The need for Open Educational Resources for Ubiquitous Learning

Rory McGreal

UNESCO/Commonwealth of Learning Chair in Open Educational Resources
Technology Enhanced Knowledge Research Institute (TEKRI)
Athabasca University
Athabasca Alberta, Canada
e-mail: rory@athabascau.ca

Abstract—**Open Educational Resources (OER) are important for the expansion of ubiquitous learning. Open licensing of learning components is a precondition for supporting anytime, anywhere learning, whether the lessons are arranged as text, multimedia, videos, applications, games or in other electronic formats. The obstacles presented by proprietary materials impede ubiquitous sharing of knowledge with the use of technological protection measures such as DRM (digital rights management), prohibitive licensing, and restrictions on format shifting, localization, content sharing and other activities considered essential in ubiquitous learning.**

Keywords- Open Educational Resources, OER, ubiquitous learning, DRM

I. INTRODUCTION

Open Educational Resources (OER) are important learning materials with the potential to facilitate the expansion of ubiquitous learning worldwide. The flexibility, both technological and legal afforded by openly licensed content is an important pre-condition for supporting ubiquitous learning. Open standards support the deployment of learning objects as OER on a wide variety of different devices, whether mobile or stationary. The open license frees instructors and learners from concerns about how, when, where and how long the content, video, audio or application can be used.

The William and Flora Hewlett Foundation, the primary donor in the OER movement, supports the use of OER "to equalize access to knowledge for teachers and students around the globe" [1]. They have defined OER as: "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others" [2].OER refers to full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials or techniques used to support access to knowledge. A more recent definition put forward in a UNESCO OER online forum is "Open educational resources are materials used to support education that may be freely accessed, reused, modified and shared by anyone" [3]. The free and open sharing of educational resources can be seen as essential for promoting the building of ubiquitous learning networks as well as the reduction of the knowledge divide that separates and partitions societies.

Educators worldwide continue to face significant challenges related to providing increased access to high quality learning, while containing or reducing costs. New developments in information technology highlight the shortcomings and challenges for the traditional education community, as well as those of more flexible providers such as open universities. Such developments have the potential to increase access and flexibility in education by rendering it ubiquitous. Basic education for all continues to be a goal that challenges – and will continue to challenge – many countries. OER can be used to overcome many of the obstacles faced by both learners and educators.

II. UBIQUITOUS LEARNING (UL)

The relevance of OER is augmented by the exponential growth in online accessibility supported by the wide range of new mobile devices that are now available, promising the possibility of learning anywhere at anytime by anyone. As an example, as early as 1999, the Philippines, was leading the world in digital messaging per capita using SMS (Short Message Service). At that time very few if any people in North America were digital messaging. Even today, they self describe their country as the "SMS capital of the world" [4] (And. For example, Canada trails many developing countries in mobile access.) [5]

Today, out of a world population of more than seven billion, there are more than two billion internet connections. About 25% of the world's population can now access the internet and this percentage is rising rapidly [6]. Moreover, one-third of Internet users only access the network through mobile devices. There are now more than 4.5 billion mobile subscriptions, out of which, about 1.5 billion access the internet [7]. More than 90% of the world's population has access to cellular networks. Ubiquitous access is becoming a universal reality [8].

These mobile devices come in all shapes and sizes. Is it a computer in your phone or is it a phone in your computer? Tablets, ebooks and net books are other forms of ubiquity-enabling devices whose popularity is exploding. You can carry them anywhere; they are always available; always connected and packed with auxiliary features. Even mobile game players like the Sony Ericsson Playstation phone or the Nintendo DS are now available. The one laptop per child initiative (and now one tablet per child) of Negroponte's group

based at MIT has opened up the market for cheap (less than $200) mobile computers/tablets that are now available (and getting cheaper) with models being produced in India, Taiwan and other places [9]. In addition there are "computational objects" that don't even look like computers [10]. This digital convergence of mobile technologies with computers has created an environment where computing is pervasive. Your mobile device can be used not just for internet access but also for email, SMS, as a camera, an ebook, a radio, a game player, a clock and even a telephone!

Moreover, this is happening at an increasingly rapid pace. Moore's Law tells us that the cost of computing is halved every 18 months. Gilder's Law tells us that the cost of bandwidth is being reduced even faster. Storage capacity is growing so fast that one can consider the cost to be approaching zero. With cloud computing, network storage has become a real option for many institutions and individuals. The Cloud supports immediate deployment, scalability, reliability, security, privacy and consistency coupled with user control [11].

This growing trend toward ubiquitous computing using the power of networks has opened the door for learners and instructors to access the world's knowledge from almost anywhere, at anytime. The internet houses the world's treasure of knowledge. In this context the role of OER in providing learners and teachers with learning content, applications, games etc. is becoming increasingly more relevant. The internet is the world's intellectual commons and OER renders this knowledge accessible to all. The world's knowledge is a public good that can be made available to everyone.

III. OPEN EDUCATIONAL RESOURCES

UNESCO supports the use of OER stating:

> *the goal of developing together a universal educational resource available for the whole of humanity provides hope that this open resource for the future mobilizes the whole of the worldwide community of educators* [12].

OER are important because unlike closed proprietary content, OER can be re-used in many similar courses and even re-purposed for use in different courses. This is an important distinction because some have argued that re-purposing of learning objects (OER are a from of learning object) has been a failure [13]. For example, a psychology module can be **re-used** in a wide variety of Psychology-related lessons or **re-purposed** for use in an Arts or Mathematics courses. Localisation is also important and OER can be altered to suit the learner or teacher in their national or regional context.

OER as learning objects have been compared to LEGO blocks that allow users to construct courses from independent blocks or modules. Others feel that the use of OER is more complex with some modules not fitting with others. They compare it to building a house where the doors and windows are standard, the plumbing units are standard but they are not the same as blocks. Others claim that it is much more complex likening the assembly to molecular and even biological systems [14].

The concept of granularity is also important. An OER can be a course, unit, lesson, image, Web page, exercise, multimedia clip, etc. but it should have a *specified* pedagogical purpose/context [15]. Content instances can be assembled into a lesson. Lessons can be assembled into modules. Modules can be assembled into courses, and courses can even be assembled together and become a full programme. All of these at their various levels of granularity can be OER.

These aspects of OER become crucial for ubiquitous learning contexts. Intellectual property owners wish to protect their "property" by imposing draconian restrictions to control how and under what conditions their content is used. Proprietary content with use limitations that include digital locks, legal prohibitions, restricted use, for example, technological measures like "time bombs" that delete the material after a limited time. Or, simply disallowing highlighting and copying can render many learning contexts unworkable. Likewise there are legal restrictions like prohibiting format shifting or sharing with others or imposing other barriers such as forbidding users to alter the content. The proprietary online content, whether it be structured as an etext or a simple web site is sometimes simply a lower quality version of the original printed text. The charts and tables can be substandard "light and washed out", thus rendered unreadable [16]. These can so cripple an educational environment as to make it impossible for ubiquitous learning environments to exist.

Presently there is a large and growing body of OER, supported by open source applications. These resources arguably represent one pre-condition for the implementation of systems for ubiquitous learning, which can effectively bring down the barriers to knowledge around the world. Ubiquitous learning will remain only a concept unless we can ensure the long-term viability of OER, through the active support of educators and educational institutions and through governmental policies encouraging their creation, adaptation and dissemination.

IV. PERMISSIONS IN SUPPORT OF UBIQUITY

Besides enabling remixing and mashing of content in support of relevant pedagogy for ubiquitous learning, OER can also reduce the costs associated with lesson and course development and increase access to quality learning opportunities. Nevertheless, ubiquity is primarily supported by the open licensing afforded by OER. Authorization to adapt, assemble, distribute, mash, re-mix, and republish become realistically possible with standard licensing as provided by Creative Commons or by releasing the materials into the Public Domain. Obtaining separate

authorizations to view freely is not enough to support true ubiquity. Instructors and institutions need to be able to make use of the content freely without having to request permission. Even the most simple requests for permissions can take weeks to confirm. When accessing content, true ubiquity demands that the instructor and students can make effective use of the materials on dedicated devices in the home, on smart phones while commuting, on tablets during meetings, on a PC in the office and on any other devices that become available.

As an example, researchers investigating the use of PERKAM, an ubiquitous computing environment used for learning relied on course materials that were made available on a variety of devices in different ubiquitous environments using knowledge awareness maps. PERKAM recommends educational materials based on the learners' tasks and their current locations [17]. Fair use or fair dealing exceptions to copyright laws allow researchers to make use of proprietary content for such research purposes.

However, if or when the researchers wish to productionize their research, using this content, licensing permissions will have to be obtained. In a wide variety of environments and with different uses by many learners and their instructors such permissions can be costly, elusive or even unobtainable. The act of seeking permission, even if no monetary costs are involved can become overly burdensome and difficult enough to dissuade instructors and institutions from using proprietary learning materials.

V. TECHNICAL CONTROLS

Vendors can technically control how, when, where, and with what specific brands of technological assistance licensees are able to access content and applications. For example some ebook publishers abridge the content and ensure that it is so difficult if not impossible to read that it is "worthless" [16]. Moreover, they also deliberately cripple their devices to ensure that only their "approved" uses are possible. This is often problematic for disabled users. The visually impaired, for example are denied use of a text to speech function and in many cases cannot even increase the text size. Moreover, many proprietary systems still disable highlighting, annotating, hyperlinking, and even dictionary access -- these features are important for educational uses and essential for ubiquitous learning.

Different formats are nearly always problematic when mixing and mashing materials. OER can be changed and altered for use in different formats without permission. Chunking of information is fundamental to learning. Small pieces of text or even chapters is often all that people need. This chunking is not normally possible with vendor-controlled proprietary content [18]. Even simple printouts are not possible in many cases through removing the printing capability (or by prohibitory licensing or both) [19]. Hyperlinking is a normal learning activity that is often disabled. The

devices are often purposely crippled, so that content and applications cannot be ported to other devices. Permissions of all kinds also need to be re-sought for tampering with the material for re-use, re-purposing or mixing, even if fair use allows for it. This can become an impractical burden putting a real damper on ubiquity. Ubiquitous learning relies on the existence of large collections of open and accessible resources.

Ubiquitous learning also requires that the application provide reliable and consistent service. But, with the use of "authentication servers" by many companies, their products cannot be used when the company servers are down [20]

Even if a format becomes obsolete, users have no recourse when they cannot technically move their content to other devices and applications. Of particular concern for the disabled, proprietors also disenable the ability of audio readers to access the content. Audio readers are becoming popular especially for people with visual disabilities and even with commuters on long trips [19]. Because of digital locks, even the process of legally downloading proprietary content can prove to be onerous [21].

Ubiquitous learning becomes problematic when mixing and mashing is not permitted. Proprietors wish to control and restrict the formats, devices, geographical regions and other circumstances that users may want to use the material in. The proprietors wish to lock in and control their customers. For example the Amazon Kindle and Microsoft Reader use DRM (Digital Rights Management) restricted formats (AZW and LIT respectively). On the other hand Adobe's PDF format allows for free use, but many older PDF document cannot be re-flowed to mobile devices easily. The open EPUB format is used by many publishers for production purposes, but then they convert it to their proprietary formats for public release.

VI. DRM

DRM software enables the tracking of users and protects content. It is used by copyright owners to control, limit and restrict how users can use their materials [22]. It is sometimes referred to as TPM (Technological Protections Measures) [23] and it is also used as a tool to turn different uses of the content or application into a separate business deal, with restrictions and permissions. Because of this, some critics refer to DRM as Digital Restrictions Management [24]. These restrictions extend to both the hardware and the software. DRM can limit the devices that you are able to employ in accessing an application or content. It can restrict you to using the proprietor's website and purchasing the proprietor's materials under strict licensing conditions, determining how, when, where you can use the application or content and with what devices. It is considered to be a necessary evil by proprietors to protect their content from pirates and viruses. There is little if any evidence for this. On the other hand existing research on learning content, both

scholarly and educational, suggests that opening up content has minimal, if any effect on sales in comparison to traditional "closed" learning content [25;26]. On the other hand DRM can (and has) been used to prevent lawful licensees from accessing their own purchased content. The DRM used in Ebooks and audio books blocks legitimate users from porting their content to other devices; in many cases, DRM has been used to delete the legally purchased products from legitimate devices. Amazon at one point entered purchasers computers and deleted their version of George Orwell's book *1984* [27]. The Sony RootKit scandal was one example of a company deliberately using its DRM to surreptitiously insert a virus into licensees' computers without their knowledge or permission, causing significant disruption [28] Even so, DRM continues to prevent market competitors from participating and effectively stifles much innovation [20]. Because of this DRM can be seen as the kiss of death to ubiquitous learning.

Ubiquitous learning is particularly affected by DRM. Ubiquitous learning demands flexibility and cannot live with proprietary restrictions that limit the capabilities of digital media. Digital books are no longer "books" [29]. In fact Kroszer, in commenting on the high price of ebooks, points out that printed books now "offer a higher degree of flexibility, portability, and readability" than proprietary ebooks.

Ubiquitous learning is also based on trust among the participating students and instructors. As they share resources, the participants must have confidence that their personal information is not used for purposes other than those of learning and sharing with other students and the teacher. Companies using DRM have a history of open ended and indiscriminate collection of private information for unauthorized purposes, using DRM to disclose personal information for inappropriate purposes [30;31]. In many, if not most jurisdictions, companies have the right to invade your computers and networks without notice and without your permission, and to disable software for any real or imagined license infraction.

VII. LICENSING

These proprietary licenses (that users must accept in order to access the content or applications) are also a major impediment to ubiquitous learning. Never mind that some users have inadvertently sold their immortal souls by agreeing to Gamestation's license in an April Fool prank [32].

Most licenses include stipulations like this:
You shall not resell, rent, assign, timeshare, distribute, or transfer all or part of the contents or any rights granted hereunder to any other person [33].

Licensing restrictions can add needless complications to downloading the content sometime making it so difficult that users simply give up [22]. Fortunately this practice is not endemic. Format shifting, as has been noted is made technically difficult, and this is reinforced with restrictive licensing that prohibits the practice. Even if one wants to retain the same format, proprietary content is licensed to only one computer ("for use solely on the device") [34], so learners who switch computers even with the same operating system are often restricted from doing so, or at a minimum they must contact the owners and request special permissions and/or register with a company.

These licenses also include clauses limiting downloads of content to one time on one computer for one user - and it is non-transferable "for your use only". Because the ubiquitous environment as well as online classes (and classrooms) are considered public places under copyright law, you cannot distribute or broadcast such licensed content among students or even lend a device to them. Licenses prohibit, not only copying and printing, but also modifying, removing, deleting, and augmenting (improving) or "in any way exploiting any of the eBook's content". This stipulation along with the "sole device" stipulation effectively negates any attempts at ubiquitous learning using such software, even if institutions are prepared to pay, pay again and keep paying for the same licenses until they expire. And, if institutions don't keep paying they may no longer be able to access to data or records linked to that product. Licenses also prohibit the transfer of content to other students when teachers wish to use the ubiquitous devices with a different group of students in later semesters.

More reprehensively, software licensing exempts software publishers from ALL liability under consumer protection law. There is no "product" to purchase. Not only does the "purchaser" have no rights, no requirements are placed on the publisher, nor any requirement that a program even work. And the publisher has no liability when they turn off the content or software for whatever reason, legitimate or otherwise They can also change these and other clauses of the contract at any time. In fact, whenever software is upgraded the contract can be changed and often is, never for the benefit of the user [24].

For those educators who wish to avail themselves of their fair dealing (or fair use) rights, these licenses effectively negate them along with the right of first sale that normally allows buyers to resell their purchases [35]. The license represents a contract agreed to by the licensee to not avail themselves of their fair dealing rights or first sale rights. Contract law trumps fair dealing.

> *if a library and a publisher agree in a contract that fair dealing will not apply to activities that are specified in the contract, then the contract's provisions prevail regardless of what the Copyright Act provides." [CARL 9]* [36]

Contracts can even be used to extend the copyright extension from 70 years after and author's death to an eternity [24]. One US Congressman noted her

preference for copyright as lasting "Forever less a day" [37].

VIII. GEOGRAPHICAL RESTRICTIONS

The predicament of an IPad owner in Luxembourg puts the question of geographical restrictions in a clear light. Even though he would like to legally purchase content, he cannot because it is not available in his country. He can find material on pirate sites, but he wanted to buy legally and could not. Another commentator, talks about user "anger" noting that geographical restrictions using DRM are "the most pressing issue" [38]. Google's "Geographical Constraint" error message along with YouTube's "This video is not available in your country" are notorious examples of this, when users get an error message when they attempt to download books or videos that are not licensed in their country. For instructors, of course a legal purchase is mandatory, so in many countries they are effectively excluded from using vast amounts of relevant content [39]. For borderless online courses from institutions that deliver lessons to many different countries, the restrictions effectively prevent them from using this content. The copyright owners are encouraging piracy through these geographical controls that prohibit legitimate uses.

IX. CONCLUSION

There is an ebook users' bill of rights that is relevant for supporting the growth of ubiquitous learning [38]. These rights include the right to use content under licenses that favor access over proprietary limitations on any technological platform of the users' choice. Portability should be paramount. This includes rights to highlight, annotate, print, and share content within the spirit of fair use and copyright. Other rights include the right to receive a file that is not locked or crippled and subject to recall by the publisher; the right to convert files to different formats for use on a variety of devices and computer platforms [40] or as Kroszer notes "trouble free and device agnostic" [29]. An essential right for ubiquitous learning would be that of allowing other users to access content either for shared learning or for future use by additional classes.

OER, by definition have minimal if any restrictions. They are technologically neutral, transmittable on different platforms and when built using commonly accepted or open software conforming to international interoperability standards, can be transported with little effort or concern by the users.

REFERENCES

[1] The William and Flora Hewlett Foundation. (2010, Oct.) *Education program: Strategic plan.*[On-line]. Available: http://www.hewlett.org/uploads/documents/Education_St rategic_Plan_2010.pdf [Jan. 10, 2012]

[2] J. Hylen. (2007). *Giving knowledge for free: The emergence of Open Educational Resources..*[On-line]. Available: http://www.oecd.org/dataoecd/35/7/38654317.pdf [Jan. 10, 2012]

[3] S. Downes, "Open Educational Resources: A definition,". Internet: http://www.downes.ca/archive/11/07_18_news_OLDaily .htm , Jul. 18, 2011 [Jan. 10, 2012]

[4] Wiki@SMU. "Digital media in Philippines." Internet: https://wiki.smu.edu.sg/digitalmediaasia/Digital_Media_i n_Philippines, May 22, 2011 [Jan. 10, 2012]

[5] International Telecommunications Union. (2011). *Measuring the information society*. Internet: http://www.itu.int/ITU-D/ict/publications/idi/2011/index.html [Jan. 10, 2012]

[6] International Telegraph Union. "Global numbers of internet users, total and per 100 inhabitants 2000 – 2010." 2010. Internet: http://www.itu.int/ITU-D/ict/statistics/material/graphs/2010/Internet_users_00-10_2.jpg, 2011 [Jan. 10, 2012]

[7] International Telegraph Union, "Global mobile cellular subscriptions, total and per 100 inhabitants 2000-2009." Internet: http://farm5.static.flickr.com/4078/4784478316_84f11ed 596.jpg, 2010 [Jan. 10, 2012]

[8] International Telegraph Union. "Percentage of the world's population covered by a mobile cellular signal 2003 compared to 2009. Internet: http://www.itu.int/ITU-D/ict/statistics/material/graphs/2010/Cellular_signal_03-09.jpg, 2010 [Jan. 10, 2012]

[9] M. Ricciuti. (2005, Sep.28). "The $100 laptop moves closer to reality." *CNet News.* [On-line]. Available: http://news.com.com/The+100+laptop+moves+closer+to +reality/2100-1044_3-5884683.html [Jan. 10, 2012]

[10] M. Kuniavsky. (2010, Dec. 6). "Smart things: Ubiquitous computing user experience design," *UX Magazine. .* [On-line]. Available: http://uxmag.com/technology/smart-things-ubiquitous-computing-user-experience-design [Jan. 10, 2012]

[11] G. Richards, R. McGreal, and B. Stewart. (2010, Dec.). *Cloud Computing, Adult Education and Literacy: A report on emerging technology for the Alpha Plus Project - How cloud computing can sustain the promise of Adult Learning.* Internet: http://hdl.handle.net/2149/3037 [Jan. 10, 2012]

[12] UNESCO Bureau of Public Information. "UNESCO promotes new initiative for free educational resources on the Internet." Internet: http://www.unesco.org/education/news_en/080702_free_ edu_ress.shtml, Jul 8, 2002 [Jan. 10, 2012]

[13] S.Bergsträßer, C. Rensing, B. Zimmermann, R. Steinmetz. (2007, June). "Building a representation of learning resources to support their re-purposing. *Proceedings of World Conference on Educational Multimedia*, *Hypermedia*. . [On-line]. pp. 3128-3136. . Available: http://www.editlib.org/p/25823 [Jan. 10, 2012]

[14] G. Paquette, and I. Rosca.(2002, Fall) "Organic aggregation of knowledge objects in educational systems." *Canadian Journal of Learning Technologies*. [On-line]. Vol. 28(3).. Available: http://www.cjlt.ca/index.php/cjlt/article/viewArticle/111/104 [Jan. 10, 2012]

[15] R. McGreal. (2004, Sep.). "Learning objects: A practical definition." *Journal of Instructional Technology and Distance Learning*. [On-line]. Vol. 1(9). Available: http://www.itdl.org/journal/sep_04/article02.htm [Jan. 10, 2012]

[16] Richard the Lionhearted. (2011, Sep.5) "Comments on five alternatives to expensive textbooks by Ritika Puri." *Globe and Mail.* [On-line].. Available: http://www.theglobeandmail.com/globe-investor/personal-finance/household-finances/five-alternatives-to-expensive-textbooks/article2145784/comments/ [Jan. 10, 2012]

[17] M.M. El-Bishouty, H. Ogata, and Y. Yano. (2007) "PERKAM: Personalized Knowledge Awareness Map for Computer Supported Ubiquitous Learning." *Educational Technology & Society.* [On-line]. Vol. 10(3) pp. 122-134.. Available: http://www.ifets.info/journals/10_3/9.pdf [Jan. 10, 2012]

[18] A.N. Bissell. "OER and open licenses: the dual-pub solution." Internet: http://independent.academia.edu/AhrashBissell/Papers/778168/OER_and_open_licenses_the_dual-pub_solution, July, 2011 [Jan. 10, 2012]

[19] Elibra and Starpath. "All about ebooks," Internet: http://www.starpath.com/elibra/about_index.htm, n.d. [Jan. 10, 2012]

[20] Electronic Frontier Foundation. "Digital Rights Management." n. d. . Internet: http://www.eff.org/issues/drm [Jan. 10, 2012]

[21] Tony. "eBooks - The problem of actually getting them into your eReader." Internet: http://www.ebookanoid.com/2010/07/29/ebooks-the-problems-of-actually-getting-them-into-you-ereader/, July 29, 2010 [Jan. 10, 2012]

[22] S.R. Subramanya, and B.K. Yi. (2006, Mar-Apr.). "Digital Rights Management." *Potentials IEEE.* On-line]. Vol. 25(2), pp. 25-34. Available: http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1649008 [Jan. 10, 2012]

[23] Parliament of Canada. (2005) "Bill C-60 An act to amend the copyright act.". [On-line]. Available: http://www.parl.gc.ca/HousePublications/Publication.aspx?Pub=Bill&Doc=C-60_1&Language=&Mode=1&Parl=38&Ses=1 [Jan. 10, 2012]

[24] P. Brown."What is DRM? Digital Restrictions Management," Internet: http://www.defectivebydesign.org/what_is_drm, n.d. [Jan. 10, 2012]

[25] R. McGreal, & N. S.Chen. (2011). "AUPress: A Comparison of an Open Access University Press with Traditional Presses." *Educational Technology & Society.* [Online]. Vol. 14(3), pp. 231 - 239. Available: http://www.ifets.info/journals/14_3/19.pdf [Jan. 10, 2012]

[26] J. Hilton III & D. Wiley. (2011). " Open access textbooks and financial sustainability: A case study on FlatWorld Knowledge." [Online] Vol. 12(5). Available: http://www.irrodl.org/index.php/irrodl/article/view/960/1887 [Jan. 10, 2012]

[27] I. Fried. (2009, Jul. 17). "Amazon recalls (and embodies) Orwell's '1984'," *CNet News.* [On-line]. Available: http://news.cnet.com/8301-13860_3-10289983-56.html [Jan. 10, 2012]

[28] I. Marson. (2005, Dec. 29). "Sony settles 'rootkit' class action lawsuit," *CNet News.* [On-line]. Available: http://news.cnet.com/Sony-settles-rootkit-class-action-lawsuit/2100-1002_3-6012173.html [Jan. 10, 2012]

[29] K. Kroszer. "The eBook problem and the eBook solution." Internet: http://booksquare.com/the-ebook-problem-and-the-ebook-solution/, May 28, 2008 [Jan. 10, 2012]

[30] The Canadian Internet Policy and Public Interest Clinic. (2007, Sep.).. "Digital Rights Management and consumer privacy: An Assessment of DRM applications under Canadian privacy law,". Available: *www.cippic.ca/uploads/CIPPIC_**DRM**_ExSum_EN.pdf* [Jan. 10, 2012]

[31] B. Schneier. [2005, Nov. 17]. "Real story of the Sony Rootkit," *Wired.* [On-line]. Available: http://www.wired.com/politics/security/commentary/securitymatters/2005/11/69601?currentPage=all [Jan. 10, 2012]

[32] C. Matyszczyk. (2010, Apr. 16). "Online game shoppers duped into selling souls," *CNet News.* [On-line]. Available: http://news.cnet.com/8301-17852_3-20002689-71.html [Jan. 10, 2012]

[33] Manning Publications Co. "Manning Ebook license." Internet: http://www.manning.com/about/license.html, n.d. [Jan. 10, 2012]

[34] eBooks.com. "Customer license." Internet: http://www.ebooks.com/information/customerlicense.asp, n.d.[Jan. 10, 2012]

[35] EBIA, "eBook License agreement," Internet: http://www.ebia.com/Copyright/Licenses/eBook, Sep. 29, 2010 [Jan. 10, 2012]

[36] T. Horava. (2009). "Ebooks licensing and Canadian copyright legislation: a few considerations," *Canadian Journal of Library and Information Practice and Research.* [On-line]. Vol. 4(1). Available: http://journal.lib.uoguelph.ca/index.php/perj/article/viewArticle/929/1475 [Jan. 10, 2012]

[37] U.S. Congress. "Mrs. Bono's address to the House.". Internet: http://frwebgate.access.gpo.gov/cgi-bin/getpage.cgi?position=all&page=H9952&dbname=1998_record, Oct. 7, 1998 [Jan. 10, 2012]

[38] Americaneditor. "The eBook Wars: Making peace.". Internet: http://americaneditor.wordpress.com/tag/book-repository/, Mar. 1, 2010 [Jan. 10, 2012]

[39] J.S. Wolf. "IPad owner in Luxembourg." Internet: http://www.mobileread.com/forums/archive/index.php/t-114431.html, Mar. 1, 2010[Jan. 10, 2012]

[40] A. Woodwarth. "How the Ebook Reader's Bill of Rights benefits authors." 2011. Internet: http://agnosticmaybe.wordpress.com/2011/03/08/why-the-ebook-readers-bill-of-rights-benefits-authors/, Mar, 8, 2011, Mar. 8, 2011 [Jan. 10, 2012]