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Free/Open Source Software
For Small and Medium Enterprises
Gigo Alampay and Joel Umali

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Free/Open Source Software
For Small and Medium Enterprises
Gigo Alampay and Joel Umali

e-Primers for the Information Economy, Society and Policy

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List of Acronyms

APDIP	Asia-Pacific Development Information Programme
APEC	Asia Pacific Economic Cooperation
BSD	Berkeley Software Development
COSS	Commercial Open Source Software
CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
EU	European Union
FLOSS	Free/Libre Open Source Software
FOSS	Free/Open Source Software
FSF	Free Software Foundation
GDP	Gross Domestic Product
HRM	Human Resource Management
HTML	Hyper Text Language
ICT	Information and Communications Technology
IEC	Information Education Campaign
IFC	International Finance Corporation
IOSN	International Open Source Network
IPR	Intellectual Property Rights
MPL	MOzilla Public License
MSME	Micro, Small and Medium Enterprise
OS	Operating System
PDF	Portable Document File
PIM	Personal Information Manager
PPP	Purchasing Power Parity
SME	Small and Medium Enterprise
SMITES	Small and Medium Information Technology Enterprises
TCO	Total Cost of Ownership
UNDP	United Nations Development Programme
VC	Venture Capital
VoIP	Voice over Internet Protocol
WTO	World Trade Organization

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PREFACE

The information revolution has transformed the way by which small and medium enterprises SMEs can conduct business. Information and communications technologies (ICTs) now enable people to exchange large amounts of information quickly, reliably and cheaply. Success is now determined by those who can best receive, process, and innovate.

From a development standpoint, ICTs can spur growth, create jobs for the poor, improve market access, contribute to income generation and enhance rural productivity. The economic contribution of ICTs is two-fold—income generation and poverty reduction. ICTs enable people and enterprises to capture economic opportunities with a view to increasing process efficiency, promoting participation in expanded economic networks and creating opportunities for employment.

The benefits that ICT provides – for both the SME and the larger national economy – reflect the interaction and dependence that both have for each other. SMEs are key drivers of national competitiveness and welfare. At the same time, the state of the national economy directly impacts the ability of the SME to succeed.

In other words, access to and meaningful use of ICTs by SMEs are key components of national economic development strategies. A strong SME sector that is integrated into the global digital economy can lead to job creation, increased public revenue and a general rise in the standard of living. In addition, the uses of ICT to enable SMEs to participate in the knowledge economy offers enormous opportunities to narrow social and economic inequalities and thus help achieve broader development goals.

It is in this context that the growing debate on the deliberate use of Free and Open Source Software (FOSS) – by SMEs as tools to enhance efficiency, and by governments as tools to promote overall economic improvement – must be seen.

This primer is therefore intended to provide an introduction to FOSS for two audiences: SMEs, and policymakers thinking about the role of ICT as well as government's role in promoting access to ICT.

It is hoped that a primer that targets both these seemingly separate constituencies will help both understand and appreciate their relevance and impact on each other. By understanding the needs and desires of SMEs, particularly as it relates to ICT in general (and FOSS in particular), policymakers can come to more informed and relevant solutions. Similarly, by thinking about the broader goals that policymakers must balance, SMEs can also learn to appreciate their own collective role in national development.

The primer is organized, as follows:

The following section provides an introduction to the role of ICT in SME development. This is followed by a section on FOSS – what it is, why it is important, what advantages and disadvantages come with it.

The main parts of the primer then follow. The third section discusses the subject of FOSS for SMEs, and provides practical points that SMEs can consider or will need to deploy FOSS within their operations. Finally, the fourth section covers some of the policy considerations that will be confronted as government struggles with the issues and challenges raised by FOSS.

To conclude, it bears emphasizing that there are no predetermined choices for either SMEs or for policymakers, and this primer does not attempt to provide any. Rather, it is hoped that this primer will provide additional information and will reveal some of the key considerations and issues that, ultimately, will lead to better solutions.

This primer is part of a series of primers on Free/Open Source Software brought to you by the International Open Source Network (IOSN), an initiative of the UNDP's Asia-Pacific Development Information Programme (APDIP).

I. INTRODUCTION

What are SMEs?

The definition of what constitutes a Small to Medium Enterprise (SME) varies widely across the world from country to country, often based on the number of employees and/or the amount of invested capital or turnover.

For example, 'SMEs are defined to have less than 200 employees with invested capital of less than K1 million for Myanmar, less than 20 million Baht for Thailand, less than 5 billion VND for Vietnam and less than P15 million for Philippines, ' (in The DatumXchange SME Definition By Andy Hor (Updated June 2002) <http://www.datumxchange.com/articles/smearticle.htm>). The European Union defines small enterprises based on its employment - companies employing 50 persons or less are categorized as small, while firms employing 51-250 persons are considered medium. The United States, on the other hand, defines small enterprises as employing less than 100 persons while medium companies have employees between 101 to 500¹.

Table 1 : Selected SME Definitions in the Asia-Pacific²

Country	SME Definition	Measurement
China	Less than 100 employees, varies with industries	Employment
Indonesia	Less than 100 employees	Employment
Japan	Wholesale – less than 100 employees or JPY 100 million assets Services – less than 100 employees or JPY 50 million assets Retail – less than 50 employees or JPY 50 million assets	Employment and asset
Malaysia	Manufacturing – less than MYR 25 million or 150 employees Services – less than MYR 5 million or 50 employees	Shareholders, funds and employment
Philippines	Less than 200 employees or PHP 60 million assets	Employment and asset
Republic of Korea	Manufacturing – less than 300 employees or KRW 8 billion assets Wholesale – less than 100 employees or KRW 10 billion annual sales revenue	Employment, asset and income
Singapore	Manufacturing – fixed assets worth SGD 15 million or less Services – less than 200 employees	Income and employment
Taiwan	Manufacturing – less than TWD 80 million of paid-in	Income and

	capital or less than 200 employees Other – less than TWD 100 annual sales revenue or less than 50 employees	employment
Thailand	Manufacturing and services – less than 200 employees or THB 200 million assets Wholesale – less than 0 employees or THB 100 million assets Retail – less than 30 employees or THB 60 million asset	

Source: *Small and Medium Enterprises and ICT. APDIP e-Primer. 2007.*

SMEs, beyond – and probably because of – their relatively small size enjoy several attributes that some say gives them an advantage, as against larger firms:³

- They usually have flat management structures, with their employees fulfilling multiple tasks and functions.
- SMEs are more flexible in decision making and implementing policy and organizational changes, allowing them to adjust more quickly to local market fluctuations.
- Smaller organizations have smoother internal communication processes allowing them to quickly implement or change a certain task.
- SMEs represent a major source of innovation as they occupy niche markets and follow competitive strategies.
- SMEs constitute a vital source of information, supply and services to larger firms in a globalized economy as they have because of their extensive knowledge of the local culture, resources, purchasing attitudes and supply patterns.
- SMEs often have a vested interest in community development. They can more easily draw upon the local community for their workforce needs, as well as for its business. Thus, SMEs are often able to provide affordable tailor made products and services based on the needs of the community.
- SMEs are important sources of employment for low skilled workers, women and young adults.

SMEs and Economic Development

The role of SMEs in generating employment and in fostering economic development, particularly in developing countries, cannot be understated. SMEs, including micro enterprises – businesses whose headcount is less than ten – account for nearly 95% of all firms in the world⁴. They employ more than 60% of the entire population and generate a significant share of new jobs⁵.

The World Business Council for Sustainable Development (WBCSD) reveals that more than 90% of all companies outside the agricultural sector are micro, small and medium enterprises (MSMEs) which generate a significant share of the Gross Domestic Product (GDP). Thus, in Bangladesh, SMEs account for 99% of all enterprises and 58% of total employment. In Ecuador, 98% of private firms are micro and small and medium enterprises which employ 55% of the labor force. In most developing countries, the informal sector which largely comprises MSMEs, account for a large but hidden portion of the GDP – anywhere between 30 to 70%.⁶

Table 2: Composition of SMEs in the Asia-Pacific Region

Country	SMEs as % of all enterprises	SME employees as % of the total employed population
Hong Kong	98.0	60.0
Japan	98.9	69.2
Malaysia	96.1	45.0 (manufacturing)
Philippines	99.6	70.0
Republic of Korea	99.8	86.7
Singapore	99.7	57.0
Tawan	97.7	68.8
Thailand	99.7	60.0

Source: *Small and Medium Enterprises and ICT. APDIP e-Primer. 2007.*

SMEs act as drivers of innovation and economic growth. Profitable market opportunities increases the rate of SME creation which in turn increases job creation and per capita income. As people gain more income, consumption of goods and services increases as well which in turn open up more market opportunities for SMEs. Unlike large multinational corporations, the growth of SMEs directly benefits the local economy as most SMEs are domestic enterprises

Various countries led by developed countries are rapidly shifting from an industrial economy to a knowledge economy influenced by computers and the internet. People and enterprises who possess skills and have access to ICT benefited much from the information revolution. The knowledge economy has impacted SMEs both on a positive and negative standpoint. Some countries such as India, Korea and Taiwan developed enabling environments to ensure that SMEs are equipped to capture new business opportunities. On the other hand, SMEs which

have not yet adopted ICT and do not possess ICT skills nor have access to ICT will have trouble surviving in the new economy.⁷

ICT for SMEs

Information and communications technologies (ICT) can enhance the key role that SMEs play in national economic development strategies by facilitating flows of information, capital, ideas, people, and products. A strong SME sector that is integrated into the global digital economy can lead to job creation, increased public revenue and a general rise in the standard of living. In addition, the uses of ICT to enable SMEs to participate in the knowledge economy offers enormous opportunities to narrow social and economic inequalities and thus help achieve broader development goals.

The availability of low cost technology, dismantling of trade barriers and overall economic liberalization all allow SMEs to setup activities beyond their local markets, thereby making their contribution to economic development even more important.⁸

SMEs are increasingly venturing into international business by selling their products to foreign markets, buying products from abroad, or starting to cooperate with foreign firms.⁹ These efforts are now facilitated and made possible because of their increased access to ICT, particularly the internet.

However, the growth of SMEs can be hampered by various factors such as lack of financing, constrained managerial skills, low productivity and difficulties in exploiting technology. Improving the performance and sustainability of SMES which represent the backbone of economic activity of the entire world will help in achieving equitable and sustainable development.¹⁰

Benefits of ICT to SMEs

For SMEs in particular, the use of ICTs can provide several significant benefits, such as:

- increasing productivity in the production process;
- enhancing and increasing the efficiency of internal business operations;
and
- connecting SMEs more easily and cheaply to external contacts, whether locally or globally.

Concrete examples of how ICTs can benefit SMEs, include the following:

- Improve inventory management systems
- Decrease wastage in production processes
- Improve communication between different departments within the firm
- Improve accounting and budgeting practices
- Reduce communication costs and geographic barriers with global suppliers and clients
- Expand client base through e-marketing (e.g. websites, portals and mailing lists)
- Link to local and global supply chains and outsourcing opportunities
- Share and learn new business practices
- Facilitate capacity building of owners and employees through e-learning platforms
- Simplify Government services such as business registration and filing taxes
- Introduce new methods of payment through e-commerce

Simply put, Internet and e-commerce enable SMEs to gain access to new customers and to expand their markets geographically, even if they have to physically remain in local and regional markets because of lack of information and marketing capability.

Through their websites, SMEs can attract potential investors and customers by providing information on their technologies, products, services and financial positions.

Moreover, the Internet can convey the ideas of knowledge-based small businesses, allowing even micro-enterprises with ideas and technologies to remain small and profitable, or even to generate substantial global sales by exploiting their intellectual property over the Internet.

Box 1. B2B Marketplace for SMEs

Alibaba.com is the largest online marketplace for both international and domestic business-to-business (B2B) exchanges in China. Alibaba International caters to SMEs interested in international trade. It has one million registered SMEs from over 200. It was ranked by Alexa, which conducts independent web traffic ratings of websites around the world, as the world's most popular site in the categories of Import-Export and International Business and Trade.

Aweb browsers are required. SMEs have a strong inclibaba also has a B2B portal for domestic businesses (<http://www.china.Alibaba.com>). SMEs do not need sophisticated ICT tools to join the community; only Internet access, email, and basic use of entive to have the basic ICT capacity to join the network because it offers them a wealth of buying and selling opportunities.

Source: culled from Small and Medium Enterprises and ICT. APDIP e-Primer. 2007.

II. **FOSS IN A NUTSHELL**

In the context both of SMEs seeking greater access to ICT, and of government intent on leveraging ICT to promote economic development, free and open source software (FOSS) present compelling reasons worthy of serious consideration.

What is FOSS?

FOSS are software programs whose licenses give users the freedom to run the program for any purpose, to study and modify it, and/or to redistribute copies of either the original or a modified program without having to pay for royalties to previous developers¹¹. FOSS projects are made public for others to innovate – to use, build upon, modify and edit.

Box 2. FOSS Philosophies

The FOSS movement is governed by two philosophies.

The Open Source Initiative states that the basic idea behind open source is the innovation and evolution of software made possible by allowing programmers to freely read, redistribute and modify the source code of a piece of software. Under the Open Source Definition, licenses must meet 10 conditions in order to be considered open source licenses.

- The software can be freely given away or sold.
- The source code must either be included or freely obtainable.
- Redistribution of modifications of derivative works must be allowed.
- Licenses may require that modifications are redistributed only as patches.
- No Discrimination Against Persons or Groups
- No Discrimination Against Fields of Endeavor
- The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.
- License Must Not Be Specific to a Product
- License Must Not Restrict Other Software
- License Must Be Technology-Neutral.

On the other hand, the **Free Software Foundation** defines FOSS as all about protecting four freedoms:

- The freedom to run a program
- The freedom to study how a program works and adapt it to a persons needs thus access to source codes
- The freedom to redistribute copies

FOSS encompasses truly protecting “works of the human spirit” by protecting the ability and freedom to create¹². It allows the sharing of “source codes” to develop and further refine computer software programs.

FOSS programs are characterized by two main attributes which distinguish FOSS from closed or proprietary software.

- First, FOSS programs make its source codes available to the public.
- Second, the nature of license under which it is distributed should allow users to modify and distribute it.¹³ In most cases, anyone who uses FOSS materials must agree to make all enhancements to the original material available to others under these same conditions. This rule distinguishes open source production from material in the public domain such as

freeware and shareware which are free to be downloaded but which do not reveal its code to the public¹⁴.

Thus, the “free” part on FOSS is less about the cost of acquiring the program at relatively no cost, and more about providing freedom to the users in anyway they see fit.

Simply put, the FOSS model is predicated on ensuring that the fundamental freedoms are not removed from the public by anyone. To do this, conditions are attached to the use of FOSS where any derivative work should be licensed on the same conditions as the FOSS material used. This ensures access rather than restrictions upon people’s ability to use, distribute and modify code¹⁵.

Why FOSS?

Open source applications have increasingly grown in features and capabilities as well as its scope. FOSS programs now find relevance in practically all industries, including the business/enterprise sector where FOSS can play a key role in achieving greater efficiency and profitability. As the range of software applications continues to grow exponentially, FOSS present tremendous benefits, especially for SMEs in developing countries.

FOSS can help SMEs to assimilate technology faster, increase productivity and efficiency of operations, explore new markets and bridge the digital divide between SMEs and large corporations.

The following are some *potential* benefits that SMEs expect to gain when they utilize FOSS:

- **Cost** – Although FOSS programs can be downloaded from the internet without paying license fees, some costs are associated with FOSS. Total Cost of Ownership (TCO)¹⁶ is significantly lower than proprietary software such as Microsoft’s Windows applications. For instance, an ATCO study by Robert Frances Group and the NetProject reported that total cost of deploying FOSS in certain projects is 35-40% lower than Microsoft applications¹⁷. FOSS allows SMEs to save resources which can then be channelled to other pressing needs.

Note, too, that savings to SMEs from using FOSS would tend to increase as more employees are provided with FOSS. The bigger the outfit, the greater the savings. In other words, the financial incentive of migrating to FOSS increases with size.¹⁸

- **Security** – The availability of source codes make it easier for SMEs to discover and fix vulnerabilities even before a flaw can be exploited. FOSS runs a large part on the internet and is focused on robustness and functionality.
- **Continuous Innovation** – As FOSS materials are made available to the public, thousands of eyes and hands make enhancements to it. Ease of, and indeed, encouraged collaboration between people means that innovation happens at a rapid pace, unlike closed proprietary software which releases updates only so often. Continuous innovation also enables the easy customization of programs at a pace not possible with closed applications.
- **Reliability and Stability** – FOSS systems are well known for their stability and reliability. Studies conducted on its stability revealed that proprietary software crashed more often. In fact a ZDNET study ran a 10-month reliability test between Windows NT and Red Hat Linux. The result: Windows NT crashed once every 6 weeks while the FOSS system never suffered any crash at all.
- **Flexibility and Vendor Independence** – Unlike most proprietary software which come bundled with all sorts of various applications, FOSS gives SMEs more flexibility by allowing them to choose and deploy selected applications, and customizing these to suit their needs. Further, open standards give users the freedom to change between software packages platforms and vendors.
- **Reduced reliance on imports** – Since virtually all proprietary software in developing countries is imported, SME purchases consume hard currency and costs countries their foreign reserves. FOSS has a positive feedback on the local economy since the cost for FOSS service is normally spent within the economy.
- **Developing local software capacity** – Studies point out that there is a correlation between the growth of FOSS developer base and the innovative capacities (software) of an economy.¹⁹ There are low barriers to entry, and FOSS represents an opportunity for countries to develop a crucial pool of knowledge workers to enhance its global competitiveness.
- **Intellectual Property Rights** – FOSS mitigates piracy by providing a far more affordable alternative to proprietary software. Piracy is high in developing countries where lower incomes make proprietary software inaccessible and which, in turn, encourages piracy.

- **Localization** – Localization involves making a product linguistically and culturally appropriate to the users. Because of its open nature, FOSS inherently makes it likely that developed software will reflect regional needs, languages, cultural considerations and other particular user preferences.
- **Supply-Side Benefits** – SMEs can avoid supplier lock-up if they use FOSS. FOSS assures users of competitive prices of applications and services as there is no single vendor to dictate price changes and availability of updates or enhancements.

Why not FOSS?

Although there are now many FOSS projects encompassing almost all sectors from the academe to the military, to governance and development and to businesses, there are still some shortcomings especially for the small enterprise sector.

- **Functionality and Ease of Use** – While there are full featured and tested applications for high end market which rivals or even exceed proprietary applications, basic and properly documented applications for SMEs are still lagging behind proprietary applications in terms of ease of use, features and functionality.²⁰ The dominance of some proprietary software, like Microsoft Office for example, also means that for SMEs who need to interact with clients or partners, using Microsoft Office is not only easier because of the likely familiarity of key persons with it, but also would be less complicated in that shared files are opened by the same software application.
- **Scarcity of Expertise** – There is a scarcity in the FOSS community of experts who are competent in both the technical and business areas. A possible reason for this is that open source has tended to slant towards the infrastructure and back-end side of the software spectrum such as operating systems, servers and developer tools. This is why we see solid and tested FOSS offerings in the network and operating system space and rather few offerings in the desktop application space.²¹

Box 3. Collaborative Initiatives enhances FOSS office productivity suites

Competitors to the Microsoft Office Suite have been driving up the enthusiasm of FOSS users by offering innovative alternatives to the popular Microsoft Office.

Software giant, IBM recently released an open source free office productivity suite called “Lotus Symphony” based on OpenOffice.org. Google Apps – Docs and Spreadsheets, a web-based office space is also well received by users around the world. Recently, Google announced a new addition to its Google Apps family called Presentations, a web based alternative to PowerPoint.

Hardware giant such as Lenovo and Dell are also partnering with FOSS vendors such as Novell to preload their latest desktop offerings with SuSe Linux Enterprise which targets business customers. Novell will also provide software and maintenance support to hardware buyers. This move will provide much needed momentum for the Linux Desktop.

With this latest offerings from big developers, it will only be a matter of time when MS Office, a key to users’ addiction to Windows, will be shadowed by FOSS based office productivity tools and the desktop PC space will no longer be Microsoft’s monopoly.

- **Documentation** – Some FOSS applications, especially for SMEs, still need extensive and exhaustive documentation to make them user-friendly.²²
- **Compatibility Issues** – Many FOSS systems such as desktop applications are not seamlessly compatible with proprietary systems, and with peripheral equipment. Organizations who invested in proprietary applications and want to migrate to FOSS could end up spending significant amounts of time, costs and risks. For example, FOSS operating systems and applications may not have adequate technical support, or more directly, may not work with existing equipment such as printers, webcams, etc.

There are a lot of myths and misconceptions about FOSS especially for those who have heard of it but have not actually used it. These misconceptions have more or less misconstrue the various advantages and benefits of using FOSS.

Box 4. Four FOSS Falsehoods

- 1. Myth - FOSS is totally free.** While FOSS applications can be downloaded from the internet, there are direct and indirect costs associated with using it like cost for broadband in downloading programs, support service fees, annual fees, etc. “Free” in the FOSS acronym is less about the zero cost of the programs but more on the “freedom” associated with FOSS programs. It is true however that total cost for FOSS in general, is significantly lower than proprietary applications.
- 2. Myth - FOSS is less secure and is more prone to attacks.** As source codes are open to inspection to hundreds of expert eyes and hands, security threats and vulnerabilities are discovered and fixed faster. Further, threats and vulnerabilities are fixed by the FOSS community without having to employ a third party vendor to address the problem.
- 3. Myth - FOSS have many bugs and errors.** The openness of FOSS results in less collusion, more peer review and higher software quality. Since source code is open, programmers can easily identify security flaws and bugs and fix them at a faster rate than proprietary applications. Open source software has a detect rate lower than closed source programs. The hallmark of most FOSS is the speed which bug fixes are applied, tested and distributed.
- 4. Myth – Installing and Using FOSS programs is very complicated.** Extensive documentation, tutorials and do-it-yourself learning guides are readily available, and installing FOSS is not necessarily more complicated than installing similar proprietary software.

III. FOSS FOR SMEs

SMEs have different ICT needs depending on their goals, its market, their technological capacities to assimilate technology, their resources to acquire ICT, geography, among others.

ICT can improve business operations, achieve faster time to market, drive new markets and efficiently manage customers. More particularly, ICTs can benefit SMEs by improving inventory management systems, improving communication channels within and outside the firm, reducing geographical barriers between clients and suppliers, linking local and global supply chains and outsourcing opportunities, facilitating capability building, and introducing new methods of payments.

Various FOSS applications, as potentially highly beneficial ICT tools, can be used by SMEs. These range from desktop applications and productivity suites (such as word processing and spreadsheets) to more sophisticated back-end applications to enhance network infrastructure such as firewalls, routers, dns servers, email applications and for data center infrastructure including storage and database management. Further, some SMEs are beginning to utilize FOSS in their mission critical applications such as Customer Relationship Management (CRM) and e-commerce applications.

The following are some of the major areas where ICT can help enhance SME's effectiveness and efficiency:¹

- Accounting and finance - book keeping and cash flow management, budgeting, credit and collections, financial management and reporting, payroll systems
- Business planning – project management tools, forecasting, mind mapping, word processing, spreadsheets and presentation programs.
- Human resource - compensation and benefits systems, employee management, payroll, recruiting and hiring
- International business – databases, communication and presentation tools
- Marketing and sales – advertising, editing and graphic tools, customer management system, direct mail, email and web development, market research tools, sales management

¹ This general listing, culled from the SMEToolkit website developed by the International Finance Corporation shows the typical ICT needs of SMEs.

- Office and Operations – Office productivity applications, procurement and inventory systems, telecommunication systems, e-commerce, messaging, web marketing, internet, networks, tech support, web development, hosting, etc.

Assessing SME Migration to FOSS – When is it Worth It?

The table below provides a “4-Cs (Cost, Compatibility, Coverage, and Capability)” framework that SMEs can use to assess the costs and benefits of migrating and using FOSS for their particular needs.²³

Table 3. Cost and Benefit of Migrating to FOSS

<p>1. Cost - FOSS is generally free to download. However, SMEs will need expertise in determining the right set-up, components, and applications for you. Further, SMEs will need support services for customization, integration, maintenance, etc.</p> <ul style="list-style-type: none">✓ What are the direct and indirect costs associated with FOSS?✓ Is it cheaper to use FOSS than buy proprietary software in terms of license fee and maintenance cost?✓ What kind of support services are the vendors offering? Are there recurring costs for acquiring their services?✓ Is the SME capable of deploying FOSS efficiently and at reasonable costs?✓ How much money and time will it cost to migrate or setup the FOSS system?✓ Are there other vendors offering the same or better packages at much cheaper cost?✓ Will there be a need to hire additional manpower to manage and maintain the system?
<p>2. Compatibility/customization - Most FOSS are flexible, customizable and can be adapted to work with the SME's existing software system or hardware equipment.</p> <ul style="list-style-type: none">✓ Can the software adopt to the needs of the company?✓ Can it handle the expected growth? (Is it scalable?)✓ Does it make operations more efficient and secure?✓ Can the new system handle the same operations that the old one does?✓ Can it be integrated with the old system? Can it replace the old system seamlessly and with little risk?✓ Can it run using existing hardware equipment, or will it be necessary to purchase or upgrade the equipment?

3. **Coverage** - SMEs should ascertain what the various requirements of the system are and what the vendors are offering to deploy the FOSS in the company.

- ✓ What are the services covered or offered by the vendor to deploy FOSS in the SME?
- ✓ Is maintenance and support service part of the package?
- ✓ What will be the ongoing and recurrent costs for FOSS deployment?
- ✓ Is the system easier to use and will it streamline operations?
- ✓ Can the agreement be changed to respond to unanticipated additional requirements of the company?

4. **Capability** - It is also important for the SME to assess what it has and/or needs to deploy FOSS?

- ✓ Does the SME have people skilled in using, integrating, deploying, and/or customizing FOSS?
- ✓ Are the vendors skilled in using, integrating, deploying, customizing, maintaining FOSS? What is their track record? Have they done the same projects elsewhere?
- ✓ Do they have ample manpower to deploy FOSS?
- ✓ Would the vendors offer training support?

Where to get FOSS for SMEs

One issue facing the SME sector is the lack of awareness, access and knowledge on where to get FOSS and how to use it.

While FOSS programs can be searched, accessed and downloaded from the Internet, or otherwise purchased and installed from commercial providers, SMEs will often still need substantial support from vendors, government and the online community to seamlessly install and integrate FOSS in their systems.

To provide better access of SMES to FOSS programs, the UNDP-APDIP-IOSON produced a CD package filled with useful FOSS-based enterprise applications called SME-in-a-Box²⁴. The SME-in-Box is a toolkit designed to meet the specialized needs of SMEs. The kit is composed of peer-reviewed software and manuals for general use of SMEs in their daily operations and management.

Applications included in the toolkit are selected as they are suitable for ease of deployment and use. The programs are grouped in function specific categories such as: accounting and inventory management, ecommerce, CRM, HRM, systems and network management, security, document management, content management, file and print serving, PIM, mail and messaging, VOIP, and groupware.

A key advantage of this kit, because the software is contained in a CD and a Demo Live CD, is that it can be deployed to and used even by SMEs who may not have ready access to the Internet. It also provides access to a range of free and low cost tools with explanation, introductory materials and documentation. Lastly, the SME-in-a-Box provides models of technology implementation for low resourced enterprise that are using old and outdated equipment and refurbished PCs.

Applications included in the CD can be downloaded at: www.sourceforge.net or at <http://www.iosn.net/fossatwork/wiki/SMEInABox>

On the Internet, of course, numerous useful applications can also be downloaded by SMEs. The table below provides a general listing of selected FOSS programs and applications which can be used by SMEs, and where they can be downloaded from:

Table 4. Selected FOSS for SMEs

Where to use it	Application	Where to get it	Description
Operating system for your computer specifically Linux distributions for enterprises	KNOPPIX	www.knopixx.com	Bootable live system
	SLAX	www.slax.org	Linux that fits on small CD-ROMS
	Suse Linux	www.novell.com/linux	Linux OS Distro for the enterprise
	Red Hat Enterprise Linux	www.redhat.com	Linux OS Distro for the enterprise
	Madriva	www.madriva.com	Linux OS Distro for the enterprise
	PCLinux	www.pclinuxos.com	Linux OS Distro for the enterprise
	Ubuntu	www.ubuntu.com	Linux Based OS
	Debian/GNU	www.debian.com	Linux based OS
Accounting and finance including book keeping, cash flow management, budgeting and reporting, payroll systems	SQL Ledger	www.dql-ledger.com	Double-entry accounting system
	GNU Cash	www.gnucash.org	Small business financial accounting
	Turbo Cash	www.turbocash.co.za	Full featured accounting
	webERP		

		www.weberp.org	system Account and inventory management
Project management tools, customer relationship systems, forecasting, office applications such as word processing and spreadsheets	OrangeHRM	www.orangehrm.com	Customer relationship management
	Sugar CRM	www.sugarcrm.com	Customer relationship management
	OpenBravo ERP	www.opnebravo.com	Enterprise Resource Planning
	Compiere ERP	www.compiere.com	Enterprise Resource Planning
	OpennTaps	www.opentaps.org	CRM and ERP
	GanttProject	http://sourceforge.net/projects/ganttproject	Project scheduling application
	Pentaho	www.pentaho.org	Business Intelligence Platform
e-commerce and marketing, database, communication and presentation tools, online shopping solutions	BitWeaver	www.bitweaver.org	Application framework for webpages
	Joomla	www.joomla.org	Open CMS for website
	Drupal	www.drupal.org	Open CMS for website
	CMS Made Simple	www.cmsmadesimple.org	Create and manage website
	VirtueMart	www.virtuemart.com	CMS, ecommerce solution
	OS Commerce	www.oscommerce.com	Online shopping solution
	ZenCart	www.oscommerce.com	e-commerce shopping
	PHPShop	www.zen-cart.com	ecommerce system
	MyMarket	www.phpshop.org	ecommerce system
	FishCart	www.mymarket.sourceforge.net	ecommerce system
	Symphero	www.fishcart.org	ecommerce system
	Alfresco	www.sourceforge.net/projects/opensy	Content management

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	Biet-O-Matic LifeRay Portal	mphero www.alfresco.com http://sourceforge.net/projects/bom www.liferay.com	repository Tool to watch and bid on auctions Enterprise portal framework
advertising, editing and graphic tools, customer management system, direct mail, email and web development, market research tools, sales management	Sugar CRM vTiger CRM GIMP Inkscape L'ane Point of Sale	www.sugarcrm.com www.vtiger.com www.gimp.org www.inkscape.org www.l-ane.net	Customer relationship manager CRM –scalable bulletin board system Graphic creating and editing Graphic creating and editing Cash Register and backoffice
Office productivity applications, web marketing, mail and calendar systems, layouting and editing tools	Hula Citadel Plone Open Office Lotus Symphony Group Office PDF Creator 7Zip Glabels Scribus Free Mind Portable apps.com	www.hula-project.org www.citadel.org www.plone.org www.openoffice.org www.symphony.lotus.com www.group-office.com http://sourceforge.net/projects/pdfcreator www.7-zip.org www.glabels.sourceforge.net www.scribus.net	Mail and calendar server Groupware platform Intranet/extranet server, document publishing system Desktop application for word processing, spreadsheets, presentation, imaging Office Productivity Suite Integrated office productivity suite Portable Document File Creator File Compression Tool Utilities for printing business cards Page editing and layouting

		www.freemind.sourceforge.net	Mind Mapping tool
		http://sourceforge.net/projects/portableapps	Allows programs to run on portable devices
Networking solutions and protection, file sharing, groupware management and internet sharing tools	<p>Monowall</p> <p>Linux IP Tables</p> <p>Cayote Linux</p> <p>eGroupWare</p> <p>GuardDog</p> <p>Firestarter</p> <p>Zenoss Core</p> <p>eMule</p>	<p>http://m0n0.ch/wall/</p> <p>www.netfilter.org</p> <p>www.cayotelinux.com</p> <p>http://sourceforge.net/projects/egroupware</p> <p>www.simonzone.com/software/guarddog</p> <p>www.fs-security.com</p> <p>www.zenoss.com</p> <p>www.e-mule.project.net</p>	<p>firewall</p> <p>packet filtering</p> <p>firewall/router</p> <p>Web based groupware for information management</p> <p>Firewall</p> <p>Firewall</p> <p>Network and Systems Management</p> <p>File sharing client</p>
Communication systems, mail and messaging, networking, internet	<p>Mozilla Firefox</p> <p>Mozilla Thunderbird</p> <p>Zimbra</p> <p>SendMail</p> <p>aMSN</p> <p>TrixB0x</p> <p>FreePBX</p>	<p>www.mozilla.org</p> <p>www.mozilla.org</p> <p>www.zimbra.com</p> <p>www.sendmail.org</p> <p>http://sourceforge.net/projects/amsn</p> <p>www.trixbox.org</p> <p>www.freepbx.org</p>	<p>Web browser</p> <p>Email Client</p> <p>Messaging and collaboration</p> <p>Email server</p> <p>Messaging application</p> <p>VoIP</p> <p>PBX application</p>
Hosted applications	<p>Web presence</p> <p>Joomla, Drupal</p> <p>Blogs</p> <p>Wikis</p> <p>Calendars</p>		

	Email		
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Source: www.SourceForge.net

Commercial Open Source

As noted previously, FOSS can be downloaded for free on the Internet. However, most users, particularly SMEs in developing countries, would probably lack the expertise or know how to use, much less maximize the potential of FOSS. For this reason, it may be more practical to procure FOSS that are sold commercially. Such commercial FOSS are designed for ease of deployment, would come with support services, and will likely be had at a price much lower than other proprietary software.

For example, commercial distributions of Linux such as Suse, Red Hat and Mandrake can be obtained for a low fee which comes with virtual support, additional features, more polished documentation and self help.

The advantages of using Commercial Open Source include: ²⁵

- Less risk - people are not forced to adapt the application to their business. It places customization and usability at the forefront thereby improving user adoption and employee productivity.
- Faster payback – COS vendors offer lower upfront, implementation, customization and maintenance cost than proprietary software. By leveraging the expertise of developers worldwide, COS vendors deliver a better product at lower cost
- Greater innovation – Involves a Darwinian process where the most useful features of the product merit the time and attention of the open source community and the ones delivered to the end users.

Table 5. Selected Commercial Open Source Applications for the Enterprise

Application	Vendor	Description
Compiere	Compiere	ERP and CRM
Db4o	Db4o	ODBMS
Funambol Server	Funambol	Mobile email and PIM synchronization
Poseidon for UML	Gentleware	Software modeling tools
Hyperic HQ Enterprise	Hyperic	System and application management
Ingres Enterprise	Ingres	RDBMS
Business Intelligence Suite	JasperSoft	Report Writing System
Knowledge Tree	Knowledge Tree	Document and Records Management System
Mule	Mule Source	Enterprise Service Bus and

		Integration Platform
Project.net	Project.net	Project and Portfolio Management
SugarCRM	SugarCRM	Sales force automation
Star Office	Sun	Personal Office Suite
NetBeans	Sun	Software Development Tools
Jave Enterprise System	Sun	Application server and middleware
Tripwire Enterprise	Tripwire	System and Network Management
Cruise Control Enterprise	ThoughtWorks	Software Development Tools
Operating System	Various vendors	OS for the Enterprise

Source: http://en.wikipedia.org/wiki/commercial_opne_source_applications

SMES for FOSS

Small and Medium IT Enterprises are ideal contributors to FOSS development not because they possess the advanced engineering skills to write complex programs and make radical innovations to FOSS programs but because they can be utilized as channels and service support mechanisms in deploying FOSS mainly also to SMEs. SMEs and SMITEs can participate in FOSS development by distribution, creation of FOSS packages for different sectors, and support services for users.

SMEs tend to cooperate and collaborate with each other thereby spreading innovation. Even though they could be competitors, SMEs do learn from each other in terms of operations, business models and business best practices. Further, SMEs can be strategic partners of larger international firms without presence in a local setting of a developing country. SMEs have extensive knowledge on the supply networks, contacts, purchasing power and cultural considerations which are important elements in establishing a business.

Box 5. CASE STUDY: LONE WOLVES

Lone Wolves (jejik.com) is a small software development firm specializing in web development and open source games based in Europe which started with only \$2,100 start-up capital for hardware and software and office expenses. Using Open Source, they managed to get their small business up and running. Lone Wolves considered the following scenarios for their software needs (licensing fees only):

Scenario 1 - An ideal software listing using Windows

2 x Windows Vista Business	2 x Windows Server 2003
2 x Office Professional	SQL Workgroup Server 2005
Symantec AV Business Pack	2 x Visual Studio Standard
2 x Adobe Photoshop	Visual SourceSafe

Total cost – \$ 9,000 - Totally beyond their start-up capital

Scenario 2 – Stripped Down Windows System

2 x Windows XP Pro OEM	Windows Server 2003
Windows Server 2003 SBS	2 x Office Professional OEM
MySQL Community Server	Symantec AV Business Pack 5
2 x Zend Studio Standard	2 x Paint Shop Pro X
Subversion	

Total \$ 3,490 - Still above their start-up capital

Scenario 3: Linux shop

4 x Debian Etch	2 x OpenOffice.org
MySQL Community Server 5.x	DenyHosts + RootKit Hunter
2 x Bluefish	2 x Kate
2 x GIMP	2 x Inkscape
Subversion	

Total - \$ 0. – Resources were then used to buy hardware and for office expenses.

IV. FOSS FOR SMEs: A PUBLIC POLICY PERSPECTIVE

Software provides and helps to enhance the accessibility of the content and applications that make information society possible. It allows people to connect, communicate, innovate and grow in this digital world.

Developing countries, however, are severely limited in their adoption of software solutions by financial considerations. In this context, Free/Open Source Software (FOSS) represents an opportunity or an alternative that will allow them to avoid prohibitive license fees, without resorting to piracy.

Moreover, developing a clear FOSS strategy and competence could help enhance country competitiveness, especially if SMEs – demonstrably critical drivers of developing countries' economic engines – get in the act.

To be sure, though, it is not a simple task or goal for any country to deploy and to pursue a deliberate strategy to promote FOSS.

What are the clear benefits specific to the adoption of FOSS, and ICT in general, for developing countries? Should governments play a role in promoting software preferences outside the public sector? Should it be an either-or decision - either FOSS or proprietary software - when public resources are involved?

Most importantly for purposes of this primer, how (and should) government consciously and deliberately push for the adoption of FOSS by SMEs?

ICT Issues and Challenges Faced by SMEs

The critical importance of SMEs to national economies, as well as the undeniable benefits they will gain from using ICT has been discussed previously. Clearly, it is in the interest of all nations to ensure that SMEs are able to access, use and deploy ICT to the extent that these not only make them more competitive as companies, but also that the benefits redound to the greater economy in the form of more jobs, better consumer welfare and increased overall national competitiveness.

From a policy standpoint, therefore, it is important to recognize the barriers that exist which make it difficult and challenging for SMEs to access and embrace ICT in general, and, in the context of this primer, FOSS in particular.

- **Unsuitability for Business.** SMEs may not see the relevance or suitability of ICT, particularly FOSS, to their businesses. Many of them

may not see how the sale of their goods or services might be enhanced by Internet transactions.

SMEs will not take advantage of ICT unless the benefits outweigh the costs and justify establishing and maintaining new ICT systems.

They may also be hesitant to introduce changes to their current way of doing business, and thereby avoid the risks associated with new investments and new business models.

Further, they may also be worried that existing customers will be turned off by the changes that they may institute.

This lack of awareness is even more pronounced when it comes to FOSS.

Most SMEs are not aware of the existence of FOSS and the benefits that come with using it. And even if they have heard of FOSS, SMEs are often at a loss as to where to get FOSS programs, and how to migrate to, and begin using FOSS. As pointed out earlier, many of them lack the technological capacities to understand the benefits, features and components of various FOSS projects, much less to deploy FOSS by themselves.

- **Lack of ICT and Managerial Knowledge Internally.** SMEs often lack the human technological resources needed for ICT and e-commerce, especially because they have to focus on day-to-day operations, and lack the time and extra resources necessary to understand the benefits of new technologies.

Even if they are aware of the potential benefits of adopting ICT, they would still require know-how or qualified personnel.

SMEs may also lack managerial understanding and skills for e-business. Successful integration of e-business often requires restructuring of business processes, or changes in organizational structures. Professional IT or e-business consultants could help, but SMEs may not have ready access to them because of their relatively high costs.

Thus, SMEs using FOSS especially in the developing countries are concerned by the lack of service providers for FOSS. Without support services, most SMEs would not know even where to start with FOSS. Further, while there are support services available on the web for popular packages such as Linux and its various distributions, there are hundreds of FOSS for which support is unclear²⁶. Lack of solid marketing also contribute to why FOSS can't be seen in shops. SMEs also expect FOSS

based companies to offer development, integration, consulting, life cycle management software maintenance and even software selection.

- **Costs of Developing and Maintaining e-Business Systems.** SMEs are generally concerned about the costs of establishing and maintaining e-commerce systems since they often suffer from budget constraints and are less sure of the expected returns on such investments.

Some SMEs cannot afford to adopt sophisticated ICT solutions (e.g., Websites with secure environment allow for credit card transactions.)

Outsourcing webpage design and updating are optional, but the costs of such may be difficult for SMEs to contain.

Logistics services, such as package collection and delivery, also matter. This is a real concern for small businesses, especially in remote districts where private package collection/delivery services may not be available at reasonable costs.

Some items, such as software, music and books, could be delivered digitally, but it may not be feasible for an individual, business or customer with slow Internet connections, or small download capacities.

In these matters, FOSS provides many cost-effective and efficient options, but again, lack of awareness, expertise and support services tend to hamper their deployment.

Faced with these challenges, many simply opt to risk using pirated proprietary software that they are already familiar with.

Indeed, desktop applications are still dominated by Windows. Most SMEs in developing countries often need only basic productivity software that will allow common tasks like word processing, preparation of spreadsheets and presentations, and graphic design. Although such FOSS applications for desktop PC is fast rising, users prefer the user friendliness and interface of Windows desktop applications.

Further, areas where FOSS need further development are in terms of wifi support, line up and support for games, support for some hardware such as old printers, old storage drivers, etc. which most SMEs need.

Box 6. Barriers to ICT Access and Use

There are, of course, other barriers to ICT access and use by SMEs which do not necessarily impact the use and deployment of FOSS, although it may be useful again from a policy standpoint to briefly note them. These barriers include:

- **Network Infrastructure – Access.** The availability of a wide range of Internet connections and other communications services, preferably at competitive prices, is very important to the extent that it allows small businesses to choose different and appropriate services according to their specific needs and expectations from on-line activities.

The availability of broadband connections may affect SMEs' decisions to adopt e-commerce. Broadband's faster speeds improve overall online experiences for both individuals and businesses, encouraging them to explore more applications and spend more time online. In contrast, slow internet connections and data transfers discourage SME adoption of the Internet.

- **Building Security and Trust.** Lesser known SMEs are at a clear disadvantage in terms of buyer confidence compared with large multinationals with highly recognizable brand names. Online clients view recognition of a brand or company name as an indicator of a firm's credibility, just as they do offline. The inability to verify online sellers' credentials ranks high among reasons for reluctance to buy online.

A professional website can help improve a firm's image for large-scale B2B transactions.

Moreover, consumers who use credit cards for online transactions are highly concerned about security, protection of credit-related information and secure systems. As more online clients demand secure transaction environments, SMEs are likely to face increasing costs for system protection and security measures.

Other related barriers include payment uncertainties and contract, delivery and guarantee uncertainties.

Privacy and legal protection for internet purchases are also significant concerns, both for businesses and customers alike.

- **Legal uncertainties.** Legal uncertainties and conflicting regulatory environments for cross-border transactions may affect SMEs strongly. SMEs can risk being sued in multiple jurisdictions under a number of inconsistent laws. But more generally, the lack of a satisfactory redress mechanism in the event of a dispute may strongly discourage both B2B and B2C online transactions.

Comparative analysis – drivers and motivations of developing and developed countries vis FOSS

While FOSS use can create business, economic and technological opportunities for enterprises across nations, there are differences in why firms in developed and developing countries decide to go with FOSS.

According to a major study on the various motivations that drive the use of FOSS in the United States and in European countries,²⁷ the main driver of FOSS use is to learn and develop new skills. Programmers in developed countries use FOSS to widen their knowledge on various ICT tools, share them to the software community and to participate in its development.

Second, FOSS also provide developers with intangible benefits including peer recognition and an increase in a person's ability/skills for future work. Programmers use FOSS to improve products of other developers and improve their future marketability.

Political reasons rank as the third motivator why FOSS is being used in developed countries. FOSS users share the belief that software should not be proprietary and to limit the monolithic powers of large proprietary firms.

Fourth, FOSS users are motivated by the ability of the open source programs for economic reasons.

FOSS can enhance their productivity as FOSS can be customized to solve a problem that proprietary applications can not.

Finally, firms in developed countries use FOSS to save on software expenses. Without licensing costs and more affordable support services, enterprise use FOSS instead of proprietary application²⁸.

FOSS users in developed countries list down the following concerns with the use of Open Source²⁹:

1. viability of service and support
2. security of software
3. lack of internal skills in development
4. product immaturity
5. overall complexity
6. ability to meet business goals
7. legal issues
8. cost of ownership

The scenario for developing countries is different. Although there are no empirical evidences yet to capture what drives enterprises and users to use

FOSS, there are anecdotal evidences from country experiences, policies and pronouncements on why they chose to use FOSS.

Proprietary software does not come cheap even in developing countries. Most developing countries in the table presented below have less than \$ 2,000 per capita which is predominantly spent for food, education, health and shelter. SMEs, on the other hand, concentrate their limited resources on operations and compensation and very little on ICT investments. Given the limited resources of SMEs in developing countries and the nation as a whole, proprietary applications are very expensive both in absolute and relative terms. Note too that income from business profits are generally lower in developing countries as purchasing power of its citizens are also very limited.

Thus, an of-the-shelf Windows Ultimate with Office Professional 2007 package which costs \$ 729 is more affordable to first world countries as their incomes are significantly higher than developing countries². Linux enterprise editions with Open Office can be downloaded free form the internet or sourced through vendors as software packages at \$80-100 or just 15% the price of the Windows software .

Thus, SMEs in developing countries use FOSS as it is more affordable than proprietary applications. With meager budgets especially for ICT investments, SMEs utilize FOSS as an alternative to proprietary applications to fulfil their ICT needs.

Government in developing nations also advocate the use of FOSS to mitigate piracy. The inability of its citizens and SMEs to legally purchase proprietary applications due to limited budget results in software piracy. The Global Piracy Study of 2006 shows that there seems to be a negative correlation between the per capita income of the country (GDP per capita) and the piracy rate in the particular country (see table below). Nations with low per capita income, in general, have higher piracy rates. For instance, Vietnam whose per capita income is \$723 and Zimbabwe whose per capita income in \$ 472 belong to the top 5 countries with the highest piracy rates in 2006.

Table 6. Selected Piracy Rates and GDP Per Capita

Country	Piracy rates in % (1)			GDP per Capita (2) 2005/2006
	2004	2005	2006	
United States	21	21	21	44,190
United Kingdom	27	27	27	39,213
Canada	36	33	34	38,951
Belgium	29	28	27	37,214

² Indicative prices from Amazon.com for 2007.

Australia	32	31	29	36,553
Germany	29	27	28	35,204
Japan	28	28	25	34,188
Singapore	42	40	39	29,917
South Korea	46	46	45	18,392
Taiwan	43	43	41	15,482
Mexico	65	65	63	8,066
Malaysia	61	60	60	5,718
Brazil	64	64	60	5,715
Thailand	79	80	80	3,136
China	90	86	82	2,001
Indonesia	87	87	85	1,640
Philippines	71	71	71	1,345
Bolivia	80	83	82	1,125
India	74	72	71	797
Vietnam	92	90	88	723
Zimbabwe	90	90	91	472

(1) 2006 Global Piracy Study. Business Software Alliance and International Data Corporation

(2) International Monetary Fund Estimates for 2006. GDP per capita estimates for 2005 or 2006.

Box 7. Open Source May Help China Curb Piracy

Altogether, software vendors claim that they suffered \$3.5 billion in losses last year due to Chinese piracy. "Recently, the Chinese government has begun the promotion of legal software," said Shouqun Lu, chairman of the China Open Source Software Federation.

"In the past, Linux wasn't mature enough, but now the situation has changed. It still isn't a total replacement for Microsoft, but it is an additional choice for users. And the cost to purchase Microsoft products is very high. It will cost much less if you use Linux."

It takes a lot of work to do this. One hopeful sign, albeit a small one, is that China's 2004 piracy rate was two percentage points lower than in 2003, where it tied for first place in piracy rates. In 2004, China was third after Vietnam and the Ukraine. (China's piracy rate further dropped to 82% in 2006 partly because of FOSS advocacies).

Source : excerpts from Maria Trombly. eWeek.com. accessed September 20. 2007.

Finally, FOSS jumpstarts the development of the local ICT industries which in most cases are just users of proprietary applications. Small and Medium IT

Enterprises benefit from FOSS applications by equipping them with developer tools which help them build innovative applications as their core product offering.

Box 8. Philippines launches FOSS initiatives for SMEs

To provide easy to use FOSS applications to SMEs which have no means of downloading and compiling useful FOSS applications, the Commission on Information and Communications Technology of the Philippines developed the “Open STEP”, a compilation of common open source applications for micro and small entrepreneurs. Free CDs were distributed to SMEs that signified their willingness to test the adaptability, user-friendliness and appropriateness of the applications to their businesses. Included in the package are Turbocash, osCommerce, Adempiere, Orange HRM, TimeTrex, IDCMS, Open Office and other open source support tools. The initiative aims to leverage ICT in business operations such that information management can be done efficiently and effectively without added cost on software.

Source : Infotech News. www. GMANews.tv accessed on September 12, 207. from <http://www.gmanews.tv/story/51816/CICT-distribute-free-CDs-to-SMEs>

What Should be the Role of Governments vis-à-vis FOSS?

Governments play a crucial role with regard to ICT in general and FOSS in particular. The public sector usually constitutes the country’s largest ICT customer in developing countries, and governments are in a position to drive strategic change throughout society. Governments also set the economic and regulatory boundaries that allow businesses to develop.

To be sure, economic direction and initiatives should generally be private sector-led. The private sector, in contrast to government, really has the expertise, resources, time and experience to innovate and respond to market/consumer needs and desires.

But, government does have its own unique and indispensable roles, including ICT policy, advocacy and education, capacity building, E-government and positioning of the country’s IT industry in a globally competitive one. The actual execution of such strategies require in varying degrees, collaboration between government, universities and educational institutions and private firms.

Should governments, particularly in developing countries, deliberately pursue a FOSS-driven Information Technology strategy? If information technology is about the production, distribution, flow and control of information, then FOSS – which could drive such activities – deserves serious consideration as potentially critical tools for government in pushing economic development and global competitiveness.

The Case of Pushing FOSS as a Strategic Policy Direction

Many governments around the world have initiated the use of FOSS as a key part of their strategic thrust in information technology, motivated by the reduction in cost of IT investments they would have to make in addition to the desire for independence, a drive for security and autonomy, and a means to address intellectual property rights enforcement.

FOSS advocates from many sectors -- including civil society, academia, development aid organisations, and increasingly local and international companies -- are encouraging governments to take clear positions in support of FOSS. They argue that free/open source software:

- Provides an opportunity to lower the cost of ICT and thereby increases ICT access for larger parts of society;
- Provides an ideal training environment for the development of computer skills; and
- Will help turn the country from being a consumer of technology to a producer of technology.

FOSS supporters argue further that because of FOSS' relevance for national development, and given the strong market position of proprietary software companies, government action is required and appropriate to at least "level the playing field" and increase competition in the software market.

Counterargument: The Case of Not Pushing FOSS as a Strategic Policy Direction

Others, including the proprietary software vendors, argue that it is not government's role to intervene in market forces and that intervention would hurt competition and innovation overall.

There is much to be said about the principle of "technology neutrality," and a proactive stance by government to advocate the use of FOSS would violate this principle. FOSS developers should compete on the basis of merit.

And, the argument that FOSS is cheaper and more affordable is misleading given that there are installation, service, support and other migration costs that are often not factored in. What happens when proprietary software vendors such

as Microsoft start giving away their software for free, as they have done in South Africa (see case study below)?

CASE STUDY: Debate between open source and proprietary software becomes real for developing countries

SOURCE: <http://www.bridges.org/commentaries/115>

Two recent announcements in South Africa raise sharp issues that characterize the raging debate between open source and Microsoft operating systems -- a debate that will ultimately affect developing countries around the world. Last Friday President Thabo Mbeki announced in his state-of-the nation speech to Parliament that Microsoft will provide free software for all of South Africa's 32,000 government schools. Previously, the South African Government's National Advisory Council on Innovation (NACI) declared its strong support for open source software, saying that it "has the potential to empower people in ways that proprietary software (such as Microsoft's) simply does not allow". For a nation that is counting on information and communications technology (ICT) to help address monumental social and economic problems, Microsoft's generous offer can make a real difference. However, many argue that open source software is more appropriate for the technology realities in developing countries. The Government -- and public -- should be aware of the implications of adopting the proprietary operating system in schools, and plan wisely to gain the benefits without suffering the consequences.

The Microsoft donation is an example of a big international company that is taking concrete action to tackle the digital divide by giving the kinds of things that it is easy for it to give. This gesture by Microsoft sets a standard that other companies should strive to meet. The initiative will help schools teach pupils about computers and computing. And the more skills built among the nation's youth -- and especially technology skills -- the better for South Africa as a whole. The hope is that Microsoft's move will be a catalyst to draw similar support from other companies, such as offers of hardware, networking equipment and training courses. The solution to the problems of the digital divide will be founded on effective cooperation among the private sector, government and civil society.

Yet, while the Microsoft action is worthy of praise, it should be approached with wide open eyes. Offering free software to schools is not only good corporate citizenship, it is good for business: if MS software dominates South African schools, it will be good for Microsoft's bottom line and may limit the adoption of

other kinds of software in this market. Embracing the Microsoft donation is a smart short-term move in a country where free access to up-to-date software like MS Office and Encarta will be a boon for many schools that would otherwise need to pay for software licenses. However, open source proponents point out that the real issue for schools is not software licenses, but the challenges and cost of deployment and maintenance of sustainable ICT infrastructure. Microsoft products have rapid product cycles and quick obsolescence, along with expensive long-term maintenance and support implications. Open source software offers a more affordable and stable option, along with "thin-client" solutions that can be run on recycled computers. The latest Microsoft offerings use far more computer resources than the open source alternatives, requiring relatively high-end systems with fast processors, lots of memory and hard disk space. Indeed, following the Microsoft announcement, the South African Minister of Education stated that only 10,000 schools are currently equipped to benefit from Microsoft's offer.

This is not the first time that Microsoft has put forward the idea of providing technology support for schools. Late last year, the company offered to provide about US\$1 billion worth of software, hardware, training and support to more than 16,000 of the poorest US schools as part of a proposed antitrust settlement. In January, the judge in that case ruled against the proposal because he was not convinced that it represented a fair conclusion, so the donation never happened. Critics of the deal, including Apple Computers and Linux software maker Red Hat, argued that the donation would have only served to solidify Microsoft's monopoly in the desktop operating system market by extending it to the education sector. Many also noted the concern that students coming from a Microsoft environment will drive a need for Microsoft systems when they graduate and join the labor market -- forcing businesses and government to adopt Microsoft products.

The South African Government should take what it can get for free (especially end-user tools) and prepare and implement a sound plan for optimizing the availability of MS software in its schools. However, it would be a mistake to assume that because South Africa will get MS software that this will automatically lead to improvements in educational outcomes; the Government needs to make certain that teachers and students are properly trained and able to benefit from the introduction of technology in schools. Microsoft should do its part in this regard by helping schools with technical support and software updates. Evan Summers, of the South African Linux School Computer Lab Project, calls for "all organizations and companies, regardless of the platform they recommend, to participate in a constructive discussion and work together to achieve the real goal: to deploy computer labs to every school in the country, and exploit that infrastructure to further education."

But the real dilemma for the South African Government is that the short-term answer -- take the MS software donation and put it to good use -- poses

problems in the long-term. In the long-term, South Africa needs to foster its own software development and capabilities. The Government should not be complacent in attempting to foster or facilitate a competitive domestic software development environment. The position of NACI illustrates many of the points that developing country governments need to consider as they drive the adoption of information technology in their nations. NACI describes the trade-off between the proprietary and open approaches to software as a choice between relying on foreign skills and developing local skills. If South Africa chooses the proprietary route, in the long-term the cost in many cases will be higher, and much of the expenditure goes out of the country. NACI advises that South Africa should be developing local open source skills and paving the way to becoming a world class software development nation.

The South African Government should focus on open source in its own development activities, its purchases, and fostering a local software market, while at the same time taking advantage of the free proprietary software for its schools. There is no reason why Microsoft and open source software cannot and will not coexist, in South Africa and elsewhere. But governments and the public may be well-advised to take a broad perspective on the issues and leave their options "Open".

QUESTIONS TO PONDER

- Is it fair, unfair or does it even make any difference whether governments develop FOSS – leaning ICT policies?
- Does government-driven FOSS (instead of Market-driven FOSS) sound artificial? Will it truly elevate the country's technology community from "mere consumers" to "equal participants"?

V. ANNEX

Glossary

Dual Licensing	The practice of distributing identical software under two different sets of terms and conditions. A program with dual license means that it is published under an open source license and at the same time a commercial license
e-business	Defined broadly as any business process that relies on an automated information system . Today, this is mostly done with Web-based technologies
e-commerce	Consists of the buying and selling of products or services over electronic systems such as the Internet and other computer networks through electronic funds transfer , supply chain management , Internet marketing , online transaction processing , electronic data interchange (EDI), automated inventory management systems, and automated data collection systems
FOSS	FOSS are software programs whose licenses give users the freedom to run the program for any purpose, to study and modify it, and/or to redistribute copies of either the original or a modified program without having to pay for royalties to previous developers ³⁰ . FOSS projects are made public for others to innovate – to use, build upon, modify and edit.
Free/Open Source Software	FOSS are software programs whose licenses give users the freedom to run the program for any purpose, to study and modify it, and/or to redistribute copies of either the original or a modified program without having to pay for royalties to previous developers
Information and Communications Technology	The study, design, development, implementation, support or management of computer-based information and communications systems , particularly software applications electronic communication, and computer hardware." ICT deals with the use of electronic computers and communications convert , store , protect , process , transmit and retrieve information, securely.
Intellectual Property	Is an umbrella term for various legal entitlements which attach to certain names, written and recorded media,

	and inventions. The holders of these legal entitlements may exercise various exclusive rights in relation to the subject matter of the IP.
Internationalization	A way of designing and producing products that can easily be adapted to different locales. It is the process of developing an application whose feature design and code design do not make assumptions based in a single locale and whose source codes simplifies the creation of different local editions of a program.
Internet	Is a worldwide, publicly accessible series of interconnected computer networks that transmit data by packet switching using the standard Internet Protocol (IP) .
Localization	The process of creating or adapting a product to a specific locale (ie to the language, cultural context, conventions and market requirements).
Micro Enterprises	Businesses whose headcount fall below ten (10).
Proprietary Software	Are closed-source software with restrictions on using, copying and modifying as enforced by the proprietor . Restrictions on use, modification and copying are sought by either legal or technical means.
Small and Medium Enterprises	Small and Medium Enterprises are small businesses whose headcount/number of employees or turnover fall below certain limits. Although there are no universal standards of the constitution of SMES, most countries define them as companies with less than 250 employees.
Small and Medium IT Enterprises	Small and Medium IT Enterprises are SMEs that provide products and services in telecommunications, IT hardware, electronics & electrical and software & IT services.
Total Cost of Ownership	TCO is a financial estimate designed to assess direct and indirect costs related to the purchase of any capital investment such as software and hardware.

Source: www.wikipedia.com

Credit/Document History

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Contract signing	August
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Revisions made incorporating comments specifically on: <ul style="list-style-type: none"> ▪ Inclusion of more case studies of SMEs using FOSS ▪ Expand list of FOSS applications ▪ Case studies on FOSS for SMEs and SMEs for FOSS ▪ Incorporate figures from the UN APCICT paper on ICT for SMEs ▪ Provide discussion on the role of SME for FOSS 	October 30
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About APDIP and IOSN

APDIP	IOSN
<p>The Asia-Pacific Development Information Programme (APDIP) is an initiative of the United Nations Development Programme (UNDP) that aims to promote the development and application of new Information and Communication Technologies (ICT) for poverty alleviation and sustainable human development in the Asia-Pacific region. It does so through three core programme areas, namely, Policy Development and Dialogue; Access; and Content Development and Knowledge Management.</p> <p>In collaboration with National Governments, APDIP seeks to assist national and regional institutions in Asia-Pacific through activities that involve awareness raising and advocacy, building capacities, promoting ICT policies and dialogue, promoting equitable access to tools and technologies, knowledge sharing, and networking. Strategic public-private sector partnerships and opportunities for technical cooperation among developing countries (TCDC) are APDIP's key building blocks in implementing each programme activity.</p> <p>http://www.apdip.net</p>	<p>The International Open Source Network (IOSN) is an initiative of UNDP's Asia-Pacific Development Information Programme (APDIP). Its overall objective is to serve as a Center of Excellence and Clearinghouse for Information on Free and Open Source Software (FOSS) in the Asia-Pacific region. IOSN seeks to raise the awareness of FOSS, facilitate the networking of people involved in FOSS, strengthen capacities in FOSS and to conduct R&D on FOSS.</p> <p>The beneficiaries of IOSN are governments, IT professionals, software developers, FOSS R&D community, academics, and the NGO community. IOSN serves as a resource center to help policy- and decision-makers in the public sector, educational institutions, businesses and others develop policies and plans for the use of FOSS in their respective organizations. Much of IOSN's activities are undertaken online and the IOSN portal (www.iosn.net) has been developed for this purpose and to serve as a comprehensive online resource center on FOSS. The IOSN portal also provides a means for the FOSS community in the region to contribute to its effort and to interact.</p> <p>http://www.iosn.net</p>

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