



**Bibliotheca Alexandria**  
**Access to Knowledge**  
**Toolkit I**  
**(A2k)**

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Edited by Hala Essalmawi

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## **Introduction**

The Bibliotheca Alexandrina (BA) has developed a growing interest in issues related to knowledge production and dissemination. Within this context, the BA focuses mainly on topics related to innovation, creativity and intellectual property. Thus, it held a number of seminars and workshops in collaboration with official/ civil, regional/international organizations and stockholders. These meetings discussed a broader comprehensive vision of intellectual property protection in relation to its linkage with sustainable development policies in varied areas; education, health, access to knowledge, as well as protection of folklore and traditional knowledge.

The BA has been following up the global developments that successfully led to the establishment of a Development Agenda for WIPO. This paved the way to discuss access to knowledge related issues such as open source; open publishing models and initiatives; as well as flexible copyright licensing (such as Creative Commons licenses) which facilitate user access to online content.

During the past few years, the issues of Access to Knowledge gained significant momentum. Hence, the “access” issue has become a pressing item on the agenda of many states and stakeholders both in developing and developed countries.

Moreover, information technology (IT) has played a crucial role in opening new horizons for the dissemination of knowledge on a broader scale and at a reduced cost. In parallel, several regional and international initiatives were undertaken to employ IT to enhance access to knowledge via innovative methods and mechanisms such as open access projects in fields of publishing and archiving. On the legal aspect, a number of

global initiatives oriented towards flexible usage IP laws were initiated to match these changes in the development of technical applications.

Consequently, new trends have emerged advocating the application of IPRs in a manner that supports access to knowledge, in particular via maximizing the potential benefits of exceptions and limitations (E&L). More voices are calling for the development of new international treaties to enhance access to knowledge and to regulate E&L to become more applicable in the digital environment.

These initiatives and developments are acquiring a growing importance especially for developing countries - including the Arab states- which seek to engage in building the “Knowledge Society”. which supports their participation in enhancing the process of creativity and innovation and reap the fruits of knowledge, while reducing the cost of economic and social development.

The aforementioned international developments showed that there is a need to analyze these initiatives and developments and consider the possibility of using them in promoting and supporting the production and dissemination of knowledge in the Arab World. On this basis, the BA has organized a regional Arab seminar on “New Tools for the Dissemination of Knowledge and the Promotion of Innovation and Creativity: Global Developments and Regional Challenges” 7- 8 September 2006. The seminar was attended by a number of international experts and leading Arab figures in various fields of access to knowledge. The different sessions of the seminar witnessed invaluable deliberations that highlighted key global initiatives and developments in the field in the Arab World and the world at large.

The workgroups that followed the seminar developed a regional research agenda for access to knowledge according to the needs and priorities of the Arab countries. The regional seminar concluded with a number of recommendations for the promotion of access to knowledge. The BA is currently in the process of implementing these recommendations.

In fulfillment of its role in promoting the dissemination of and access to knowledge, the BA has prepared this “Access to Knowledge” toolkit<sup>1</sup> to introduce this global movement, its activities and the issues of interest to different stakeholders. The toolkit comprises an article by Mr. Ahmed Abdel-Latif introducing the movement, its development and main activities, and two papers on open source software and their future development by Mr. Anas Tawileh and Prof. Sherif El-Kassas.

Mr. Tawileh has contributed another paper entitled “Creative Commons”. The paper examines one of the legal aspects related to IP open sources, many of which employ the flexible licenses of Creative Commons.

Although, the topics raised in the seminar and the toolkit have received, in general, little attention in the Arab world, Arab experts and specialists have participated positively in the BA’s seminars and showed a great interest in contributing to the toolkit. It is worth noting that there are a number of ongoing research projects in Egypt and the Arab World as highlighted in the articles by Dr. Nagla Rizk and Dr. Bassem Awad and Moatasem El-Gheriany.

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<sup>1</sup> This guide consists of a number of papers that reflect their authors’ vision concerning given issues. The editing team at the BA is responsible for topics selection, assignment of experts, revision and final editing as well as the translation of papers that were originally written in English.

Finally, in an attempt to answer a number of questions that were raised by the seminar's workgroups "Regional Research Agenda", Dr. Rasha Abdullah's paper furnishes with some answers concerning Arabic content and the status of Arabic language on the Internet.

This is only a beginning. The BA and A2K team will continue working to participate in and contribute to this global momentum by encouraging stakeholders to share their own broad vision regarding global topics of interest in the form of research papers and articles. Although the target audience of this endeavor are the Arabic speakers, the toolkit is published in English as well. This is to secure a wider scale of participation on an international level and, consequently, to increase the Arab World's contribution to this global movement through the BA.

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# **The Evolution of the A2K Movement**

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Full biography p.36

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## **Introduction**

Recent years have witnessed the emergence of Access to Knowledge (A2K) as an important and pressing global issue. A2K is a term that is used to refer to a social, cultural and developmental demand as well as to the social movement that has promoted this demand at the international level. This social movement initially included a number of developing countries, non-governmental organizations (NGOs), consumer organizations, international figures and academics.

A2K appeared in the context of a number of efforts, aiming at addressing some of the effects of globalization, particularly in relation to the imbalance characterizing new global trade and IP rules. A2K was one of the important issues raised in context of the deliberations of the World Summit on the Information Society (WSIS) process since 2003 and of the WIPO Development Agenda process since 2004. A number of NGOs have proposed to conclude an A2K treaty and, in cooperation with international experts and academics, a draft was elaborated and discussed in several international conferences.

The purpose of this paper is to give a brief overview about the A2K movement, its evolution in recent years and its future prospects, taking into consideration its importance for developing countries and its contribution in reducing the knowledge gap and developing their capabilities in the area of scientific research and technological development.

### **The Emergence of A2K:**

A2K is based on the principle that knowledge lies at the foundation of human progress and civilization, and thus all cultures and civilizations encourage the

acquisition of knowledge. This is the case in the Arabic Islamic civilization. The first word of the Holy Koran, the injunction made to Prophet Muhammad (PBUH) "read", is indicative of the status of knowledge and science in Islam. It is important to distinguish here between knowledge and information as the latter is the primary material which can be used to produce knowledge.

A2K, as an international demand, is rooted in several international human rights texts and instruments. Article 27 (1) of the 1948 Universal Declaration on Human Rights stipulates that "every person has the right to freely participate in the cultural life of society and to enjoy the arts and contribute to scientific progress and benefit from its results." A similar reference is made in Article 15 (1) of the 1966 International Covenant of Economic, Social and Cultural Rights.

**Article 27.**

**(1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.**

*Universal Declaration of Human Rights (1948)*

For centuries, the dissemination of knowledge took place through mechanisms and venues of limited scope and distribution such as universities, research centers, books, academic periodicals and traveling. However, the revolution in information and communications technology (ICT), that the world has witnessed in recent years, has opened unprecedented horizons for the dissemination of knowledge. It has empowered individuals to access flows of information in a manner and scale that was not possible before. Personal computers are omnipresent all over the world and, in the early 1990s, the Internet appeared, making information easily available in all areas of knowledge. Today there are more than 1, 2 billion internet users in the world.

The revolution in information and communications technology (ICT) contributed to the phenomenon of "globalization" in the aftermath of the Cold War. This phenomenon carried with it deep changes in the structures of the world economy and made of knowledge assets, particularly in the area of science and technology, the main factors of competitiveness for countries and firms. This new economy has often been labeled the "knowledge economy."

In the context of the growing importance of the "knowledge economy", the role of Intellectual Property Rights (IPRs) – such as patents and copyright –expanded considerably. IPRs are exclusive rights granted for a limited period of time to a creator or an inventor enabling him to protect his works and inventions, to benefit from the material reward stemming of them and to prevent third parties from exploiting them without prior authorization or licensing agreement. With the evolution of the market economy, giant economic conglomerates, particularly multinational corporations (MNCs), became the main holders of these rights. This prompted them to seek to expand the scope of these rights in developed countries in an unprecedented manner since the 1980s, taking into consideration that entities in developed countries are the main holders of Intellectual Property (IP) assets in the world. For example, individuals and firms in developed countries hold 90% of patents in the world.

In this context, industrialized countries – particularly the United States, Europe and Japan – sought to entrench their scientific and technological superiority by concluding an international agreement in the field of IPRs which took the form of the Trade Related Aspects of Intellectual Property Rights Agreement. The TRIPS Agreement was concluded in 1994 in the context of the Uruguay round of trade negotiations. The multilateral trade framework of negotiations (the GATT) was chosen by developed countries as a forum to conclude this agreement for two main reasons: Introducing IP

in the context of multilateral trade negotiations enabled to link it with other trade areas such as agriculture, textiles, trade in goods, tariffs and services and indeed developing countries reluctantly accepted this hoping for concessions in other areas of negotiations in the Uruguay round of priority to them. Second, placing TRIPS among the agreements under the umbrella of the World Trade Organization (WTO) brought it under the realm of the dispute settlement mechanism created with the Organization, while other fora where IP agreements were concluded, such as WIPO, did not have such a mechanism.

The TRIPS Agreement became the main pillar of the international IP architecture as it established minimum international IP standards binding on all WTO members with transition periods for developing countries and LDCs. The main features of the TRIPS Agreement compared with previous international IP instruments are the following:

- using comprehensiveness as one single instrument that encompasses all categories of IPRs such as patents, copyright, trademarks, industrial designs and geographic indications.
- Unifying terms of protection such as stipulating a 50 years protection term for copyright and 20 years protection term for patents.
- Expanding the scope of IP protection as the agreement requires the protection of computer programs by copyright, the protection of pharmaceutical products by patents, the patenting of micro-organisms, the protection of plant varieties by patents or a *sui generis system* of protection.

- Including a chapter on enforcement which requires countries to take a number of measures to ensure the enforcement of IPRs as stipulated by the Agreement.

After the conclusion of the TRIPS Agreement, developed countries sought to conclude new IP agreements addressing areas which had not been covered by TRIPS. This led to the conclusion of the WIPO Internet Treaties (1996) on the protection of copyright and a number of neighboring rights in the digital environment which require parties to take measures to deal with the circumvention of technological protection measures. Developed countries also sought to conclude bilateral and regional free trade agreements with developing countries comprising provisions on IP which went beyond the minimum standards of the TRIPS Agreement, particularly in the area of patents, copyright, protection of undisclosed information and enforcement. For instance, some of these agreements stipulate a term of protection of 70 years for copyright while TRIPS stipulates a 50 year protection term only.

As a result of all these developments, IP legislations at the international and national level have witnessed an unprecedented expansion. Concerns started to appear concerning the effects of this expansion on many public policy objectives such as the protection of public health, access to knowledge and environmental protection. In the United States, a number of academics started to express their concerns with regard to the implications of American IP and copyright legislations on access to knowledge, creativity and innovation and in particular their effects on reducing the public domain.

For developing countries, these developments brought back to the surface their concerns regarding access to education, science and technology, concerns which they had articulated since their emergence on the international scene and had led them, particularly in the 1960s and 1970s, to seek the reform of a number of international

conventions in the area of intellectual property (IP), such as the Berne Convention (1886) on the protection of copyright and the Paris convention on the protection of industrial property (1883), with a view towards making these instruments more responsive to their socio-economic needs and circumstances.

At the same time, developing countries started to feel the burden and costs of implementing the TRIPS Agreement and its implications on public health and medicines. The AIDS medicines treatment crisis unfolded in 1998 when a number of pharmaceutical companies sued the South African Government over its possible use of compulsory license with a view to expanding access to medicines treating at a reduced cost. Ultimately, developing countries with the support of many NGOs and consumer organizations, succeeded in mobilizing an international campaign on access to medicines which resulted in the adoption of the Doha Declaration on TRIPS and Public Health in 2001.

The Doha Declaration on TRIPS and Public Health is a landmark development in global deliberations on IP as its formulations were quite balanced. Paragraph 2 recognizes the importance of IP for the development of new drugs while also recognizes its effects on prices.

Paragraph 4 reaffirms the commitment to the TRIPS Agreement while reaffirming the need to interpret and implement the agreement in a way that is supportive of WTO members to protect public health and promote access to medicines for all.

For many developing countries, this balanced message had a wider significance as it emphasized the importance of implementing IP protection in a manner that was supportive of social and development objectives.

After the success of the international campaign on access to medicines, developing countries and NGOs started to consider raising A2K related issues and did so

gradually in context of the deliberations of the World Summit on the Information Society (WSIS) process since 2003 and of the WIPO Development Agenda process since 2004.

## **A2K and the World Summit on the Information Society**

The United Nations General Assembly approved in 2001, in accordance with its resolution 56/183, a proposal by the International Telecommunications (ITU) to hold a World Summit on Information Society. The first part of the summit was held in Geneva from 10 to 12 December 2003 and the second part was held in Tunisia from 16 to 18 November 2005. The objective of the summit was to discuss the new horizons opened by the information revolution and how to use ICT to empower millions of people, improve their living standards and achieve the Millennium Development Goals while also focusing on how to bridge the digital divide between countries and within societies.

The first phase of the summit held in Geneva aimed at formulating the political vision to build the information society as well as identifying the practical steps to achieve this. It adopted a Declaration of Principles and a Plan of Action. The second phase, which was held in Tunisia, examined the implementation of the Geneva Plan of Action and a number of pending issues such as Internet governance, funding and follow up mechanisms to the Summit. At Tunisia, a Commitment and Agenda for the Information Society were adopted. Agreement was also reached on creating an Internet Governance Forum which holds regular meetings to address unresolved issues such as Internet governance.

The preparatory phase of WSIS, as well as the deliberations of the Summit, witnessed many discussions on the different aspects associated with building the



information society and bridging the digital divide on top of which came the infrastructure required to participate in and benefit from the information society, an infrastructure which many developing countries do not possess. In the context of these deliberations, developing countries were keen to raise the issue of "access" to information and knowledge. They succeeded in including it in the Geneva Declaration of Principles in the section on principles governing the information society under the title: "Access to Information and Knowledge."

On access to information and knowledge, the Geneva Declaration of Principles states, for example, that "the ability for all to access and contribute information, ideas and knowledge is essential in an inclusive Information Society"(paragraph 24). It also stipulated that the "sharing and strengthening of global knowledge for development can be enhanced by removing barriers to equitable access to information ...and by facilitating access to public domain information". (Paragraph 25) The Declaration highlights that " a rich public domain is an essential element for the growth of the Information Society (paragraph 26) The Declaration mentions that "access to information and knowledge can be promoted by increasing awareness among all stakeholders the possibilities offered by different software models, including proprietary, open-source and free software". (Paragraph 27) It also aspired to "promote universal access with equal opportunities for all to scientific knowledge and the creation and dissemination of scientific and technical information,

### B 3. Access to information and knowledge

24. The ability for all to access and contribute information, ideas and knowledge is essential in an inclusive Information Society.

25. The sharing and strengthening of global knowledge for development can be enhanced by removing barriers to equitable access to information for economic, social, political, health, cultural, educational, and scientific activities and by facilitating access to public domain information, including by universal design and the use of assistive technologies.

26. A rich public domain is an essential element for the growth of the Information Society, creating multiple benefits such as an educated public, new jobs, innovation, business opportunities, and the advancement of sciences. Information in the public domain should be easily accessible to support the Information Society, and protected from misappropriation. Public institutions such as libraries and archives, museums, cultural collections and other community-based access points should be strengthened so as to promote the preservation of documentary records and free and equitable access to information.

27. Access to information and knowledge can be promoted by increasing awareness among all stakeholders of the possibilities offered by different software models, including proprietary, open-source and free software, in order to increase competition, access by users, diversity of choice, and to enable all users to develop solutions which best meet their requirements. Affordable access to software should be considered as an important component of a truly inclusive Information Society.

28. We strive to promote universal access with equal opportunities for all to scientific knowledge and the creation and dissemination of scientific and technical information, including open access initiatives for scientific publishing.

*Declaration of Principles*

*the World Summit on the Information Society (WSIS)*

*12 December 2003, Geneva*

including open access initiatives for scientific publishing". (Paragraph 28)

IP and its status in the information society was one of the important controversial issues raised during the preparatory phase of the Summit. Developed countries and the private sector insisted that IP protection was an "essential" factor in the information society. Developing countries and many NGOs considered that an exaggerated expansion in IP protection, and its implementation from a narrow perspective, could potentially have a negative impact on creativity and the dissemination of information in the information society. After long and tortuous negotiations, the paragraph included in the Geneva Declaration on IP (Paragraph 42) can be considered as balanced to a great extent. The paragraph stipulated "the importance of IP – as an important element in encouraging innovation and creativity in the information society – as well as the importance of the dissemination of knowledge and its sharing on a wide scale to encourage innovation and creativity." It is interesting to note that placing IP and the dissemination of knowledge on an equal footing in this paragraph implies that IP does not necessarily always achieve the dissemination of knowledge and its wide sharing from the view of developing countries, NGOs and consumer organizations.

WSIS is considered a landmark development for the A2K movement as the forces involved in this movement succeeded for the first time in integrating their concerns in an international instrument of a political nature. References to access to knowledge and the need to remove obstacles it faces, to the role of the public domain, in addition to raising awareness about the possibilities offered by different models of software, including Free and Open Source Software (FOSS) were ground breaking from this perspective. In addition, developing countries managed to reach relatively balanced formulation on IP, in contrast with earlier formulations in the negotiations which magnified the role of IP. They also succeeded in putting IP on an equal footing with the dissemination of knowledge and in its sharing on a large scale.

### **A2K and the Proposal for Establishing a Development Agenda for WIPO**

In the context of overall efforts by developing countries to integrate the development dimension in the global trade and IP regime, fourteen developing countries – Brazil, Argentina, Bolivia, Cuba, Dominican Republic, Ecuador, South Africa, Egypt, Kenya, Iran, Peru, Sierra Leone, Tanzania, Venezuela - presented a comprehensive proposal to establish a Development Agenda for the WIPO during the organization's General Assembly which was held from 27<sup>th</sup> September to 5<sup>th</sup> October 2004.

The proposal aimed at integrating the development dimension in all aspects of the organization's work, including its norm setting and technical cooperation activities. This proposal came in the context of increasing attention to the orientation of the organization's activities in a number of international reports, such as the Commission on Intellectual Property Rights report (CIPR) of 2002 which included in its membership a number of eminent experts from both developing and developed countries. The report underlined that "WIPO should act to integrate development

objectives into its approach to the promotion of IP protection in developing countries. It should give explicit recognition to both the benefits and costs of IP protection and the corresponding need to adjust domestic regimes in developing countries to ensure that the costs do not outweigh the benefits.”

One of the basic premises of the Development Agenda proposal is that the protection of IP is not an end in itself but only a means to encourage creativity and innovation. Thus for IP protection to fully play its role in this regard, it should be balanced and must take into consideration the economic and social circumstances of each country and the differences in the levels of development between countries. In the absence of this, and in the case of an excessive expansion of IP rules, IP protection could possibly hinder creativity and innovation as well as the dissemination of knowledge.

Although the WIPO Development Agenda initiative was not only about A2K, other issues related to access to knowledge were clearly an important component of the proposals and ideas the initiative was seeking to advance. This was reflected in the original document containing the Development Agenda initiative which included key elements and concerns of the A2K movement such as:

- An indication that adding new layers of intellectual property protection to the digital environment would obstruct the free flow of information and scuttle efforts to set up new arrangements for promoting innovation and creativity, through initiatives such as the ‘Creative Commons.’
- An expression of concern at the ongoing controversy surrounding the use of technological protection measures in the digital environment.

- A reference to the importance of safeguarding the exceptions and limitations existing in the domestic laws of Member States.
- A mention to the need to bear in mind the relevance of open access models for the promotion of innovation and creativity in order to tap into the development potential offered by the digital environment, and an invitation to WIPO to consider undertaking activities with a view to exploring the promise held by open collaborative projects to develop public goods, as exemplified by the Human Genome Project and Open Source Software.
- A reference to the need to examine the potential development implications of several of the provisions of the proposed Treaty on the Protection of Broadcasting Organizations that the Standing Committee on Copyright and Related Rights is currently discussing taking into consideration the interests of consumers and of the public at large.

For two years (2005-2007), WIPO witnessed structured deliberations to examine concrete proposals presented by the developing countries mentioned above – which became known as the "friends of development" – in addition to a number of proposals presented by other developed and developing countries. Representatives of both civil society and NGOS actively participated in these deliberations and presented many proposal and suggestions on how to address the effects of the unprecedented expansion of IP rules on access to knowledge and how to find means to promote new arrangements to encourage creativity and innovation, such as the Creative Commons and open collaborative projects.

After two years of deliberations, an agreement was reached on 45 recommendations which were adopted by the WIPO General Assembly in 2007 for implementation in the context of the organizations' activities. These recommendations are divided among clusters of issues and some of them are directly related to access to knowledge such as recommendation 16 in cluster (b) on "norm setting, flexibilities, public policy and public domain". It also emphasizes the need to "consider the preservation of the public domain within WIPO's normative processes and deepen the analysis of the implications and benefits of a rich and accessible public domain."

It is worthwhile noting also that the term A2K was explicitly mentioned in the title of cluster (c) on "Technology Transfer, Information and Communication Technologies (ICT) and Access to Knowledge". In this cluster, a number of recommendations are directly relevant to access to knowledge and transfer of technology such as "to explore IP related policies and initiatives necessary to promote the transfer and dissemination of technology, to the benefit of developing countries and to take appropriate measures to enable developing countries to fully understand and benefit from different provisions, pertaining to flexibilities provided for in international agreements. (Recommendation 25)

Cluster C: Technology Transfer, Information and Communication Technologies (ICT) and Access to Knowledge

24. To request WIPO, within its mandate, to expand the scope of its activities aimed at bridging the digital divide, in accordance with the outcomes of the World Summit on the Information Society (WSIS) also taking into account the significance of the Digital Solidarity Fund (DSF).

25. To explore IP related policies and initiatives necessary to promote the transfer and dissemination of technology, to the benefit of developing countries and to take appropriate measures to enable developing countries to fully understand and benefit from different provisions, pertaining to flexibilities provided for in international agreements, as appropriate.

26. To encourage Member States, especially developed countries, to urge their research and scientific institutions to enhance cooperation and exchange with research and development institutions in developing countries, especially LDCs.

27. Facilitating IP related aspects of ICT for growth and development: Provide for, in an appropriate WIPO body, discussions focused on the importance of IP related aspects of ICT, and its role in economic and cultural development, with specific attention focused on assisting Member States to identify practical IP related strategies to use ICT for economic, social and cultural development.

28. To explore supportive IP related policies and measures Member States, especially developed countries, could adopt for promoting transfer and dissemination of technology to developing countries.



29. To include discussions on IP-related technology transfer issues within the mandate of an appropriate WIPO body.

30. PO should cooperate with other intergovernmental organizations to provide to developing countries, including LDCs, upon request, advice on how to gain access to and make use of IP-related information on technology, particularly in areas of special interest to the requesting parties.

31. To undertake initiatives agreed by Member States which contribute to transfer of technology to developing countries, such as requesting WIPO to facilitate better access to publicly available patent information.

32. To have within WIPO opportunity for exchange of national and regional experiences and information on the links between IP rights and competition policies.

*Recommendations adopted by 2007 WIPO General Assembly  
in the context of the WIPO Development Agenda*

It was agreed that a number of 19 recommendations would be immediately implemented. Among these recommendations, there was one on the public domain (recommendation 11) and one reaffirming the importance of WIPO taking into account in its activities, including norm setting, the flexibilities in international IP agreements, especially those which are of interest to developing countries and LDCs (recommendation 17).

The WIPO General Assembly also approved the creation of a Committee on Development and IP (CDIP) to meet bi-annually in order to monitor the

implementation of these recommendations. The CDIP held its first meeting in March 2008 and began examining the implementation of the WIPO Development Agenda recommendations.

In spite of the fact that the recommendations, adopted in the context of the WIPO Development Agenda process, do not take into consideration all the proposals related to A2K that were presented during the past two years of deliberations, the proposal for a WIPO Development Agenda and the deliberations, in its context, contributed towards giving an international momentum to these A2K related proposals by, for the first time, putting them forward in the specialized forum in the area of intellectual property. This certainly contributed towards having WIPO consider matters beyond the narrow view towards IP protection that was prevailing in WIPO before the launch of the WIPO Development Agenda.

### **The proposal for an A2K treaty**

A number of NGOS and consumer organizations- such as the Transatlantic Consumer Dialogue TACD, the Consumer Project on Technology in cooperation with a number of experts - put forward a proposal for an A2K treaty.

This draft treaty was drafted in different stages. In February 2005, a group of experts met and made a number of suggestions on the possible future content of such a treaty. In May 2005, a larger meeting was held in London with the participation of experts from Spain, Germany, Italy, Brazil, South Africa, Chili, Serbia, France, Canada, Korea, Malaysia, the United Kingdom, India, the United States of America and Greece to draft a treaty on A2K. And in effect, within the two days of the meeting

a text was drafted for discussion by representatives from civil society, consumer organizations, academics, governments, and international organizations.

## **Draft A2K Treaty**

### Part 1 - Purposes, Objectives, Relationship to Other Treaties

#### PREAMBLE

The parties to this treaty, Seeking to enhance participation in cultural, civic and educational affairs, and sharing of the benefits of scientific advancement,

Recognizing the importance of knowledge resources in supporting innovation, development and social progress, and of the opportunities arising from technological progress, particularly the Internet,

Mindful of the need to overcome disparities in wealth, development, and access to knowledge resources,

Recognizing the importance of protecting and supporting the interests of creative individuals and communities,

Determined to create the broadest opportunities to participate in the development of knowledge resources,

Concerned about private misappropriation of social and public knowledge resources,

Recognizing further the importance of knowledge resources that are created for the benefit of all, and the need to protect and expand the knowledge commons,

Determined to protect, preserve and enhance the public domain, which is essential for creativity and sustainable innovation,

Seeking to control anticompetitive practices,

Concerned about technological measures that restrict access to knowledge goods will harm authors, libraries, education institutions, archives, and persons with disabilities,

Recognizing the need for greater disclosure of knowledge, and for new incentives to create and share knowledge resources without restrictions on access,

Encouraged by the success and potential of new methods of creating and sharing knowledge,

Mindful of the need for public and private investments in knowledge resources,

Concerned over insufficient public support for knowledge resources,

Conscious of the importance of the global information networks in expanding access to knowledge,

Mindful of the benefits of open access to scientific research and data,

Recognizing the benefits of greater transparency of knowledge resources and technologies,

Recognizing the need for global action to protect and enhance access to knowledge resources,

Seeking to promote the transfer of technology to developing countries,

Members agree

*Article 1-1 - Objectives*

The Objectives of this treaty are to protect and enhance [expand] access to **knowledge, and to facilitate the transfer of technology to developing countries.**

*Draft A2K treaty*

*May 2005*

The goal of the draft treaty is to contribute towards enhanced access to knowledge through a number of provisions which aim at enhancing the social, economic and development benefits of access to knowledge. It addresses both developing and developed countries taking into consideration the differences in their levels of

development and their differing needs. The different provisions of the draft treaty deal with a number of areas such as: exceptions and limitations in the area of copyright, access to research that is publicly funded, patents, open standards and intellectual property, and competition law.

The draft treaty particularly focuses particularly on enhancing use of exceptions in the area of copyright in favor of education, science, digitalization, so that researchers, disabled persons, persons involved in distant education, and media, particularly in developing countries, can gain wider access to knowledge. These exceptions and limitations are relevant for "knowledge intermediaries" such as search engines on the internet, libraries, archives, academic and research institutions. While the draft treaty seeks to operationalize a number of exceptions and limitations that are effectively already included in a number of international instruments - such as the TRIPS Agreement – the draft treaty also aims to put in place new exceptions and limitations such as exceptions for search engines in the digital environment.

The elaboration of a draft treaty on A2K is an initiative which reflects the keenness of civil society, one of the active forces in the A2K movement, to present concrete proposals to move forward international deliberations on A2K towards tangible outcomes. Despite the fact that the draft A2K treaty has been mentioned in discussions in the context of the WIPO Development Agenda, steps have not been taken to have an in depth examination of it in an intergovernmental setting. Nevertheless, the draft treaty remains one of the main reference points of the A2K movement as it contains many of its demands with a view to making international legal rules – particularly in the area of IP- supportive of access to knowledge.

## **The Main Priority Issues of the A2K Movement**

The A2K movement gives priority to a number of issues to which it considers it can contribute positively and effectively in the dissemination of knowledge on a wide scale.

### **1-Free and Open Source Software (FOSS)**

The term "free software" refers to software that allow users operating it a number of freedoms such as to operate the program for any purpose, study it and adapt it to their needs, distribute it and improve it and making these improvements available to the benefit of the public as well as the society as a whole. The term "open source" software refers to software with a more limited scope as it focuses on making the source code available to users from a technical point of view without the matter extending necessarily to authorizing its alteration and distribution. In both cases, copyright is acknowledged in the sense that the program is affiliated to its author who makes it available under a license so that the public can use it and develop it according to the freedoms and regulations governing these software models. Free and Open Source Software have many economic and social benefits, particularly the fact that their cost is inferior to the cost of proprietary software. They also enable us all to grasp how software operates and how they can be further developed, and thus they contribute towards a culture based on cooperation and knowledge sharing. Despite the fact that the free and open source movement has gained significant momentum in many developed and developing countries, it has not yet received appropriate attention in Arab countries.

## **2- Open Source Collaborative Models**

Open source and collaborative models have recently acquired significant importance in a number of economic and social areas. Despite the fact that the term "open source" was originally used to refer to a type of software, it now refers more generally to a collaborative working method in many areas such as legal research, academic publishing and scientific research. It brings together contributions by individuals and institutions to elaborate an output that is freely available to the public without restrictions. While there are many examples of projects and initiatives which adopt the open collaborative model, special mention should be made to the Human Genome project. The Human Genome project identified parts of the human genome. It was implemented by Sir John Sulston – the recipient of the Nobel Prize in Medicine – and Bob Watson who in accordance with a method that refused to apply patents to the information discovered, believed that not making this information available in a wide scale, and its protection by patents, obstructs scientific progress in this vital area for humanity.

Wikipedia is another well-known example of open source collaborative work. Wikipedia is an online encyclopedia which makes information freely available on the internet. Users can also modify its contents and entries as they are drafted by volunteers. Wikipedia started on 29<sup>th</sup> January 2001, and now contains 4,600,000 articles in different languages including 1,200,000 articles in the English language.

Creative Commons (CC) is a non- profit organization which presents a number of flexible licenses to make creative works available freely for specific uses. This organization was created by a number of academics working in the area of IP and law

in 2001 and the first Creative Commons licenses were published on 16<sup>th</sup> December 2002.

The Creative Commons website ([www.creativecommons.org](http://www.creativecommons.org)) enables authors and creators to grant the public a number of rights through a flexible system of licenses and contracts, made available to the public domain in accordance with open source licenses. In this way, Creative Commons seeks to avoid the difficulties and restrictions, for access to knowledge, arising from the exclusive nature of copyright legislations and a narrow application of these legislations. This initiative has witnessed significant growth in recent years. Creative Commons International was established to apply Creative Commons in different countries taking into consideration the legal specificities of these countries. 47 countries up till now have participated in this initiative. Despite the significant momentum witnessed by this initiative and the fact that many well known artists have made available their works by using Creative Commons licenses, the presence of this initiative in the Arab world remains limited- Jordan is the only Arab country where the development of Creative Commons License has been decided. Egypt and Tunisia are also included in this initiative for future implementation. It is also worth noting that an initiative aiming at promoting the Creative Commons culture in the Arab world has been launched, namely the Arab Commons initiative. ([www.arabcommons.org](http://www.arabcommons.org))

### **3. Exceptions and Limitations:**

With the unprecedented expansion in IP rules in recent years, the A2K movement has attached importance to enhancing the role of exceptions and limitations contained in international and regional legislations in the area of copyright in favor of access to knowledge and addressing the needs of consumers, libraries and researchers. The following are among these most significant limitations and exceptions:



- The copyright protection term, which is of fifty years after the death of the author in accordance with the TRIPS Agreement, while this period extends to seventy years in many developed and some developing countries.
- The exclusion of a number of works and information from the scope of copyright protection such as legal texts, judicial decisions and non-original databases.
- Fair use which entail lawful practices and which do not require the author's authorization as they are defined by law, an example of such practices is reproduction for private use only.
- Compulsory licensing, which developing countries were allowed to use in accordance with the Berne Appendix (1971), and within well defined parameters, for purposes of education and translation.

It is worthy to note that Article 13 of the TRIPS Agreement addresses the matter of exceptions and limitations to exclusive rights in a general manner. It stipulates that exceptions and limitations should be restricted to special cases, which do not conflict with the normal exploitation of the work, and do not cause unreasonable prejudice to interests of the right holder.

Exceptions and limitations have gained a special importance in the digital environment as some tools used to protect creative works in the digital environment from unauthorized use – such as technological protection measures (like encryption)- can entail obstructing the implementation of these exceptions which favor access to knowledge; for example, reproduction for private use only.

Recognizing the importance of exceptions and limitations in the area of copyright, Chile presented a request in 2004 to include the issue of exceptions and limitations in

favor of education, libraries, and disabled persons on the agenda of the Standing Committee on Copyright and Related Rights (SCCR) at WIPO. After some preliminary discussions, Chile presented a proposal in 2005 (SCCR/13/5) to the SCCR in order to establish a group of exceptions and limitations for the public interest which embody a minimum number of international standards that would be included in all legislations, particularly as many legislations of developing countries do not include, in a detailed and exhaustive manner, these exceptions and limitations which serve access to knowledge.

In March 2008, Chile and a number of developing countries presented a proposal for a work program on exceptions and limitations to the SCCR, which paves the way for a process of deliberations of significant importance in which the A2K movement should be fully engaged and supportive of.

### **Current Developments Relating to A2K**

Gradually, the A2K movement has acquired increased momentum at the international level. It has also gone beyond the limited scope in which it appeared so as to express the concerns and demands of many stakeholders such as libraries, universities, educational institutions, education and research institutions and also a number of industry interests, particularly in the area of information technology.

The Yale Law School Information Society Program (ISP) has organized two major international conferences on A2K, since 2006. These conferences have significantly contributed to the momentum experienced by A2K while also strengthening the links of the A2K movement with academia and researchers.

As a result of the above, A2K now embodies a positive agenda, at the international level, seeking to harness all efforts in favor of access to knowledge without excluding any interested party.

In Egypt and the Arab World, the Bibliotheca Alexandrina is raising awareness about the importance of access to knowledge, and fulfilling its mission as a center for dialogue and the dissemination of knowledge.

In this context, the Bibliotheca Alexandrina organized a regional seminar, entitled "New Tools for the Dissemination of Knowledge and the Promotion of Creativity and Innovation: Global Developments and Regional Challenges" from 7 to 8 September 2006. The organization of this regional seminar came as an implementation of one of the recommendations of the Regional Arab Dialogue, organized by the Bibliotheca Alexandrina, the International Center for Trade and Sustainable Development (ICTSD), and the United Nations Conference on Trade and Development (UNCTAD) during the period 26-28 June 2005. This regional seminar adopted an ambitious program to promote access to knowledge, a program that is currently being implemented by the Bibliotheca Alexandrina.

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# Free and Open Source Software

## An Introduction For Practitioners

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Full biography p 55.

*The views expressed herein are solely those of the author and do not necessarily reflect the views of the Bibliotheca Alexandrina.*

## **Introduction**

The fundamental transformations brought about by the increasingly rapid developments of science and technology have changed the way we work, communicate, learn, grow and prosper. Probably one of the most significant of these developments is the advent of the digital computer and the global Internet. Computers and the Internet enabled information to be collected, stored, processed, searched for, retrieved and transmitted at a speed and scale that could not be imagined few decades ago. These capabilities empowered human kind to invent applications that facilitate the undertaking of everyday activities. It can be argued that virtually all aspects of human life have been affected one way or another by the rapid developments in digital computing.

Such powerful impact on all aspects of human development attracted the attentions of countless numbers of corporations that perceived a gigantic commercial opportunity to be exploited. Corporations contributed to the acceleration of the development of digital computers for a usually rewarding return on their investments. Other parties have also played a major role in shaping the future of the industry. These include universities, research institutions, governmental bodies, special interest groups and even individuals. The collaboration between all these parties resulted in the establishment of standard and open technologies that can easily interoperate and work with each other. Additionally, openness facilitated further development of computing technologies. This fortunately did not last long. Several commercial corporations, motivated by the potential to maximise their earnings and profits, decided to change their strategies and to close the technologies and products they develop, particularly computer software.



This change of attitude was perceived by others as a serious threat to the future of computing. Computers were already playing a critical role in empowering humanity, and closed software and technologies were considered a hindrance to the potential of future growth in the role of computers in transforming the world. The major reaction to this development was the Free and Open Source Software (F/OSS) movement, calling for computer software to remain open for others to use, adapt and develop.

In this article, a brief account of the history of the F/OSS movement will be discussed in order to enable interested practitioners to develop an appropriate understanding of the movement and how it may affect their own practice. The rest of the article is structured as follows: firstly, the nature of computer software will be introduced to facilitate further discussion; afterwards, the historical development of the Free and Open Source Software (F/OSS) movement is reviewed. The formation of the Free Software Foundation and the Open Source Initiative is also presented, and the distinction between the two illustrated. The article concludes with a short account of the implications of the Free and Open Source movement for developing nations and local development.

## **Hardware, Software and Source Code**

Digital computers consist of several distinct components that jointly make up the devices that we interact with in our daily lives. The two major categories of these are hardware and software components. Understanding the distinction between the two enables you to grasp the ideas that will be discussed later. Hardware is the physical devices that you can see and touch when you look at a computer, such as keyboards, monitors, mice, hard disk drive, etc. Think of hardware as a robot, it has all what it needs to function, but still requires instructions to act in a specific, and hopefully useful, way. These instructions constitute the second component: software. Software

tells the hardware what it should do, such as processing the monthly payroll, printing the financial report, etc. Just like spoken instructions, software does not have any physical characteristics, i.e. they can not be seen or touched, thus the name “software”. However, without software, computers become mere physical machines that do not have much use.

Software programs are lists of instructions written to order the computer to do specific tasks. Examples of computer programs include: operating systems, word processors, spreadsheets, graphics processing applications, etc. The act of writing these programs is called: programming. In programming, the programmer decides what task the software program should perform, and write the required instructions to tell it to do so. However, computers only understand one language: the machine language. In the early days of computing, programs could only be written in the machine language, making it a difficult and time consuming task, and widely perceived as the arena of the super smart geeks. Because of its difficulty and distance from the understanding of the mortal humans, the machine language was also called: a low-level language.

To simplify and accelerate the process of programming, a smart concept was developed: the compiler or interpreter. In exactly the same way as human interpreters sit in the middle of the conversation of two people speaking different languages, translating from one language to the other, compilers and interpreters sit between the human programmer and the machine, translating every instruction the programmer gives to the machine language that the computer understands. This breakthrough enabled the development of what is termed: high-level programming languages. These languages facilitate the programming process by allowing the programmer to write the program instructions in a “high-level” language that is much simpler than the machine

language, and similar to human languages. The resulting list of instructions is called the **source code** of the software. A compiler is used later to translate this source code into the machine language so that it can be understood and executed by computers. The resulting set of instructions is called a “binary” or “executable” program. Because these programs are now in the machine language format, it becomes very difficult for human beings to comprehend them without being able to access the original source code.

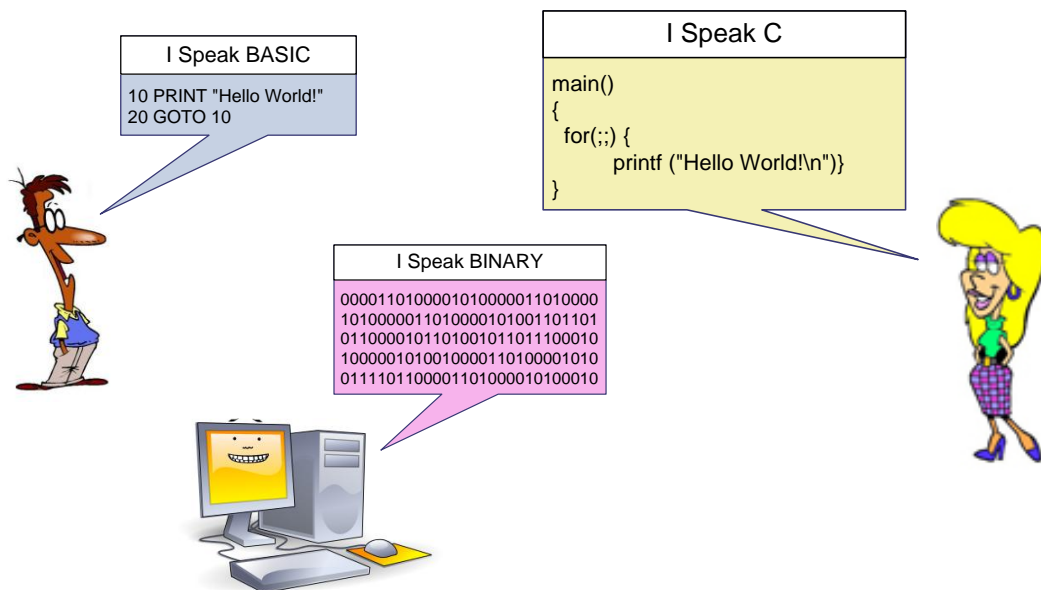


Figure 1: Programming Languages

Examples of popular programming languages include: Java, C, C++, Visual Basic. This amusing website includes the source code of a simple program called “Hello World” written in almost every programming language in existence:

<http://www2.latech.edu/~acm/HelloWorld.shtml>.

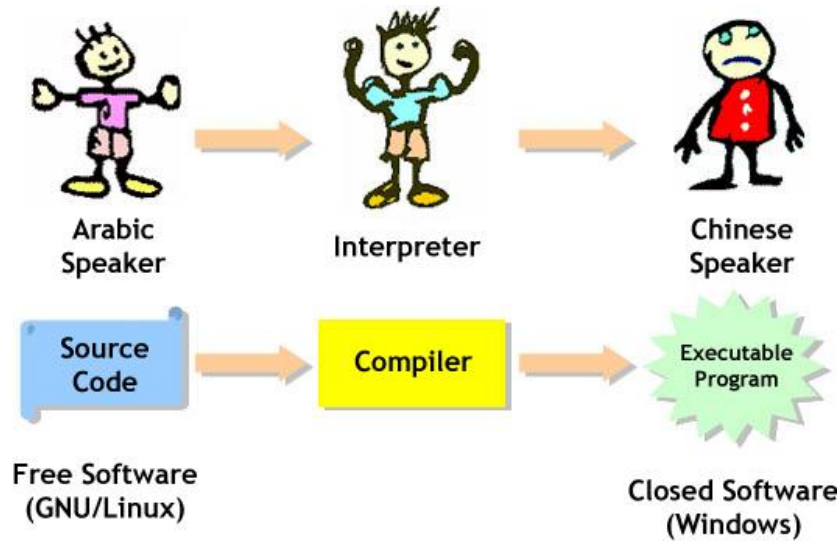


Figure 2: Software Compilers

## How It All Started

In the early days of computing, all computer programs were distributed with their source code. This enabled users to study the source code, adapt if the need arises and make further developments. However, some software development corporations decided to keep the source code of their software and distribute only the executable, compiled version. Although this would permit the user to run and use the software on her computer, she would be unable to study its source code and internal functionality or make any required modifications or developments without going back to the software vendor. This move was considered by some software developers and users as an attempt to eliminate a basic right from the user of the software: her freedom to use the software as she deems appropriate, and change, adapt or develop the software as required. The first action, however, was taken by a computer programmer at Massachusetts Institute of Technology (MIT) Artificial Intelligence lab called Richard Stallman.

When the IA lab at MIT acquired a new computer in 1982, the administrators decided to use a new operating system developed by Digital Equipment Corporation

which was, unfortunately, closed. Stallman always had a firm belief that software should be free. The word “free” here means freedom, and not zero price (in the English language, the same word is used to communicate the two connotations, which is unfortunate, as much misunderstanding, and later significant developments in the movement, arose from this confusion). By asking for software to be free, Stallman was advocating for the user’s legitimate right in studying, adapting and sharing the software without any restrictions to his freedom in doing so. Availability of source code is a precondition for this to happen. Therefore, Stallman called for all computer software to be distributed with its source code, and without any provisions in the accompanying license agreement that may forbid the user of exercising any of his rights.

Stallman quickly realised that the trend was moving rapidly towards the distribution of closed software, which he believed would hurt the community, and decided to take action. He thought about his coming life, and how he wants to spend it, and made the decision that changed the software industry landscape. Richard decided to start the GNU project<sup>1</sup>. The project aims to build useful free software applications that are distributed with their source code and without any restrictions to the user’s rights to study, adapt and share these applications. Logically, the first step was to build the most essential piece of software that is used in every computer: the operating system. At the time, the most widely operating system was called UNIX. Stallman decided to build an operating system that mimics the functionality of UNIX with a major difference: the new operating system will be free.

The name of the project was derived from a hacker tradition in using recursive terms: GNU is Not Unix, which also signals the fundamental difference between the two systems. An operating system is a package that contains several software

components, such as text editors, compilers, interfaces, etc. In 1984, Stallman started working on the development of the first component of his new operating system: the Emacs text editor. The rationale behind picking a text editor to develop first was that writing any piece of software will require a text editor, so building one will enable all developers to switch from other closed editors when writing other components of the operating system.

But software and its source code is only one piece of the puzzle. What Stallman wanted to achieve is the protection of what he believed are the user's natural rights. He did not want anyone to jump in and exploit an open source software by hiding its source code and converting it into a closed program. To attain this goal, a supporting device was required to protect the user's right legally. In a very smart move, Stallman utilised the same copyright laws used to protect the interests of software development corporations to server exactly the opposite goal: to protect the rights of the software user. He wrote the GNU General Public License (GPL), and instead of using the term "Copyright" to denote that the software is protected by traditional copyright laws, Richard coined the term "Copyleft" for use with free software.

The GNU General Public License (GPL) is a legal document with good amount of legal jargon, but essentially what it does is the provision of four levels of freedoms to the software user:

Freedom 0: (computer programmers usually start counting from 0, and Stallman is no exception!) The freedom to run the program, for any purpose.

Freedom 1: The freedom to study how the program works, and adapt it to your needs (Access to the source code is a precondition for this).

Freedom 2: The freedom to redistribute copies so you can help your neighbour.

Freedom 3: The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.

These four freedoms are sufficient to guarantee that once a piece of software is released under the GNU GPL it will remain free forever. No one would ever be able to restrict any of the freedoms granted to the user under the terms of this license. Moreover, any software that is developed based on a free software shall also be released and distributed as a free software. Any violation to any of these terms is considered a breach of the license agreement and can be prosecuted.

It is exceptionally important to understand the difference between free software (as in freedom) and software with no price (as in free beer). The GNU GPL does not prohibit the commercial exploitation of the software as long as it does not violate any of the license terms and conditions. The widely held misconception that free software must be distributed free of charge is dead wrong. Although many free software is available free of charge, it is so because its developers decided to make it available without charging for it. On the other hand, several companies were built around the commercial exploitation of free software. Another chapter in this toolkit discusses free and open source software business models in greater detail.

## **The Free Software Foundation**

The GNU project grew quickly as more programmers from all over the world were becoming increasingly attracted to Stallman's ideas and volunteering to contribute to the project's development. Using the Internet as the main medium for communication and collaboration, a large community of practice started to form around the GNU project. As the community grew, more components of the GNU operating system were developed, providing viable free alternatives to closed software components.

However, to secure the continuing growth and prosperity of the community, some funding was required to keep the momentum going. In 1985, the Free Software Foundation (FSF)<sup>2</sup> was established by Richard Stallman to perform this task in order to support the free software movement.

The funds raised by the Free Software Foundation were used to employ programmers and software developers to accelerate the production of free software packages, particularly those to be used in the forthcoming GNU operating system. In the mid nineties, the number of individuals and organisations building free software reached became so large that software development at the FSF was not really needed anymore. Consequently, most of FSF's volunteers' and employees' time was redirected towards legal and structural issues for the free software movement<sup>3</sup>.

### **GNU and Its New Kernel: Linux**

In 1990, most of the components of the GNU operating system were developed, and only one piece of the puzzle was missing: the kernel. The kernel is the central component of most operating systems. It manages the system's hardware and resources to enable other application software to run successfully. The developers at the FSF, led by Richard Stallman, discussed several approaches to the technical design of the GNU kernel, named HURD. Stallman's lust for excellence and perfection delayed the development of HURD. At the same time, and in completely different part of the world, another critical development in the world of free software was underway.

A student at the University of Helsinki in Finland called Linus Torvalds decided to write a small operating system kernel. Torvalds was also upset with the increasingly restricted access to computer software source code, and wanted to act to change this trend. He started by writing a simple kernel, and chose to release its source code under



the GNU General Public Licence (GPL) so that it remains free forever. The first version of the new kernel, named Linux after its developer, was released on the Internet in 1991. The new kernel quickly became the focal point of free software developers all over the world, and its development accelerated at a considerable pace.

However, the new comer to the free software world was only a kernel. It could not do much on its own, as for it to unleash its full potential; it should be placed at the heart of a full operating system. But wait a minute; do you recall the efforts invested at the FSF to build the components of the GNU operating system? Almost all of the components were already developed by that time, and the only missing piece was the kernel. In another brilliant decision, Stallman decided to abandon plans to build the HURD kernel, and to adopt the new kernel developed by Torvalds and his contributors instead to be combined with the GNU operating system. The new, complete operating system is called: GNU/Linux. There is a popular mistake of calling the whole operating system “Linux”. This is far from the truth, and although many would argue that there is no harm in using the kernel’s name to denote the complete operating system, this would undermine the significant efforts invested by other developers to build the remaining components of the operating system. It is far better to acknowledge the contributions of all, and to give everyone credit for his/her effort. So the next time you use the term, GNU/Linux is the better choice.

### **The Open Source Initiative**

The powerful combination of GNU and Linux had a profound impact on the adoption of free software on a global basis. Users now have a complete alternative that can be used instead of the closed and proprietary operating systems. Furthermore, the existence of this free operating system stimulated the development of more software applications that are distributed under the GNU GPL. A positive reinforcing

loop became into play, by developing more applications, more users will switch to free software, increasing the user base and encouraging the development of even more applications. However, a slight issue remains to be addressed.

The semantic confusion caused by the use of the word “free” was perceived as a hindrance to the realisation of the full potential of the free software movement. In the software development field, commercial organisations were scared away by the term as it could be easily interpreted as “no cost” or “no price”. Communicating the real values of freedom upon which the whole movement was built proved to be difficult using the same vocabulary. Some members of the movement believed that for free software to achieve its full potential, the message should be clearly communicated to commercial organisations that the movement is all about freedom and openness, and that it does not have any intentions to undermine the companies’ legitimate interest in making money. This was best illustrated in Eric Raymond’s words: "Because hackers are bright people, and they've figured out that if you want to change the world, one of the things you have to do is co-opt the people who write the big cheques." <sup>4</sup> Eliminating the confusion caused by the term “free” was an essential necessity for the movement to appeal to commercial software developers.

To address this issue, a handful of other prominent Free Software developers (including Eric Raymond, Bruce Perens and Linus Torvalds) decided to coin the term “Open Source”. They developed a set of principles that establish what constitutes an “open source software”. These principles are laid down in the “Open Source Definition”. This definition is used to determine whether a particular software license can be considered an open source license, and thus whether the software distributed under this license can be labelled open source software. Software licenses must meet ten conditions to be considered open source licenses<sup>5</sup>:

1. Free Redistribution: the software can be freely given away or sold. (This was intended to expand sharing and use of the software on a legal basis.)
2. Source Code: the source code must either be included or freely obtainable. (Without source code, making changes or modifications can be impossible.)
3. Derived Works: redistribution of modifications must be allowed. (To allow legal sharing and to permit new features or repairs.)
4. Integrity of The Author's Source Code: licenses may require that modifications are redistributed only as patches.

No Discrimination Against Persons or Groups: no one can be locked out.

5. No Discrimination Against Fields of Endeavor: commercial users cannot be excluded.
6. Distribution of License: The rights attached to the program must apply to all to whom the program is redistributed
7. without the need for execution of an additional license by those parties.
8. License Must Not Be Specific to a Product: the program cannot be licensed only as part of a larger distribution.
9. License Must Not Restrict Other Software: the license cannot insist that any other software it is distributed with must also be open source.
10. License Must Be Technology-Neutral: no click-wrap licenses or other medium-specific ways of accepting the license must be required.

A non-profit organisation “The Open Source Initiative” was also formed to “educate about and advocate for the benefits of open source and to build bridges among different constituencies in the open-source community”<sup>6</sup>. It also inspects and certifies submitted license for conformance with the Open Source Definition. The OSI maintains a list of all approved open source licenses on its website <sup>7</sup>, this list contains 59 licenses as of these writings. Examples of these licenses include the Mozilla Public License (MPL), the MIT license and Berkeley Software Distribution (BSD) license.

## **Open Source vs Free Software**

In spite of the misguided use of the terms “open source” and “free software” interchangeably, there is a fundamental difference between the two that deserves some explanation. The Open Source Initiative allows anyone to write her own license, as long as it conforms to the ten conditions of the Open Source Definition. If the license does actually conform to these conditions, then any software that is released under this license can be called “open source software”. On the other hand, for any software to become free software, it must be released strictly under either the GNU General Public License (GPL) or the GNU Lesser General Public License (LGPL).

The Open Source Initiative offers more flexibility as it allows new open source licenses to be written. Consequently, if someone is not completely comfortable with a specific provision within the existing license, he can write a new one as long as it conforms to the conditions of the Open Source Definition. This flexibility encouraged many organisations to develop open source licenses that match their own requirements and release software under these licenses. In the long run, the community will be enriched by these contributions and the open software ecosystem will have higher chances to prosper and succeed.

Interestingly, the Free Software Foundation Licenses (the GNU GPL and LGPL) conform to the Open Source Definition, and therefore any free software is also open source software. However, the opposite is not true. Licenses other than the GNU GPL and LGPL that are accepted by the Open Source Initiative are considered by the FSF as being more restrictive and do not qualify as free software licenses. To clear the confusion between free software and open source, the term “Free and Open Source Software – F/OSS” (sometimes called Free/Libre and Open Source License – FLOSS) was coined to embrace both concepts.

## **Implications for Development and Localisation**

The free and open source software (F/OSS) movement has crucial implications for the use of technology in development in the developing nations. The philosophy upon which the whole movement was built is based on freedom, equitable access to technology and sharing. In the past, developing nations could not afford to make the investments required to acquire and implement technology, and were consequently left behind the global emergence of the knowledge society. This widening gap between the north and south is sometimes referred to as the “digital divide”. F/OSS offers an invaluable tool to bridge the gap by eliminating the massive investments required to jumpstart technology adoption in developing nations. Furthermore, because all F/OSS applications warrant access to source code as part of their license agreement, software developers can actually study and learn the functionality of applications, which would enhance their software development capabilities. Coupled with the freedom to adapt the software and modify it for any use, programmers in developing nations can build tailored applications to satisfy their countries’ own requirements and development needs.

F/OSS also facilitates overcoming an important obstacle to technology adoption in local communities: the dominance of English as the de facto language for computer software.

The availability of source code and the open development processes afforded by F/OSS enable the localisation of software to local languages in a much faster and simpler way using the collective effort of local contributors. Breaking the language barrier will encourage societies to adopt technology and utilise it in their daily lives. This would also change their attitude from simply consuming digital content to active participation and development of content that is more relevant to their own societies

and which reflects their values and morals. Communication becomes easier and better understanding among cultures change into a reality.

With the significant decrease in the investments required to acquire and implement technology, governments will be more capable of adopting modern technologies to support development projects and activities in their countries. Technology has affected all aspects of human life, and a technologically empowered society is better equipped to tackle the problems inhibiting its growth and development. F/OSS can lubricate the transformation of societies in developing nations into knowledge based societies for the benefit of all. When societies are empowered by technology and learning, the potential for creativity and innovation is unlimited, and these societies can have the chance to play their role in shaping the future of humanity.

## **The Author**

Mr. Anas Tawileh is a researcher and consultant for Information and Communication Technology for Development (ICT4D). He worked for many projects to bring technology to developing countries and has designed, developed and delivered several training and capacity building programmes and workshops. He is currently working as consultant for IDRC's ICT for Development (ICT4D) project in the Middle East, which aims to contribute to the development of an inclusive knowledge society in 5 countries: Jordan, Lebanon, Palestine, Syrian and Yemen. His experience also includes more than 7 years of working with international organisations such as the European Commission, Open Society Institute, The Association for Progressive Communications.

Anas has published many papers in scholarly journals and industry magazines and has contributed to and authored several books, including: Open Source, Unlimited Opportunities, Voice over IP for Development Primer, Wireless Networking in the Developing World and Emerging Free and Open Source Software Practices.

A firm believer in Free and Open Source Software(F/OSS), he established the GNU/Linux Syria User Group in Damascus in 2002 and co-founded the Internet Society - Syria Chapter. Anas started the Arab Commons initiative as an attempt to advance the Creative Commons cause in the Arab World. Anas is also a member of the International Advisory Board of the Global Text Project He has a lifelong love affair with animated cartoons, specially Tom & Jerry.

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# THE GNU FREE DOCUMENTATION LICENSE

## AN INTRODUCTION

Anas Tawileh\*

\*A researcher and consultant for Information and Communication Technology for Development (ICT4D). He worked for many projects to bring technology to developing countries.

Full biography p 55.

*The views expressed herein are solely those of the author and do not necessarily reflect the views of the Bibliotheca Alexandrina.*

## **Introduction**

Over the past few years, the Free and Open Source Software (F/OSS) phenomenon proved itself as a highly successful movement, capable of producing high quality software applications that rival their proprietary counterparts. At the heart of this movement is the GNU General Public License (GPL), written in 1989 by Richard Stallman<sup>1</sup>. The GPL was Stallman's genius response to the increased restrictions applied by software companies on the use, modification and redistribution of the software applications they produce. These restrictions are usually enforced through custom user license agreements, carefully crafted by lawyers working for giant software development companies. The terms and conditions enforced by such agreements are usually much more stringent than those afforded by applicable copyright laws. Stallman perceived this growing influence and control as a significant threat to the future of software development, and to the sharing culture inherent in human societies<sup>2</sup>.

What started as the brainchild of a single smart individual quickly captured momentum. Software developers from all over the globe believed in Stallman's cause, and started to use the device he created (the GPL) to release a plethora of software applications under the permissive terms of the GPL. The inherent nature of the GPL that is premised on sharing and freedom created a snowball effect in the growth of what later became the Free and Open Source Software (F/OSS) movement. Many of today's widely used software applications, such as the GNU/Linux operating system, Mozilla and Apache, are distributed under free or open source license agreements.

But the influence of the ideals adopted and promoted by the F/OSS movement were too good to remain confined in the software development world. The movement provided other disciplines with a practical role model that can be replicated in other fields of

endeavor. Organizations and initiatives that promote openness, stimulated by the massive success of the F/OSS movement, emerged to apply the same principles in media, journalism, knowledge production and distribution, governance, education, etc.

Probably among the first of these movements, and one that was started by Richard Stallman himself and the Free Software Foundation he established, was an initiative to promote freedom and openness of knowledge captured in textual format, rather than software source code. A novel legal device called the GNU Free Documentation License (FDL)<sup>3</sup> served as the cornerstone for this movement in exactly the same way as the F/OSS movement emerged around the GPL.

This article will introduce the GNU Free Documentation License (FDL) through its historic background, and will highlight the features of the license and its potential for promoting the production and access to knowledge, particularly in developing countries. Several examples that utilize the FDL will be introduced, along with the implications of the use of this license by practitioners.

### **Beyond the GPL**

The adoption of the GNU General Public License (GPL) did not face any significant difficulties. Despite all the challenges it posed to proprietary software development companies, and the vested interests of so many players, the GPL was incredibly successful in attracting large numbers of software developers to write and contribute high quality software. This can be partly attributed to the characteristics of the software development process, in which several developers collaborate to write small chunks of code, in addition to the ethos of software developers who tend to favor tinkering around with source code to learn how it works, and then work on improving it. The result of the growing influence of the GPL can be easily observed in the large numbers of software

applications and tools that were distributed under its terms. In a relatively short period of time, viable free and open source alternatives became available to almost every major proprietary software application.

This thriving community, however, was frequently accused of producing highly complex, and not very user friendly applications, a deficiency seen by many as a major issue preventing free and open source software from achieving its full potential. The Free Software Foundation (FSF) was aware of this issue, and was determined to address its cause. After serious investigations and discussions, the FSF concluded that the deficiency does not lie in the free software itself, as mounting evidence suggested that the F/OSS movement was producing highly reliable and dependable applications. The problem was, however, the severe lack of good manuals and instruction guides for these applications.

The Free Software Foundation understood that deficiency, and decided to take appropriate action to rectify it. What was needed is a way to encourage writers and authors to produce high quality manuals to explain and teach Free and Open Source Software applications. Such materials are usually text-based, aiming primarily to capture and communicate knowledge (in this particular case the knowledge presented relates to how to use software applications). The materials to be developed need to conform to the principles of openness and freedom advocated by the Free and Open Source Software movement. This is achieved by eliminating or reducing the restrictions imposed on the use, copy, modification and redistribution of the textual materials. Traditionally, textual materials, represented in books, newspapers, magazines, encyclopedias and manuals, are considered to be creative works, and hence automatically protected by copyright laws. Under the protection of these laws, the user is restricted from copying, modifying and/or redistributing the materials. Such restrictions are incompatible with the F/OSS

philosophy that considerably reduces the copyright restrictions on software applications. Therefore, a legal tool, similar to the General Public License, was needed for textual materials.

The question naturally poses itself: why not use the GPL itself for textual content, rather than creating a completely new license? To a large extent, the new license will attempt to do the same thing: limit the restrictions imposed by copyright laws on creative materials. The answer lies in the inherent difference between the nature of software applications and textual content. Software applications are written in specific computer programming languages. These languages, while comprehensible by humans, cannot be understood by machines unless translated into machine instructions. Hence there are two versions of any software application: the original script written by the human programmers (referred to as the “source code”), and the version that can be executed by the machine (referred to as the “binary” version). The GPL, written primarily for software applications, must have provisions for this specific characteristic. Textual content, on the other hand, does not have such limitation. The text is usually consumed in the same language in which it was written, unless it was translated into another human language. To address these issues, the Free Software Foundation decided to create a new license specifically designed for textual content, and called it: the GNU Free Documentation License (FDL).

### **The GNU Free Documentation License**

The first version of the GNU FDL was released in March 2000. The license followed the model of the GPL, and was specifically designed to suit reference materials that accompany Free and Open Source Software applications (although it can be applied to any kind of reference materials). Freedom of content, defined as “to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either

commercially or noncommercially.”<sup>4</sup>, was emphasized as the overarching aim of the license.

In the same spirit of the original GPL, and to prevent anyone from restricting the freedoms granted by the license by changing the terms under which derivative works are distributed, the FDL required that any re-distribution of the work or any derivatives based on it should retain the same licensing conditions. In other words, if you liked a work that has been released under the FDL, and want to redistribute it, you should only do so under the FDL itself, acknowledging the original source of the work. Moreover, any modifications or changes that are based on the original work should also be released under the FDL. This provision ensures that content released under the FDL will remain free forever. Content released under the FDL is considered to be “free content”, with free here referring to freedom, rather than has no price.

The licensing conditions of the FDL can be summarized as follows:

- All authors who contributed to the work should be attributed.
- All changes made to the original work should be tracked in a “history” log.
- All modified or changed works based on the original FDL-licensed work (these works are usually called “derivative works”) should be released under the FDL.
- No technical measures that restrict access to the work (such as Digital Rights Management – DRM<sup>5</sup>) can be implemented.

The GNU FDL defines specific sections that should be added to works distributed under this license in order to facilitate its enforcement. These include cover texts (text that appears on the front and back covers of a book or manual, for example), title page (which may appear on the cover itself), document history log and disclaimers.

The license also distinguishes between two document formats: transparent and opaque. Transparent formats are machine readable, enable straightforward revision and modifications to be made directly to the document, are based on specifications available to the general public, and can be easily translated into other document formats. Opaque formats are defined as any formats that do not satisfy the criteria to be considered transparent. Examples of transparent formats include plain text documents, simple HTML documents and write-enabled PDF. Opaque formats include read-only PDF documents and proprietary e-book formats. This distinction is implemented primarily to facilitate the modification and improvement of free materials that comply with the license conditions. Easy and straightforward modification of the work also plays an important role in stimulating improvement and derivatives.

Redistributing any modified version of any work originally released under the GNU FDL must satisfy several requirements to comply with licensing terms. These requirements include maintaining a history log in the document that properly attributes the work to all previous authors, clearly stating the author and publisher who are responsible for the modified version, removing any endorsements applicable for the original version as the original author(s) cannot be held responsible for changes made to their work, and making a transparent copy of the modified work permanently available to the public. These provisions protect the rights and interests of original authors—those who contributed to, altered or improved free works—and the readers as well.

### **Why Use the GNU Free Documentation License?**

It is clear now that the GNU Free Documentation License (FDL) is an innovative copyright tool that offers many benefits to the Free and Open Source Software community and users, in that it enables the development of high quality technical

reference and instruction materials to supplement the outstanding F/OSS software applications. But how can the FDL benefit authors and creative workers?

While the motives behind the adoption of openness in creative production is still an area of heated debates, increasing numbers of authors, scientists, artists and researchers are actively contributing to a growing body of free and open content. In fact, vibrant movements have emerged around these communities of practice, such as open access and access to knowledge. The FDL can probably be considered one of the first enablers for these movements. It facilitates sharing, distribution and improvement of content, and at the same time preserves the rights of all authors to be properly attributed and acknowledged. These features alone can stimulate creativity and contribution, as authors know that their contributions will be properly attributed and will, more importantly, remain free and open for the benefit of humankind.

However, the FDL went further to explicitly incorporate features that encourage authors and commercial publishers to release their work under its licensing terms and conditions. For example, cover texts serve as a very effective way to communicate to readers who is the original publisher of the work. Any subsequent modifications or derivatives based on this work are obliged to retain the content of the cover text, preserving the branding of the original publishers. The legitimate fears of changes that are considered undesirable by the original authors and publishers are mitigated by the license's requirement to maintain a history log in the modified version. The history log will indicate, clearly and unambiguously, what has been changed in the document and by whom. It also provides references to the previous versions. Another feature that caters to the interests of publishers is the requirement to remove any endorsements made by the original publisher



from any modified versions, hence clearing this publisher from any liability towards subsequent derivative works.

### **The GNU FDL in Practice**

The GNU FDL was quickly adopted by contributors eager to support the F/OSS movement, and willing to contribute their energies into producing high quality technical manuals and reference materials for F/OSS software applications. However, the most prominent and widely known applications of the new license extend to areas that were mostly unimaginable when the license was conceived.

It can be argued that the biggest success of the FDL lies in its adoption by Wikipedia, the online collective, free encyclopedia<sup>6</sup>. When Wikipedia's founder Jimmy Wales was exploring the licensing options for his new invention, he was looking for a copyright license that is compatible with the needs of a massively distributed knowledge resource, authored and curated by hundreds of thousands of contributors from all over the world, which also needs to remain freely accessible to any reader, no other option was perfectly suited than the GNU FDL.

On Wikipedia, authors contribute articles about topics of interest to the encyclopedia's audience. When the number of users vetting the contributed articles and correcting, changing and updating its content increases, the quality of the articles increases as well. Two key innovations in Wikipedia enabled it to accelerate this process to quickly become one of the world's most cited knowledge resources. The first innovation is making the encyclopedia content freely available to anyone on the web. This feature attracted large numbers of readers who consequently spotted errors and took action to correct them. There is a famous statement in the software development world that says: "with enough eyeballs, all bugs are shallow"<sup>7</sup>. This was primarily empowered by the use of the GNU

FDL. The second innovation lies in making the process of adding or changing content on Wikipedia extremely simple and straightforward. This was achieved by using a software application called wiki to manage the encyclopedia's content.

Wikipedia is currently ranked as the eighth most popular website in the world according to the Internet statistics engine Alexa<sup>8</sup>. It contains more than 13 millions articles and close to 1.5 billion words. The site attracts more than 7 million visits per hour. Clearly, these are signs of the great success achieved on the premises of sharing free and open knowledge, and empowered by the GNU FDL.

Note: Wikipedia has recently decided to change its licensing system to Creative Commons. The FSF cooperated with the encyclopedia to facilitate this move.

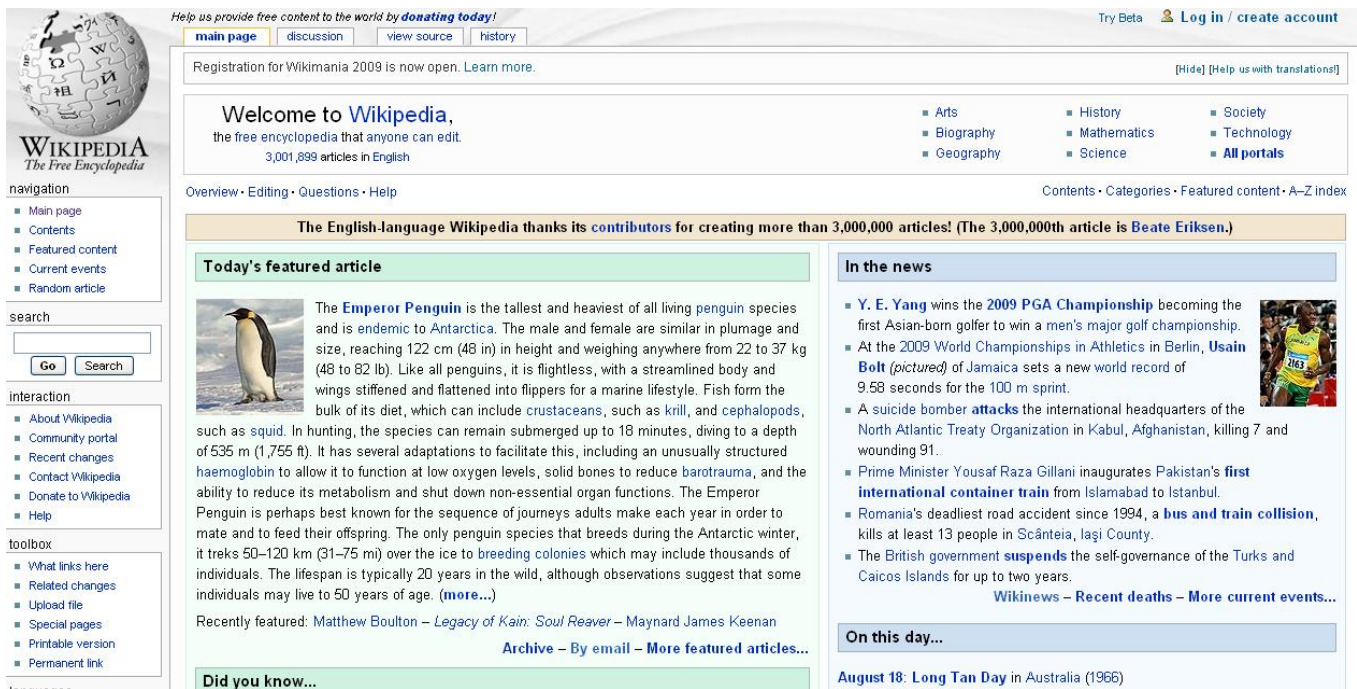


Figure 1: Screenshot from the English Wikipedia

## Similar Initiatives

The growing adoption of the GNU FDL, and the success of the initiatives and projects that adopt this license, prompted others to think about adapting the concepts and philosophy underpinning the FDL to address different problem sets. A prominent example is the inception of Creative Commons by Larry Lessig<sup>9</sup>. Lessig wanted to extend the GNU FDL to cover not only textual content, but all forms of creative work, such as video, audio and multimedia. He also claimed that the FDL, rooted in Richard Stallman's idealism, is probably more open than what creative content producers may actually want.

Lessig's answer was to devise a set of flexible licenses that can be combined together in a "mix and match" fashion to generate customized licenses that can be as permissive, or as

restrictive as the author desires. Control over the freedoms offered to the users of the work is completely delegated to the author. For example, the author can decide to allow free use of the work for non-commercial purposes, or prevent any modifications or changes. Creative Commons also provided a set of easy to use tools to support the authors in making their content licensing decisions. Complete discussion of Creative Commons is provided in another article in this toolkit.

### **Implications for Practitioners**

This article has introduced the GNU Free Documentation License, and highlighted its historical development, along with its specific features and characteristics. It also discussed the benefits that can be reaped by adopting the license, and used Wikipedia as an example of a successful initiative based on the FDL. Similar initiatives that adopt the principles of freedom and openness were also introduced.

For access to knowledge practitioners, particularly in developing countries, the GNU FDL provides a unique tool that can be effectively employed to address many challenges of access to knowledge facing nations in the south. In exactly the same way in which Wikipedia created a massive, reliable and vibrant knowledge repository and made it open to all humankind, this success story can be replicated in other endeavors. For example, policies can be formulated and adopted to favor the use of open content whenever possible in school and university curricula, training materials, publications, etc. Moreover, content that is available under the FDL can be easily translated without the need to obtain permissions from original authors or incur prohibitive copyright royalties.

On the personal level, active participation in the development, translation and distribution of open content proved to be a powerful reputation device that can quickly elevate the readership and audience of authors by making their works available under favorable

licenses. It also facilitates translation to other languages. The case of Paolo Coelho<sup>10</sup>, the famous Brazilian author, is frequently cited to demonstrate that releasing creative work under favorable licensing conditions usually leads to higher revenues to the author and the publisher. By combining the creative power and will of individuals and governments in the south, and joining the increasingly growing global collective wisdom to learn and to contribute, we will undoubtedly be much better positioned to address our development challenges.

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# Considerations and Motivations

## For the Use and Development of Open Source Systems

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Full biography p.83.

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## **Abstract**

This paper addresses the various qualities of the open source model from both an end-user's and developer/service provider perspectives. It addresses some of the main concerns, and outlines some of the main work models. The paper concludes that the open source model has established itself as an important alternative to proprietary development models and should be given adequate attention when making software-related decisions.

**Keywords:** open source software, software assessment and evaluation, work models for the software industry, reliability, performance, security, and total cost of ownership.

## **Introduction**

Open source software has gained a significant amount of mindshare and has been the subject of much debate. Often promoted as being more efficient than proprietary software (from an ethical and social point of view [Error! Reference source not found.]); and criticized as being unrealistic or too idealistic.

According to the "Open Source Initiative" [Error! Reference source not found.] software is considered "open source" if its distribution terms adhere to the following:

1. Free redistribution;
2. The distribution must include the source code, and allow distribution in source code as well as compiled form;
3. Derived works: The license must allow modifications and derived works;
4. Integrity of the Source Code;

5. No discrimination against persons or groups;
6. No discrimination against fields of endeavor;
7. Distribution of License;
8. License must not be Specific to a Product;
9. License must not Restrict Other Software; and
10. License must be Technology-Neutral.

The full and elaborated definition can be found in [Error! Reference source not found.] and examples of open source licenses can be found in [Error! Reference source not found.] (some are outlined in Figure 1).

This paper attempts to address the merits of the open source model from both an end-user's and developer/service firm perspectives.

Software license	Available at no cost	Distribution allowed	No usage restrictions	Source code freely available	Source code modification allowed	Derived work must be free again	Linking with proprietary software allowed
Public Domain	X	X	X	X	X		X
Shareware	(X)1	X					
Freeware	X	X	X				
GPL	X	X	X	X	X	X	
LGPL	X	X	X	X	X	X	X
MPL	X	X	X	X	X	X	X
BSD-License	X	X	X	X	X		X

1) Shareware is gratis for a trial period only

**Figure 1. Different open source license models [Error! Reference source not found.].**



## **A user's perspective**

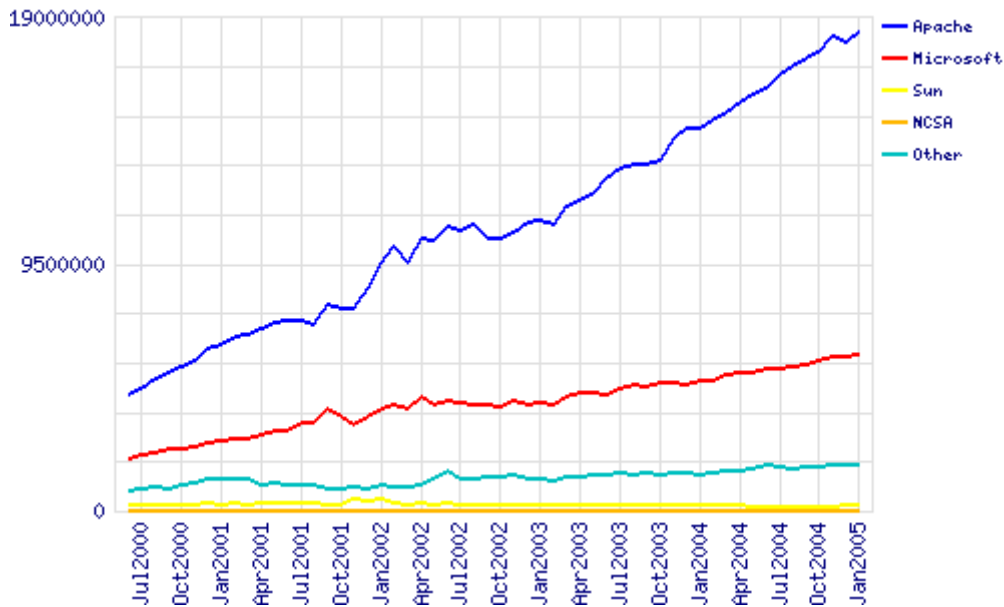
This Section considers an end-user's perspective to the deployment and use of open source software. It is based on the treatment found in [0].

The main issues this section addresses are market share, reliability, performance, security, and total cost of ownership.

### **Market share**

Market share or whether a product "is mainstream" is an important decision-making criteria for users. This is due to the fact that the more mainstream the product is the more likely it is to find trained staff, product-related resources resource, and reduces the risks associated with the decision to adopt the product in question.

There are many open source products that have become mainstream and obtained significant market share. Perhaps among the most well known are GNU/Linux operating system and the Apache web server. Figure 2 shows the market share of various open source and proprietary web servers showing the dominance of the open source Apache web server. Figure 3 shows dominate but decaying market share of preparatory web browsers.

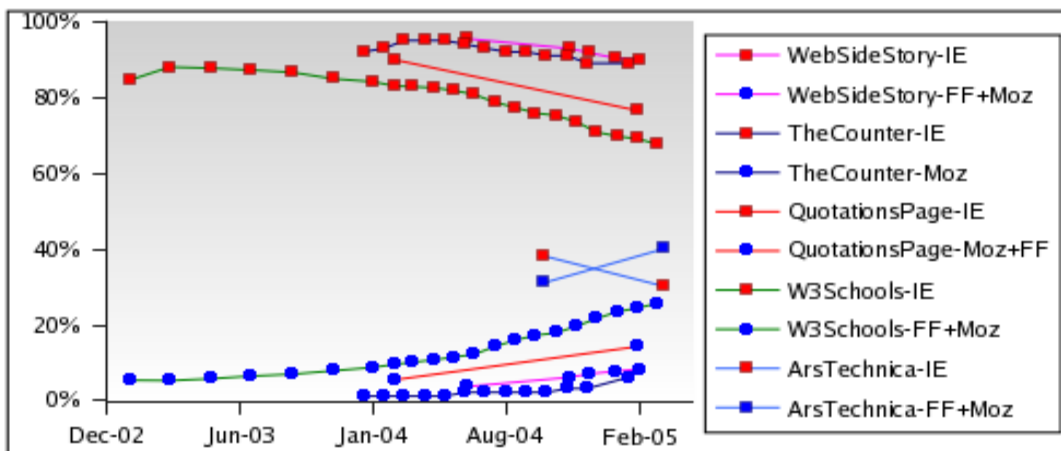


**Figure 2. Totals for Active Servers across All Domains, June 2000 - January 2005**

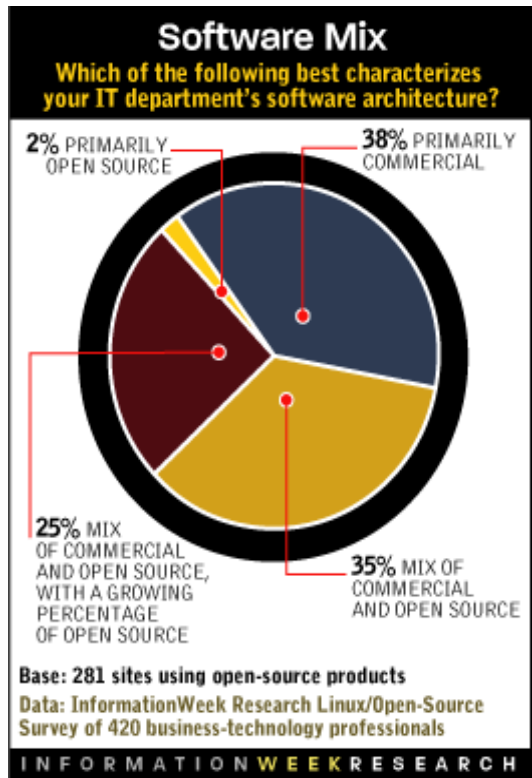
[Error! Reference source not found.]

One may conclude that if open source products exist and have proven their success by maintaining a healthy market share, then it would make sense to consider the adoption of such products. Of course, it is hard to determine if such products exist for all categories of interesting software. Figure 4 shows the result of a survey [Error! Bookmark not defined.] about the use of Open Source Software.

### Web Browser Market Share (Wheeler Summary)



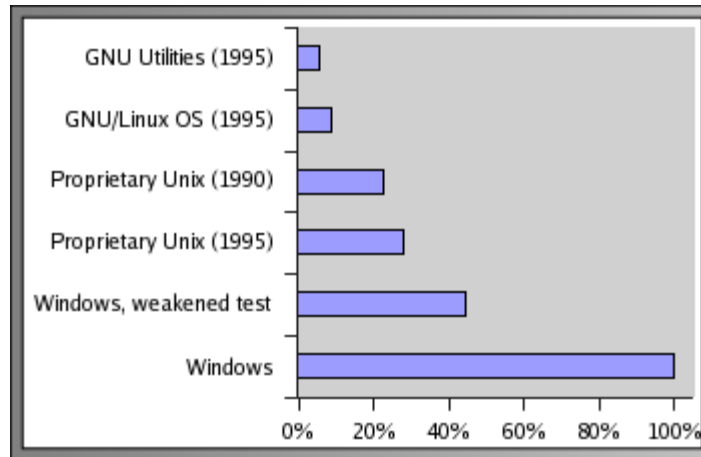
**Figure 3. Web Browser market share [0].**



**Figure 4. Open Source Software Usage (based on a survey conducted by Information Week) [Error! Reference source not found].**

## Reliability

Reliability is an important criterion when selecting mission critical software. There is some evidence that suggests that open source software offers enhanced reliability. It may be possible to attribute this to the development model of open source software that allows for rapid modifications and testing. Additional information about this can be found in [0,0].



**Figure 5. Failure Rates as Measured by Fuzz Testing<sup>2</sup> [0]**

## Performance

Performance tests are often controversial due to the many factors and assumptions that affect the results. This often results in conflicting results and conclusions. However, for the purpose of this study it is safe to say that there have been successes for both open and closed source software. Examples of such studies can be found at various locations (such as <http://www.tpc.org/> and <http://www.eweek.com/article2/0,3959,293,00.asp>). Hence, careful evaluation of individual products is necessary when performance considerations are important for project success.

## Security

The fact that a program is open source does not make it automatically more secure. However, the same arguments made for reliability tend to apply here as well. That is, problems found in open source software tend to be fixed faster resulting in improved

<sup>2</sup> Fuzz testing is a form of testing that depends on the use of random data as input to the software. See [http://en.wikipedia.org/wiki/Fuzz\\_testing](http://en.wikipedia.org/wiki/Fuzz_testing) for additional information.

security. However, there are other issues that tend to favor open source systems when security is an important issue. Perhaps those are best summarized by the following statement “Public security is always more secure than proprietary security. It is true for cryptographic algorithms, security protocols, and security source code. [...] open source is not just a business model; it is smart engineering practice” [Error! Reference source not found.]. Hence, when security issues are of paramount importance is it considered prudent to use open source solutions<sup>3</sup>.

### **Total Cost of Ownership**

The total cost of ownership is an important measure and decision-making tool for numerous users. It is also, however, dependant on individual and environmental needs. There have been numerous studies comparing the TCO of open vs. closed source systems with mixed and conflicting results (see [0] and [Error! Reference source not found.]). However, it should be noted that many case studies have shown that the use of open source software has resulted in significant cost reduction (for example, Amazon.com [Error! Reference source not found.] and the city of Largo [0]).

Basically, every user considering open source solutions should conduct their own TCO study to apply local and environmental constrains in order to obtain accurate results. An interesting view is offered in [Error! Reference source not found.] which expresses the thought that “[...] the long run total cost of operations (TCO) for a suite of proprietary software must necessarily be greater than that for an equivalent suite of free software [...].”

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<sup>3</sup> Note that for security issue the term open source is used in the broad sense of the term and, even though recommended, doesn't necessary have to adhere to the definition provided in [1].

## **A Developer and Firm perspective**

One frequent concern is that without adequate protection of intellectual property there would be no real incentive for innovation. The idea being that intellectual property regulations create a form of artificial scarcity that enables creators to benefit from their intellectual product. While such arguments are accepted by many, the overwhelming presence of open source initiatives in software and elsewhere confirms that this is not the only motivation for creativity. Indeed, open source development is often described as an instance of the scientific method of creating knowledge. However, the fact remains that in order to create effective knowledge-based industries we need effective work and business models.

Another aspect of this phenomenon is observed in [Error! Reference source not found.] where the author's research reveals that about one-third of surveyed open software developers are paid by firms. Such firms are motivated by profit and consider open source development to be one of their tools for success. Furthermore, there have been some recent changes by firms to convert their formally proprietary software into open source software (e.g., IBM, CA, SAP, and others).

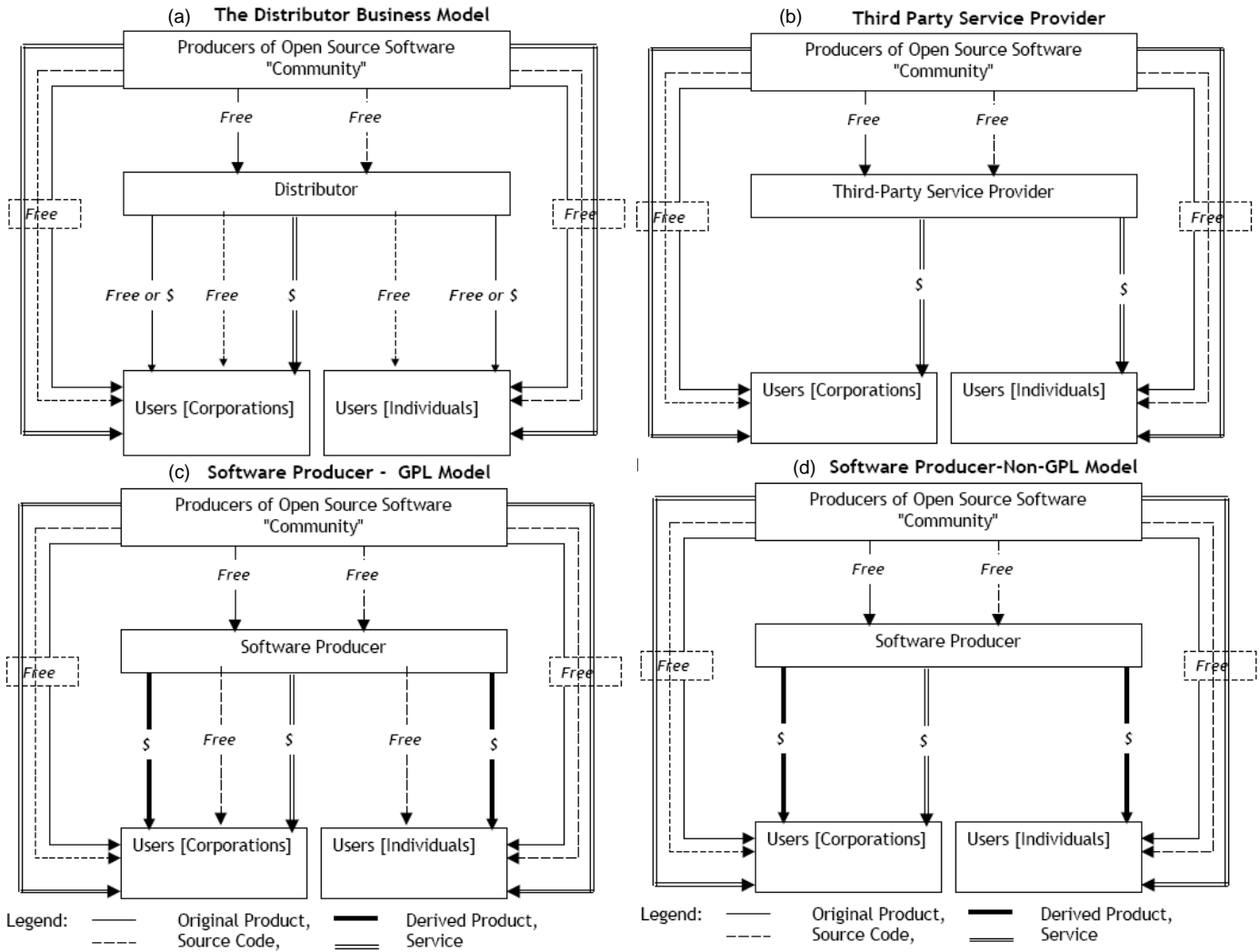
## **Work Models**

A number of models have been applied by firms to benefit from and support the open source movement. Those are mainly identified as-this treatment is based on [0]: (1) the distributors; (2) the software producers (GPL and non-GPL models); and (3) service providers.

### **The Distributor Model**

Distributors are firms that provide access to source code and open software products. Examples include, Red Hat and Suse Linux. Such firms tend to gain money

from selling CD and customized versions of their products and by offering various update and support services to enterprise clients.



**Figure 6. The Open source work models [0].**

## **The Software Producer Model**

Software producers that depend on non-GPL such as licensing can either incorporate source code in existing products or bundle products within packages or offerings. Both models share many similarities, but the main difference lies in that the non-GPL producer does not have to release his product for free and make the source code available.

Figure 6 (6c) and (6d) show this basic difference.

## **Service Providers**

The service provides model (depicted in

Figure 6(6b) depends solely on selling support and upgrade services. The service model is also very important as a complement for the other models discussed here. Many authors have observed (see [0]) that the sale of open source software alone may not be enough to sustain a firm; hence it is often complemented with a services model. The author believes that on the mid-to long-term the combination of the GPL software production with the service provider model will dominate a large part of the commodity software industry.

One should note that success in the open source services and consulting business also depends on the type of consulting being performed. It is suggested in [**Error! Reference source not found.**] that open source consulting firms are expected to be more successful when product know-how is important and that when more strategic consulting is required open source knowledge become less important.

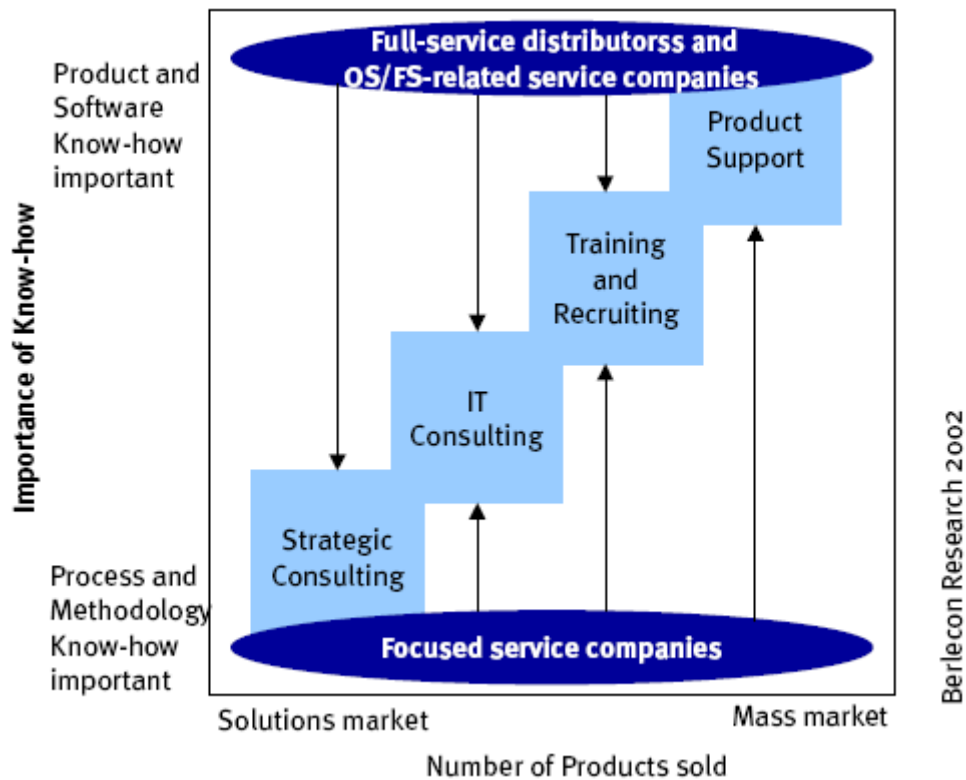
## **Strategic motivations**

Not all software firms involved in open source activities are committed to such development models. Indeed, some firms have used open source to influence their



standing in other areas of the software and IT business. Some examples of such strategies-outlined in [Error! Reference source not found.]- include: SAP releasing its SAP DB database product as open source enables it to reduce the overall price of its Enterprise Resource Planning application to compete more effectively with companies such as Oracle (which presumably cannot do the same since the Oracle's database product is part of its core business).

Other companies, such as IBM, may benefit from open source models to provide unified access to its diverse hardware platform which may lead to increased hardware sales.



**Figure 7. Areas of success in open source related services [Error! Reference source not found.].**

## Conclusions

This paper addresses the benefits of using and developing open source software from a number of different perspectives. It is fairly clear that the open source model has established itself as an important and successful alternative to proprietary development models.

Users and developers considering software development should consider open source platforms and models as an important alternative to proprietary software. Furthermore, it is also worth noting that it may not be always possible to rely (at least entirely) on open source software. This is mainly due to reasons of availability, compatibility with existing closed systems, or due to legal requirements such as certification.

From a developing country perspective, open source software seems to lower the entry bar, particularly in the commodity software product area and in embedded systems; it makes sense to consider basing local development efforts on a suitable open source model.

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# CREATIVE COMMONS

## An Introduction For Practitioners

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Full biography p.55.

*The views expressed herein are solely those of the author and do not necessarily reflect the views of the Bibliotheca Alexandrina.*

## **Introduction**

Creativity and innovation are essential ingredients for the development of human society. Scientific, economic and social evolutions require the orchestrated efforts of many intellectuals, working together on overcoming the challenges to human development and inventing novel concepts, theories, tools and technologies that can be effectively exploited to serve humanity and improve the well-being of society. Think for a moment of the scale of technological and social developments in our modern world. While some may argue that these developments have been misused, no one can deny the considerably higher quality of life we enjoy compared to our ancestors. Cures now exist for infectious diseases that once could destroy a complete nation, travel and communications became much easier and cost effective that people can now engage in dialogues with each other in ways that were unimaginable just a few decades ago, and the list goes on.

Such massive developments could only become possible through the empowerment of researchers and intellectuals to capitalise on the gigantic body of knowledge built by their fellow creative workers. Every innovator taps into the knowledge sources produced by others and contributes back to the development of human wisdom. However, with the increasing complexity of creative and intellectual work, appropriate incentive systems should be implemented to motivate intellectuals to invest their time and effort in contributing to the global knowledge creation. Without such systems, very few are willing to devote their scarce resources to expand the borders of knowledge in the highly demanding modern lifestyle. But these incentive systems should be carefully designed to serve their main purpose: motivating intellectuals to produce creative work by guaranteeing them a fair return on their investment of intellectual and financial capital. They should not block access

to knowledge in such a way as to prevent others from capitalising on the previous body of knowledge in their pursuit for creativity and innovation.

Traditional copyright regimes were devised to serve exactly this purpose. They promise any intellectual worker who is willing to spend time and effort developing creative materials (artistic, scientific, technological, etc.) an appropriate reward for her investments by giving her the exclusive right to exploit these materials commercially for a certain period of time. Copyright laws also (at least theoretically) guarantee access to these materials for others through different mechanisms, such as fair use, limitations and exceptions and by limiting the term of exclusive protection of creative works.

The Internet has undoubtedly revolutionised access to knowledge and creative content on a global scale. Its ability to bypass geographical and physical barriers previously constraining distribution of content and access to information, combined with the unsurpassed power of digitisation in storing, indexing, searching and retrieving creative materials have changed the dynamics of the creation, development, distribution and access to information and creative content. More people are now able to retrieve content, develop their own and distribute it to practically anyone in the world with a connection to the Internet, in what may be called the democratisation of content creation and distribution tools. Nevertheless, existing copyright laws which were mostly developed in the offline era did not evolve sufficiently enough to enable this new movement to prosper and grow. Several authors have argued that traditional copyright regimes have serious flaws that render them ineffective in the rapidly changing electronic information age.



In this article, the historical development of copyright laws will be briefly presented in order to lay the ground for the discussion of their limitations and weaknesses. Creative Commons will then be explained as an innovative companion to existing copyright regimes that addresses these issues, together with a discussion on how it benefits intellectual and creative workers. A practical account of the tools offered by Creative Commons follows, and the article concludes with some hints and tips for the implications of Creative Commons on access to knowledge in developing nations.

### **A Brief History of Copyright**

The first known copyright law is the Statute of Anne, enacted to achieve a clear goal very well articulated in its title: "An Act for the Encouragement of Learning, by vesting the Copies of Printed Books in the Authors or purchasers of such Copies, during the Times therein mentioned." [1] Therefore, the original copyright law intended to promote innovation and creativity while, probably more importantly, preserving the right of everyone to access intellectual and creative materials so that learning can also be guaranteed. This was warranted through a limited term of copyright protection: 14 years renewable once if the author was alive, and that all works already published will get a single term of 21 years. After the protection term expires, the work falls into the public domain, which means that the ownership of the work is transferred from the original author to "the public". Copyright laws do not apply to the public domain, and any person may access and exploit any work from the public domain without requiring any prior consent from the original author. The rationale behind the renewable term lies in accelerating the transition of works into the public domain if the author dies and therefore can not benefit from the incentives of protecting his productions. Moreover, the law actually protected a very specific

restriction: to prevent others from printing a book [2]. It can be reasonably argued then that copyright was born as a balanced approach to protect the interests of both authors and users.

When the term of copyright protection for existing works at the time approached its expiry date, book publishers feared the consequences of such event, which they believed will lead to greater, more intense competition, and would therefore undermine their monopolistic positions and weaken their profits. They first appealed to parliament to extend the term of protection, but the parliament rejected their request, arguing that extended copyright terms will block the society's access to published works. But publishers did not give up and appealed their case to the court. Their argument stated that although the Statute of Anne protects some of their rights, the expiry of this protection does not nullify the rights to protection granted by the common law. Under the common law, using another person's creative work requires her permission. The court ruled in favour of publishers on the basis of "perpetual" rights in the common law, and the transition of copyrighted works into the public domain was delayed until further notice.

An appeal was later made to the House of Lords against the "perpetual rights" case. The argument this time was that the Statute of Anne effectively terminates any rights that have existed before its passage, and therefore the only protection to copyrighted materials are those specified by this statute. In 1774, the House of Lords accepted the appeal and confirmed the central concept in copyright law: the limited term protection. Having rejected the "perpetual rights" claim, all works for which copyright protection has expired under the Statute of Anne are no longer protected, and the public domain was born.

After few years, in 1886, the first international recognition of copyright was established through the Berne convention. Under this convention, authors are not required to register their works to obtain protection, copyright is automatically applied on any creative work as soon as it is fixed (recorded on a certain medium, such as paper, tape, disc, etc.) and exclusive rights are granted to the author for the exploitation of her work. The important point to note here is the automatic nature of copyright protection, which has significant implications on both the author and the users. Authors may produce content which they wish to make freely available, or to distribute on a wider scale without strict copyright restrictions. Unfortunately, the current copyright system is of very little use in such cases. Simply making the content itself available without registering it or adding a copyright protection notice does not work, as the work is still protected to the maximum extent possible under the copyright law.

The United States congress enacted the first copyright law in 1790. The American law was largely based on the Statute of Anne, and granted exclusive rights to the original author for a period of 14 years renewable once if the author is still alive. This would serve the same aims of balancing the benefits to authors and benefits to society. In 1831, the American copyright law was amended to increase the first protection term from 14 to 28 years, thus effectively increasing the overall possible protection term to a total of 42 years. Moreover, an additional clause was added to allow the widows and children of authors to file for renewal [3]. This clause constituted a serious development, as it basically contradicts with the main goal of copyright protection: creating the incentives for creative people to generate content while preserving the right of society to access and benefit from this content.

In 1909, the U.S. Congress extended the renewal term from 14 to 28 years, increasing the overall protection period to 56 years. Clearly, parties interested in more strict and lengthy copyright terms were lobbying to shape the future of copyright protection. Another event that confirms this observation is the 1976 Copyright Law that extended all existing Copyrights for an additional 19 years. The new law also granted a period of copyright protection that extends to the life of the author plus fifty years. In 1998, the Sonny Bono Copyright Term Extension Act (also called the Mickey Mouse act, as Disney was the major player in lobbying for its passage) extended the term of copyright protection of all works for 20 years. This means that the current effective copyright protection term is 95 years.

The consecutive extensions to the copyright protection law have three major implications: first of all, they contradict the original concept of copyright as a tool to balance the benefits to the author and society. Secondly, the limitation of copyright protection terms became legitimately questionable, as no end point can be envisaged of possible future extensions. And lastly, all these extensions practically mean that the transition of works into the public domain is continually delayed.

## **Technology and Copyright**

The original copyright law was devised to protect printed books from being copied by others. This is clearly evident from the name itself: “copyright”. At the time, this was the only viable way for mass production and distribution of creative content, which was mostly written materials. Technological developments have brought major breakthroughs in the ways content is created, stored and distributed. Two particular technologies carried the most significant impact on change: the advent of digital computers and the Internet.

Digital computers have fundamentally transformed the ways in which content can be created, stored and reproduced. They enabled creative materials to be represented in digital format. Digitally representing content liberates it from the constraints of physical mediums. Information content can be stored without the need of paper and books, music and video can be saved without physical tapes, discs or other storage media. Moreover, copying became much easier, as the replication of digital content does not require any specialised skills or materials or expensive equipment. With a simple mouse click or by pressing a couple of buttons on the keyboard, you can literally create as many copies as you want. Additionally, digital copies do not degrade the quality of the material. In the pre-digital era, copying implied a certain reduction of quality. Take the example of copying a video tape, the picture quality will degrade in every consecutive copy made away from the original version. Media companies have once exploited this feature to discourage copying and increase the sales of original content.

Although digital computers have enabled the easy creation, storage and copying of content without the constraints of physical media, distribution of digital content remained a victim of the physical world's constraints. Sending a digitally represented audio track or scientific research still requires placing it on a physical storage device (a floppy disk, a CD-ROM disc or a digital tape) to be sent physically to the recipient. It was not until the invention of computer networks that these constraints were relaxed. Computer networks enable digital computers to communicate among each other and exchange digital content. The largest, and most well known example of which is the Internet, which connects hundreds of millions of digital computers around the globe to a single, unified communication medium. This breakthrough destroyed the barriers of physical distribution of digital content, creating a compelling case for sharing and communication. While sharing content prior to the digital

computer and networks age involved financial costs, such as the price of copying media and the costs of using copying machines and equipment, sharing digital content is practically free. If you want to share a music album with your friend or a scientific paper with your colleague, all what you need to do is make a copy of the digital file containing this material and send it over the local network, or maybe the Internet.

The new dynamics for creating and distributing content have both positive and negative implications. On the positive side, the Internet has enabled easier access to information and content resources without regard to geographical or political barriers. Anyone connected to the Internet anywhere in the world can access and retrieve digital content from anywhere else. This effect is considered by many to be a significant step towards the empowerment of under-served communities to access information and to contribute to the well being of societies in developing regions. Furthermore, digital content production and distribution is considerably easier and much less costly than other formats. Users can now utilise widely available tools and resources to generate knowledge, art and cultural materials without being constrained by the economies of scale governing the physical production and distribution of content. These two factors have facilitated and promoted communication and dialogue among people from all corners of the globe. In essence, digital computers and the Internet have democratised the tools for producing and distributing content.

On the other hand, simplicity and ease of copying and sharing encouraged the development of a sharing culture in which participants are willing to copy and exchange digital content. Different online providers started to offer file exchange services to facilitate sharing, and user communities developed rapidly around these services and technologies (such as Peer to Peer file sharing). However, sharing of copyright protected material in any format (including the easily distributable digital

format) constitutes a violation of copyright law and is illegal in most countries of the world. Media conglomerates attempted fiercely to block the proliferation of these sharing communities, arguing that illegal copying and sharing (also called piracy) negatively affects their revenues, and consequently impairs the future development of content (a note worth making here is that several studies showed evidence that contradicts these claims, arguing that sharing has a very negligible effect on the revenues of media companies). The very nature of networking and Internet file sharing makes the enforcement of copyright laws a very difficult task. Therefore, media giants resorted to a different strategy. They lobbied for more restrictive and strict copyright legislations, while at the same time introduced different technologies to prevent users from copying digital content. The main problem with these technologies is that they do not distinguish between lawful and legitimate copying and other illegal activities. For example, while it was perfectly legal for someone who purchased an original audio CD to make a backup copy of this CD just in case the original got lost or damaged, making backup copies of the same music when purchased in digital format is not possible because of the implemented copyright protection technologies.

These increasingly restrictive copyright laws, combined with the adoption and implementation of copyright protection technologies, pose a direct threat to the fundamental objective of the creation of copyright: the balance between benefits to authors and society. They also hinder the ability of the Internet to perform effectively as a platform for innovation and creativity and as a tool for human and social development.

## **Standing on the Shoulders of Giants**

Creativity and innovation build on the past. Sir Isaac Newton once said: “If I have seen further, it is by standing on the shoulders of giants”. Digital computers and the Internet are extremely powerful tools to grant everyone access to knowledge and to empower the world to innovate. They provide an unprecedented platform for communication, learning, collaboration and creativity. They enable everyone to stand on the shoulders of giants.

Copyright laws were originally intended to foster such innovation and creativity for the well being of society. Unfortunately, during their evolution, they were steered away from this objective in favour of narrower interests of several corporations. Instead of stimulating the development of knowledge and improvement of human life, they imposed strict restrictions on access to knowledge and information and impaired the potential of the Internet as a platform for global development.

While people in developed countries can afford access to original content thanks to high income levels, those who live in less developed regions are prevented from obtaining essential knowledge and information they need as the associated costs are incredibly prohibitive. This creates a vicious cycle, low income means more limited access to knowledge, which translates into lower ability to develop and advance, driving income even lower. People in less developed regions of the world can not reap the benefits afforded by the Internet, and thus can not contribute to human development. Effectively, they are blocked from innovation and creativity.

Moreover, not everyone produces knowledge or art for the sole purpose of financial benefit. People innovate for all sorts of reasons, including financial incentives, religious beliefs, helping others and satisfying inner self esteem. Many



works are created with the intention of being distributed as widely as possible for the benefit of all. Some may have the intention of making their works freely available without any restrictions, others may permit usage of their content within certain conditions. Under the current copyright protection regimes, releasing the creative works in the wild is not enough. Copyright law protection is automatic, which means that regardless of whether the original author wanted it or not, the work is protected to the maximum extent by default. Others can not just simply access the work and use it or transform it or build on it unless they obtain the prior consent from the copyright holder. This has become a serious issue in the Internet age, as tracing the origins and copyright owners for content is very troublesome and time consuming.

So the question now becomes: is there a possible way to overcome these obstacles in such a way as to stimulate creativity and innovation on the Internet while preserving the legitimate rights of original authors and creative workers?

### **The Birth of Creative Commons**

When an appeal was made before the Supreme Court in the United States that extending copyright terms under the Sonny Bono Copyright Term Extension Act was unconstitutional, Lawrence Lessig, a law professor at Stanford and a renowned cyber law theorist, argued for the case. His central claims were (1) that extending existing terms violated the U.S. Constitution's "Limited Times" requirement, and (2) that extending terms by another twenty years violated the First Amendment. However, the Supreme Court has dismissed these claims, and upheld that the Sonny Bono Copyright Term Extension Act was constitutional.

But Lessig was determined to do something about his cause in order to answer the previously posed question: how to bring balance to current copyright laws so that

innovation and creativity can prosper in the Internet age while protecting the incentives for the development of creative content?

An appropriate and sustainable answer should satisfy several requirements. First of all, original authors should be provided with enough flexibility to attach as many or as few copyright restrictions as they want. Under the current copyright protection system, the default status is the famous “all rights reserved” case, in which copyright protection applies to your work to the maximum extent possible. The misplaced belief that to counter the excessive copyright controls, the only answer would be to subtract all protections from creative works in a “no rights reserved” manner is very far from being useful. Reality must lie in choice. Remember that the aim here is to balance the benefits to both authors and society. Authors should be in control, and should be able to decide how they want their works to be used, shared and built upon. There should be somewhere in between these two extreme cases a solution that promotes flexibility and choice.

The second essential requirement is mandated by the exponential growth of the Internet and the massive increase in the volumes of digital content produced and placed online. If users of the Internet are to reap the maximum benefits from this evolving information platform, they should be able to quickly determine the copyright restrictions as applied to any piece of content they may find online so that they can make correct decisions on how to use this material in a lawful manner. Traditionally, users were obliged to trace the original author of any creative material before they can obtain the required permission to use it for any specific purpose. This is a tedious and time consuming task, as contact details of original authors may be very difficult to find. Furthermore, the original authors may well not be the copyright owners, as they may have transferred the ownership of their works to the publisher or producer.

The brilliant brainchild of Lawrence Lessig came to answer this question and satisfy these requirements in the establishment of Creative Commons. Creative Commons (CC) is a non-profit organisation established in Massachusetts in the United States in 2001 that aims “to build a layer of reasonable, flexible copyright in the face of increasingly restrictive default rules” [4]. It realises this aim by providing a set of tools to enable authors to place as many or as few restrictions on their works as they want. These tools include several licenses that combined imply a wide range of freedoms and restrictions that can be applied to creative works. Creative Commons also provides an online platform to aid authors in selecting the most appropriate license that matches their requirements. The organisation also supports projects that align with its objectives and promote creativity in the Internet age.

### **Creative Commons Licenses**

In order to satisfy the requirements set forth by the global Internet, Creative Commons’ licenses were developed in three different formats: legal code, digital code and common deed. The legal code (also referred to as the lawyer-readable format) is the actual license that can be used before court in case a dispute about the license violation arises. It is written using lawyer’s vocabulary and contains significant legal jargon, which makes it difficult to comprehend by non-lawyers. Because Creative Commons aims to enable authors to decide how to license their own works, and in order to reduce the confusion caused by the jargon in the legal code, the common deed was also developed. The common deed is practically a human readable summary of the legal code, making it much easier for the layperson to understand the essence of the license and its implications. Lastly, to cater for the digital storage formats of modern creative content, and to enable users to quickly understand the copyright restrictions and freedoms applied to digital content available on the Internet, the digital code (also known as the machine-readable) format of the license enables

computers to understand the copyright terms of the content, and therefore present this information to the user so that he can respect these terms and conditions.

License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED.

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1. Definitions

1. "Adaptation" means a work based upon the Work, or upon the Work and other pre-existing works, such as a translation, adaptation, derivative work, arrangement of music or other alterations of a literary or artistic work, or phonogram or performance and includes cinematographic adaptations or any other form in which the Work may be recast, transformed, or adapted including in any form recognizably derived from the original, except that a work that constitutes a Collection will not be considered an Adaptation for the purpose of this License. For the avoidance of doubt, where the Work is a musical work, performance or phonogram, the synchronization of the Work in timed-relation with a moving image ("synching") will be considered an Adaptation for the purpose of this License.

2. "Collection" means a collection of literary or artistic works, such as encyclopedias and anthologies, or performances, phonograms or broadcasts, or other works or subject matter other than works listed in Section 1(f) below, which, by reason of the selection and arrangement of their contents, constitute intellectual creations, in which the Work is included in its entirety in unmodified form along with one or more other contributions, each constituting separate and independent works in themselves, which together are assembled into a collective whole. A work that constitutes a Collection will not be considered an Adaptation (as defined above) for the purposes of this License.


3. "Distribute" means to make available to the public the original and copies of the Work through sale or other transfer of ownership.

Fig. 1: An extract of a Creative Commons Legal Code





Attribution-NoDerivs 2.5

You are free:

-  **to Share** — to copy, distribute and transmit the work

Under the following conditions:

-  **Attribution.** You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).
-  **No Derivative Works.** You may not alter, transform, or build upon this work.

- For any reuse or distribution, you must make clear to others the license terms of this work. The best way to do this is with a link to this web page.
- Any of the above conditions can be waived if you get permission from the copyright holder.
- Nothing in this license impairs or restricts the author's moral rights.

Fig. 2: Common Deed of the Attribution –No Derives 2.5 license

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<a rel="license" href="http://creativecommons.org/licenses/by-nd/3.0/">

</a>
<br />This
<span xmlns:dc="http://purl.org/dc/elements/1.1/"
href="http://purl.org/dc/dcmitype/MovingImage"
rel="dc:type">work</span> is licensed under a
<a rel="license" href="http://creativecommons.org/licenses/by-nd/3.0/">
Creative Commons Attribution-No Derivative Works 3.0 License</a>.

```

Fig. 3: Digital Code of the Attribution –No Derives 2.5 license

The following table (Table 1) provides a quick summary of the major Creative Commons licenses currently available:

License	Description
 <b>Public Domain</b>	<ul style="list-style-type: none"> <li>• Work is dedicated to the Public Domain</li> <li>• For the benefit of the public at large, forever</li> <li>• The work may be: Freely reproduced, redistributed, transmitted, modified, or exploited for any purpose, commercial or non-commercial</li> </ul>
 <b>Attribution</b>	<ul style="list-style-type: none"> <li>• Work should be attributed to its owner</li> <li>• This condition can be waived if a permission is obtained from the owner</li> <li>• The work, or any other modifications based on it, must mention the name of the original author</li> </ul>
 <b>Share-Alike</b>	<ul style="list-style-type: none"> <li>• The work can be redistributed under the same license</li> <li>• If the original license prohibits commercial use, then it should not be possible to use any modifications based on this work commercially</li> </ul>
 <b>Non-Commercial</b>	<ul style="list-style-type: none"> <li>• The work cannot be used in any commercial purpose</li> <li>• Commercial use is possible if a permission is obtained from the owner</li> </ul>




	<p><b>Non-Derivatives</b></p>	<ul style="list-style-type: none"> <li>•The user is free to use the work as it is</li> <li>•No modifications, transformations, or changes are allowed</li> </ul>
	<p><b>Remix</b></p>	<ul style="list-style-type: none"> <li>•Means that the user can change the work, modify it and build upon it</li> </ul>
	<p><b>Sampling</b></p>	<ul style="list-style-type: none"> <li>•This license invites other people to use part of the work and build upon it</li> <li>•For any purpose other than advertising</li> <li>•Copying and distribution of the entire work is <b>prohibited</b></li> </ul>

Table 1: Summary of the major Creative Commons licenses

## How to Use Creative Commons Licenses

Creative Commons has made it very simple for any author to select a copyright license that matches the requirements she wants to apply to her own creative work. Authors can decide whether they want to dedicate their work to the public domain, granting users the highest levels of freedom to deal with the work, or to allow modifications and alterations to be done to the work without the need to obtain a prior permission as long as the user attributes the work properly to its original author. They may also prohibit commercial exploitation of the work without the author’s consent or allow only parts of the work to be used or mixed on a sampling basis. The choices are very flexible and it is up to the author herself to decide under which conditions she wants her work to be distributed and/or built upon. The following simple steps will guide you through the process of selecting and using an appropriate Creative Commons license for your own creative work.

**Note:** You have to keep in mind that making your work available under a Creative Commons license does not mean giving up your copyright. In fact, you will still retain ownership of the work, and any use of it should strictly respect the conditions you set forward when you chose the license. If someone violates any of these conditions, the licenses can be enforced in court in exactly the same way as any other traditional copyright law can be enforced. Several cases have been won before court regarding violations of Creative Commons' licenses [5][6].

### **1. Decide on the distribution format of your creative work**

For example, are you producing a scientific paper or a documentary video clip? Distribution formats usually affect the possible ways of using the material; additionally, the same content may be reproduced in different formats and therefore the possible options should be carefully considered.

### **2. Decide on how many restrictions you want to place on your work**

This is the most critical step in the process. Think carefully about the conditions under which you want your work to be used. These conditions determine the extent to which others can utilise your works. For instance, if you do not want anyone to change your material in any way, you should explicitly decide so. The implication of such decision is that others can not build upon your work or improve it by any means. The choice is totally yours, but you have to give it some thought. The following questions may help you decide what freedoms you want to grant your users:

- *Do you want to allow commercial uses?*
- *Do you want to allow modifications?*
- *How would you like others to distribute modifications? Do you want any modifications and derivative works to be distributed under the same license as the original material?*

### 3. Decide on the country you will release your work in

Copyright legislations differ from country to country, and in order to give the Creative Commons' licenses the power to be enforceable in court, they must be compatible with local laws and jurisdictions. Creative Commons' licenses are usually ported into local jurisdictions to ensure compatibility with the local legal system in each country. You have to decide which local license you want to use based on the country in which you may need to argue your case in front of its courts just in case a license violation occurs.

### 4. Select the appropriate license

After you made these important decisions, you can choose the appropriate license to satisfy your requirements. The license you will use is selected based on a combination of different licenses. For example, if you want any modifications to be attributed to you as the author of the original work and do not want others to exploit your work for any commercial purposes, you will use an Attribution + Non-Commercial = Attribution-Non-Commercial licence. Table 2 illustrates some examples of possible license combinations:

	=	 <b>Attribution</b>
 + 	=	 <b>Attribution-ShareAlike</b>









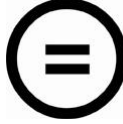

 +  + 	=	 <b>Attribution— NonCommercial- ShareAlike</b>
 +  + 	=	 <b>Attribution— NonCommercial- NonDerivatives</b>

Table 2: Examples of Creative Commons licenses

To simplify this selection process, Creative Commons has developed a very user friendly web-based tool that asks the user three simple questions about his requirements and then suggest the most appropriate license that satisfies these requirements. It will also generate a link that can be used to embed the license in your own work. The tool can be accessed on the following address:

<http://creativecommons.org/license>

## 5. Publish your work

After you have selected the appropriate license, you can use the link generated by the “License your Work” tool on the Creative Commons website and add it to your website where the content will be placed. Several digital publishing tools now provide facilities to enable licensing of digital content within the tool itself, others have add-ons that enable such functionality (such as Microsoft Office [7] and OpenOffice [8]).

Congratulations! You have just published your work under the Creative Commons license that enables others to use it under the specific conditions you defined. From

now on, when others access your work, they can immediately understand what constitutes an appropriate use under this license and act accordingly. They may (if you opted to allow them) copy your work, redistribute it, build upon it and improve it and remix it without the burdens of excessive copyright restrictions that you may not wanted to apply in the first place. This will foster innovation and overcome many obstacles posed by the conflict between traditional copyright protection laws and the technological developments brought by digital computer and the Internet.

### **Implications for Developing Nations**

The principal aim of Creative Commons is to promote creativity on the Internet by “making it easy for people to build upon other people’s work” [2]. This offers particular benefits to developing countries if understood and practiced well. By enabling access to information and knowledge produced all over the world, researchers, artists and intellectuals in less developed nations can tap into the wealth of knowledge and art available on the Internet without the prohibitive costs imposed by highly restrictive copyright regimes. When intellectuals and creative workers are granted access to what others have already done, they will invest their own time and creativity in building upon this knowledge in order to contribute to the development of humankind. This will improve the existing global body of knowledge, art and culture for the benefit of all.

Using other people’s work, however, requires diligence in understanding what freedoms are granted to users by the associated licenses and in respecting the conditions put forward by the author. For instance, any modifications to materials that require any derivatives to be distributed under the same license should always be made available under the same conditions of this license. Therefore, you have to

decide beforehand what you want to achieve with the materials you are using and select content that is licensed under compatible licenses. Luckily, online search engines have started to implement features to enable users to determine the licensing criteria they want. This way, the search engine will only show search results of content that matches the user's requirements. For example, if you want to obtain some digital images that you want to modify and use later in a commercially oriented advertising, you can search for images that allow commercial use. Remember that Creative Commons' licenses have the same power, and can be enforced in court, as the traditional copyright laws. So be careful and respect the generosity of authors who granted you more freedoms than would you otherwise get from an "All Rights Reserved" license.

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# **Research in Progress on A2K in Egypt**

**In Line with the Proposed Agenda for A2K Research in the  
Arab Countries**

**Nagla Rizk\***

\*Dr. Nagla Rizk is an associate professor, Economics Department, American University in Cairo.

Full biography p.117.

*The views expressed herein are solely those of the author and do not necessarily reflect the views of the Bibliotheca Alexandrina.*

## **Introduction :**

The purpose of this essay is to provide a summary of my research in progress in the area of Access to Knowledge (A2K) in Egypt. The essay is written bearing in mind the deliberations of the workshop entitled “Towards A Regional Research Agenda on Access to Knowledge” held in Alexandria within the conference on “New Tools for the Dissemination of Knowledge and the Promotion of Innovation and Creativity: Global Developments and Regional Challenges” organized by Bibliotheca Alexandrina in September 2006.

## **Background**

The deliberations of the Alexandria Workshop are summarized into the detailed outline attached at the end of the essay. Below, however, are the five main clusters under which the research entry points are grouped:

1. Identifying Barriers to A2K
2. The Search for Alternatives
3. Creating Awareness, Promoting the Alternatives
4. Expanding Arabic Content
5. Tackling Thematic questions

My research deals with the second cluster, namely, the search for alternatives that would maximize A2K in Egypt.

My work stems from a strong belief that expanding access (A2K) and Contribution to Knowledge (C2K) is instrumental in promoting sustainable development for countries of the region. A related challenge in this context is the need for knowledge liberalization for the benefit of the user without penalizing the creator. It is indeed ironic that knowledge liberalization has not received much attention at a time when the technology is most permitting, and when trade liberalization has been the focus of global attention. It is important to explore whether-and the extent to which-a parallel world of open knowledge would work for everyone’s benefit, especially in developing countries suffering from the ills of the digital divide.

A relevant question in this context is whether-and the extent to which-knowledge can be viewed as a public good, which in turn begs the question of whether-and the extent to which-moral rights should be reflected in (or indeed equated with) financial return to knowledge creators. The challenge then is to strike a balance between the needs of users on the one hand (access) and knowledge creators on the other

(contribution). This becomes especially relevant to developing countries, given their less favorable position in the global knowledge economy.

In this context, it seems that efforts at enforcing intellectual property in the region have focused mainly on enforcing proprietary rights as manifested in strict implementation and punishment of violators. As they stay away from the pirated products, knowledge users have only one other choice: pay the (often high) price tag of the knowledge good. My work involves this very point: what other choices are out there, and which are most suited for Egypt and the Arab region?

At this juncture, tackling A2K in general, and intellectual property rights in particular, should focus on the search for such alternatives, may they be inherent in exceptions and limitations, in hybrids and middle grounds, and/or in new and creative approaches. Of relevance here are novel business models that do not place a price tag on the knowledge good; financial reward to the knowledge creator is obtained in forms other than appropriations paid directly by the knowledge user. Open source software, subscription paid sites and advertizing supported models are cases in point.

In the following paragraphs, I discuss my research in progress on A2K in Egypt in the areas of the software and music industries.<sup>4</sup>

### **Towards Maximizing A2K and C2K: The Software and Music Industries in Egypt**

My research focuses on two types of knowledge goods: software and music. Both music and software are knowledge goods that are labor intensive, and that are themselves inputs for further knowledge. Indeed, both can be called knowledge capital. As outputs of creativity, both are subject to intellectual property protection. Both are “nodable” and “granulable”, which provides a strong potential for peer collaborative production.<sup>5</sup> Both are “digitizable”, which entails a relatively high marginal cost of production, yet next to zero cost of reproduction. Given all this, the

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<sup>4</sup> The initial phase of this work was supported by a research development grant from the American University in Cairo (2006/2007). The results of the preliminary research were presented at the second Access to Knowledge conference of the Information Society Project of Yale Law School (A2K2, April 2007). A wider scope of the research is being undertaken at the Economics Department of the American University in Cairo in collaboration with the Information Society Project of Yale Law School, with financial support from the Mac Arthur Foundation (2007/2008).

<sup>5</sup> I owe the concepts of no debility, granularity and peer collaborative production to Yochai Benkler’s “Coase’s Penguin or Linux and the Nature of the Firm”, *Yale Law Journal*, 2002.

production of both music and software provides the potential for economies of scale, for unequal market power distribution, and of course, for piracy.

In practice, music and software production seem to operate in two parallel worlds: an official protected one, and an unofficial, sometimes illegal, “open” one, where files are shared, copied, and freely distributed. What rules govern this open world? How do markets operate? How is market power distributed? Who reaps the reward for knowledge creation, how, and who pays? Who loses, and who gains? How is all that governed by the current intellectual property regimes and the prevailing business models? More importantly, what model(s) are most befitting Egypt (and the rest of the region)?

### **The Software Industry**

In the past few years, Open Source Software (OSS) has globally expanded within an overall trend against conventional models of proprietary intellectual property protection. The OSS movement has grown to encompass expanding communities and markets as represented in different business models. The argument for adopting OSS has extended beyond mere growth justifications to cover wider developmental dimensions. In particular, OSS is said to have a positive developmental role in encouraging innovation and providing training grounds for human capital, among other things. Proponents of OSS have extended their argument beyond economic benefits to span also technical, social and political dimensions. OSS is perceived as a form of knowledge liberalization as opposed to knowledge protectionism and fragmentation. Its role in contribution to, and democratization of, knowledge through a novel intellectual property regime is instrumental.

In my research, I attempt to test whether the commonly acclaimed developmental potential of OSS for developing countries is relevant to Egypt, and if so, the extent to which this potential is, has been, or will be utilized. The research assesses software production as a practical case of utilizing Information and Communication Technologies (ICTs) for development. Adopting a comparative approach (OSS vs. proprietary software), I attempt to assess the impact of software production and use on growth, employment, brain gain rather than brain drain, education, and linkages to feeding industries, among other effects. This is especially relevant as Egypt is a country where software has been hailed as a potentially competitive sector at the same time that there are interesting anomalies in the educational and labor market demographics (high illiteracy rates, over-supply of engineering school graduates, labor market segmentation, and questionable quality of national education).

The purpose of my current research is to view the software industry as a substantial form of Contribution to Knowledge (C2K), which in turn is an integral component of



sustainable development. It is particularly interesting to assess the business models used in the industry, spanning the range from proprietary to open source models, including hybrid models and alternative business practices that are or could be offered to expand A2K and C2K (such as price differencing and educational packages). In the case of open source models, emphasis is placed on their ability to sustain profits through, and in spite of the digital commonality of knowledge. It is important to reach alternatives that are suited to the Egyptian context.

Within this research, I survey the status of OSS movement in Egypt, assess the size of the business, backward and forward linkages, and review the types of business models adopted. Special emphasis is placed on the future prospects of this industry, including the obstacles and challenges faced. This is undertaken through field research involving interviews with the business community, NGOs, academic institutions and government officials, with an eye to testing whether peer collaborative models of production will lead to promoting human development in Egypt.

Finally, it will be of interest to compare Egypt to other countries that have achieved successes in this industry, namely India, and countries whose governments have chosen to adopt OSS, such as Malaysia. In that sense, the comparison is not limited to approaches to promote the industry per se, but rather looks into efforts at developing the wider techno-economic paradigm surrounding the industry. This includes, but not limited to, developing the educational system, the business environment, and the legal infrastructure. These, it is argued, represent the real challenges facing a developing country in their strife to join the global knowledge economy.

### **The Music Industry<sup>6</sup>**

The past few years have witnessed a vibrant debate over the structure, operation, and indeed survival of the music industry. This was ignited by the massive advances in digital technologies and expansion in peer-to-peer music file sharing. Such developments call for taking another look into the currently prevailing structures and business models in the industry. Of utmost relevance in this context is the role of Intellectual Property (IP) systems in resolving issues related to music access, production, distribution and compensation to music creators.

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<sup>6</sup> This research was presented in March 2007 at the Conference on “Intellectual Property and Developing Countries: The WIPO Development Agenda”, University of California Los Angeles Law School. Final paper being edited for publication as “Arab Musiconomics, Culture, and Copyright”, in *Intellectual Property and Development: WIPO Development Agenda and Developing Countries*, Neil Netanel, Ed., Oxford University Press, 2007 (forthcoming).

My research looks at the music industry in Egypt in light of the country's, and indeed region's, socio-cultural, economic, political, and legal realities. The research sheds light on the current practices and value chains for different genres of music, with the objective of examining the role that copyright plays, or does not play, in this context. In my research there exists a *de facto* commons for Arab music, and propose that suitable IP regimes be devised to accommodate the prevailing practices.

At the heart of this work is the belief that IP regimes should not be imposed from the top, but should rather emanate from the base, addressing the special needs and unique circumstances of the respective countries or regions. IP systems are observed as tools to promote access and contribution to music as an integral component of human knowledge. The fact remains that music, and correspondingly knowledge, cannot be understood apart from the cultural context in which they operate.

Given the lack of published data on the Arab music industry, this research is primarily based on interviews with musicians, producers, distributors, lawyers, agents, NGOs, and government officials.

### **The Next Step**

The above has been a summary of my research in progress on A2K-related issues in Egypt. Results of this work should be available for publication by summer 2008.

What I see as the next step along this work is concurrently undertaking parallel studies covering other countries of the region. The Bibliotheca Alexandrina database of contacts will be useful for identifying research partners in other Arab countries and undertaking comparative research work. The creation of a regional research network on A2K for Arab countries would solidify such research and ensure sustainability of such collaborative research. The Economics Department at the American University in Cairo has started a coalition of researchers working on A2K, and can work closely with the A2K initiative of Bibliotheca Alexandrina to create the Egypt node of the network.

It will be also useful to move to the next item on the research agenda, namely, creating awareness, by means of expanding the national and regional A2K coalition to include members from the business community, civil society, governments, and other research institutions. National and regional meetings can be held for the dissemination of research results. Electronic communication within a regional A2K website would also be useful.

**Annex**  
**Clusters/Themes for Regional Research Agenda on A2K<sup>7</sup>**

**Outcome of Deliberations at Workshop entitled**

**“Towards A Regional Research Agenda” (Alexandria, September 2006)**

**Moderator: Nagla Rizk**

**1. Identification of Barriers and Bottlenecks hindering A2K**

What are the barriers to A2K? (Social, technological, institutional, others?)

**2. The Search for Alternatives: New Options, Utilizing Exceptions and Limitations, Alternative Intellectual Property regimes and Business Models**

1.1 What is the impact of the Creative Commons initiative on knowledge creation in

the Arab world? What are the suitable business models?

1.2 How can new business models resolve issues of IPR in research and knowledge production?

1.3 What are the strategies for governments to adopt Open Source Software?

1.4 What are the lessons learned from the experience of other countries in the area of Open Source Software? What are the best practices?

**3. Creating Awareness, Promoting the Alternatives**

3.1 How to raise awareness with respect to A2K for the public- and policy-makers?

3.2 How to customize/tailor new A2K initiatives to the public?

3.3 How to communicate the needs of the knowledge society to government officials responsible for negotiating in the international arena?

3.4 To what extent can libraries serve as tools for promoting A2K in the region?

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<sup>7</sup> Summarized by Nagla Rizk in collaboration with Hala Essalmawi from Bibliotheca Alexandrina (The American University in Cairo, July 2007).

#### **4. Expanding Arabic Language Content on the internet**

4.1 How to measure A2K in the Arab countries (metrics for assessing Arabic content)?

4.2 What are the barriers inhibiting Arab Content?

4.3 What are the incentives to knowledge creation in Arabic?

4.4 To what extent is Arabic content relevant to the people? (inclusion)?

4.5 What are the economic and social impacts of free-trade agreements in the Arab world?

#### **5. Tackling Thematic Questions**

5.1 Education: What reforms and updates are needed for the educational system to promote  
A2K?

5.2 Access to Health: What are the issues pertaining to health within the A2K framework?

## **The Author**

Nagla Rizk is Associate Professor of Economics at the American University in Cairo. Her area of research is the economics of knowledge, technological change and development with emphasis on the economics of intellectual property, access to knowledge and human development in Egypt and the Arab world. Of particular interest is the potential role of ICTs as a source of empowerment and a driver for development. She has done extensive work on the assessment of e-readiness of small and medium enterprises in Egypt. Her current research includes work on Egypt's open source software and copyright in the Arab music industry, and is done in partnership with the Information Society Project of Yale Law School where she is the team leader, contributor, and co-editor for Egypt A2K country study. She is also working on a macroeconomic study on information technology, productivity and economic growth in Egypt. She has served as Chair of the Economics Department of the American University in Cairo, research advisor on Egypt's e-readiness at the Ministry of Communication and Information Technology, and is currently the leader of Egypt's research team within the Research ICT Africa Network and a member of the Research and Strategy Advisory Group of Iqsenato research and policy think tank. She received her PhD from McMaster University in Canada and has also taught at the University of Toronto.

# **African Copyright and Access to Knowledge Project**

**(ACA2K)**

**Dr. Moatasem el-Gheriani \***

**Dr. Bassem AWAD \*\***

\*Dr. Moatasem el-Gheriani faculty of law- University of Alexandria

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Full biography p.123

*The views expressed herein are solely those of the author and do not necessarily reflect the views of the Bibliotheca Alexandrina.*

## Executive Summary

The provisions of a country's copyright legislation can have a significant impact on that country's development efforts. For developing countries such as those in Africa, which are net importers of the intellectual property (IP) products covered by copyright rules, failure to take advantage of the exceptions and limitations allowed by international copyright treaties can lead to restricted access to learning materials for the citizenry.

However, copyright legislation and its impact on access to learning materials have received little research attention in Africa, and what changes have taken place in copyright statutes have been driven by global agreements rather than by development-focused analyses. The African Copyright and Access to Knowledge (ACA2K) Project aims to reverse this trend in eight African countries, through probing the copyright environments in these countries and determining the degree to which access to learning materials, both hard-copy and digital, is a function of these prevailing copyright environments.

The ACA2K network comes out of the access to knowledge (A2K) paradigm within the intellectual property field – a paradigm which regards the protection and promotion of user access as a central objective of copyright law. The A2K approach seeks an appropriate balance between the rights of content users and the rights of the content rights-holders, with particular attention to the types of balancing necessary in developing country contexts.

The African Copyright and Access to Knowledge (ACA2K) Project is a 28-month project, running from October 2007 to January 2010. A multi-disciplinary team of researchers from Egypt, Ghana, Kenya, Morocco, Mozambique, Senegal, South Africa and Uganda, supported by a team of international advisors seeks to research the relationship between copyright and access to knowledge in African countries.

The eight initial study countries were selected to provide the research project with a range of country contexts, in terms of:

- geographical regions;
- colonial/linguistic/legal legacy;
- the current state of reform of copyright law and regulations, e.g., recently-amended, in the case of Ghana, Egypt, Uganda, Senegal, and delayed amendment, in the case of South Africa;
- participation in the WIPO “Development Agenda” process, e.g., Egyptian, Kenyan and South African participation in the Africa Group of the WIPO Friends of Development (FoD) grouping;
- existing digital commons work, e.g., Creative Commons and I Commons in South Africa, Bibliotheca Alexandrina in Egypt; and
- existing research and advocacy work around copyright and learning materials access.

A descriptive analysis of the legal copyright framework (policy, law, regulations, judicial decisions) shall be conducted by ACA2K researchers in each of the eight study countries. Particular attention shall be paid in these analyses to possible limitations and exceptions relevant to access to knowledge (A2K) and access to learning materials.

In addition, each country’s more general "copyright climate" shall be examined, as interpreted and interacted with by relevant learning materials stakeholders (state and non-state). For instance, an effort shall be made to probe levels of stakeholder understanding of, and compliance with, the copyright rules related to learning materials in each country. Moreover, stakeholders’ ability to interact with copyright policy-making processes relevant to learning materials shall be explored. Also, case studies shall be conducted of learning materials settings/groups, looking at experiences of access to digital and hard-copy learning materials within the existing copyright climate.



Finally, a comparative review of the findings across the eight countries shall be conducted, in an effort to extract recommendations that can be brought to bear on copyright policymaking in these eight countries and at regional and international levels.

Dissemination of findings and policy recommendations will be conducted via the Internet, via submissions to print media, interactions with conferences and workshops, and dedicated ACCR national Policy Dialogue Seminars in each of the eight countries.

This ambitious project does not aim to be the definitive study of copyright in relation to learning materials access in these eight countries, but rather to be a starting point for what will need to be many years of engagement with the complex set of issues that arise from the copyright environments in these countries in the digital era.

The general objective of this project is to empower researchers in the eight study countries to develop the evidence necessary for stakeholders in their countries to pursue the development of a copyright environment that maximizes the opportunities for digital and hard-copy learning materials access.

Project specific objectives include:

- building research capacity in African nations, and building an Africa-wide network of researchers, around issues of copyright and learning materials access;
- building the corpus of publications – both research reports and academic peer-reviewed publications – on copyright and learning materials access in Africa;
- building awareness and policy advocacy capability among learning materials stakeholders in African countries around the importance of copyright issues – including copyright flexibilities -- for both digital and hard-copy learning materials provision; and
- building awareness and policy advocacy capability among copyright policy stakeholders (e.g., government officials, legislators, advisors, learning communities, civil society groupings) of the importance of copyright -- and the importance of copyright flexibilities in national policy/law/regulation -- for learning materials access, both digital and hard-copy.

The ACA2K network is supported by Canada's International Development Research Centre (IDRC) and South Africa's Shuttleworth Foundation, and managed through the LINK Centre, Wits University, Johannesburg.

The ACA2K Methodology Guide and other information on the project can be found at the ACA2K's website: [www.aca2k.org](http://www.aca2k.org).

## **The Author**

Dr. Bassem AWAD is a Chief Judge at the Egyptian Ministry of Justice. He also works as Lecturer of IP law at the regional centre of intellectual property, University of Helwan and Lecturer of intellectual property law for the postgraduate programs at the Faculty of law, University of Alexandria. Prior to this, he worked for a number of years as a District Attorney at the Office of the Attorney General at the Egyptian Ministry of Justice. He is a member of several associations such as the Egyptian Association for the Protection of Intellectual Property [AEPPPI] ....

Dr. AWAD holds a Ph.D. in Intellectual Property from the University of Montpellier in France, an LL.M. degree in IP from the same University and another LL.M. degree in International Business Law from the University of Paris I (Panthéon-Sorbonne). He is the author of a thesis on the *role of Patents in today's economy and their impact on developing countries*. He prepared several papers on copyright exceptions and limitations; Patents in United States and Europe; the influence of the TRIP'S agreement on the trademark law.

Dr. AWAD is a member of the ACA2K project funded by Canada's International Development Research Centre (IDRC - CRDI) since October 2007.

# **Arabic Language Use and Content on the Internet**

Rasha A. Abdulla\*

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Full biography p.141

*The views expressed herein are solely those of the author and do not necessarily reflect the views of the Bibliotheca Alexandrina.*

The Internet offers its users many rights and privileges, at the heart of which is the right to access information. A major issue that faces developing countries, in this regard, is the use of their own native language(s) on the Internet. Creating content is a major challenge to such countries as they have to face many barriers and overcome several hurdles in order to be able to create websites in their own languages. Some of these barriers may be obvious, such as illiteracy, computer knowledge, and technical knowledge of the tools of content creation. Other hurdles may come in the form of government regulations, misconceptions among users, technical difficulties with non-English content creation tools, or just the mere absence of motivation to create content, particularly in the users' own language.

In this paper, I will examine the Arabic content on the Internet and discuss its status. I will then turn to patterns of language used among Egyptian Internet users. Next, I will discuss the barriers and challenges facing the creation of Arabic content on the Internet, and finally, I will turn to what can be done to increase it, both on the level of organizations and on the level of individual users. In doing so, I will attempt to answer four research questions:

- 1) What is the status of Arabic-language content on the Internet?
- 2) What are the language usage patterns for Egyptian Internet users?
- 3) What are the challenges/barriers facing the creation of Arabic content on the Internet?
- 4) What are the incentives that could be offered to encourage more creation of Arabic content on the Internet?

## **The Status of Arabic-language content on the Internet**

Reliable statistics about language content and language use on the Internet are very scarce, partly due to the difficulty of assessing such data. Most available data estimate the number of users who are native speakers of a particular language, rather than evaluate the actual use of certain languages and their number of websites. One popular website that provided content estimates by language was NUA—Online Internet Demographics, a site that unfortunately no longer exists. Another site that estimated Internet hosts by language is Global Reach, a site that does exist today but has not been updated since 2004. The latest statistic available on this website, as regards Arabic language Internet hosts, dates to 2003, with an estimate of only 145 hosts. In comparison, Chinese Internet hosts were estimated at that time to be 4,014 while Japanese hosts were 12,962 hosts (Global Reach, 2004).

Having said that, it remains a fact that the percentage of Arabic content on the Internet is dismal. Warschauer (2003) estimated that there were only 127.5 million Arabic Web pages online. The Egyptian Ministry of Communications and Information Technology (MCIT, 2006) estimated Arabic language content to account for only 0.3% of the total content available on the Web.

Most available statistics, however, estimate the number of users by language; for example, the number of users according to their native language. This is sometimes confusing because the figures are presented under titles such as “Top Ten Languages on the Web,” a heading which gives the impression that the percentages reported are of content in a particular language as a percentage of the total content on the Web, when in fact they represent the percentage of users who speak a certain language as their native tongue. The latest figures of this kind are provided by Internet World Stats, dating June 30, 2007. This Web site estimates users whose native language is

Arabic to be 2.5% of the global Internet user force. English native speakers, in comparison, comprise the largest group and are estimated at 31.2% whereas Chinese native speakers are estimated at 15.7%, and Spanish at 8.7%. One interesting statistic though is the percentage of growth of the Arabic native user population, estimated at 940.5% between the years 2000 and 2007. The closest growth rates were 524.7% for Portuguese, and 469.6% for Chinese. The English native user population growth rate was estimated at 157.7%.

This huge growth rate in Internet users whose native language is Arabic does not seem to be equivalent to the close percentage of growth for Arabic-language content. The author has repeatedly argued (Abdulla, 2003, 2005b, 2007) for the necessity of presenting an Arabic-language content that targets Arab Internet user populations and carries the essence of identity, i.e. relevant to the cultures, identities, and religions of the Arab region, both in English and in Arabic. Egypt, reputed as a leader in creating media content in the Arab world, is in perfect position to steer this effort (Abdulla, 2005a, 2006).

### **What are the language usage patterns for Egyptian Internet users?**

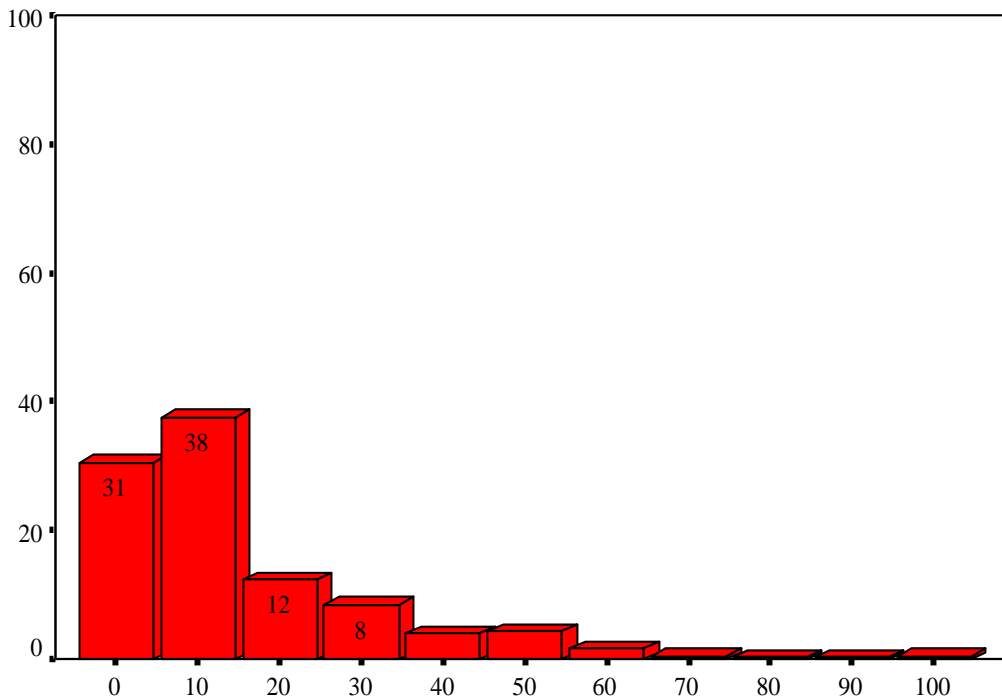
The author (Abdulla 2003, 2005b, 2007) investigated the language usage patterns of a group of Arab student Internet users (mostly Egyptian)<sup>8</sup>. The author examined the usage of the Arabic language as well as the interesting phenomenon of writing Arabic phonetically using Latin characters (for example, writing “sabah el kheir” instead of “good morning” or “ahlan wa sahlam” instead of “hello”), a phenomenon that, in its own right, is worth taking into deep consideration.

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<sup>8</sup> The exact percentage of Egyptian students to the total student body was 86.2%.

Four questions inspected the reading and writing patterns in Arabic or Arabic using Latin characters. Overall, the results showed a minimal use of the Arabic language, though it was used more in Latin characters than in Arabic characters (Abdulla 2003, 2005b, 2007). Figures 1-4 show the results in greater detail.

FIGURE 1. I read Arabic letters or characters on the Internet—percent of the time.



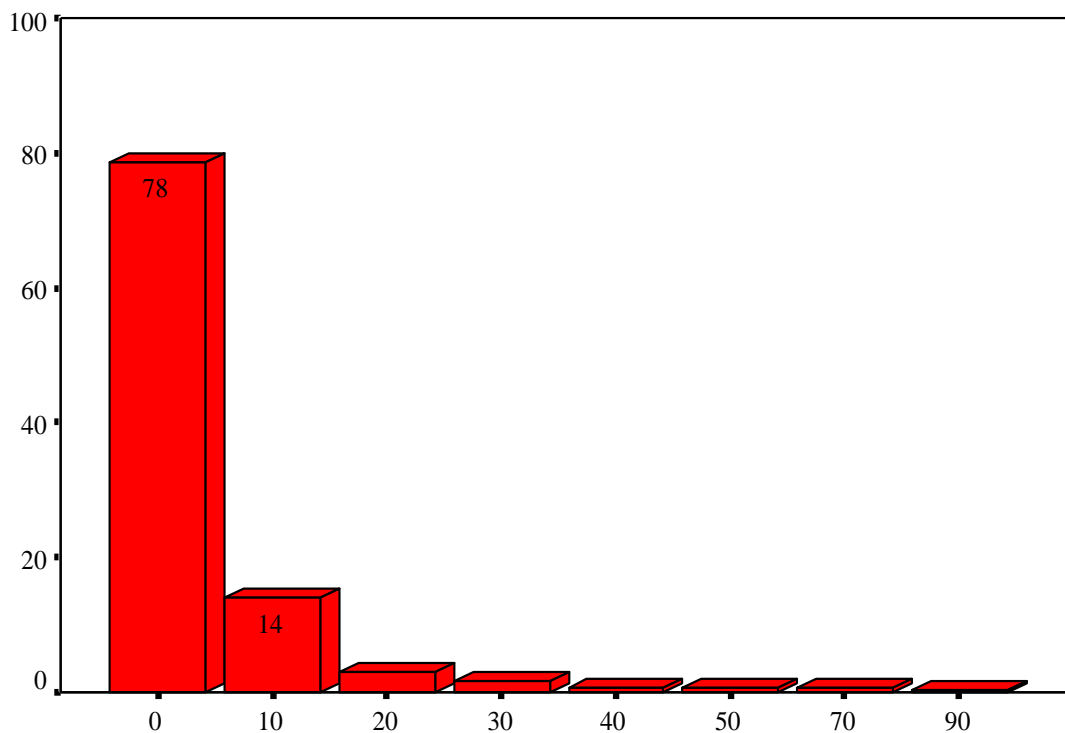
I READ Arabic letters or characters on the Internet ---- percent of time

Out of 502 respondents, almost one-third (30.5%,  $n = 152$ ) said they never read in Arabic on the Internet. Another 37.1% ( $n = 186$ ) said they only used it 10% of the time. Only 1.6% ( $n = 8$ ) said they used Arabic 50% of the time, and under 1.2% ( $n = 6$ ) said they read in Arabic more than 60% of their time on the Internet (Figure 1).

Using Arabic characters to write on the Internet was even less in use by the respondents. More than three-quarters of them (78.5%,  $n = 387$ ) said they never used it, and another 14.2% ( $n = 70$ ) said they used it only 10% of the time (Figure 2).



FIGURE 2. I use Arabic letters or characters to write on the Internet—percent of the time.

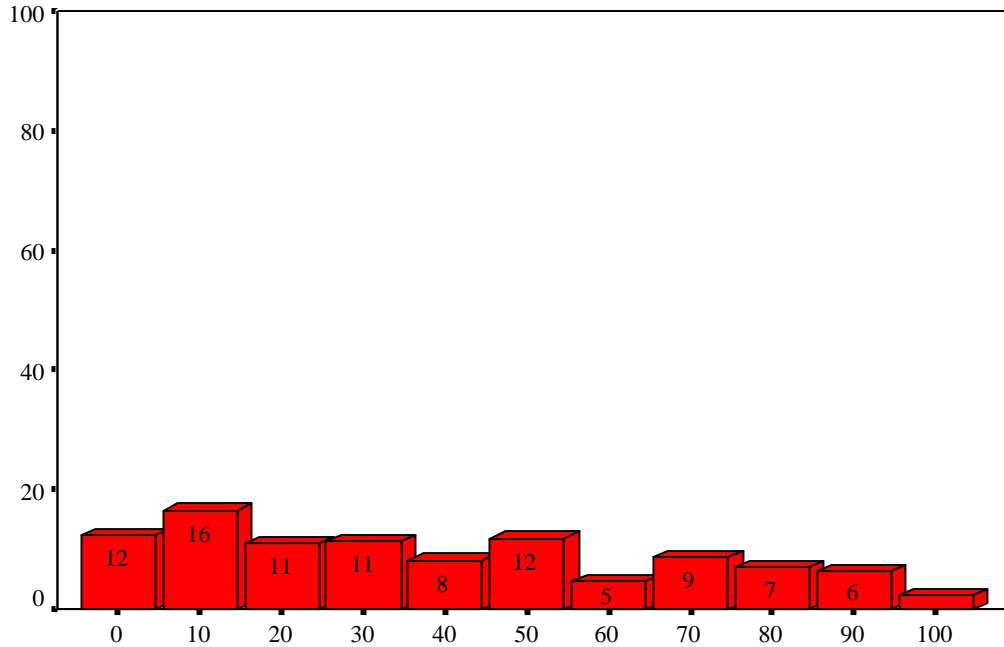


I use Arabic letters or characters to WRITE on the Internet ---- percent

To some extent, respondents were more likely to use Arabic words spelled phonetically in English or Latin letters and characters. In recent years, this has been a widespread phenomenon that has swept over the Internet and mobile phone text messaging, and is especially popular among youth. In addition to simple words, such as “sabah el kheir,” which is Arabic for “good morning,” young users have also devised a system for Arabic letters that do not have a phonetic counterpart in Latin characters. It is not uncommon now to see numbers in the middle of Latin words to stand for such Arabic characters. For example, the number 3 stand for the Arabic “ain”; 7 for “haa”; 7’ (followed by a single quote) for “khaa” and so on. This phenomenon has exploded recently, so it is likely that the figures reported here for

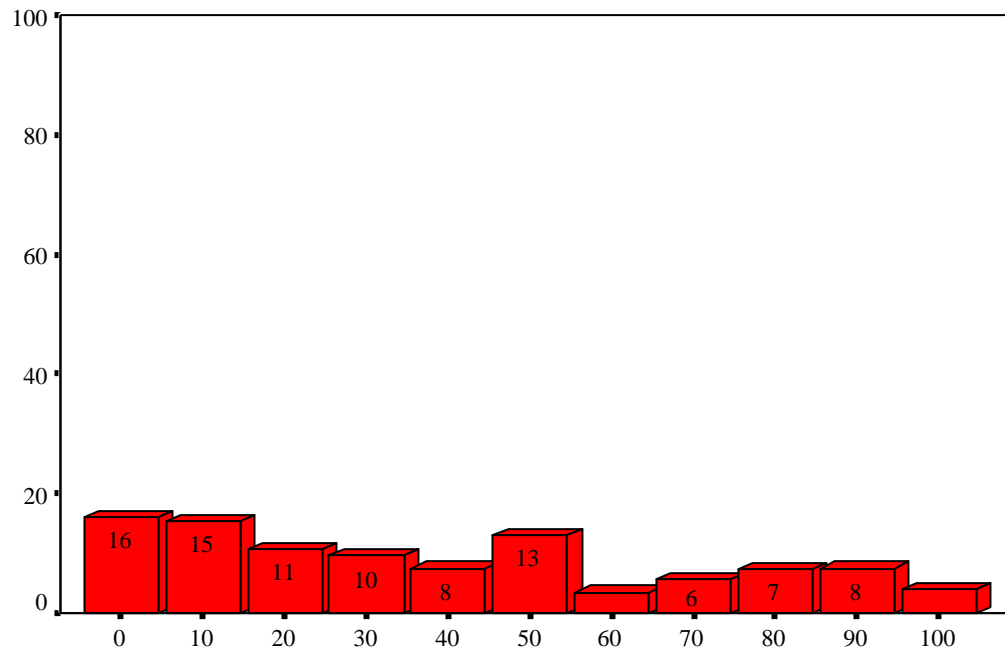
using Latin characters have since then increased. Figures 3 and 4 show a distribution of respondents' use of Arabic in Latin characters both in terms of reading and writing.

FIGURE 3. I read Arabic dialogue written in English letters or characters on the Internet—percent of the time.



I READ Arabic dialogue written in English letters --- percent of time

FIGURE 4. I use Arabic dialogue written in English letters or characters to write on the Internet (e.g., Sabah el kheir)—percent of the time.



I use Arabic dialogue written in English letters to WRITE --- % of time

In an interesting development, the widespread usage of Arabic in Latin characters on the Internet has led some users to create a “group” on Face book, one of today’s most popular online social networking services, to try to combat this phenomenon. The group is called “Those who are fed up to see Arabic written with a Western alphabet” and aims at convincing users to use proper English when writing on a global forum such as Face book where some readers are probably non-Arab and not familiar with the Arabic language. The members also argue that this form of writing is difficult to follow and plead with users who want to “converse” in Arabic to use proper Arabic language and characters. Although the group was not proven to be very popular (it only has 38 members), the conversation seemed to immediately take the technical route, implying that one of the main causes for this phenomenon is a lack of efficient

computer systems that support the Arabic language in a way that could permit these users to use it in their online everyday conversations.

The minimal use of the Arabic language by Egyptian Internet users as portrayed by Abdulla (2003, 2005b, 2007) is also a reflection of the major problem of lack of Arabic content on the Internet, which is the focal point of this paper. These findings stand in sharp contrast to Chao (2001), who looked at Internet usage among university students in Taiwan. Demonstrating far more comfort with using their native language than Egyptian students, the majority of these Taiwanese Internet users (97.6%, n = 487) used Chinese as their main language on the Internet. However, these students did not seem to have a problem finding what they needed on the Web in their own language. The majority of the sites they reported visiting on the Web were “within Taiwan” (97.4%, n = 486) as opposed to in “other countries.”

I will now turn to a discussion of the main challenges that contribute to the lack of Arabic content on the Internet.

### **What are the challenges/barriers facing the creation of Arabic content on the Internet?**

There are several barriers that seem to stand in the way of increasing Arabic content on the Internet at the same pace that the Arabic-speaking Internet users are increasing. Some of these barriers, as alluded to above, are technical while others are social or logistical in nature. For the purposes of this upcoming discussion, let us keep in mind that there are two main types of content in any language on the Internet. The first is content created by individual users, which can be on the whole characterized by being personal in nature, or dedicated to a cause or a topic of interest to the user. Such content is not necessarily professional in format (although sometimes the content

is very informative or beneficial to readers), it could be in a very low-budget, and is usually not supported by advertising. The second type is content created by organizations, companies, or professional entities. This content usually looks very professional in format (although again this is not a guarantee of content credibility), it is sometimes relatively costly to produce and maintain, and is in many instances supported by some form of advertising or corporate sponsorship.

We also have to bear in mind that although Internet penetration rates are increasing in the Arab world, overall, these figures are still very low compared to other parts of the world. Abdulla (2007) reported that Internet penetration rates in the Arab world comprised under 2% of the world Internet user population, and under 7% of the Arab population of over 300 million. This constitutes a problem for the second type of content discussed above, content created by companies or corporations. With this type of content, the benefit to the creator company -commercial or otherwise- is usually dependent on the number of hits (visits) the website can generate. Arabic content, in this case, is not as beneficial to the company as English, or Chinese, or Spanish content.

Another major challenge to creating Arabic content is the technical side. Until this day, using the Arabic language on the existing computer systems is not exactly unproblematic. Anyone who has tried typing and formatting a simple document in the Arabic language knows the existing systems are much more efficient when used in English than in Arabic. This becomes especially true if the document includes figures (numbers) or other foreign (e.g. English) characters. In some instances, the order of the Arabic words or figures change, for no apparent reason, when being uploaded, printed or saved on any computer program. In addition, many e-mail applications still do not read Arabic characters. Therefore, the tedious experience of trying to produce

an error-free document that is computer-readable becomes much more difficult in Arabic than in English.

Factors that inhibit Internet penetration in general are also augmenting the problem of the lack of Arabic content (Abdulla 2005b, 2007). We cannot ignore the painful fact that about 30% of the Egyptian population is still illiterate (UNDP, 2006). This sharply limits the potential pool of content creators. Other literacy factors, such as computer literacy, English-language literacy, and Internet literacy, also come into play. These factors particularly inhibit the creation of the first type of content discussed above, content produced by individuals rather than companies, institutions, or organizations. Practically speaking, it is difficult – if not impossible - for an Internet user who does not know any English to create a web page, even if the contents of the web page are in Arabic. The individual user would still need a basic knowledge of English to navigate his/her way around the Internet. The only way in which non-English-speaking individuals can become part of the Arabic content creators' pool is if they are part of an organization or an entity. Otherwise, they are not capable of joining that production force, thus limiting the potential individual content creators to those who at least have a basic knowledge of computer systems, English language, and the Internet.

Another barrier to creating Arabic content might be an educational/cultural one. We have already discussed how operational skills, such as computer or English-language knowledge, affect the ability to create content on the Internet. Another such necessary skill is typing. Egyptian students do not learn typing skills in any of their formal schooling stages. Those who enroll in a computer college or a similar line of education gain their typing skills mostly through personal practice. Such typing skills are almost always related to the English, not the Arabic language. Such students may

become familiar with the Latin-character keyboard as they do their programming assignments or as they play computer games; however, none of the educational materials they get require them or even expose them to Arabic typing skills. As a result, it is often easier for these computer-oriented users to type in English than in Arabic since they are more familiar with the Latin keyboard and do not have much of an incentive to type in Arabic. This might be another reason why many users find it easier to use Latin characters to express Arabic words.

Finally, there might be a lack of interest among individual users, even those with the needed operational skills, to create content. Generally speaking, we have become a society of consumers much more so than producers, and information technology is no different. Many users might be interested in surfing the Web for different reasons, but have no interest in exerting the effort to create and maintain content, much less Arabic content. These are the groups that should be targeted with some incentives, an idea that will be discussed in the following section.

### **What are the incentives that could be offered to encourage more creation of Arabic content on the Internet?**

In answering this question, ideally, we should look at the barriers impeding content creation and try to seek solutions to each one. Naturally, some are easier to deal with than others, and some require more long-term planning than others. In an underlying note, I believe the illiteracy problem needs radical and fast consideration. Even though it might not appear directly related to the effort at hand, in reality, it sharply decreases the potential for human resources development in the field of information technology.

The creation of a computer-oriented culture and an Internet culture is another underlying factor. Online Arabic content is a small cog in a big wheel. More efforts need to be made to familiarize the society at large with the benefits of the Internet. Any efforts that result in a larger Internet penetration rate will be a supporting factor in increasing Internet traffic, sponsorship, advertising, and eventually, Arabic content. More media efforts need to be exerted in this realm. There should be more regular sections in daily newspapers and popular magazines – even if in the form of paid advertising – to introduce people to the nature of the Internet, how they can use it, and how it can better their lives. More television shows should be geared to the same effect. Such non-technical media content should be inviting in order to attract more Internet users. The same media outlets should start talking users into the benefits of creating Arabic content, particularly targeting individual users and small business owners. Again, we are used to being consumers of media and consumers of information, mostly information provided by the government, and so it is almost natural that Internet users would be more likely to consume content rather than think of producing it. It is this shift in the mode of thinking, a paradigm shift from consumers to producers, that needs to be addressed in the media.

Computer education should be part of every school curriculum. Starting from a young age, students should be exposed to a computer culture, and should learn a minimal degree of Arabic typing and English language skills. Some efforts have already attempted to provide at least a computer in every public school in Egypt. Still, a lot more is needed in this area. The government should dedicate a reasonable budget and a funding strategy to these efforts, given their essentiality in equipping the upcoming generations with much needed computer and Internet knowledge and skills.



Internet education should be available for free or at a minimal cost, particularly for school and college students. In this regards, the United Nations Development Programme (UNDP) has carried out a successful initiative through Technology Access Community Centers (TACCs), that were launched in March 1999 in two cities in Sharkiya Governorate. Representing a “cybercafe for the poor,” the project provided affordable public access to the Internet as well as free training on the use of technology. The TACCs educated customers on the means through which they could access information, and develop web pages of local interest. It was reported that more than 1,400 web pages were developed in Arabic through the TACCs, including a database of local medical practitioners that is now hosted and maintained by the Ministry of Health and Population (TACC, 2002).

There are now more than 1,000 information technology clubs in Egypt that try to replicate the TACC experience. The 21<sup>st</sup> Century Kids Clubs were established as a joint effort between the government, non-governmental organizations, and the private sector. The clubs provide Internet access, software, and training. To serve the 21<sup>st</sup> Century Kids Clubs, RITSEC launched the first official children’s website, Little Horus. The site, which can be accessed in both Arabic and English, contains information for children about Egypt’s history, traditions, children, and places to visit (MCIT, 2007).

Efforts such as the TACCs and the IT clubs need to increase and become more popular among school and college students. More media attention should be given to these projects to encourage more use from their target populations. An excellent idea that Tunisia has used to that effect is the establishment of “Internet caravans.” These are fleet of buses, electronically equipped with computers and mobile Internet access. The caravans go to where their target populations are and spend a day of seminars and

demonstration workshops on Internet use (Zitoun & Sghaier, 2000). A fleet of such buses at our Egyptian universities would go a long way in recruiting Internet users and creating interest for Arabic content creation.

On another note, the technical difficulties associated with using Arabic characters should be resolved. As early as 2001, Arabic-language Uniform Resource Locators (URLs) were starting to surface. Dabbagh Information Technology [DIT] reported that about 75,000 websites had registered an Arabic-character URL address by July 2001. Several technologies were being developed to offer alternatives to the Latin character-based Internet domain name system. This was expected to exponentially increase the amount of Arabic content on the Web. It was projected, at the time, that the market for Arabic-language URLs and domain names within the Arab world would be worth US\$126 million (DIT, 2001). However, for some reason, these efforts went unheard of until they fortunately surfaced again in 2006. United Press International's The Web column reported that the Internet Corporation for Assigned Names and Numbers (ICANN) is responding to the growth rates in Arab Internet penetration by experimenting with the use of Arabic characters in domain names (The Web, 2006). Such initiatives should be closely followed up by the Egyptian and Arab governments to move forward their fruition and implementation. Such developments will encourage international software production companies to pay more attention to Arabic-language support of their software packages. Other efforts for such software production should also be carried out by Egyptian and Arab companies working in this area.

At the level of content produced by major corporations and organizations, the Egyptian government should consider giving some sort of benefit (maybe tax reductions) to entities that are willing to develop and maintain top-notch major

projects of online Arabic content that would be hosted in Egypt. Again, it has to be noted, though, that such projects are mainly driven by the amount of potential Internet traffic on the particular website, and so increasing Internet penetration in general is the apt line of action in this realm.

Finally, on a more micro level of analysis, other efforts can still be put in place to encourage the production of Arabic online content by individuals. Content producing competitions need to be common place at every level. These should be carried out by the Ministry of Telecommunications and Information Technology, the Internet Society of Egypt, as well as other Egyptian Internet organizations. They should be carried out by every Egyptian college and university on several levels: beginner, intermediate, and expert. They should be carried out by public libraries (foremost among which is Bibliotheca Alexandrina), cultural centers, social and sports clubs, and NGOs. They should be carried out in a variety of ways and categories: personal Web sites, school web pages, cultural sites, health sites, educational sites, sites to promote Egypt, sites to promote a social cause, sites to offer information about a topic of interest, etc... The possibilities are endless. Such competitions should be publicized, and potential content creators should be offered a free crash course in whatever skills needed to produce the required Arabic content. Different criteria should be set for selecting winning Web sites, including maybe online voting by other Internet users in order to promote a sense of familiarity and community. The winning web sites should also be well promoted and publicized to encourage others to try follow suit.

Such competitions should all be part and parcel of the creation of an Internet culture, something that is young, vibrant, exciting, beneficial, and educational, and something that will bring a nice prize (be it a picture in the school wall paper or a decent monetary award) to the winner, and will encourage others to compete in the

next round. It is a marketing challenge for the purpose of attaining an educational and productive goal. If we manage to create a small percentage of the interest young people seem to have for television call-in contests, we will be ensured to have a great deal of online Arabic content.

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