



THE ROADMAP FOR TAFOSSA

1. WHAT IS TAFOSSA?

The **Tanzania Free and Open Source Software Association** (TAFOSSA, www.tafossa.or.tz) is a non-profit organisation to advocate and promote Free and Open Source Software (FOSS) for rapidly developing access to, and utilisation of, Information and Communications Technologies (ICT) in Tanzania.

2. WHAT IS FREE AND OPEN SOURCE SOFTWARE?

FOSS¹ is a type of software as well as a methodology, a philosophy and a movement. The defining institutions are the *Free Software Foundation* (www.fsf.org), who use the term “Free Software”, and the *Open Source Initiative* (www.osi.org), who coined the term “Open Source Software”. The abbreviation “FOSS” embraces both terminologies, although the word “free” in this context emphasises liberty and not the absence of cost. FOSS programs have licenses² that allow users the freedom to run them for any purpose, to study and modify the program’s source code, and to redistribute copies of either the original or the modified program, without having to pay royalties to previous developers, but simply by giving recognition to their contributions.

The FOSS movement is built on the premise that when everyone is given the freedom to modify and share the source code of software, then better and cheaper software will be available to more users. Instead of selling user licenses, the software is distributed free of charge, without users being charged licence fees for running that software. Money is made by suppliers offering their services for software installation, customisation, enhancements, application development, training, etc. The overall cost to users is then reduced, while the market becomes more competitive. Migrating between competing products is also easier, because developers gain no advantage by locking-in their users, but instead focus on interoperability between products, which attracts opportunities for further development and innovation, thereby potentially increasing their earnings. This also signifies that FOSS developers tend to be more responsive to the needs and problems of their end-users (a fact borne out by numerous empirical studies). The FOSS business model does not compel developers to look towards relentlessly expanding their market-shares while raising revenues on a per user basis, which is what leads proprietary software houses to focus on larger customers to the detriment of the smaller, but probably more innovative, ones.

FOSS is gaining momentum in all parts of the world and notably in the developing world, especially Africa. Growing numbers of people are now convinced of the potential benefits of migrating organizations to FOSS. They are now forming groups to locally promote and support such processes. On the ground however, proprietary or Closed Source Software (CSS) is still

¹ There are many variations in the terminology used to refer to this type of software (OSS/FS, Free/Libre Software, FLOSS, etc). For the sake of simplicity it is consistently referred to as FOSS throughout this Roadmap. A complete definition of terms can be found at www.wikipedia.org/wiki/Free_Software.

² Details about these so-called “copyleft” licences can be found at <http://www.gnu.org/gnu/the-gnu-project.html>

dominant and supported by huge marketing budgets. In Africa, where many organisations and individuals are unable to benefit from ICT because of the high threshold barrier of costs, there might be significant advantages in making that initial investment using FOSS instead of CSS.

However there are several issues that need to be considered when comparing FOSS and CSS. For example, although FOSS is emphasizing “freedom of speech” rather than “free of charge” (some FOSS software is also for sale), there are unavoidable costs associated with implementation, maintenance, management and modification of both FOSS and CSS. Comparisons between the two types of software need to take into account these dimensions plus a number of other non-quantitative issues such as freedom from control by others (especially a single source), protection from licensing litigation, flexibility of deployment, social / moral / ethical issues, and the potential for innovation. Please see the matrix at Annex 2 for a simple comparison³ of software types.

When considering software’s Total Cost of Ownership (TCO⁴), case studies have been conducted, for example by Gartner Associates⁵ among others, to demonstrate that there can be considerable savings gained by selecting FOSS over CSS, and especially in the context of developing countries⁶. In another line of debate, the Return on Investment (ROI) from FOSS compared to that of CSS has proven significantly in favour of FOSS wherever such comparisons can be made, and most particularly in implementations where there is no migration from a legacy computer system⁷.

The concept of “ownership” is questionable in the context of a CSS license that is filled with disclaimers to protect manufacturers from lawsuits, while allowing them the freedom to raid the premises of their clients for suspected licensing irregularities. There are pros and cons associated with ownership for both FOSS and CSS that have been severally analysed⁸. One the whole, the usually recommendation is for a hybrid approach that focuses on applicability, standards, interoperability and content. Indeed the FOSS movement is based on three “Open” pillars, namely *Open Source*, *Open Standards*, and *Open Content*. All three pillars need to be considered when making choices between comparable FOSS and CSS alternatives.

But in spite of all the apparent benefits of FOSS, fear, uncertainty and doubt (FUD⁹) still prevails about its viability, and is being sustained by some of the CSS producers. Conversely, the

³ SIDA has conducted an excellent study in this regard. It can be found at: www.statskontoret.se/upload/Publikationer/2003/200308A.pdf

⁴ TCO refers to the direct and indirect costs related to the use of an ICT component. The calculation of total cost must include license fees (if any), and also expenditures for support and training of personnel. It must also be calculated over the entire lifespan of the project. Note the current scarcity of qualified personnel may suggest that the cost of technical support is apparently greater for FOSS than for the more common CSS.

⁵ This study, as well as a series of similar case studies and numerous other useful references, are captured within a very comprehensive article by David A. Wheeler titled: “*Why Open Source Software / Free Software (OSS/FS, FLOSS, or FOSS)? Look at the Numbers!*”, available at: www.dwheeler.com/oss_fs_why.html

⁶ Rishab Ghosh’s very explicit paper “*Licence fees and GDP per capita: The case for open source in developing countries*” focuses on this particular issue. It is available at: www.firstmonday.org/issues/issue8_12/ghosh/

⁷ The issue of cost of software in developing countries needs to be considered with caution given the existence of so much pirated software. Indeed, as stated by Dimo Calovski in an interview: “*FOSS in developing countries is more than a TCO or ROI issue. It has to do with developing skills, fostering homegrown solutions, and nurturing an intellectual property environment that is sensitive to development needs. It also has to do with good governance, transparency, and efforts to achieve social and economic development supporting the rights of individuals and communities.*” Article available at: www.open-mag.com/features/Vol_98/UNCTAD/UNCTAD.htm

⁸ IICD (www.iicd.org) has developed an excellent decision tool in “*The Status of Open Source Software in Africa*” while Bridges.Org’s Software Comparison Report (www.bridges.org) is also an excellent resource.

⁹ An erudite article responding to the economic aspects of this FUD is titled “*Open Source-onomics: Examining some pseudo-economic arguments about Open Source*” by Ganesh Prasad. It can be accessed at: <http://people.mech.kuleuven.ac.be/~bruninc/linux/economy-oss.html>

commercial characteristics of FOSS do not permit its producers to have the same level of marketing expenditures as is the case for CSS producers who seek to broaden their market shares. Hence the accessibility of FOSS needs to be promoted and facilitated via non-profit organisations.

For Africa, FOSS leadership and guidance is being provided by the *Free and Open Source Software Foundation for Africa* (FOSSFA, www.fossfa.net), which brings together all the FOSS promoting organisations of the whole continent under one network. Despite having Tanzanians on its Council and initiatives, in their individual capacities, Tanzania is not yet counted as member of FOSSFA. However there has been a dialogue with the FOSSFA Secretariat in which they indicated that once we have established a formal FOSS organisation, Tanzania will be admitted as a full member of FOSSFA.

3. WHY TAFOSSA?

FOSS is providing ICT communities worldwide with a valuable tool to address certain aspects of the so-called “digital divide”¹⁰. Tanzania cannot remain isolated from this highly advantageous phenomenon, especially given that the 20-year Prohibition Order on computer imports from 1974 until 1993 has significantly impaired this country’s ICT standing. However, this offers us a unique opportunity in that we have fewer legacy systems to migrate from obsolete mainframe technologies into the current mobile-Internet age. Thus, given the increasing momentum in Africa for migrating to FOSS, Tanzania has the opportunity to take a lead in this area. To do so, a broad-based association needs to be established, as a platform for initiatives aimed at nurturing the hitherto spontaneous emergence of FOSS in and around Tanzania’s ICT community. Moreover, through partnership with FOSSFA, TAFOSSA can expect to gain and probably even contribute knowledge and resources with others beyond Tanzania’s national borders.

The proposed vision and mission of TAFOSSA are as set out below:

The Vision of TAFOSSA is:
A Tanzania in which people have free access to software tools and opportunities to improve their capacity to utilize them to reduce poverty and improve livelihood on terms set forth by the National Vision 2025 and reiterated in the National ICT Policy.

The Mission of TAFOSSA is:
Establish a sustainable network of partner institutions combining resources, available within the Tanzanian community, and possibly from external development partners, towards prolific availability, formidable support and high quality training of Free and Open Source Software.

Once established, TAFOSSA will offer leadership in the following main areas:-

3.1 Promoting FOSS for Affordable Access, Choice and Empowerment

By making FOSS better known, we can help a wider choice of affordable software to be available to Tanzanian users. Moreover, it will be easier for Tanzanians to customize and enhance that

¹⁰ In the G8’s Report of the Digital Opportunity Task Force (DOT Force) titled “**Digital Opportunities for All: Meeting the Challenge**”, delivered at the G8 Genoa Summit of 2001, the following understanding is used: “This “digital divide” is, in effect, a reflection of existing broader socio-economic inequalities and can be characterized by insufficient infrastructure, high cost of access, inappropriate or weak policy regimes, inefficiencies in the provision of telecommunication networks and services, lack of locally created content, and uneven ability to derive economic and social benefits from information-intensive activities.”

software to better suit our local needs, thereby also lowering the threshold for new users to gain productivity more rapidly through the effective use of ICT.

In this area, TAFOSSA will be active in creating awareness of the availability of FOSS products and services, as well as the different types of advantages that FOSS offers to different categories of users and organisations. Within an organisation's hierarchy, the perception of FOSS will differ from level to level. So it will be imperative for TAFOSSA to gain an understanding of the concerns and needs at each level, and thereby respond appropriately to each. Thus, beyond promoting the adoption of FOSS wherever it is an appropriate choice, TAFOSSA will also evolve to be an effective platform for civic advocacy and general lobbying in favour of ICT for development in Tanzania. Issues like affordability of access and quality of services could be considered.

3.2 Build Local ICT Skills, Capacity and Content through the Use of FOSS

At present, Tanzanians are merely consumers but not yet producers of ICT. By encouraging efficient adoption and sustainable use of FOSS, TAFOSSA will enhance the capabilities of innovative Tanzanians to design, modify, develop and manage software applications, as well as to more easily develop and disseminate multimedia content of local value and relevance. Tanzanian developers will also be able to participate in FOSS design and development projects initiated from elsewhere around the globe. And as the availability of Tanzania-specific content increases, the ability to reach a more global audience will also be enhanced within all other sectors of endeavour.

In this area, TAFOSSA will be active in collecting and disseminating knowledge about FOSS issues, especially those that are of local relevance. TAFOSSA will also provide the services of registering FOSS products and services offered by Tanzanians, so as to make these more readily visible to a wider potential user-base within the country and beyond¹¹. Additionally, TAFOSSA will be able to create thematic networks of FOSS users who share similar interests, challenges, or other characteristics, in order to make it easier for participants in those networks to give each other peer-support, while gaining access to possible external resources and global partnerships.

3.3 Quantify and Enhance the Economic Benefits offered by FOSS

Encouraging and adopting FOSS offers the opportunity to reduce significantly our spend on software procurements, which are basically a net capital outflow of hard-earned foreign exchange, each time we acquire CSS products and related services. The choice of FOSS also allows a major reduction in procurement schedules, as there is no need to tender when identifying, selecting and acquiring something free-of-charge by downloading it directly from the Internet. And suppliers who are responding to tenders would be able to offer lower-cost options if they have awareness and access to reputable FOSS applications for inclusion in their bids. Thus in paying for services to support the development of local FOSS-based services, applications and ancillary products, we will automatically encourage local opportunities for employment, self-employment, innovation and entrepreneurship, especially among our youth who already have basic computer literacy, but lack options to apply it gainfully. This will reduce the allure of the brain-drain, while increasing the opportunities for Tanzanians living abroad to invest in the ICT sector back home.

In this area, TAFOSSA will be active in facilitating research to measure capital outflows from Tanzania that could be reduced significantly by adopting FOSS when procuring, maintaining or implementing computer software applications and operating systems. TAFOSSA will also be involved in supporting the fluid job-market for ICT professions, and promote emerging opportunities for self-improvement via ICT-enabled distance-learning. And the up-and-coming

¹¹ The most popular of such registries is at www.sourceforge.net, which TAFOSSA could emulate and link with.

Business Incubation¹² initiatives will necessarily draw upon TAFOSSA's services and knowledge transfers to encourage entrepreneurship that is enabled by – or is enabling – FOSS usage. Thus, through FOSS, the ingenuity of our youth can become usefully and affordably harnessed and then channelled into driving ICT innovations that can not be even imagined today.

3.4 Develop and Support the Community of Local FOSS Users

It is not that Tanzania currently does not have any users and developers of FOSS; indeed there are many but, in the absence of a rallying-point, they remain practically invisible and are unable to give support even to one another. These Tanzanian users and developers of FOSS are typically in occupations that do not have the promotion of FOSS as a core function, and so they are unable to assure local novice FOSS users the kind of reliable support that they may need. And given the need to be self-sufficient, each individual has to act like a jack-of-all-trades to the limit of their own capabilities and access to resources. Under these conditions, any assessment of skill gaps and priority needs could not claim to be authoritative.

In this area, TAFOSSA will be active by developing a knowledge warehouse, and by building in-house expertise through networking the existing FOSS users and developers in Tanzania, to then identify the areas of weakness that need priority attention. TAFOSSA will also be in a position to ensure that technical experts in Tanzania will have opportunities and access to be able to participate in FOSS development activities¹³. With its knowledge warehouse and its networking of end users, TAFOSSA will be able to identify applications relevant to Tanzania that need to be developed, and then spur their development by providing the resources to support projects by local experts. In building the applications that Tanzanians need, TAFOSSA will be able to initiate its own *bounty systems* (also called *sponsor systems* or *pledge systems*) by requesting specific software developments, while stating the price it is able to afford for each project; other parties from around the globe are then invited to join the online bidding to accumulate enough of a bounty to entice qualified developers (whether local or not) to implement that project. This further implies that TAFOSSA will be able to facilitate technical research and development for applications that are relevant to Tanzanian users, as well as the creation of localisation packages initially for Kiswahili, but potentially also for Tanzania's numerous native languages and dialects.

3.5 Foster the Development of a Tanzanian FOSS Community

As mentioned earlier, FOSS is not only a type of software but is also “*a methodology, a philosophy and a movement*”. TAFOSSA therefore needs to espouse the broader aspects of FOSS by propagating an understanding of the *methodology*, encouraging local debate about the *philosophy*, and attracting members and partners to participate in the *movement*. As FOSS lacks deep commercial pockets to sustain its growth, TAFOSSA will have to ensure that it is accurately perceived both in a vertical dimension by the local ICT producers, vendors, techies and hands-on users, as well as in a horizontal dimension by the local educators, the business-communities, policy-makers and students. It is vital that key stakeholders from both dimensions should grasp the issues around these broader aspects of FOSS, in order to be empowered to see through the FUD that is being artificially induced by CSS producers and their supporters.

In this area, TAFOSSA will be active in fostering a national FOSS community with a vibrant web-presence. In addition to organising its own events, TAFOSSA will promote and publicise FOSS applications, documentation and available training materials as well as listing any training, job or

¹² Details about this process are available at www.incubation.co.tz whilst www.eThinkTankTz.org/incubators provides some background to it.

¹³ The experience of www.eThinkTankTz.org and the achievements of its active forum over the last five years are a tangible testimony to the value of virtual networking among Tanzanians.

project opportunities, during events that may bring together other relevant interest groups. As Tanzania's focal point organisation, TAFOSSA will also be able to use its resources to assist in creating and publicising jobs, as well as entrepreneurial opportunities for investors in relation to FOSS initiatives. In dealing with regional and global organisations that support FOSS, TAFOSSA will also be in a position to access experience and knowledge of best-practices for sharing at home.

4. CHALLENGES FOR TAFOSSA TO ADDRESS

There are a number of challenges that TAFOSSA anticipates in the adoption of the FOSS in Tanzania at this time. These will necessarily evolve as TAFOSSA's interventions begin to take effect. But for the time being, the key anticipated challenges are as summarised below:

4.1 Lack of Awareness

Most decision makers and IT Professionals are unaware of any viable alternatives to proprietary software. Furthermore it can be said that most of the few IT professionals with awareness of these alternatives, actually have only detrimental, outdated, and even anecdotal information about FOSS, primarily received from the purveyors of CSS. Consequently, even in the formal procurement and tendering processes of both private and public sectors, FOSS products and services are typically excluded, possibly to the disadvantage of the organisations involved and of Tanzania in general¹⁴. Therefore, as such potentially detrimental choices on ICT deployment are being based on disinformation, the lack of public awareness about FOSS is then a very immediate challenge.

4.2 Position of the Government and Sensitising of Political Will

The government, despite its National ICT Policy (2003), is not yet sufficiently assertive about the potential advantages of promoting FOSS for developing the country's ICT sector and users. This is in addition to delivering ICT-enabled opportunities for all other sectors in accordance with the National Vision 2025, and the UN's Millennium Development Goals for 2015.

Despite the National ICT Policy's success in galvanising political attention on the value of ICT for Tanzania's development, the notion that FOSS can be a pillar and a tool to implement that Policy has not yet been addressed. This is in part because there has not hitherto been an organisation to help do so, nor specific activities directed at sensitising politicians and policy makers on the opportunities afforded by FOSS as seen from their own point of view. Moreover, by encouraging diversity in software choice for its own procurements, the Government will be better positioned to negotiate for more favourable terms from the suppliers of both FOSS and CSS products, thereby enhancing local competition. And as FOSS, via e-commerce, also helps to reduce barriers to trade while further accelerating the dissemination of new skills and technologies, governments globally are choosing to take a proactive stance internally, so that FOSS may be more easily accepted and adopted on a national basis.

Thus, in view of the unique opportunities offered by FOSS for e-Government and the positive impact that will be likely to emerge if Government embraces FOSS and becomes a model user, all sectors will stand to benefit significantly if Government chooses to champion FOSS as a matter

¹⁴ This can be compared to the situation among leading FOSS adopters around the world who accord preferential treatment to FOSS products as a matter of policy. An interesting perspective about this was provided in *The Economist* of 11th Sept. 2003, headed "*Microsoft at the power point – Governments like open-source software, but Microsoft does not*", which is at: www.economist.com/business/PrinterFriendly.cfm?Story_ID=2054746.

of policy. Conversely, unless a close working relationship is built with Government, it will be considerably more difficult for TAFOSSA to achieve its objectives. Therefore it is imperative that this challenge is taken as a priority.

4.3 Lack of Local Support Capacity

Penetration of closed source or proprietary software into business, private sector and educational systems is undeniably high, supported by marketing campaigns of multinational companies. As a result, awareness of the availability of technical support for proprietary software is huge while for FOSS it is deficient. Even the leading FOSS brand names do not have any official representation or professional certification among local ICT service providers yet. Such absence of tangible and visible support services reinforces the FUD on the viability of deploying FOSS in Tanzania. This is therefore a challenge that need urgent action to enable the FOSS user-base to grow sustainably while nurturing a fertile environment for innovative local applications of ICT to also grow freely.

4.4 Increasing the pace of change

In the absence of a formal organization for FOSS, there have been a number of positive developments as witnessed in various FOSS initiatives during 2003/4. These initiatives were orchestrated mostly by members of the TAFOSSA Interim Secretariat with the support of various partners¹⁵.

Some of the most visible FOSS initiatives in which Tanzania has recently been involved include informational seminars on FOSS, training in FOSS¹⁶, and establishing an unmoderated discussion list¹⁷. In addition our FOSS developers have also been very active with the support of the *Open Swahili Localisation Project*¹⁸, for example: participating in localisation of OpenOffice¹⁹ to generate Jambo OpenOffice²⁰; localising TuxPaint and TuxType into Kiswahili versions²¹; collecting a glossary of words for online Kiswahili dictionaries²²; production of CDs of FOSS products for distribution into needy institutions and during gatherings; participating in *African Virtual Open Initiatives and Resources* (AVOIR, <http://avoir.uwc.ac.za/>); etc. These activities have consistently excited and have begun to unite Tanzania's nascent FOSS community and user-base. In addition the online discussion list is growing increasingly active, and expectations are high. Therefore once TAFOSSA is formally established, it will face the challenge of increasing and enhancing the visible

¹⁵ Partners have included the International Institute for Communication & Development (IICD, www.iicd.org), the President's Office – Public Service Management (PO-PSM, www.estabs.go.tz), the Swedish International Development Agency (SIDA, www.sida.se), Tanzania's Commission of Science and Technology (COSTECH, www.costech.or.tz), Tanzania's Global Development Learning Centre (TGDLC, www.tgdcl.go.tz), the University Computing Centre (UCC, www.ucc.co.tz), and the University of Dar es Salaam's Computer Science Department (UDSM, <http://cs.udsm.ac.tz/>).

¹⁶ This training has been conducted variously at the UCC, Dar Institute of Technology (DIT, www.dit.ac.tz), and the Bagamoyo based Agency for the Development of Educational Management (ADEM, www.ademtz.com).

¹⁷ The discussion list is called OpenSourceTz (OSSTz, <http://groups.yahoo.com/group/OpenSourceTz>).

¹⁸ This began as a joint project between UDSM and the Swedish IT consultancy company *IT+46*. Information about it and its numerous initiatives is available at www.kilinux.org.

¹⁹ OpenOffice (OOo, www.openoffice.org) is a viable alternative to Microsoft Office, but had previously not been available in Kiswahili.

²⁰ The BBC website describes its launch in an article at <http://news.bbc.co.uk/1/hi/world/africa/4078753.stm>. Jambo Ooo may be downloaded from www.o.ne.tz where additional information on FOSS may also be found.

²¹ TuxPaint is available as "TuKsi Koti la Rangi" from www.o.ne.tz/tuxpaint, while TuxType including the Kiswahili dictionary is available at <http://tuxtype.sourceforge.net/download/>.

²² A Kiswahili Spellchecker for Jambo OpenOffice is available at <http://www.o.ne.tz/spellchecker> while an article about Kiswahili Localisation of Open Source is available at: <http://www.jifunzeonline.or.tz/content/view/23/>.

activities that are already in progress, while reinforcing their impact for the benefit of Tanzania's FOSS community. Thus TAFOSSA's action plan must always take this challenge into account.

4.5 Sustainability of TAFOSSA

As mentioned in the preceding section, the Interim Secretariat has been working with a number of local and international development partners to support its activities, which have been primarily project-based during 2003/4. But the Constitution, this Road Map and the 2005 Action Plan, all envisage establishing a formal organization that will incur running costs to support its organisation structure, implying the need for additional funds over and above the requirements hitherto.

However, already there has been hesitation on the part of international development partners to support the organizational side of the envisaged TAFOSSA, and indeed some of the planned core activities. Given the need to increase the pace of change and the imperative to register and operationalise TAFOSSA, the question of long-term sustainability will continue to be a significant challenge. This challenge will require flexible approaches and proactive strategies in order that TAFOSSA survives the test of time as a viable and vibrant organisation.

5. TAFOSSA'S STRATEGIES

The approach to achieving TAFOSSA's objectives while addressing the varied challenges will be multi-disciplinary and involve establishing partnerships with local and foreign organizations, academic institutions, and government offices, in order to be able to carry out a number of core strategies. It is worth noting at this stage that partnerships are so fundamental to the FOSS methodologies as a *sine qua non*, that instead of being an adjunct, they have been mainstreamed within TAFOSSA's proposed strategies. The related activities shall include, without being limited to, those listed below for each strategy:

5.1 Creating Awareness of FOSS

- a) awareness to foster political will and commitment among politicians and policy-makers;
- b) awareness of the opportunities that FOSS offers in achieving national developmental goals;
- c) awareness for influencers and decision-makers of organisational ICT procurements;
- d) awareness of how to formulate a business model around the supply of FOSS products and services;
- e) demystify the viability and ease of use of FOSS products for potential end-users;
- f) raise the visibility of existing and forthcoming local FOSS projects and initiatives;
- g) conduct a campaign including technical update seminars, training workshops, conferences and awareness presentations throughout the country;
- h) become the pre-eminent reference point in Tanzania on "FOSS vs. CSS" and other related issues;
- i) identify local partners, communities, events, resources and initiatives;
- j) urge the donor community and other institutions within the country to consider supporting FOSS in the context of their sectoral development activities;
- k) create thematic interest groups on FOSS addressing specific applications and types of needs, e.g. for women, youth, etc.

5.2 Promoting the Awareness of FOSS

- a) develop/disseminate Position Papers on topics relevant to the adoption and use of FOSS in Tanzania-specific institutional environments;
- b) prepare a baseline study on the national spending on ICT that includes an appraisal of Total Cost of Ownership (TCO) implications for FOSS versus CSS within Tanzania's private sector, public sector and non-profit organisations;
- c) propagate guidelines on technical process of transitioning and what to expect when migrating systems from CSS to FOSS;
- d) create regional strategic partnerships for information exchange and knowledge transfer between countries;
- e) urge key government organs to overtly support FOSS development in the country and, as a matter of policy, consider within its own ICT procurements;
- f) promote FOSS capacity and skills development country wide through education with emphasis on women, youth and disadvantaged communities;
- g) promote the translation, localization and internalization of software, tools and content so that they can be accessible to people preferring to use Kiswahili;
- h) develop a framework for compiling and cheaply distributing FOSS resources, tools, documentation and training materials;
- i) create a national "Who Is Who?" of FOSS centres of expertise, knowledgeable persons, and types of specialisations;
- j) channel resources for FOSS to be featured at all key ICT events and promotions in Tanzania;
- k) provide the primary platform for ensuring regular publicity appears in the local mass media on FOSS activities and on the projects of TAFOSSA's partners.

5.3 Capacity Building and Promoting the Use of FOSS

- a) identify national FOSS training needs and propose institutional strategies for stakeholder to be able to address them;
- b) discern locally relevant FOSS initiatives and enable target stakeholders to assimilate them;
- c) establish links for distance-learning and knowledge exchange centres both within the country and with relevant regional and global centres of excellence and create programmes that include courses, video-conferences and debates on FOSS;
- d) establish and develop physical premises including library, training centre and help-desk support facilities in Dar es Salaam as a national FOSS centre to anchor out-reach efforts;
- e) develop and maintain a knowledge warehouse of expertise within Tanzania and including the Tanzanian diaspora, and encourage them to support new users and/or developments;
- f) establish incubation centres where young graduates can be trained and groomed as FOSS experts in a wide variety of specialisations;
- g) build strategic partnerships with regional and global FOSS focal points as well as with associations for business incubation and entrepreneurship development;

- h) facilitate internships both locally and internationally for Tanzanians with FOSS expertise;
- i) create opportunities for technical experts nationwide to effectively participate in developing open source software applications in both local and international projects;
- j) disseminate localised documentation and training materials for FOSS, as well as targeted information to refute the common allegations that contribute to FUD against FOSS;
- k) initiate or participate in conferences, exhibitions and other events showcasing available FOSS opportunities, and draw attention to FOSS community networks in Tanzania;
- l) encourage and support entrepreneurial ventures towards establishing centres of excellence for FOSS support and expertise;
- m) forge direct links with the initiators of FOSS products and services in order to establish an internationally recognisable certification for the skills of Tanzanian experts, support staff and end users of those products and services.

5.4 Development and Support

- a) acquire content in order to maintain and manage a repository of online databases of FOSS resources, software and related documents;
- b) spearhead the creation of Tanzanian portals for FOSS on the Web;
- c) develop a FOSS applications guide to meet Tanzania's market and localisation needs, and ensure feedback from Tanzanians reaches the application developers;
- d) develop a toolkit for selected FOSS server services, operating systems, desktop and hand-held applications;
- e) encourage Tanzanian localisations of existing FOSS products and services;
- f) develop a toolkit for Tanzanian localisation and internationalisation activities;
- g) identify and exploit sources of funding for Tanzania's research and development activity in FOSS.

5.5 FOSS Community Development

- a) nurture vibrant national online fora for FOSS topics;
- b) develop, maintain and manage an authoritative and up-to-date national FOSS portal;
- c) convene regular physical meetings or events for the FOSS community and new members;
- d) identify, encourage and connect with sub-national FOSS focal points and user groups;
- e) forge links with other national, regional and international FOSS focal points;
- f) disseminate to local FOSS communities the outcomes of TAFOSSA activities and partner initiatives in all sectors.

5.6 Sustainability of TAFOSSA

- a) develop a baseline document to set out the benefits that TAFOSSA brings to Tanzania;
- b) engage with local and international development partners, exploring possibilities of collaboration and support;

- c) engage in innovative income-generating activities;
- d) forge long term partnerships and collaborations with a wide variety of actors;
- e) share and adapt the lessons learnt and best practices of other national FOSS associations around the world;
- f) build a proactive and forward-looking action planning process for TAFOSSA.

6. ORGANISATIONAL ARRANGEMENTS

6.1 Management Board

As provided for in its Constitution, TAFOSSA will be led by a Management Board of seven members, consisting of a Chair, Vice Chair, Treasurer (who will preferably be a certified public accountant), Secretary (who will also be the Executive Secretary of the TAFOSSA Secretariat) and three other Board Members.

Apart from the Executive Secretary, who shall be recruited on a competitive basis for renewable five-year contracts, all members of the Management Board will be elected for a tenure of three years by the Annual General Meeting. The Board will report regularly to the Annual General Meeting, consisting of all eligible members of TAFOSSA in accordance with the definitions set out in the TAFOSSA Constitution.

6.2 Strategic Advisory Panel

Members of the Management Board will have access to the services of a Strategic Advisory Panel, which will initially be constituted from the existing Interim Secretariat (with the exception of individuals who may chose to become office-bearers). Subsequently the Panel, of not more than 10 panelists, may include members of the General Meeting elected during Annual General Meetings to serve on a rotational basis. Their role is to assist the Management Board through consultation and advice on strategy or policy matters. As *de facto* members of the General Meeting, they will also have the authority to call for an Extraordinary General Meeting by a simple majority vote amongst themselves.

6.3 Secretariat

In carrying out the core functions of TAFOSSA, there will be a **Finance Unit** that reports to the Executive Secretary, with designated staff responsible for looking after:

- managing and reporting on membership fees and dues
- managing and reporting on the flow of donors' funds
- processing of internal financial transactions
- processing of external transactions, procurements and commitments
- compiling TAFOSSA's budget and generating expenditure reports
- internal auditing function
- etc.

Of the three core functions of TAFOSSA, there will be a **Department of Community Administration**, reporting to the Executive Secretary. It will be responsible for:

- registry services
- publications and library
- content of databases
- website administration
- estates management
- assets management
- etc.

Secondly, there will also be a **Department of Awareness and Capacity Building**, reporting to the Executive Secretary. It will be responsible for:

- promotions
- training
- conferences
- incubation
- etc.

And thirdly, there will be a **Department of Technology and Support**, reporting to the Executive Secretary. It will be responsible for:

- systems
- application building
- research and development
- guidelines and manuals
- localisations
- etc.

6.4 Anticipated Sources of Income

Funding for TAFOSSA will be expected to come from its own members in various categories (i.e. individual professional, students, corporates, institutional members, etc.) as well from other stakeholders and activities including, but not limited to:

- Membership fees;
- Voluntary subscriptions, grants, gifts and donations from individuals, governments, international organizations, and international development partners etc.
- Fees generated through public events such as workshops, seminars, conferences etc.
- Consultancy fees; and
- Contractual assignments.

6.5 Anticipated Expenditures

The expenditures that TAFOSSA will incur can be grouped into two categories. Firstly that of *Internal Administrative Expenditures* and secondly that of *Activity-Related Expenditures*. For the organisation's sustainability to be assured, these two types of expenditure will have to be kept very carefully segregated from one another. The first category should always be funded from Membership Fees and direct subsidies, while the second category should depend on donations and grants.

Under *Internal Administrative Expenditures*:

- salaries and allowances of TAFOSSA officials
- expense of convening the statutory Annual General Meeting
- compensation to office-bearers on Management Board and the Strategic Advisory Panel
- basic operational expenses for the office, premises and tools
- statutory dues to FOSSFA
- cost of attending statutory regional gatherings

Under *Activity-Related Expenditures*:

- promotional activity
- networking of people
- databases of resources
- content development
- publications
- participation at relevant events
- study tours
- research, design and development
- capacity development

6.6 The Corporate Logo

TAFOSSA's logo is based on a pangolin²³ (known in Kiswahili as "kakakuona"). This is a seldom seen scaly anteater that is found in Tanzania among very few other places around the world. Pangolins are estimated to have existed for over 40 million years and have survived by constantly adapting to the changing environment as they are exceptionally versatile creatures. They sleep in burrows or trees by day, emerging at night to search by smell for ant and termite nests. They walk mainly on their hind legs supported by a powerful tail, while keeping the body horizontal to the ground, and are proficient climbers and swimmers. Their claws are used to break open ant or termite nests before capturing the occupants with a very long and sticky tongue.

As a very shy nocturnal mammal, the pangolin is traditionally believed to also possess mystical powers that bring good fortune to persons who should come into contact with it. Its scales are used to treat various ailments, or are used as lucky charms in the belief that they can neutralise evil spirits. Although the people who know about the pangolin do not know where to seek it, they live in the hope of encountering one in anticipation of thereby solving their personal problems. They also seek to spread awareness about its mystical benefits, so that anybody else encountering one may react by sharing the discovery with other people, and not by being afraid.

So the pangolin was chosen for TAFOSSA's logo as a Tanzanian multi-cultural symbol of hope, optimism, opportunity to adapt, and sharing of good fortune, which is what FOSS is also offering. This symbol, featured prominently on the logo, is displayed on TAFOSSA publications (including the front page of this Roadmap), as well as on the prototype TAFOSSA website (www.tafossa.or.tz).

²³ The African Wildlife Foundation describes the giant pangolin (*manis gigantea*) at www.awf.org/wildlives/178 while the B.B.C. offers more about its characteristics at www.bbc.co.uk/nature/wildfacts/factfiles/621.shtml.

7. NEXT STEPS

The Steering Committee will first review and approve this RoadMap, along with the Work Plan 2005 and the Constitution. Then the Interim Secretariat will need to create a detailed Activity Plan (including Gantt Chart, milestones, etc.) towards fully operationalising TAFOSSA. This Activity Plan shall include at a minimum the steps set out below. It is noteworthy that the steps are not necessarily either sequential or complete, but are just a high-level guide to the way forward over the next few months:

- Revise this Roadmap, the TAFOSSA Constitution, Budget and WorkPlan 2005 following Steering Committee's deliberations and eventual instructions
- Finalise then broadcast www.tafossa.or.tz and act on feedback
- Finalise Work Plan 2005 and Budget into a detailed Activity Plan
- Table detailed Activity Plan to the Steering Committee
- Begin to engage potential partners for their support
- Register the Association
- Launch the Association in a public event with stakeholders
- Operationalise the Association
- Have a membership drive
- Convene the first AGM
- Sustain, support and promote relevant ongoing FOSS projects

8. IN CONCLUSION

The TAFOSSA Interim Secretariat takes this opportunity to acknowledge with appreciation the strong commitment and support that it has received from the Steering Committee, and its partner organisations, as well as the many expressions of goodwill and encouragement received from very many individuals, during the course of carrying out its' duties. Members of the Interim Secretariat are confident that this level of acceptance and support augurs well for realising the "Next Steps" in partnership with TAFOSSA's stakeholders, and anticipate that TAFOSSA will enrich Tanzania's increasingly energetic ICT environment while contributing positively and significantly to national development.

Below are listed the members of TAFOSSA's Interim Secretariat who developed this RoadMap:

- (i) Edephonce Ngemera Nfuka (*Chair*) – University Computing Centre
- (ii) Atanas Cosmas (*Secretary*) – University Computing Centre
- (iii) Ali Ayoub Kalufya – Commission for Science and Technology
- (iv) Jacob Mtui – University Computing Centre
- (v) Simbo Ntiro – Private sector consultant
- (vi) Rafiy Salehe – Tanzania Development Gateway
- (vii) William Sangiwa – Private sector consultant
- (viii) David Sawe – President's Office, Public Service Management
- (ix) Dr. Hashim Twaakyondo – University of Dar es Salaam, Computer Science Department

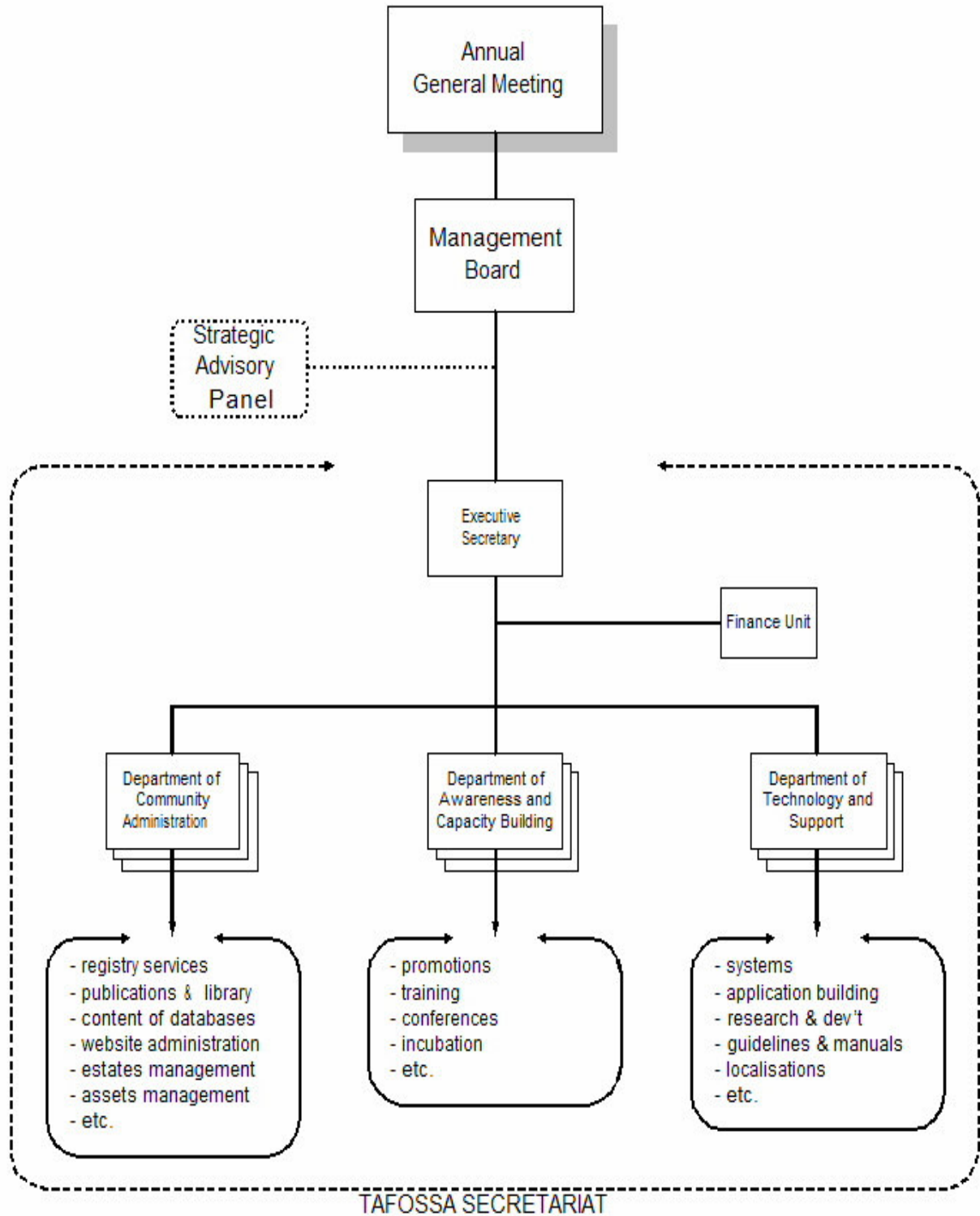
"Open-source software has been called many things: a movement, a fad, a virus, a Communist conspiracy, even the heart and soul of the Internet. But one point is often overlooked: Open-source software is also a highly effective vehicle for the transfer of wealth from the industrialized world to developing countries"

Andrew Leonard

ANNEX 1:

Tanzania Free & Open Source Software Association (TAFOSSA)

Proposed Organisation Structure



ANNEX 2:

Understanding Free/Open Source Software – a matrix of differing perceptions between the *Producers* versus the *Users* of software

<i>...could it also then be?→</i> <i>If it is offered as...↓</i>	Free of charge	Commercial	Free & Open Source	Shareware	Demoware	Proprietary	For pay
Free of charge		possibly ¹	possibly	possibly	likely	possibly	never
Commercial	unlikely		possibly	possibly	possibly ²	likely	likely
Free/Open Source	possibly	possibly		possibly	unlikely ³	unlikely	unlikely
Shareware	unlikely	likely ⁴	unlikely		likely	likely	likely
Demoware	likely	likely	unlikely	possibly		likely	possibly
Proprietary	unlikely	likely	unlikely	possibly	possibly		likely
For pay	never	certainly	possibly	possibly	possibly	likely	

¹ As there is a possibility of subsequently paying for user-support, upgrades, or additional functionality.

² The demoware product could be offered independently from the commercial product to attract buyers.

³ Since it would be illogical to set blockages on the demo product while freely offering the source code.

⁴ Although in some cases, the earnings might be declared as being dedicated for a charitable cause

ANNEX 3:
LETTERS OF ACKNOWLEDGEMENT