



**Open Source Zambia Developers Community**  
**Joint venture between**  
**Open Source Zambia (OSZ) and Coldreed Training (CRT)**

**An Open-source pilot initiative**

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## Introduction

Open-source Zambia (OSZ) is a group of people, enthusiastic about free/libre/open-source software (FLOSS). FLOSS is software that is sometimes available at no charge and most importantly it is software that gives freedom to view and modify the source code. It is often high quality software that (most importantly) is developed by a community rather than one company.

The main objective of the community is to bring about knowledge and awareness of FLOSS. Further to this OSZ aims to develop solutions that are specific to Zambia. The community's objective is to attain levels where information is readily accessible in sectors such as agriculture, medical records, educational records, governance, or credit records. Zambia lacks a central storage for such information; this could be due to lack of technical knowledge in the record-keeping/management, a lack of interest in embracing technology, or the fear that investing in this technology could be too costly.

OSZ is determined to bring FLOSS in the business stream and use it to solve current ICT problems being faced in Zambia.

FLOSS provides many opportunities for developing countries and Zambia is placed at an advantage to benefit from it. The social sector in Zambia has lagged behind in adapting Information and Communication Technologies (ICTs) to efficiently deliver services in various communities. Being a country that suffers greatly from the digital divide, OSZ's promotion of FLOSS arms Zambians with the tools necessary to bridge this gap cost-effectively. The nature of FLOSS and the invitation to users to participate in its growth increases people knowledge, pride, and personal accomplishment. FLOSS liberates users from being mere users but transforms to contributors of the software development process itself. Developing countries such as Zambia can boost the morale of its citizens by encouraging them to use and participate in the use, development and growth of FLOSS.

OSZ community has human resource that can be developed and harnessed to develop and support ICT projects. OSZ thrives upon the expertise of many IT professionals who are specialized in various aspect of IT. Granted, a great deal of this expertise of strongly closed source inspired.

OSZ has human resources who are fully capable of setting up Ethernet networks, wide area networks, and metropolitan area networks. The OSZ human resources are also fully capable of developing software solutions in various formats, web-based, Windows-based, and Linux-based solutions. The OSZ human resources is capable of setting up various types of servers ranging from web servers, DNS servers, DHCP servers, mail servers, authentication servers, as well as a plethora of other servers as may be required.

OSZ will undertake various projects ranging from consultancy to direct user support and software development in order to cover running costs. With a human resource crew that can deliver almost all types of IT solutions, OSZ will charge for services rendered. The cost of the services will not be exorbitant but will be much cheaper than commercial rates; costs are kept low in order to promote open source.

## **Situational Analysis**

Like many countries, Zambia's development is spurred by developments in science and technology. Zambia's development agenda has for a long time been defined by various public policies and largely driven by various government agencies under different ministries. The ministry of science and technology is responsible for policy formulation while the national council for science and technology and higher learning institutions are mainly responsible for research and often acting as policy advisor to the ministry. Implementation is normally by various institutions whose key mandate is to develop relevant human resource to meet the demands of both public and private sectors. By and large, the country's strategy is inclined towards development of relevant skills and knowledge in the use and application of science and technology tools rather than development of industries.

Zambia has a long history of using computers. Computers have been used by the large organisations, public and private sector alike (by the city councils, for example, or the mining companies.) The price of a computer is prohibitively high. The average citizen with an income of \$340 per year can afford neither computers nor software licenses. The barriers to entry into information society for Zambia are high in terms of purchasing software, hardware and building necessary human expertise to exploit modern technologies. Shared access points such as Internet cafes or Tele-centers are the common places majority of people's access to ICTs.

### ***Common Areas of ICT application in Zambia***

Information and Communication Technologies are used in quite diverse ways in Zambia. In many ways, however, the applications of computers and the Internet are either not used, or in the stage of introduction. Access to ICTs exists in the urban areas with increasing coverage and quality, but in remote areas it is either impossible or very expensive to use the full spectrum of ICT services. There is also a lack of qualified staff in all areas of ICT, which has led to high salaries and a culture of job-hopping. The lack of skilled ICT personnel has discouraged small business from investing in computers and its applications. Those businesses/organisations that do have computers use them mainly for accounting. The

Windows based solutions is by far the most popular software package among medium to large companies or organizations. Government institutions have been using computers for decades.

In the health sector for example, the main use of computers has been in administrative purposes. Preparing reports, letters and on a very low scale data collection and analysis has until recently been the application of ICT in most government institutions including the Ministry of Health. Recently, however, many government institutions are presenting themselves on the internet. In the last couple of years, particularly in the Ministry of Health, there has been a remarkable increase in ICT related initiatives. These initiatives are part of the broader ICT in the health sector and involve even the lower branches of health delivery systems such as hospitals and clinics. Telemedicine has emerged as a single most, fast spreading concept in the sector. These activities are supported by the current Health sectors policy which aims at taking quality affordable health care delivery systems closest to the people.

The provision of health services in the country is a responsibility of many actors. Many of these actors are public institutions. The ministry of health is responsible for policy direction and general regulations. A number of professional bodies regulate the conduct of health professionals such as doctors and nurses. Sourcing and distribution of health drugs to hospitals and clinic is done by quasi government institutions. The private sector is quite active in offering prescriptive drugs to patients. Other services such as hardware and software for laboratory, operations and administrative purposes are a responsibility of a combination of public and private and general community.

Health services in Zambia are largely a co-share basis. Patient accessing services are expected to contribute a certain amount. Funding for the Health sector comes from both Government and Corporation partners. Zambia does not have capacity to produce or manufacture most hardware needed in hospitals. Even software providers are almost non existent. Software especially in most health care providers is often foreign developed proprietary and very expensive. Much of the funding from government goes towards infrastructure, drugs and emoluments. Large ICT initiatives in health sector such as Telemedicine is largely funded by donors who are also responsible for providing hardware and software.

### ***Open Source in Zambia***

Until recently, Open Source was only used by few Zambian businesses, but now more increasingly educational and not-for-profit organizations are starting to use Open Source. The new developments within education sector presents a special opportunity for rapid spread of OS mainly because education institution ordinarily forms the centre for orderly and continuous development and spread of knowledge and skills in the country. In additional to all these, the recently enacted national ICT policy which emphasizes access to ICT and promotion of

alternative ICTs, has raised OS higher up on both national and institutional ICT agenda. Given the above scenario and the fact that there is yet no locally established institution with the capacity to provide the range of service and goods for the emerging OS market, any support towards the setting up of the Open Source Zambia Developers Community is a worthy investment.

## Problem Analysis

In Zambia, despite notable increase in ICT activities country wide, use of FLOSS is not widespread. The key reasons are non-availability of information on FLOSS and its potential use, and lack of local support.

Despite all the efforts by many organizations such as OSZ Zambia, Coldreed Training, Evelyn Hone College and E-brain forum to try and raise awareness on the potential benefits of OS, many Zambians are yet to be reached. Yet, however, while a number of people and an increasing number of organizations now have some general awareness of OS solutions, many of them have not fully adopted them. Reasons are numerous, but among them are, insufficient demonstrable examples from those using and benefiting from them; many still see OS solutions to be more technical than desktop or end user solutions; but by far the most common problem cited by those on the verge of 'taking a plunge', is the absence of a reliable, more visible service provider. This reason leads most to think OS solutions much as they are attractive, could leave them stranded. This is particularly of great concern to institutions and organizations whom sustainability or continuity factors is the overriding factor in choosing a solution. There are other social and cultural factors that contribute as well such as the famous or is it infamous myth about 'free things'.

Further, although many organisations in the public and civil society sectors are increasingly aware of the potential of using ICTs to improve efficiency, extend outreach and better serve their constituencies with appropriate information and communication services. When these organizations embark on using ICT, they usually start out with the familiar proprietary applications which come with the IT equipment, and for which basic user capacities exist. After using these applications for a period of time, organizations tend to run into a new set of problems, incl.:

- limited financial room for purchasing/renewing licenses for the software and thus resorting to software piracy or not updating their software;
- limitations in scalability of applications such as Microsoft's Access database software, when the amount of data records become numerous;
- inability to adapt international software to needs of local organizations;

There are a few particular cases of organizations in the Health sector and the Financial Services sector, which are currently facing scalability and local adaptation issues with proprietary software, whereby a migration to open-source based system appear appropriate. The limited FLOSS developer and support capacity available within organizations and within the country however hinder a migration and cause hesitation on the part of the organisations. It is these current practical needs that collaboration between Open Source Zambia and IICD aims to address, thereby also increasing the practical experience and capacity base of open source developers in Zambia which will assist in addressing future needs for Zambian organizations.

## **Overall Objective**

The overall objective of the collaboration is to enhance software development and adaptation capacity for open source-based information technology solutions in the existing OSZ community in Zambia, and consequently to provide effective ICT support to projects and organizations in various thematic areas such as agriculture, health, financial services, education and governance.

### ***Specific Objectives:***

1. To assist the formation of organized and dedicated sub-communities within OSZ that focus on creating and adapting appropriate software solutions for Zambian organizations;
2. To build the capacity of existing and new community members based on practical experience;
3. To develop an affordable local (Lusaka-based) connectivity model, which does not require the use of expensive internet services for developers to collaborate on software projects;
4. To create a physical space where OSZ developers and members can come to find out more information, work on collaborative development/adaptation projects, and to act as the physical/personal link between client organizations and the developers subgroups and community;
5. To document and showcase experiences and examples of the use of appropriate open source software systems in Zambia;

The collaboration between IICD and Open Source Zambia to realize the above objectives forms a sub-project under the wider mission and goals of the Open Source Zambia community.

## Activities

The project activities which will enable the realization of the above objectives are as follows:

a. Establish a secretariat.

The secretariat will be a point of first contact through which the community can be reached. The secretariat will be managed by a part time staff who will receive and send official communication on behalf of the community and the subgroups.

The secretariat will also be equipped with a small number of computers on which the project information and work-in progress can be stored and accessed.

An additional computer will be made available to allow for Open Source Zambia members to access open source applications, collaborate and communicate on national, regional and international projects and similar activities. This will contribute towards the perception that the secretariat belongs to the entire OSZ community, and is not the private property of a few individuals.

b. Capacity Assessment

The current capacities (knowledge, skills and attitudes) of existing and newly sourced members of the Open Source Community will be assessed. This serves to clearly identify which members can be involved in the immediate practical development/adaptation work, and to identify which type of capacity building activities and strategies need to take place in order to raise the general level of professional developer capacity within the community.

c. Form dedicated subgroups

Based on the current and projected (short-term) demands of client organizations in Zambia, together with the identified interest and capacities available within the community, dedicated subgroups will be formed to work on particular IT solutions. Grouping developers according to involvement with thematic sectors (e.g. health sector solutions, financial services solutions, education sector solutions) will assist with knowledge exchange among projects and client organizations, and develop a foundation of FLOSS experience and capacity to assist with similar programmes in a particular sector.

The dedicated subgroups, which are led and coordinated by experienced and professional members of the community, may include younger individuals who show interest, potential for growth, and dedication to learn from the practical projects.

d. Collaborate with Client organizations

Organize regular meetings of the subgroups/subgroup team leaders with the client organizations to assess requirements, provide feedback, assess progress and suitability of work, etc.

Where client organizations have IT professionals as part of their staff, every effort should be made to include them as collaborators in the solution development effort. This way, existing capacity within organizations will be enhanced, ownership of the developed solutions on the part of the client organizations will increase, and appropriate management and maintenance of the solutions within the organizations will be addressed.

e. Documentation and Awareness Raising

The collaboration, through the subgroups and their participating members, will document the process of development and implementation of the IT solutions. The documentation will be compiled and made available to raise awareness on the actual examples/case studies of FLOSS being used by Zambian organizations, and the challenges that may have arisen (e.g. clarity of requirements, capacity building in organizations to act as sparring partners for developers, management support, uptake within organizations, etc.)

f. Participation in Events and Presentation of Experiences

Highlight and present experiences and IT solutions to a wider set of interested stakeholders at appropriate opportunities, events etc.

## Medium Term Perspective

The OSZ project is expected to remain a Zambian owned and led initiative. This means that OSZ will continue to offer its services to the Zambian Community on a continuous basis. This raises the challenges of the both institutional growth and sustainability. In as far as growth is concerned; OSZ project must evolve into a community owned and managed initiative. In the initial stages, while funding for the project is mainly directed at ensuring OSZ deliver and support needs of the IICD-supported projects, OSZ will function under the described parameters in order to hold itself accountable to the expectations of both the projects and IICD. Later, once there is satisfaction by all parties on the delivery of primary results, the project will seeks to transform itself into a viable OSZ community programme hosted by any member organizations with a strong OS commitment and supported by community members willing to offer their services as a contribution. The OSZ project will largely remain a non-commercial venture but will offer services to the general public in order to generate some income to sustain the secretariat and meet pre-funding development costs. The structure of the OSZ will also change over time to allow for more community members to participate by way for taking up higher responsibilities in the management and operations of the OSZ.

## Risks

Establishing a paid secretariat at this stage brings with it some risks – preferable, and in line with the open source philosophy, would be a situation where regular projects are run on a voluntary basis, and that coordination structures result in an organic manner. Financial rewards, and a physical coordination space such as a secretariat, may deter community members from voluntarily contributing their time and effort to realizing joint projects and taking up leadership positions and associated responsibilities based on interest and dedication.

## Justification

However, with the current identified need for professional open-source based IT solutions and services, waiting for members to voluntarily come forward from this nascent community to work on demanding and complex projects, which require set deliverables and associated accountability, it is felt that limited financial and organizational support to ensure professionally coordinated and accountable working groups, as well as a physical space where clients can turn to, is a worthwhile investment.

It is believed that the greatest virtue of FLOSS for Zambia is the ability to reduce the required input, in terms of both money and skilled people, to deploy an IT solution. Development risk is shared in FLOSS projects. The Open Source Zambia Community, and its group of its skilled and experienced members, is well placed to practically show the value of FLOSS solutions, and thus assist in building a business case to prove the value of what Open Source professionals, and the wider community, can do.

Small-scale support in terms of contributions towards technology and a physical space to meet and confer, as well as a part-time staff who will be available to answer to enquiries and redirect information and requests to the involved subgroups of professionals, will contribute to ensuring that effective collaboration on the required IT solutions take place.

In essence, this collaboration aims to develop and demonstrate a business case for a professional and reliable FLOSS consulting business in association with OSZ, answering to clients' needs for scalable and reliable open-source based IT solutions.

## Requirements

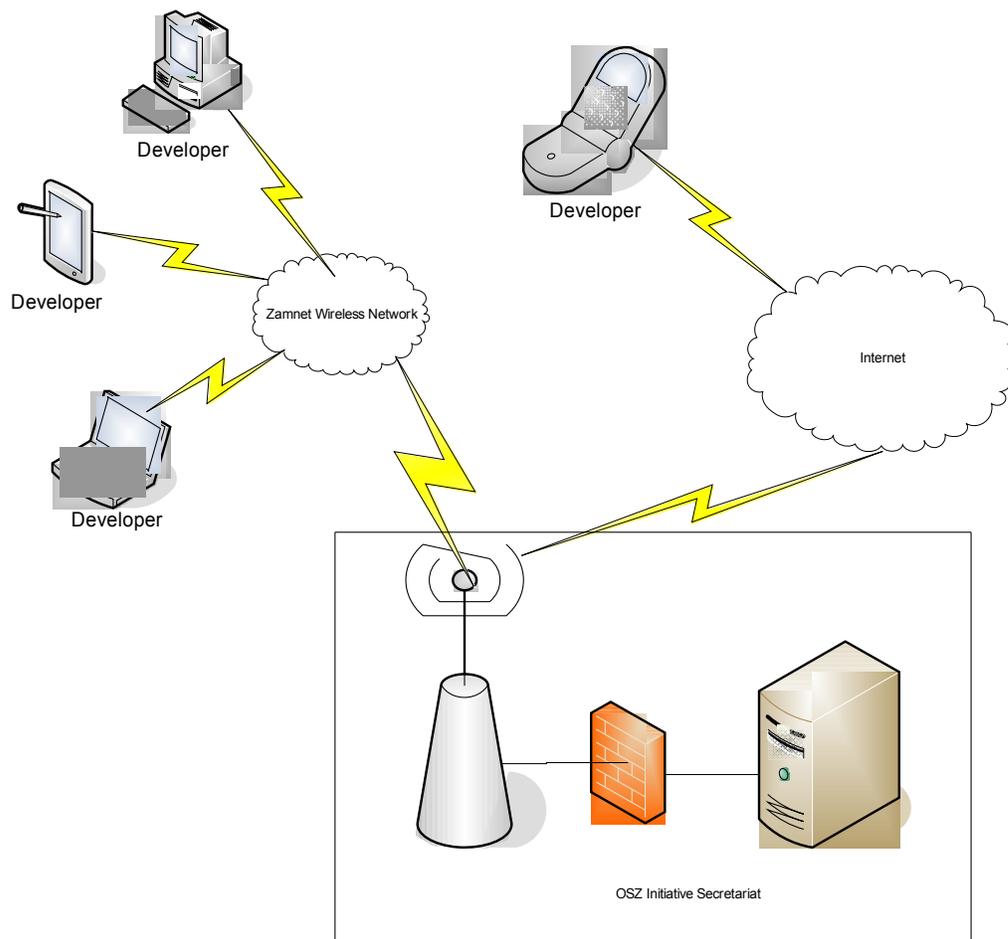
In order to meet objectives and to operate efficiently OSZ Initiative project will required the following in place:

### 1. Technology

Local Connectivity. Developer will need to communicate amongst themselves and with the secretariat. In order to reduce on cost on equipment the community has agreed with Zamnet to use their existing network to establish he OSZ Wireless Wide Area Network - WWAN. The WWAN will provide the following resources to be used by the developers and non-developers:

- a. Internet
- b. Local Instant messaging
- c. File Server
- d. Application server
- e. Mail server

The figure below shows a pictorial layout of the WWAN as proposed by Zamnet.



2. Human Resources

Part time staff (0.5 FTE) to man the secretariat and assist with communication and coordination among developer subgroups;

3. Operational Costs

Secretariat: rent and internet services;

Salary of the part time staff

**Please refer to Annex I for a detailed budget.**

## Organization and Structure

The OSZ community is open to any individual or organization and as such is not a legal entity. However, for purposes of this project, a small project team will be constituted and recognized as the project owner. The formal structure and authority by and within which various parties will associate and relate with the OSZ project team will be through a Memorandum of Understanding. A separate code of conduct and principles of association for the OSZ will be developed by the OSZ team to guide the conduct of members but also to specify the rewarding scheme for work performed under this project.

In the initial stages, the OSZ project will comprise a small project team of developers. The head of the project team will be the overall coordinator of project development and therefore responsible for the overall project results. Projects under OSZ will be managed by sub-groups consist of developers and specialists in the field the system will be designed for. Each sub-group will be coordinated by a one developer to be reporting to the OSZ Coordinator. The head of a sub-group will take responsibility for further design, coordination and deliver of sub-group outputs. The OSZ Chairperson and sub-group coordinator will attend initial meetings to develop the initial blue print to be used in the development process. The rest of the developers will be assigned specific responsibilities in accordance with project requirements.

Projects being undertaken by the community will be coordinated from the secretariat. The secretariat will be hosted by Coldreed Training. Coldreed Training has a history of promoting Open source and is well recognized for providing services to several individuals and organizations working with ICT4D. An office will be setup exclusively for OSZ operations and will be equipped with necessary facilities to facilitate smooth and continuous operations of OSZ. Coldreed Training, will therefore take full responsibility for the safety of the OSZ secretariat equipment, as well as physical availability of the secretariat to authorized OSZ project team members. Apart from providing space, Coldreed Training will also avail OSZ both legal and institutional framework for the Open Source project. In practice, Coldreed will offer administrative and institutional backing while OSZ project team will take full responsibility for negotiations, development, and delivery of client solutions.

Financial responsibility will be a joint responsibility of OSZ Zambia and Coldreed Training. Coldreed Training and OSZ will draw up the initial project budget covering all aspects of the project. Coldreed Training will open up and maintain a Bank Account exclusively for OSZ project. The signatories to the account will be CRT Director and OSZ Project Coordinator. Separate financial books will be kept by CRT to track all financial transactions regarding the project. A system will be put in place to allow other project team members to submit any request for use of project funds as specified in the financial plan.

Individual developers, who will be part of the project team, will sign Associative Contracts which along with the Memorandum of Understanding will bind them to the OSZ project.

## **Description of Services**

The services to be offered by OSZ in the initial stages of the project will be directed at IICD project partners. They will cover the following areas;

1. Adapting general FOSS to meet the specific needs of projects. This will include helping project assess their software needs, select appropriate FOSS for them, and where necessary make necessary adjustments to the software.
2. Support services – this will include a range of technical, management and operational support. OSZ will act as a support center where projects partners will be able to forward their FOSS queries. The OSZ secretariat will maintain a log of queries and schedule responses to project in the most efficient manner. OSZ will also maintain a repository of FOSS at its secretariat and this will be accessible free of charge to projects. In cases where FOSS is packaged on CD ROM, then a small charge (cost recovery only) will be levied.
3. Consultancy – OSZ will also offer FOSS related consultancy to Projects. Services such as System Investigation and Assessments, Software Evaluation, and Change Management.

Open Source Zambia will be the direct service provider to Zambian clients. Relevant documentation and contracting will be done between the client and the Open Source Zambia secretariat. In the case where the clients concern IICD partners, IICD will be a participant in the three-way dialogue, and act as an advisor to the client. IICD will endeavor to manage expectations, planning and product quality by liaising with both the client organisation and the OpenSource Zambia developer teams.

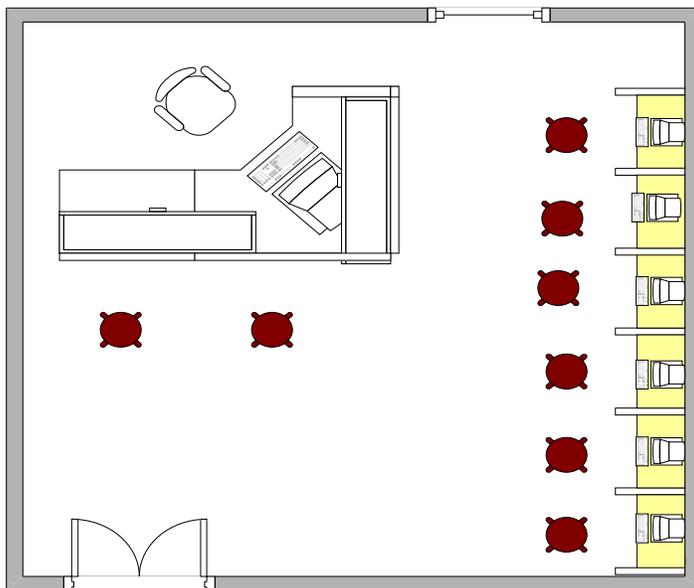
## Secretariat and Operations

The secretariat hosted within Coldreed Training will function as the physical office for the developers, their clients and the wider open source community members. The equipment and infrastructure will enable the developers to use common servers and software for collaborating on the development of the information systems, thus aiding the collaborative product development through the WWAN.

The office representative of OSZ will be the interface with the clients who will coordinate the communication between the dispersed developers and current and prospective clients.

Additionally, the equipment provided at the secretariat will host Open Source software that is relevant for Zambian individuals' and organisations' use, allowing Open Source Zambia community members to build their capacity in the use of these softwares through practical usage. Central storage will be provided for information systems under development, and a central library will be provided to avail OSIs of Open Source Operating Systems and software applications.

The set-up of the secretariat is envisaged as in the diagram below:



## Financial Flows:

The income generated by the production and support of appropriate information systems for Zambian organisations will be reinvested in growing the Open Source Community in Zambia and its developer base. As the donor support will only be available for the first year, a percentage of the income needs to be set aside to cover administrative and recurring costs, including fees for developers. Additionally, OSZ will set aside part of the fees to invest in extension and maintenance of the development/collaboration network, to bring new and promising developers on board and to be able to acquire the needed access points and other hardware.

Out of the revenue coming into OZS, it is expected that

- 20% will go to administration costs of the secretariat and the activities,
- 60% will go to the activity cost (incl. Developers fees)
- 20% will go to re-investments in growing OSZ's developer base;

## Human Resources

OSZ has human resources who are fully capable of setting up Ethernet networks, wide area networks, and metropolitan area networks. The OSZ human resources are also fully capable of developing software solutions in various formats, web-based, Windows-based, and Linux-based solutions. The OSZ human resources are capable of setting up various types of servers ranging from web servers, DNS servers, DHCP servers, mail servers, authentication servers, as well as a plethora of other services as may be required.

The key OSZ staff that will be involved with the development work, have gained valuable practical experience and expertise in the private sector, allowing for valuable transfer of knowledge between new FLOSS developments and the Zambian private sector. The key human resources involved are reputable professionals, with full or part time jobs with respected employers. As the OSZ development work is not their main source of income, the staff time made available to the development work can be counted on as based on honest and genuine interest to deliver quality FLOSS products and services.

The key OSZ human resources that will be available to assist with the development and adaptation of the required information systems for client organisations are:

Name	Expertise area	Sector experience (e.g. Health, Microfinance, etc.)	Relevant previous clients	Est. no. of hours available per week
David Phiri	Software Design	Finance and Health	JICA/MOH	10 hours
Kasenga Kapansa	Software Design and Databases/Network Specialist	Finance, Governance, social sectors		10 hours
Teddy Nyambe	Software Design and Integration/ Database Design	Finance, Governance, Health	COMESA,GRZ, Various Banks, UNZA	10 hours
Fraxon Lubingu	Software Design and Integration/Database Design	Business	KCM, Various Banks	10 hours
Chigikwa Mweene	Database Designer	Business		8 hours
Michael Mkandawire	Network Specialist	Business		8 hours
Michael Chileshe	Network Specialist	Business	Various Banks	10 hours



Additionally, the OSZ production/developers unit will make use of existing back office staff capacity at the host organisation, such as the accountant, technical/training support staff, etc. This will allow for the cross-fertilisation of knowledge and skills, from the practical technical experiences of the OSZ developers into ICT(4D) training work, and from the training clientele into the developers unit, providing a better understanding of the information systems and FLOSS capacity needs among Zambian organisations that utilise ICTs.

## Time Planning

The investments for the secretariat for the Open Source Developers Community will take place in two phases. The first phase of installments will enable the establishment of the secretariat and infrastructure, especially as relates to ICT equipment and the first months of running costs (rent).

The remaining installments will cover the funds required to operationalise the secretariat, especially as relates to furniture and communication costs.

It is expected that acquisition of defined ICT equipment will commence in December 2007 and continue in the first two months of 2008, enabling the technical start-up of operations by beginning of 2008.

Liaising with clients will continue and become more formalized through the secretariat as of the beginning of 2008.

The IICD start-up support for the Open Source Developers Community concerns the investment costs for equipment and infrastructure, and a significant contribution towards the running costs for the first year of operations.



## **Conclusion**

Developing capacity in software development and integration is key to improving quality of life to citizens. By employing ICTs in the provision of good and services, service providers are guaranteed efficient and effective processes of high quality in the delivery of services. The OSZ community is best placed to provide skilled human resource that can be harnessed to provide sustainable development in various sectors of the country.

## Annex I – Financial Budget

<b>Open source Zambia Developers Community</b>			
<b>Budget</b>			
	<b>Euro</b>		
<b>Description</b>	<b>Cost per unit</b>	<b>No of units</b>	<b>Total Cost</b>
<b>Technology Requirements</b>			
PCs	1000	3	3000
Laptop	1300	1	1300
Printer (Laser) (Zkw 1,600,00)	320	1	320
Wireless Intranet (Zamnet Rabbits)	310	6	1860
Local Instant messaging	0	0	0
High-End Server	3800	1	3800
External Drive (Zkw 650,000)	130	2	260
Flash Disk	50	6	300
Antenna at Secretariat	100	1	100
<b>Subtotal Total Technology</b>			<b>10940</b>
<b>Other investment Costs</b>			
Front desk & Chair (Zkw 2,000,000)			380
2 visitors chairs (	55	2	110
Carpenters for cubicles			300
Electrical Socket	50	4	200
Extension cables	30	2	100
Locks	50	1	50
Power stabilizers (2000VA = Zkw1,000,000))	200	2	400
Filing Cabinet	160	1	160
<b>Sub Total Other Investment Costs</b>			<b>1700</b>
<b>Operational Costs</b>			Annual
Office Coordinator (50%)	400	9	3600
Facilitation for OSZ team	0	0	0
Rent & Utilities Contribution	400	9	3600
Internet LAN / Wireless	0	0	0
Telephone / Fax	20	9	180
Telephone (Mobile)	75	9	675
Office Supplies	100	9	900
Cartridge	125	4	500
Bank Account Maintenance	45	9	405
Sub Total			9860
<b>Total Operational Costs</b>			<b>9860</b>
<b>Grand Total</b>			<b>22500</b>