Free Software in Latin America

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Revision History

Version	*Date*	*Comments*	*Author*
Draft 1	06/11/2002	First public available version before proof-reading. Expect some errors.	Cesar Brod
Draft 2	10/11/2002	Text review, proof reading	Cesar Brod
V 1.0	19/11/2002	Added text on the First National Free Software Forum for Universities in Brasil (São Carlos) Added text on São Carlos city project for free software adoption – page 12	Cesar Brod
V 1.1	23/01/2003	Consolidation of several research data on the overall ICT usage in Latin America Overall review	Cesar Brod

Table of Contents

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Executive Summary

A 2001 study sponsored by Accenture and Santander Central Hispano Investment[1] have shown Latin America has 15 million Internet users, which means the Internet is used by only 3% of the region population. Another recent study by eMarketer[2] says Latin America will have 33 million Internet users by the end of 2002, 43.4 millions by the end of 2003 and more than 60 millions by the end of 2004. Even considering the growth of the Latin American population and extrapolating the data for the upcoming years, we can easily see the number of Internet users will grow proportionaly faster than the population. The eMarketer study estimates a growth of 80% of the Internet users from 2002 to 2004 (Argentina, Brazil and Mexico will have 65% of all of the Internet users). During the same period of time, the number of Internet users in the United States will grow only 11%.

A quick analysis of this data shows the IT-based (or IT-dependent) companies are already looking at the emerging economies in order to increase their businesses, once studies by the BSA[3] and IDC predict a market growth of 18% per year (considering packaged software products only). A major concern of the BSA, of course, is piracy. Although BSA studies[4] have shown the revenue loss has dropped close to 15% from 2001 to 2002, it is still close to one billion dollars.

As the unemployment rate is bigger than the Internet users rate, one may think Latin American governments have more to worry about then software piracy only. BSA studies, however, have been effectively showing the two things are related – there is a significant reduction of jobs when software piracy increases. Using this argument, local BSA representations in all of the Latin American countries have been able to join forces with the federal police and using local "software laws" they have fought piracy by applying fines and taking to prison illegal software users.

Some governments in Latin America, however, are noticing that by using and fostering free software development and usage, they can, at the same time, fight piracy, increase jobs and acquire technological independence. Free software can be freely copied and modified, thus there is no legal possibility of piracy when using free software.

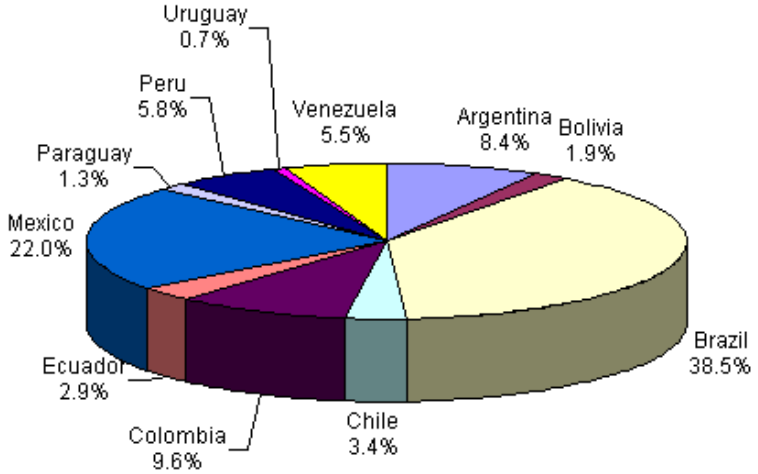
In April, 2002, Peru has become the latest Latin American country to propose a bill mandating[5] the use of open source software in government organisation. Brazil, Mexico and Argentina already have similar proposals in place. Most of those proposals require that the software used by the government agencies have their source code available for auditing by the tax payers, once they are the ones actually paying for it.

1 Published in the newspaper "O Estado de São Paulo" - http://www.estadao.com.br/tecnologia/internet/2001/mai/08/272.htm
2 Published in the newspaper "Folha de São Paulo" - http://www1.uol.com.br/folha/informatica/ult124u11351.shtml
3 Contribution of the Software Industry to the Latin American Economies, by Price Waterhouse Coopers
4 www.bsa.org/resources/2002-06-10.130.pdf
5 http://www.computing.co.uk/News/1131173 – actually, most proposals "prefer" the usage of free software, rather than mandating it.

Latin America Demographics[6]

	1995	1996	1997	1998	1999	2000	2001
Real Sector							
Population (million)	409.9	416.2	422.6	428.9	435.3	441.7	448.8
GDP per capita (US$)	3,864	4,142	4,482	4,427	3,801	4,166	4,074
GDP (US$ billion)	1,584	1,724	1,894	1,899	1,655	1,840	1,828
GDP (annual variation in %)	1.6	3.7	5.2	2.0	0.1	4.0	0.2
Unemployment (%)	7.7	7.1	6.9	6.9	7.8	6.8	7.7
Fiscal Balance (% of GDP)	-3.7	-2.8	-3.0	-4.4	-4.7	-2.6	-2.7
Monetary Sector							
CPI (%-change)	24.9	16.3	9.4	8.3	8.7	7.0	5.3
Interest Rate (%)	32.9	21.4	26.3	27.1	16.6	15.1	11.1
Stock Market (US$-terms, %)	-	14.1	25.9	-38.1	57.1	-16.7	-5.9
Bonds (EMBI+ Latin)	1085.0	542.0	471.8	936.6	592.7	705.8	1239.1
Exchange rate depreciation	15.0	6.0	5.7	9.8	12.5	5.0	4.3
External Sector							
Current Account (% of GDP)	-2.2	-2.1	-3.1	-4.4	-3.0	-2.2	-2.8
Trade Balance (% of GDP)	0.5	0.5	-0.4	-1.5	0.0	0.7	0.6
Current Account (US$ bn)	-34.1	-36.5	-59.3	-83.6	-49.5	-40.2	-50.4
Trade Balance (US$ bn)	7.5	8.8	-7.8	-27.7	0.8	12.7	11.4
Exports (US$ bn)	209.2	236.3	262.3	257.2	273.5	331.1	318.9
Imports (US$ bn)	201.7	227.5	270.2	284.9	272.7	318.4	307.5
Exports (%-change)	22.9	13.5	11.5	-1.7	7.3	21.6	-3.8
Imports (%-change)	11.8	12.8	18.7	5.4	-4.3	16.7	-3.4
Int. Reserves (US$ bn)	130.9	152.0	165.0	156.2	145.7	149.9	152.4
Int. Reserves (months of imports)	7.8	8.0	7.3	6.6	6.4	5.7	5.9
External Debt (US$ bn)	535.3	567.4	602.2	693.1	712.5	694.6	693.9
External Debt (% of GDP)	33.8	32.9	31.8	36.5	43.1	37.7	38.0

Distribution of Population per Country[7]



6 Source: Latin Focus (http://www.latin-focus.com)

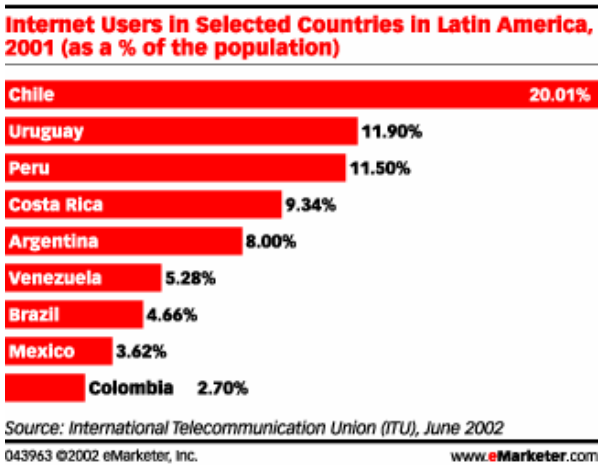
7 Source: Latin Focus (http://www.latin-focus.com)

Comparative Estimates: Internet Users in Latin America*, 2000-2005 (in millions)

	2000	2001	2002	2003	2004	2005
Accenture, February 2001	15.0	22.0	33.0	33.0	44.0	–
Computer Industry Almanac (CIA), April 2001	21.6	31.8	43.2	55.8	–	–
eMarketer, May 2002**	**19.3**	**26.2**	**33.1**	**43.4**	**60.6**	**–**
International Data Corporation (IDC), September 2001	–	21.8	31.0	42.8	–	–
Jupiter Media Metrix, Inc., March 2001	21.0	–	–	–	–	77.0
Morgan Stanley, May 2002	15.0	18.0	21.0	26.0	31.0	40.0
Nielsen// Netratings, March 2002	–	20.7	–	–	–	–
Probe Research, February, 2002	–	6.8	9.9	–	–	18.0

*Note: *including Mexico; **eMarketer's year 2000 and 2001 baselines are from the International Telecommunication Union's estimate of internet users aged 2 years and older, who have accessed the internet within the previous 30 days*
Source: eMarketer, May 2002; various, as noted, 2000-2002

038778 ©2002 eMarketer, Inc. www.eMarketer.com



In Brazil, with the election of Lula for president, it is expected a big boost for free software adoption and development[8] based on a good experience with this kind of technology in the state of Rio Grande do Sul, ruled by PT, the elected president's party. Also, as Lula is viewed as someone who can strengthen the relationships between Mercosur[9] countries, this may also contribute to a wide regional adoption of free software.

Although there are several success stories (and some not so successful stories) of the usage of free software in Latin America, there is very little "statistical" information on this issue. The adoption of free software as a replacement for proprietary software is quite new all over the world, although it has become more popular and viable with the newest versions of the GNU/Linux operating system (the basis of most of the free software solutions).

The objective of this paper is to show some existing free software projects in Latin America who have already became important to the communities using them, some with the potential of becoming important, and some who have failed, along with some reasons for the successes and failures.

8 http://www2.uol.com.br/info/aberto/infonews/092002/18092002-6.shl
9 http://www.cnn.com/2002/WORLD/americas/10/29/brazil.elections.ap/index.html

The ICT presence in Latin America

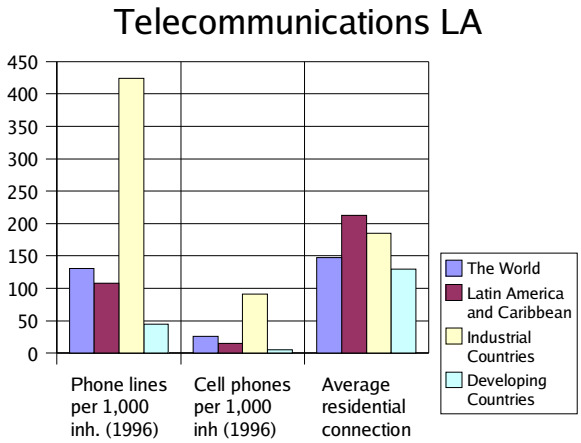
Selected ICT Indicators[10]

Indicators	*The World*	*Sub-Saharan Africa*	*Arab States*	*Southern Asia*	*Eastern Asia*	*South-Eastern Asia and Pacific*	*Latin America and Caribbean*	*Eastern Europe*	*Industrial Countries*	*Developing Countries*
Population in millions	5,787.40	604.90	260.40	1,337.70	1,805.70	3,516.60	484.30	343.50	1,228.70	4,538.70
GNP/capita	4,880.00	518.00	2,162.00	426.00	1,323.00	617.00	1,533.00	2,013.00	18,158.00	1,141.00
Domestic letter items/capita (1995)	69.00	6.00	5.00	Na	Na	17.00	16.00	31	380.00	Na
International letter items/capita (1995)	1.60	1.10	2.60	Na	Na	.50	1.10	1.60	6.00	Na
Phone lines per 1,000 inh. (1996)	131.00	14.00	51.00	18.00	61.00	35.00	108.00	169.00	424.00	45.00
Cell phones per 1,000 inh (1996)	25.70	2.10	3.70	.40	8.70	9.00	15.30	3.80	91.70	5.80
Average residential connection charge (US$, 1996)	148.00	96.00	127.00	59.00	Na	94.00	213.00	187.00	185.00	130.00
No of radio receivers/1,000 inh. (1996)	364.00	166.00	264.00	88.00	215.00	156.00	384.00	412.00	1,005.00	185.00
No of television receivers/1,000 inh. (1996)	228.00	35.00	138.00	55.00	248.00	150.00	223.00	317.00	524.00	145.00
No of Pcs/1,000 inh (1996)	43.60	Na	5,7	1.20	6.50	8.30	17.50	18.20	156.30	6.50
No of internet hosts (1,000, 1996)	16,253.00	104.00	9.00	4.00	135.00	77.00	164.00	246.00	15,818.00	435.00
No of users (1,000, 1996)	4.80	Na	.20	Na	.50	.60	1.30	2.60	17.90	.50
People on line (millions, 1999)	158.00	1.10	.80	Na	Na	26.60	4.60	Na	125.10	Na

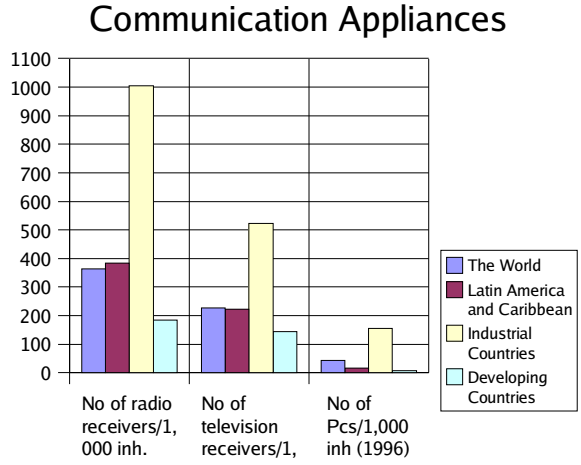
It proved to be very difficult to find accurate, updated information and figures on the ICT evolution for Latin America. One of the reasons is the recent scenario of the telecommunications industry deregulation, other is the market protection policy that some of the Latin American countries applied during the 80's and 90's in an attempt to develop a local computer industry.

Let us take a graphical look at some of the data gathered from the UNESCO's Statistical Annex, which have been reproduced in the table above:

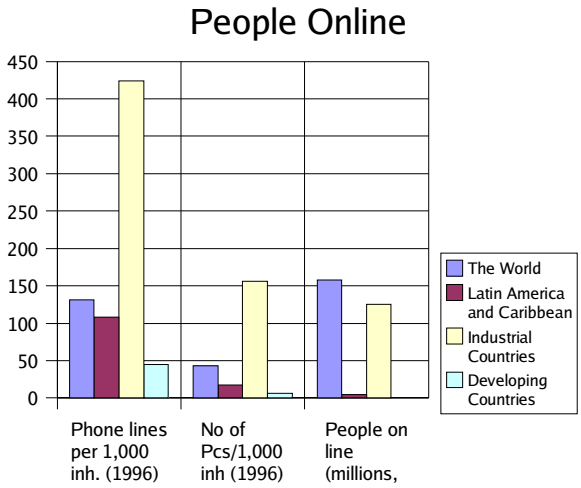
10 UNESCO's Statistical Annex (http://www.unesco.org/webworld/wcir/en/pdf_report/annex.pdf), published 1998-1999



1. Note that Latin America has a distribution of regular phone lines and cell phones which is close to the World's distribution and better than the one for the Developing Countries, and yet, the average residential connection costs are higher than all of the other (even Industrial Countries). The cost, of course, is one of the reasons people don't have telephones. Governments in Latin America (with a few exceptions, such Cuba) have promoted a deregulation of the Telecommunications market, allowing international companies to invest in the telecommunications infrastructure and sell their services (which, of course, seemed very attractive considering the available growth space and the perception that people would gladly pay a connection fee similar to the average one in Developing Countries). What the figures don't show is that there is a lot of people living in areas where there is no telecommunications infrastructure, and the cost of building it is not considered profitable for those companies, so people will still have no access to telephones.



2. The number of radio and television receivers also follows the same pattern seem in the telecommunications graphic, although the number of personal computers is well bellow the World's average, but still better than the statistic for all Developing Countries combined.

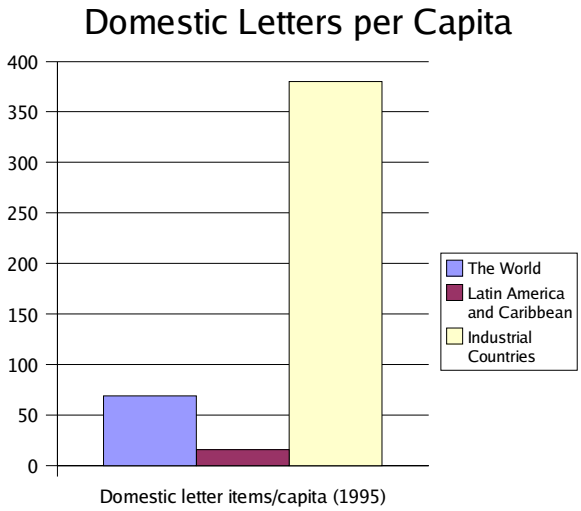


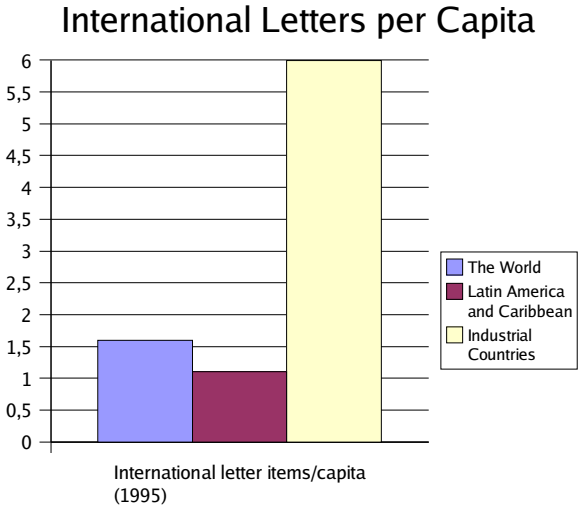
3. Considering that the minimal requirement for an Internet connection is a computer and a regular phone line, we see now that, compared to the World's average, there are very few people on-line in Latin America.

Morgan Stanley recognises in its 2000 Latin America Report[11] that "*income distribution is poor in Latin countries. The fifth quintile (top 20% of the Latin American population) concentrates almost 60% of the income, and the fourth quintile does not reach 20% of the income. By comparison, the top 20% of the US population concentrates less than half the total income and the fourth quintile receives almost 24% of the total. Latins are also significantly poorer than the average US consumer. In 1999, the per capita GDP of the four largest economies in Latin America ranged from $3,000 to almost $8,000, compared to $32,400 in the US.*", and provides some hints on how the Internet will grow in the region: "*initial Internet penetration of the top segments of Latin populations should be fast, with slower movement then to lower-income levels. (...) we expect the emergence of Latin solutions to work around such structural limitations as poor postal services or low credit card penetration. Some of these workarounds might appear strange to proponents of the virtual world, but will be pushed by the companies seeking to minimize their cost of serving clients.*"

Being a US based financial and market advising company, the Latin America Report produced by Morgan Stanley is geared to companies willing to establish business in the region. However, from a social or economic perspective, there is no way of providing advanced technology (such as Internet access) without covering some basis. Let us take a look at some more information extracted from the UNESCO's Statistical Annex:

11 http://www.morganstanley.com/institutional/techresearch/latnet.html?page=research





Compared to the World and Industrialised Countries, Latin Americans seem to communicate less with each other, at least in a written way. This may point to poor postal services, but also to a low level of literacy[12].

In an excelent study called Telecommunication Reforms, Access Regulation and Internet Adoption in Latin America[13], Antonio Estache and others thoroughly evaluate the real costs of a telecommunication infrastructure needed to provide Internet Access for Latin America. However, even if the infrastructure is in place and access is provided will people really benefit from it? Are there other basis that needed to be covered first or the technology itself may help cover those same basis?

Geoffrey Kirkman (Information Technologies Group, Center for International Development Harvard University) points out in his paper "It' sMore Than Just Being Connected"[14] (1999) that we are still trying to figure out if Information and Communication Technologies can narrow the gap between developed and underdeveloped countries. Observing the effect of the deregulation and further expansion of the Telecommunications industry in Latin America and the fact this didn' t

12 On the Conclusion section of this document we will go through some education issues.
13 http://econ.worldbank.org/files/13162_wps2802.pdf
14 http://www.cid.harvard.edu/ciditg/resources/beingconnected.pdf

cause any noticeable improvement in this gap we can conclude we have not figured this out yet.

Kirkman says "*If medical transcription services can be carried out in Madras, India for Boston doctors, then surely Russian language translations of computer magazines can be coordinated between London and Ulaan Bator, Mongolia. If the government of Costa Rica can attract mighty Intel to build a silicon-processor plant in its country, surely Mauritius can cut a deal with Microsoft. And without a doubt, many say, if only the Internet were taken to all corners of the globe, then the global economic and social inequality would be lessened. Unfortunately, translation of a utopian vision of the positive impact of ICTs on the developing world into reality is not so simple. In practice, whether or not a developing country can build an ICT-based economic or social sector depends on overcoming many of the same microeconomic and macroeconomic barriers that have long contributed to its underdevelopment –* ***What is the state of its educational system?(...) - What sources of investment capital are there for small or medium sized businesses? (...) - What kind of intellectual property rights protection is in place?(...)***"

Latin America is mostly an ICT consumer. Even the technology that is not imported into the region is produced by local subsidiaries of foreign companies. In terms of telecommunications, this is easily confirmed by the overall presence of international giants associated with local groups to provide access services (regular and cell phones, data lines). Before the deregulation, the local, government owned, Telecommunication companies were consumers of international technology provided by Siemens, NEC, Motorola and others. It is really very difficult and expensive to overcome the technology gap necessary to make Latin America become a telecommunications hardware producer. The investment for this kind of technology have already been put in place in other geographies by the companies owning this technology.

The benefits of producing some types of technology are questionable though, once patents are owned by international companies anyway – any derived technology produced locally would still belong to the original patent holder, meaning no real "local" knowledge would be produced. Considering the software industry example, pretty much all of the proprietary consumer software (Office productivity, Operating Systems, etc) have been localised into Spanish or Portuguese, although all of the software and translation produced are property of the company who sells the software packages.

Free software allows local development without the onus of property and patent issues. Software code produced becomes a property of the humanity and not of a single individual. This is possible because of the distribution schema of free software, mostly released under the GPL[15] or other types of Open Source licenses[16].

15 http://www.gnu.org/licenses/gpl.html
16 http://www.opensource.org/licenses/

An overview of the presence of Free Software[17] in Latin American Countries

In order to find out how free software is being used in Latin America, this research relied basicaly in two very simple methods:

1. Google Search, using the term "Software Libre" (or "Software Livre", for Brasil) and the name of the country as spelled in the local language. All references pointing to "Software Gratis" where not considered, although references to all kinds of Open Source Software, regardless the type of the license were taken in consideration.

2. Contact with real people whenever was possible[18], person to person or through e-Mail.

Digging through the data collected, we tried to find Free Software projects that have a social and/or economical impact for the specified Country, local communities or the community in general. Along with this, we will point significant facts that somehow contributed to the free software movement or raised people awareness about it.

Latin American Countries

Caribbean	*Central America*	*South America*	*North America*
Cuba Dominican Republic	Belize Costa Rica El Salvador Guatemala Honduras Nicaragua Panama	Argentina Bolivia Brazil Chile Colombia Ecuador Paraguay Peru Uruguay Venezuela	Mexico

17 For the scope of this research, no special distinction was made when researching for Free Software or Open Source Software solutions.

18 The author wishes to thank UNESCO for sponsoring his participation at the 3eras Jornadas Regionales de Software Libre, where some contacts were made.

Country	*Number of Google pages found (November, 2002)*
Mexico	9590
Brazil	8540
Argentina	8000
Colombia	7320
Venezuela	6570
Peru	4510
Cuba	3820
Uruguay	3710
Chile	3470
Bolivia	2200
Ecuador	2140
Costa Rica	1970
Panama	1900
Nicaragua	1830
Guatemala	1760
Paraguay	1740
Honduras	1550
El Salvador	1080
Dominican Republic	200

Free Software in Mexico

GNOME

Being the country with the biggest number of hits in the "Google free-software search", one could expect the biggest and most important Latin American free software project would come from Mexico. This is possibly true. Started in 1997 by the Mexican developer Miguel de Icaza while working at the Institute of Nuclear Sciences (UNAM – Universidad Autónoma de Mexico), the GNOME project provides today a high-quality, user-friendly desktop for the GNU/Linux system.

> *The GNOME Usability Project aims to improve the ease-of-use of GNOME and make the GNOME experience as enjoyable and natural as possible.* [19]

Besides aiming to provide an enjoyable and natural interface for the user, the GNOME project also

19 http://www.gnome.org/intro/findout.html

provides a set of tools for developing GUI applications. There is a complete set of office[20] productivity applications and dozens of applications[21] developed for the GNOME desktop, from development tools to multimedia players.

In 1999 Miguel de Icaza and others founded Helix Code, today Ximian[22], an open-source support and services company based in Boston, MA, US. The GNOME Foundation[23], founded in 2000 is also based in Boston.

Red Escolar Libre

A very exciting Mexican free software project was the Red Escolar Libre[24] (Free School Network), developed by UNAM and the Latin American Institute of Didactic Communication, ILCE (Instituto Latinoamericano de Comunicación Educativa). Based in the fact Mexico had, in year 2000, 120,000 schools, each one supposed to have one server and six desktop workstations, network connections, the server software would cost USD 500.00 and the desktop software would cost USD 55.00 (all Microsoft software), it seemed like a good idea to save all of the license money and use free software instead.

Problem was the huge savings on licenses purchase have made the project leaders overlook, or at least take a naive attitude towards implementation and support planning - and its costs. Unfortunately today there is no link to the Linux experience in the official site for the Mexican Red Escolar[25]. Several sites on the project (mostly on http://linux.org.mx) simply disappeared from the Internet.

Of course problems like that in free software implementation will always open space for proprietary solutions, and the Mexican government has now a partnership with Microsoft to put the whole nation online by 2006 in a project called eMexico[26]. Miguel de Icaza has written a proposal[27] to the Mexican government suggesting the usage of free software to achieve the same goal.

Free Software in Brazil

Brazil is being very active in free software production, although most of the solutions developed in the country have not crossed its borders. The state of Rio Grande do Sul, who hosts the International Free Software Forum[28] (today the biggest IT show in Latin America) is being the most active in the country, mainly due to the local government support, who has been able to join the efforts of Universities, Companies and individuals in the Free Software Project – Rio Grande do Sul

20 http://www.gnome.org/gnome-office/
21 http://www.gnome.org/projects/
22 http://www.ximian.com
23 http://www.gnome.org
24 http://www.mexicoextremo.com.mx/noticias/redesc-linux.php3
25 http://redescolar.ilce.edu.mx/
26 http://www.northamericaninstitute.org/articlearcive/nytimes041702.htm
27 http://primates.ximian.com/~miguel/emexico2.html
28 http://www.softwarelivre.rs.gov.br/forum/

(PSL-RS[29]).

Código Livre

Brazil has its own "Sourceforge[30]-like" portal, a host for free software projects. Started by UNIVATES[31], a small University Centre in the city of Lajeado, south of the country, and now co-hosted by UNICAMP[32], the State University of Campinas, in São Paulo, CódigoLivre (http://codigolivre.org.br) has more than 2,300 users who contribute for more then 300 different projects[33].

UNIVATES

UNIVATES is recognized in Brazil as the most active free software factory[34]. Employing a team of more than 20 free software developers and support analysts, this University Centre has been producing free software since the beginning of year 2000 and have published a TCO analysis proving what the institution has saved in software licenses has been more than enough to pay the salaries of its developers. Among UNIVATES developed softwares are SAGU, an academic administration software with modules reflecting all businesses areas of an University; GNUTECA, a library administration, loan and collaboration system and MIOLO, a framework for the development of complex, database driven, free software solutions. SAGU is now used by a dozen Universities all over the country, and MIOLO is considered by several of them as a standard for software development. GNUTECA will have its English version by the end of 2002.

UNIVATES also sponsored the creation of SOLIS, a free software development cooperative, in order to increase the free software market and create jobs for the University students.

Rede Escolar Livre RS[35]

Based on the Mexican Red Escolar Libre project, and learning from its mistakes, the Rede Escolar Livre RS project is sponsored by the government of the state of Rio Grande do Sul and supported by PROCERGS, the IT government company. Rede Escolar Livre RS comprises a set of tools for distance education, web presence, computer learning, system and network administration and even a Debian customised Linux distribution who eases the adoption and learning of free software tools for teachers and students. With this project, the state government has saved more than USD 20 million dollars, and made investments in training programs and support staff.

29 http://www.softwarelivre.rs.gov.br/
30 http://www.sourceforge.net/
31 http://www.univates.br
32 http://www.unicamp.br
33 http://codigolivre.org.br/softwaremap/trove_list.php
34 http://www.univates.br/freesoftware
35 http://www.redeescolarlivre.rs.gov.br/

City-based initiatives

Several cities in Brazil have implemented Free Software Projects. Some of them have approved laws making the adoption of Free Software Solutions the preferred one, and requiring thorough technical evaluations of proprietary solutions when they seem to be the only one available to fit specific needs. As an example, the city of São Carlos, in the state of São Paulo, have approved a "Free Software" law in October, 2001. The city has already installed eight free software based labs in public school libraries and a couple of "telecentres" in the poor areas of the city, where they are also providing training to the population, easing the citizens' access to technology and helping them finding jobs.

Free Software in Argentina

Although most of the countries researched have Linux and Free Software user groups, Argentina seems to be where the various groups are better organised, mostly due to the initiative of Lugar (Linux User Group Argentina – www.linux.org.ar) which provides a "virtual meeting point" for all of the groups. There is even a special group for health related free software - BioLinux[36]. Lugar in Spanish means "Place". Lugar also maintains the documentation portal AULA (which means "school class"), which is an effort to produce a localised – Argentinian specific Spanish – version of free software documents, although aligned with other documentation efforts such as LuCAS[37] and TLDP[38]. Another interesting effort is the Via Libre Foundation[39], a NGO concerned about using free software as a sustainable development tool. Partnering with the Blas Pascal University[40], Via Libre has been able to provide several Free Software Courses and support services.

UTUTO[41] – GNU/Linux Simple

The most important and visible project of Argentina is UTUTO, a CD-Rom based distribution of the GNU/Linux operating system tailored to the Argentinian users. Running directly from the CD-Rom driver, UTUTO does not require any installation. UTUTO is the brain child of Diego Saravia[42], an engineer that introduced Linux in Argentina in 1994 while working as a system administrator for the National University of Salta[43].

Free Software in Colombia

With several user groups organized under the umbrella of the Colibri[44] Community (Comunidad de

36 http://www.biolinux.org.ar/
37 http://lucas.hispalinux.es/
38 http://tldp.org/
39 http://www.vialibre.org.ar
40 http://www.ubp.edu.ar
41 http://www.ututo.org/quees.html
42 http://g.unsa.edu.ar/ututo/dsa.html
43 http://www.unsa.edu.ar/
44 http://bachue.com/colibri/

Usuarios de Software Libre en Colombia), Colombia has a very good initiative on promoting academic adoption and development of Free Software through the project SLEC[45] (Software de Libre Redistribución en instituciones educativas colombianas). One of the components of SLEC is Structio[46], a tool set and documents that can be readily implemented in any interested Colombian school. The documents include a complete standard proposal for a hardware, software and network framework to be implemented in the schools. The SLEC web page also maintains a list of Education Institutions using free software, including their configuration and contact information, so they can help each other with the adoption of Free Software.

Free Software in Venezuela

There is a noticeable activity on Free Software in Venezuela, and even a plan[47] of the Planning Minister, Felipe Perez Martí, to develop an e-Government open source platform.

PHP-Nuke

PHP-Nuke is a web portal, content management system started by Francisco Burzi in Venezuela, which soon became a world wide adopted tool. From 2000 on, more and more sites on the web are using Burzi' stool. There is no estimate of the total number of "nuked" sites, but PHP-Nuke empowered non-specialised users with a free tool to build very professional looking web portals.

Free Software in Peru

In April, 2002, Peru has become the latest Latin American country to propose a bill mandating the use of open source software in government organisation. While the law was discussed in the congress, Microsoft sent a letter to congressman Edgar Villanueva Nuñez stating *"The project, by making mandatory the use of open-sourced software, establishes a discriminatory and non-competitive treatment at times of contracting and acquisitions by the public organisms (...)"*. Mr. Nuñez replied *"the state archives, handles, and transmits information which does not belong to it, but which is entrusted to it by citizens, who have no alternative under the rule of law. As a counterpart to this legal requirement, the State must take extreme measures to safeguard the integrity, confidentiality, and accessibility of this information. The use of proprietary software raises serious doubts as to whether these requirements can be fulfilled, lacks conclusive evidence in this respect, and so is not suitable for use in the public sector."*.

Both the Microsoft letter and the congressman response were made public[48], which raised a tremendous awareness of the issue all over Latin America, once Free Software activists reproduced and linked to the information sources in several web sites.

With pressures from the Microsoft (a donation of USD 550,000 to the Peruvian government) and

45 http://ingenieria.sanmartin.edu.co/slec
46 http://structio.sourceforge.net/
47 http://www.hpcd-abogados.com/es/abogados/download/e-gov1es.pdf
48 http://www.gnu.org.pe/preyres.html

the United States itself[49] (from the local embassy), the bill ended up not being approved.

Victor Huayllani Yllatinco started an ERP[50] project for small and medium businesses (PYMES – Pequeñas y Medias Empresas), implemented as a test basis in some textile industries. Due to the lack of confidence and further economic support for continuous development, the project was withdrawn and now Victor and others are trying to start an NGO to continue the project.

Free Software in Cuba

The "Proyecto Linux Cuba"[51] intends to foster the use of Free Software in the country, creating a tool set to ease this use and allow the growth of the user base.

INFOMED[52]

The telematic network of the Ministry of Public Health (MINSAP) was developed in 1992, the world's first to offer nationwide coverage and to use Linux as its operating system.

> From the beginning, INFOMED used the operating system LINUX - currently causing a crisis at Microsoft - because it was highly adaptable to the particularities of the task and, "because it isn't something packaged," allows for creativity, as well as its work philosophy based on cooperation, states its director, Pedro Urra.[53]

Free Software in Uruguay

Uruguay has a very active users group, UYLUG[54], which promotes the "Jornadas Regionales de Software Libre", an yearly event that brings people from all over Latin America and is the bigger and best organised user group event in Latin America. Free software usage is supported by academic initiatives by the Universidad de la Republica[55] and the Universidad Catolica de Uruguay[56]. Along with UNESCO, UYLUG is promoting a Latin American user groups community, in order to foster Spanish and Portuguese free software development and localization through user groups joint activities and a developers consortium.

Free Software in Chile

49 http://www.baquia.com/com/20020716/not00001.html
50 http://fing.javeriana.edu.co/ingenieria/dep_procesos_productivos/iiccio2002/ponencias/IICCIO2002PonenciaTaipeLinuxDefinitivo.pdf
51 http://www.linux.cu
52 http://www.sld.cu/
53 http://www.cubasolidarity.net/urragranma.html
54 http://www.linux.net.uy/uylug/
55 http://www.rau.edu.uy/
56 http://www.ucu.edu.uy/

Very little information could be researched other than a good amount of user group activity and events organised by them.

Free Software in Bolivia

The Gabriel Rene Moreno University promotes a yearly Free Software Development competition[57], giving prizes for softwares developed in several categories (Games, Internet Software, Network Software and others).

Free Software in Ecuador

Ecualug[58] is the country's user group, and G-CTB[59] (GNU ConTaBilidad) seems to be the country's major project – an Accounting system.

G-CTB

G-CTB is a project developed by Branly Abendano, a student of the Escuela Politecnica Nacional[60]. G-CTB implements all of the basic accounting functions for small and medium businesses.

Free Software in Costa Rica

User group contacted http://www.linux.or.cr without response.

Free Software in Panama

Several projects based on free software, or relying on a free software network infrastructure were deployed during the past federal government, such as Infoplazas (telecentres) and multimedia casting servers. It seems all of them have been shut down or at least stopped by the actual government.

Free Software in Nicaragua

57 http://nodo.uagrm.edu.bo/congresolinux/Default.htm
58 http://www.ecualug.org
59 http://gctb.sourceforge.net/
60 http://www.epn.edu.ec/

Four Universities in Nicaragua (UNI[61], UNAN Managua[62], UNA[63] and UNAN León[64])have put together a plan for developing an infrastructure that will consist in a system to handle Academic Registration, Accounting, Human Resources and Library[65]. This plan requires all software adopted or developed to be under free software licenses.

SAM

Developed by Georg Lehner, Denis Chavez and Leonardo Orozco, SAM[66] is a tool for hospital equipment administration and support.

Georg says "*the program is designed to be internationalised and is not restricted to Hospital Maintainance. The target "market" would be middle to big institutions, with a dedicated maintainance department, which eventually has some sub-departments, like universities, SuperMarket-Chains, Ministries, etc".*

Free Software in Guatemala

No relevant info retrieved.

Free Software in Paraguay

No relevant info retrieved. Although the UYLUG (Uruguay) is setting up a free software conference in Paraguay to help enthusiasts to get more attention.

Free Software in Honduras

User group http://www.linux.hn/honlug.php contacted without response.

Free Software in El Salvador

User group http://www.linux.org.sv contacted without response.

61 http://www.uni.edu.ni
62 http://www.unan.edu.ni
63 http://www.una.edu.ni
64 http://www.unanleon.edu.ni
65 http://www.tic-nicaragua.edu.ni/pdfs/plan_en.pdf
66 http://sam.uni.edu.ni/

Free Software in Dominican Republic

The Dominican Republic hosted in the beginning of November, 2002, the country's first "ExpoLinux"[67], a Linux and Free Software congress organised by the user groups[68] and the engineering students of the Catholic University[69].

Free Software and the Latin American Academy

Latin America contributes only with 2.1% of the world's academic scientific research[70]. Considering only IT related research, this contribution goes down to 1.2%[71]. This clearly demonstrates Latin America is technology dependent from developed countries (USA, Europe and the Industrialised Asia produce more than 80% of the world's scientific research).

As Free Software is royalty and patent free, it can be used as research basis by any academic institution without the need of investment in proprietary software products. This is one of the reasons why in most of the countries researched here there is (at several levels) academic involvement with free software. One other reason, of course, is as the free software programming code is open, students have full access to it.

During the days of November 13 and 14 a group of Brazilian Universities got together in the city of São Carlos, São Paulo, in order to discuss joint actions for free software adoption for education and school administration. Along the actions defined by the "Letter of São Carlos"[72], are the creation of a web portal with description of success stories of software adoption within Universities, online training and hints and a knowledge database. Also, the "Letter" will propose a review of all academic "curriculum" in order to avoid the hard-link of any course to proprietary software tools.

Similar actions have been already described in this document: Project SLEC in Colombia and a joint development plan for Universities in Nicaragua.

Some conclusions and ideas (trying to keep it simple)

Bringing some figures mentioned here back, as we see the unemployment rate of Latin America (almost 8% in the year 2001) being bigger than the percentage of people who have network access (3%) and the technology dependency on developed countries (only 2.1% of the world's academic research comes from Latin America) we should try to find where free software can help (or is helping) change this situation.

67 http://expolinux.linux.org.do
68 http://linux.org.do
69 http://rsta.pucmm.edu.do/
70 Although I could not find a printed confirmation of the "per-country-rate" participation in academic research, I was told when participating in SOLIES (Free Software Forum for Universities) that of this 2.1% the majority of academic research (circa 80%) comes from Brazil.
71 http://www.cgee.org.br/arquivos/abc.pdf - Memória da Conferência Nacional de Tecnologia, Ciência e Inovação (September 2001)
72 To be published in http://www.ufscar.br/solies

Education

Education plays an important role on individual independence and ability to build a better life and this research have shown a couple of examples where free software have lowered the barriers for "technology-enhanced" learning. Both Colombia and Brazil have experiences that can be shared with other geographies, and both have shown a success experience depends on proper planning, the creation and adoption of standards, ways of sharing information and (as in the case of the south of Brazil) government support (although desirable, this doesn't seem to be mandatory).

One of the tools Colombia uses in its schools is the excellent FreeEduc, released by Ofset (Organization for Free Software for Education and Teaching)[73]. FreeEduc has some localization for the Spanish language, and less localization for Portuguese.

A good amount of schools, however, are too far from being benefited by free software (or any kind of software) as some of them don't even have electricity. Data from UN's CEPAL[74] (The Economic Commission for Latin America and Caribe) have shown an advance on education access, even in the rural areas, and now more than 93% of children between six and thirteen years old are studying in schools, and trends show this is getting better. CEPAL studies still show a high number of students leaving the schools to start working, and also shows that if these students have stayed in the school longer, their average income would be better. What the study doesn't show is if some "computer technology education" would also allow the student to get a better salary or job after finishing school, but it does show the Latin American market has not been able to provide jobs for professional "graduated" people (with academic or professional training): only 82% have some kind of job, and among them, only 81% are payed accordingly.

Although there are several education problems that need to be addressed, Brazil, Colombia and Venezuela have already found if money can be saved on software, it can be applied in other areas that are directly related to the quality of education.

Job Creation

Based on this information, and also knowing the amount of people below the poverty line in Latin America is 43% (2001 CEPAL estimate), we see that not only people need to get a job, but also have a better income.

Large companies that already have access to technology and can afford it are already benefiting from free software – although this study didn't look at the usage of free software by profitable large companies, it is clear that investments by IBM, Sun, Dell and others, along with free software adoption by large companies all over the region have shown there is an emerging business model having free software as part of it.

What free software can do is leverage technology usage by small and medium companies who

73 http://www.ofset.org/
74 http://www.eclac.cl

really cannot afford the costs of proprietary technology, allowing them to reach a better competition level and grow to hire more people (and pay better salaries).

Peru, Ecuador, Venezuela and Brazil have developed software who can help small and medium enterprises, although none of them can be considered complete, they are all targeted to the specific needs of Latin American countries. Due to the proper marketing of proprietary software vendors, most of the free software developers contacted in this research mentioned the companies "fear" the adoption of free software solutions, and lots of those companies rely on illegal copied software, although they also fear to "get caught".

Colombia, Venezuela and Brazil have already plans for adopting free software for academic administration (Brazil has a couple of success stories already), which even being different from business administration, requires the same kind of technical skills for software development.

A "regional development" program could be put together, involving University and/or technical Schools, to build – and implement – free software tools for several different groups of small and medium companies. The rural area of Peru could be used as a starting point, whose experience could then be expanded to another geographies and different set of companies. Along with helping companies to grow, the ERP-like free software development, deployment and support can also generate jobs.

One Brazilian initiative that could be considered a "thematic free software user group" could also be reproduced in other places and help finding new work spaces. The GNURIAS user group is a group that started in order to primary think of ways of women insertion in the men dominated IT marketplace. As free software has a business model that is still being forged, the GNURIAS group thinks it may be a way of start fighting for more and better space for women in this model. Along with this, they also do some voluntary work intended to introduce people who haven' had access to technology before (old citizens, poor kids, etc) to computers by using free software.

Access and Democratisation of Information

With only 3% of people accessing the Internet in Latin America, we can surely say the Net today is not the best way of making information public. Free software can help in several ways, being the most obvious the lowering of the cost barrier for internet access which allows the creation of public "telecentres". Less obvious are the usage of free software as an instrument for making information available.

Radio covers all of Latin America through wide band or shortwaves. A small group of people with Internet access can broadcast information to a lot larger number of communities. The information can be targeted to the different kind of communities, cooperative workers, etc. Regular mail also covers pretty much all geographies, meaning that even where Internet connection is impossible or cost-prohibitive, information that can be accessed trough a computer could be used (even though the computer itself will be offline). Combining free software, radio, offline computers and regular mail a lot of information and specific community related training could be shared. As radio regulations vary from country to country, this initiative is likely to require local government support.

Publishing information on the Internet is no longer a mystery, and with tools like PHP-Nuke it is easy for non-technical people to do this in a very organised, effective and professional way. As long as some kind of communication is allowed between local communities or individuals with someone with internet access, any information can be made public. Allowing the world to know the problems local communities have is already a way of finding solutions to this problem, and also push governments to help.

Transparency

It is very difficult to ensure transparency when someone doesn't want to provide information. When this is government information, it should, in principle, be readily available for the public this government rules and represents. The several proposal of bills who are trying to push Latin American governments to use free software take this in consideration. One must admit, however, there is not enough free software tools to run a government, and a lot of developed countries are not willing to use free software as a standard tool for government administration (although, the army in several countries are using it in the other way – to ensure privacy of critical information[75]).

If a developed country would adopt free software as a standard for public administration, allowing public inspection of information and even allowing the auditing of the code through the publication of it entirely, this would set an example that would show the world free software can be used for this mean. If a group of developed countries invest in the development of a generic, internationalised version of a government administration tool, this would probably save money for these governments and also allow the countries who doesn't have the money to pay for this development to also use the tool. It is even probable, as a couple of governments take this attitude, that companies already providing proprietary tools for government administration will be willing to open source their software.

Of course this doesn't help transparency itself, as it depends on the will of each Country. But if the tool allows several information to be viewed by the public, and the countries supporting the development of this tool make the information available, people will know if their government doesn't make information available is because it just doesn't want to, so they can better push for it.

Free software tools could also be make available for the house of representatives, allowing congressmen to easily push their proposals for public viewing and comments. PHP-Nuke allows this kind of things already. Combined with other forms of communications other than the Internet, everything published by a congressman could reach the audience through radio, regular mail, etc. So, a proposal that can help or cause problems to a specific community will reach their individuals who will be able to support or act against it. As a congressman will have its work "viewed" by a larger number of people, he/she will be carefully thinking about his actions.

75 See http://slashdot.org/article.pl?sid=02/10/29/0233251