exclusion, cost of software, etc. also favour the adoption of free software in e-governance. We request the Government of India to make it a point to use only free software to develop IT solutions and to distribute developed work as free software so that society at large can benefit from the work. Government contracts should ensure that work done with its funds is available to the public under free software licenses.

Micro Enterprise

Free software provides an ideal choice in the development of small scale industry in software and IT-enabled services. Free software removes barriers in accessing software. It reduces the startup cost of small scale industries. Government intervention in developing and promoting free software-based micro enterprises in the country will contribute to social and economic development. Training programs and R & D

efforts in free software and IT-enabled services will be of benefit.

The Government of Brazil has taken up model initiatives in this regard. They have several programs to promote cooperatives working in the free software sector. These small industries provide support to e-governance initiatives. They have contributed towards local technological development and employment. The Government of India also can look into the possibilities of starting similar initiatives here.

Social Sector

ICT can contribute significantly to social organisations, whether private NGOs or public organisations like hospitals, community libraries, etc. Unfortunately, since these organisations often work with meagre resources they fail to gain the benefits from these new technologies. Being affordable, free software can help these organisations. Free software Geographical Information Systems like GRASS and Mapserver can be of use in the development of endemic surveillance systems. These map-based spatial analysis systems could be used for the development of decision support systems for rural development planning. Koha is an excellent tool which can help libraries to automate their working. Use of Information technology by these groups is very important as they usually address the weak and underprivileged in society.

Using free software is also a kind of self help for these social organisations. These organisations can share the developments with each other, thereby magnifying the benefit of ICT. As the cost of development is shared, it will reach out to and benefit everyone. This is also the most sustainable form of software development because of shared cost, better

3 Applying Free Software

resource management and maximum utilisation of work done. Organisations like UNESCO have understood the importance of free software in social development. They are trying to promote initiatives like the Cuban information network for public health, called Infomed, which is based on free software. More development sector organisations are following this step.

Science and Technology

IT has become an important tool in all areas of scientific and technological endeavour. Whether it be for research in physical or natural sciences, or technology, or for implementing technological projects, computers and software have come to play a major role. It is therefore important that the government take an affirmative decision to make use of Free Software for all such work.

There are several reasons for this:

Free Software builds capability: Proprietary software permits the user to do only what the software company allows the user to do. This, more often than not, hides what exactly the software does. In other words, the user can only mechanically follow a given set of steps to do what can be done (not necessarily what he wants to do). On the other hand, with Free Software, it is often possible to decide what one wants to do and to find the way to do it. In cases where the software currently does not support a particular action, it is possible to make use of available expertise to add the required feature.

Free Software enables easy exchange of information: Proprietary softwares use file formats that are also proprietary and non-standard. As a consequence, it becomes necessary to often convert

information from one file format to another, leading to wastage of time and energy and, possibly, loss of information. Free Software uses only open formats that are accessible by everyone. The information developed by one group can therefore be easily given to and accessed by another without difficulty.

These are in addition to the general features of Free Software mentioned earlier, like the freedoms it gives, low or no cost, and so on.

4 Governments for Free Software

Across the world, governments have realised the importance of free software. There are several initiatives in the world which benefit from the freedom in computing provided by free software movements. The following are a few representative initiatives from different countries in different continents.

Latin America

Latin American governments have realised importance of free software in their national development and has taken several important policy level initiatives to promote it. Some of the initiatives are given below. The government of Brazil has decided to make use of free software for their IT needs. They are in the process of migrating all their information infrastructures to free software. Through projects like UNIVATES and SOLIS, Brazilian universities are promoting the development of free software locally and creating small enterprises based on the same. Several cities like Sao Carlos use free software for e-Governance programs. There are several free software based community Internet centres being established across the country for public use.

Economic sanctions and other issues contributed towards Cuba's greater adoption of free software in e-governance. The Information network of the Ministry of Public Health called Infomed is based on free software. This is one of the first large-scale free software based e-governance initiative. Organisations like UNESCO are trying to promote this system in other South American countries. Other Latin American countries like Mexico, Peru, Argentina, etc. are using free software for various needs.

Asia

In Asia, free software has made its presence felt in both public and private sectors. Unlike Latin America there is no strong government level policy support for free software in Asia. Still it is being used extensively in the continent.

In India, President Dr A P J Abdul Kalam has publicly stated his support for free software. He specifically mentions national security issues which proprietary software introduces. Many e-governance initiatives are using free software in several states in India. Indian academic institutions have been familiar with free software for long. Major public sector organisations in India like VSNL, BSNL and NIC are using and developing solutions in free software.

It has been reported that the Government of China is supporting the development of a local GNU/Linux distribution. The Chinese government prefers free software solutions over proprietary solutions due to economic and security reasons.

Work on free software localisation for various Asian languages is being done in almost all the Asian countries. This will further promote free software movement in the region.

Europe and North America

Free software development happens mostly in the industrialised countries in Europe and North America - the leadership they have in technology being the major reason. Higher level of connectivity and access to software also has contributed to this situation.

4 Governments for Freesoftware

Governments in industrialised countries are adopting free software due to practical reasons like better quality and security. At the same time, lobbying by proprietary interest groups is also very intense in these countries.

The regional government in Extremadura, Spain, has charted out a development program based on free software. As part of this, they have deployed 80,000 computers running free software desktops. They are further developing e-governance and local industry solutions based on free software.

Due to national security reasons the Government of Germany prefers free software over proprietary alternatives. As mentioned earlier in this note, the German government is supporting the development of free software for secure e-mail communications. The world wide network of the German Federal Foreign Office is deployed using free software. This network covers around 200 countries and employs 10,000 people. Cities like Munich are shifting to free software.

Due to reasons like cost, interoperability and transparency the Government of France give preference to free software over proprietary. The French Agency for e-Government (ATICA) has been given the task of looking into free software. Italy is also following France by the way of introducing legislations which stipulate the use of free software in public institutions.

The US government also is using free software extensively. And many major free software service companies exist there. The use of free software by the Government is also contributing to the development of

more free software. Private companies are also working on the development of free software.

Africa

Free software is helping Africa to benefit from new information technologies. Various developmental projects in Africa use free software. Recently, the South African government came up with a law which stipulated the use of free software in public institutions. Brazil and South Africa are working closely on free software and social development. The CSIR of South Africa has a major programme for using free software in computer literacy programmes, enterprise resource planning and many other areas.

Conclusion

The above description hopefully makes it clear that the adoption of Free Software is the most ideal for any country, especially a developing country like India. Among others, it has the major advantages of security, stability and technology. When we consider the fact that in addition to its other drawbacks, proprietary software makes us dependent, and takes away precious financial resources from our country, we are left with the only alternative of Free Software. The Free Software Foundation of India has been campaigning for the use of Free Software in the government and all its agencies, and there has been slow but steady progress. In this context, we request you to use your good offices to argue for the use of Free Software only for all governmental and public purposes.