



**Government of the Republic of Trinidad
and Tobago**

Ministry of Public Administration and Information

**The role of Open Source Software in
Trinidad and Tobago (2006 – 2008)**

A Consultation paper

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1 Document Name

Consultation Paper on the role of Open Source Software in Trinidad and Tobago.

2 Target Audience

This document is targeted to strategists in the process of developing key sectoral infrastructure, architecture and developmental programmes for the constituents of Trinidad and Tobago. Specifically, this is meant to gain comments from information technology specialists within and outside of the Public Service.

3 Consultation Aims and Objectives

The aim of this paper is review the role of the Open Source Software (OSS) model within the broader societal goals of economic and social development. The issues discussed herein shall be critical to further engage the Public Service and the wider national ICT sector in developing an action plan going forward. Such a national discourse and action plan will go a long way in meeting the objectives of *fastforward*, the National ICT Plan, and the regional action plan for the information society, **eLAC2007**.

In pursuing the above aim, this consultation paper attempts to:

- (i) address the major risks cited against the use of the OSS model;
- (ii) identify uses of the OSS model in various segments of the industry; and
- (iii) gain feedback proposing a way forward, with opportunity and threats, for OSS in the developmental objectives of Trinidad and Tobago.

4. Consultation Context

This Paper on the role of Open Source Software shall be consistent with the general framework of goals, objectives and action plans of the National ICT Plan and Vision 2020.

5. Consultation Maintenance History

Date	Change Details	Author	Version
July 2006	Complete first draft	ICT Division	1.0

Responding to this Consultation

Comments and suggestions on this consultative document should be made according to the prescribed consultation response form, an example of which is included at Appendix A.

In responding please state in your cover letter whether you are commenting as a member of the general public, representing non-government organisations or writing on behalf of a business/organisation. If you are writing on behalf of an organisation you must indicate the process that was used to solicit views from your organisation's membership. Supporting documents should be attached to the consultation response form.

Reference must be made to the paragraph number to which the comments/suggestions are associated.

Comments should be sent via email and post by November 25th 2006 to the:

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6. BACKGROUND

As the use of information and communications technology (ICT) became more integral in the actualization of both professional and recreational lifestyles, there was early identification of the potential to effect accompanied increases in productivity. The business sector, the Government of the Republic of Trinidad and Tobago was no different, responded by integrating the use of ICT's in their operations and business processes. To rapidly facilitate this thrust, the marketplace rapidly migrated towards widespread use of licenced software packages in the office place. This deference to popular, off the shelf licensed software persists as something of a "default" up to today.

This strategy has since been formalised within the public service, where common desktop software/ applications have been identified for use in the office place. This decision is implemented through the Government's Enterprise Service Agreement with software suppliers, managed by the National Information Systems Centre (NISC).

Despite this history, there has been a growing consensus, by proponents in both the public and private sectors, that given the advances in the wider ICT sector there may be a need to review this default position. Further, upcoming ICT-based initiatives under *fastforward*, underscore the need to balance the availability of these software products with developmental objectives. A review of the international landscape reveals an interesting trend where this "default" position is challenged, particularly where the prominent consideration is capacity development. To facilitate the analysis of Trinidad and Tobago's readiness to challenge this default position, will require a review of the perceived benefits and pitfalls associated with licenced software products and their corollary: products developed through open standards and practices.

Open standard is generally a philosophy, or otherwise a pragmatic methodology, related to production practices that promote access to the origins of the products. The philosophy encourages better awareness on the part of the user/ purchaser of a product. This philosophy is applicable in the development of "Open architectures", "open systems" and "open source code". In *fastforward's* context, this philosophy would most appropriately relate to, and find credence in, the software used within the ICT agenda's framework. With the increasing number of interactive communities and their direct involvement with the Internet, open source software yields the most prominent example of the open philosophy. The Internet started in 1969 with open standards like the Internet Request For Comments (RFC's), but it was not until 1998 that open source became a label to denote to software the same effort which began the Internet.

The argued advantage of open source is that products are more understandable, modifiable, duplicatable, or simply accessible. The argued

advantage of licenced or closed source products is inimically tied to the perceptions such as:

- the ease of training in these licensed packages;
- the ability to seamlessly integrate with the commercial packages which public servants and consultants may already be using otherwise; and
- suggested cost and maintenance advantages.

The **open source vs. closed source** (alternatively called proprietary development, or Commercial off the Shelf (COTS)) debate is often heated, and almost religious. The Open Source software development model is considered by some to be a superior software development model when compared to proprietary alternatives for a number of reasons.

Open Source Software (OSS) developers publish their software product with open access to source objects so others may contribute to the development of the product, and better understand how it works. OSS typically provides others with the ability to develop a new version of the software, port it to other operating systems and processor architectures, share it with others, or even productize and sell it.

7. Open Source Software - Threat or Promise?

fastforward consists of eight programs and over one hundred related projects. Trinidad and Tobago plans to become a knowledge-based society by 2008, therefore software will rapidly become one of the most fundamental building blocks of human interaction and activity.

Open source software (OSS) is gaining momentum in both the public and private sectors around the world. It is software for which the complete source code is made available for examination and modification. The software is usually, but not always, free. OSS has become such a phenomenon now that several countries, China, Germany, France, Finland, the Philippines, Peru, South Korea, and Taiwan are all considering or have already embraced open source software. Trinidad and Tobago now needs to consider if heading in this direction is feasible and appropriate given our specific context. Some claim that OSS confers a promise of better software and independence from perceived monopolistic behaviour and vendor capture. Such a promise would also have far reaching consequences for employment and opportunity.

7.1 The common threats of Open Source Software (OSS)

Many large proprietary software companies strongly condemn the adoption of the OSS model from the stand point of:

- o **security threats:-** as an example, proponents of the proprietary software model contend that having the source code of critical software open to viewing and modification by anyone makes it more vulnerable to malicious attack; and
- o **economic impacts:** - particularly associated with the free, libre open source software movement.

Despite these warnings, industry leaders are yet to give substantive detail on the dangers of open source software.

7.1.1 The security threat

In most instances, OSS is by its nature more secure in general than proprietary software. This is due to the notion that, since the source code of proprietary software cannot be examined; its security cannot be assessed, thus increasing one's risk profile. The underlying principle is that security through obscurity can, and often does, lead to less stringent practices and security.

To further compound the perceived irony, one of the sectors that would be most severely damaged by a ban on using Open Source is the Information Security Sector, since many of the most reliable systems and most powerful security analysis tools are developed through Open Source.

7.1.2 The economic threat

COTS software proponents also state that policies supporting, in particular, the free, libre open source software (FLOSS) model are anti-competitive and may cause a loss of jobs and corporate revenues. They also point out that open software is not truly free and will actually cost the government/corporate body more in training and support.

Alternatively, those who argue for open source software claim that this argument is spurious and is actually contradicting itself in indicating that open source software involves more costs than proprietary software. It is their claim that OSS will actually save countries like Trinidad and Tobago a great deal of money using open source software.

7.1.3 The development opportunity

There is the argument that open source software represents a serious alternative to the traditional proprietary model of software development. Its appeal is not just that it is cheaper, more versatile, reliable and customizable software. OSS represents a structural shift of power from sellers to users, and in that sense is one of the most liberating tools of media empowerment that individual citizens and the civic sector has developed to date.

The argument continues that Open Source repositions the terms of competition to a matrix of quality and utility, and diminishes the advantages to be gained from manipulations of the distribution apparatus, marketing schemes, restrictive licensing terms, and bundling deals with hardware makers. Open source software is also inherently more suited to educational environments because its inner logic - the source code - can be directly manipulated by students. With its inner parts visible, users can choose to learn how the software works and then share and develop that knowledge. Proprietary software, by contrast, is inherently "unknowable" because its inner architecture is a trade secret.

Apache, Perl and many other open source software programs are being embraced by major proprietary vendors as cornerstones for future software development. Microsoft concedes in internal strategic analyses leaked to Eric Raymond -- the "Halloween Memos" -- that GNU/ Linux and other open soft software -

"provide very dramatic evidence....that commercial quality can be achieved/ exceeded by open source software projects."¹

All of this suggests that the new software movement stands at a threshold. It has a sovereign vision, competitive product, burgeoning cadre of supporters, and growing investment, encouraging fresh attention within technology

¹ <http://www.opensource.org/halloween1.html>.

circles. All this buttressed by favourable general press, and a hardy development process of proven effectiveness.

7.2 OSS and Market Share.

Some support the notion that a product is only a winner if it has significant market share. Although arguably lemming-like, there is some rationale for this - products with big market shares attract the development of associated applications, trained users, and momentum that reduces future risk. Some writers argue against OSS or GNU/Linux as “not being main stream”, but if the anecdotal evidence which suggest their use is more widespread is correct, then such statements reflect the past, not the present. There is excellent evidence that OSS has significant market share in numerous markets.

For example, the most popular web server has consistently been OSS since the start of the practice of collecting such. **Apache** is the premier web server with over three times the market share of its next-ranked (proprietary) competitor. Further Apache’s share is increasing, whereas all the market share of all the others is decreasing. Netcraft’s statistical web servers have consistently shown Apache (an OSS web server) dominating the public Internet Web Server market since Apache first rose to the #1 web server in April 1996. Before that time, the NCSA web server (Apache’s

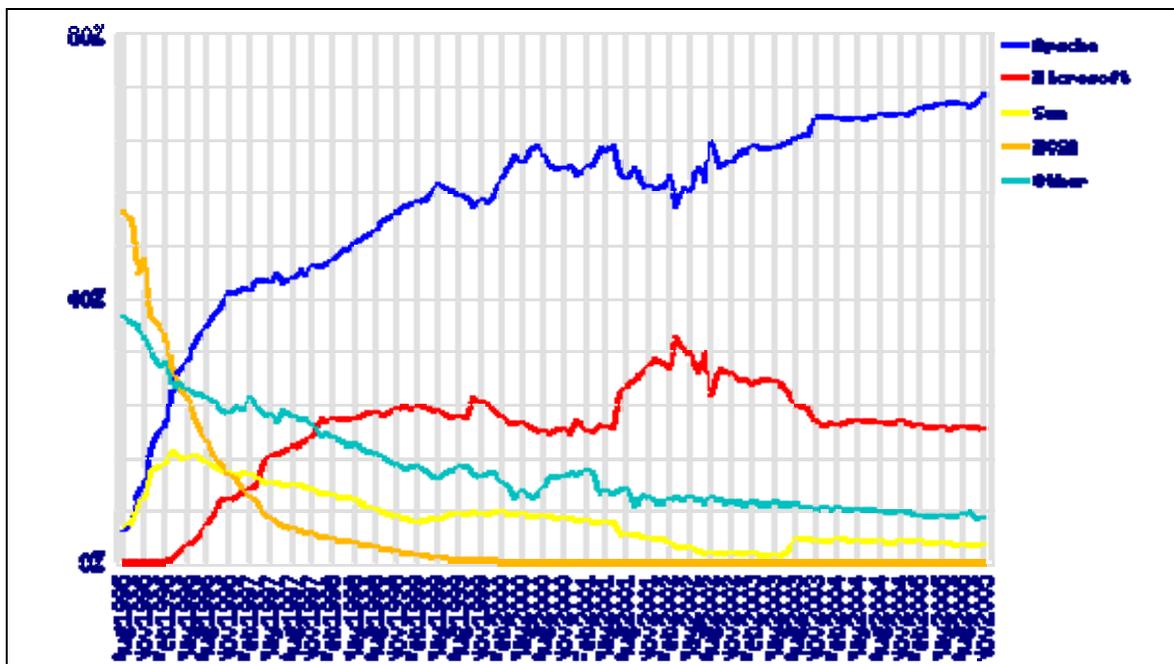


Fig 1. Market Share for Web Servers across All Domains, August 1995 - November 2005

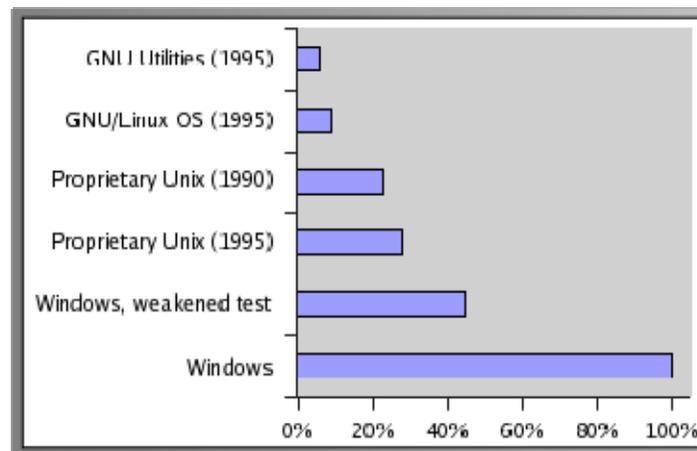
predecessor) dominated the web from August 1995 through March 1996 - and that was also OSS.

Netcraft's survey published November 2005 (covering results through October 2005) polled all the web sites they could find (totaling 74,572,794 sites), and of these, counting by name, Apache had 70.98% of the market, Microsoft had 20.24%, Sun had 2.52%, and Zeus had 0.78%.

7.3. Reliability

There are a lot of anecdotal stories that OSS applications are more reliable than its COTS equivalent, but such suspicions were deemed confirmed when it was found that, according to the Fuzz study, equivalent FLOSS applications are more reliable. The paper "Fuzz Revisited"² measured reliability by feeding programs random characters and determining which ones resisted crashing and freeze-ups. This approach is unlikely to find subtle failures, yet the study authors found that their approach still manages to find many errors in production software and is a useful tool for finding software flaws. This approach is considered extremely fair and can be broadly applied to any program, making it possible to compare different programs fairly.

Fig 3. Failure Rates as Measured by Fuzz Tests



OSS has had higher reliability by this measure. It is also interesting to compare results of testing the commercial systems to the results from testing "freeware" GNU and Linux. The seven commercial systems in the 1995 study have an average failure rate of 23%, while Linux has a failure rate of 9% and the GNU utilities have a failure rate of only 6%.

It is reasonable to ask why a globally scattered group of programmers, with no formal testing support or software engineering standards can produce

² <http://www.cs.wisc.edu/~bart/fuzz/fuzz.html>

code that is more reliable (at least, by our measure) than commercially produced code. Even if you consider only the utilities that were available from GNU or Linux, the failure rates for these two systems are better than the other systems.

As a point of note, there is further evidence that Windows applications have even less reliability than the proprietary Unix software (itself less reliable than the FLOSS software). A later paper published in 2000, "An Empirical Study of the Robustness of Windows NT Applications Using Random Testing"³, found that with Windows NT GUI applications,

- they could crash 21% of the applications they tested,
- hang an additional 24% of the applications, and
- could crash or hang *all* the tested applications

when subjecting them to random Win32 messages. Indeed, to get less than 100% of the Windows applications to crash, they had to change the conditions of the test so that certain test patterns were not processed. Thus, there is no evidence that proprietary Windows software is more reliable than OSS by this measure.

The Fuzz paper's authors also found that proprietary software vendors generally did not fix the problems identified in an earlier version of their paper (from 1990), and they found that concerning. There was a slight decrease in failure rates between their 1990 and 1995 paper, but many of the flaws they found (and reported) in the proprietary Windows programs were still not fixed 5 years later.

In contrast, one Scott Maxwell led an effort to remove every flaw identified in the OSS software⁴ in the 1995 Fuzz paper, and eventually fixed every flaw. The OSS community's response shows why, at least in part, OSS programs have such an edge in reliability; if problems are found, they are often fixed. Even more notably, the person who spearheaded ensuring that these problems were fixed wasn't an original developer of the programs - a situation only possible with OSS.

7.4 Governments and OSS

Globally, a vast majority of ICT enabled governments use OSS extensively, and many have policies or are considering policies related to OSS. Motivations vary; for many governments, the overriding rationale for considering OSS is simply to reduce costs. Such governments will still take a variety of other factors into account such as reliability, performance, and so on, just like a commercial firm would do. Some governments may also consider the special privileges granted to them by OSS; e.g., there are direct

³ <http://www.cs.wisc.edu/~bart/fuzz/fuzz.html>

⁴ <http://home.pacbell.net/s-max/scott/bullrtproof-penguin.html>

advantages to users if they can examine the source code, modify the software to suit them, or redistribute the software at will.

In contrast, some governments also consider OSS as a way of supporting other national policies. Here is a list of some of the other considerations that have been reported by various governments:

1. **Supporting industrial policy** -- a government may choose to support OSS to encourage the development of local companies who can train, support, and tailor products. COTS software products are normally maintained by a single company, who, in the Trinidad and Tobago context are often foreign-owned which may not allow the best software jobs to be performed by persons in the country.
2. **Increasing competition / reducing dependence on, or control by, any one company** – a corporation or government may wish to prevent any one company from completely controlling the computing infrastructure of the firm/ government or within its country. This is not necessarily the same as supporting industrial policy; the goal may be to simply support improved competition, foreign or not. After all, the effective monopolies in various software markets can be viewed as a market failure that requires correction. Lawrence Lessig's **Code and Other Laws of Cyberspace**⁵ argues that "code is law" -- as computers become increasingly embedded in our world, what their code does, allows, and controls what we may or may not do in very a powerful way.

"If code is law, who are the lawmakers? What values are being embedded in the code? Both questions are fundamentally about sovereignty. Who should be building this [electronic] world, and who should be specifying the values that this world will build into itself?"

Governments may be increasingly skeptical of a world where increasingly its laws are rendered irrelevant by the controls of code from a single company. Proprietary/ COTS vendors can also actually threaten governments into doing what they want, by threatening to withhold the product from that country⁶ or alternatively by threatening to pull out of countries⁷.

3. **Security** -- many are concerned about the security of the software they depend on. Often commercial off the shelf products are bought and later found to be full of security vulnerabilities; OSS products at least provide governments with the *option* of detailed review of the source code, and

⁵ available at: <http://codebook.jot.com/book>

⁶ recent occurrences reveal such not unthinkable, see <http://www.pcworld.com/news/article/0,aid,95904,000.asp>

⁷ also see; <http://www.groklaw.net/article.php?story=20050215071109231>

opportunities to fix problems themselves without waiting for the vendor. Microsoft does have a "shared source" program for its operating system, allowing governments to look at source code, but this program does not generally permit the worldwide analysis and discussion that OSS permits, nor does it permit changes and redistribution by end-users. In many cases, the proprietary/ COTS vendor is foreign or has foreign developers, which for some governments raises additional concerns -- can the foreign company's product be trusted? For example, a special key in Microsoft Windows called NSAKEY was identified years ago, and whether or not this was a "back door" into Windows, it did reveal that this was a concern of many governments. While any developer can make a mistake leading to a security flaw, and a malicious developer could write subversive OSS software as well, many believe the additional (worldwide) transparency provided by OSS, and the ability to repair and redistribute OSS programs immediately, provides additional protection.

4. **Record longevity** -- OSS reveals exactly how data is stored, so that, in the event of application evolution or format changes, important data is not lost. Governments using proprietary data formats risk loss of critical records if the company folds or stops supporting a particular format, or version of a format. Unfortunately, this occurs very often.
5. **Transparency of government data** -- OSS enables complete review of exactly what is done and what data is stored, so that the public can freely receive that data without being required to buy products from any particular vendor.
6. **Localization** -- OSS can also be trivially localized, a critical advantage where there are languages with a smaller number of speakers. With OSS, users do not need to convince a vendor to support their language; they can simply add that capability themselves.

The United States federal government has a policy of neutrality; they choose proprietary or OSS programs simply considering costs and other traditional measures. In contrast, Dr. Edgar David Villanueva Nuñez has written a detailed letter explaining in detail why he believes it is beneficial (and necessary) for the Peruvian government to prefer OSS; his rationale included "Free access to public information by the citizen, permanence of public data, and security of the state and citizens".

7.5 Developing Countries and Open Source Software

Experts insist that software should not only be open for adaptation or copying; it should also be free of charge. Speaking at LinxAsia 2005 in New Delhi in February, Deepak Phatak, professor of Information Technology at the Indian Institute of Technology in Mumbai, stressed that the major component of computer affordability will not come from hardware price reduction but from open source software; and that in developing countries it is essential so that these computers could be offered at low or zero cost in some cases.

One school of thought believes that Free Software and Open Source is not just a useful and significant tool for the developing countries, but clearly has the potential to help democratization and positively help find solutions to the most pressing problems faced by the populations of developing countries. This school has lobbied for decision-makers to give consideration that Free Software and Open Source possesses:

"inherent qualities" which make it a prime tool for achieving local language educational software, "especially for language and dialect which are not deemed commercially viable for proprietary software vendors".

In the eyes of critics and observers, this movement has been so powerful that even Microsoft has been 'fighting back'. This has been claimed by proponents citing that in a number of countries, Microsoft Corp. has rapidly expanded giveaway programs, especially to schools in the poorest parts of Africa and Asia.

As an example, recently Microsoft signed an agreement with the South African government to give all the schools in that country free access to a selection of the company's software. It was a controversial decision in that country, but not necessarily because of any technical considerations. Increasingly, as cash-strapped public agencies in other Third World countries struggle to determine the best choice, they may find their decision process has become complicated by a variety of political and ideological issues.

On the face of it, the decision was fairly straightforward. According to South Africa's Finance Minister Kader Asmal,

'an agreement gave South Africa's schools free access to a variety of Microsoft's essential programs, including Windows 2000 Server, Office, Visual Studio, and Encarta among others'.

The deal represented potential savings exceeding US\$100 million, according to the deal's defenders. However, critics have charged that the deal illustrated the potential threat that was perceived of the Open Source software movement in the country.

fastforward's agenda is broad and ambitious, with targets which include milestones such as:

- o fifty percent of the population must have internet access;
- o fifty percent of the population must have computers;
- o a SchoolNET Programme;
- o Computers For Communities Programme; and
- o an electronic government portal which facilitates access to all government ministries' services.

All these programmes are heavily dependent on software. Proprietary software would see huge renewal and upgrading costs which could run into the tens of millions. It must be examined whether the Government and ***fastforward*** can continue to go this way taking into consideration that these programmes may expand rapidly when it is adopted by the population. Expansion means more programs, more software, more nodes, and more licenses which translate into more money required, anticipated in the hundreds of millions, merely for maintenance.

Another aspect which is extremely important is the complementary and reciprocal relationship that free open source software has to education. Research in Latin America and developing countries shows that in the case of education in computer sciences, the FLOSS approach provides opportunities which no other current model of software development offers. Research and observation has shown that FLOSS provides unrestricted access to the source code, an environment of unlimited experimentation and tinkering, and collaboration and interaction with a community of programmers, coders and users around the world.

7.6 Free, Libre Open Source Software and NICT Strategies

The importance of free, libre open source software (FLOSS) as an instrument to promote the access of citizens and enterprises to ICT lies not only in the large savings that it generates, but also in the fact that FLOSS represents a change of paradigm in the development and diffusion of ICT which opens new possibilities to all of Trinidad and Tobago and other countries. Experiences of enterprises and governments of Latin America and of other regions show that OSS has the capacity to respond to the needs of most demanding users and to deliver high-quality products.

Its is also shown that the adoption of FLOSS can contribute to the achievement of strategic objectives in terms of reducing the amount of royalties paid to foreign suppliers, enhancing security and reliability, ensuring the preservation of public information, achieving greater interoperability and adaptability, removing lock-in effects in the choice of ICT providers, and stimulating the development of national ICT skills and capacities⁸.

For software producers, FLOSS is becoming increasingly important given the incidence of business models based on the sales of software services. These business models also place the smaller software producers that predominate in Latin America and the Caribbean in a better competitive position. However, the increased use of FLOSS will require both planning within a medium and long-term time horizon and awareness-raising efforts both in the public and the private sector.

⁸ UNCTAD Regional Conference ICT Strategies For Competitiveness And Development

FLOSS eliminates the national-level economic loss resulting from duplication of work, particularly if such development has been done in a public or academic institution. Sharing applications and their source code across ministries, government offices and schools and universities can be a public policy stance. A variety of positive spill-over effects to other technology and non-technology sectors are also possible.

Many have noted that FLOSS approaches can be applied to many other areas, not just software. The Internet encyclopaedia Wikipedia, and works created using creative commons licenses, are other examples of this development approach.

7.7 Policy Options for Free Open Source Software

There are two general areas of policy implementation options to be considered by Governments, each with different public-sector, civil-society and private-sector dynamics. Each of these potential paths has constraints or obstacles that developing countries in particular must be aware of when considering the various policy options available to them in adopting OSS.

Formal vs. Informal Approaches

Formal approaches such as legislation or a government strategic plan may be weighed against more informal, flexible approaches to letting OSS use evolve without normative patronage.

Formal Involvement

A number of Governments have pursued formal approaches to the adoption of FLOSS in the public sector, considering legislation to mandate the use of open source solutions in government applications or at least seriously consider them as an alternative to proprietary software. In the industrialized world, this trend has been strongest in Europe, particularly France and Germany.

A number of Latin American governments at the national and local levels have introduced or passed legislation on the use of FLOSS solutions in the public sector. Peru is one such example. Argentina's Parliament reviewed a proposal that mandates, with a few exceptions, the use of FLOSS in all government offices and state-owned enterprises, but the Parliament collapsed in the fiscal crisis of 2001 before a decision was taken on this bill.

Informal involvement

Alternatively, application of strategic public policy has been known to work in some jurisdictions. An example of informal involvement through high-level strategic thinking is the case of the Government of South Africa. A council to consider the use of FOSS was convened in early 2003. The council delivered an official recommendation promoting the use of open-source applications when proprietary alternatives did not offer a compelling advantage.

The strategic approach allows Governments to work in collaboration with donors to map out potential areas for development assistance, in particular identifying potential human resource capacity-building and technical assistance needs. The report recommends creating strong linkages with higher education institutions to build a national collaborative network that can be extended internationally. It also emphasizes building partnerships within the public and private sectors and civil society, as well as regionally within Africa and globally. The strategy emphasizes the importance of building support among key stakeholders, including the political level, senior management, IT professionals and government users.

At the strategic level but with the stakes raised to international collaboration, FOSS may have the potential to generate large economies of scale and positive spillover effects in regional capacity building and infrastructure development. A number of regions have taken steps toward collaborating on FOSS, and such cooperation has been most pronounced in Africa.

Strategy determining level of involvement

Strategic initiatives may be carried out at sub-national, national or regional levels, and they may also entail different degrees of involvement, from awareness building to procurement to funding of Research and Development (R&D).

These options are not mutually exclusive, but rather represent spectrums along which *fastforward* and Government can choose to array specific policies or a more general approach to OSS use. The relationship between government, civil society and industry may also be varied, with initiatives coming in a mixture of strengths from any given stakeholder. There is no prescription or tried-and-tested scheme: policy makers will have to consider their national circumstances and ICT development priorities.

Within this broad framework, the Ministry of Public Administration and Information welcomes perspectives on the appropriate approach to open source software in the Trinidad and Tobago context.

8 Key points of consultation

Key point 1

From your understanding, do you agree with the above analysis?

Key point 2

Do you think *fastforward*, the NICT Plan should encourage the use of open source software, and accept the associated 'risks' when very sensitive information is at stake?

Key point 3

From your understanding, which of the above perspectives is accurate?

Key point 4.

What do you think should be the primary goals guiding decisions for or against the use of open source software in Trinidad and Tobago?

Key point 5

Given the above data, and your understanding of the current state of the ICT sector in Trinidad and Tobago, is there a potential to develop numerous niches and cost saving strategies through the implementation of OSS?

Key Point 6

In your opinion, what new structures are needed to encourage niches of activity through OSS?

Key point 7

Considering the comments above, should open source software model follow the FLOSS philosophy? Please provide context to your response.

Key point 8

Considering the points above, and your contributions to key points 5 and 6 above, what role if any do you think the Government of Trinidad and Tobago should play with regard to the open source industry, as opposed to the proprietary software industry, in the country?

Key point 9

Should Government look primarily at formal (direct) or informal (non-direct) approaches to the question of software models (proprietary or open) within the ICT sector?

Appendix A

Examples of Direct Involvement by Government

Since Governments are important consumers of ICT in developing countries, their participation is crucial for the success of any open-source initiative. Government can be involved at the level of strategic policy, building awareness and promoting conscious and informed choice among its administration as well as industries and civil society. It may act as a procurer, and it may directly finance R&D. This section considers different levels at which Governments can implement a FOSS strategy.

In early 2003, African countries from across the continent launched the Free and Open Source Software Foundation for Africa (FOSSFA), an organization aimed at promoting the use of FOSS throughout the continent. In the regional context, Brazil has become, and continues to strengthen its position, as a leader due to the strategic use of Open Source software and an innovation system which encourages direct collaboration between higher education and industry.

On October 10, 2002, the Danish Board of Technology released a report⁹ about the economic potential in using Open Source software in the public administration. The report showed a potential savings of 3.7 billion Danish Kroners (500 million Euros) over four years. A pilot project in the Hanstholm municipality determined that switching the office suite from Microsoft Office to OpenOffice.org and StarOffice did not increase their number of problems and that each user only needed 1 to 1.5 hours of training to learn the new office suite. The municipality will now use OpenOffice.org and StarOffice on all workplaces (200 in all) and will save 300,000 Danish Kroners (about 40,000 Euros) each year in license fees. They will still use Microsoft Windows as their OS.

On the other hand, the French industry news service Toolinux¹⁰ reports that the French police are planning to switch from Microsoft Office to OpenOffice. By the end of January 2006 some 35,000 PCs and workstations were set to be equipped with the open source office suite; by the summer the number is expected to reach 80,000. The French police expect to be able to cut costs amounting to more than two million euros (approximately TT\$ 18.9 million) by this move.

⁹ <http://lwn.nwt/Articles/13301>.
http://www.tekno.dk/pdf/projekter/p02_opensource_paper_english.pdf

¹⁰ http://www.toolinux.com/news/logiciels/le_gendarme_et_openoffice_ar5768.html

Annex A

Example of a Consultation Response Form

Name	
Organisation	
Postal Address	
Telephone/Fax	
Email Address	
Website (if applicable)	
Title of Consultative Document	
Response	
Section No.	(maximum 500 words)

Annex B

GORTT's Consultation Principles

Public Consultation involves the exchange of information between the Ministry and its stakeholders to facilitate a shared understanding of the issues under consideration. It is an open and accountable process whereby individuals and groups can contribute to decision-making processes and influence outcomes.

Consultation will be seen as an integral part of the policy formulation and implementation process which is the initiation or revision of policies, programmes and projects. It is also viewed as a mechanism to assess, monitor and evaluate the success of the delivery of government services.

Stakeholder analyses will be conducted to accurately identify those interest groups and associations that have significant and legitimate interests in a specific issue or policy area.

The consultation material will be concise, easily understandable and widely accessible. Each document must have an executive summary that covers the main points under review, this will ensure that the relevant stakeholders are in a position to read the appropriate documents related to his/her interest.

The relevant Government Ministry remains the key policy-adviser on matters within its portfolio and will be the final determinant as to the contents of any particular policy or strategy and will make the appropriate recommendations to Cabinet for consideration and approval.