

## **Committee on Development and Intellectual Property (CDIP)**

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### **USING COPYRIGHT TO PROMOTE ACCESS TO INFORMATION AND CREATIVE CONTENT<sup>1</sup>**

*prepared by the Secretariat*

1. The Annex to this document contains a Study on Using the Copyright Framework to Promote Access to Information and Creative Content prepared under the project on Intellectual Property, Information and Communication Technologies (ICTs), the Digital Divide and Access to Knowledge (CDIP/4/5/REV). The part one of this Study addressing the Education and Research, has been prepared by Mr. Sisule F. Musungu, President, IQsensato, Geneva, the second part on Software Development Practices has been prepared by Mr. Rishab Aiyer Ghosh, Senior Researcher, Maastricht University, UNU-Merit, Maastricht, The Netherlands, and the third part on Public sector information has been prepared by Ms. Catherine Jasserand, LL.M, Researcher, and Professor Bernt Hugenholtz, Director, Institute for Information Law (IViR), University of Amsterdam, The Netherlands.

2. *The CDIP is invited to take note of the information contained in the Annex to this document.*

[Annex follows]

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<sup>1</sup> The views and opinions expressed in this Study are the sole responsibility of the authors. The Study is not intended to reflect the views of the Member States or the WIPO.

## TABLE OF CONTENTS

### Part I

Executive Summary .....	3
1. Introduction.....	5
2. Using the Copyright Framework to Promote Access to Information and Creative Content for E&R Resources – Case Studies .....	6
2.1 Case studies on OA to E&R resources in Africa .....	9
2.2 Case studies on OA to E&R resources in Asia .....	11
2.3 Case studies on OA to E&R resources in Latin America and the Caribbean.....	13
2.4 Developed countries and OA to E&R .....	15
2.5 OA initiatives by international organizations and publishing industry .....	17
3. Using the Copyright Framework to Promote Access to Information and Creative Content for E&R Resources – Analysis .....	18
3.1 IP issues in OA to E&R .....	18
3.2 Economic sustainability of OA as a means of improving access to E&R resources .....	19
3.3 Incentives for participating in OA initiatives in the E&R sector .....	21
3.4 Effectiveness of OA approaches in the E&R sector .....	21
4. Recommendations – Possible Future Role of WIPO in OA for E&R Resources.....	22

### Part II

1. Introduction.....	25
2. IPR regimes for software: Copyright, Open Source and Limitations and Exceptions...25	25
2.1. Software Copyright.....	25
2.2. Mechanics of rights protection.....	26
2.3. Rights claimed by open source developers.....	27
2.4. Models of open source licensing .....	27
2.5. Conditions and “reciprocity” .....	28
2.6. Reciprocity and collaboration .....	29
2.7. Reciprocity and incentives.....	30
2.8. Reciprocity as a framework for disclosure.....	31
3. Open source strategies for local development: economic aspects, incentives, costs and Benefits .....	32
3.1. Skills development: Informal apprenticeships benefitting employers .....	33
3.2. Building local ICT competencies .....	34
4. Legislative findings and policy options .....	36
4.1. Legislative and policy measures to support wider access to software .....	36

4.2. Fiscal measures .....	38
5. Supporting software development: summarized case studies .....	39
5.1. Sahana: Disaster Management in Sri Lanka, Peru and Haiti .....	41
5.2. Ushahidi: Mapping and visualization in Kenya and Chile .....	45
5.3. KhmerOS: Localization and software training in Cambodia .....	46
5.4. IT@Schools: Computerizing state schools in Kerala, India.....	52
5.5. Open Source Observatory and Repository (OSOR): Facilitating knowledge sharing and community building in Europe .....	58
5.6. Softwarepublico: Brazilian Government Software Portal.....	61
6. Conclusions and Recommendations for WIPO's role.....	63
7. Glossary of common acronyms.....	65

### Part III

Executive Summary .....	67
Introduction.....	68
<i>i Methodology And Terminology.....</i>	69
<i>ii International Legal Framework.....</i>	71
<i>iii Country Chapters .....</i>	73
France .....	73
Japan.....	77
Mexico .....	79
New Zealand .....	81
Uganda.....	83
United Kingdom.....	85
United States.....	88
<i>iv Comparative Analysis.....</i>	90
Different Models .....	90
Possible Developments.....	92
<i>v Recommendations .....</i>	94

## EDUCATION AND RESEARCH (Part I).

*Prepared by Mr. Sisule F. Musungu*

### **EXECUTIVE SUMMARY**

The role of education and research (E&R) in enabling the creation, access and use of information, knowledge and culture for human development and the exercise of freedoms is widely acknowledged as critical. In recent decades, advances in information and communications technologies (ICTs) has been recognized as having vast potential to improve both access to, and the quality of, E&R. This Study, which is part of a broader (three-part report) on *Using Copyright to Enhance Access to Information and Creative Content* focuses on open access (OA) approaches in the management of copyright in the E&R sector. It presents existing examples of normative solutions or public policies, including pilot projects or national strategies, which have proven beneficial for the achievement of targeted E&R objectives. In particular, specific case studies of Open E&R resources from Africa, Asia, Latin America and the Caribbean as well as OA approaches to E&R resources in developed countries are examined and analysed.

The case studies reviewed from Africa are the SABER repository in Mozambique, the Scientific Electronic Library Online (SciELO) in South Africa and the African Virtual University (AVU) Open Educational Resources (OER), which is a regional initiative. In Asia, the case studies are ePrints@IISc in India and Vietnam Journals Online (VJOL). In Latin America and the Caribbean (LAC) the study looks at SciELO Brazil and the Network of Collaboration between Europe and LAC Countries (NECOBELAC). The case studies that are covered in the Study were selected on the basis of a flexible but discernible criterion. For an initiative to be considered for the Study it had to meet two main criteria. First, it had to be possible to demonstrate or at least discern a clear national or sub-national government involvement or the involvement of a significant state agency, such as a government-funding agency. Second, it had to be an initiative or project which actually provides OA to E&R resources as opposed to just an initiative or project providing information about these resources elsewhere. Admittedly, a strict interpretation of this criterion could have eliminated some of the case studies and, as such, the criterion was used as broad guidance as opposed to a strict standard. In addition to the case studies, the report also summarises the state of OA for journals, repositories and OpenCourseWare (OCW) in developed countries and some of the initiatives by international organizations.

Overall, it is clear that the OA approach to managing copyright in E&R resources has emerged as an important model to promote access to information and creative content in the recent past. There has been an impressive growth in OA journals and repositories as well as OCW in developing countries and the trend appears to be set to continue. The Directory of Open Access Journals (DOAJ) lists journals from at least 50 developing countries. The Directory of Open Access Repositories (OpenDOAR) lists repositories in at least 53 developing countries while the OCW Consortium has participating institutions from at least 23 developing countries. At governmental level, however, there appears to have been stronger political and public policy responses to promote OA to E&R resources in developed countries as opposed to developing countries. Individual institutions and private actors as opposed to governments and government/public policy drive many initiatives in developing countries.

The review and analysis of the various case studies raises a number of issues that need to be considered or addressed but also points to some tentative conclusions regarding IP, economic sustainability, and incentives for various stakeholders as well as the effectiveness of this model of managing copyright in the E&R sector. With respect to IP, considering that OA operates within, and is supported by, the copyright system, there are, in general, no major unique issues that arise with respect to the use of the model for E&R resources. Nevertheless, there are two issues that emerge from the case studies that require some further consideration. First, it is not entirely clear whether individual researchers and authors in various participating institutions,

particularly in the case of OA repositories, are all on board with this approach. Second, the terms of OA licenses in a number of initiatives are not clear or are contradictory. There are cases where reported OA repositories, for example, have an “all rights reserved” copyright message on their websites.

In terms of economic sustainability, the case studies suggest that broadly speaking OA approaches are financially and economically viable since this approach is not mutually exclusive with revenue and profit. The system of author pays, coupled with other revenue streams such as sale of prints and advertising appears to address the cost question fairly well with respect to OA journals which is the area with most concerns regarding free availability of content. Repositories and OCW raise less financial sustainability questions due to the lower costs involved and the inherent linkage to normal functions of institutional libraries and teaching.

Regarding incentives, it emerges that there is a significant overlap and commonality regarding incentives for individuals and institutions as well as governments promoting OA approaches. The idea of higher visibility, accessibility and impact appear to speak to most players in the E&R sector. Financial considerations, particularly for governments and institutions, also appear to be an important incentive for supporting OA approaches.

Though it may be too early to make any conclusive statements regarding the effectiveness of OA approaches to enhancing access to E&R resources, there is already noticeable impact in developing countries. The numbers regarding participation of developing countries in OA journals and repositories as well as OCW make a good case in this regard. There is one area, however, where there are questions regarding the effectiveness of this model, which is in the area of arts and cultural information and content as opposed to scientific information and content. There appears to be a large focus on OA initiatives in journals and repositories in the sciences.

Taking into account the work that has already begun under the Development Agenda Project on IP, ICTs, the Digital Divide and Access to Knowledge (including this Study), there are a number of opportunities for WIPO to do more in the area of OA to E&R resources in future. There are clear opportunities with regard to WIPO:

- (a) As a significant provider of E&R resources on IP and related subjects (through the WIPO Academy and other training and teaching initiatives), to adopt or pilot the OA approach with respect to its own E&R resources and to generate best practices. This approach or pilots will help inform policy not just in Member States but also in other international organizations;
- (b) Providing a forum for continued discussion and learning about OA approaches to the dissemination of E&R information and content to increase awareness; and
- (c) Contribute to the gathering and dissemination of evidence to policymakers on the effectiveness of these approaches, particularly in developing countries.

## 1. INTRODUCTION

Human development and the exercise of human freedoms heavily depend on the availability and access to information, knowledge and culture.<sup>2</sup> In the last decade or so, advances in information and communications technology (ICTs) have been recognized as having vast potential to improve both access to, and the quality of, education and research (E&R). According to the United Nations Educational and Scientific Organization (UNESCO), ICTs “can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers’ professional development and more efficient education management, governance and administration.”<sup>3</sup> Consequently, these communications tools that are now accessible to millions of citizens with the capacity for reproduction and distribution can, with concerted efforts, vastly improve access to, and the quality of, education and integrate developing country researchers and research into the global knowledge economy.

The potential for ICTs to improve the state of E&R particularly in developing countries has, however, been tempered with the realities of the digital divide.<sup>4</sup> The difference in the availability of opportunities to access ICTs and to use the Internet between and within countries is the result of a wide range of factors including economic, social and cultural factors. Nevertheless, the role of intellectual property (IP) laws and regulations in shaping the socio-economic and cultural environments within which information and knowledge are produced and used has been acknowledged to be a particularly important factor that needs specific consideration. In this regard, the Declaration of Principles of the World Summit on the Information Society (WSIS) recognizes that “facilitating meaningful participation by all in IP issues and knowledge sharing is a fundamental part of an inclusive information society.”<sup>5</sup> In other words, facilitating the participation by all in IP issues and knowledge sharing is key to bridging the digital divide. In terms of E&R resources, the copyright system is of particular interest because of its twin function of encouraging creativity (the production of creative and scientific content) and enabling the sharing of knowledge and information.

The digital age has, however, also brought about a paradox for the IP system, particularly for the copyright system. In this era, the copyright system is expanding rapidly, yet it is at a point where its future remains undetermined.<sup>6</sup> Digital technologies have both offered the opportunities for increased production and expanded access to creative works and at same time sophisticated tools for curtailing access and use of informational products, including scientific, educational and academic works.<sup>7</sup> The rapid development of ICTs and a tendency to make E&R material open to the public in recent years has the potential to help deal with this paradox and ensure that the copyright system can be used to facilitate the production of education content as well as access. Open E&R resources could empower users, particularly, in developing countries, to participate in the creation and dissemination of educational and

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<sup>2</sup> Y. Benkler, *The Wealth of Networks – How social production transforms markets and freedom* (New Haven and London: Yale University Press, 2006), p. 1.

<sup>3</sup> See UNESCO’s ICT in Education webpage at: <http://www.unesco.org/new/en/unesco/themes/icts/>.

<sup>4</sup> The term “digital divide” refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access ICTs and to their use of the Internet for a wide variety of activities. The digital divide reflects various differences among and within countries. Definition based on the OECD Glossary of Statistical Terms. Available at: <http://stats.oecd.org/glossary/detail.asp?ID=4719>.

<sup>5</sup> See Article 42 of the Declaration, available at: <http://www.itu.int/wsis/docs/geneva/official/dop.html>.

<sup>6</sup> P. Yu, “The Global Intellectual Property Order and its Undetermined Future” *The WIPO Journal* 1 (2009), pp. 1- 15 at p. 15.

<sup>7</sup> U. Suthersanen “Some Initial Thoughts on Copyright, Human Rights and Market Freedom” in G. Westkamp (ed.) *Emerging Issues in Intellectual Property – Trade, Technology and Market Freedom: Essays in Honour of Herchel Smith* (Cheltenham and Northampton: Edward Elgar, 2007), p.35.

learning materials. This will make the copyright system promote social and economic development in the digital age.

In light of the growth and proliferation of open E&R resources, governments and public institutions are increasingly interested in raising the awareness of the chances and opportunities that can be created in this field. There is also an interest in considering the implementation of public policy strategies to foster and incentivize a wider and easier creation, development, distribution, access and use of open E&R resources. This explains the World Intellectual Property Organization (WIPO) Development Agenda (DA) Project on IP, ICTs, the Digital Divide and Access to Knowledge.<sup>8</sup> The Project's objective, in the area of copyright, is to gather information and explore the potential of the copyright system, its flexibilities and different models for managing copyright for enhanced access to knowledge.

This Study is part of a broader (three-part report) on *Using Copyright to Enhance Access to Information and Creative Content* and focuses on E&R information and content. In this context, the Study aims to present existing examples of normative solutions or public policies, including economic incentives, pilot projects or national strategies, which have proven beneficial for the achievement of targeted E&R objectives. In particular, specific case studies of Open E&R resources from Africa, Asia, Latin America and the Caribbean examined and analysed. An overview of the policies of developed countries as well as initiatives of international organizations and the publishing industry is also provided. A geographically balanced approach to case studies is critical to ensure that we have a full picture of the relevant issues which may differ from region to region. On the basis of this analysis, the Study offers recommendations on the possible role that could be played by WIPO in the field of Open E&R resources in the future.

In terms of methodology, the Study was largely undertaken through an online survey of Open E&R initiatives as well as relevant online and other literature on the subject. This was combined, to a limited extent, with discussions and interviews with researchers and practitioners. An online survey methodology is particularly suitable for this Study because open E&R resources refer to digital online resources made available through the deployment of ICTs. It follows that initiatives or projects which are not searchable or easily accessible online are unlikely to lead to the achievement of targeted E&R objectives.

## **2. USING THE COPYRIGHT FRAMEWORK TO PROMOTE ACCESS TO INFORMATION AND CREATIVE CONTENT FOR E&R RESOURCES – CASE STUDIES**

The primary role of the international copyright system, from a normative perspective, is to facilitate the production of creative and scientific works and their dissemination. From a human rights perspective, the copyright system, internationally and nationally, is an important part of the efforts to fulfill socio-economic and cultural rights. In particular, while copyright is not a human right in itself, copyright laws and systems are an important part of governments' efforts to fulfill their human rights obligations under the Universal Declaration of Human Rights (UDHR)<sup>9</sup> and the International Covenant of Economic, Social and Cultural Rights (ICESCR).<sup>10</sup> These two instruments require states to ensure the right of everyone to freely participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits and to the protection of their moral and material interests resulting from any scientific,

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<sup>8</sup> See WIPO document CDIP/4/5 REV available at: [http://www.wipo.int/meetings/en/doc\\_details.jsp?doc\\_id=131424](http://www.wipo.int/meetings/en/doc_details.jsp?doc_id=131424). This Project is aimed at implementing WIPO-DA Recommendations 19, 24 and 27. The DA recommendations are available on the WIPO website at: <http://www.wipo.int/ip-development/en/agenda/recommendations.html>.

<sup>9</sup> Text of UDHR is available at: <http://www.un.org/en/documents/udhr/index.shtml>.

<sup>10</sup> Text available at: <http://www2.ohchr.org/english/law/cescr.htm>.

literary or artistic production of which they author.<sup>11</sup>

At its very basic the copyright system is therefore concerned with both production and availability of information and creative content in the context of human development and fundamental freedoms. On the production side, the exclusive legal rights over these works are intended to permit and/or encourage authors or creators to invest the time, intellectual effort and money in the production of creative, artistic and scientific information and content (including from a quality perspective) and for the said authors and creators to be identified with and ensure the integrity of their works (attribution). On the dissemination and access side, the first principles rule that copyright only protects expressions but not ideas, procedures, methods of operations or mathematical concepts<sup>12</sup> and an in-built system of limitations and exceptions (L&Es) ensures that ideas, which are the building blocks for creativity, are not constrained by exclusive rights and that certain public interest uses of copyright works are permitted without undue restrictions. The way in which countries, companies and individuals manage copyright has an important bearing on whether both the production side and access side of the copyright bargain are met or not.

The open access (OA) approach to the management of copyright in E&R resources has emerged as an important model for managing copyright to promote both production and access to information and creative content. The OA approach, which as noted above, is a particular approach to the management of copyright, relies primarily on the consent of copyright holders.<sup>13</sup> The OA approach, however, also benefits from the fact that copyright is time-limited and hence rights over works eventually expire. Such works can be made available online free of charge with no copyright related restrictions. Because it operates within the framework of copyright law, and indeed, depends on the ease of obtaining copyright (since copyright generally applies by default and does not require registration), the OA approach to management of E&R resources is compatible with quality (e.g., through peer-review) and revenue or profit motives in copyrighted works.

In general, making E&R materials available on an OA basis means that the copyright holder grants to all users a free license to use works with limited usage restrictions with respect to distribution, transmission and public display in any digital medium for any responsible purpose, subject to proper attribution of authorship. In the last decade or so various initiatives have been undertaken to promote OA in the E&R sector. In the developing country contexts, OA initiatives can be broadly divided into three categories. Those that aim to increase access to E&R resources, those that aim to increase the visibility of the work of the authors from these countries and those that aim to increase knowledge of the available E&R resources. Many initiatives, as we will see in the case studies below, aim to do all the three to varying degrees.

OA for E&R resources has mainly taken the form of OA Journals and OA institutional repositories operating under either creative common (CC) licenses or other open content licenses. These two forms of OA have increasingly proven suitable for closing the information gaps in ways that are beneficial for developing countries in particular.<sup>14</sup>

OA journals range from journals whose articles are immediately available upon publication with no restrictions on use and re-use through to those with delayed release of articles on an OA basis. Journals are important because the results of scientific research are primarily communicated and validated through publication in scientific journals. For developing countries OA journals are meant to help overcome a range of distribution and dissemination barriers that

<sup>11</sup> See Article 27 of the UDHR and Article 15 of the ICESCR.

<sup>12</sup> See Article 9.2 of the TRIPS Agreement.

<sup>13</sup> See P. Suber "Open Access Overview" for a detailed explanation of the definitions, origins, operation and other aspects of OA. Available at: <http://www.earlham.edu/~peters/fos/overview.htm>.

<sup>14</sup> M. Abukutsa-Onyango "The Problems Faced by Research Communities in Developing Countries". Available at: [http://www.openoasis.org/index.php?option=com\\_content&view=article&id=28&Itemid=412](http://www.openoasis.org/index.php?option=com_content&view=article&id=28&Itemid=412).



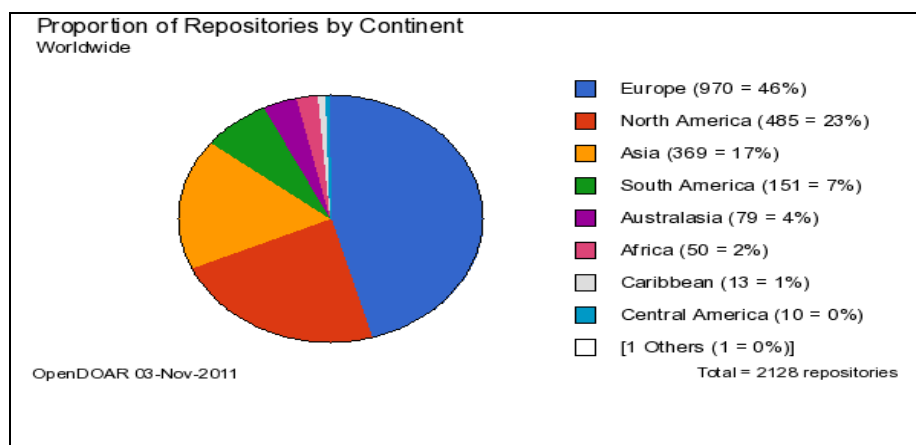
limits the access and usage of locally generated literature and scientific information. Research institutions and individual researchers are increasingly choosing to publish in freely available OA journals on the Internet rather than the conventional subscription-based journals.

OA institutional repositories are online spaces for the collection, preservation and dissemination of the intellectual output (books, articles, research papers and other materials) of an institution. OA repositories are seen as important for institutions because they create global visibility and accessibility for an institution's research and scholarly outputs, increase the impact of such research and intellectual outputs and because they help to preserve digital assets (such as dissertations and theses) which otherwise are easily lost.

Another important mechanism that has emerged on the open E&R resources arena is OpenCourseWare (OCW). This is a class of material such as syllabi, lessons, reading lists, lecture notes, and other documents that were previously used in an actual classroom but which are now being made available to the public, through the Internet, for free.

In the context of OA journals and repositories as well as OCW, there are today thousands of initiatives in both developed and developing countries. In terms of journals, the Directory of Open Access Journals (DOAJ) lists, at the end of October 2011, more than 7,000 journals from 117 countries.<sup>15</sup> In 2002 there were only 33 journals from seven countries. This means that the number of journals in the DOAJ has jumped more than 21,000% in under 10 years and the number of countries from which the journals come has jumped more than 16-fold in the same period. For OA repositories, by the start of November 2011, the Directory of Open Access Repositories (OpenDOAR) has more than 2100 listings from 97 countries.<sup>16</sup> Figure 1 below shows the distribution of the repositories in different continents.

Figure 1



With regard to OCW, the OCW Consortium counts members in 46 countries who make available several hundred courses in a wide range of subjects.<sup>17</sup>

Despite the rising, and in some cases, remarkable uptake of OA approaches in dealing with copyright over E&R resources, many of the initiatives in journals, repositories and OCW remain mainly driven by private actors or individual institutions as opposed to being a function of government policies at the national, sub-national or agency level. This raises a challenge in

<sup>15</sup> See: <http://www.doaj.org/>.

<sup>16</sup> See: <http://www.opendoar.org/index.html>.

<sup>17</sup> See: <http://www.ocwconsortium.org/>.

finding initiatives driven or based on concrete legislations, public policies and strategies of governments linked to the use of the copyright system in order to enhance access to information and creative content, which is what this Study is concerned with. A criterion for selecting initiatives or projects as the subjects of case studies was therefore necessary to maintain some level of relevance between the purpose of the Study and the initiatives examined as case studies.

In this regard, the case studies that are covered in this Study (the sub-sections which follow below) were selected on the basis of a flexible but discernible criterion. For an initiative to be considered for the Study it had to meet two main criteria. First, it had to be possible to demonstrate or at least discern a clear national or sub-national government involvement or a significant state agency, such as a government-funding agency, in a certain field. Secondly, it had to be an initiative or project which actually provides OA to E&R resources as opposed to just an initiative or project providing information about these resources elsewhere. Admittedly, a strict interpretation of these criteria could have eliminated some of the case studies and, as such, the criterion was used as broad guidance as opposed to a strict standard.

## 2.1 Case studies on OA to E&R resources in Africa

It has been argued that Africa, particularly, Sub-Saharan Africa, is suffering from a scientific information famine and that the expectation that the Internet would facilitate scientific information flow does not seem to have been realised.<sup>18</sup> In many African countries the dissemination of research findings remain an important concern mainly because of publishing and access restrictions.<sup>19</sup> These restrictions have meant that the visibility of African scholarship is kept at the minimum among other challenges. In recent years, OA has been gaining a foothold in the continent and is seen as an important tool that could change the picture in region. By the beginning of November 2011 OpenDOAR lists 50 OA repositories in 15 countries.<sup>20</sup> On its part, DOAJ lists journals from 16 countries.<sup>21</sup> In terms of OCW, four countries, Burkina Faso, Kenya, Nigeria and South Africa, are listed as having entities participating in the OCW consortium. In this regard, a number of successful or promising initiatives have been implemented in different countries in addition to some regional initiatives. We examine three of these.

### 2.1.1 Mozambique – SABER

SABER, launched in 2009 with the support of the Mozambican Ministry of Education (through a World Bank funded project), is a shared repository that provides a single entry point for access to research produced in Mozambique and made available, technically, OA principles.<sup>22</sup> It brings together six public higher education institutions. These are the *Universidade Pedagógica; Universidade Eduardo Mondlane; Centro de Formação Jurídica e Judiciária; Universidade Politécnica; Universidade São Tome de Moçambique and the Instituto Superior de Ciências e Tecnologia de Moçambique*. The repository, mainly in Portuguese language, contains journal articles, conference papers as well as thesis and dissertations in a broad range of subjects.

SABER currently (November 2011) holds more than 2,600 items. According to Aissa Mitha Issak, its general coordinator, “the idea of also being able to contribute to global knowledge is

<sup>18</sup> W. Nwagwu and A. Ahmed “Building Open Access in Africa”, *Int. J. Technology Management*, Vol. 45, Nos. 1/2, 2009, pp. 82-101 at 82.

<sup>19</sup> H. Van Dam, T. Madzija, A. Martinho and R. Waete “Knowledge, Attitudes and Practices with Respect to Institutional Repositories in Mozambique – a Benchmark Study”, *KIT Working Papers Series 12*, Royal Tropical Institute, 2010, p.6.

<sup>20</sup> See: <http://www.opendoar.org/countrylist.php?cContinent=Africa>.

<sup>21</sup> See: the DOAJ country listings at: <http://www.doaj.org/doaj?func=byCountry&uiLanguage=en>.

<sup>22</sup> See the initiatives website at: <http://www.saber.ac.mz/>.

really a very valuable thing.”<sup>23</sup> Consequently, in addition to improving visibility of works and ensuring long-term preservation, it is also seen as an issue about Mozambicans moving away from just being consumers of information and knowledge to being contributors of knowledge as well.

With respect to copyright it is reported that there are no major copyright issues.<sup>24</sup> In the main, each participating institution holds the right to publish the contents of dissertations and theses. Since most of these contents were never published elsewhere it reduces the chance of any copyright related disputes. It is notable, however, that on the SABER website has an “all rights reserved” notation with respect to copyright affixed raising questions whether indeed SABER is actually an OA repository as claimed or whether it is informed by OA principles of making available but not necessarily as a copyright management model.

### 2.1.2 South Africa - SciELO

SciELO South Africa<sup>25</sup>, which is an offshoot of SciELO in Brazil<sup>26</sup>, is an initiative under the Scholarly Publishing Programme of the Academy of Science of South Africa (ASSAF) with the support of the South Africa Department of Science and Technology (DST) for OA. It offers a platform that is free to publish and free to access. The Programme’s main focus is on enhancing the quality, quantity and worldwide visibility of original, peer-reviewed publications produced by researchers in the public sector, and fostering a new generation of highly competent and productive scientists and scholars. This focus is linked directly to key objectives of South Africa’s national system of innovation in the context of DST’s Ten Year Plan for Innovation in South Africa, namely, enhancing the national capacity to produce and especially to publish research and increasing the quality and visibility of South African research publications.

In 2006, ASSAF in its Report on a Strategic Approach to Research Publishing in South Africa<sup>27</sup> recommended among others (Recommendation 6) that DST takes responsibility for ensuring that OA initiatives are promoted to enhance the visibility of South African research articles through funding OA journals, establishing a federation of institutional OA repositories and undertaking a national harvesting of OA repositories. To implement this recommendation, ASSAF chose to implement SciELO based on the Brazilian model because it combined the most desirable features such as effective mechanisms for journal selection, free-online open access e-publishing, a variety of features to facilitate contextual understanding and contacts between readers and authors and full mark-up and indexing which permits direct online bibliometric analysis.<sup>28</sup> As at October 2011, SciELO South Africa had at least 20 journals in a number of subject areas. The subjects include animal science, civil engineering, education, medicine, psychology and veterinary.

However, despite the clarity of objectives the SciELO South Africa website provides no information regarding the copyright licensing regime for the materials on the site and the journal articles. Since the various journals that provide access to articles through SciELO hold the copyright it would appear that the access rights granted depend on the journals and their copyright policies.

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<sup>23</sup> See EIFL “Changing Research in Mozambique with a Shared Institutional Repository”, EIFL, September 2010. Available at: [http://plip.eifl.net:8080/news/spotlight/2010\\_09\\_03\\_changing-research-in](http://plip.eifl.net:8080/news/spotlight/2010_09_03_changing-research-in).

<sup>24</sup> See H. Dam “Case Study Mozambique: SABER: A Unique and Innovative FOSS Open Access Repository” available at: <http://www.eifl.net/dspace>.

<sup>25</sup> The website is available at: <http://www.scielo.org.za/>.

<sup>26</sup> See: <http://www.scielo.org/php/index.php?lang=en>.

<sup>27</sup> The summary of the recommendations is available at: [http://www.assaf.co.za/wp-content/uploads/reports/evidence\\_based/recommendations.pdf](http://www.assaf.co.za/wp-content/uploads/reports/evidence_based/recommendations.pdf).

<sup>28</sup> ASSAF Report to DST on the Scholarly Publishing Program covering the Period up to June 2010. On file with author.

### 2.1.3 Regional – African Virtual University (AVU) Open Educational Resources (OER) Initiative

In 2010 AVU<sup>29</sup> began developing the OER repository with funding support from the African Development Bank (AfDB). The repository called OER@AVU<sup>30</sup>, developed using open source software platforms and technologies, including Linux, DSpace and PostgreSQL, is intended to serve as a platform where the 73 modules of ICT Integration in Mathematics, Biology, Physics, Chemistry and Education, ICT Basic Skills and professional courses that were developed and released as OERs through the AVU Multinational Teacher Education Programme will be published. It also serves as a platform for educators to use, modify and contribute to AVU collection, make their educational resources available to others, discuss and comment on them, and collaborate in developing them further. The intention is to go beyond the 73 existing modules and the repository will host all of the AVU's upcoming OER in areas such as business studies, computer sciences, agriculture and environmental studies.

The core objectives of the OER@AVU initiative is to: facilitate increased participation by Africa in the creation, organization, dissemination and utilization of OERs; address issues pertaining to relevance of OERs to the African context; reduce technological challenges; and enable institutions to participate actively, by driving and owning the process in terms of form, content, structure and orientation. The materials on the OER@AVU site are licensed under a creative commons license (South Africa 3.0) which means that they can be copied, distributed, transmitted, adapted and used commercially provided that there is attribution and the altered, transformed on new materials based on them are shared alike.

Historically, OER@AVU builds from earlier efforts by AVU and its partners to improve the availability of quality and contextualized academic content so as to improve access to quality education in Africa. In this context, AVU launched in 2005, a multinational project, funded by AfDB and the United Nations Development Programme (UNDP) – Somalia one of whose objective was to develop a continental teacher education program in mathematics, sciences and ICT. Through this project, AVU developed four (4) full Bachelors of Education in Mathematics, Physics, Chemistry and Biology. The programs were developed using a collaborative approach. A total of 12 universities, 146 authors and peer reviewers from 10 countries in Anglophone, Francophone and Lusophone countries were involved. In total, 73 modules made up of 46 Math and Sciences, 4 ICT Basic Skills, 19 Teacher Education professional courses and 4 related to the integration of ICTs in Education and integration in respective subject areas were developed. It is these modules that have been made available through the OER@AVU initiative.

OER@AVU has a clear open access copyright policy in the form of an attribution sharealike creative commons license. Under the license, the modules on the site can be copied, distributed, transmitted and used commercially provided that:

- The work is attributed in the manner specified by the author or licensor; and
- If you alter, transform, or build upon the work, you may distribute the resulting work only under the same or similar license to the attribution sharealike license.

The licensing terms also include specific language on works in the public domain, on limitations and exceptions and on moral rights. In particular, it is provided that where the work or elements

<sup>29</sup> AVU is a Pan African Intergovernmental Organization established by charter with the mandate of significantly increasing access to quality higher education and training through the innovative use of information communication technologies. Five African Governments, Kenya, Senegal, Mauritania, Mali and Cote d'Ivoire signed a Charter establishing the AVU as an Intergovernmental Organization. The AVU has its headquarters in Nairobi, Kenya and a Regional office in Dakar Senegal. The AVU has Host Country Agreements with the governments of Kenya and Senegal and the AVU has diplomatic status in these countries.

<sup>30</sup> Detailed information about OER@AVU is available at: <http://oer.avu.org/>.

of the work are in the public domain that status is not affected by the license and that the license does not affect fair use rights or moral rights.

## 2.2 Case studies on OA to E&R resources in Asia

The developing parts of the Asian region have made important strides in promoting OA to E&R resources with India being considered the leading country in this regard. Many countries have initiatives at different level of development and with varying degrees of impact. The OpenDOAR lists OA repositories in over 20 developing countries in Asia with a total of individual projects/initiatives running into the 100s.<sup>31</sup> The DOAJ lists OA journals in a similar number of countries. The OCW Consortium lists at least nine countries as having participating entities from the region. In this Study, we look at two initiatives, one in India and the other in Vietnam, which tentatively fulfill our selection criteria.

### 2.2.1 India – ePrints@IISc

The *Indian Institute of Science* (IISc) was the first to set up an interoperable institutional repository (*ePrints@IISc*) in India.<sup>32</sup> Since its launch, the repository has accumulated more than 30,000 items many having full text. The types of documents that can be found in the repository includes: journal articles; conference papers, proceedings and posters; newspaper and magazine articles; books and book chapters; and technical reports or working papers. In the main, ePrints@IISc repository collects, preserves and disseminates, in digital format, the research output created by the IISc research community. The repository has been built by enabling the Institute community to deposit their pre-prints, post prints and other scholarly publications (as described above) using a web interface, and organizes these publications for easy retrieval. While ePrints@IISc can be accessed by anyone, submission of documents to the repository is limited to the IISc research community. In terms of software, the repository runs on ePrints open archive software, a freely distributable archive system.

The ePrints@IISc is one of the few major OA initiatives in the E&R area to have clearly spelled out guidance on copyright matters, including frequently asked questions (FAQs) section.<sup>33</sup> The guidelines provide detailed advice on how to ensure that publisher's copyright is not infringed. Some of the questions addressed relate to:

- Copyright ownership.
- Rights that may have been signed away to publishers.
- Copyright agreements and their interpretation.
- Change of copyright policies by publishers and retrospective application.

Overall, materials on ePrints@IISc are made available in full text freely but are subject to the copyright and licensing policies of the publishers or other copyright holders.

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<sup>31</sup> See: <http://www.opendoar.org/countrylist.php?cContinent=Asia>.

<sup>32</sup> D.K Sahu and R.C. Parmar "Open Access in India", 2006. Available at: [http://openmed.nic.in/1599/01/Open\\_Access\\_in\\_India.pdf](http://openmed.nic.in/1599/01/Open_Access_in_India.pdf). For detailed information on ePrints@IISc, see its website at: <http://eprints.iisc.ernet.in/>.

<sup>33</sup> The copyright guidance can be found on the repository's website at: [http://eprints.iisc.ernet.in/submission\\_guideline.html#copyright](http://eprints.iisc.ernet.in/submission_guideline.html#copyright).

### 2.2.2 Vietnam – Vietnam Journals Online (VJOL)

The National Centre for Scientific and Technological Information (NACESTI), which falls under the Ministry of Science and Technology, launched VJOL in 2007.<sup>34</sup> The International Network for the Availability of Scientific Publications (INASP) supported the initiative.<sup>35</sup> VJOL aims to promote awareness and use of Vietnam-published journals in all disciplines by providing access to tables of contents, abstracts and full text on the Internet. It uses open source software, which allows the journal content listed on VJOL to be indexed through Open Archives Initiative search engines dedicated to research.

VJOL provides participating journals the opportunity to take control of the area within the VJOL and they are responsible for loading, editing and updating their own journal information. All the material on VJOL is free to view, search and browse. However, the journals/authors or publishers retain copyright to the materials. This means that each journal or author will need to give permission for any use or re-use of the content that falls outside fair use or other permissible uses. As in the case of SABER in Mozambique, this approach to copyright management raises questions whether this is actually an OA repository or not.

### 2.3 Case studies on OA to E&R resources in Latin America and the Caribbean

Latin America and the Caribbean have already recorded important progress in making E&R resources widely available using OA approaches. Many scholars and scientists both at individual level and system-wide in the region are said to share the ethical and epistemological motivations to increase the 'public presence' of academic research.<sup>36</sup> Overall, many more scholars and scientists have been enabled to access information at affordable prices and participate and collaborate in international networks for knowledge production.<sup>37</sup> Due to a relatively developed ICT infrastructure the region is well positioned to implement OA initiatives to increase the availability and access to E&R resources. In terms of OA, it is estimated, for example, that 13% of Latin American journals are OA. This is a much higher percentage than even North America and Europe. OpenDOAR lists hundreds of OA repositories in at least 19 countries in the region<sup>38</sup> while the DOAJ lists journals from at least 17 countries. OCW Consortium lists entities participating in the Consortium from 11 countries in the region.

The move to OA in the region dates back to the late 1990s and there has been significant progress. This is exemplified by a number of initiatives with Brazil being a leading example. It is significant that key initiatives in the region have taken a regional approach as opposed to a national or sub-national focus. In this regard, for the case study we look at one Brazilian initiative – SciELO- that is in fact an international initiative and a pan-regional Latin America and the Caribbean (LAC) – European initiative.

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<sup>34</sup> The description in this sub-section is partly based on the presentation of Dr. Ta Ba Hung, Director of NACESTI, at the second IFLA Presidential Meeting in Berlin in February 2008. The VJOL website is at: <http://www.vjol.info/>.

<sup>35</sup> Information on INASP can be found on its website at: <http://www.inasp.info/>.

<sup>36</sup> J.P. Alperin, G.E. Fischmann and J. Willinsky, "Open Access and Scholarly Publishing in Latin America: Ten Flavours and a Few Reflections", *Liinc em Revista*, Vol.4, No. 2, September 2008, p. 172 – 185 at 173. Available at: <http://openarchive.stanford.edu/bitstream/10408/101/1/269-950-2-PB.pdf>.

<sup>37</sup> Alperin *et al*, *id.*, p.177.

<sup>38</sup> See: <http://www.opendoar.org/countrylist.php?cContinent=Caribbean;>  
<http://www.opendoar.org/countrylist.php?cContinent=Central%20America;> and  
[http://www.opendoar.org/countrylist.php?cContinent=South%20America.](http://www.opendoar.org/countrylist.php?cContinent=South%20America)

### 2.3.1 *Brazil – SciELO*

SciELO, first piloted in Brazil in 1997, is aimed to be a model for cooperative electronic publishing of scientific journals on the Internet.<sup>39</sup> The initiative was conceived, as a vehicle to meet the scientific communication needs of LAC countries. It provides an efficient way to assure universal visibility and accessibility to the scientific literature from the region. In addition, the SciELO model comprises integrated procedures for the measurement of usage and impact of scientific journals. SciELO was founded through the partnership of the State of São Paulo Science Foundation (FAPESP)<sup>40</sup>, the Latin America and Caribbean Center on Health Sciences Information (BIREME)<sup>41</sup>, and national and international institutions related to scientific communication and editors. It started off as a pilot with 10 Brazilian journals from different subject areas. Since then the initiative has progressively grown incorporating new journal titles and expanding to new countries. In addition to South Africa (already discussed above) SciELO has expanded to or is in development in 13 other countries, primarily in Latin America, including Argentina, Bolivia, Costa Rica, Chile, Cuba, Mexico, Paraguay, Peru, Portugal, Spain, Uruguay and Venezuela.

The model has three main components. First, the model enables the electronic publication of complete editions of scientific journals, the organization of searchable bibliographical and full text databases, the preservation of electronic archives and the production of statistical indicators of the scientific literature usage and impact. The methodology also includes journal evaluation criteria based on international scientific communication standards. Second, the model envisages the operation of national sites as well as thematic sites. Finally, the model actively encourages building of partnerships among national and international scientific communication players — authors, editors, scientific and technological institutions, funding agencies, universities, libraries, scientific and technological information centers etc., aiming at the dissemination, improvement and sustainability.

The inclusion of journals in the collection is coordinated by an Advisory Committee and it is based on a detailed criteria and policy on inclusion and permanence.<sup>42</sup> To date SciELO boasts more than 230 journals with thousands of issues. These articles are from a broad range of disciplines including agricultural sciences, applied social sciences, biological sciences, chemistry, engineering, earth sciences, geosciences, health sciences, humanities, linguistics and arts, mathematics and social sciences, among others.

As with SciELO South Africa, SciELO Brazil website provides no information regarding the copyright licensing regime for the materials on the site and the journal articles. It follows, like in the South Africa case that the access rights granted to the journal articles made available through the platform depend on the journals and their copyright policies.

### 2.3.2 *Regional/International - NECOBELAC*

The Network of Collaboration Between Europe and LAC countries (NECOBELAC) is a network of collaboration between Europe and LAC countries as the name implies. Its aim is to spread know - how in scientific writing and provide the best tools to exploit open access information for public health. It is a project funded under the 7<sup>th</sup> Framework Program of the European Commission (EC), under the Science in Society theme. The project was launched in 2009 with the specific goal of creating a network of institutions collaborating to promote training activities in scientific writing and to strengthen the dissemination of information through an OA approach. In specific terms, the initiative promotes the coordination and effectiveness of the existing

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<sup>39</sup> SciELO website is at: <http://scielo.br/>.

<sup>40</sup> Information on FAPESP is available at: <http://www.fapesp.br>.

<sup>41</sup> Information available at: <http://www.bireme.br>.

<sup>42</sup> The policy and criteria can be found at: [http://www.scielo.br/avaliacao/criterio/scielo\\_brasil\\_en.htm](http://www.scielo.br/avaliacao/criterio/scielo_brasil_en.htm).

health-related information infrastructures in Europe and LAC countries to achieve a wider scale uptake of community engagement, embedding the use of open access methods within accepted working practices. It involves all stakeholders in the communication process, fostering a cultural change and using existing technologies.

The project was launched with six institutional partners, namely: *Istituto Superiore di Sanità* (ISS) Italy (project coordinator); *Consejo Superior de Investigaciones Científicas* (CSIC) Spain; The University of Nottingham (UNOTT) United Kingdom; *Centro Latino Americano e do Caribe de Informacao em Ciencias da Saude*, BIREME, PAHO; *Instituto de Salud Pública* (ISP), *Universidad Nacional de Colombia*, Colombia; and *Universidade do Minho* (UMINHO) Portugal. In addition to providing lots of information on its website, NECOBELAC has delivered a wide range of training and materials on OA publishing in its almost three years of existence.<sup>43</sup>

While NECOBELAC is clear that its purpose is to promote OA approaches there is no clear guidance regarding copyright in the material on the website and the licensing terms. There appears to be a presumption that indicating that the objective is OA clarifies the copyright and licensing issues, which is not the case.

#### 2.4 *Developed countries and OA to E&R*

There is a strong and broad OA movement in developed countries (defined, in this paper as WIPO Group B countries) due, in part, to the obvious greater endowments in ICTs but also due to stronger advocacy by the E&R communities in these countries. It is notable though that the proportion of E&R resources available under the OA model as a percentage of all E&R resources in areas such as journals in developed countries remains significantly small compared to some developing countries such as Brazil. This is no surprise because these countries, in general, do not have similar or the same concerns regarding visibility or impact of research and publications especially in the academic publishing sectors. Much less attention is also given to grey literature, such as theses and dissertations, either because there is a tradition of formal publication of these or they count for less in terms of the total knowledge availability in specific subject areas.

At the government level, however, there appears to have been much stronger political and public policy responses to promote OA for E&R resources in developed countries than in developing countries. Advocacy, particularly in the area of publicly funded research, has played an important role in this regard. The early uptake, and widespread availability of ICT infrastructure in developed countries, may also have helped more easily demonstrate the value of open E&R resources to them than in developing countries where important challenges remain with respect to ICT infrastructure. The situation on OA to E&R resources in developed countries at the government/public policy level could be summarized as below.

##### 2.4.1 *OA journals and repositories in developed countries*

There are a significant number of OA journals in developed countries with at least 55 per cent of those listed in the DOAJ coming from these countries. The United States of America (U.S.A) has, by far, the largest number of OA journals with a listing of 1,342 in DOAJ, as at 3<sup>rd</sup> November 2011, accounting for over 30 per cent of the developed countries total and almost 20 per cent of the total DOAJ collection. Taken in context, the performance of developed countries in the OA journals field is, however, less than impressive. For example, Brazil leads all developed countries, save for the U.S.A.; contributing almost 100 more journals than the second placed developed country -the United Kingdom (U.K). The performance on repositories

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<sup>43</sup> Details of various NECOBELAC activities can be found on its website at:  
<http://www.necobelac.eu/en/training.php>.



is much more stronger. OpenDOAR lists over 1,300 OA repositories in these countries with the U.S.A leading with over 390 repositories followed by the UK with over 190.

The impressive growth of OA repositories in developed countries appears to be directly correlated to the push, particularly, by government scientific funding agencies, for OA availability of the research they fund. Between 2005 and 2010 an upwards of 40 such agencies adopted policies to promote OA availability of research by mandate or requiring their grantees to deposit publications and/or data in OA repositories.<sup>44</sup> Some of these governmental agencies include, among others: the Australian Research Council<sup>45</sup>; the Australian Health and Medical Research Council<sup>46</sup>; the Belgian Research Foundation Flanders<sup>47</sup>; Genome Canada<sup>48</sup>; the National research council of Canada<sup>49</sup>; Canadian Cancer Society<sup>50</sup>; Canadian health Services Research Foundation<sup>51</sup>; Canada Institute of Health Research<sup>52</sup>; the European Research Council<sup>53</sup>; Agence *Nationale de la Recherche* in France<sup>54</sup>; Fraunhofer *Gesellschaft* in German<sup>55</sup>; Wellcome Trust in the UK<sup>56</sup>; the Irish Council for Science, Engineering and Technology<sup>57</sup>; the Irish Science Foundation<sup>58</sup>; the Norwegian Research Council<sup>59</sup>; the Swiss National Science Foundation<sup>60</sup>; the Arts and Humanities research Council in the UK<sup>61</sup>; the UK Engineering and Physical Sciences Research Council<sup>62</sup>; the UK Medical Research Council<sup>63</sup>; the UK Science and Technology Facilities Council<sup>64</sup>; the Natural Environmental Research Council in the UK<sup>65</sup>; and the US National Institutes of Health<sup>66</sup>.

In the United States, the Federal Research Public Access Act<sup>67</sup> requires government agencies that fund in excess of 100 million US dollars in annual external research to ensure that manuscripts of peer-reviewed journals articles stemming from such research be made publicly available on the Internet.

In most cases these agencies require mandatory deposit of publications resulting from grants, scholarships and other full or partial support in a central (e.g. PubMed Central) or institutional OA repository. There are a few cases where the policy only requires best endeavor efforts such as in the case of the Swiss Science Foundation. A review of these policies show that making available an electronic version of peer-reviewed publications, is required either immediately

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<sup>44</sup> For detailed information on research funders OA policies see SHERPA JULIET at:  
<http://www.sherpa.ac.uk/juliet/index.php>.

<sup>45</sup> See website at: <http://www.arc.gov.au/>.

<sup>46</sup> See website at: <http://www.nhmrc.gov.au/>.

<sup>47</sup> See website at: <http://www.fwo.be/en/index.aspx>.

<sup>48</sup> See website at: <http://www.genomecanada.ca/>.

<sup>49</sup> See website at: <http://www.nrc-cnrc.gc.ca/eng/index.html>.

<sup>50</sup> Website at: <http://www.cancer.ca/>.

<sup>51</sup> Website at: <http://www.chsrf.ca/Home.aspx>.

<sup>52</sup> See website at: <http://www.cihr-irsc.gc.ca/e/193.html>.

<sup>53</sup> See the report of the European Scientific Advisory Board on OA Policy at:  
[http://ec.europa.eu/research/eurab/pdf/eurab\\_scipub\\_report\\_recomm\\_dec06\\_en.pdf](http://ec.europa.eu/research/eurab/pdf/eurab_scipub_report_recomm_dec06_en.pdf) and the European Research Council's OA guidelines at:  
[http://erc.europa.eu/pdf/ScC\\_Guidelines\\_Open\\_Access\\_revised\\_Dec07\\_FINAL.pdf](http://erc.europa.eu/pdf/ScC_Guidelines_Open_Access_revised_Dec07_FINAL.pdf).

<sup>54</sup> See website at: <http://www.agence-nationale-recherche.fr/Intl>.

<sup>55</sup> See website at: <http://www.fraunhofer.de/en/>.

<sup>56</sup> See website at: <http://www.wellcome.ac.uk/>.

<sup>57</sup> See website at: <http://www.ircset.ie/>.

<sup>58</sup> See website at: <http://www.sfi.ie/>.

<sup>59</sup> See website at: <http://www.forskningsradet.no/no/Forsiden/1173185591033>.

<sup>60</sup> See website at: <http://www.snf.ch/E/Pages/default.aspx>.

<sup>61</sup> See website at: <http://www.ahrc.ac.uk/Pages/default.aspx>.

<sup>62</sup> See website at: <http://www.epsrc.ac.uk/Pages/default.aspx>.

<sup>63</sup> See website at: <http://www.mrc.ac.uk/index.htm>.

<sup>64</sup> See website at: <http://www.stfc.ac.uk/>.

<sup>65</sup> See website at: <http://www.nerc.ac.uk/>.

<sup>66</sup> See website at: <http://www.nih.gov/>.

<sup>67</sup> For useful information and explanations about SPARC see:  
<http://www.arl.org/sparc/advocacy/frpaa/index.shtml>.

upon acceptance for publication, or within six to 12 months. In terms of subject coverage, these policies apply to a wide field including sciences, humanities and arts and in themes such as health, energy, engineering, and environment.

Some developed countries also have initiatives related to OA infrastructure to enable researchers and grantees comply with OA mandates. Here the Open Access Infrastructure for Research in Europe (Open AIRE) is a leading example.<sup>68</sup> It is a three-year program funded under the Seventh Framework Programme of the European Commission (FP7) and is aimed at supporting a pan-European digital repository infrastructure to optimise the sharing of repository functionality and content. This is key to implement the EC requirements that research funded under FP7 be made openly accessible. OpenAIRE involves 38 partners from 27 European countries, representing active OA advocates from the library and repository communities, and ICT research groups with expertise in building infrastructures.

#### 2.4.2 OCW in developed countries

Since 2002 when the Massachusetts Institute of Technology (MIT) launched its OCW there have been a growing number of universities and institutions participating in making digital course and learning materials available for free worldwide. As already noted, the OCW Consortium has recorded impressive growth over the years, growth that is projected to continue in the foreseeable future. Developed countries have dominated the delivery of OCW with most of the participating institutions based in these countries. However, unlike in the case of OA journals and repositories, OCW initiatives have largely been driven by universities and funding agencies such as the William and Flora Hewlett Foundation. It is difficult to discern any clear government or government agency policies in developed countries linked to the promotion of OCW.

#### 2.5 OA initiatives by international organizations and publishing industry

The growing importance and impact of OA has also attracted the attention of international organizations and publishing industry players. Naturally, the United Nations Educational and Scientific Organization (UNESCO) leads the way. It has a dedicated programme to promote OA, with particular emphasis on scientific information generated through publicly funded research.<sup>69</sup> The program, which pays particular attention to Africa and other developing countries, seeks to improve awareness about the benefits of OA among policy makers, researchers and knowledge managers. The work under this program has led to the establishment of the Global Open Access Portal (GOAP), which provides a snapshot of current status of OA to scientific information around the world.<sup>70</sup> More recently, UNESCO together with the Commonwealth of Learning (COL) have published Guidelines on OER in Higher Education to provide pathways on how the potential of OER can be harnessed to support quality teaching and learning by higher education stakeholders.<sup>71</sup> WIPO, in the context of the Development Agenda has also embarked on work to examine OA approaches as a copyright management model for E&R resources.

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<sup>68</sup> Information on OpenAIRE can be found on its website at: <http://www.openaire.eu/>.

<sup>69</sup> Information on UNESCO's OA work can be found on its website at: <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-access-to-scientific-information/>.

<sup>70</sup> GOAP can be accessed at: <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/>.

<sup>71</sup> The guidelines are available at: <http://unesdoc.unesco.org/images/0021/002136/213605E.pdf>.

There have also been efforts to provide easier access to journals in particular through initiatives involving international organizations and the publishing industry. These initiatives seek to provide free or low cost online access to journals and other research materials to certain categories of developing countries. However, these are much like tiered-pricing models as opposed to OA models. A prominent example of such an initiative is Research4Life, which is a public-private partnership of the WHO, the UN Food and Agriculture Organization (FAO), the United Nations Environment Programme (UNEP), WIPO, Cornell and Yale Universities and the International Association of Scientific, Technical & Medical Publishers.<sup>72</sup> There are four main programs under Research4Life, namely, WHO's HINARI (launched in 2002)<sup>73</sup>, FAO's Access to Global Online Research in Agriculture (AGORA)<sup>74</sup>, UNEP's Online Access to Research in the Environment (OARE)<sup>75</sup> and WIPO's Access to Research for Development and Innovation (ARDI)<sup>76</sup>. Overall, Research4Life, though not an OA initiative, is reported to be providing access to over 8000 journals to approximately 5000 eligible institutions in over 100 countries.

It is important to note, however, that limited work has been done relating to international organizations providing access to their E&R resources on an OA basis. Many of these organizations provide training and produce significant research. There therefore remains work to be done regarding access to E&R resources emanating from the international organizations themselves. Here, there are recent efforts led by WIPO to consider the development of an international organization OA licensing model. This type of initiative is likely to lead to more clarity and proactive efforts by international organizations to make available E&R materials and other OA resources.

### **3. USING THE COPYRIGHT FRAMEWORK TO PROMOTE ACCESS TO INFORMATION AND CREATIVE CONTENT FOR E&R RESOURCES – ANALYSIS**

There is no doubt that the OA approach to the management of copyright in digital E&R continues to gain ground over the “all rights reserved” approaches. Notwithstanding the challenges of the digital divide, the uptake of OA in E&R (journals, repositories and OCW) is encouraging, including in Sub-Saharan Africa where ICT infrastructure remains limited. In trying to understand the opportunities provided by the OA approach as a model of managing copyright in the area of E&R it is, however, important to look beyond the impressive uptake or aggregate statistics such as those of DOAJ, OpenDOAR and the OCW Consortium. In this regard, we analyze below the case studies and initiatives reviewed above based on four parameters, namely: the IP issues involved; an economic sustainability and cost/benefit assessment; the incentives for the relevant stakeholders involved; and effectiveness. As will become clear this analysis is only tentative but nevertheless it provides some important insights to facilitate discussion and further interrogation of how OA approaches can help improve access to E&R resources, especially in developing countries.

#### *3.1 IP issues in OA to E&R resources*

The OA approach to improving access to E&R resources is intended to, and indeed, operates within the established copyright framework. The making available of digital E&R materials for free is a particular approach to copyright licensing and relies on the consent of the copyright holder or expiration of the copyright term. In practical terms it is enabled, especially in the case of E&R material, by the ability of institutions and governmental funders to exercise control over their employees or grantees through contract and the copyright system. In other words, the

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<sup>72</sup> Fuller information on Research4Life can be found on its website at : <http://www.research4life.org/about.html>.

<sup>73</sup> See the HINARI website at: <http://www.who.int/hinari/about/en/>.

<sup>74</sup> See the AGORA site at <http://www.aginternetwork.org/en/>.

<sup>75</sup> See website at: <http://www.oaresciences.org/en/>.

<sup>76</sup> See website at: <http://www.wipo.int/ardi/en/about.html>.

ability of these institutions to enforce contractual requirements for making materials free and widely available is significantly aided by the copyright system's enforcement structure.

There are various way in which works can be licensed under OA principles. This can range from copyright policy statements by individual institutions or journals through to the use of well recognized standard open content licenses such as creative common (CC) licenses. Overall, the review of different case studies discussed above shows that the CC licenses or similar principles predominant in the area of OA for E&R. This seems to be the case because of the flexibility of this licensing approach. With the core principles being to promote OA as the default and to ensure attribution and further sharing, CC licenses accommodate a range of situations and can be applied differently in different jurisdictions or institutions.

From the perspective that the OA models operates within, and is supported by, the copyright system, it follows that as a general rule there are no unique copyright/IP issues that arise with respect to the use of the model to improving access to information and creative content for E&R. Looking at the various initiatives, and in particular the case studies presented in this Study, there are nevertheless a number of IP/copyright issues that require some consideration going forward if this model is to achieve the objective of widespread availability of E&R information and content. Two particular issues deserve attention.

The first issue relates to the consent of individual authors or researchers. While there appears to be clear motives and willingness to license copyright using OA approaches by the institutions or agencies involved, it is much less clear whether individual authors or researchers are fully on board with this approach. To the extent that even in employment or funded situations moral rights remain with the authors and, in some cases, the copyright in the work can not be fully attributed to the funding, the attitudes of individual researchers and authors require to be understood better from a copyright perspective. Broad support from individual authors and researchers will be important if the OA model is to succeed in the long run.

The second issue that arises relates to the clarity of the licenses and whether they are in fact OA licenses. While many initiatives are instinctively characterized as OA initiatives, a closer look at the copyright terms on their websites reveal a contradiction. The example of SABER in Mozambique is a case in point. Although touted as an OA repository, in actual fact the website is marked as an "all rights reserved" site with respect to copyright. It appears that it is assumed that simply making materials digitally available on the internet without technological restrictions qualifies as OA. This type of situation causes confusion and can easily result in unnecessary disputes. OA initiatives will have to do better in providing clear and unambiguous information about copyright to ensure the efficient working of OA journals, repositories and OCW.

### *3.2 Economic sustainability of OA as a means of improving access to E&R resources*

Though Suber traces the OA movement to the launch of the U.S. Department of Education's Educational Resources Information Centre in 1966, as a global phenomenon, OA is a relatively nascent development.<sup>77</sup> Rapid uptake of OA is a phenomenon of the 2000s when ICT and Internet deployment made important progress especially in developing countries. From this standpoint, it may be too early to make conclusive statements regarding the economic sustainability/cost-benefit analysis of OA in the E&R sector.

However, it is possible to make some tentative statements based on the initiatives/projects reviewed in this Study as well as existing literature on this question.<sup>78</sup>

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<sup>77</sup> See P. Suber "Timeline for the Open Access Movement". Available at: <http://www.earlham.edu/~peters/fos/timeline.htm>.

<sup>78</sup> Some of the literature on cost benefit analysis of OA includes J. Houghton *et al* "Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits", Report to The Joint Information

To shed some light on this question, we look at two particular issues – where the funding for OA initiatives is coming from coupled with the fact of lowered costs of ICT/Internet infrastructure and the linkage between OA and the implementing institutions' mandates.

The production of OA E&R resources is not costless. The question with respect to financial viability is therefore not whether you can produce quality scientific and other literature for free but rather whether there are other sustainable ways for paying for these costs.

OA Journals (also referred to as the 'gold OA'), probably raises the most questions about economic sustainability because it is the area which has previously been dominated by commercial publishers who heavily rely on copyright and commercial pricing models. Predominantly, gold OA has been enabled through 'author pays' models where journal article authors through research grants or their institutions pay the publishing costs coupled with other lines of revenue such as sale of prints, advertising and other publishing services. This model seem to have seen quite some success especially because significant focus with respect to OA publishing has been on publicly funded research. To the extent that governments and other public institutions will continue to be the main funders of key research it would seem that this model can be sustained in the long-run. It is notable, however, that this model would probably be less applicable to non-scientific publications such as novels or other artistic literature which are also important E&R resources.

OA repositories (also referred to as 'green OA') primarily rely on self-archiving into an institutional or other open repositories. Considering the levels of development and investments in ICT infrastructure and that archiving and other storage is a primary function of libraries and related services in most educational and research institutions, it follows that the cost of the basic infrastructure will be sunk whether there is OA or not. Strictly speaking, other than these sunk costs, self-archiving implies little, if any, financial cost to the institution or author. As such, it can be said that self-archiving being the preferred method for OA repositories offers a real possibility for sustainability.

OCW probably raises the least question about costs and sustainability. First, basic course and teaching materials have not traditionally been a big ticket item for copyrighting to recover revenue. Second, the preparation of these materials is routine in the teaching environment and hence other than delivery infrastructure, whose costs has become lower and lower, there is no significant other costs associated with making the material available digitally. This probably explains why a significant number of institutions, including from developing countries, can participate in providing OCW materials and why there has been readiness on the part of donor agencies to support these initiatives.

Sustainability of OA initiatives and projects is also dependent on the linkage between the initiatives and the institutional mandates of the implementing institutions. The correlation between OA and the mandates of the implementing institutions for OA E&R resources is probably the most obvious. Most open E&R resources are produced and are being made available by research and educational institutions and scholars and students who have an inherent interest in visibility and impact of research. This abiding link suggests that financial motives are not necessarily the primary motive and hence the question of financial sustainability less critical.

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[Footnote continued from previous page]

Systems Committee (JISC) by Victoria University & Loughborough University. Available at: <http://www.jisc.ac.uk/media/documents/publications/rpconomicoapublishing.pdf> and M. Piorun and L. Palmer "Digitizing Dissertations for an Institutional Repository: A Process and Cost Analysis" available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2479051/>.

### *3.3 Incentives for participating in OA initiatives in the E&R sector*

Managing copyright through an OA approach as a means of promoting access to information and creative content in the E&R sector impacts on, and is of interest, to many actors and groups. We have students, authors, publishers, professors and teachers, librarians, the E&R institutions themselves, governments, funding agencies and the general public. Each of these has different interests and may require different incentives to participate in OA. Based on the reasoning and justifications of the various OA initiatives/projects reviewed in this Study it is possible, however, to find significant commonalities of incentives. These revolve around visibility and accessibility, impact and finance. These should be seen as cumulative incentives as opposed to each standing on its own.

There is no doubt that making E&R materials available on OA principles ensures that they are available free worldwide and hence enjoy a higher level of visibility, accessibility and, as corollary, that they are likely to have a higher impact. Increased visibility and accessibility serves the interests of the authors and institutions by allowing them to reach a larger audience. For students, scholars and teachers ease of accessibility makes their lives much easier and rewarding. For governments and funding agencies higher visibility, accessibility and impact means that quality and access to education is improved and that the money spent on producing these resources benefits the largest number of people. Financial efficiency, which is also a consideration for institutions, is important here.

For publishers, who are probably the most sensitive to financial incentives, as already noted, the OA approach is not mutually exclusive with revenue and profit. In the area of OA journals, the author pays system as well as other revenue streams such as sale of prints, advertising etc., has ensured that the operation of the OA model in this area is still paid for. Consequently, revenue and profit still remains an important incentive under the OA model particularly in the case of journals.

### *3.4 Effectiveness of OA approaches in the E&R sector*

It would be presumptuous, as with the issues of sustainability, to attempt to make any conclusive statements regarding the long-term effectiveness of OA approaches in the E&R sector. This is particularly the case in developing countries where we are still observing how the OA growth trajectory goes. Of course, there are some exceptions such as SciELO in Brazil which has been around for almost 15 years. Overall, it is safe to say that in its short period as a significant copyright management model in the E&R sector, OA has had an important impact and has been effective in increasing the availability and access to E&R information and content. The numbers of articles and material on the journals listed on DOAJ, the repositories listed on OpenDOAR and the courses in OCW Consortium speak for themselves.

One area where the effectiveness of OA as a model for enabling access to E&R resources needs to be examined more carefully relates to the limited attention paid to the arts and culture areas as compared to the sciences particularly in the case of OA journals and repositories. There is an obvious emphasis on scientific literature in most of the initiatives reviewed here and in general. While the interest in science is partly understandable in the context of development, a holistic educational system requires equally enhanced access to the arts and cultural writings as well as other works such fiction. It may be that the OA model is most suited for the sciences but not as well for the arts and cultural information and content, in which case adaptation of the model might be needed.

#### **4. RECOMMENDATIONS– POSSIBLE FUTURE ROLE OF WIPO IN OA FOR E&R RESOURCES**

The implementation of the Development Agenda is today a key part of WIPO's efforts to ensure that the protection of IP leads to economic, social and cultural development particularly in developing countries and least-developed countries (LDCs). Efforts to implement recommendations 19, 24 and 27 of the Development Agenda aimed at exploring ways in which WIPO can further facilitate access to knowledge and technology for creativity and innovation; help in efforts to bridge the digital divide; and assist Member States identify practical IP-related strategies to use ICT for economic, social and cultural development, respectively, have resulted into the Project on IP, ICTs, the Digital Divide and Access to Knowledge.

The work under the project to gather information and explore the potential of the copyright system and different models of managing copyright to enhance access to knowledge offers an important opportunity for WIPO to consider what its role could be in this area in future. The information gathered in this Study, and especially the analysis in section 3 above, with specific focus on OA approaches as a model for managing copyright to enhance access to E&R resources, suggests a number of possible entry points for WIPO in this area going forward.

In addition to its role as a discussion/negotiations forum, WIPO invests significantly and is an important source of E&R resources on IP and related subjects. The relevant E&R resources range from course and training materials through to studies, such as this one, through to a journal and other publications. Taking into account the work that has already begun under the Development Agenda Project on IP, ICTs, the Digital Divide and Access to Knowledge, WIPO could, within its mandate, play a more significant role with respect to OA for E&R resources.

To start with, as a significant provider of E&R resources on IP and related subjects, a first question that needs to be asked is what WIPO's copyright management model for these E&R resources is. To the extent that OA approaches can enhance access to E&R information and content WIPO could, as an institution adopt or, at least, pilot this approach to its E&R resources. As noted in section 2.5 above, WIPO has already begun a process to consider the potential for OA with respect to its own materials and possible open licensing models for international organizations. By adopting or piloting this approach at the institutional level, WIPO could achieve several objectives. In addition to enhancing the availability of the said E&R information and content, the WIPO Secretariat could learn valuable lessons and gain experience that could be used in providing advice or assistance to those developing countries that are interested in using OA approaches. Overtime, WIPO could also develop replicable best practices and generate useful information for assessing sustainability and effectiveness of these approaches.

There is also a clear role for awareness and education in this area. While there is has been a significant rise in the uptake of OA as a copyright management model or practice for E&R resources, OA is still not well understood even by those who may associate with its principles. Leveraging its mandate as a forum for discussion on copyright and related matters, WIPO should ideally continue to provide a space, in the CDIP or elsewhere, for raising awareness regarding this model and what it can and cannot do. In the same context, WIPO provides an ideal forum and space to examine best practices in this area from different countries.

The greater interest and investment by governments and institutions in OA as a model for managing copyright in E&R resources is an important development. As the uptake of this approach grows, it will be critical that better evidence is made available to policymakers, especially in developing countries, on the sustainability and effectiveness of this model. Taking advantage of WIPO's increased investments in research and evidence gathering coupled with the broader interest in evidence-based IP policies and strategies, another role for WIPO in future could be evidence gathering and dissemination. As this Study reveals, there remains limited data and evidence regarding sustainability and longer-term effectiveness of this model. The body of evidence, particularly in developing countries, could be significantly enriched by WIPO.

[Part II follows]



## SOFTWARE DEVELOPMENT PRACTICES (Part II)

*prepared by Mr. Rishab Aiyer Ghosh*

### • INTRODUCTION

*Recommendation 19: To initiate discussions on how, within WIPO's mandate, to further facilitate access to knowledge and technology for developing countries and LDCs to foster creativity and innovation and to strengthen such existing activities within WIPO.*

*Recommendation 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).*

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

*WIPO Development Agenda, A/43/16*

The WIPO General Assembly, in formulating the Development Agenda, recommended actions as cited above, to investigate how access to knowledge and technology for developing countries and LDCs could be facilitated. This Study aims to examine the practical strategies used in Member States to support economic, social and cultural development through the application of copyright regimes to software development practices. Drawing on numerous quantitative surveys of software use in developing countries, this Study focuses in particular on the economic aspects of software development under alternative models of copyright, i.e. open source software. The Study also examines specific cases of public policies, strategies and public institutional support of models for software development that facilitate wide access of software.

The treatment of software under copyright regimes has particularities which affect how public policies can address economic, social and cultural development issues. This Study therefore commences with a discussion of the treatment of software under IPR regimes; specific exceptions and limitations available or utilized; the alternative development model of open source software, which is in fact founded on copyright law.

An analysis of economic aspects of the open source software model follows, examining the incentives, costs and benefits from the perspective in particular of developing countries. Empirical evidence on economic and policy aspects of open source is then examined, drawing on numerous quantitative surveys and studies from Africa, Asia, Latin America, Europe and North America. This discussion is followed by an outline of legislative, fiscal and other measures that *could* be used to support software development, including a taxonomy of possible policies, and actually implemented policies across the world.

This is followed by a qualitative (and necessarily subjective) summary of selected case studies from different countries. A key factor in selecting the cases was their suitability for reproduction and transfer to other domains and regions, and the availability of public documentation and dissemination of information. In this regard, specific case studies were selected for initiatives that originated in certain countries and were actually reproduced in other parts of the world.

Finally, conclusions are drawn regarding the policies that should be considered by Member States in order to facilitate software development with optimal economic and social impact; and specific recommendations made for WIPO regarding its possible future role in this field.

- **IPR REGIMES FOR SOFTWARE: COPYRIGHT, OPEN SOURCE AND LIMITATIONS AND EXCEPTIONS**

## SOFTWARE COPYRIGHT

Software is covered by copyright law as a literary work<sup>79</sup>. Although software works are unusual in that they may also be covered by patent law, the scope of this study is limited to software development practices with respect to copyright, the primary means of IPR protection applied to software works.

### *Legal Background*

Internationally copyright law has historically been governed by the Berne Convention, agreed on since 1886, with various amendments up to 1979. The Berne Convention sets out a number of rights that are granted to the creators of literary or artistic works. The rights granted by the Convention include economic rights, specifically the right of the rights-holder to exclusively authorize the reproduction of works. Independently of the author's economic rights, and even after the transfer of the said rights, the Convention provides the author with "moral rights" - the right to claim authorship of the work and to object to distortion or mutilation of the work.

The Berne Convention did not specifically protect software authors, and the first legislative protection of software was in 1980 when the US amended its copyright law to include software<sup>80</sup>. In 1991 Council Directive 91/250/EEC made explicit the inclusion of software under European copyright law. The World Trade Organization TRIPS agreement in 1994 included software ("Computer programs") as subject matter to be protected as literary works, in Article 10. And the WIPO World Copyright Treaty (WCT) detailed rights applicable to software in 1996.

The legal framework for software copyright means, in summary, that a work of software cannot be used, modified, copied or distributed without the explicit permission of the software's authors. Although there are some limitations and exceptions of copyright that have been applied to software, in general, the legal framework means that the use of software is governed by the terms of a *license* from the rights-holders that determine how and whether the software can be accessed, used, modified, copied and distributed.

### *Policy initiatives*

Public policy initiatives that aim to support economic and social development through the application of copyright to software development practices can take a number of forms: legislative actions affecting the scope and implementation of copyright; legislative and regulatory actions taking advantage of exceptions and limitations in copyright regimes as applied to software; and legislative, fiscal and other policy initiatives related only indirectly to copyright law.

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<sup>79</sup> In US law since 1980, followed by legislative changes around the world. See e.g. Mark A. Lemley, Peter S. Menell, Robert P. Merges, Pamela Samuelson, Brian W. Carver. 2011. *Software and Internet Law, Fourth Edition*. Aspen; Bridget Czarnota & Robert J. Hart, 1991. *Legal protection of computer programs in Europe: a guide to the EC directive*. London: Butterworths

<sup>80</sup> Title 17, US Code, Sections 101 and 117

While portions of this study touch on the first two forms, the primary focus of this study is on initiatives that work completely, in legal terms, within the standard copyright system. This is because the past nearly three decades has seen the rapid growth of software development practices that, originating in legal innovations in the application of copyright law, have evolved to a major economic methodology with spillover effects in non-software domains, cultural and societal practices. Free software, later also known as open source software, is a software development and licensing model that has been the primary alternative to traditional software development practices and a means of increasing software access through policy initiatives. In the business community, as later sections of this study show, the success of open source software has been large enough that it is part of the mainstream, and it calling it an alternative model is a misnomer.

Although the software development and economic practices in open source may differ from that used by proprietary software companies, when it comes to the *legal* aspect, open source does not rely on any exceptions from copyright law, and fits completely within the traditional copyright legislative framework. As this fact is key to the exploration of how public policy can increase access to software – new legislative approaches to copyright are not required – this Study provides below an explanation of how intellectual property rights and open source software development relate.

#### MECHANICS OF RIGHTS PROTECTION.

Open source software developers have become among the most economically productive online communities; however, there is sometimes a misconception that laws are ignored or that the community's efforts are "shared" as public domain and thus ignorant of IPR concepts. In fact, open source communities are among the most formalized in cyberspace, with the basis of their functioning guided by licenses under which their output is distributed, based on copyright law as a foundation.

The interaction between open source communities and rights is a complex interaction between the actors (developers and other community contributors), artefacts (code and documentation) and legal frameworks as they determine the scope of intellectual property rights.

To elaborate on this interaction, it is useful first to examine the way in which rights are treated by the current legal framework for copyright. Normally, once a work is created, it is exclusively appropriated by the creator, with a limited, temporary monopoly granted by the state. This monopoly provides the creator with the sole right to control access to the work; with copyright, the monopoly is over the reproduction of the work. It prevents follow-on creation by others without the permission of the creator. This monopoly is meant to reward the creator and provide an incentive for future creation.

With open source, this monopoly for the creator, providing rights to the created artefact, is not used as an incentive to create. As seen below, incentive structures in open source communities are more closely aligned to sharing of output rather than its appropriation. This introduces several complexities in the interpretation of who the creator is, and how (and by whom) rights are exercised.

## RIGHTS CLAIMED BY OPEN SOURCE DEVELOPERS

It is essential to clarify that open source developers *do* claim and exercise rights over their creations, even if this is done through unconventional uses of the legal framework. Open source artefacts – software, documentation – are not public domain, in the legal sense of the term<sup>81</sup>, though they may be public goods in the economic sense. Open source refers to software to which the “Four Freedoms” adhere (Stallman<sup>82</sup>): users have the freedom to use, freedom to study, freedom to modify and freedom to share this software.

While this includes works that are actually in the public domain<sup>83</sup>, by default, software authors own their code. Under the Berne Convention, all copyrightable works are automatically covered by the copyright of the original creator at the moment of creation. No registration or notice – not even a copyright notice attached to the work – is required. Since software authors own their code, they are free to sell it, or indeed to “give it away”. They must do this explicitly, and can impose conditions, which may perpetuate the “Four Freedoms”.

Although the open source community has evolved its own implicit and explicit, informal rules and norms, the legal foundation of the open source community structure is in copyright law. Authors have the sole right to license their software to others, and software users must follow license terms – otherwise they are infringing authors' copyright.

While software authors can safely “give it away”, this would literally be releasing software into the public domain and disclaiming all future rights to it. This is rare (and not even possible in some legal frameworks, e.g. in jurisdictions which provide for inalienable moral rights of the author). Instead, licenses for open source follow two broad models: permissive and reciprocal, and both involve the release to licensees of human-readable source code along in addition to machine-readable object code.

## MODELS OF OPEN SOURCE LICENSING

The *permissive* licensing model is fairly close to public domain. It allows licensees broad rights to use, study, modify, distribute the software with few if any conditions. Most conditions relate to disclaimer of warranty issues. Examples of such licenses include the Berkeley BSD license, under which the popular operating system FreeBSD and its relations are distributed; the Apache license used for the market leader in web server software, Apache; and the MIT license used for the X Window system of graphical user interfaces under Unix-like operating systems. As the names of some these licenses indicate, they originated in universities and are often referred to as *academic* licenses.

The other licensing model, accounting for a majority of open source projects is *reciprocal*. ‘Reciprocal’ is used here to convey the notion that rights are being granted by the software authors, but *in return* (i.e., reciprocally), the recipients of the software must also grant similar rights if they redistribute the software. Quite different from the public domain, this model forms a “protected commons”. Licensees have broad rights to use and study the software. If they

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<sup>81</sup> With no claim of (copy)right, works in the public domain can be used in any way by any one; see Samuels, Edward, 1993. “The Public Domain In Copyright Law by Edward Samuels”, *Journal of the Copyright Society* 41:137.

<sup>82</sup> Stallman, Richard. “The Free Software Definition”. Available at <http://www.gnu.org/philosophy/free-sw.html>. The definitive list of open source software licenses is maintained by the Open Source Initiative, following the Open Source Definition, see <http://www.opensource.org> "

<sup>83</sup> E.g. software created by employees of the US Federal Government, which uniquely under US law is, like other intellectual works created by US Federal Government employees, in the public domain.

distribute the software, they must provide recipients access to the source code (providing them the *freedom to study*). They must also provide recipients with the software under the same terms, allowing recipients the freedoms to further *use, modify or distribute* it. Licensees can only modify the software if the modified software is also distributed under the same terms. All recipients of such a derived work can, according to the original license, further modify it. This ensures reciprocity by forming a “protected commons” – authors are contributing their software into a commons with certain freedoms attached, and any further modifications must be made available with the same freedoms provided. This principle of reciprocal licensing can be described in lay terms as: “I am giving you certain rights over my software, and if you distribute this software, you must ensure that recipients receive the same rights from you as you did from me”.

The best known reciprocal license is also the most widely used open source license, accounting for over 66% of open source software projects (Freshmeat 2005<sup>84</sup>), the GNU General Public License (GPL), with a further 6% distributed under the closely related Lesser GPL. The GPL is the license used by the Linux kernel and several other large software packages. Other widely used reciprocal licenses include the Mozilla Public license<sup>85</sup>, used for the popular web browser Firefox; the Lesser GPL<sup>86</sup>, used by Open Office, the main competitor to the Microsoft Office productivity suite; the European Union Public Licence created by the European Commission for the release as open source of publicly funded software<sup>87</sup>.

## CONDITIONS AND “RECIPROCITY”

Note that this “protected commons” created by reciprocal licenses is not formalized, and there is no obligation that licensees who modify software to make derived works “give back to the commons” in a formal sense, i.e. modified software does *not* need to be given away at no cost; nor does source code need to be published or provided to the original author. Indeed, such requirements would disqualify a license from being a free software (or open source) license. Reciprocal licenses such as the GPL require that *recipients of software* have the four freedoms; they do not require that the public at large have these freedoms.

The GPL, for instance, allows an author of a derived work to sell the work for 5 000 Euro a copy in only binary form (machine readable object code). However, all those who buy this software must, according to the GPL, be given the four freedoms. In particular, they must have the right to study the code, which is why the GPL requires that *recipients of object code* – in this example, the buyers – be provided with the source code at no significant extra charge. Similarly, the recipients have the right to modify and distribute the code with no further conditions; since they may distribute the code they received at no charge, if they so wish, or sell it for a lower price than they paid for it, charging high prices for the code alone, while allowed by open source licenses, is unsustainable under normal market conditions.

The reciprocal conditions imposed by open source licenses such as the GPL are unusual, though they have since been widely reproduced (including in Creative Commons licenses for non-software works such as art and text). Several commentators have raised questions as to the validity of the GPL’s reciprocity requirements, going so far as to claim that reciprocal conditions expropriate the intellectual property rights of the authors of derivative works<sup>88</sup>.

<sup>84</sup> <http://freshmeat.net/stats/#license> - 66% when accessed on July 17, 2006

<sup>85</sup> <http://www.mozilla.org/MPL/MPL-1.1.html>

<sup>86</sup> <http://www.gnu.org/licenses/lgpl.html>

<sup>87</sup> <http://www.osor.eu/eupl>

<sup>88</sup> “This viral aspect of the GPL poses a threat to the intellectual property of any organization making use of it”, in Mundie, Craig. 2001. “Speech Transcript - Craig Mundie, The New York University Stern School of Business”, May 3, Available at <http://www.microsoft.com/presspass/exec/craig/05-03sharedsource.msp>; See also Evans, David S. and Reddy, Bernard J., 2003. “Government Preferences for Promoting Open-Source

However, a derivative work is a work built upon an original work, such as a modified version or extension of an original work of software. Authors of derivative works have no particular right to create them in the first place. Copyright law prevents anyone from modifying or distributing software without the explicit permission of the copyright holder – permission granted usually through a license. The copyright holder, choosing to grant the permission to modify, is free to set any conditions on the license.

For example, an open source license gives a person permission to sell copies of the licensor's software, which would be forbidden (without permission) under copyright law. It may place conditions on this permission. But an open source license normally cannot place conditions on your ability to copy parts of software, make a personal backup copy, or other activities allowed by copyright law under "fair use" or equivalent<sup>89</sup> terms.

Without following licensing conditions, users who distribute a work or make derived works are making unauthorized copies, thus infringing copyright. Indeed, in a rare court case concerning the distribution of modified versions of netfilter/iptables, a tool in Linux, a German appeals court ruled that even though the GPL itself may not entirely be valid in German contract law, it was the only thing that granted permission to the accused to distribute the software. Thus, the terms had to be obeyed, otherwise it was a simple case of copyright infringement.<sup>90</sup> Several incidences of violations of open source licensing terms have since been identified, mostly settled out of court<sup>91</sup>.

## RECIPROCITY AND COLLABORATION

Creators of a number of open source projects, with the aim of maximizing use, have chosen permissive rather than reciprocal licenses. Some of the early choices have been without much discussion, almost by default. The prototypical permissive license is the BSD license<sup>92</sup>, used for the various versions of BSD Unix (the "Berkeley Software Distribution"<sup>93</sup>). This enormously influential systems software suite has, in great part due to its license, provided the underlying operating system for all Apple Macintosh computers since 2002 (and is the core of Apple's iOS mobile operating system, meaning that the iPhone and iPad run on open source software). Originally copyright of the Regents of the University of California, the BSD license was typical of the "academic" publication ethic.

Similarly brief and permissive (and academic in origin), the MIT License<sup>94</sup> or X license originated to distribute the X Window System<sup>95</sup>, the graphical user interface (GUI) for Unix that originated in 1984 at MIT and is now the basis for most GUIs running on versions of Unix, Linux and BSD.

Both these licenses were implemented before the first version of the GPL, thus before the notion of reciprocal licensing became widely known. The GPL's legal innovation was truly

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[Footnote continued from previous page]

Software: A Solution in Search of a Problem", 9 *Mich. Telecomm. Tech. L. Rev.* 313. Available online at <http://www.mtlr.org/volnine/evans.pdf>; see also Jonathan Schwartz, CEO of Sun Microsystems, quoted in Profitt, Brian. 2005. "Editor's Note: With Friends Like These...", *Linux Today*, April 8, available online at [http://www.linuxtoday.com/it\\_management/2005040802526OPBZ](http://www.linuxtoday.com/it_management/2005040802526OPBZ)

<sup>89</sup> E.g. in many European countries, the right to make a "private copy"

<sup>90</sup> District Court of Munich I, Judgement of 19/05/2004 – file reference: 21 0 6123/04; English translation available at [http://www.oii.ox.ac.uk/resources/feedback/OIIFB\\_GPL2\\_20040903.pdf](http://www.oii.ox.ac.uk/resources/feedback/OIIFB_GPL2_20040903.pdf)

<sup>91</sup> See <http://gpl-violations.org>

<sup>92</sup> <http://www.freebsd.org/copyright/freebsd-license.html> - permissive licenses are often called "BSD-like"

<sup>93</sup> Much information and history is available on Wikipedia:

<sup>94</sup> [http://en.wikipedia.org/wiki/Berkeley\\_Software\\_Distribution](http://en.wikipedia.org/wiki/Berkeley_Software_Distribution)

<sup>95</sup> <http://www.opensource.org/licenses/mit-license.php>

<sup>95</sup> [http://en.wikipedia.org/wiki/X\\_Window\\_System](http://en.wikipedia.org/wiki/X_Window_System)

remarkable, and the most significant permissive license that followed was probably the Apache license in 1995<sup>96</sup>. This was written for the Apache web server, an open source application written *not* by academics but by Internet professionals and website administrators. The GPL was already the dominant open source license and the discussion among the Apache developers, about whether or not to require reciprocity, is something many subsequent projects have faced, with varying degrees of argument. Apache chose to maximize its user base, and to encourage contributions to the commons through gentle social pressure<sup>97</sup> rather than legally binding restrictions. Indeed, Apache's user base was maximized – it became the most used web server within a year of its release, and has held a steady two-thirds of the total web server market since 2000.

Some of the scripting languages and content management systems - tools used (among other things) to make websites interactive – have also used permissive licenses. But the Linux kernel and the majority of open source software use reciprocal licenses. One reason is that reciprocal licenses are drafted to enforce reciprocity through “recursion” – typically, a derived work must be distributed under the *same* license. Thus, new software that reuses old GPL software – code reuse being one of the hallmarks of the open source software development model – must be licensed as GPL. For those not strongly opposed to reciprocal licensing, choosing the GPL is a fair trade for getting access to an ever huger codebase to reuse. Thus each reciprocal license is automatically designed to be dominant, and the most popular, or oldest, will by default dominate the entire license space.

However, one cannot say that most developers are against reciprocal licensing, or even neutral towards it. For rational actors, reciprocal licenses may be a better choice than a permissive license. Certainly, one feature of “giving your work away” that is hard to justify by a shortsighted rational actor is the threat of competitors benefiting from what you give away, or more generally, the threat of free-riding. This occurs less with reciprocal licenses, since competitors can benefit, but they cannot *exclusively appropriate* the benefits. They can “share”, but not “steal”. If they adapt or improve the work, they must in general return it to the commons, allowing the original creator to benefit from the improvements. Reciprocity ensures that development remains collaborative, and cannot be exclusively appropriated. The reciprocal licensing model allows the Linux operating system, for example, to have several thousand individual copyright holders, for each separate contribution made – something that would be quite impractical if individual licensing agreements had to be made. This is an example of how open source licensing lowers transaction costs for collaboration.

## RECIPROCITY AND INCENTIVES

Reciprocity provides incentive for new contributors, including firms. 60% of developers think<sup>98</sup> the role of a license is “To prevent others from appropriating the software we've created” (open source-US survey<sup>99</sup>), thus showing that they are not altogether (if at all) altruist and may frequently be choosing reciprocal licenses with the selfish motive of ensuring their access to future improvements.

The preference among developers for reciprocity is not limited to independent individuals. According to a survey of Italian firms that release open source software, firms prefer to use the

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<sup>96</sup> The current version is 2.0, written in 2004 and available at <http://www.apache.org/licenses/LICENSE-2.0>

<sup>97</sup> See e.g. Apache Software Foundation, 2006. “Frequent Questions about Apache Licensing”. Available at <http://www.apache.org/foundation/license-FAQ.html>

<sup>98</sup> out of 1540 respondents: [http://www.stanford.edu/group/open\\_source-us/stats/q7.html](http://www.stanford.edu/group/open_source-us/stats/q7.html)

<sup>99</sup> David, Paul, Waterman, Andrew and Arora, Seema, 2003. “FLOSS-US: The Free/Libre/Open Source Software Survey for 2003”. *SIEPR/KNIP Working Paper*, available at [http://www.stanford.edu/group/open\\_source-us/report/open\\_source-US-Report.pdf](http://www.stanford.edu/group/open_source-us/report/open_source-US-Report.pdf)

GPL because “it allows to keep the code open and forbids competitors to turn it into proprietary.” (Bonaccorsi & Rossi 2003<sup>100</sup>).

This has even been a concern for the public sector. For example, in a study conducted to examine the possibility of the European Commission releasing a software application it owns under an open source license, a key condition was that “the Commission requires protection against appropriation of application by third parties” (Dusollier, Laurent and Schmitz 2004<sup>101</sup>). The recommendation, based on this requirement, was to use a license with a reciprocity clause, i.e. a copyleft license such as the GPL.

## RECIPROCITY AS A FRAMEWORK FOR DISCLOSURE

Patents, which are justified on the basis of promoting disclosure (and therefore follow-on innovation), are not really succeeding at that task, according to a number of surveys of innovators.

Arora et al (2003)<sup>102</sup> find that “patent disclosures appeared to have no measurable impact on information flows from other firms, and therefore no measurable effect on R&D productivity”. Arundel (2001)<sup>103</sup> finds that “a consistent result in survey research on the use of patent databases is that they are among the least important external information sources available to firms”. His analysis of 12445 firms’ responses to the CIS survey results<sup>104</sup> shows that between 5% and 18% of small and medium-sized firms find patents to be a useful source of information<sup>105</sup>.

In the case of software, surveys show (Arundel et al 2006<sup>106</sup>) that more firms think free software source code is an important source of new ideas (17%) than patent databases (5%). The opinion of individual innovators (engineers) is perhaps more relevant as questionnaires on patents sent to firms are likely to be answered by the legal department than by innovators. Far more innovators within firms<sup>107</sup> think software source code (41%) or journal publications (68%) are moderately or very important sources of new ideas, than patents (24%).

While we do not know how much of this software source code that is source of new ideas is licensed under reciprocal terms, these data show that open source software is succeeding in providing disclosure, while patents are less successful. This is certainly at least in part due to reciprocal licensing, which provides a legal requirement to disclose (much as patents are

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<sup>100</sup> Bonaccorsi, A. and C. Rossi (2003). “Licensing Schemes in the Production and Distribution of Open Source Software: An Empirical Investigation”. MIT Open Source working paper series. Available online at <http://opensource.mit.edu/papers/bnaccorsirossilicense.pdf>

<sup>101</sup> Dusollier, S., Laurent, P., and Schmitz, P-E. 2004. *Open Source Licensing of software developed by The European Commission (applied to the CIRCA solution)*. European Commission DG ENTR. Available online at <http://europa.eu.int/idabc/servlets/Doc?id=19296>

<sup>102</sup> Arora, A. et al., 2003. “R&D and the patent premium”, Nat’l Bureau of Econ. Research, Working Paper No. 9431. p17. Available at <http://www.nber.org/papers/w9431>

<sup>103</sup> Arundel, Anthony. “Patents in the Knowledge-Based Economy”, *Beleidstudies Technologie Economie 67*;

<sup>104</sup> Arundel A. (2000), “Patent – the Viagra of Innovation Policy?”, *Internal Report to the Expert Group in the Project “Innovation Policy in a Knowledge-Based Economy”*, Maastricht, MERIT. Figure 4, page 15. Available online at <http://www.ebusinessforum.gr/index.php?op=modload&modname=Downloads&pageid=320>

<sup>105</sup> the share is 34% for large firms, but even they find patents *less* useful than other sources of information, such as customers, suppliers, conferences and journals, trade fairs, and competitors.

<sup>106</sup> Arundel, A., Bergstra, J., Feijoo, C., Ghosh, R.A., Glott, R., Hall, B., Klint, P., Martin, A., Thoma, G., and Torrisi, S. 2006. “Empirical Study of economic impact: Approach and preliminary findings”. *European Commission*, part of the “Study of the effects of allowing patent claims for computer-implemented inventions”, available online at <http://www.merit.unu.edu/patentclaims/>

<sup>107</sup> Arundel et al 2006 (*supra* note) shows consolidated data for all respondents; figures included here are for individual innovators employed at private companies, i.e. excluding those employed at public organizations or research institutes.



supposed to do). Without reciprocal licensing, disclosure would be only due to social, economic or other incentives, but not a *requirement*, and would presumably be reduced<sup>108</sup>.

If a legal framework is required to promote disclosure and follow-on innovation, there is, therefore, some evidence to justify an argument that reciprocal open source licensing provides a more effective framework than the current patent regime. At any rate, open source licensing has come to form an innovative layer above copyright law to further access to software as well as facilitate wider participation in the process of software development itself.

## **OPEN SOURCE STRATEGIES FOR LOCAL DEVELOPMENT: ECONOMIC ASPECTS, INCENTIVES, COSTS AND BENEFITS**

*“Access [to ICTs] is not enough, it is the ability to create, to add value, that is important”*

Felipe Gonzalez, former Spanish Prime Minister<sup>109</sup>

What former Spanish Prime Minister Felipe Gonzalez referred to as the ability to create and add value is particularly important for developing countries and other economically disadvantaged communities. Access alone limits them to the role of passive consumers in the knowledge economy; the ability to create transforms them into active participants. By lowering barriers to the transfer of knowledge, reducing transaction costs and enabling a protected commons, open source arrangements for software development has been shown to provide a training environment that enables this ability to create; it increases the earning capacity of community participants without any explicit investment in training and is perhaps a novel form of technology transfer.

The common feature described in the literature<sup>110</sup> for various examples of collaborative innovation shows that the most important enabling feature is access. Access is not required to knowledge alone, but to the tools and (legal) ability to replicate and improve upon knowledge. Thus it is not access to knowledge as passive consumers, which is often discussed and fitted well with the old model of R&D where producers were distinct from consumers. In this model, developing countries are often treated as consumers who do not have the ability to innovate, perhaps due to the lack of technical skills, and must therefore passively consume products of developed countries (with subsidies, if required) or if they are more industrially advanced they may imitate production methods developed elsewhere. Apart from being patronising, this view does not fit with the new mode of technological progress for development, for two reasons.

First, empirical research has shown (Ghosh and Glott, 2005) that in the case of software, open collaboration provided by access to modifiable technology may not be problematic due to a lack of skills; rather, it leads to the development of technical, business and legal skills. Such skills are often better than those learnt in formal courses and proven participation in open source development may compensate for the lack of formal degrees. These results were supported by employers surveyed. This shows that while access to knowledge may build skills through passive absorption (e.g. through textbooks), access to technology in a form that can be shared

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<sup>108</sup> Several firms embrace disclosure for other incentives, e.g. when they contribute to Apache software which has no reciprocity requirements. However, several firms try to evade the disclosure requirements of reciprocal licenses such as the GPL, when the GPL's legal requirement to disclose provides a useful mechanism. The court case referred to in *supra note* is one example, and the GPL Violations Project (<http://gpl-violations.org/>) contains many others.

<sup>109</sup> Gonzalez. Speaking at Open Source World Conference in Málaga, Spain, 18/2/2004. From author's notes.

<sup>110</sup> e.g. Benkler, Yochai, 2006. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale Press; Ghosh, Rishab Aiyer (ed.), 2005. *Code: Collaborative Ownership and the Digital Economy*. MIT Press; Ghosh, Rishab and Soete, Luc. 2006. "Information and Intellectual Property: The Global Challenges". *Industrial and Corporate Change*, Vol. 15, No. 6, pp. 919-935

and modified without entry barriers (as with open source software) can build advanced skills, compensate for the absence of formal training and generate increased employment.

Second, the premise of the new mode of technology development is that lowering entry barriers for the modification of technology reduces search costs, allowing participants in the market of producer-consumers to more efficiently allocating skills and other resources to needs for improvement. This leads to more efficient and perhaps faster technical innovation, with the entrepreneurial risks of innovation spread widely. Thus, providing access to technology need not be seen as charity or aid for developing countries, but as enlarging the resource base of potential innovators.

While access to knowledge as a passive process is politically framed within the language of development aid, access to technology as a way of providing the right and ability of participation is analogous to the arguments favouring free trade: developing countries can then be seen as providing a resource of potential innovators, rather than merely using existing innovations from the developed world.

This leads to the question of whether public policy should favour passive use of “black-box” software or active participants in the global ICT community. Being active requires being able to create – and choose with the least barriers the level of creativity. Clearly, the lower the entry barrier for creativity, the higher the potential that creativity that will occur. Developing countries need to avoid being locked out of skills and competencies. Skills development requires access to the ability to create, not only the access to software itself but to the process of software development, which as the following summary shows, is provided by the open source development model founded on the use of copyright licensing.

#### SKILLS DEVELOPMENT: INFORMAL APPRENTICESHIPS BENEFITTING EMPLOYERS

Open source, or free software as it was originally called, has become in recent years one of the most talked about phenomena in the information technology world. This is remarkable, not only for the usual reasons that open source has been around for many years as a volunteer driven success story before being discovered by big business and government — but also because it has largely developed quietly on its own without the headline coverage and glare of international attention that it now receives.

This in turn makes it more attractive to governments and policy makers. Countries around the world, regardless of wealth, are trying to bring citizens into the Information Society and provide electronic access to government services. Many of them are considering open source software as a cost-effective means of doing so. Many more see an inherent injustice in requiring citizens and businesses to buy software from specific vendors in order to communicate with the government, and are looking at *open standards* – which allow different products from different producers, whether open source or proprietary software, to work together.

What is the special economic and social value of open source software, and how can it be harnessed? The Free/Libre/Open Source Software (FLOSS) study in 2002<sup>111</sup>, a comprehensive study of several thousand developers and users worldwide, first showed that the most important reason for developers to participate in open source communities was to learn new skills — “for free”. These skills are valuable, help developers get jobs and can help create and sustain small businesses. The skills referred to here are not those required to use open source software, but

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<sup>111</sup> Ghosh R., Glott R., Krieger B., Robles G. (2002). *Free/Libre and Open Source Software: Survey and Study, FLOSS, Final Report*. European Commission / International Institute of Infonomics, University of Maastricht. See Survey of Developers. Available online at: <http://www.flossproject.org/report/index.htm>

those learnt from participation in open source software communities. Such skills include programming, but also skills rarely taught in formal computer science courses, such as the basics of copyright law and licenses (a major topic of discussion in many open source software projects). Teamwork and team management are also learnt – after all, the team management is required to coordinate the smooth collaboration of 1500-plus people who rarely see each other can be more intensive and subtler than what is required to coordinate smaller teams employed in a single software company.

A large-scale follow-up study in 2005 for the European Commission under the FLOSSPOLs project found that developers *as well as employers* find that skills learnt by participation in the open source software community are so valuable that they may compensate for the lack of a formal degree. Large surveys for the European Commission under the FLOSSWorld and FLOSS include research projects in 2007-2010 – the first large surveys on FLOSS, with thousands of respondents, conducted across developing countries and LDCs in Africa, Asia, and Latin America – found similar results regarding the economic value of open source software for the development of local skills of use to employers.

Open source communities are like informal apprenticeships – but the apprentice/students and master/teachers contribute their own time “for free”, without any monetary compensation for the training process. Everyone can benefit equally from this training – any employer can hire someone informally “trained” through participation in the open source software developer community. However, not everyone invests equally in it. As many “teachers” may have been formally trained at university or at work, which is explicitly paid for, explicit costs are being borne for some proportion of community participants who have been formally trained.

In the larger perspective, this training system where all parts of society benefit from the products of the system, but only some explicitly pay for it, represents a subsidy – or technology transfer – from those who pay for formal training to those who do not (or cannot). Within countries, this represents a technology transfer from big companies who often formally pay for training to small and medium-sized enterprises (SMEs), who can less afford formal training expenses. Globally, this represents a technology transfer from the usually richer economies who can afford formal training, to the usually poorer ones who cannot.

## BUILDING LOCAL ICT COMPETENCIES

Local skills development extends to the creation of new, local businesses, which are able to provide commercial support for and build upon open source software thanks to its low entry barriers, in a way that would not be possible with proprietary software where standard copyright licenses prevent transaction-free access by third parties. This effect is heightened by any public support of the open source software sector.

Facilitating local software development is especially important given the natural tendency of traditional global proprietary software vendors to ignore local needs especially in developing regions. As proprietary vendors are motivated by global profit-maximization strategies, local issues and user needs take a lower priority. So, for instance, a large multinational software company may not be interested in supporting Xhosa speakers in southern Africa. And since their software is proprietary, no local user or local business is in a position to add such support. Open source developers in Europe or North America may similarly be uninterested or unwilling to develop support for Xhosa speakers. However, making software available under open source licenses allows developers in southern Africa to learn from and adapt it to support Xhosa. As the description of this case later in this study shows, local development of software for local communities can then result in localization infrastructure that, while built in Africa, is later exported and reproduced in other parts of the world.

Such local adaptation supports the creation of new, local businesses, which are able to provide commercial support for and build upon open source software thanks to its low entry barriers, in a way that would not be possible with proprietary software. This effect is heightened by any public support of the open source software sector. For example, the take-up by the Extremadura Region in Spain of open source through its support for the LinEx project has led to an economic regeneration in a relatively poor region of the European Union (receiving, in April 2004, the award of the European Regional Innovation Award). This has not just allowed the implementation of activities for a lower price, but activities especially in education and training which were simply not possible with proprietary software; it has also led to the growth of a number of small businesses to provide commercial support, since with open source software there is no need for customers to approach one sole vendor for support — approaching local entrepreneurs is possible and an obvious choice.

For SMEs who do not already have extensive ICT use – and this applies to significant sectors and regions of the economy – evidence from MERIT's initial study of the impact on local firms of the ICT/open source policies of the regional government of Extremadura<sup>112</sup>, Spain is instructive. There is a clear indication that while open source use may not in itself drive economic growth, the availability of open source drives ICT (not always open source) take-up among SMEs. A significant connection between ICT performance in firms and the role of open source was found. There was strong evidence that effective ICT performance together with the role of open source is what counts in terms of improving firm performance: above average performing firms with respect to ICT performance and open source support exhibit above average scores with regard to market share, cash flow and return on investment.

This performance seems driven by the importance given to innovation, and a close relationship was found between ICT use together with open source use and educated employees, and the degree of innovation. Thus, besides ICT importance in general (which is the most important indicator when compared to other firms with a lower ICT use), open source support seems to be part of the explanation for the actual ICT performance together with the level of education of the employees. The conclusion was that ICT performance matters and open source support and the level of educational attainment are equally important for its performance. In particular, a number of local small businesses have arisen to support and develop open source applications, sell hardware based on open source (in particular, Extremadura's version of Linux called gnu/LinEx). Some of these also develop new software, such as FacturLinex, a open source invoicing and billing system developed by a local micro-enterprise and used in many shops in Extremadura and increasingly elsewhere in Spain. In interviews with MERIT, small business customers in Extremadura have expressed a preference for using software which a small firm has developed (or helped to develop) as they feel they will get better support and personalised attention, whereas a large firm with a proprietary product may not be willing or able to attend to their specific needs. It should be noted that the Extremadura model has already been duplicated in other regions, especially in Spain, such as the much larger Andalucia, where about 400 000 desktops are running a localised version of the open source operating system GNU/Linux, which is also the standard platform – as with Extremadura – for libraries and digital inclusion centres. As pioneered by Extremadura, which used regional policy in support of open source to encourage local SMEs to provide IT services, Andalucia is also developing a regional policy to induce economic development through SME firms retaining a higher share of value added locally.

Of course, proprietary software also supports local businesses (excluding businesses who are *users*, who exist regardless of the type of software). What are the types of businesses that can be based upon proprietary software? Building new products and services above the platform is one, equally applicable to open source software – 100% of this value is local. Sales

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<sup>112</sup> Dunnewijk, Theo and Garcia, Abraham, 2005. The economic impact of ICT policies in Extremadura. FUNDECYT/Junta de Extremadura, Badajoz, Spain

commissions are another, rarely possible with open source software, and of relatively low value. While 100% of the commissions may be locally retained, they represent a small proportion of the total value added, and every dollar of sales commission represents several dollars of imports. Finally, support, integration and customisation – this is where with proprietary software the local value added is limited by the proprietor’s control of the software. Deep, high-value support requires deep, high-value access to the software, which only the proprietor has.

With open source software, the “deep support” that can be provided by “deep access” to the code available to all local businesses can generate enormous value, all of which is retained locally. No royalties or licences fees have to be paid.

Even for local businesses producing their own software, rather than only supporting other software, open source software is often a better value proposition: the licensing model allows providers to reuse software built by others without additional licensing or payment rather than build from scratch. The low transaction barriers means there it is possible to reuse a huge base of software written by others. Re-using (and modifying) allows the creation of much better end-user solutions for the same effort as compared to than creating completely new software, which local businesses are typically forced to do if they choose to develop software for sale under the proprietary software model. Put together, this provides better value for money for customers (who benefit from software representing a large base of cumulative development) and better profit margins for local service providers (who can focus on adding new features faster rather than replicating basic ones, allowing them to charge more for less work). Thus, access to software as well as participation to software creation is increased.

It must be emphasised here that increased open source software use can allow regional economies, and SMEs in particular, to locally retain a higher *share* of the added value. It is clear that sales commissions related to proprietary software may lead to a higher *absolute* value retained locally, if proprietary software is much more widely used than open source software. A high added value in a small market can be less than valuable locally than low added value of a large market. Indeed, this makes open source potentially rather attractive, as it currently provides lower absolute added value locally than proprietary software, but provides a higher *share* of added value retained locally. This is because the market is currently dominated by proprietary software. Our analysis above suggests that if the share of open source software was increased relative to proprietary software – whether by market-driven demand, or by regional policies as described in this study – since the share of all value added that was retained locally would rise, the total value retained locally would also rise significantly. In any case, when a high share of proprietary software leads to a high absolute value added retained locally in the form of, say, sales commissions, this only indicates the even higher absolute value that is *not* retained by local firms.

## **LEGISLATIVE FINDINGS AND POLICY OPTIONS**

### **LEGISLATIVE AND POLICY MEASURES TO SUPPORT WIDER ACCESS TO SOFTWARE**

Unlike for some other creative works, initiatives to improve access to software do not seem to take advantages of any exceptions or limitations to rights. Although IPR laws for software could, in principle, be written to provide exceptions or limitations, those that are in place seem to serve specific, technical purposes: specifically, the limitation on copyright that allows for reverse engineering for the purposes of interoperability, in US case law and the EU Software Directive. There have been discussions in policy circles of using TRIPS Article 40 exceptions for software, but again this has been for the technical purpose of ensuring interoperability, and not increasing access to software.

In some situations, software copyright simply has not applied. E.g. in least developed countries temporarily exempt under TRIPS from enforcing software copyright, such as Cambodia (see

case study), or jurisdictions with limited recognition or facing trade embargoes, such as Northern Cyprus – where proprietary software from US vendors simply cannot be sold, so in practice it must be widely copied ignoring copyright<sup>113</sup>. However, even in such situations, users, developers, industry, donors and policy makers have tended towards looking at open source software licensing as a forward-looking solution to providing and increasing access software. (In Cambodia, as the case study shows, it was to develop local-language software solutions for the first time; in Northern Cyprus, donor agencies including the European Commission and UNDP supported migration to open source software as a legitimate low-cost alternative to unauthorized copying of proprietary software for which copyright would be enforced after eventual unification.)

Policy initiatives examined here, therefore, exclusively relate to open source software as a means to increase access. Such initiatives can be classified as follows<sup>114</sup>:

- Mandating Free/Libre/Open Source Software (FLOSS)<sup>115</sup>: government requires the use of FLOSS for all or specific types of software
- Preferring FLOSS: government prefers the use of FLOSS for all or specific types of software
- Mandating Open Standards: this often has the effect of preferring FLOSS
- FLOSS Competency Centres: supporting initiatives that provide expertise and support for public authorities and others with questions about FLOSS
- A common strategy of many FLOSS policies is the creation of a FLOSS competency/research/compatibility
- Awareness raising: the most widely recommended and successful strategy as shown from a number of empirical surveys, simply raising awareness of FLOSS has the tendency to increase its use and development; such awareness raising is typically in the form of promoting or aggregating news, conducting case studies of best practices, etc. See the OSOR case study.
- Credit/Financial Assistance

A number of countries have had some success in implementing some or several of these policies and initiatives. The Brazilian Government has managed to foster the development of open source software in all areas of its ecosystem – education, public administration, health, industry. In Latin America, Brazil stands out from the rest of the countries in the region due to the greater extent to which it has adopted and developed FLOSS, with levels comparable to countries such as India and China, due to the publication of regulations, mass migrations in public sector agencies and companies, FLOSS product development (goods and services) at the public universities and the creation of a collaborative portal for Community players. The European Union and certain EU member states have also taken several policy initiatives (see the OSOR case study) and are helped by having the largest number of individual open source software developers world-wide.

Countries with a higher level of FLOSS development and adoption, such as the United States (where however, the private sector leads by far in FLOSS initiatives), Australia, Germany, France, Spain, each demonstrate high levels of development in all parts of the ecosystem. The open source software development model is a globalizing model in which players use the

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<sup>113</sup> A further, more esoteric case is when software is created by USA Federal Government employees; under US law, there is no IPR on such software, which is automatically in the public domain. There is one well-known case of software that was created in such a way: VistA, the health management software for the US Veterans Administration. It has since been further developed by foundations and the private sector, and a copyrighted version is distributed under an open source license (OpenVista).

<sup>114</sup> This classification draws on: Wong, Kenneth. 2004. *UNDP-APDIP: FOSS Government Policy*. Elsevier. Available online at <http://www.iosn.net/government/foss-government-primer/foss-govt-policy.pdf>

<sup>115</sup> Free/Libre/Open Source Software is generally referred to in this document by the acronym FLOSS, a term used in a number of studies and policy documents in Europe, Africa and Latin America.

Internet to take part in projects in a cooperative environment, regardless of the nationality of the player or the project, and there are rarely differences between geographical areas, either in terms of the workings of the communities or the associated business models. When initiatives do take off, therefore, they quickly lead to global links – see the KhmerOS Cambodia and Sahana Sri Lanka case studies.

The Center for Strategic and International Studies has, for the past few years, compiled a list of public initiatives taken by national, regional and local authorities worldwide<sup>116</sup>. A quantitative summary from the 2010 list is provided below.

Table: Regional distribution of Open Source Initiatives

Region	Approved initiatives				Proposed initiatives	Failed initiatives
	R&D	Advisory	Preference	Mandatory		
Europe	45	37	36	8	27	10
Asia	19	16	22	2	20	2
Latin America	8	6	12	31	15	11
North America	5	8	2	1	11	10
Africa	3	1	4	8	1	0
Middle East	1	2	2	0	2	0

*Note: R&D initiatives are non-policy initiatives supported by public authorities or legislatures. Other initiatives are policy initiatives, relating to development, software procurement regulation, or release of publicly funded software under open source licenses.*

## FISCAL MEASURES

FLOSS software development may not be a charitable activity, although a majority of contributors remain independent individual volunteers<sup>117</sup>. However, when the software is released to the public, it is a charitable donation and treating it as such for tax purposes may be a simple and effective support mechanism. It should be noted that IPR donations are commonly used for tax deductions by firms especially in high technology sectors in the US. There has been considerable controversy resulting in a general investigation by the US Internal Revenue Service on the somewhat arbitrary valuations placed by firms on such donations, particularly on donations of patents to universities<sup>118</sup>.

However, with FLOSS software, a simple lower bound valuation could be the time spent on development. While there are means of evaluating this based on the size of the codebase<sup>[2]</sup>, which could be used as a control on time claims, these “donations” could also be valued on the basis of actual time spent as documented by timesheets.

It should be noted that the logic of equitable treatment for in-kind donations of FLOSS applies also to other non-software goods that are donated under such “information commons” schemes, such as music, text, scientific and other creative works distributed under (several, but not all)

<sup>116</sup> Lewis, James A. 2010. *Government Open Source Policies*. <http://csis.org/publication/government-open-source-policies>

<sup>117</sup> See Figure 28, “Distribution of code output by individuals, firms, universities”, in European Commission 2007.

<sup>118</sup> See e.g. Feder, Barnaby J., 2002. “Patent Donations Are Novel Corporate Gift”, *New York Times*, November 17 (Finance News). Available at <http://www.nytimes.com/ref/open/finance/17PATE-OPEN.html>

Creative Commons licences. A control for valuation may be somewhat more difficult for other artefacts where, unlike for software, substitution cost estimation metrics do not exist – but auditable time input at the opportunity cost of the donor's time can always provide a lower bound for the value of the donation.

It should be noted that there is no specific policy in place in member states for tax treatment of open source contributions that the author is aware of. The proposal above was included in a report published by the European Commission (2007) which noted in detail how it was consistent at least with US tax law.

## **SUPPORTING SOFTWARE DEVELOPMENT: SUMMARIZED CASE STUDIES**

Previous sections have examined economic aspects and survey data relating to open source software and economic development, and legislative and policy initiatives. In this section, a few cases of specific initiatives have been examined in more detail. They show how open source models for copyright have allowed public initiatives to rapidly develop access and deploy software systems with significant impact. Initiatives examined have sometimes been originated by government, but are often originated by civil society or industry and later supported by public organizations – underscoring the flexibility of open source licensing, which allows users and developers to bypass the transaction costs and times typical of traditional copyright exploitation models. The initiatives examined here have been selected specifically for highlighting the role of local software development, and exportability to other regions (see the table below).

Thus, the following case studies are presented here.

1. Sahana: the award-winning disaster management system created in Sri Lanka as a response to the 2004 tsunami. Deployed in Sri Lanka by the government's Center of National Operations (CNO), it was later supported by a number of public and private agencies and deployed with further development around the world, including in Indonesia during the 2006 earthquake, Peru in the 2007 earthquake, and Haiti during the 2010 earthquake.
2. Ushahidi: a crisis mapping, data collection and visualization system created in Kenya in the violent aftermath of the disputed 2007 presidential election, the Ushahidi system has been used to monitor elections in Mexico and India, deployed shortly after the 2010 earthquake in Haiti, used to monitor the effects of the 2011 earthquakes in Christchurch, New Zealand, and Japan.
3. KhmerOS: a software localization effort in Cambodia that built upon the South African *translate.org.za* multi-lingual localization system, and was then "exported" to Bangladesh
4. IT@Schools Kerala: an initiative of the regional government of Kerala, India, to use open source software in all state schools, that is similar to a number of initiatives elsewhere in the world
5. Open Source Observatory and Repository: a European Union project, providing a development environment and repository of open source software for public administrations across Europe and an Observatory of case studies and news to build a community of practitioners, which has drawn from and become a model for other similar initiatives.
6. Softwarepublico, a Brazilian public software portal initiated by the Government.



<b>Case</b>	<b>Origin</b>	<b>Funding</b>	<b>Key stakeholders</b>	<b>“Export”</b>
<i>Sahana</i>	Sri Lanka	Volunteers; Industry; SIDA	FLOSS community & industry; emergency response / aid agencies	Indonesia, Peru, Haiti
<i>Ushahidi</i>	Kenya	Volunteers; Universities; UN OCHA	FLOSS community, civil society	Haiti, Chile, New Zealand, Japan, Libya
<i>KhmerOS</i>	Cambodia	Local NGOs; UNDP, UNESCO, IDRC, AECID, InWent, Internet Society, Government	FLOSS community; development agencies; government	South Africa (“import”), Bangladesh, Bhutan
<i>Kerala IT@Schools</i>	India	Government	School teachers, FLOSS community, government	Spain (“import”)
<i>OSOR</i>	Europe	European Commission	Public administration, contractors, developer community	EU Member states; “Parallels” in Brazil etc.
<i>Softwarepublico</i>	Brazil	Government	Public administration, contractors, developer community	“Parallels” in EU, elsewhere

*Note: Funding agencies listed are: SIDA (Swedish International Development Agency); UN OCHA (Office for the Coordination of Humanitarian Affairs); InWent (now part of Deutsche Gesellschaft für Internationale Zusammenarbeit, the German aid agency); IDRC (Canada's International Development Research Centre); AECID (Spanish Agency for International Cooperation for Development). The Export column lists “imports”: previous implementations upon which the described cases drew; and “parallels”: cases similar to but not directly following the described case.*

SAHANA: DISASTER MANAGEMENT IN SRI LANKA, PERU AND HAITI

<b>Case summary</b>	
<i>Geography</i>	Sri Lanka
<i>IPR Issues</i>	Open source licensed software development: the project involved the use of existing open source software and the adaptation and development of software released under open source licenses
<i>Stakeholder incentives</i>	Volunteers and local software industry responding initially to the catastrophic 2004 Tsunami and the lack of software tools to help emergency responders; emergency responders and aid agencies incentive to participate is the availability and development of unique software tools.
<i>Sustainability</i>	Economically sustainable through funding from donor agencies (emergency response) globally; commercial sustainability through furthering projects and brand image marketing for Sri Lankan software, and training and participation for local software developers and industry.
<i>Impact</i>	Widely recognized as the best and essential software tool set for emergency response to catastrophes, Sahana has been used around the world. It has had a major impact in terms of supporting emergency response and recovery of economies after natural catastrophes, but also in terms of the use of and access to Open Source software and Sri Lankan software developers' participation in the global software developer community.
<i>Transferability</i>	The software developed was adapted and used in various settings – indeed, in several of the major developing-country catastrophic natural events since 2005, including the earthquakes in Indonesia (2006), Peru (2007) and Haiti (2010), so it is clearly transferable. The process of development itself was special, though not unique; a number of other regions have seen the development of local software in response to local conditions, which once released as Open Source have received worldwide adoption. E.g. Ushahidi in Kenya, or GNU Health in Argentina.
<i>Public policy implications</i>	Sahana and Ushahidi are examples of civil society rapidly responding through the use and development of open source software to specific unmet local needs that turn out to be global and more broadly in demand, and develop local skills. Public authorities can support or even lead such initiatives, working with civil society to rapidly develop a local response and software developer community. If managed with local business foundations, such as with Sahana, this can also result in developing a global reputation for locally developed skills.

Tsunami

Sunday, December 26th, 2004: A devastating Tsunami hits Indonesia, Sri Lanka and many other Asian countries. In the first week of the tsunami in Sri Lanka, 1 million people (5% of the population) was rendered homeless, two-thirds of Sri Lanka's coast was damaged and nearly 40,000 people died.

Tuesday, December 28th, 2004: Many different organizations in Sri Lanka start efforts to write various bits of software to help manage the disaster. (This process also took place in other affected countries, including India, Indonesia and Thailand.)

Wednesday, December 29th, 2004: Software developers get together at the ICT Agency in Narahenpita, Sri Lanka to discuss ways of putting the software all together to make it easier to manage the situation. Sanjiva Weerawarana, Founder & Director of the Lanka Software Foundation (LSF, an industry body which supports Open Source software) called the US Federal Emergency Management Agency (FEMA)'s CIOs office and asked for whatever software they had, but was told that "FEMA had no software that could help; they only had software that was used to cut checks to people after hurricanes".

In the 3-4 weeks that followed, many individuals, universities and software companies and Sri Lanka Telecom contributed to what became known as Sahana. While most contributors to the initial effort were from Sri Lanka, international communities of Open Source developers were also involved. Part of the initial development was done on computers that IBM donated within a week or so of the tsunami. The joint effort was coordinated by the LSF. Software was developed and went into production within a week. After about 3 months the initial phase of software development and deployment completed.

In the meantime, it became clear that there was a gap in the world of disaster management software. The state of the art that the UN team that came to Sri Lanka with was based on extremely outdated proprietary software. Existing solutions were not easily deployable or scalable and, most importantly, didn't embrace the Web. The tsunami provided a unique opportunity to look at disaster management in the modern world: despite the destruction, mobile phone and Internet networks were intact (or could be rapidly re-enabled for emergency use with portable transmission). Clearly, there was a huge need for modern software that could live in this world and help first responders and follow-up recovery be more effective at responding and managing a disaster.

"We were not going to let Sahana die; we decided we are going to make it into something the world can reuse readily", said Weerawarana. In 2005 Swedish aid agency SIDA approved a proposal to fund Sahana phase II (for \$85,000). The justification for the development of disaster management software under open source licenses, made in the Sahana proposal to SIDA, bears quoting in full:

*"Very few countries and organizations today can afford to invest a lot of resources in disaster management when there is no disaster present. While this is obviously true of poor, developing nations, it is also true of richer, developed countries as well because there are always higher priority items that need the funding. Worse yet, even if there are some national scale systems that may get deployed, it is very unlikely that regional and local level systems will ever get deployed if they cost any significant amount of resources.*

*Because no one is willing to pay for the software, no one is willing to build it either. This is what we see in the world today – while disaster management software is critically needed, there is no complete commercial or non-commercial software solution that is widely available. Going the open source way can address both these concerns. Using the open source development model, it is possible to develop this software at a much reduced cost compared to pure commercial development models. This is true because while commercial entities are not willing to invest into these systems, there are hundreds and thousands of well-meaning IT professionals who are very happy to donate a few hours of effort to helping build such systems. We are already seeing this with the nascent Sahana project. Thus if there was a small team which was driving such a project, then it is possible to get a lot of assistance from the global IT community to make those systems truly exceptional.*

*Going with open source approaches can also greatly reduce the deployment cost of this software in peace (i.e., non-disaster) times. The Sahana system, for example, can be*

*deployed on any PC with just a Linux LiveCD (that is, a CD from which the entire system can be booted up and brought on-line). Thus, not only is it possible to run this on commodity, inexpensive hardware, it is in fact possible to not even have dedicated hardware around – just take any office PC and make that the “disaster management center”! In fact, that is how Sahana was first deployed in Sri Lanka – on a borrowed PC. (Later it switched to running on a borrowed server as the capacity requirements increased.)*

*Thus, open source is the natural way to providing disaster management solutions."*

SIDA funding for Sahana was followed by additional grants from donor agencies and industry (both local as well as international, including IBM and Google).

Sahana was restructured with its own Board – members are all volunteers – with LSF remaining the underlying legal authority for the activities that the Sahana Board governs.

### *Transferability*

Sahana has been deployed and adapted all over the world. Some examples have been listed below.

The 2007 Peru earthquake measuring 8.0 on the moment magnitude scale that hit the central coast of Peru on Wednesday August 15, 2007 and lasted for about three minutes. The epicenter was located at 150 kilometers south-southeast of Lima at a depth of 39 kilometers. 50% of the population was left homeless with over 500 deaths reported.<sup>119</sup> IBM Peru lead the Sahana deployment with the support of Lanka Software Foundation and Sahana community of Sri Lanka. The system was localized into Spanish. The project was coordinated by the Prime-Minister's office in Peru, with the objective of tracking relief items and co-ordinate relief efforts among personnel.

The 2008 Sichuan earthquake on May 12, 2008 in Sichuan province of China killed at least 68,000, injuring 374,176. The earthquake left about 4.8 million people homeless. Set up at the request of Chengdu Municipal Government and was deployed as a collaborative effort by IBM (CSR), Lanka Software Foundation of Sri Lanka (LSF), Sahana-community & the Trinity College, Sahana deployment in Chengdu was used to register shelters, track affected persons and manage relief personnel and supplies.

Deployed in 2007 as a measure of emergency preparedness, Sahana Disaster Management system is currently in function at the Office of Emergency Management (OEM) of New York City Council for New York Coastal Storm Planning. The Sahana system is capable of coordinating a mass evacuation of 6 million people in the New York City area in the case of a hurricane, and is continually being updated to accommodate the city's changing population. It currently tracks 26,000 relief workers, volunteer staff and evacuees in over 500 shelters. This project was carried out as a collaborative effort between the IBM Crisis Response Team (IBM CRT), IT Crisis of USA and Lanka Software Foundation of Sri Lanka (LSF).

In the afternoon of 12 January 2010, a 7.0 magnitude earthquake struck the poverty-stricken Caribbean nation of Haiti. The impact of the earthquake, occurring just south of the densely populated capital city of Port-au-Prince, was devastating as scores of multi-storied concrete structures in the capital and surrounding municipalities collapsed, killing tens of thousands instantly, injuring and trapping thousands of others beneath the rubble.<sup>120</sup> The Sahana Software

<sup>119</sup> See <http://respere.org/deployments>

<sup>120</sup> Source: Chamindra de Silva and Mark Prustalis, 2010. "The Sahana Free and Open Source Disaster Management System in Haiti" in *ICT for Disaster Risk Reduction Case Study 2*, published by UN-APCICT/ESCAP, May 2010.

Foundation and the Sahana community responded immediately, with a hosted instance of Sahana on a public website that served to fill gaps in the information management requirements of the massive relief operation. Other organizations deployed adaptations of Sahana tools – e.g. the National Library of Medicine (NLM), the world's largest medical library and an arm of the US National Institutes of Health (NIH), released a Sahana-based “Lost Person Finder”, called “Haiti Earthquake Person Locator”.

### *Impact in Sri Lanka*

The immediate impact of the Sahana initiative was of course mostly felt outside the field of software – in the recovery from the 2004 tsunami. However, there has also been a clear impact in terms of Sri Lanka's role in software development. Open source software turned out, with Sahana as the prime example, as a great enabler for Sri Lanka to enhance its position in the global software ecosystem. Being a source of mission-critical software that has literally saved thousands of lives around the world provides a credibility that would be hard to earn. A key factor in this has been the open source license, which allowed for rapid deployment and adaptation of the software to local needs – without which the usefulness of the software, however technically capable, would have been severely limited.

Beyond Sahana, the key aspect of the LSF strategy has been “*to create a platform on which Sri Lanka can build*”, according to Weerawarana. He draws a parallel to another sector for which Sri Lanka is well known – tea: “*Sri Lanka has a few companies which are now global consumer brands in tea. That was only possible because of the brand Ceylon Tea. Having that brand enabled differentiation and enabled our companies to leverage that to compete for consumer recognition and adoption.*”

LSF's strategy is to create a group of people who are global contributors to FLOSS to such an extent that the world recognizes Sri Lanka – which compared to its much larger neighbour, India, has a small software industry – “*as a powerhouse of open source development*”. This strategy has seen some success. For the first few years the global Summer of Code contest run by Google, University of Moratuwa Sri Lanka was the winner of grants. In the Apache software project – a global open source software application that powers 70% of the world's websites – there are more Sri Lankan software contributors than from any other country outside the US and a few western EU nations. Sri Lankan produced software, distributed under open source licenses, has been globally adopted, riding on the reputation of Sahana and contributions to Apache projects. “*We have demonstrated what is possible if you take the best people in a poor developing country and give them the right tools, environment and opportunity to compete in the global stage. [The open source software model's] beauty is that it allows anyone to compete globally - it is not necessary to be in San Jose or Boston or London to compete!*”, concludes Weerawarana<sup>121</sup>.

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<sup>121</sup> Correspondence with the author.

USHAHIDI: MAPPING AND VISUALIZATION IN KENYA AND CHILE

<b>Case summary</b>	
<i>Geography</i>	Kenya
<i>IPR Issues</i>	Open source licensed software development; open content licensing. The project involved the use of existing open source software and the adaptation and development of software released under open source licenses; a major part of the use of the project related to geographical mapping of data points submitted by large numbers of individual volunteers.
<i>Stakeholder incentives</i>	Volunteers responding initially to the violence around the 2008 Kenyan elections; citizens and civil society; donor agencies and various public agencies.
<i>Sustainability</i>	Economically sustainable through funding from donor agencies globally; possible commercial sustainability through commercial applications of “crowdsourced” mapping technology
<i>Impact</i>	Widely recognized as an effective, rapid solution to collecting, organizing and visualizing geographic data, Ushahidi has been used around the world. It has had a major impact in terms of supporting emergency response and recovery of economies after various crises, but also for tasks such as monitoring elections. It is a key example of appropriate mobile computing, with its dependence on and exploitation of mobile networks
<i>Transferability</i>	The software developed was adapted and used in various settings – to monitor elections in India, Mexico, Lebanon and Afghanistan; track unrest in the DR Congo; monitor medicine stocks in Zambia; map events and activities in Haiti, Chile, New Zealand and Japan after earthquakes and Libya after the violent events recently. So it is clearly transferable. The process of development itself was special, similar to Sahana. Ushahidi’s model of locational input means that each time it is used, a community of participants and contributors is being built, demonstrating further its transferability.
<i>Public policy implications</i>	Sahana and Ushahidi are examples of civil society rapidly responding through the use and development of open source software to specific unmet local needs that turn out to be global and more broadly in demand, and develop local skills. Public authorities can support or even lead such initiatives, working with civil society to rapidly develop a local response and software developer community.

Following the violence in Kenya after the 2008 elections, it was apparent that a method to track events - being able to see where disturbances, crimes and other events were happening – was an important way to coordinate information from news sources as well as local people. The volunteer team behind Ushahidi rapidly developed a tool for Kenyans to report and map incidents of violence that they saw via SMS, email or the web. Within a week Ushahidi had gone to live deployment. The team behind Ushahidi became an organization that created a free and open source mapping and content management system which can be used by organizations worldwide in similar crisis-related situations. The main goal of the organization is to create a system that facilitates early warning systems and helps in data visualization for response and recovery.

Erik Hershman, director of operations at Ushahidi says<sup>122</sup>, ‘We take the stance that you go for the lowest common denominator, which is the SMS enabled mobile phone. So you take your Nokia 1100 and you say, “If we can make the technology work on this that’s useful for people both on incoming messages and outgoing messages then we have something that’s valuable and let’s see what people do with it.” The first iteration of that was in Kenya during the post election ballots. We quickly created a website. It was a mash-up of maps and incoming mobile phones messages that we called Ushahidi, which means testimony in Swahili, then what we did was get funding to build a global version of this.’

Following the initial deployment, Ushahidi received support from a number of donor agencies and foundations, especially for deployments in different regions. One such major deployment was in Haiti. As Zook et al<sup>123</sup> write, “When the magnitude 7.0 earthquake struck Haiti on January 12, 2010, there was an immediate need for maps. Emergency responders had to know where the people most in need were located and how to get assistance and relief to them. Large parts of Haiti and its capital, Port-au-Prince, lacked adequate coverage in the standard web mapping services [...] that people in most of the developed world have grown accustomed to using. As one of the world’s poorest countries, Haiti had simply not provided the kind of demand for online mapping that drove its expansion elsewhere. Post-earthquake, the demand for spatial information and online maps increased tremendously and, given the urgency of relief operations, the ability to crowdsource the data collection process became particularly important.” Ushahidi was used to allow volunteers across Haiti to notify the system of events and geographic markers from different locations around Haiti, and visualize and monitor the results. Ushahidi's ability to receive input by text message (SMS) meant that in Haiti – as in Kenya and elsewhere – the simplest of mobile phones could be used to provide geographically marked, accurately time-stamped reports.

“Crowdsourcing”, or using the collective power of large numbers of possibly anonymous individuals, has become an increasingly well known method of solving problems ever since the popularization and explosive growth of Wikipedia. It is a good illustration of the power of open source licensing to promote software access that one of the most effective, widely used and innovative applications of crowdsourcing – with real crowds of ordinary people using the simplest mobile phones – was developed not in Silicon Valley but in Nairobi.

#### KHMEROS: LOCALIZATION AND SOFTWARE TRAINING IN CAMBODIA

<b>Case summary</b>	
<b>Geography</b>	Cambodia
<b>IPR Issues</b>	Open source licensed software development: the project involved the use of existing open source software and the adaptation and development of software released under open source licenses. As a background - special LDC status under TRIPS allowed Cambodia to not enforce software copyright, removing one incentive to use Open Source Software (the zero license fee) as the effective license fee for proprietary software was zero.

<sup>122</sup> Source: UK Design Council, 2010. “Case study: Ushahidi”. Available online at:

<sup>123</sup> <http://www.designcouncil.org.uk/our-work/challenges/security/design-out-crime/case-studies1/ushahidi/>  
Matthew Zook, Mark Graham, Taylor Shelton & Sean Gorman, 2010. “Volunteered Geographic Information and Crowdsourcing Disaster Relief: A Case Study of the Haitian Earthquake”. *World Medical & Health Policy*. Vol. 2: Iss. 2, Article 2 (2010). Available online at: <http://www.psocommons.org/wmhp/vol2/iss2/art2/>

<b>Case summary</b>	
<i>Stakeholder incentives</i>	Primary incentive for stakeholders (NGO, government and Development Aid Agencies) has been the adaptation of software to the local Khmer language, for which open source software was the most appropriate and cost-effective; a further incentive has been to spread the knowledge built up with other countries in a similar situation (Bhutan, Bangladesh)
<i>Sustainability</i>	The economic sustainability is two-fold; operational sustainability for new development of software is provided for through development funding (i.e. non-commercial). However, the output, software distributed under open source licenses, is by definition a sustainable, widely used, essential end-product regardless of funding for future developments.
<i>Impact</i>	From the initial impact – allowing Cambodians to use computers in their own language – to the continuing effect of training local software developers and enabling computer use in other countries, the impact has been high.
<i>Transferability</i>	As with most open source software localization efforts, this drew on previous knowledge and cases – specifically, translate.org.za, an effort to provide computer access in local South African languages (under open source licenses) funded by the Shuttleworth Foundation. The KhmerOS project itself has replicated parts of its activities in Bangladesh and Bhutan, demonstrating transferability.
<i>Public policy implications</i>	For many countries with local languages, whose users are disadvantaged in accessing ICTs, FLOSS provides a way to make computers accessible in languages previously unsupported. Localization initiatives improve access and revitalize vernacular communications, and provide local software development skills

### *Computing in Khmer*

From 2004 to 2010, the KhmerOS / Open Schools Program has changed the map of Information and Communication Technology (ICT) in Cambodia, making access to technology widely available to citizens by the simple means of translating free software to Khmer (Cambodian) language, providing training, and supporting the government on policy-making and planning, to ensure that these computer programs are used.

This has led to a strategic advantage for ICT in Cambodia, by ensuring that software is available to people in their own language, and that all new high school graduates are familiar and comfortable with Open Source Software applications. This new situation facilitates penetration of Open Source Software in both government and the private sector, reducing the financial needs of all of them, and potentially ensuring faster deployment of ICT around the country.

The use of local language in computers enables access to information and communication tools for the 98% of the population that does not have sufficient knowledge of a foreign language to use computers that are not in Khmer. It allows teaching of ICT in schools, as the base for developing professional skills, while facilitating automation of government offices and SMEs, effectively reducing the digital gap. Widespread use of ICT in the local language eliminates an important barrier to economic development.

KhmerOS started in 2004 as a technical NGO-based project to localize and adapt to Khmer culture Free/Libre/Open Source (FLOSS) computer applications, producing also documentation and training materials for this software, as well as new fonts and keyboards that supported the standardization of the use of Khmer in computers.



After working for two years with other government agencies, in 2007 the Open Schools program started as a joint initiative between the Cambodian Ministry of Education Youth and Sport and the Open Institute (the NGO that houses the KhmerOS project). While using the software that had been developed, the goals of this new initiative were more centered on using ICT to improve the quality of Education and on offering ICT-based professional skills to high school students.

From 2007 to 2009 the Open Schools program has developed a five-year Master Plan for ICT in Education, created curricula for students and for teachers, as well as the necessary textbooks, and trained ICT teachers in all the schools in the country that have computers for education.

The participation and experience of the UNESCO Asia and Pacific Regional Bureau for Education, as well as its Phnom Penh office has been crucial to develop the ICT policy and to turn it into actual plans accepted by the Ministry of Education, Youth and Sport.

### *ICT context in Cambodia*

In 2004 Cambodia was in the middle of transforming itself from a market with few computer users and some small computer shops into a country where the use of computers was starting to become common. New ISPs started to take a part of the Internet connection market, which did not grow as fast as expected, due to the high price of government-controlled connectivity. Most of the software available and used was proprietary, mostly unauthorized copies easily acquired in markets for a few dollars, and available in foreign languages (English).

The government was nevertheless working on ICT policy, trying to understand and unblock factors that might delay economic development for lack of access to ICT. In 2003 the National ICT Development Authority of the Royal government of Cambodia (NiDA) started to develop a National ICT policy with the support of the UNDP Asia-Pacific Development Information Programme (UNDP-APDIP). In 2004 a first draft of this policy was being publicized; it included simple provisions for the use of Open Source Software but nothing about localization or the use of Khmer language in ICT.

The lack of consideration for the national language was a product of lack of awareness on the advantages of the using local language software, as all those working on the policy and all computer specialists spoke English or other foreign languages well. As in some other developing countries, it was assumed that people who could afford computers would be able to (and intend to) use them in foreign languages such as English. Moreover, there was no short-term likelihood of Khmer support being available.

The International Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) had granted Cambodia, as a Least Developed Country, a special moratorium until 2013 under which it did not have to have or enforce any anti-piracy laws. Least developed countries (LDCs) were accorded special and differential treatment pursuant to Article 65.5 and 66.1 of the TRIPS Agreement. They were not required to implement the TRIPS Agreement (except for national and most-favored-nation treatment) until January 1, 2006, and they were not prevented from reducing their level of TRIPS consistency prior to that date. The date for TRIPS compliance was subsequently extended until July 1, 2013.

The economical situation of Cambodia, and the uncontrolled use of proprietary software used without paying for licenses made Cambodia an uninteresting country for proprietary software companies, who did not see how to make a profit in Cambodia in the short run. They did not consider interesting investing in either preparing the software for the use of Khmer script, or translating it and adapting it to Khmer. No software in Khmer language was available in 2004.

Also, given again the economical situation, in which the cost of a computer (hardware only) was higher than the average yearly income for a Cambodian, duplicating this cost by paying for software licenses would have put computers even further away from the economic possibilities of most Cambodians. As only computers in English could be used, computers remained accessible only to the elite who knew or could learn English well.

#### *Free and Open Source Software in Cambodia*

In 2004 there was very little awareness of the existence of Free/Libre/Open Source Software (FLOSS) in Cambodia. Training institutions teaching the use of computers used proprietary software applications in English. UNDP-APDIP was a strong advocate of the use of FLOSS, and had at least participated in introducing the use of FLOSS in the draft ICT policy. The Government of Japan, through CCIC (Center for International Cooperation for Computerization), was organizing meetings all over Asia promoting the use of FLOSS in governments. Officials of the Cambodian National ICT Development Authority (NIDA) had been attending these meetings since 2003. Cambodia and other governments hoped that this would end up turning into direct support from the Japanese government of FLOSS activities in the target countries, but this never materialized.

Meanwhile, IDRC (International Development Research Center, Canada) created in 2003 the PAN Localization project, in theory aimed at creating localized software in eight Asian countries. The program supported FLOSS in several countries, but in the specific case of Cambodia, it supported the creation of computer products for Windows platform, none of them in Khmer, and none of them released for free at the time.

#### *Planning Khmer computing*

The original version of the KhmerOS project was designed on the second half of 2003 by Javier Solá, a Spanish computer scientist who was traveling through Cambodia. The goal of the project, from the very beginning, was to ensure that the lack of software in local language would not be a barrier to the usage and development of ICT in Cambodia. The project included the localization (translation and adaptation) of software, its documentation, dissemination, and training of prospective users. As it was not possible to do this localization work with proprietary software – which only the rightsholders can modify and adapt – Free/Libre/Open Source Software (FLOSS) was chosen for the project.

The project first planned to promote the use of FLOSS Khmer language tools in the proprietary Microsoft Windows environment, and then gradually push for change to the use of the FLOSS platform Linux using Khmer language as a base.

After attempting – and failing - to create a consortium of private IT companies that would be interested on having this work done, KhmerOS became a project inside Open Forum of Cambodia (OFC), an NGO. With some funds from the NGO, and a few donations from private individuals, the project got some equipment and was able to hire two computer scientists in February 2004, starting the first real part of the work.

#### *Finding support: a community, donors & government*

From the very beginning KhmerOS attempted to create a local community of users, through its website: [www.khmeros.info](http://www.khmeros.info). Started in 2004, the website now has more than 6,300 registered users, and serves over 160,000 pages per month, with active forums, serving as a reference for the local FLOSS and local language computing community.

From the very beginning, finding funding was a priority. A grant from the Small Grants Program (several donors headed by UNDP-APDIP) was awarded to the project to write a FLOSS

Localization Toolkit in which the experiences of the project were shared. This grant would be later followed by small grants from the Internet Society and UNESCO, giving the project enough funds to hire four more members for the localization team.

In 2005, InWEnt Capacity Building International, a German development aid agency, started supporting the training activities of KhmerOS with advice and funding, through its training project it@foss. Also in 2005 Javier Solá created in Spain - together with localization specialist Alberto Escudero - the WordForge Foundation, an organization aimed at supporting what it defined as “Digitally Endangered Languages” ([www.wordforgefoundation.org](http://www.wordforgefoundation.org)). The new foundation would become instrumental in securing – since 2006 – funding from the Spanish Agency for International Cooperation for Development (AECID). This would become the largest donor of the project, helping ensure that its results had the desired impact.

In 2004 the Ministry of Education, Youth and Sport, with the support and help from UNESCO, was preparing its ICT policy. The participation of the Open Forum of Cambodia led to ensuring that both the use of Khmer language in ICT and the use of Free and Open Source would be recommended in the policy document that was finally approved in January 2005.

In 2005, Open Forum was approached by National ICT Development Authority (NiDA, the inter-ministerial body for ICT Development). A collaboration was started that would make the KhmerOS initiative a joint project of its parent NGO and NiDA. Several things came out of this collaboration:

- A Master Plan for deployment of FLOSS in Cambodia was developed. The plan was published (as a draft) and has been used as a reference for actions to be taken; parts of it have been adopted in the 2009-2013 Master Plan for ICT in Education
- KhmerOS members were involved in the improvement of the National ICT Policy, ensuring that Khmer language, Free and Open Source and Open Standards were part of it.
- A standard keyboard – based on the previous work by KhmerOS, and the first keyboard for use in Khmer – was defined as the NiDA Standard Unicode Keyboard, and publicized.

In 2005, with the support of the it@foss program of InWEnt, KhmerOS prepared and printed a Khmer user guide for OpenOffice (the FLOSS office document software application, localized to Khmer by the project), and started an ambitious training plan of government officials, computer teachers, NGO workers, and students in Phnom Penh and several provinces. They were all trained on the use of Khmer language FLOSS applications.

In 2006 KhmerOS organized a National Typing contest, aimed at encouraging the learning of Unicode typing. Local contests were held in province capitals, and then a Nation-wide final was held in Phnom Penh, with the best three typists from each province. Spanish development aid from AECID started funding the project in 2006, covering all the needs that had not been covered until then for lack of sufficient funds. From 2007 onwards KhmerOS continued giving support on the use of Khmer software to government bodies, responding to their demand. The Ministry of Information, the Ministry of Culture and Religion, the Ministry of Interior, the Ministry of Agriculture, the Ministry of Rural Development, the Ministry of Woman's affairs, the Royal Palace, the Senate and the National Assembly have had their staff trained on the use of Khmer language FLOSS applications by the KhmerOS team. Open Institute has also trained computer scientists from the Ministry of agriculture, staff from NGOs, universities, and computer distributors on the administration of the FLOSS operating system Linux for use on file servers and Internet servers. As a consequence of these actions, the Royal School of Administration has started to teach the use of FLOSS to its students.

With cooperation and support from the Open Institute, the Cooperation Committee for Cambodia (CCC), the largest association of Cambodian NGOs, has started its own training

program for NGO workers on the use of FLOSS in NGO's. The program became self-sustained in 2010.

### *Cooperation with other countries*

KhmerOS has produced, from the very beginning, documents for replication of the project in other countries, as well as supported other collectives who wanted to do work on Khmer language. The localization effort also drew on efforts from other countries, such as translate.org.za (a FLOSS localization project for 15 South African languages funded by the Shuttleworth Foundation). KhmerOS has developed a localization project for the Tetum language in East Timor, supported a similar effort in Uganda, and given direct technical support and/or advice for localization in Laos, Vietnam, Myanmar, Bhutan, Nepal, Bangladesh, Tanzania and - to a lesser degree - to other countries in Asia, Africa and Latin America.

KhmerOS members participate directly in some Open Source projects, such as OpenOffice, where they have provided code for the inclusion of the languages of several countries in the program, as well as manuals for how to do the technical localization of the OpenOffice code.

In 2005 KhmerOS started the WordForge project, dedicated to produce localization tools that used all the know-how that we had both accumulated on localization. The goal of WordForge was to facilitate the localization process in other countries that wanted to follow a similar process. The WordForge Foundation was created in Spain to find funding for this project. KhmerOS continues to working on this tool now with developers from Bangladesh and Spain, and this has led to the most advanced tool available for FLOSS localization, using Open Standards to produce high-quality language translations with volunteer and/or minimally-trained translators.

In 2007 KhmerOS/Open Schools Program was a finalist of the Stockholm Challenge/GKP Award in the Economic Development category. This prestigious international award has been given by the city of Stockholm since 1999 for the world's best initiatives using ICT for development.

### *Conclusion*

The KhmerOS project shows that localization of Free and Open Source software produces sufficient added value - in countries in which there is not other software in the local language - for change to the use of FLOSS to take place. Together with the Open Schools Program it also shows the need to work on ICT policy as the vehicle that will lead the change. While national ICT policy must be affected, the impact of Education ICT policy is the real path to change, as it affects what users will get used to and use in the future.

The Open Schools Program has shown how a strong government/NGO partnership, with support from engaged donors and development partners, can produce effective policy and implementation of ICT in Education in a two year period, ensuring a clear path for a future in which support for use of ICT will be fully integrated in the Ministry, its overall five-year plans, and in its Annual Operational Plan and budget. Meanwhile, the Master Plan provides a guide for its development partners on the path that the Ministry wants to follow and for which it needs support.

Support from government is important to be able to penetrate society, and collaboration with international organizations is a good channel to reach the correct bodies of government. Localization of software without supporting materials (books and training materials) does not penetrate society, as resistance to change is strong. It is possible to start a project small, with few resources, but is also important later to be able to enlist sufficient financial resources for the development of training materials and for training.

Localization of FLOSS is a technical process that can be done in any country, if the necessary resources are available. Any materials, terminology or any other type of resources can be obtained. Staff who is proficient in their own language and have sufficient knowledge of English can act as translators, with checking the local language being the main skill required.

While still at an early stage, BanglaOS – the replication effort in Bangladesh – demonstrates that the model can be reproduced in other countries in a much shorter period of time of what was required in Cambodia, by working in parallel on localization and on policy, collaborating from the beginning with the national Education system.

#### IT@SCHOOLS: COMPUTERIZING STATE SCHOOLS IN KERALA, INDIA

<b>Case summary</b>	
<i>Geography</i>	India (Kerala)
<i>IPR Issues</i>	Open source licensed software adaptation & deployment: the project involved the use of existing open source software and the adaptation and development of software released under open source licenses.
<i>Stakeholder incentives</i>	Primary incentive for stakeholders (Kerala state government, school teachers & teacher trainers) has been the adaptation of software to local needs and cost-effectiveness, for which open source software was the most appropriate
<i>Sustainability</i>	The major costs are operational – teacher training – and are part of the general education budget of the government.
<i>Impact</i>	As the leading example of state-wide computer training in schools, this project has had a high impact.
<i>Transferability</i>	As with most open source software school deployment efforts, this drew on previous knowledge and cases. One well documented related case was the adaptation, development and widespread deployment of Open source software across schools in the Spanish region of Extremadura. However, despite the technical similarities in the software applications, wide region-to-region differences remain in the political, economic and organisational structure, which is the main part of any ICT-in-schools effort.
<i>Public policy implications</i>	Supporting initiatives that use open source in education, with the involvement of school teachers & teacher trainers, can have significant impact on software access & use, local software skills development, and local pride & sense of ownership and achievement, at relatively low cost

The Kerala IT@school programme provides computer education and computer enabled education through FLOSS tools to 1.6 million students annually in 2,738 high schools across 14 districts in the state, covering the last four years of schooling (grades 8 to 12 in the Indian system).

Initially, a training program was to be based on proprietary software. Following public protests from teachers and others, the state government reconsidered the use of proprietary software, in particular based on the argument that using it for training would make the education system dependent on monopoly vendors. Basic changes were made to the program to support the goal of universal access, including: providing large-scale in-house teacher capacity building programs; combining learning computer skills with computer-enabled learning in other subjects; and giving ownership to teachers to experiment with open source educational software in the classroom. Thus, instead of relying on vendors and investment in infrastructure, Kerala has

chosen to invest in teacher capacity building on FLOSS, thus leading to the creation of an open source software eco-system.

#### *Greater focus on computer aided learning*

The teacher training program was designed to make the school teachers acquire basic computer literacy and open source educational software, but also to use computer aided learning to teach their own subjects. Teachers were also trained to install software and maintain hardware, making teachers comfortable with using computers. The rich availability of FLOSS educational tools and their provision to the schools under the program, coupled with teacher training, has enabled computer aided learning.

Well-qualified external experts trained an initial set of master trainers, who then trained their teacher colleagues. This removed the need for the external experts to be continuously required to train the entire teacher community. This saved costs, but perhaps more importantly, provided teachers with a sense of ownership and control of the program.

The teacher training systems, which are fully responsible for the pre-service and in-service training of teachers, were also responsible for training teachers computer skills. Since the training faculty is within the state education system, it ensured computer proficiency was developed and maintained as part of the on-going teacher training process. (It is important to note that the government education system in India has one of the largest, if not the largest, pool of teacher trainers in the world - there are more than 80,000 teacher trainers at cluster, block and district levels, whose primary responsibility is teacher training, both in-service and pre-service. Most of these teacher trainers or educators have a degree in education and have teaching experience in schools).

Significantly, this shift has also changed the nature of the ICT in schools program from being a centrally designed and implemented, with external resource persons, to owned by the schools, and supported by the school system. As an evaluation of this program noted, this was consciously in line with the philosophy of free software: it ensures the freedom to the school and the teacher to develop the curriculum and pedagogical methods the way they want to, which ensures their complete ownership and enthusiasm in the program.

#### *Use of FLOSS educational software*

Using regular in-house teacher trainers meant that open source knowledge was closely adapted to the needs of the teachers. Open source educational software is best used by teachers who understand the subject matter being taught, not just the software. More than technological expertise, what is required is that teachers can explore the software and determine for themselves how best to adapt it to their curriculum.

This process of contextualized ICT education by teacher support system allows for teachers to integrate computers into their own regular subjects, converting the computer from being a 'subject of learning' to 'process or method of learning' which took the program to much superior level of quality. This is seen from the continuous enrichment of the learning processes through the relevant use of additional tools. The 'school wiki' program has trained teachers in publishing digital content on the web to allow each school to have its own wiki page for sharing its work and ideas. This is also keeping in line with the collaborative philosophy echoed by FLOSS.

#### *Systemic capacities for teacher education*

The 'Education Technology' (ET) wing' in the District Institute for Education and Training (DIET) has the responsibility of understanding the role and possibilities for the use of technology in the

school system. Making computer training an in-house integrated activity of the school support system serves as an opportunity to increase the specialisation of ET faculty within the DIET.

Making the ET faculty responsible for the training for ICT in schools, including providing them with in-depth understanding covering the role of ICTs in learning and in society will strengthen the role of ICTs in the education system, making computer learning an integral part of the learning processes in schools. This also adds to the stature of the teacher educators as trainers in this 'new' arena of educational resources, methods and processes.

There is little justification in having only ICT training outsourced (to, e.g. private vendors) when all other kinds of educational training is done in-house, within the public teacher training system. If ICT education is seen to be a critical learning area, there is all the more reason to integrate it with the core of the education system, and use the existing capacities for in-service teacher education, instead of outsourcing the activity. This also implies that computer learning programs need to prioritize the needs of teacher educators and build their capacities for them to be able to work with teachers and schools, and this teacher preparation needs to precede the implementation of ICT in schools.

#### *Free and customizable software*

The Kerala project has made a significant effort in aligning the introduction of ICT to the learning contexts of the schools. Firstly, the department realized that office automation software (while important to learn) was not really the primary application for schools and that education required a larger set of software tools and applications that teachers and students could use and adapt for their own learning. The constructivist learning approach emphasized by the National Curriculum Framework 2005 specifies that learning happens not when the learner is merely the object of predetermined learning material, but requires the active engagement of the learner with the medium itself. These two imperatives – a large set of software tools, and the necessity of the learner to actively engage with these tools, led to the realization that proprietary software platforms would not suffice. Such platforms would not allow the learner to rise above the level of an 'end user', with no involvement in understanding the 'tools' and possibly 'co-constructing' them. Moreover, the pay per license model of proprietary software would make computer education enormously expensive, and unjustifiable in the context of a country like India.

Kerala's education department thus wanted to begin with a customized software distribution that would be relevant to, and appropriate for, its schools. While most computers come preloaded with Microsoft Windows and a few other applications such as Microsoft Office, with an English language interface, the department realized that this would not meet its goal of building in a large set of contextual educational applications, with local language interfaces. The choice of Free and Open Source Software (FOSS) was thus logical. A FOSS based approach could allow the department to take an existing software set and customize it in two ways – make the software interface completely available in the language spoken in the state (Malayalam), and to also bundle in hundreds of educational applications all available on a free and open source model along with the basic operating system.

The completely 'in-house' developed process and software design has also meant savings of millions of rupees that would have gone to vendors in the usual 'PPP' models, and these savings have supported the investments in further building in-house capacities for shaping new educational processes and curriculum using digital technologies, the role and scope of which in any education system will only keep increasing. According to a recent study<sup>124</sup>, the Government of Kerala saved around 500 million rupees (\$11 million) as a result of opting for FOSS. Even more importantly, FOSS by reducing the costs of acquiring a computer helps in

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<sup>124</sup> Rahul De, 2009. *Economic Impact of Free and Open Source Software – A Study in India*. Indian Institute of Management, Bangalore. Available at: [http://www.iimb.ernet.in/~rahulde/RD\\_FOSSRep2009.pdf](http://www.iimb.ernet.in/~rahulde/RD_FOSSRep2009.pdf)

the faster and cheaper dispersion of computers outside the schools, in the homes of the students. Students and their parents are able to take the software used in schools and use it at their homes without having to either pirate proprietary software or pay huge license fees. This model also helps prevent complete dependence on technology vendors as well as resist marketing pressures.

### *Educational and local language software*

Similar to the situation in Cambodia, South Africa, Bangladesh and elsewhere, the adaptability of open source software to local languages is directly related to its increased adoption. Schools in Kerala find the application interface in the local language, Malayalam, compatible with their medium of instruction. A local language software distribution has been made possible due to the conscious choice of free and open source software which has enabled the government to customize applications in the local language, and equally importantly to make available large number of educational software applications available to all schools at practically no cost. Students are therefore not limited to learning only office automation applications – which most typically associate with 'learning computers'; they engage with computers on a variety of areas from mathematics to science to environmental sciences.

The software distribution was customized from the publicly available Debian GNU/Linux operating system. The popular Edubuntu distribution which is specifically aimed at schools is also derived from the same Debian distribution and has hundreds of educational applications inbuilt. The issue of license fees / free sharing is not restricted to the operating system or office applications, but extends to educational resources. Educational software and content offered by large education technology companies is usually on a per-user license fee basis, which would make scaling and replication expensive. The Kerala SIET has created more than a thousand films on different subjects and provided them to schools for the 'digital libraries'. These can be freely copied and shared as required at marginal costs equaling just the cost of media.

### *Factors favoring a FLOSS eco-system in Kerala*

It is worth exploring specific factors in Kerala that contributed to the success of the open source model in the state. First was the involvement of teachers' unions, who were consulted in the design and roll-out of the program. This helped get a greater support and buy-in of the teachers in implementing the program and in getting support and participation of the teachers for FLOSS. Teachers found installing and using FLOSS simple and did not want the program to use proprietary software. Second, the fact that most schools in Kerala have reasonable teacher-pupil ratios meant that schools could spare teachers for participating in the computer training programs and have one teacher in each school designated as a "computer teacher". Third, the teacher training institutions of Kerala are also well staffed and could take on the responsibility of learning and teaching FLOSS on computers.

While the above mentioned set of factors may be within the influence of any public sector education system, there are other factors which are perhaps unique within India to the state of Kerala. These include very high levels of literacy, greater urbanization, higher availability of transport, communication facilities and electricity. Kerala's 'Akshaya' program of the IT Mission in Kerala, which created computer infrastructure in villages across the state, in the form of telecentres, and provided basic computer literacy to one member of each household, would also have helped in providing local capacity building and hardware / software support. The political-ideological inclinations of the left-of-centre government in the state could also be a factor that



avored the spread of FLOSS in the state, although open source policies have received support across the political spectrum in India<sup>125</sup>.

### *Curriculum – a critical factor of the FLOSS eco-system*

Curriculum design played a key role in the success of the Kerala program. The implications for pedagogy and learning arising from a casual approach to ICT and ICT-based curriculum include both making computer learning largely unconnected to the larger curricular design of the education system and not leveraging the best FLOSS possibilities for learning. Vendor-driven or product-driven ICT policies are typical in many deployments of software – and related references to software in curriculum.

In Kerala, a vendor-driven approach was consciously excluded. Instead, the curricular content for the program was created through workshops with regular teachers and educationists were clearly in charge of the process. The program supports the development of curricular material by teachers in each school, with school “wikis” providing a grassroots, interactive and collaborative content creation process at the local level.

### *Exploring new possibilities for learning through FLOSS educational software:*

Education through computers in schools has enormous possibilities. Providing access to a wide variety of information sources (reliance on the single text book is an acknowledged limitation of learning possibilities in schools), connecting students to peers and other learning community members (which would transcend space and time), creating new digital artifacts and publishing / sharing the same, are some new possibilities that can significantly impact learning processes. (At the same time, there are new skills that may be required to be learnt, for instance, learning to discriminate and identify authentic from spurious sources of information, which would be a component of critical pedagogy, defensive access to the internet to protect against 'virtual predators' etc.) However for any of these possibilities, it is essential that the entire system of learning be grounded and integrated in the mainstream education system and its design and implementation driven by the members of the system itself - comprising of teachers, teacher educators, students and educationists. The collaborative scope of FLOSS allows this.

Over time, the outcomes of the efforts of the vendors and technology experts would become the default curriculum which can have negative implications for learning. Use of FLOSS in schools removes the dependence on external vendors, thus giving complete ownership to the school and its teachers.

### *“Public Software”: using terminology to facilitate non-technical discourse*

As a follow-on to the [IT@Schools](#) project in Kerala, and through the discussions and interactions in the EU-funded FLOSSInclude project, the notion of “public software” emerged as a term, and strategy, for the use of and access to software for the public good. This has been the subject of workshops and discussions highlighted on the Public Software portal hosted by the NGO IT for Change, and has helped provide political and policy-maker support for public access to software. As in the case of public education or public health, public institutions are, following this argument, responsible for ensuring access to public software as well as support public participation in its creation and sharing.

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<sup>125</sup> E.g. the 2009 manifesto of the right-of-centre BJP party: <http://public-software.in/BJP-IT-vision> and that of the left-of-centre CPI(M) party: <http://public-software.in/CPI%28M%29-manifesto>

“Software developed for public service has a unique context and objectives deriving from those of public service; with its imperative of providing public goods and ensuring equity and social justice. It is well known that private and commercial actions have very different context, motives and considerations than public actions. For instance, the largest possible reach and diffusion as well as transparency of actions are basic to public service, which are not necessarily values espoused by private and commercial players. Thus public software would cater to the requirements of universal access, transparency and participation. Public Software being publicly owned, allows for its free sharing as well as modification by all. Public Software is thus Free Software. In addition, public software is also a public good. While Free Software requires the freedoms of the individual user to use, study, share and modify the source code, in addition to this, public software emphasizes its 'public good' nature and vests on government the responsibility of ensuring that basic software required for negotiating the digital world is freely available to all.”<sup>126</sup>

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<sup>126</sup> “What Is Public Software”, available online at: <http://public-software.in/Public-software>

*Open Source Observatory and Repository (OSOR): Facilitating knowledge sharing and community building in Europe*

<b>Case summary</b>	
<i>Geography</i>	Europe-wide
<i>IPR Issues</i>	IPR issues were not faced directly by the project, which acted to facilitate the release of software developed by public administrations under open source licenses. However, the project also acts as a competence centre, publishing studies directly addressing IPR issues that stakeholders might face – choosing licences, copyright issues, interaction between open source and patents, etc.
<i>Stakeholder incentives</i>	The project was funded by the European Commission, with the aim of increasing software sharing among public authorities and across the public sector in general. Incentives for other key stakeholders were: gaining recognition for local initiatives and access to peers in other administrations (for administrations contributing and participating in project activities, including sharing their software on the OSOR portal); single-point access to a public sector software sharing community (for open source developer community, civil society and industry stakeholders)
<i>Sustainability</i>	Operational sustainability for keeping the OSOR.eu portal going is relatively low in terms of physical infrastructure costs. Much of the content and all hosted software is provided by the (mostly public sector) software rightsholders. During the initially funded period, a knowledge base of answers to IPR and other issues was built up and is maintained by the community of participants, who also contribute to news updates, the most visible part of the portal.
<i>Impact</i>	OSOR.eu has acted as a major catalyst in coordinating open source initiatives in Europe and is one reason for Europe's global preponderance in this area (see the table of regional distribution of initiatives in the previous chapter). It is now the world's biggest single source of news updates and case studies on public sector open source software, and its software portal is similar to several others worldwide.
<i>Transferability</i>	Several efforts worldwide have implemented the model of a hosted community of public sector open source software, though not necessarily as broad in scope as OSOR.eu which had a big focus on facilitating cooperation across different countries and building a knowledge-base, in addition to cataloguing software and catalyzing its release under open source licenses. Softwarepublico.gov.br is an example of a parallel initiative in Brazil.
<i>Public policy implications</i>	Building or supporting initiatives that aggregate and disseminate information about open source software use can increase software development and increase sharing of software and reducing costs in the public sector

Following on the successful Open Source Observatory initiative in 2003-2005, which published regular news reports and case studies on open source software use, deployment, and development in public administration in Europe, the Open Source Observatory and Repository (OSOR) was initiated in late 2006. It was designed as a pan-European collaborative environment to federate public sector Open Source developments. It was designed to include a

Repository – a site where software packages and information about software can be hosted, providing a “home” for software that has been released under open source licences and therefore may be legitimately acquired from sources unconnected to the rightsholders).

The point of OSOR was to encourage the re-use of publicly-financed software through the use of Free/Libre/Open Source Software (FLOSS) distribution and deployment, by becoming:

- A pan-European information platform on FLOSS: providing news, guidance, links, contacts;
- A platform for uploading and downloading software produced by and for public administrations;
- A platform/“forge”<sup>127</sup> for cross-border collaboration providing technical, organizational, and legal support.

Volunteer collaboration in producing free or open source software is nothing new, as the movement was initiated in the eighties. Technical environments allowing doing so were also developed early (SourceForge.net is the most famous, and has many derivative versions).

In the past few years, the EU recognized that this form of collaboration has extended to the production of software by organizations – such as companies, and to a limited extent, public administrations – and was no longer limited to individual volunteers. Indeed, organizations may account for at least one third of open source software available today, possibly much higher for some projects such as OpenOffice.org, Linux or Apache<sup>128</sup>.

Meanwhile, the public sector in Europe accounts for some 20% of the ICT market<sup>129</sup>. At the same time, while about 29% of software investment in the EU is on in-house software development (and a further 53% is on custom developed software)<sup>130</sup>, it is apparent that much software spending in the public sector is duplicative in nature. Providing mechanisms for pooling and sharing such software would reduce costs, increase efficiencies and increase collaborative innovation in the public sector. In this context it is remarkable that over 10% of local government authorities in the EU stated that they own software that could be released under an FLOSS licence<sup>131</sup>.

From this, the European Commission saw a clear potential for a public service, such as the OSOR, to enable the sharing and shared development of software by and for the public sector in Europe. The OSOR aimed to not be only a platform for software development – a forge – but to bring together an accompanying effort to provide service, support and community-building synergies addressing the specific needs of the European Public sector. Due to national, linguistic, cultural and legal barriers, only a small amount of transnational collaboration has been undertaken in the field of software used by the public sector. The OSOR as a public service would aim to change this.

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<sup>127</sup> A “forge” is an online web-based platform where software under an open source licence can be stored, downloaded, maintained and modified, while keeping track of individual contributions and modifications through sophisticated version control systems. The term “forge” comes from Sourceforge.net the first widely-used such platform.

<sup>128</sup> DG Enterprise, “Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU”, January 2007

<sup>129</sup> According to an estimate by Dr Tech Kari Tilli, Director (telecommunications and electronics industries) of Tekes published in March 2006 by the European Commission – see [http://europa.eu.int/information\\_society/research/vienna\\_process/vienna\\_documents/documents/k\\_tilli.pdf](http://europa.eu.int/information_society/research/vienna_process/vienna_documents/documents/k_tilli.pdf)

<sup>130</sup> See data from the FISTERA network cited in table 24, page 124 of R. A. Ghosh, “Study on the economic impact of open source software on innovation and the competitiveness of the ICT sector in the EU” – [www.flossimpact.eu](http://www.flossimpact.eu)

<sup>131</sup> DG INFOS. “Effect on the development of the information society of European public bodies making their own software available as open source”, Published on <http://www.publicsectoross.info/> (July 2007).

The Open Source Observatory and Repository project could be perceived from different points of view. From the European Commission's point of view, OSOR started as fully funded project (IDABC - DG Digit 2006-2009) in contrast to the many research projects that are initiated by various groups, e.g. through grant funding or other sources. OSOR faced high expectations from the EU authorities and all stakeholders, as it was seen as the most ambitious and significant support from the EC to develop an innovative knowledge society in the specific domain of public sector software.

From the economic point of view, the OSOR aimed to reduce the duplication of effort that comes from different public administrations developing software for the same tasks, in effect re-inventing the wheel. This was seen as likely to save taxpayers' money in the long run, making the OSOR a service that is not only in the public interest, but also provides a substantial – if indirect – return on investment.

From a strategic or policy point of view, the OSOR project could be seen as a potential driver for changing software development and distribution policies in both EU, national and local public administration and for facilitating the implementation of “free/libre/open source” ecosystems around software used and produced by the public sector.

More concretely, from the end users' (or beneficiaries') point of view, the OSOR was to provide a *service* dedicated to the common needs of specific public sector communities that was not previously provided at a single location. It was therefore important to identify concretely the target stakeholders and to focus on some specific groups or stakeholders that could act as pilots or models for others:

- Existing open source repositories in EU Member States that might be interested in forming a network (a repository function) and,
- FLOSS projects associated with public authorities interested in using the OSOR service as exchange or development platform (a collaboration function).

The OSOR acted as a Competence Centre for the multiple emerging initiatives in Member States (and inside the European institutions), by extending the work of the pre-existing Open Source Observatory (OSO): providing regular news, events and newsletters, cases studies and reports providing legal and strategic advice. This served to actively assist public bodies about the use and collaborative development of FLOSS. Reports published covered topics such as patents and public sector use of FLOSS; building links to between public administrations and FLOSS developer communities; and the influential and widely cited “Guideline on public procurement of Open Source Software”<sup>132</sup>. The OSOR also resulted in the creation of the European Union Public Licence, an Open Source licence with legally valid translations in all official EU languages and determined to be in full compliance with EU law. This *imprimatur* made a big difference to public administrations – who are conservative, but nevertheless may lack sufficient legal advice – in terms of reducing concerns about open source software licensing.

A key innovation of the OSOR repository was the federated search – the ability to search for software hosted on the OSOR directly, but also those hosted on repositories supported by individual regions, Member States, or independent initiatives. Using the European Commission's expertise and services for translation, this service allows users to search in any EU language; keywords are translated into the languages of affiliated repositories; software descriptions in search results are re-translated and collected for the user. As repositories are as much about community building as physically hosting software, the ability to interact with

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<sup>132</sup> Available online at <http://www.osor.eu/idabc-studies/OSS-procurement-guideline%20-final.pdf>

and collate from other repositories was important – the OSOR did not intend to replace other, more local initiatives, but to facilitate them and facilitate interactions across them.

To this end, the OSOR includes a collaborative workspace to develop and share experience and software where necessary: a Wiki-based collective memory, a “forge” to support collaborative software development, mechanisms to put public administration in contact with one another through OSOR user groups, forums for collaborative discussion, the facilitation of specialized improvements and adaptations, software localization or certification, support for the development of ecosystems around public sector software (such as technical support, or other services).

The OSOR now has 80 published case studies and several hundreds of news items, several times a week; over 200 software projects are hosted directly on the OSOR, with a further 2500 searchable through its federated repository system. The European Commission initially planned the project as a 4-year trial, expecting that it would be self-sustaining. However, its widespread impact and stakeholder demand has led to a decision to continue supporting it, integrating it as a key part of the European Commission's ISA (Interoperability Solutions for European Public Administrations) program.

#### SOFTWAREPUBLICO: BRAZILIAN GOVERNMENT SOFTWARE PORTAL

<b>Case summary</b>	
<i>Geography</i>	Brazil
<i>IPR Issues</i>	IPR issues were not faced directly by the project, which acted to facilitate the release of software developed by public administrations under open source licenses.
<i>Stakeholder incentives</i>	The project was funded by the Ministry of Planning, Budget and Management, with the aim of increasing software sharing among public authorities and across the public sector in general. Incentives for other key stakeholders were: gaining recognition for local initiatives and access to peers in other administrations (for administrations contributing and participating in project activities, including sharing their software on the OSOR portal); single-point access to a public sector software sharing community (for open source developer community, civil society and industry stakeholders)
<i>Sustainability</i>	Operational sustainability for keeping the Softwarepublico.gov.br portal going is relatively low in terms of physical infrastructure costs. Much of the content and all hosted software is provided by the (mostly public sector) software rightsholders. The Brazilian Ministry of Planning, Budget and Management pays the costs of running the portal.
<i>Impact</i>	Since its creation in 2007, the portal has grown to a community of 130 000 registered users, with software in solutions in different areas and multiple awards for e-government and innovation.
<i>Transferability</i>	Several efforts worldwide have implemented the model of a hosted community of public sector open source software.
<i>Public policy implications</i>	Building or supporting initiatives that aggregate and disseminate information about open source software use can increase software development and increase sharing of software and reducing costs in the public sector

The Brazilian Public Software Portal is a space for providing IT solutions to the public sector

According to the Brazilian Ministry of Planning, Budget and Management<sup>133</sup>, *“More than 5,500 municipalities spread across a continental region, limited resources, cultural diversity and a need for integrated operations are some of the factors that have promoted the use of open software in Brazilian public administration. In this scenario, and based on very successful experiences in the use and licensing of open software, the Brazilian government created the Portal do Software Público Brasileiro [Brazilian Public Software Portal] to systematize the combination of resources and create a single source of solutions in open software for public administration, especially at the municipal level”.*

The Portal was created as a place to share software between government authorities, civil society and the non-profit sector; software on the portal is all distributed under a reciprocal FLOSS licence, the GPL, ensuring that it can be accessed, studied, modified and redistributed and that all modifications remain accessible under the same terms.

In addition to providing access to specific software solutions, and allowing the upload of new solutions and improvements in already existing software, the portal also receives contributions from users and organizations in fields such as quality, professional training, financial support, management and international communication. Similar to the OSOR.eu in Europe, the Brazilian Public Software Portal goes beyond software to provide a community, with resources such as articles, interviews, links and a guide to service providers that is continuously growing.

The software is expected to be a finished solution that is ready to install and use, fully documented, like any commercial off-the-shelf software. A set of basic user services is provided by the Portal, including various interactive online forums for discussion, feedback and support, a version control tool for modifying the software and tracking modifications, and system documentation.

The community is supported by a technical team; management and control tools are defined to establish the frequency of the release of new versions and provide quality control parameters for on-going software development. The Portal also provides for a uniform process of availability for any entity or individual that participates in the model, guaranteeing the release of the software, the continuity of the project and the functioning of the ecosystem.

According to the Ministry, the software solutions, which can be adapted for use in any country or organization, provide various benefits including:

- Rationalization of resources – the sharing of solutions reduces the replication of development efforts;
- Immediate availability – the solutions, which are documented, can be downloaded free of charge, through simple registration on the portal;
- Sharing of administrative experiences among municipalities, and analogously, of technological knowledge and of rules of negotiation among the members of the user communities created around the solutions;
- Creation of business opportunities for local IT companies, which are dedicated to customization and improved solutions;
- Sharing of improvements – developments and corrections can be made available on the portal;

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<sup>133</sup> This case description is drawn from correspondence between the author and officials of the Brazilian Ministry of Planning, Budget and Management; as well as the Ministry’s publication on the Public Software Portal.

- Choice of supplier – the user can opt for the service provider and for the contracting model considered most suitable.

The Portal is seen by the Ministry as a success and a key part of Brazil's public sector software infrastructure. It was created in April 2007, starting with just one software application hosted, and now offers dozens of solutions in various areas (education, processing of geographic information, computing, administration and healthcare). It now has more than 130 000 registered users.

## • CONCLUSIONS AND RECOMMENDATIONS FOR WIPO'S ROLE

This Study set out to investigate the use to which copyright law can be put to facilitate the application of software development practices to economic, social and cultural development, in developing countries and LDCs. To this end, the Study has examined the general treatment of software in copyright law at the international level and national and regional regimes. The primary conclusion from this initial exercise is that software has been treated as primarily an industrial activity, rather than, say, a form of essential knowledge or information to which access should be given some consideration. Unlike, say, for educational materials, public information or even (with relation to patents) pharmaceuticals, legislative and regulatory practices for software do not in general provide for exceptions or limitations to rights provided.

General practices within copyright law, such as limitations and exceptions, do apply to software too. They have had a limited impact on software development practices. The one software-specific exception applied in copyright law is the “interoperability exception”, incorporated in the EU Software Directive and related to Article 40 of TRIPS, which allows for appropriate treatment of IPR licensing practices that may be considered anti-competitive. Again, in practical terms, this has a limited impact on the software market in terms of increasing access for the purposes of economic and social development.

One important reason for the lack of legislative or regulatory initiatives towards improving access to software through copyright exceptions has been the development and success over the past two decades of an alternative software development model that does not rely primarily on the economic exploitation of exclusive rights over software. Free software, also called libre software or open source software<sup>134</sup>, is a phenomenon that has grown from small beginnings in the academic community in the 1980s to powering the majority of devices and services people use to connect to Internet today. This study has shown how open source software, while providing an alternative software development model and supporting a range of business models for economic exploitation of software and related services, works within current copyright regimes. Indeed, key features of popular open source software licenses rely on copyright law for their functioning, and open source licenses have been enforced through copyright law in the courts.

Open source software, while functioning within the traditional copyright regime, greatly increases access to and the ability to participate in software development. As explained in this study, it does this through an economic model and a licensing framework emphasizing the sharing of information based on voluntary copyright licensing mechanisms chosen by rights-holders, rather than through legislative actions around copyright law. Methods used by governments to facilitate software development for economic development are, therefore, typically been in terms of increasing demand, supply or broad access for open source software. Demand-increasing measures, such as procurement policies that result in an increase in the public use of open source software, have the result of making open source software more

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<sup>134</sup> Free/Libre/Open Source Software is generally referred to in this document by the acronym FLOSS, a term used in a number of studies and policy documents in Europe, Africa and Latin America.



economically sustainable for local businesses (and may increase the efficiency of public spending on software). Supply-increasing measures include policies to release software developed for or by the public sector under open source licenses; measures to fund the development of open source software, either directly or through fiscal (tax) treatment of contribution to open source software development. Broader access-increasing measures include training programs that encourage entrepreneurial activity around open source software; facilitation of information sharing among public sector, private sector and community developers; educational access programs such as the use of open source software in schools; ICT access programs, such as adaptations to local languages through the use of open source software models.

Unusually, open source software is an access-increasing model that has until now been more successful in wealthier countries, with adoption driven largely by business demand. This is not surprising – with some exceptions, there is a high geographic correlation between open source software developers and access to computers and the Internet<sup>135</sup>. Partly as a result, a wealth of empirical evidence has been collected over the past few years on the economics of open source software, and this Study has examined this material – albeit with a particular focus on the development of local knowledge and skills, and local economic development. Open source software has been shown to have a strong impact on access to software and more importantly from the perspective of long term sustainable economic development, access to skills development and participation in the software creation process. A summary of policies and initiatives regarding open source software has been provided in this Study, based on data from dozens of countries around the world. A more comprehensive survey of official open source-related policies is cited in the bibliography, and distributed as an annex to this report.

A few especially interesting cases going beyond policy – not necessarily initiated by governments – have been examined in more detail. They show how open source models for copyright have allowed public initiatives to rapidly develop, access and deploy software systems with significant impact. Initiatives examined were sometimes originated by government, but often originated by civil society or industry and later supported by public organizations – underscoring the flexibility of open source licensing, which allows users and developers to bypass the transaction costs and times typical of traditional copyright exploitation models. The cases selected emphasize how the open source copyright model can be used not only to increase access to software in developing countries (as passive consumers) but how this model is suited for the creation of software innovations in developing countries. Examples such as the use of Sahana (originated in Sri Lanka) in New York or Ushahidi (originated in Kenya) in New Zealand show how the open source model allows developing countries to actively participate and contribute value in the global software development community, providing a flow of knowledge that may be surprising.

Policy strategies focus mainly on correcting current policies and practices that implicitly or explicitly favour proprietary software. Some of these policy strategies were recommended (and have since been followed in whole or in part) in the recommendations of the European Commission report “Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU”, January 2007.

Recommendations are listed below with a primary focus on WIPO initiatives, and a secondary focus on member states activities:

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<sup>135</sup> Note that in terms of open source *usage*, developing countries do not lag; indeed, if mobile computing is included, open source software runs at the core of most smartphones and more advanced feature phones whether in the form of Linux, Android (essentially Google's version of Linux) or even Apple's iPhone, which is build like all modern Apple systems on the open source FreeBSD platform.

1. Avoid aggravating policy lag; increase awareness of open source as a source of innovation in software. WIPO, like many member states, has in the past not paid much positive attention to open source, although this has changed in the past few years. The world's software industry is now, with few exceptions, run on open source software. The global economy – the New York and London Stock Exchanges and NASDAQ – run on open source software (Linux)<sup>136</sup>. Mobile computing, the fastest growing way for ICT distribution in developing countries, is also dominated by open source software such as Linux and Google's Android<sup>137</sup>. It is important for policy makers at all levels to recognise that open source licensing is an innovation and licensing model that has been widely accepted by industry and provides a legitimate way for broadening ICT access.
2. WIPO should include open source licensing and IPR issues in technical training. Unlike many sectors of IPR, broadening access to software does not necessarily depend on exceptions and limitations; open source software relies on copyright law within the boundaries set by TRIPS. National PTOs and copyright offices often lack awareness of the IPR issues involved with open source software; as it is an important policy option, WIPO should ensure the provision of technical training to increase knowledge and awareness among member states. Several resources for this purpose have been created by member states themselves (especially within the EU's OSOR project)
3. WIPO should specifically address open source in discussions on standards and IPR, specifically Standards Policy and Patent Policy, where open source software may be penalised. Recent publications and policy statements in the EU (specifically, European Commission) are highly relevant for an appropriate approach
4. Encourage the study of fiscal policies, such as equitable tax treatment for open source creators: open source software contributions should be treated as charitable donations for tax purposes. Where this is already possible, spread awareness among firms, contributors and authorities. (Primarily an issue for member states, although perhaps also for WIPO – the ToR for this study specifically called for a discussion of fiscal issues)
5. Avoid penalising open source in innovation and R&D incentives, public R&D funding and public software procurement that is currently often anti-competitive and favours specific proprietary brands to a far greater extent than most other sectors of procurement (member states)
6. Avoid lifelong vendor lock-in in educational systems by teaching students skills, not specific applications; encourage participation in open source-like communities (member states)

## • GLOSSARY OF COMMON ACRONYMS

*FLOSS: An acronym unifying the terms free software, libre software and open source software, all of which refer to software that is distributed under the terms of the free software definition or open source definition, which are equivalent. Free/Libre/Open Source Software, and the acronym FLOSS, is used in a number of studies and policy documents in Europe, Africa and Latin America.*

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<sup>136</sup> See <http://www.computerworlduk.com/news/networking/3244936/london-stock-exchange-smashes-world-record-trade-speed-with-linux/>

<sup>137</sup> Even Apple's iOS and Mac OS X run on an open source software operating system, with a proprietary graphical user interface.

*GPL: GNU General Public License, the most commonly used copyright licence for distributing FLOSS, used for GNU/Linux, Android, and several other FLOSS software systems.*

*ICT: Information & Communication Technologies*

*IPR: Intellectual Property Rights, including Copyrights, Patents and Trademarks*

*NGO: Non-Governmental Organization, typically non-profit organizations*

*SMEs: Small or Medium Enterprises, businesses with a small or medium number of employees and revenue.*

## **PUBLIC SECTOR INFORMATION (Part III)**

*prepared by Ms. Catherine Jasserand, LL.M and Professor P. Bernt Hugenholtz*

### **EXECUTIVE SUMMARY**

This study, which is part of a three-part report on *Using Copyright to Enhance Access to Information and Creative Content*, examines the role that copyright plays in facilitating access to and reuse of public sector information. As is increasingly acknowledged worldwide, promoting the re-use of government-produced documents and data and permitting its commercial exploitation by the private sector may provide important stimulus to emerging information economies.

This study briefly describes the laws, national policies and government practices relating to the reutilization of public sector information that are currently in place, or being developed, in seven WIPO Member States: France, Japan, Mexico, New Zealand, Uganda, United Kingdom and the United States.

This immediately raises the question whether public sector information is or can qualify as subject matter protected by copyright in the first place. As this study reveals, the answer differs – sometimes spectacularly – from country to country. While some countries provide for partial or even complete exclusion of public sector information from copyright protection, others assume full or near-complete government copyright ownership.

These diverging regimes are not in conflict with the Berne Convention (Article 2(4)), which leaves it to the Members of the Berne Union to decide whether official acts such as “texts of a legislative, administrative and legal nature, and (...) official translations of these texts” should be granted copyright protection. The notion of public sector information is, however, much broader than this limited category of official acts. It also includes reports, statistics, pictures, databases and all sorts of other works that are created or commissioned by the public sector.

Clearly, in those countries such as the United States, where government works are exempt from copyright protection (at least at the federal level), copyright has at best a very limited role to play in enhancing access to and re-utilization of public sector information. Perhaps not surprisingly, the first large scale government open data portal (data.gov) was established in the United States in 2009. Indeed, copyright protection of government information is often perceived as an obstacle to the reutilization of public sector information rather than as an enabling tool, and there are good reasons to limit the scope of copyright protection in government works, as is the case in many of the countries surveyed.

Nevertheless, as this study reveals, in countries where government works do enjoy (near-) complete copyright protection, such as the United Kingdom and New Zealand, open access policies based on open content licensing structures are being developed and successfully deployed. In such countries copyright therefore can play an important enabling role.

Based on the countries surveyed in this study, three models have been identified: (1) placing all public sector information in the public domain; (2) excluding only official acts from copyright protection and allowing re-use of other types of public sector information under permissive (open) licenses or (3) protecting all public sector information but allowing re-use through copyright waivers or permissive (open) licenses. WIPO could play a dual role here by (a) drafting model legislation, and (b) educating lawmakers in member states and/or providing technical assistance. Countries aspiring to enhance re-use of public sector information could follow one of these three models or mix them to set up their own model.

All the same, the role of copyright in providing access to and re-use of public sector information, remains fairly limited. Of greater importance are rigorous laws on freedom of information that guarantee transparency of government institutions and allow citizens a right to access government information. Without such laws in place, re-use policies, whether based on open content (copyright) licenses or not, will remain largely illusory. Raising public awareness of the existence and operation of such laws is of course equally important.

In addition to freedom of information legislation, or as an integral part thereof, legislatures or governments must develop general and/or sector-specific policies setting out rules that clarify the copyright status of public sector information and allow re-use under generous and non-discriminatory conditions. Such policies might be implemented either by way of open data or open content licensing structures (based on copyright in government information), or otherwise, e.g. by way of regulation or government guidelines.

As this study reveals, three of the surveyed countries currently apply open content licenses to disseminate public sector information. France and UK have set up their own custom-made open licenses, whereas New Zealand encourages the use of Creative Commons licenses to facilitate the use and re-use of public data. Here again, WIPO could play a role, either by publishing best practices or by developing suitable standard license models.

Additionally, governments should be encouraged to set up their own national portals to facilitate the accessibility, dissemination and re-use of public sector information, taking into account the costs of maintaining and updating such portals.

## **INTRODUCTION**

Governments and public entities produce a vast amount of information in their daily tasks in fields as varied as environment, weather, geography, business, statistics or legal matters. The information takes the form of reports, statistics, charts, audiovisual archives, databases, etc. Usually information held, produced and collected by public sector in its public tasks is identified as public sector information (PSI). The topic of public sector information is linked to the law on access to information, also called freedom of information law, and which is as old as 200 years when the first law permitting the access to public information was adopted in Sweden. The purpose of freedom of information legislation is not only to ensure transparency of public authorities and accountability towards citizens but also to foster the participation of citizens in the decision-making process. Most of the laws on freedom of information have been adopted around the world in the course of the 20th Century. The notion of public sector information itself is however a recent notion, which has emerged over the past decade in discussions involving a better use or re-use of government-produced documents and data, notably to permit its commercial exploitation by the private sector and thus stimulate emerging information economies. Most of the laws on freedom of information grant access to public information but do not guarantee such secondary uses. However, in recent years several governments have developed policies to actively disseminate public data and made them accessible to those seeking reutilization by setting up national portals.

This study, which is part of a three-part report on *Using Copyright to Enhance Access to Information and Creative Content*, examines the role that copyright might play in facilitating access to and reuse of public sector information. This immediately raises the preliminary question whether public sector information is or can qualify as subject matter protected by copyright in the first place. As this study reveals, the answer differs – sometimes spectacularly – from country to country. While some jurisdictions provide for partial or even complete exclusion of public sector information from copyright protection, others expressly recognize complete government copyright ownership. Clearly, in those countries, such as the United States, where government works are exempt from copyright protection (at least at the federal level), copyright has at best a very limited role to play in promoting access to PSI. By contrast,

in countries where government works enjoy full copyright protection, such as the United Kingdom, copyright serves as the essential background law to the open content, open access and open data licenses that are increasingly, and successfully deployed.

This study briefly describes the laws and policies relating to the reutilization of PSI that are currently in place in seven selected countries (France, Japan, Mexico, New Zealand, Uganda, United Kingdom and the United States). Policies and strategies adopted by government to enhance access and accessibility to their public information will also be presented. The survey will conclude with a comparative analysis and draft recommendations.

This report is largely the result of desk-study. The limited scope of the commission did not allow the authors to conduct interviews on site. While the authors have undertaken all reasonable care to present reliable and verifiable information, due the impediments of geography and language, errors and omissions may have occurred. The authors are grateful for any comments, corrections, additions and other feedback received on this draft.<sup>138</sup> The research was mainly conducted between December 2010 and June 2011. The hyperlinks were last visited on December 1, 2011.

## I METHODOLOGY AND TERMINOLOGY

Selection of countries:

In order to assess the role played by copyright systems on access to and re-use of public sector information, we have surveyed seven countries: France, Japan, Mexico, New Zealand, Uganda, United Kingdom and the United States. Our aim has been to respect a geographic balance and study at least one country per continent, among which a developing country and an “intermediary” country.<sup>139</sup> Finally, we have been looking for balance in terms of numbers of countries following the common law tradition (four) and countries subscribing to the civil law system (the remaining three). Taking all parameters into account, our choice has also been guided by countries that have adopted Freedom of Information Laws that grant a right to access public (sector) information.

In Africa, since only six countries have adopted FOI laws,<sup>140</sup> we have chosen a developing country for which literature already existed in that field,<sup>141</sup> although little information on re-use of public sector information is currently available.

For Latin America the choice was between sixteen countries that have adopted FOI laws.<sup>142</sup> Mexico was selected for its relatively strong FOI legislation.

In the European Union the topic of re-use of public sector information has been harmonized by Directive 2003/98/EC (referred hereinafter as the PSI Directive). Two countries that provide useful case studies in view of their active engagement in the Open Data movement have been

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<sup>139</sup> The notion of « intermediary » country is not a notion officially used but it is convenient to designate a country, which does not belong to the group of developed countries because of its lower level of development but which is more developed than countries belonging to the group of developing countries. We categorize Mexico as a country belonging to this group.

<sup>140</sup> Angola, Ethiopia, Liberia, South Africa, Uganda and Zimbabwe, see <http://www.unesco.org/new/en/communication-and-information/freedom-of-expression/freedom-of-information/foi-in-africa/>

<sup>141</sup> See for example Toby Mendel, *Freedom of Information: A Comparative Legal Survey*

<sup>142</sup> <http://www.unesco.org/new/en/communication-and-information/freedom-of-expression/freedom-of-information/foi-in-latin-america-and-the-caribbean/>

selected: France and the United Kingdom. The Open Data movement aims at making more accessible and re-usable public sector information, notably through open licenses.

Even though US copyright law excludes works created by the federal government from copyright protection, a study on this topic could not be complete without describing the United States, where 'open data' initiatives have been pioneered.

Finally in Asia and the Pacific, we have selected two countries where access to PSI has been on the public agenda for some time: Japan and New Zealand respectively.

The collection of data has been corroborated by local experts in Uganda, Japan, Mexico and United Kingdom. For the other countries, existing literature has been used (see references at the end of the report). No interviews could be conducted on site.

#### *Notion of public sector information (PSI):*

In the report, the terms "public (sector) information", "government-held information", "government information" and "public data" are used indistinctly. Although there is no universal definition of public sector information, it can be understood as information produced, held, collected, commissioned by public entities or government controlled entities.<sup>143</sup> Concerning open data, the scope of the research is limited to initiatives by governments and excludes civil society initiatives.

#### *Notion of access:*

Access to public sector information is regulated not only by freedom of information laws but also by sectoral laws on public records, land registries, statistics, etc. The study mainly focuses on access as provided under freedom of information laws.

#### *Open (government) data and open licenses*

In this study the term "open data" follows the definition developed by the advocates of the open government data principles.<sup>144</sup> According to these principles, government data should only be considered as "open" if data are made public in a way that complies with eight principles (complete, primary, timely, accessible, machine-processable, non-discriminatory, non-proprietary, and license-free).

Open licenses are any license through which "anyone is free to use, reuse or redistribute [data] – subject only, at most, to the requirement to attribute and share-alike".<sup>145</sup> This definition has been borrowed from the project Open Definition of Open Knowledge Foundation, a UK-based non-profit organization hosting an international working group on open government data.<sup>146</sup>

#### *Themes:*

First of all, we have made a distinction between access to public sector information, where copyright law might play a (limited) role, and re-use of public sector information, where copyright law or specific policies can provide some rules or guidelines on how to license public information in a way that enhances and facilitates its re-use. The right of access does not

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<sup>143</sup> Access Info Report (2010)

<sup>144</sup> [https://public.resource.org/8\\_principles.html](https://public.resource.org/8_principles.html)

<sup>145</sup> <http://opendefinition.org/>

<sup>146</sup> <http://okfn.org/>; [http://www.access-info.org/documents/Beyond\\_Access\\_10\\_Aug\\_2010\\_consultation.pdf](http://www.access-info.org/documents/Beyond_Access_10_Aug_2010_consultation.pdf)

automatically imply a right to re-use the information. While the issue of reutilization of PSI has generated an ongoing public debate in Europe and the USA, where public sector information was seen early on as a valuable economic resource that might serve as input to a range of value-added-value goods and services, reuse of government information is much less visible on the public agenda in many other countries.

For each country, we have split our findings between regulatory frameworks and policy frameworks. The regulatory framework describes the relevant laws and regulations for access, re-use and copyright protection. It also provides the national definitions of public sector information (referring to their exact wording, i.e. information, record, administrative documents or public information) and of public sector bodies. The copyright status of public sector information (and possible exemptions) is also described as well as the legal provisions relating to the re-use of public sector information.

The second part of each case study describes the policy framework relating to both access to and re-use of public sector information. The purpose of this section is to establish whether the different countries under study have established policy instruments to facilitate the access to or re-use of public sector information. The policy framework also describes the role played by specific administrative authorities, which can be in charge of the access and if relevant of the management of public sector copyright. We also provide examples of existing projects that are concrete applications of licences existing in specific areas or sectoral websites facilitating access and re-use. Finally we have deemed important to mention the existence or not of a national open data portal, permitting to disseminate public sector information and facilitate its exploitation.

The scope of the report is limited to the regulatory and policy frameworks relating to the access to and re-use of public sector information. In addition, only the rules applicable at central level (Government or federal level) are assessed. State and local levels are therefore excluded.

In each country chapter, the exceptions to the freedom of information laws are not detailed, unless they relate to copyright law or other intellectual property rights.

#### *Other intellectual property rights*

The study focuses on copyright law. However other intellectual property rights could also be relevant such as database right in collections of public sector information, e.g. compilations, catalogues and portals relating to public sector information. No international rules exist in this field, with the exception of the European Union's Directive on the legal protection of databases.<sup>147</sup>

Beyond database rights, other rights, such as secrecy and data protection, might also be relevant but are not described in this study as they constitute obstacles to access rather than to re-use of data.

## **II. INTERNATIONAL LEGAL FRAMEWORK**

The reutilization of PSI is governed, both at the national and international level, by two distinct legal regimes that have very little in common. While copyright protection (if available for government works) is part of the fabric of intellectual property law, and thereby subject to the familiar international treaties (notably the Berne Convention), the law of access to government is primarily linked to human rights and to the right to take part in public affairs (transparency and

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<sup>147</sup> Directive 96/9/EC on the Legal Protection of Databases, OJ L 77, 27.03.1996, p.20-28



accountability).<sup>148</sup> Both regimes collide where public authorities invoke copyright to prevent reutilization of public sector information. Conversely, government copyrights may also serve, more positively, background rights on which open data or open access policies can be based.

### *The Berne Convention*

The Berne Convention does not refer to the right of access to or to the right of re-use of government-held information but leaves it to its Members to decide which copyright status should be granted to official texts. Article 2 (4) of the Convention refers to official texts as “texts of a legislative, administrative and legal nature, to official translations of such texts”.

As a consequence, many countries around the world have excluded official texts from copyright protection. But the category of public sector information is much broader than the limited category of official texts. It may also include reports, statistics, pictures, databases and all sorts of other works that are created or commissioned by the public sector. While the Berne Convention remains silent on such subject matter, many national copyright laws do deal with copyright protection of public sector information in a broader manner, albeit in a far from uniform way. Some jurisdictions provide for partial or even complete exclusion of PSI from copyright protection, whereas others expressly recognize government copyright ownership.

### *The European PSI Directive*

The European Directive on the re-use of public sector information (Directive 2003/98/EC) was adopted to provide a minimum set of rules with the aim of promoting re-use of public sector information under fair, proportionate and non-discriminatory conditions. The directive does not deal with access to public sector information but builds on existing freedom of information regimes. Likewise, the directive does not contain any obligation to allow the re-use of public sector information but leaves it to Member States to decide whether or not to authorize re-use of public sector information.<sup>149</sup>

The issue of intellectual property rights is briefly mentioned in the recitals of the Directive. Documents in which third parties holding intellectual property rights, understood as copyright and related rights, are excluded from the scope of the Directive.<sup>150</sup> Concerning PSI in which public sector bodies hold copyright, the Directive requires the public authorities to exercise their copyright in a way that facilitates re-use of PSI (Recital 22). No further guidance is provided, except that when public sector bodies allow the re-use of their PSI under conditions, they should grant a license for re-use (Article 8). The conditions could include the re-use of copyright-protected materials.

### *Unesco’s Guidelines and OECD’s Recommendation*

In 2004, the UNESCO proposed guidelines to develop policies on access to public sector information and to promote government public domain information.<sup>151</sup> Later the OECD examined the social and economic implications of the use of public sector information and published a recommendation to improve the access and use of public sector information, taking into account legal requirements and restrictions, such as intellectual property rights.<sup>152</sup> The copyright issue is one of them. The recommendation acknowledges that governments are dealing differently with copyright issues, from releasing PSI in the public domain to retaining

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<sup>148</sup> Toby Mendel (2008)

<sup>149</sup> Recital 9, Directive 2003/98/EC

<sup>150</sup> Directive 2003/98/EC, Recital 22 and Article 1, paragraph 2 (b).

<sup>151</sup> Paul Uhlir (2004)

<sup>152</sup> OECD Recommendation of the Council for Enhanced Access and More Effective Use of Public Sector Information [C(2008)36], available at <http://www.oecd.org/dataoecd/41/52/44384673.pdf>

copyright. It also provides some guidance on how governments might facilitate the re-use of copyright protected PSI, such as through waiver of copyright or through the use of simple and effective licenses.

### III. COUNTRY CHAPTERS

#### FRANCE

##### A. Regulatory Framework

The French constitution does not recognize a specific right to information but the French Council of State ruled in 2002 that access to public documents was a fundamental right under Article 34 of the Constitution.<sup>153</sup>

In 1978, the Parliament adopted the law on access to public documents (*Loi n°78-753 du 17 juillet 1978 portant diverses mesures d'amélioration des relations entre l'administration et le public et diverses dispositions d'ordre administratif, social et fiscal*, hereinafter Law n° 78-753).<sup>154</sup> The law guarantees the right for any citizen to get a copy of any administrative document.

In 2005, the law was amended by an Ordinance to implement the PSI Directive on re-use (*Ordonnance n° 2005-650 du 6 juin 2005 relative à la liberté d'accès aux documents administratifs et à la réutilisation des informations publiques*)<sup>155</sup> and completed by a decree (*Décret n°2005-1755 du 30 décembre 2005 relatif à la liberté d'accès aux documents administratifs et à la réutilisation des informations publiques*).<sup>156</sup>

The Copyright aspects are to be found in Part I of the French Intellectual Property Code (*Code de la Propriété Intellectuelle*).

##### *Definitions*

##### *Public Sector Information*

Law n°78-753 distinguishes administrative documents, which are accessible, and public information, which is reusable. According to Article 1, *administrative documents* are documents produced or received by public sector bodies. Some examples of these documents are provided, such as files, reports, studies, records, minutes, statistics, orders, instructions, ministerial circulars, memoranda or replies, letters, recommendations, forecasts and decisions. *Public information* is defined in Article 10 as information contained in documents produced or received by a public sector body in its mission of public service.

##### *Public Sector Bodies*

The State, territorial authorities, public law authorities or private-law organizations managing a public service constitute the category of public sector bodies to which Article 1 applies.

##### *Copyright status of Public Sector Information*

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<sup>153</sup> CE, 29 april 2002, M. Ullmann, n°228830, AJDA 2002, p. 691

<sup>154</sup> Available at [www.legifrance.com](http://www.legifrance.com)

<sup>155</sup> <http://admi.net/jo/20050607/JUSX0500084R.html>

<sup>156</sup> Available at [www.legifrance.com](http://www.legifrance.com)

Neither Law n°78-753 nor the *Code de la Propriété Intellectuelle* contain specific provisions on copyright of public sector works. However Article L. 131-3-1 of the CPI states that copyright of works created by public agents is assigned to the State.

Concerning the categories of works that are excluded from copyright protection, the CPI is silent. However, it is generally admitted that official acts such as laws, case law and decrees are exempted from copyright protection.<sup>157</sup> But Courts have established that this exception does not apply to commentaries or compilations of case law.<sup>158</sup>

### *Re-use*

Chapter II of Law n°78-753 (Article 10 to Article 19) defines the re-use of public information and implements the PSI Directive.

Article 10 defines re-use as the use by a person of a document held by a public sector body for a purpose other than the initial purpose within that public sector body's public task for which the document was produced. The same article excludes from the scope of public information (in order to be re-used) information contained in documents on which third parties hold intellectual property rights (Article 10 (c)). However when the public authority holds, is granted or licensed intellectual property rights from third parties without any limitation on information contained in public document, this information can be licensed (Article 25).

Under Article 12, re-use of information is subject to the conditions that the information is not altered, its meaning not distorted and that its source and last update be mentioned.

Article 16 imposes the grant of a license for re-use when the re-use of public information is subject to the payment of a fee.

Finally when the copyright of a document containing a public information is held by a third party, the administrative authority must communicate the identity of the third party to the person who wishes to re-use the information (Article 25).

### B. Policy Framework (access/ re-use)

No single policy framework presently exists in France but some standard licensing models for re-use of public information have been developed.

#### *Administrative authorities:*

The role of two administrative authorities is important: the CADA, *Commission d'Accès aux Documents Administratifs* (access commission to administrative documents) and the APIE, *Agence du Patrimoine Immatériel de l'Etat* (Agency for Public Intangible Assets in France). The CADA makes recommendations on access to administrative documents and gives advice on re-use of public information. The APIE supports administrations in the management of their public information and has developed tools such as standard licensing models to ensure the re-use of public sector information.

#### *General Policy instruments:*

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<sup>157</sup> Lucas and Lucas (2001,) para. 106

<sup>158</sup> Idem, para. 116

The APIE has released on its website a license called General Conditions (*Conditions Générales de réutilisation*), which applies in case the re-use is free of charge, and two different licenses in case the re-use is subject to a fee.<sup>159</sup>

The first license is applicable when public sector information does not require any update such as information contained in a public report. This license is called “*licence de réutilisation des informations publiques délivrées en application de la loi n°78-753 du 17 juillet 1978 et prévoyant une livraison unique des informations*” and corresponds to Article 16 of Law n°78-753.<sup>160</sup>

The second type of license targets public sector information that necessitates updates such as information contained in databases. This license is called “*licence de réutilisation d’informations publiques délivrées en application de la loi n°78-753 du 17 juillet 1978 et prévoyant une livraison successive des informations faisant l’objet de mises à jour régulières*” and is not dealt with by Law n°78-753.<sup>161</sup>

In case public authorities have been granted or licensed by third parties intellectual property rights (such as copyright or database rights) on information contained in administrative documents without any restriction, the license must identify the rights granted or licensed and authorize licensees (i.e. re-users) to exploit these rights in order to re-use public information.

Since May 2011, no central public authority is entitled to charge a fee for the re-use of its data, without being first registered on a list established by decree and under specific circumstances.<sup>162</sup> The default rule is therefore the reuse of public sector information free of charge.

#### *Sectoral examples:*

In application of Article 17 of Law n° 78-753, administrative authorities have the obligation to create catalogues or repertoires of the public data they hold (*répertoires des informations publiques*, also known under the acronym RIP). Several public bodies have taken this a step further and have either implemented the standard licenses proposed by APIE or drafted their own licenses for re-use.

The National Geographic Institute (IGN-*Institut Géographique National*),<sup>163</sup> the National Institute for Industrial Property Licences (INPI- *Institut National de la Propriété Industrielle*)<sup>164</sup> but also the national weather data provider (*Météo France*)<sup>165</sup> are among the public authorities that have adopted standard licenses to permit the re-use of their information. In April 2010, the Ministry of Justice released its own licenses, “Licences IP” (also called “Conditions of the reuse of public information that is freely reusable”).<sup>166</sup> These licenses are

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<sup>159</sup> [https://www.apiefrance.fr/sections/acces\\_thematique/reutilisation-des-informations-publiques/licence-type/downloadFile/attachedFile/Presentation\\_des\\_modeles\\_de\\_licence\\_de\\_reutilisation\\_d\\_informations\\_publiques\\_090206.pdf?nocache=1288881577.69](https://www.apiefrance.fr/sections/acces_thematique/reutilisation-des-informations-publiques/licence-type/downloadFile/attachedFile/Presentation_des_modeles_de_licence_de_reutilisation_d_informations_publiques_090206.pdf?nocache=1288881577.69)

<sup>160</sup> [https://www.apiefrance.fr/sections/acces\\_thematique/reutilisation-des-informations-publiques/licence-type/downloadFile/attachedFile\\_1/Licence\\_avec\\_livraison\\_unique\\_des\\_informations\\_090209.pdf?nocache=1288881577.69](https://www.apiefrance.fr/sections/acces_thematique/reutilisation-des-informations-publiques/licence-type/downloadFile/attachedFile_1/Licence_avec_livraison_unique_des_informations_090209.pdf?nocache=1288881577.69)

<sup>161</sup> [https://www.apiefrance.fr/sections/acces\\_thematique/reutilisation-des-informations-publiques/licence-type/downloadFile/attachedFile\\_2/Licence\\_avec\\_livraison\\_successive\\_des\\_informations\\_CG\\_100928.pdf?nocache=1288881577.69](https://www.apiefrance.fr/sections/acces_thematique/reutilisation-des-informations-publiques/licence-type/downloadFile/attachedFile_2/Licence_avec_livraison_successive_des_informations_CG_100928.pdf?nocache=1288881577.69)

<sup>162</sup> Décret 2011-577 du 26 mai 2011 relatif à la réutilisation des informations publiques détenues par l'Etat et ses établissements publics administratifs, available at [www.legifrance.com](http://www.legifrance.com)

<sup>163</sup> <http://professionnels.ign.fr/41/licences/tarifs.htm>

<sup>164</sup> <http://www.inpi.fr/fr/services-et-prestations/reutilisation-des-donnees-de-l-inpi.html>

<sup>165</sup> <https://public.meteofrance.com/content/2010/7/23888-48.pdf>

<sup>166</sup> <http://www.rip.justice.fr/1932-simplified-licence-%C2%AB-conditions-of-the-reuse-of-public-information-that-is-freely-reusable>

open licenses inspired by Creative Commons licenses.<sup>167</sup> They are non-exclusive, worldwide, and permit commercial use and the creation of derivative works as long as the source of the original document is indicated.

*Data directories/portal:*

In February 2011, the French Prime Minister officially announced the creation of Etalab,<sup>168</sup> a team in charge of setting up a single portal for public information (data.gouv.fr).<sup>169</sup> The project has been launched as one of the measures of the program “*France Numérique 2012*” (Digital France 2012), a plan for the development of the digital economy.<sup>170</sup> The portal data.gouv.fr was officially launched on 5 December 2012. It gives access to raw data (currently some 350.000 datasets originating from 90 producers) under a re-usable format (including a new open and free license called “*Licence Ouverte*”).<sup>171</sup> The majority of data will be free of charge. No public information is available on the costs of functioning of the portal and whether its economic model will be sustainable.

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<sup>167</sup> Guy Lambot (2010)

<sup>168</sup> [http://www.gouvernement.fr/sites/default/files/communiqués/02.22\\_Communique\\_de\\_presse\\_-\\_Etalab.pdf](http://www.gouvernement.fr/sites/default/files/communiqués/02.22_Communique_de_presse_-_Etalab.pdf)

<sup>169</sup> <http://www.gouvernement.fr/premier-ministre/le-secretariat-general-du-gouvernement/etalab>

<sup>170</sup> <http://lesrapports.ladocumentationfrancaise.fr/BRP/084000664/0000.pdf>

<sup>171</sup> <http://www.data.gouv.fr/Licence-Ouverte-Open-Licence>

## JAPAN

### A. Regulatory framework

Article 21 of the Japanese Constitution provides for the right of expression<sup>172</sup>, which has been interpreted by the Japanese Supreme Court as including the right to know (*shiru kenri*).<sup>173</sup> In 1999, the Law Concerning Access to Information Held by Administrative Organs was adopted (hereafter AIDA).<sup>174</sup> The Law on Public Record Management adopted in 2009 can also be mentioned, although no English version is available. It should be mentioned that these laws only apply to central government. Local governments are regulated by ordinances at local level and are excluded from the study.

The Law Concerning Access to Information Held by Administrative Organs and the Public Record Management Law does not contain provisions on the re-use of public information. But two sectoral laws, on Statistics (Statistics Act) and Geospatial Information (Basic Act on the Advancement of Utilizing Geospatial Information and Survey Act) respectively, can be mentioned.

The copyright issues are dealt with in the Copyright Law, n° 48 of 6 May 1970.<sup>175</sup>

#### *Definitions*

##### *Public Sector Information*

Article 2 (2) of the AIDA defines *administrative document* as “ a document, drawing, and electromagnetic record (meaning a record created in a form that cannot be recognized through one’s sense of perception such as in an electronic form or magnetic form), that having been prepared or obtained by an employee of an administrative organ in the course of his or her duties, is held by the administrative organ concerned for organizational use by its employees”.

Article 2 of the Public Record Management Act also refers to public documents as defined in the AIDA and to corporate documents as well as historical documents (that are transferred to the National Archives of Japan).

Are excluded from the scope of public sector information: “items published for the purpose of selling to many and unspecified persons, such as official gazettes, white papers, newspapers, magazines and books” and “in the case of archives and other organs designated by Cabinet Order, items that are specially managed as either historical or cultural materials, or as materials for academic research” (Article 2, para. 2 (1) and (2)) of the AIDA).

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<sup>172</sup> [http://www.kantei.go.jp/foreign/constitution\\_and\\_government\\_of\\_japan/constitution\\_e.html](http://www.kantei.go.jp/foreign/constitution_and_government_of_japan/constitution_e.html)

<sup>173</sup> See Toby Mendel (2008)

<sup>174</sup> [http://en.wikisource.org/wiki/Act\\_on\\_Access\\_to\\_Information\\_Held\\_by\\_Administrative\\_Organs](http://en.wikisource.org/wiki/Act_on_Access_to_Information_Held_by_Administrative_Organs)

<sup>175</sup> <http://www.wipo.int/wipolex/en/details.jsp?id=8881>

### *Public Sector Bodies*

Article 2 (1) of the AIDA does not define public sector bodies but provides a list of administrative organs (understood as government departments but also public service corporations) to which the law applies.

### *Copyright status of Public Sector Information*

The Copyright Act does not differentiate between public sector information and other types of works. In application of Article 13 of the Copyright Act, the following works are not protected by copyright: the Constitution and other laws and regulations; notifications, instructions, circular notices and the like issued by public entities; judgments, decisions, orders and decrees of law courts; translations and compilations of those materials mentioned in the preceding items, made by public entities.

### *Re-use*

No general provisions on re-use exist. However, in the Statistic Act of 2007, Article 32 provides for the secondary use by the administration of information collected through statistical survey and recorded in documents, pictures or electromagnetic records.

In the field of Geospatial Information, Articles 29 and 30 of the Survey Act provide that the approval of the Geospatial Information Authority is required for the copying and re-use of survey results (such as maps, diagrams, final result table, photograph or document).<sup>176</sup>

### B. Policy framework (access/re-use)

There are no general policies or guidelines. Concerning complaints relative to access to public information, no internal appeal is possible. The public agency concerned first refers to the Information Disclosure Review Board. Decisions of the Board (denials of access) can be appealed before a District Court.<sup>177</sup>

### *Administrative authorities*

No specific administrative authority is in charge of managing access to public sector information. Complaints relative to access are lodged before a Court.

### *Genera Policy Instruments*

To our knowledge, there are no general policy instruments to facilitate access and re-use of public sector information.

### *Sectoral examples:*

However, some sectoral examples can be mentioned.

For example, the website of the Official Statistics of Japan (e-Stat) is a “one-stop service for official statistics” and contains information gathered “from statistical department of Ministries and Agencies”. According to the terms of use on the website, the reproduction of information for personal use is permitted as long as the source is mentioned. Reproduction for commercial use needs to be authorized by the relevant ministries or agencies.

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<sup>176</sup> <http://www.gsi.go.jp/common/000051205.pdf>

<sup>177</sup> Banisar (2006), Japan, p.95-97

*Data directories/portal:*

Finally the Japanese Government has launched in May 2010 an Open Government Portal, [Openlabs.go.jp](http://Openlabs.go.jp).<sup>178</sup> The website does not provide public data but resources to locate public information.

## MEXICO

### A. Regulatory framework

Article 6 of the Constitution establishes a detailed and broad right to information, subject to limited restrictions on access for public interest reasons, and guaranteeing to put in place systems to rapidly access public information.<sup>179</sup> Mexico was one of the first Latin American countries to adopt a freedom of information act. In 2002, the Federal Transparency and Access to Public Government Information Law (*Ley Federal de Transparencia y Acceso a La Información Pública Gubernamental*, known under the acronym LFTAIPG) was adopted.<sup>180</sup> The law does not contain any provision on the re-use of public information.

Copyright is regulated in the Federal Copyright Law (*Ley Federal del Derecho del Autor*) (1996)<sup>181</sup> completed by the Federal Copyright Law Regulations (*Reglamentado de la Ley Federal del Derecho de Autor*) (2006).<sup>182</sup> Only the federal regime is covered in this Chapter.

### Definitions

#### *Public Sector Information*

Article 3, Sections III and V of the LFTAIPG defines respectively the terms *information* and *documents*. Information is any information contained in documents that public bodies issue, obtain, acquire, transform or preserve. Documents mean any records (files, reports, studies, certificates, resolutions, official communications, correspondence, directives, etc), regardless of their form and that relate to the exercise of the functions or activities of public bodies and public servants, regardless of their source or date of issuance.

#### *Public Sector Bodies*

Article 3, Sections IV and XIV of the LFTAIPG distinguishes between *public bodies* and *agencies and entities*, which represent essentially the executive branch of the government and the federal public administration, and other types of *public bodies*, composed of the federal legislative branch, the federal judicial branch, autonomous constitutional bodies, federal administrative bodies and any other federal body. Agencies and entities are subject to stricter obligations and to a more rigorous oversight.

#### *Copyright status of Public Sector Information*

According to Article 46 of the Federal Copyright Law, “works made in the official service of the Federation, federative entities or municipalities” are copyright protected.

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<sup>178</sup> [http://www.epsplus.net/news/news/japanese\\_government\\_s\\_open\\_government\\_portal\\_is\\_live](http://www.epsplus.net/news/news/japanese_government_s_open_government_portal_is_live); information available on [Openlabs.go.jp](http://Openlabs.go.jp) has not been updated since August 2010.

<sup>179</sup> <http://www.diputados.gob.mx/LeyesBiblio/pdf/1.pdf>

<sup>180</sup> <http://www.diputados.gob.mx/LeyesBiblio/pdf/244.pdf>

<sup>181</sup> [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=199536](http://www.wipo.int/wipolex/en/text.jsp?file_id=199536); English translation : <http://www.ifai.org.mx/English>

<sup>182</sup> [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=199557](http://www.wipo.int/wipolex/en/text.jsp?file_id=199557); English translation : <http://www.ifai.org.mx/English>



In application of Article 14, Section VIII of the Federal Copyright Law, the following works are excluded from copyright protection: “legislative, regulatory, administrative or judicial texts, as well as their official translations. In the event of being published, they will be attached to the official text and they will not confer exclusive right of edition”. But “concordances, interpretations, comparative studies, annotations, comments and other similar works that involve, on the part of their author, the creation of an original work” are subject to copyright protection.

#### *Re-use*

No general provisions on re-use exist in Mexico

#### B. Policy framework (access/ re-use)

There is no known policy on access to public sector information and re-use of public sector information.

#### *Administrative authorities*

Article 33 of the LFTAIPG provides for the creation of the Federal Institute of Access to Public Information (Spanish acronym, *IFAI*), an independent and autonomous body in charge of enforcing the Federal Law on Transparency with the departments and agencies of the executive branch, and reviewing the cases in which public authorities refuse access to public information.

No known authority is in charge of the management of government held copyright.

#### *General Policy Instruments*

No general policy and tools to facilitate access to and re-use of public sector information are known.

#### *Sectoral examples*

The study did not permit to identify sectoral examples (such as websites in a specific area) that facilitate access to and/or re-use of public information.

#### *Data directories/portal*

A global portal named INFOMEX provides access and accessibility to (federal) public information, i.e. to more than 230 institutions of the executive branch, through online requests.<sup>183</sup> The portal does not contain information on secondary use or re-use of public sector information. Registration as a user is necessary to gain access to information. Therefore the portal does not seem to qualify as an open data platform.

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<sup>183</sup> <https://www.infomex.org.mx/gobiernofederal/home.action>

## New Zealand

### A. Regulatory framework:

The laws relating to access of New Zealand public sector information are the Official Information Act of 1982 (OIA) at federal level<sup>184</sup> and the Local Government Official Information and Meetings Act of 1987 at local level.<sup>185</sup> However these laws do not contain any provisions or principles of re-use of public sector information. This chapter will only cover the federal level.

Copyright provisions are to be found in the Copyright Act of 1994.<sup>186</sup>

#### *Definitions*

##### *Public Sector Information*

Section 2 (1) of the Official Information Act defines *official information* as “any information held by a department, a Minister of the Crown in his official capacity or any organization” (as named in the Official Information Act or in the Ombudsmen Act). The Official Information Act grants access to official information as well as to certain documents. *Document* is also defined under Section 2(1) as “a document in any form”. The section contains a list of examples such as writing on any material, recorded information, label, book, map, plan, photograph, film, tapes.

##### *Public Sector Bodies*

The Official Information Act does not provide any definition of public sector bodies but refers to the list of organizations to which the act applies, as detailed in Schedule 1 of the Official Information Act,<sup>187</sup> as well as to the list of organizations to which the Ombudsmen Act applies.<sup>188</sup> The term Crown in its broadest sense covers the whole system of government (executive, legislative and judicial arms) and in a more restrictive sense refers to the executive branch of the government. Finally the term make reference to the historical tie existing between the United Kingdom and the Commonwealth territories (including New Zealand).

##### *Copyright status of Public Sector Information*

The Crown owns copyright in works “made by a person employed or engaged by the Crown under a contract of services, a contract of apprenticeship or a contract for services. (...) The Crown is the first owner of any copyright in the work” (Section 26 (1) and (2) of the Copyright Act).

Copyright does not subsist in all information. The following materials are excluded from copyright protection: bills, legislations, bylaws, parliamentary debates, reports of select committees laid by the House of Representatives, judgments of any court or tribunal, and any report of a Royal commission, commission of inquiry, ministerial inquiries or statutory inquiries (Section 27 of the Copyright Act). All these documents are therefore in the public domain.

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<sup>184</sup> <http://www.legislation.govt.nz/act/public/1982/0156/latest/DLM64785.html>

<sup>185</sup> <http://www.legislation.govt.nz/act/public/1987/0174/latest/DLM122242.html>

<sup>186</sup> [http://www.legislation.govt.nz/act/public/1994/0143/latest/DLM345634.html?search=ts\\_act\\_Copyright+Act\\_rese&p=1&sr=1](http://www.legislation.govt.nz/act/public/1994/0143/latest/DLM345634.html?search=ts_act_Copyright+Act_rese&p=1&sr=1)

<sup>187</sup> [http://www.legislation.govt.nz/act/public/1975/0009/latest/DLM431204.html?search=ts\\_act\\_Ombudsmen+Act\\_rese&p=1#DLM431204](http://www.legislation.govt.nz/act/public/1975/0009/latest/DLM431204.html?search=ts_act_Ombudsmen+Act_rese&p=1#DLM431204)

<sup>188</sup> <http://www.legislation.govt.nz/act/public/1975/0009/latest/DLM430984.html>

## Re-use

The principle of re-use of public sector information is not enshrined in any regulatory provision. The Official Information Act is silent on licensing copyright material released by government.

### B. Policy Framework

In 1997 the *Policy Framework for Government held information* (PFGHI)<sup>189</sup> was published to guide Government departments in managing government-held information. The framework covers eleven principles (availability, coverage, pricing, ownership, stewardship, collection, copyright, preservation, quality, integrity and privacy). Several discussions were engaged and on 6 August 2010, the New Zealand Minister of State Services launched the *New Zealand Government Open Access and Licensing framework* (NZGOAL).<sup>190</sup> On 8 August 2011, the 1997 Policy Framework for Government held information was replaced by the New Zealand Data and Information Management Principles.<sup>191</sup>

#### *Administrative authorities*

No central agency administers the Crown Copyright. Complaints concerning access to public information are brought before the Office of Ombudsmen.<sup>192</sup>

#### *General policy instruments*<sup>193</sup>

Principle 7 of the PFGHI is of particular interest as it provides that “information created by departments is subject to Crown Copyright but where wide dissemination is desirable, the Crown should permit use of its copyright subject to acknowledgment of source”. The purpose of the policy framework was to open-up Government non-personal information, which was locked as “specific department asset”. However, the policy did not deal with re-use of Government information or with the management of copyright and licenses in the digital area. Therefore the NZGOAL was adopted. This policy gives guidance to State services that release copyright and non-copyright works to third parties. It provides a series of open licensing and open access principles and recommends the use of a “no known rights” statement for non-copyright materials. Concerning copyright materials, it recommends the use of the Creative Commons Attribution (BY) license as the default license. In case a copyright restriction applies, one of the five other Creative Commons licenses may apply.

The NZ Department of Affairs has updated the Policy Framework for New Zealand Government Held Information to “create the conditions that encourage use and re-use of non-personal New Zealand government information and data for the benefit of the New Zealand economy and New Zealanders”. As a result, the Government has released the New Zealand Data and Information Principles, which are based on the core concepts of the 1997 framework.

#### *Sectoral examples*

The *New Zealand Geospatial Strategy* was developed in 2006 to improve management, knowledge and access to geospatial information.<sup>194</sup> Thanks to the principles provided in the Strategy, “geospatial information is easy to understand, integrate, interpret and use”. The re-

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<sup>189</sup> [http://www.ssc.govt.nz/Documents/policy\\_framework\\_for\\_Government\\_.htm](http://www.ssc.govt.nz/Documents/policy_framework_for_Government_.htm)

<sup>190</sup> <http://ict.govt.nz/guidance-and-resources/information-and-data/nzgoal>

<sup>191</sup> <http://ict.govt.nz/programme/opening-government-data-and-information/new-zealand-data-and-information-management-principles>

<sup>192</sup> <http://www.ombudsmen.govt.nz/>

<sup>193</sup> ePSIplatform Topic Report No : 15, New Zealand

<sup>194</sup> <http://www.geospatial.govt.nz/geospatial-strategy/>

use of geospatial information is not one of the goals of the Strategy; however “access arrangements should be geared to maximize the ability to discover access and use the geospatial resources that public agencies hold. The access arrangements implemented will need to make explicit any constraints of use”, such as licenses.

In the environmental field, the *Land Cover Database* and the *Land Environments New Zealand* are available for free and licensed under the Creative Commons Attribution (BY) license.<sup>195</sup>

#### *Data directories/portal*

A central government pilot, Data.govt.nz, was launched in November 2009. The site does not host data but provides links to datasets held by the public sector. The portal has been conceived as a catalogue for all publicly available data. Until the launch of the portal, public data was spread among different websites, which made access difficult.<sup>196</sup> Data.govt.nz provides links to datasets from a broad range of agencies that are available under Creative Commons licenses. Commercial use of the data is not a given. Users wishing to commercially exploit data must contact each administration to determine whether he is allowed to do so.

## UGANDA

### A. Regulatory framework:

The right of access is enshrined in Article 41 (1) of the Constitution adopted in 1995: “every citizen has a right of access to information in the possession of the State or any other organ or agency of the State except where the release of the information is likely to prejudice the security or sovereignty of the State or interfere with the right to the privacy of any other person”.<sup>197</sup>

The constitutional right of access has been given effect in the Uganda Access to Information Act adopted in July 2005.<sup>198</sup> The law does not contain any provision on the re-use of public sector information.

The copyright aspects of public sector information are dealt with in the Copyright and Neighbouring Rights Act (Copyright Act), adopted in May 2006.<sup>199</sup>

#### *Definitions*

##### *Public Sector Information*

Article 4 of Access to Information Act defines the terms *information* and *record*. Information “includes written, visual, aural and electronic information”. Record “means any recorded information in any format in the possession or control of a public body, whether or not that body created it”.

##### *Public Sector Bodies*

According to Article 4 of Access to Information Act the term public body means “a government, ministry, department, statutory corporation, authority or commission”.

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<sup>195</sup> <http://www.mfe.govt.nz/issues/land/land-cover-dbase/index.html>

<sup>196</sup> <http://www.beehive.govt.nz/release/government-takes-steps-demystify-data>

<sup>197</sup> [http://ugandaembassy.com/Constitution\\_of\\_Uganda.pdf](http://ugandaembassy.com/Constitution_of_Uganda.pdf)

<sup>198</sup> [http://freedominfo.org/documents/uganda\\_ati\\_act\\_2005.pdf](http://freedominfo.org/documents/uganda_ati_act_2005.pdf)

<sup>199</sup> [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=141975](http://www.wipo.int/wipolex/en/text.jsp?file_id=141975)

### *Copyright status of public sector information*

According to Article 8 of the Copyright Act, economic rights of civil servants are vested in government when the work is created under the direction or control of the government and unless otherwise agreed.

In application of Article 7 of the Copyright Act, the following materials are excluded from copyright protection: “official documents such as enactment (act, statute, decree, statutory instruments or other law made by the legislature or other authorized body); decree, order and other decisions by a court of law for the administration and any official translation of them; report made by a committee or commission of inquiry appointed by Government or any agency of Government; [et cetera]”.

### *Re-use*

The Access to Information Act does not contain any provision or principle on re-use of public sector information. Likewise, the Copyright act does not contain specific provisions concerning the licensing of government-held information.

### B. Policy framework

No policy general framework exists, whether for the access to or for the re-use of public sector information.

#### *Administrative authorities*

No administrative authority is in charge of guaranteeing access to the information. Complaints relating to access are lodged with the Chief Magistrate according to Article 27 of the Access to Information Act.

#### *General Policy instruments*

To our knowledge, no general policy instruments exist.

#### *Sectoral examples*

In the field of environment, the Uganda National Environment Management Authority has issued *best practices* in environmental information management to enhance access to environmental information (via a resource center to improve (physical) access and use of environment information).<sup>200</sup>

In the legal field, the Uganda Legal Information Institute provides legal information to the public via a *database* containing Courts decisions, legislations and some publicly available secondary legal materials.<sup>201</sup> The terms of use of the website contain a notice on copyright of the materials made available: unless otherwise specified by Courts or government bodies, the legal materials can be copied, printed, and distributed by users free of charge and without any other authorization from the Uganda Legal Information Institute, provided the Institute is identified as the source of the document. The terms of use similar to open access principles. Ugandan Courts are also making their Statutes, decisions and judgments available on the website of the Judiciary of the Republic of Uganda.<sup>202</sup>

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<sup>200</sup> <http://www.grida.no/files/publications/UgandaCaseStudy.pdf>

<sup>201</sup> [www.ulii.org](http://www.ulii.org)

<sup>202</sup> [www.judicature.go.ug](http://www.judicature.go.ug)

### *Data directories/portal*

No general portal, where all public information can be found or links to public sector information, presently exists.

## UNITED KINGDOM

### A. Regulatory framework

The right of access in the United Kingdom does not find its roots in a Bill of Rights (Constitution) but in the Freedom of Information Act (FOIA), which was adopted in 2000,<sup>203</sup> and in the Environmental Information Regulations of 2004.<sup>204</sup> It should be noted that the Freedom of Information Act did not enter into force before 2005. Until 2005, public records legislation from 1831 to 1958 governed access to public (official) records. Only provisions relating to the main Freedom of Information Act will be detailed in this chapter.<sup>205</sup> The right of re-use has been introduced through the Re-use of Public Sector Information Regulations of 2005, implementing the PSI Directive in the UK.<sup>206</sup>

Provisions on copyright are to be found in the Copyright, Designs and Patent Act (CDPA) of 1988.<sup>207</sup>

### *Definitions*

#### *Public Sector Information*

*Information* is defined in Section 84 of FOIA as information recorded in any form and held at the time of the request by a public body. The information is considered as held by a public body if it is held on behalf of a third party but also if a third party holds the information on behalf of the public body.

The Regulations on re-use refer to the notion of *content* and *document* and not to information (Regulation 2). Content is defined as the information recorded in any form, whereas document means any content, including any part of such content, whether in writing or stored in electronic form or as a sound, visual or audio-visual recording, other than a computer program.

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<sup>203</sup> <http://www.legislation.gov.uk/ukpga/2000/36/contents>

<sup>204</sup> <http://www.legislation.gov.uk/uksi/2004/3391/contents/made>

<sup>205</sup> Scotland benefits from a separate regime and freedom of information law

<sup>206</sup> <http://www.legislation.gov.uk/uksi/2005/1515/contents/made>

<sup>207</sup> <http://www.legislation.gov.uk/ukpga/1988/48/contents>

## Public Sector Bodies

The FOIA does not contain a definition of what constitutes a *public body* but refers to a list of entities contained in Schedule 1 of the Act. In addition, the Re-use of Public Sector Information Regulations (Regulation 3) extend the list of *public sector bodies* to all government departments, legislative bodies, armed forces and individually listed bodies, as well to public-owned corporations (either wholly owned by the Crown or a public body other than a Government department).

### *Copyright status of Public Sector Information*

A distinction is made between Crown Copyright and Parliamentary Copyright. According to Section 163, CDPA, *Crown Copyright* applies to works “made by an officer or servant of the Crown in the course of its duties”. It includes a wide range of materials such as laws, government codes of practice, Ordnance Survey maps, reports, official press releases and many public records. Copyright and database right of works produced by employees of the Crown (and servants) in the course of their duties are subject to Crown Copyright or Crown database right.

*Parliamentary copyright* applies to works “made by or under the direction or control of the House of Commons or the House of Lords” (Section 165, CDPA), but the notion does not extend to works “commissioned by or on behalf of” the House of Commons or the House of Lords.

According to Section 164 of the CDPA, all laws (i.e. acts of the Parliament and measures of the General Synod of the Church of England) are Crown Copyright and belong to her Majesty the Queen. Public sector information held by local authorities and other bodies is copyright of those authorities and bodies under the standard provisions of the CDPA.

### *Re-use*

Provision of information under the FOIA or the Environmental Information Regulations, i.e. access law and regulations, does not grant an automatic right to re-use information. Re-use needs to be permitted.

The Regulations on re-use define the concept of re-use as “the use by a person of a document held by a public sector body for a purpose other than the initial purpose within the public sector body’s public task for which the document was produced” (Regulation 4). A public sector body may impose conditions on re-use provided it does not restrict the way in which the document can be re-used or competition (Regulation 12).

Finally a public sector body is entitled to charge to allow re-use of public information. If so, it should establish standard charges (Regulation 15). Charges should not exceed costs of collection, production, reproduction and dissemination of documents and a reasonable return on investment.

## B. Policy framework

According to the website of the National Archives, the UK Government Licensing Framework (UKGLF) “provides a policy and legal overview for licensing re-use of public sector information, both in central government and the wider public sector”.<sup>208</sup> This licensing framework sets out the licensing principles for the re-use of public sector information and recommends the use of

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<sup>208</sup> <http://www.nationalarchives.gov.uk/information-management/uk-gov-licensing-framework.htm>

one of two new licenses, the UK “Open Government Licence” (OGL)<sup>209</sup> and the “Non Commercial Government Licence”.<sup>210</sup>

#### *Administrative authorities*

The Office of Public Sector Information (OPSI) is in charge of setting standards, receiving complaints from users for access and re-use, and providing access.

Her Majesty’s Stationery Office (HMSO) is the central agency administering Crown Copyright on behalf of her Majesty the Queen. The Controller of HMSO licenses uses of Crown Copyright materials and also authorizes other bodies to license their own material. Before the adoption of the OGL, much copyright used to be waived but is now licensed through the OGL.

#### *General Policy instruments:*

The “*Open Government Licence*” (OGL) developed under the UKGLF replaces the previous “*Click-Use Licence*”. The scope of the OGL is much broader. It covers public information protected under copyright and database right. The license however does not apply to information where copyright (or database right) has expired or if the information is in the public domain or subject to patents, trademarks or design rights. Information that can be used and re-used under the OGL is non-personal information collected and produced by government and public sector, including works subject to copyright and database right. It also includes previously unpublished datasets released by the public sector on portals and (original) open source software and source code.

The OGL is a common open license encouraging the re-use of PSI protected by copyright (including Crown Copyright). It is the default license for most Crown-owned information. The license grants the right to re-use, republish the information and produce derivative works, under the condition that the source of the information is acknowledged. The license is perpetual, worldwide and royalty free. The license, which is available in a machine-readable format, is interoperable with other types of licenses (such as the Creative Commons Attribution License and the Open Data Commons Attribution License).

The “Non Commercial Government Licence” is similar but permits use only for a non-commercial purpose.

#### *Sectoral examples:*

The UK’s national mapping agency, the *Ordnance Survey* provides datasets under licenses<sup>211</sup> either free of charge (“OS OpenData licence”, which incorporates the “Open Government Licence”) or subject to charges (such as the “Multi-Client Contractor Licence”).

Before September 2010, the UK Government’s Information Asset Register (*IAR*), managed by OPSI, compiled a catalogue of unpublished information held by the Government. The list was accessible through a website.<sup>212</sup> Since the adoption of the “Open Government Licence”, the catalogue has only historical value. However, individual departments, such as the Department for Business, Innovation and Skills (BIS),<sup>213</sup> the Home Office<sup>214</sup> or the Department for Work and Pensions (DWP),<sup>215</sup> have kept their own registers of unpublished information.

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<sup>209</sup> <http://www.nationalarchives.gov.uk/information-management/government-licensing/the-framework.htm>  
<sup>210</sup> <http://www.nationalarchives.gov.uk/information-management/government-licensing/non-commercial-government-licence.htm>  
<sup>211</sup> <http://www.ordnancesurvey.co.uk/oswebsite/licensing/agreements.html>  
<sup>212</sup> [www.inforoute.hmso.gov.uk](http://www.inforoute.hmso.gov.uk)  
<sup>213</sup> <http://www.bis.gov.uk/site/foi/information-asset-register>



Many local authorities now use the “Open Government Licence” for at least some of their information.

### Data directories/portal

The portal data.gov.uk was launched in January 2010 and is a search engine of available public information (under the format of datasets searchable by keywords, public body, category or department agency and explaining how to access the data). Data and datasets are available under the “Open Government Licence”, unless otherwise specified for specific datasets. The data is licensed “as is”, i.e. the portal does not accept any liability or provide any warranties for the data. The portal is interactive since it allows users to submit their ideas and applications to permit re-use of public sector information.<sup>216</sup>

The project is a part of the Government’s Transparency Agenda (opening up data held by Government bodies).<sup>217</sup>

## UNITED STATES

### A. Regulatory framework

The right to access public information is not granted by the Constitution but is guaranteed by the Freedom of Information Act that was adopted in 1966.<sup>218</sup> The Paper Reduction Act of 1995, through its various amendments, has added several obligations for agencies concerning the dissemination of public information.<sup>219</sup>

The principle of re-use is not dealt with in the Freedom of Information Act.

Relevant copyright provisions can be found in the US Copyright Act, 1976.<sup>220</sup>

### *Definitions*

#### *Public Sector Information*

The law on Freedom of Information refers to the term *record*, which is defined as “any information that would be an agency record (...) when maintained by an agency in any format, including an electronic format” (paragraph (f)(2)).<sup>221</sup> The US Copyright Act also refers to public sector information in the sense that Section 101 defines a *work of the United States Government* as “a work prepared by an officer or employee of the United States Government as part of that person’s official duties”.

#### *Public Sector Bodies*

An *agency*, subject to the obligation of disclosure of PSI, includes “any executive department, military department, Government corporation, Government controlled corporation, or other establishment in the executive branch of the Government (including the Executive Office of the President) or any independent regulatory agency”(paragraph (f)(1)).

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[Footnote continued from previous page]

<sup>214</sup> <http://data.gov.uk/dataset/home-office-information-asset-register>

<sup>215</sup> <http://www.dwp.gov.uk/publications/information-asset-register/>

<sup>216</sup> <http://data.gov.uk/terms-and-conditions>

<sup>217</sup> <http://www.cabinetoffice.gov.uk/content/transparency-frequently-asked-questions-faqs>

<sup>218</sup> FOIA, 5.U.S.C. § 552

<sup>219</sup> 44 U.S.C. §3506 (d)(1)-(4)

<sup>220</sup> <http://www.copyright.gov/title17/>

<sup>221</sup> [http://www.justice.gov/oip/foia\\_updates/Vol\\_XVII\\_4/page2.htm](http://www.justice.gov/oip/foia_updates/Vol_XVII_4/page2.htm)

### *Copyright status of Public Sector Information*

As a general rule, any work of the federal United States government is exempted from copyright protection and directly placed in the public domain (Section 105, Copyright Act). However Section 105 does not apply to works of the US Postal Services and to certain works of the National Institute for Standards and Technology.<sup>222</sup> The US Government can always receive or hold copyright “transferred to it by assignment, bequest or otherwise” (Section 105) and protect its works under the jurisdiction of other countries.<sup>223</sup>

Note that the US Copyright Act’s exclusion of government works applies only to works created by federal government bodies. Individual states remain free to grant copyright protection to State works under their state laws.

#### *Re-use:*

No statutory provisions are available.

#### **B. Policy Framework**

The policy framework concerning the access to and re-use of data is set out in OMB Circular A-130.

#### *Administrative authorities*

Complaints concerning access to public sector information are lodged before a U.S. District Court. No public authority is in charge of managing copyright of government-held information.

#### *General Policy instruments*

The main document underpinning re-use of public sector information is the OMB (Office of Management and Budget) Circular A-130, which was issued in 2000. The Circular provides the data access and re-use policy framework of the federal Government. It applies to all agencies of the executive branch department of the federal Government.<sup>224</sup> In the document, “government information” is defined as any information created, collected, processed, disseminated, or disposed of by or for the federal government.<sup>225</sup> The Circular sets out policies for the management of federal information and requires, for example, that agencies avoid improperly restrictive practices (such as charging fees higher than the cost of dissemination or charging fees or royalties for the reuse, resale or re-dissemination of the information).<sup>226</sup> The Circular acknowledges the role of the federal government as being the “largest single producer, collector, consumer, and disseminator of information in the United States”.

In 2009, the OBAMA administration released a Memorandum on Transparency and Open Government,<sup>227</sup> leading to the development of an Open Government Directive.<sup>228</sup> The Memorandum and the Directive constitute the Open Government Initiative.<sup>229</sup>

No standard conditions of re-use (such as licenses) are however proposed.

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<sup>222</sup> Compendium II, Copyright Office Practices, 2060 02 (a) and (b)

<sup>223</sup> ePSIplatform : Timothy Vollmer, Topic Report n° 25 : Public Sector Information in the United States

<sup>224</sup> Section 4, OMB Circular A-130, [http://www.whitehouse.gov/omb/circulars\\_a130\\_a130trans4#4](http://www.whitehouse.gov/omb/circulars_a130_a130trans4#4)

<sup>225</sup> Section 6 (h), OMB Circular A-130

<sup>226</sup> Section 8 (7) (a) and (b), OMB Circular A-130

<sup>227</sup> [http://www.whitehouse.gov/the\\_press\\_office/TransparencyandOpenGovernment](http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment)

<sup>228</sup> [http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda\\_2010/m10-06.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf)

<sup>229</sup> <http://www.whitehouse.gov/open>; see also ePSI platform Topic No.25, Timothy Vollmer.

### *Sectoral examples*

In the field of geospatial data, the National Spatial Database Infrastructure constitutes a “one-stop” providing access to all available metadata providing access to geographic data.<sup>230</sup>

The National Oceanic and Atmospheric Administration disseminates a broad range of information, especially in the field of weather data, and stimulates its re-use.<sup>231</sup>

### *Data directories/portal*

An important part of the Open Government Initiative was the launch of *data.gov*<sup>232</sup>, a large open data portal that provides access to federal raw data and tool catalogues (hyperlinks to agency tools or websites containing datasets). The purpose of the portal is to “increase public access to high value, machine-readable datasets generated by the Executive Branch of the Federal Government”.<sup>233</sup> The portal contains hundreds of thousands records in its geodata catalog, and thousands of records in its raw data and tools catalogs.<sup>234</sup> The future of the *data.gov* portal is threatened by the economic crisis since it is financed from the public budget.<sup>235</sup>

## **IV COMPARATIVE ANALYSIS**

### *Different models*

The preceding country-by-country survey shows major differences, both in the legal framework and actual policies relating to copyright and PSI. While all the selected countries recognize a right of access to public sector information, not all of them acknowledge a right to reuse the information. It should also be noted that the scope of these laws, both in terms of public sector bodies they apply to and the type of information within their scope can differ substantially. What is more FOI law is an important but by no means the only type of law that regulates access to public sector information.

All the countries under study have adopted freedom of information laws, which in all cases guarantee access to public information but only rarely contain provisions on the re-use of the information by third parties. Implementing the EU Directive on PSI (Directive 2003/98/EC), France and the United Kingdom have amended their freedom of information law (France) or adopted specific regulations (United Kingdom) on re-use. New Zealand and the United States have adopted policy frameworks to facilitate the re-use of public sector information. The three remaining countries (Japan, Mexico and Uganda) do not at present seem to have any provisions or general policies on the re-use of public sector information.

The copyright status of public sector information is usually not dealt with in the context of freedom of information legislation but in national copyright laws. No direct link presently exists between the regulatory or policy regimes on PSI and the laws of copyright.

All in all, the role played by copyright in the access to and dissemination of public sector information is still limited, or even non-existent, such as in the United States, where works produced by the federal government are exempt from copyright. As the survey indicates, copyright law functions as an enabler mainly in those countries such as the United Kingdom and

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230 <http://www.fgdc.gov/framework/frameworkfaq>

231 <http://www.economics.noaa.gov/?file=about>

232 <http://www.whitehouse.gov/Open/>

233 <http://www.data.gov/about>

234 See ePSIplatform Topic No.25, Timothy Vollmer.

235 <http://fcw.com/articles/2011/05/25/egov-budget-cuts-fedspace-data.gov.aspx>;

<http://sunlightfoundation.com/blog/taxonomy/term/savethedata/>

New Zealand that have implemented open content or open data policies based on copyright protection for government works.

### *Definitions*

The notions of public sector information and public sector body are defined at national level and little harmonization exists in that field. The term “public sector information” itself is not used in the national legislations under study. However it can be found in international documents, such as the OECD Recommendation on PSI, where it is defined as “information, including information products and services, generated, created, collected, processed, preserved, maintained, disseminated, or funded by or for the Government or public institution”.<sup>236</sup> The European Directive on PSI re-use (2003/98/EC) also mentions the notion in its title and recitals but does not define it.

The same remark can be made for the notion of “public sector body”. The notion greatly differs from one country to another.<sup>237</sup> As already analyzed in the “Policy Guidelines for the development and promotion of governmental public domain information”<sup>238</sup>, the notion is influenced by the culture and history of each country and can be composed of public entities and bodies financially supported with public funds. Among the countries surveyed, Japan, New Zealand and the United Kingdom do not define public sector bodies but refer to a list of public entities to which the freedom of information law applies.

### *Copyright status of public sector information:*

From a copyright perspective, the countries included in the survey fall in three categories: (a) countries that exempt public sector information from copyright protection (e.g. the United States); (b) countries that distinguish between public sector information that is copyright protected and public sector information that is in the public domain (e.g. France, Japan, Mexico, New Zealand and Uganda); and finally (c) countries where copyright law covers a wide range of public sector information (e.g. UK and New-Zealand).<sup>239</sup>

The case of Crown copyright deserves particular attention. Among the seven countries surveyed, the United Kingdom and the New Zealand are characterized by Crown copyright, defined as copyright claimed by governments of Commonwealth countries. However there is a major difference between these two countries: whereas in United Kingdom Crown Copyright applies to all government works and statutory materials, official acts such as bills and bylaws are excluded from copyright protection in New Zealand.

### *General policy instruments:*

Among the surveyed countries, four countries, namely France, New Zealand, the United Kingdom and the United States, have adopted specific policy instruments to facilitate the access and re-use of public sector information. However in France, the instruments composed of standard models of licenses permitting the re-use of public sector information, do not constitute a general policy, contrary to the three other countries. New Zealand has released the New Zealand Government Open Access and Licensing Framework; the United Kingdom the UK Government Licensing Framework; and the United States rely on the OMB-Circular 130.

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<sup>236</sup> OECD Recommendations of the Council for Enhanced and More Effective Use of Public Sector Information (2008)

<sup>237</sup> The concept of « public sector body » can also vary at domestic level depending on the context (competition law, administrative law, freedom of information law, etc).

<sup>238</sup> Paul Ullmer (2004)

<sup>239</sup> This classification has already been established by Access Info in its consultation report (2010)

These policies not only establish a framework for the access and re-use of public sector information but they also promote the use of open licenses. In France, an Open Licence called “Licence Ouverte” has been adopted to permit the free access of data available on the French open data portal.<sup>240</sup> In the United Kingdom, a new open license, the “Open Government Licence”, has been developed inspired the model of the Creative Commons licenses to encourage the re-use of PSI protected by copyright (including Crown copyright). The Government of New Zealand promotes the use of ‘pure’ Creative Commons licenses for government copyright materials.

### *Sectoral examples*

Particularly in countries that have not yet developed general policy on access to or reuse of public sector information, some sectoral practices are worth mentioning. In Japan, for example, the Official Statistics of Japan (e-Stat) offers a one-stop service for all statistics. In Uganda, the Uganda Legal Information Institute (ULII) provides legal information through its database. It is interesting to note that in both cases the terms of conditions of the websites allow the re-use of the information. In the case of the ULII website, the conditions of re-use seem to be inspired by open licenses since users can copy, print, distribute the legal materials available free of charge and without further authorization, provided they identify the source. The e-Stat website only allows re-use for a personal purpose (expressly excluding a commercial use) provided that the source is also indicated. Existence of national portals to guarantee access and accessibility to public sector information:

With the exception of Uganda, the six other countries under study have established or have plans to set up national portals to centralize access to public sector information. The models presented are however quite different. Whereas in the United States, New Zealand, UK and France, the national portals give direct access to datasets and/or data, portals in other countries seem to be more restrictive or more limited in scope. Most of these portals embrace the principles of Open Government Data in the sense that the information made available can be freely used, re-used and redistributed.<sup>241</sup> However these portals, currently financed by public budget, might face financial difficulties in the future.

## **POSSIBLE DEVELOPMENTS**

### *Promotion of a national portal*

Among the seven countries surveyed, five have launched a national portal to disseminate public sector information: United States, United Kingdom, New Zealand, France and to a certain extent Japan. The advantage of a national portal is to concentrate in a single site access to all available public sector data, either directly or via hyperlinks to other sources. National data catalogues offer a comprehensive overview of the data (documents) and datasets that third parties can freely use. Another advantage of national portals is that they permit the development of citizen-driven catalogues (usually created by open government data advocates) based on the data registry of the national portal.<sup>242</sup>

To ensure the success of a national portal several precautions should be taken. First of all, the copyright status of the raw data contained in the catalogue should clearly permit secondary use of the data. Ideally, the raw data should be released under an open license. Secondly, the data catalogues should be presented in an interoperable and open format.

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<sup>240</sup> <http://www.etalab.gouv.fr/pages/licence-ouverte-open-licence-5899923.html>

<sup>241</sup> <http://www.opengovdata.org/>

<sup>242</sup> Info Access Report (2010)

### *Use of open licenses*

Three of the surveyed countries apply open licenses to disseminate public sector information. France and UK have set up their own custom-made open licenses, whereas New Zealand encourages the use of Creative Commons licenses to facilitate the use and re-use of public data. While these licenses are not specifically meant for government produced data and datasets, they are easy to understand and use and are suitable for online and offline environments. Public sector bodies may choose from several standard licenses. The least restrictive licenses, such as the Creative Commons Attribution License and the even more liberal Creative Commons Zero Public Domain Dedication (in which the copyright owner waives all his rights) seem to be the most appropriate.<sup>243</sup>

### *Identified obstacles to further open data:*

Several obstacles might prevent the opening up of public sector data to the public. First of all, even if a law on access to information has been adopted and is implemented, citizens are not always aware of their rights. According to a Unesco Report of 2009,<sup>244</sup> in large parts of Africa the enforcement of the freedom of information laws as well as the public awareness of a right of access to government information is still in its infancy. However, in Uganda, a court case of 2010 concerning a request of access to official information may demonstrate an increasing awareness among citizens.<sup>245</sup>

Different factors such as the lack of accuracy, the incompleteness or untimeliness of the data can affect the quality of data and therefore constitute further obstacles for the re-use of data. The absence of metadata referring to holdings and holders of public sector information is yet another possible impediment.

A further obstacle might be linked to the IT infrastructure. In less developed countries, the quality of telecommunications networks and limited Internet literacy may, for instance, prevent an efficient deployment of national portals.

Finally, the costs of maintaining national portals and open databases should also be taken into account. Different funding models (portal supported by general taxation; end users paying data; data suppliers paying public sector bodies or a combination of the different models) are to be considered.

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<sup>243</sup> See Naomi Korn and Professor Charles Oppenheim (2011); and also <http://creativecommons.org/about/cc0>

<sup>244</sup> Freedom of Information (FOI) and women's rights in Africa (2009)

<sup>245</sup> Charles Mwanguhya Mpagi & Izama Angelo v. Attorney General (Miscellaneous Cause No 751 of 2009) [2010] Uganda Court of Nakawa (3 February 2010) ; summary available at <http://right2info.org/cases/cases>

## V. RECOMMENDATIONS

In conclusion we offer the following recommendations:

1. For any model of promoting access to and re-use of government information, having rigorous freedom of information laws in place is a sine qua non. There are still numerous countries in the world that have yet to adopt such laws.<sup>246</sup> In those countries that already have such laws in place, public awareness thereof needs to be raised or increased.
2. Governments should be encouraged to clear the copyright status of public sector information and other intellectual property rights that might prevent the public from accessing and re-using public sector information. Governments might consider implementing one of three models: (1) placing all public sector information in the public domain; (2) excluding only official acts from copyright protection and allowing re-use of other types of public sector information under permissive (open) licenses, or (3) protecting all public sector information but allowing re-use through copyright waivers or permissive (open) licenses. WIPO could play a dual role here by (a) drafting model laws, and (b) educating lawmakers in member states and/or providing technical assistance. Alternatively, Governments might combine the different models to set up their own. WIPO could also guide countries in finding the suitable model matching national copyright law and policy with public sector availability and funding options.
3. Governments should be encouraged to set up their own national portals to facilitate the accessibility, dissemination and re-use of public sector information. However, the decision to set up and maintain a governmental portal should be taken following an assessment of the financial sustainability of the model.
4. In those countries where public sector information is (fully or partially) protected by copyright, this should be released under an open license, either by way of a (standard) license (such as Creative Commons) or a tailor-made license. Here again, WIPO could possibly play a role, either by publishing best practices or by developing suitable standard license models. Alternatively, countries might consider setting legal standards by regulatory means, such as laws or guidelines, permitting reutilization of public sector information under generous conditions.

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<sup>246</sup> See David Banisar, *Freedom of Information Around the World 2006 : a Global Survey of Access to Information Laws*, Privacy International 2006, available at :  
[http://www.freedominfo.org/documents/global\\_survey2006.pdf](http://www.freedominfo.org/documents/global_survey2006.pdf);  
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