COMESA Guidelines on Free and Open Source Software (FOSS)

Introduction

The COMESA Guidelines on Free and Open Source Software are a follow-up to the COMESA Regional FOSS Framework of 2009 whose main objective was to provide a clear way forward for the Free and Open Source Software (FOSS) programme which would lead to an increase the adoption and use of FOSS especially in the public sector.

The guidelines highlight the basic principles and best practices for the acquisition of open source software and applications, especially in public procurement and they may be used for reference in the planning stages of any software procurements in public sector ministries and organisations.

Free and Open Source Software (FOSS) is software which is liberally licensed to grant the right of users to study, change, and improve its design through the availability of its source code. This approach has gained both momentum and acceptance as the potential benefits have been increasingly recognized by both individuals and corporate players.

Open Source vs Proprietary Software

Proprietary software comes at a relatively higher cost and is usually accompanied by restrictions in license agreements and lack of access to the source code to allow for customization or enhancement of the software to suit the requirements of the organization. The restrictions are tied in to intellectual property rights of the developer and aim to protect the unlawful copying and distribution of the software.

On the other hand, the open source software community is very collaborative, and gives more rights to the user of the software to improve on and make changes to the software without any issue of intellectual property rights.

In the open source software community, users of any open source software are free to:

- Use the software for any purpose
- Have access to the source code and study it and modify it as they wish
- Redistribute the software without royalty payments or any other licensing restrictions

This allows for open source software products to undergo continuous improvements through peer review and allowing for end products that are secure, robust and of comparatively higher quality.

Advantages of Open Source Software

Lower Total Cost of Ownership (TCO)

FOSS has a considerably reduced Total Cost of Ownership (TCO) due to factors such as costing less to acquire, lower upgrade and maintenance costs, no imposed license management costs, and it is usually able to run on older hardware more efficiently.
Less process

Open source software rarely involves an up-front purchase cost. Therefore acquiring open source software can involve fewer approvals, fewer meetings, less process and delay resulting from the financial approvals process inside government. When facing deadlines less process is a welcome.

Greater flexibility

Licensing open source software does not involve negotiating a contractual agreement for the software. No contract means less commitment, and allows for greater flexibility should any changes need to be made.

Better sustainability

Market forces can undermine the sustainability of a software product. A software system can become redundant through the consolidation of an overcrowded market or through strategic mergers and acquisitions. Adopting an open source solution is a strategy to help insulate IT investments from external market forces. Having “open source” rights to the application code reduces dependencies.

Greater freedom

In the open source model of development third party vendors compete to offer software support. Having “open source” rights to the application code ensures vendor lock-in is not a concern.

Self determination

Open source systems are developed in an open, collaborative manner. Supporters can exert an influence on a system’s direction. Users have direct input into improvements and setting priorities.

Adopting Open Source Software

An excerpt below is from the Office of the Chief Information Office of the Ministry of Citizens’ Services and Open Government in British Columbia, Canada outlining the basic principles for the adoption of open source software:

1. **Open Source Software must be given impartial consideration (alongside proprietary software) when being proposed in response to a procurement.**
2. **The choice of software should be based on the business value proposition, the assessment of the associated risks and compliance with standards.**
3. **Acquirers must ensure their intended use of open source software is compatible with the software’s license terms.**
4. **Acquirers must ensure that the sources used for downloading and updating open source software are trustworthy.**
5. **Acquirers must undertake to keep their open source software patched and up-to-date, consistent with best security practice.**
**Public Procurement and FOSS**

Public procurement is the process by which government departments or agencies purchase goods and services from the private sector. It takes place at both a national and regional level, and the process will usually be subject to specific rules and policies covering how the relevant decisions are made.

The primary aim of public procurement is to obtain value for money using a competitive tendering process.

Strategies deployed by the public sector to promote the IT sector and have them successful in the procurement process include:

- Having in place such IT and Public Procurement policies, a sound legal and regulatory environment, and a good overview of the IT industry in areas such as skills and new IT implementations taking place
- Transparent procurement process backed by documented procedures
- Development of capacity in the public sector for gaps that have been identified in the IT sector
- Carrying out awareness activities of developments in the IT sector such as conferences, training and seminars
- Developing and implementing sound institutional frameworks
- Providing alternative means to allow the private sector to effectively participate in the tendering process
- Adopting and disseminating information on best practice software design to facilitate wider participation

As regards the inclusion of FOSS in public procurement, it is recommended that the adoption of policies aimed at equal consideration of FOSS in public procurement is given priority by governments. It is common practice for tender requirements to show open bias against FOSS. This is usually in the way the tender information is structured. Sometimes it is as a result of the lack of knowledge about FOSS among the Government officials or consultants preparing the tender documents while other times it is a deliberate effort aimed at driving the use of particular solutions. (*Recommendation from COMESA Regional FOSS Framework, 2009*)

Two illustrations have been given below of concerns in the industry when public agencies are procuring software.

**Concerns**

**Example 1:**

*Of a sample of 3615 software tenders that were published between January and August this year, 36 percent request Microsoft software, 20 percent ask for Oracle, 12 percent mention IBM applications, 11 percent request SAP and 10 percent are asking for applications made by Adobe.*

**Example 2:**

*Software tenders often have either implicit or explicit bias for software brands or even specific applications. Of a thousand government IT organisations, 33 percent said compatibility with previously acquired software is the most important criterion when selecting new applications. "This implicit vendor-lock in means that a tender, meant to last for only five years, leads to a contractual relation lasting ten, fifteen years or more."*
The necessary policies, legal and regulatory frameworks help to ensure that all stakeholders in the procurement process are able to effectively consider, adopt and use an alternative to the traditional procurement process, and that is e-procurement. As the name implies, e-procurement is the ability to conduct a procurement using e-mail and internet-based technology making the process simpler and much more effective.

Naturally, e-procurement embraces a number of familiar e-commerce aspects and includes the term e-tendering. E-tendering is the electronic advertising of tenders and entails the tender document being supplied and submitted electronically.

COMESA has developed an e-procurement system based on open source software for its public procurement programme and the system is available on http://promis.comesa.int.

Obstacles, especially in developing countries, to the full adoption of an e-procurement system include:

- Reluctance to adopt e-procurement system by the main procurement agencies
- Insufficient IT infrastructure to support the technology
- Insufficient skills to maintain the technology
- Lack of awareness on the benefits of such a system
- Lack of recognition of electronic signatures, especially on cross-border trade
- Insufficient business process re-engineering to move to the new system
- Challenges in legislations to support the use of the system

The Guidelines for FOSS Procurement

Public Sector agencies are required to follow the FOSS procurement guidelines during all procurement activities such as but not limited to software, hardware, IT related products and services acquisitions. These guidelines will facilitate Public Sector agencies to derive best value for money and all other benefits of FOSS. FOSS procurement should be based on merits, value for money, transparency, security and interoperability, as well as in accordance with procurement policies and procedures.

Public Sector agencies are required to consider the following key principles in the procurement of software and such other ICT equipment:

Scalability

The option of scalability to allow the product to withstand frequent and high volume use is a key principle, considering that usage of software in organisations grows with time due to an increasing staff base. The flexibility provided by FOSS by allowing access to the source code provides for scalability as the code may be optimized to adapt to any increasing demands on the software.

IT Architecture

Consideration should be given to the overall design of the product which should, as much as possible, be scalable and modular, and provide for flexibility for modifications and for integration with other products. FOSS offers software, complete or as modules, free of charge online, including source code and all the information needed to allow easy adaptability to specific user needs. The flexible architecture provided by FOSS allows for easy integration with other modules.
Support
Support should be available for the product through a number of alternative means, and without the need for any software support and subscription arrangements. FOSS has a large support base from its various online communities and various solutions are regularly provided based on user experiences. This is aided by the fact that there are no copyright restrictions and the source code is openly available.

Adoption
Rigorous testing and marketing, leading to adoption by the industry and the community should be evidenced through the availability of the product and the market, and the documentation and resources available for it. Through the active online communities, and because they are freely and widely available, FOSS products are put through a lot of use and testing contributing to the adoption of the product.

Community
An active and lively community which discusses various aspects of the software gives credibility to public procurement professional to be able to confidently acquire a software. The main benefit for FOSS users is the active community through which experiences are shared and support is provided at no cost. The communities also discuss new developments in the field of FOSS.

Interoperability
Public Sector agencies should be encouraged to use products (hardware and software) for interoperability that support open standards and specifications in all future ICT developments.

Transparency
The move towards greater transparency of IT governance is central to the principle of accountability. Procurement activities of Public Sector agencies must adhere to standard procurement policies and procedures and tender specifications must be free of ambiguity. Access to source code must be available wherever possible.

Security
Potential ICT solutions should be carefully evaluated on case by case basis prior to being accepted as safe and free from security flaws for use in operations. The security aspect will cover how vulnerable the product is to virus and other malware attacks and its stability during operation. The evaluation may also consider the development method, program architecture and target market for the product as these may greatly impact how secure a software is, and how easy or difficult it is to breach.

Value for Money
Public Sector agencies procurement exercises seek to avoid unnecessary public spending. Hence, procurement decisions are always to be based on the best value for money solution.

Merit
Procurement decisions should be based on merit, and there should be level terms applied for evaluation of software.

Functionality
The responsiveness of the product to user requirements should be one of the main factors to determine the decision to procure.
Usability
The ease of setup and configuration, user-friendliness, ease of support and maintenance determines the usability of software and impacts on how well a product will be adopted.

Quality
Public sector agencies should ensure and find proof of rigorous testing to confirm that the design of the software is solid to withstand all types of usage once in production.

Performance
An evaluation system should be able to confirm that the product had previously successfully passed standard testing alongside other competing products based on the same benchmarks.

Documentation
The open source software product should have comprehensive documentation to meet the needs of end users, administrators and software developers.

Professionalism
Public procurement agencies should seek to have evidence of professionalism in the development process and organization of the project.

Conclusion
These guidelines provide for best practices which would ensure that FOSS products get a fair chance to be able to compete favourably on public procurements for software, and ensure the best value for money on sustainable solutions that can be integrated with other solutions and may be able to operate on a wide number of platforms without any vendor lock-in.

Of critical importance is the education and awareness of the personnel involved such as the procurement experts, and the IT technical support who would provide the support for the maintenance of the procured software.

Ultimately, a wide acceptance, adoption and use of FOSS has the potential to improve ICT skills in the region, provide business opportunities and employment especially for the youth thereby allowing for ICT to effectively contribute to the development of the region.