INTERNATIONAL TELECOMMUNICATION UNION

Establishment of Regional FOSS Centers in the Arab World

DRAFT PROPOSAL

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1 Introduction

1.1 Background

The Arab world comprises the 22 countries and territories of the *Arab League* stretching from the Atlantic Ocean in the west to the Arabian Sea in the east, and from the Mediterranean Sea in the north to the Horn of Africa and the Indian Ocean in the southeast. It has an area of about 13.3 million square kilometers, and a combined population of around 360 million people, with over half under 25 years of age[1]. These 22 Arab countries are: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen (*Illustration 1*).
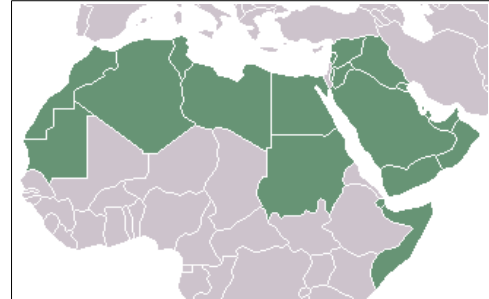

Illustration 1: Map of the Arab world

The Arab region has shown rapid development of ICTs, particularly in the area of mobile telephony and Internet penetration. While the world Internet penetration is estimated at 34.3% (North America 78.6%, Europe 63.2%), an estimated average of about 30.5% of the Arab population use the Internet, a relatively low rate compared to developed regions, with Qatar, Bahrain, and UAE leading with over 70 percent, and Somalia, Mauritania, and Iraq lagging behind with less than 5 percent[2] (*Table 1*). Internet penetration is a strong indication of the country's use of ICT in general, and provides an indication on the impact of the country's adoption of FOSS in national ICT strategies.

The ITU World Telecommunications Development Conference[3] (WTDC-10), which was held in Hyderabad, India in May 2010 identified FOSS as a priority in the Arab region by adopting it as one of the Arab regional initiatives.

The *World Summit on the Information Society* (WSIS), which was held in Geneva in December 2003 and in Tunis in November 2005, issued the "*Tunis Commitment*"[4] that proclaims in one of its commitments

> Our conviction is that governments, the private sector, civil society, the scientific and academic community, and users can utilize various technologies and licensing models, including those developed under proprietary schemes and those developed under open-source and free modalities, in accordance with their interests and with the need to have reliable services and implement effective programmes for their people. Taking into account the importance of proprietary software in the markets of the countries, we reiterate the need to encourage and foster collaborative development, interoperative platforms and free and open-source software, in ways that reflect the possibilities of different software models, notably for education, science and digital inclusion programmes.

Free and Open Source Software (FOSS) has recently gained attention and support in the Arab region. Governments in several Arab countries are developing national strategies for the adoption of FOSS, and have put in place initiatives to support its use in government agencies, academia, and the private sector. While various Arab countries have been recently witnessing political and security instability, initiatives on FOSS in those countries are dormant or never had the chance to initiate. However, groups and associations in those countries have been always active and ahead of any

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1   "U.S. & World Population Clocks", 2012 (http://www.census.gov/popclock/)
2   ICT Facts and Figures, Individuals using the Internet,
     http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2012/Individuals_Internet_2000-2011.xls
3   http://www.itu.int/ITU-D/conferences/wtdc/2010/
4   The "Tunis Commitment", WSIS-05/TUNIS/DOC/7, Second Phase of the WSIS (16-18 November 2005, Tunis)
     available at http://www.itu.int/wsis/documents/doc_multi.asp?lang=en&id=2266|0

government initiative. More details on the current state of FOSS in the Arab world is developed in the next section.

1.2 Objective

The objective of this document is to put in place a strategy and a cost benefit analysis for the establishment of FOSS network of regional Centers of Excellence (CoE) for the Arab world. Particularly, this document provides

- a background description of existing FOSS activities in the Arab region.

- a cost benefit analysis for the establishment of the network of FOSS regional CoE for the Arab world.

- an appropriate administrative coordination structure for the network and the working method between the centers.

- a briefing on the feasibility and costs of the project and suggestions on funding mechanisms.

Table 1: Internet Penetration in the Arab World [2]

Country	Population	Percentage of Penetration
Egypt	83,661,000	38.69%
Algeria	37,900,000	14.00%
Iraq	33,330,000	5.00%
Morocco	32,917,100	51.00%
Sudan	30,894,000	19.00%
Saudi Arabia	29,195,895	47.50%
Yemen	24,527,000	14.91%
Syria	21,377,000	22.50%
Tunisia	10,777,500	39.10%
Somalia	10,053,000	1.25%
United Arab Emirates	8,264,070	70.00%
Libya	6,506,000	17.00%
Jordan	6,304,600	34.90%
Lebanon	4,324,000	52.00%
Palestine	4,293,313	41.08%
Oman	3,831,553	68.00%
Kuwait	3,582,054	74.20%
Mauritania	3,461,041	4.50%
Qatar	1,944,953	86.20%
Bahrain	1,234,571	77.00%
Djibouti	818,159	7.00%
Comoros	724,300	5.50%
359.921.109 (total)		**30.54%** (average)

Four FOSS CoEs are envisioned to cover four sub-regions of the full Arab landscape, according to the following two possible subdivisions: (*Illustration 2 and Illustration 3*)
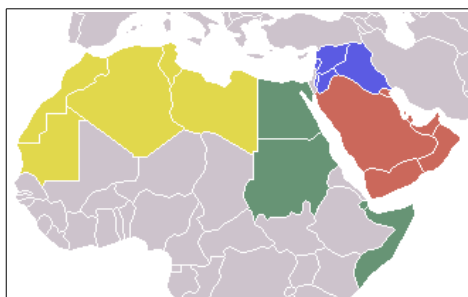
Option 1:

- Region A: *The Maghreb region*. It covers Libya, Tunisia, Algeria, Morocco, and Mauritania.

- Region B: *The Middle and Southern region*. It covers Egypt, Sudan, Somalia, Djibouti, and Comoros.

- Region C: *The Sham/Northern region*. It covers Palestine, Jordan, Lebanon, Syria, and Iraq.
- Region D: *The Arabian Gulf region*. It covers Oman, Yemen, Saudi Arabia, United Arab Emirates, Qatar, Bahrain, and Kuwait.
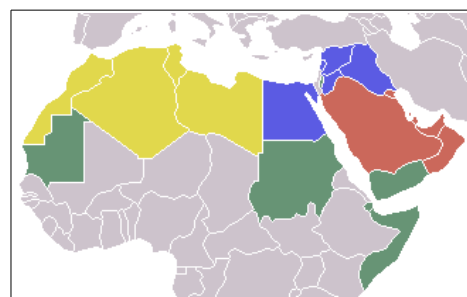
Option 2:

- Region A: *The Maghreb region*. It covers Libya, Tunisia, Algeria, and Morocco.
- Region B: *The Mashreq region*. It covers Egypt, Jordan, Lebanon, Syria, and Iraq.
- Region C: *The Gulf Cooperation Council Countries*. It covers Oman, Saudi Arabia, United Arab Emirates, Qatar, Bahrain, and Kuwait.
- Region D: *The Least-Developed Countries (LDC)*. It covers Yemen, Sudan, Djibouti, Somalia, Mauritania, Palestine, and Comoros.

Illustration 2: Four FOSS Regional CoEs Option 1

Illustration 3: Four FOSS Regional CoEs Option 2

1.3 What is FOSS anyways?

Free and open-source software (F/OSS or FOSS) or free/libre/open-source software (FLOSS) is software that it is liberally licensed so as to grant its users the right to use, copy, study, change, and improve, and redistribute its design through the availability of its source code. This model of software development and licensing has recently gained increasing momentum, acceptance, and support due to its potential benefits on social, economical, and educational development, especially in developing countries.

FOSS is an inclusive term that covers both free software and open-source software, which despite describing similar development models, have differing cultures and philosophies. Free software focuses on the fundamental freedoms it gives to users, whereas open source software focuses on the perceived strengths of its peer-to-peer development model. FOSS is a term that can be used without particular bias towards either political approach.[5]

Richard Stallman, founder of the GNU[6] project and president of the Free Software Foundation (FSF)[7], defines four essentials freedoms users of software should have:

- The freedom to run the program, for any purpose
- The freedom to study how the program works, and change it
- The freedom to redistribute copies so you can help others

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5   http://en.wikipedia.org/wiki/Free_and_open-source_software
6   https://www.gnu.org/
7   http://www.fsf.org/

- The freedom to distribute copies of your modified versions to others – giving the whole community a chance to benefit from your changes

Adopting FOSS in national ICT strategies, at corporate levels in the private sector, in academia, or at an individual level has many apparent benefits:

- **Freedom**. The rights and freedoms of FOSS licenses gives its users greater control over the tools they come to depend on, and provides the ability of its users to localize software and customize it to local needs. (The four freedoms of Richard Stallman.)

- **Cost**. FOSS is a "public good". It is developed and supported by a network of "volunteers", not-for-profit foundations, and the civil society. As a result, the total cost of ownership of FOSS is less than that of enterprise developed proprietary software. This economical and developmental factor is an important element that has driven developing nations to adopt FOSS at a large scale.

- **Innovation, Learning, and Knowledge**. FOSS drives innovation and learning, and brings the knowledge component, through local R&D, to countries that have been excluded from such activities. In this regard, FOSS becomes an empowerment tool with the potential of turning consumers into innovators, producers and contributors. It helps create the foundation for a local technology that is "global belonging but home grown", portable, has very small technology transfer associated costs and provides wider choice to consumers.

- **Security**. Hacking attempts on servers and personal computers are frequent. Malware, trojans and viruses are commonplace. No operating system or software is 100% immune from security vulnerabilities. However, the FOSS model of development has proved to delivers superior security performance. When a vulnerability is identified, it is often fixed in a matter of hours; proprietary software vendors sometimes take months to find a solution or even announce the existence of such a problem to customers.

- **Quality**. Reliable independent reports researching and studying FOSS finds its quality significantly better than proprietary software. The FOSS development model itself relies on constant peer review of the code and produces a highly modular design which makes it easier to read and fix. Releases tend to occur when the software is considered ready for use, not on a date set by marketing constraints.

- **Standards**. FOSS has largely defined the standards in use in ICT and on the internet today. Open standards allow products from different vendors to work together and also prevent businesses from getting "tied" to a single product from a single vendor. This is becoming increasingly important, especially with regards to document storage and archival. The ODF (Open Document Format), for instance, is an OSI approved standard and allows any vendor to use a common document format; meaning files will always be readable without having to pay for the latest Office application upgrade for example.

- **Flexibility**. FOSS is transparent. Its users can either customize it themselves or hire someone to do it for them. They are also free (and encouraged) to contribute their modifications back to the community so that the software continues to improve.

- **Support**. Access to good support on FOSS is largely available for free via mailing lists, forums and IRC. This support is often provided by the same people that wrote the original code.

2 Background Analysis of FOSS in the Arab World

The landscape of Free and Open Source Software in the Arab world has been growing and gaining

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much attention in the past several years. However, in comparison with other developing nations, such as South Africa and Brazil, the Arab world is falling behind in developing government-level strategies to adopt FOSS is the administration and academia. Many reasons contribute to the limitations of FOSS adoption and wide-spread acceptance:

- The Arab world has a low average of Internet penetration estimated at about 30% (*Table 1*) compared to a world-wide 35% average – a high 78.6% in North America, 63.2% in Europe, and 42.9% in Latin America[2].

- The educational system in various Arab countries have not adapted its curricula to the wide-spread use of ICT in the classroom, but rather considers computing as a secondary topic and is often overlooked in favor of other topics considered more important for our society.

- The language barrier in some countries is a limiting factor to software development learning as it largely depends on the English language.

- The Arab software market is dominated by "crack-ware". "Piracy" of proprietary software is a very common practice and usually available for the price of its physical media (CD/DVD), and sold in shops, Internet cafes, or even from individuals dragging a cart on the streets and crossroads! This has become a cultural issue: "Why pay when you can get it for free, and why bother to learn something new when the available solution is almost free as well."

- There is an apparent lack of awareness on the viability and impact of FOSS to social and economical development, as well as to education.

- The total cost of ownership (TCO) of FOSS solutions is believed to be higher than that of proprietary alternatives due to

  - Lack of expertise: A small fraction of computer professionals are experts in FOSS, while the majority of expertise revolve around proprietary software. As a result, it has become difficult and costly to maintain and operate an FOSS-based solution. In general, it is easier to find an "*MS Windows*" administrator rather than a GNU/Linux administrator, and it is certainly less expensive to hire a *.NET* developer rather than a Java developer.

  - Risk Costs: Operating on FOSS has a higher risk due to the lack of expertise and the lack of local FOSS communities of development and support. The absence of such communities indicates the absence of any contribution to source code and customization of software. This implies that the Arab world is losing one of the main reasons of FOSS existence: adding features, customizing, and modifying the source code. The risk of FOSS project failure becomes higher in the absence of maintenance, support, customization, and upgradability.

- Software giants or their affiliates in the Arab world exercise political pressure on government agencies and companies in the private sector(e.g. ISPs) who use FOSS solutions to switch to their proprietary alternatives.

- Government agencies do not value FOSS solutions and trust more proprietary alternatives offered with internationally renowned training programs, certification, and support.

Despite these limiting factors, there has been a considerable amount of effort to establish initiatives to promote and support FOSS in the public sector and the civil society. Regional and national initiatives, as well as "*Linux User Groups*" (LUG) and "*Open Source Communities*" have seen light and have undertaken strategies and actions to promote, support, and develop FOSS applications.

However, most of these initiatives have had a short lifetime – an average of two to three years. Existing initiatives have had limited impact on the society, and they operate in isolation, with no proper planning for growth or cooperation or partnership with other initiatives. These problems are primarily due to the lack of proper support from the government or the private sector.

The following provides a list of known initiatives.

2.1 Regional initiatives and projects

2.1.1 Tasharok

Tasharok (http://tasharok.net) is the "Arabic Network for Free Software and Open Sources". It is a project by ALECSO (http://alecso.org.tn/), the Arab League Educational, Cultural, and Scientific Organization in Tunis. Tasharok strives to build an online network and a guide of free and open source software projects and ventures. Tasharok aims to spread the Software Freedom and the Open Source Software philosophies in the Arab world, and to instigate efforts of researchers and free software developers and supporters. Tasharok intends to monitor such activities and projects in one location, and to coordinate efforts and exchange experiences.

The plan to initiate Tasharok was agreed upon in a meeting of experts in ALECSO, Tunis in January 2013, but an official date for launching the project has not been defined yet, as sources of funding the project has yet to be identified.

2.1.2 Ma3bar

Ma3bar (http://ma3bar.org) is the Arab Support Center for Free and Open Source Software. Since its inception in 2009 by UNDP-ICTDAR, UNESCO, and the University of Balamand, Lebanon, the center strives to disseminate free and open source software as a philosophy and culture in academia and Arab societies. Ma3bar has three main activities: Awareness, training, and FOSS development.

Ma3bar, hosted at the University of Balamand, Lebanon, is currently dormant and undertaking restructuring.

2.1.3 Other

- **Linux Arab Community** (http://linuxac.org/) – an online Arabic portal that provides discussion forums, learning material, and technical support.

- **Arabic Open Source Operating System** (http://www.tagorg.com/ServicesGroup.aspx?id=450) – a fully Arabized Linux Operating System that addresses the needs of citizens in Arabic speaking countries, emphasizing History, language, culture, traditions, and philosophy . Supported by the Talal Abu-Ghazaleh Organization (http://tagorg.com/).

- **Ojuba** (أعجوبة) (http://ojuba.org/) – provides an Arabic portal to foster free and open source software and related free intellectual computing products and Arabic digital content. One of the major contributions of this initiative is the release of a fully Arabized Linux distribution that is available for download from its portal.

- **Miftaah** (http://rabat.unesco.org/article.php3?id_article=1125) – a USB key comprising a set of free and open source software (FOSS) for Arabic users. Its second version contains applications frequently used in technical and science education, such as physics, chemistry, computer science, as well as tools for image processing and entertainment. The development of Miftaah 2 is organized by UNESCO's Office in Rabat with the financial support from ISESCO and in cooperation with various partners of higher education and scientific research centers in Algeria, Morocco, and France.

- **Arabic Open CD** (http://arabicopencd.org/) – a collection of free and open source software in Arabic that includes Arabized office utilities, programming, and Internet, graphics. Supported by KuwaitNET (http://kuwaitnet.net/)

- **Arab Eyes** (http://arabeyes.org/) – a Meta project that is aimed at fully supporting the Arabic language in the Unix/Linux environment.

- **Arab Techies** (http://arabtechies.net/)

- **The Initiative for an Open Arab Internet** (http://openarab.net/)

- **Arabic FOSS blog** (http://arabicfoss.blogspot.com/)

- **Open Source 4 Arab** (http://www.opensource4arab.com/)

2.2 National initiatives

Several Arab countries have initiated national initiatives in the direction of making efforts for increasing the acceptance of FOSS at a national level. A list of known initiatives is provided below.

- **Oman**: *National Free and Open source Initiative of Oman* (http://fossc-oman.net/) supported by the *Information Technology Authority* (ITA) (http://ita.gov.om/).

- **Saudi Arabia**: The *National Program for Free and Open Source Software Technology* (NPFOSST – Motah) (http://motah.org.sa/) supported by *King Abdulaziz City for Science and Technology* (KACST) (http://kacst.edu.sa/).

- **Tunisia**: The *Open Source Portal* (http://opensource.tn/) at the *Ministry of Information and Communication Technologies*, which has put in place a "National Open Source Plan" (http://opensource.tn/en/open-source/opensourceintunisia/national-plan/).

2.3 Organizations and user groups

FOSS organizations, associations, foundations, societies, clubs, and GNU/Linux user groups are numerous in the Arab civil societies. Some of them are active and organizing activities, but others are dormant. Below is a list of the known organizations.

- **Algeria**
  - Open Source DZ (http://opendz.tuxfamily.org/)
  - Algerian group for translating and programming scientific, technical and engineering open source applications (https://launchpad.net/~algeriatul)
  - Ubuntu Algeria (http://ubuntu-algerie.org/)

- **Bahrain**
  - Bahrain Linux User Group (http://linuxbahrain.com/)

- **Egypt**
  - Egyptian GNU/Linux User Group (http://eglug.org/)
  - Egypt Open Source Association
  - Ubuntu Egypt (http://ubuntu-eg.org/)

- **Jordan**
  - Jordan Open Source Association (http://jordanopensource.org/)
  - Jordan Linux Users Group (http://www.jolug.org/)
  - Ubuntu Jordan Local Community Team (http://wiki.ubuntu.com/JordanTeam/)

- **Kuwait**
  - Kuwait Open Source Community (http://oskw.org/)
  - Kuwait Linux User Group (http://www.q8linux.net/)

- **Lebanon**
  - Lebanese GNU/Linux Users Group (http://www.leglug.org/)
  - Free Libre Open Source Lebanese Movement (http://oslm.cofares.net/)
  - Ubuntu Lebanon Team (http://wiki.ubuntu.com/LebanonTeam/)
- **Libya**
  - Techno Libya (http://technolibya.com/)
- **Morocco**
  - GNU Linux Maroc (http://linux-maroc.org/)
  - Ubuntu Moroccan User Community (https://wiki.ubuntu.com/MoroccanTeam/)
- **Palestine**
  - Palestinian Open Source Community (http://www.opensource.ps)
  - Palestine Free Software Foundation (http://fsfp.ps/)
  - Linux Users Group in Palestine (http://www.plug.ps/)
- **Qatar**
  - QGLUG Qatar GNU/Linux Users Group (http://qglug.org/)
  - Ubuntu Qatari Local Community Team (http://wiki.ubuntu.com/QatariTeam/)
- **Saudi Arabia**
  - Saudi Computer Society (http://www.computer.org.sa/)
  - Vstoria (http://vstoria.com/)
- **Tunisia**
  - Digital Free Software Association (http://dfsa.tuxfamily.org)
  - Central Club of young scientists of Tunisia (http://jeunescience.org/)
  - Internet and Multimedia Tunisian Society (http://atim.org.tn/)
  - Ubuntu Tunisian Local Community Team (http://wiki.ubuntu.com/TunisianTeam/)
- **United Arab Emirates**
  - Linux-Dubai (http://www.linux-dubai.com/)
  - UAE Linux User Group (http://goldensun.com/linux/linuxpress.html)
- **Yemen**
  - Yemeni Free & Open Source Software Association (http://www.linuxarabia.org/)

3 Establishing a Network of Regional FOSS CoEs

3.1 Purpose

Establishing a Network of Regional FOSS Centers of Excellence in the Arab world has apparent developmental and economical advantages. The purpose of this network is to coordinate the following activities:

- **E-Strategies**. Help governments develop and implement comprehensive, forward looking and sustainable e-strategies that support the use and development of FOSS. The Network, in coordination with the private sector and the civil society, and in dialogue with governments, will have an important consultative role to play in devising national e-strategies that

encourage public institutions to adopt FOSS alternatives in the academia and the administration. More specifically, this activity aims to

- ○ work with Government agencies to adopt FOSS and use them to establish e-government systems to communicate with the citizens and businesses;
- ○ ensure that proper consideration of FOSS solutions is provided in the Government procurement activities, and that FOSS solutions are fairly considered alongside proprietary software solutions in making procurement decisions;
- ○ strengthen skills, experiences, and capabilities of Government Agencies in using FOSS systems;
- ○ implement a pilot project at one or more public agencies in implementing and using FOSS systems.

- **Awareness**. Raise awareness at the government and business levels on the potential and viability of FOSS solutions and applications as solid alternatives to proprietary software. Awareness campaigns targets ICT decision makers and ICT focal persons of various public and private institutions:
  - ○ government agencies and the public sector, including central and local government departments, municipalities, military forces, and police bodies
  - ○ the private sector and non-government organizations
  - ○ public and private educational institutions (universities, colleges, secondary schools, primary schools, scientific and research centers, etc.)
  - ○ the society in general, through civil organizations, clubs, communities in towns and villages, and special interest groups
  - ○ public libraries, cultural centers, museums, and post offices
  - ○ health centers and hospitals

  Awareness training sessions, workshops, and conferences should focus on:
  - ○ Business models based on FOSS and the associated opportunities in developing the Arab ICT economy
  - ○ Access of poorer communities to ICT and the related advantages
  - ○ Legal and license issues related to the nature of FOSS; i.e. the freedom to use the software for any purpose, to access, study and make changes to the source code, and to redistribute the modified versions
  - ○ Viable alternatives available in FOSS and how to migrate from existing expensive proprietary software to FOSS alternatives with much lower total cost of ownership
  - ○ Organization of FOSS development and distribution within a FOSS community
  - ○ The innovation and educational benefits of FOSS

- **Training**. Training is intended for ICT focal persons of various private and public institutions, ministries, academic bodies, professional associations, and chambers of commerce throughout the Arab world. In addition to the awareness sessions proposed above, the training sessions shall focus on
  - ○ the wide-spread GNU/Linux operating system – a highly stable and secure operating system used by millions of users and enterprises worldwide;
  - ○ the Document Foundation LibreOffice – a modern FOSS productivity suite for word processing, spreadsheets, presentations, and more;
  - ○ GIMP (GNU Image Manipulation Program) – a FOSS application for image retouching

and editing, free-form drawing, resizing, cropping, photo-montages, converting between different image formats, and more specialized tasks;

- Administration and development of web content management systems, such as Drupal, Wordpress, and Joomla;

- The FOSS development model and methodologies, including the installation of FOSS projects, FOSS licensing models, source code management, version control, and distribution.

- **Education and curricula development**. This activity entails the development of educational and learning resources, as well as recommendations to adapt, where possible, the traditional teaching of computing using proprietary software to include FOSS counterparts. These resources will be available as online guides and booklets, and will be distributed in schools, universities, research centers, and the community in general.

- **Research and Development**. This activity aims at defining a framework for building a network of FOSS developers and researchers and providing the proper support for them. Groups of FOSS developers will be brought together, either virtually online, or physically in workshops to discuss and showcase their innovations, and demonstrate their projects in a competitive and collaborative environment.

- **Technology Centers**. Building a technology center aims at constructing a technological pole and an innovation center that hosts FOSS tools and applications, provides download and support services as well as learning and training services. This center will also host R&D activities, software testing, debugging, and bug reporting. The technology enter comprises a data center of servers with a permanent Internet connectivity.

- **Entrepreneurship**. This activity supports the creation of business start-up incubation facilities to foster innovation, creativity, and entrepreneurship among FOSS developers, graduating students, bloggers, and young professionals to achieve their goals in building their FOSS projects to a higher level of technical excellence and professionalism.

- **Online community**. This activity aims at maintaining a web portal and animating its online community. It is intended as an interactive forum on the Internet that presents a complete guide for Arab parties interested in FOSS. It monitors all activities and projects in one place, reaching to coordinating efforts and exchanging experiences. The main purpose of the online community is envisaged as follows:

  - Identifying Arabic FOSS projects and setting up a guide of these projects, their developers and supporting organisms;

  - Monitoring and following up news of related Arabic projects;

  - Enabling community members from exchanging information and enriching the site of the Network, and participating in discussion forums by engaging them in debates on current topics.

3.2 Coordination Framework

The establishment of a network of regional FOSS centers of excellence dictates the need to formulate an effective governance structure. The proposed structure is a framework of coordination between regional centers supervised by a steering committee, and supported by an advisory board. This structure is depicted in Illustration 4.

The role of the steering committee is instrumental in providing guidance and direction, to the Network, and has a duration of one year from the start of operation. An advisory board supports the steering committee by providing strategic guidance and advice to its members. At the end of the

first year of operation, and after assessing the Network sustainability and the proper coordination structure, a decision will be taken on the need to extend or terminate the steering committee.

Each regional CoE of the Network is governed by a coordinator, and has focal points to manage the various intended activities. The roles of the coordinators and the focal points are briefly described next.

3.2.1 Steering Committee

The steering committee is a group of individuals responsible for general operating policy, procedures, and related matters affecting the operation of the Network. It is a high-level decision-making body that provides guidance, direction, and control to the Network. It may have appointed members from ITU, governments, academia, and the civil society. The regional coordinators are ex-officio members who report to the steering committee. The steering committee has a lifetime of one year, after which the Network is guaranteed self-sustainable and properly governed.

3.2.2 Advisory Board

The advisory board is a group of individuals providing strategic guidance and advice to the members of the Steering Committee. Members of this board includes key local or international figures in FOSS, and representatives of enterprises, governments, academia, and the civil society.

3.2.3 Regional CoE Coordinator

The regional CoE coordinator is an executive person responsible for the operation of the CoE, and reports to the Steering Committee. Duties include: management of daily operations of the CoE, cash flow monitoring and guaranteeing revenues, coordination with peer CoE coordinators, setting-up and follow-up on the implementation of a plan of action for capacity building, R&D, awareness, and the operation of the Technology Center and Entrepreneurship.
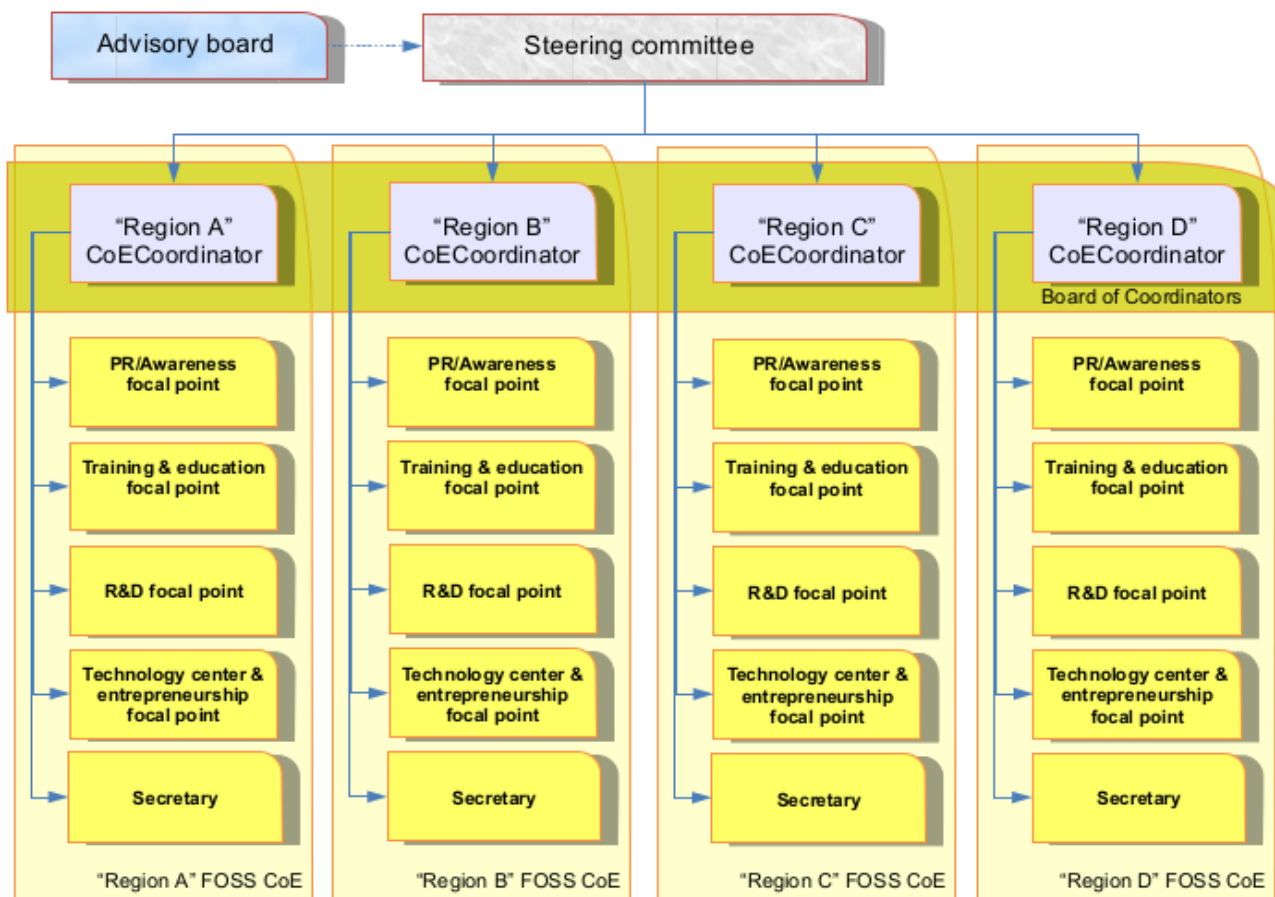
Illustration 4: Coordination framework of the network of regional CoEs

3.2.4 Public Relations and Awareness Focal Point

The Public Relations and Awareness Focal Point will use all forms of media and communication to build, maintain and manage the reputation of the regional CoE, and gain understanding and support as well as to influence opinion about FOSS. He/she will coordinate activities to raise awareness on the potential and viability of FOSS solutions and applications as solid alternatives to proprietary software. He/she will coordinate with peer Public Relations and Awareness Focal Points in other regional CoEs.

3.2.5 Training and Education Focal Point

The Training and Education Focal Point will coordinate capacity building activities, including technical training courses and sessions, delivered traditionally in a classroom or virtually online. He/she acts as a liaison officer with the academic sector to develop FOSS-related material, courses, programs, and curricula. He/she will coordinate with peer Training and Education Focal Points in other regional CoEs.

3.2.6 R&D Focal Point

The R&D Focal Point will work closely with software development communities, research centers and researchers, FOSS developers and enthusiasts to support their activities on software development, debugging, customizing, upgrading, and testing. The R&D Focal Point will identify priorities for these activities – digital Arabic content, Arabic language processing, localization, etc. He/she will coordinate with peer R&D Focal Points in other regional CoEs.

3.2.7 Technology Center & Entrepreneurship Focal Point

The Technology Center & Entrepreneurship Focal Point is responsible for the establishment and operation of two independent, yet integrated entities: A Technology Center and an Entrepreneurship and business start-up incubator.

The Technology Center will represent a main FOSS hub operating on powerful computing machines that run portal integration software, knowledge/information repository, FOSS applications, products, and development projects on a cloud configuration, and FOSS Wikis. The Technology Center will support all other activities of the center, namely R&D, entrepreneurship and business incubation, training, and awareness campaigns. The Focal Point of the center will coordinate with peer Focal Points to setup hardware/software infrastructures for a diversified structure for the Technology Center and for a unified and coordinated connectivity setup. He/she will also be responsible for setting-up, hosting, and managing a web portal that maintains a permanent web presence of the Network and the activities of the regional CoEs.

The entrepreneurship and business start-up incubator is a technology park developed around the technology center. The objective is to foster innovation, creativity, and entrepreneurship among FOSS developers, graduating students, bloggers, and young professionals to achieve their goals in building their FOSS projects to a higher level of technical excellence and professionalism. The center will provide office space and the infrastructure support needed by entrepreneurs, including technical advise and training, business planning, communications, and the FOSS ecosystem and marketing strategies.

3.2.8 Secretary

The Secretary will support the daily operation of the CoE in its various activities. His/her role consists of supporting the center using a variety of project management, financial management, communication, and organizational skills.

3.3 Cost-Benefit Analysis

The cost-benefit analysis (CBA) presented in this section supports the desirability of establishing the Network of Regional FOSS CoEs. *Table 2* shows a matrix of the cash flow for five years and the external costs and benefits for one center. The following notes are relevant.

- The total capital and operating cost of one center of excellence is averaging nearly one million US dollars per year.

- The major source of revenues is the donations and "in-kind" contributions, with only about 15% average revenues generated from the activities of the center (training & education, business incubation, and consulting and support)

- The external benefits and costs are projected figures that are not based on any real analysis of present economical or developmental national values of any Arab country. These figures remain to be verified in the course of operation of each center during the five year period. Such verification requires a market analysis on the impact of the center activities in its region. This market analysis should be conducted yearly starting the end of the second year to evaluate the impact of the center on economical, educational, social, and developmental benefits and costs.

- The Net Benefits of 162 million dollars is calculated simply as the sum of the yearly net benefits.

- The Net Present Value (NPV) of the series of cash flows is calculates as the sum of the

present values (PVs) of the yearly cash flows, and is estimated at an average of about 120 million dollars.

4 Funding Opportunities

The major source of revenues needed for the operation of the Network is the "Donations" and "in-kind contributions." It is the role of the coordinators of the centers to guarantee that such funds are raised annually to ensure sustainability of the Network. During the first year of operation, the steering committee and the advisory board will play an instrumental role in supporting the CoE Coordinator in raising the needed funds.

4.1 Sources of funding

The following provides a list of prospective agencies, foundations, and enterprises that are identified as candidate donors that will support the Network.

- **Government agencies**. Governments should play a leading role in providing support to the Network. Candidate government agencies include: Ministries of technology and telecommunications, ministries of education and higher education, ministries of industry and trade, etc.

- **Telecommunications operators** and **mobile network operators** should have an interest in supporting the Network for its apparent benefit to the telecommunications sector.

- **Internet Service Providers** (ISP). ISP's have become leading users of FOSS tools and applications for their daily operations, and should be approached to partner and provide support to the Network.

- **International tech giants.** International ICT giants have a track record of providing support to FOSS projects and initiatives. Such companies include Google, Oracle, Apple, Samsung Electronics, HP, IBM, Intel, Yahoo, Cisco Systems, and Adobe systems. These companies have an interest in the Arab markets and would provide support to the Network as a marketing tool to their presence in these markets.

- **International organizations and agencies** often issue calls for proposals to support projects of this nature. These organizations include UN bodies/projects, Europeans agencies/projects, and USAID, among others.

- The **local private sector**. ICT and software companies should be approached to provide monetary sponsorships and/or in-kind contributions or R&D support. The private sector normally considers partnerships with regional initiatives such as this network.

- **Techies activists, and the civil society** represent an invaluable part of the FOSS ecosystem. Their partnership and in-kind contribution should always be considered an essential element as a source of support to the Network.

Table 2: Cost-Benefit Analysis of establishing a Network of Regional FOSS CoEs

COST BENEFIT ANALYSIS

Regional FOSS Centers of Excellence in the Arab World

	Year 1 ($'000)	Year 2 ($'000)	Year 3 ($'000)	Year 4 ($'000)	Year 5 ($'000)	Notes, data sources, assumptions, results and limitations
A. PROJECT CASH FLOW						
Capital Costs						
Technology Center equipment	200	40	50	50	60	data servers and communication equipment
Office refurbishment, furniture and equipment	200	30	30	30	30	
Other costs	50	50	50	50	50	unexpected costs
Total Capital Costs	**450**	**120**	**130**	**130**	**140**	
Operating Costs						
Salaries						
Regional Coordinator salary	110	114	119	124	129	
PR/Awareness focal point salary	80	83	87	90	94	
Training & education focal point salary	80	83	87	90	94	
R&D focal point salary	80	83	87	90	94	
Tech. Center & Entrepreneurship focal point salary	80	83	87	90	94	
Secretary	35	36	38	39	41	
Operations						
PR/Awareness campaign	30	40	40	45	45	
Training & education	30	40	40	45	45	
R&D	30	40	40	45	45	
Tech. Center & Entrepreneurship	30	40	40	45	45	
Other						
Services (Communications, Internet, etc.)	30	30	30	30	30	
Materials and Supplies	30	30	30	30	30	
Other costs	20	20	20	20	20	
Total Operating Costs	**665**	**724**	**743**	**783**	**804**	
Revenues						
Donations & 'in-kind' contributions	1,100	800	800	800	800	
Training & education	10	30	40	45	60	
Business incubation	20	50	60	80	90	
Consulting and support	5	15	15	20	20	
Other revenues	5	10	10	10	10	
Total Project Revenues	**1,140**	**905**	**925**	**955**	**980**	
NET PROJECT CASH FLOW	**25**	**61**	**52**	**42**	**36**	
B. EXTERNAL BENEFITS & COSTS						
External costs						
Economic costs	1,000	3,000	5,000	8,000	10,000	loss of business on sales of software licenses, training, service, and support
FOSS total cost of ownership	2,000	6,000	10,000	15,000	25,000	capacity building, service, customization, localization, and support
Total external costs	**3,000**	**9,000**	**15,000**	**23,000**	**35,000**	
External benefits						
Economic benefits	5,000	15,000	25,000	40,000	50,000	cost savings of software licenses, software TCO, business start-ups
Education & Innovation Benefits	3,000	9,000	18,000	24,000	30,000	teaching/learning and innovation from source code
Social & development benefits	1,000	3,000	6,000	8,000	10,000	access to ICT for development, human rights of freedom to use software
Total external benefits	**9,000**	**27,000**	**49,000**	**72,000**	**90,000**	
NET EXTERNAL BENEFITS	**6,000**	**18,000**	**34,000**	**49,000**	**55,000**	
NET BENEFITS	**6,025**	**18,061**	**34,052**	**49,042**	**55,036**	
(Net Project Cash Flow Plus Net External Benefits)						

			discount rate		
Net Benefits ($'000)		162,216		calculated simply as the sum of the yearly net benefits
				the discount rate is the rate of return that could be earned on the investment in the financial markets with similar risk
Net Present Value (NPV) @	6%	130,321		
Net Present Value (NPV) @	8%	121,599		the NPV of the series of cash flows is calculates as the sum of the present values (PVs) of the yearly cash flows
Net Present Value (NPV) @	10%	113,657		