

The New Books - Electronic and Portable

Tihomir Stefanov¹, Milena Stefanova²

Abstract –The report presents the status and prospects of development of the book. A research study on current formats and devices for publishing, reading and exchange of electronic books has been carried out.

Keywords – Books, Electronic Books, Digital Rights Management, Tablet.

I. INTRODUCTION

The electronic book is an electronic version of the traditional printed books. It can be read on a personal computer, a mobile device or a specialized electronic reading device. The e-Book (electronic book) as a concept is also used to signify an electronic reading device for books in an electronic format.

1965 is considered to be the year when the development of electronic publishing took off, and Theodor Nelson laid the foundations of the hypertext, which was later on established as a basic format for online text saving. Launched in 1963, Theodor Nelson developed a model for creation, and by using the linked content he coined the terms "hypertext" and "hypermedia" (first published reference 1965[2]).

2009 could be considered the beginning of mass e-Book popularization and of a heightened interest by the bigger producers in the production and distribution of electronic reading devices.

II. ELECTRONIC BOOKS - THE ESSENCE

The differences in context between the e-Book and the printed one are in relation to the text structure. The printed book sticks to the linear speech structure [1]. Every part (sentence, paragraph, chapter, volume, etc...) follows in a sequence and the references to various parts of the book (footnotes, dictionary and used terminology, works cited) are rather clumsy. The reader has to shift focus away from the line they are reading or even flick through the pages. The printed book is practically impossible to send real-time references to external sources of information with. The electronic book is structured in a hypertext principle (a particular word or phrase is a direct reference to a different part of the book or to another document) and there is no problem for such references to take place.

¹Tihomir Stefanov is with Department of Information Technologies, "St. St Cyril and Methodius" University of Veliko Turnovo, G.Kozarev 3, 5000 Bulgaria, E-mail: tiho2000@abv.bg.

²Milena Stefanova is with Department of Computer Systems and Technologies, "St. St Cyril and Methodius" University of Veliko Turnovo, 5000 Bulgaria, E-mail: m_stefanova@abv.bg.

A. Advantages:

- Lower contents price: no printable technologies required for its production;
- Space economy – small size and weight irrespective of the book volume;
- Unlimited quantity – the reader can carry about 17 000 headings at a time;
- Unlimited circulation – no extra charges on additional issues, no old stock quantities of printed books;
- The electronic books are not liable to natural wear and tear;
- Nature conservation – it is a lot nicer to read an electronic book under the shade of a tree, rather than have it printed out of wood-fibre.
- Interactive approach – the possibility of combining text with graphics, animation, sound, as well as book search;
- Possible content update without the need of replacing the book.

In reference to e-Book advantages, the analysis specialist Michael Ashley published an article in Gizmodo, where he pointed out the five most important reasons why authors will direct their attention towards electronic self-publishing [2].

The first reason is the *speed* with which the book reaches readers' devices by way of electronic ink. This is a great benefit to writers whose books contain up-to-date information and need to be published as soon as possible.

E-publishing is *economically more effective*. The expenses are considerably reduced and authors appreciate this fact. Moreover, the sites for electronic book sales pay off by a larger percentage to authors than traditional publishing companies do.

Electronic books enable authors *to always have their last say*. This fact suits them well, as the final product meets their expectations in the most favourable way.

E-Books *provide access to a wider and much more varied audience* of readers. What is more, the e-Book readers are people who keep up-to-date with technological innovations. Authors can now add as many graphic and multimedia designs in their books as they want. It has also been proved that people have generally started reading more thanks to the appearance of e-Books.

Last but not least, *writers can add changes to their books even after they have been introduced to the market*. Thus, any possible mistakes could be corrected. Some electronic readers have the option to automatically add changes to updated book releases so that readers can receive the best of what the product has to offer and authors are satisfied with their corrections taking effect so quickly[2].

B. Electronic books disadvantages

- Despite the low energy consumption, they need charging;
- The price of reading devices is still very high;
- There is no standard file format for all e-Books.

III. POPULAR E-BOOKS FILE FORMATS

Most electronic book file formats (e-Books) are based on xml files. The most interesting formats are the ones that electronic books can read.

The concept Digital rights management (DRM) used below, is a right-protection one. Digital rights management (DRM) is a general concept related to access control technologies used by publishers and owners of publishing rights to restrict unauthorised use of copyright-protected pieces of work in electronic format and/or devices [3]. Basically, this is a type of software or in some cases a combination of software and hardware that impedes copying of copyright-protected pieces of work or allows the tracking of already existing copies. It appeared for the first time in the middle of the 90s to prevent illegal DVD copying. In 2002-2003 they started being used widely in the sales of digital songs on the internet.

ABW – format, a free editing programme *AbiWord*, similar to Microsoft® Word, working with all operative systems to differ. When compressed, the format is *.zabw*.

ACSM – file format for DRM file protection of Adobe e-Books PDF and ePUB. When downloading PDF or ePUB right protected files, you first download a small file with *.acsm* extension. This file is then used by Adobe Digital Editions to send an identification code to the server that will use this number to generate the encrypted PDF or ePUB files, saving them on the computer.

Adobe e-Book (PDF) – this is a format similar to pdf, but designed for smaller screens and uses CoolType fonts that are easily recognised by LCD screens. Adobe offers a software system for e-Book distribution called ‘Adobe Content Server’.

PDF – Portable Document Format created by Adobe Company in 1993 for their Acrobat product. This format was gradually established as the main format of document transfer. The PDF document contains all fonts, images, graphics, etc. to achieve adequate visualisation. In 2008 PDF was established as the main standard. PDF is not an e-Book-friendly format [7]. Some devices cannot display PDF documents very well as they have been formatted to suit A4 or letter and cannot be scaled properly either. Another disadvantage is that the files are *larger in size than ordinary formats*.

AZW – e-Book format used by Amazon for their Amazon Kindle devices, compatible with Kindle software for PC and iPhone. *AZW* e-Book files have DRM protection.

AZWI – e-Book format in *Topaz* (TPZ) format, distributed by Amazon – *Whispernet* wireless network. *Whispernet* allows access to e-Books for Kindle without the need of Internet.

BBeB (Broad Band e-Book) is a proprietary e-Book file format developed by Sony and Canon and used for electronic books and dictionaries. *BBeB* files have the following extensions:- *LRF* (unencrypted); - *LRS* files are XML files that can be edited and follow the *BBeB Xylog XML* specification and represent the source code of each *BBeB* e-Book; -*LRX* (encrypted for DRM purposes) files are compiled / compressed versions of *LRS* files that are actually used by e-Book readers [7].

While the *LRS* format is openly available to the public, the *LRF* and *LRX* formats are not and remain proprietary. The conversion (compilation) from *LRS* to *LRF* can be done with a special tool, *XylogParser.dll*, also freely available to the public. As of July 2010, the Sony e-book store states that they are no longer using the *BBeB* format, and have converted all books to the *ePub* format.

TABLE 1
COMPARISON OF E-BOOK FORMATS

Format	Filename extension	DRM support	Image support	Table support	Sound support	Interactivity support	Open Standard
Kindle	.azw	+	+	+	+	-	-
BroadBand e-Book	.lrf, .lrx	+	+	?	-	-	-
DjVu	.djvu	?	+	+	-	-	+
ePub (IDPF)	.epub	+	+	+	+	+	+
eReader	.pdb	+	+	?	-	-	-
FictionBook	.fb2	+	+	?	-	-	+
HTML	.html	-	+	+	-	-	+
Mobipocket	.prc, .mobi	+	+	+	-	-	+
Portable Document Format	.pdf	+	+	+	+	+	+

DjVu (pronounced „deja view”) – a format similar to pdf, created by Lizardtech Company, mainly used for scientific publications and scanned documents which contain a combination of text and photos. With this format the photos and the text are saved as separate layers, the quality being very high and the compression very good.

DNL format e-books are created using Desktop Author and presents digital information in book form. DRM encryption is supported by this format, having the opportunity to read part of the book. *DNL* files allow text search, page numbering, and highlight the text, including recording and displaying video. Pages actually turn, the index has links directly to pages with the information you want, pop up images give you enlarged views of specific images and dynamic HTML links will open your browser to specified web pages containing reference or files to download.

ePub – open format, implemented by the Forum Open e-Book Forum of the International Digital Publishing Forum (IDPF). *ePub* is based on XHTML and XML, and combines text, formatting, and user interface. It is essentially a ZIP format. This format is a precursor of OEB standard. *ePub* supported by the devices of Sony, Hanlin V3 of Jinke, and more. Adobe Digital Editions uses *.epub* format for its e-books, with DRM protection provided through their proprietary ADEPT mechanism. The recently developed INEPT framework and scripts have been reverse-engineered to circumvent this DRM system.

ER.PDB – format used by one of the largest distributors of electronic books Fictionwise, owned by Barnes & Noble for

the eReader program. It allows reading documents for Palm OS. ER prefix in the beginning is used to distinguish that it is a PDB format of Fictionwise.

FB2–FictionBook format files are based on XML. To display FB2 files there are programs for operating systems Windows, Linux, PocketPC and Palm OS. This format is used by HaaliReader for PocketPC, universal program for reading electronic books FBReader and free program for reading documents for Palm OS - PalmFiction.

HTML– Hyper Text Markup Language, the basic format used on the Internet. Most devices for reading electronic books maintain the styles of HTML Cascading Style Sheets.

IS.PDB–based of PDB format developed for reading the program ISilo. ISpre fix in the beginning is used to distinguish this format from the PDB.iSilo™ is development for Palm OS, Pocket PC, Windows Mobile Smartphone, Symbian UIQ, Symbian Series60, Blackberry, iPhone, and Windows CE Handheld PC handhelds, as well as for Windows computers.

MOBI – a format used by a free-of-charge MobiPocket Reader programme by MobiPocket. At present, the owner of MobiPocket is Amazon. The file extension could be .mobi or .prc. Both extensions can be encrypted or non-encrypted. The .prc extension is used because PalmOs can only support .prc or .pdb. MOBI format is based on the Open e-Book standard that uses XHTML and supports Java Script, frames and simple SQL applications. MobiPocket bans the use of their DRM encryption for e-Books which support other types of DRM protection. AZW by Amazon Kindle is in the same format as MOBI, but has a different DRM encryption. The format does not support letters with a stress or any other symbols.

PDB – Palm Database Format, the format is recognised by Palm devices. eReader is a free programme which supports this format. PDB is supported by the Barnes & Noble device – Nook.

PKG – extension is recognised by Newton MessagePad PDA. A .pkg file can support several books. All systems with a Newton operative system (the most popular being Newton MessagePads, eMates, Siemens Secretary Stations, Motorola Marcos, Digital Ocean Seahorses and Tarpons) can recognise this format. Newton books do not have encryption or DRM protection.

PRC – Palm Resource Compiler, Mobipocket e-Book format (see Mobi). If the specification of a device is said to support PRC or MOBI format, it should be understood in the same fashion. Technical information on format can be found at: <http://web.mit.edu/tytso/www/pilot/prc-format.html>. PRC format is supported by e-Book reading devices property of IREX Technologies.

IV. LATEST ELECTRONIC BOOK DEVICES – AN OVERVIEW

Pocket eDGe – the smallest spread-open e-Book. It combines a tablet, a netbook and an electronic reader in one. Pocket eDGe is a smaller version of the original eDGe tablet, released by the same company in the spring. The pocket-sized version combines two displays: a 7-inch colour WVGA sensor-resistant display and a 6-inch 800x600 E Ink display

and works with stylus only. It works with Android operative system and has WiFi b/g and Bluetooth connection, internal memory 3GB, 2-mega pixel camera and a microSD slot card. It has a standard and mini USB ports, a built-in microphone, a loudspeaker and headphones output.

Both displays work in collaboration thanks to the improvements made to Android by Entourage in order to enable web-page transfer from LCD to E Ink to ease reading and annotation. Conversely, pages from E Ink (together with consumers' notes) can be transferred to LCD and be sent by e-mail.

Tablet eDGe offered to the market earlier on did not receive many positive reviews, slashgear.com states. The current pocket version, however, is a compact device (weighing 680 grams it is the smallest dual book on the market) with a number of applications and WiFi connection. It comprises two screens attached with hinges - LCD and E-Ink that can

communicate together or with the consumer. The input data includes a long list of electronic books, periodicals and music ready to download off the company's digital electronic shop.

The seven-inch LCD screen is excellent for web surfing and watching of videos. You can send e-mails from it or work with office documents. There are useful built-in applications such as a calendar and a notepad. Additional applications for Android can also be downloaded.



Fig. 1. Devices for electronic books: Pocket eDGe [5] and Kindle [8]

The six-inch E-Ink, on the other hand, gives the opportunity to browse through electronic books and documents in EPUB and PDF formats. It enables note taking and annotation with stylus after activation of the special Journal function. With this technology the consumer can highlight parts of the document, add notes or comments and then send it as PDF to friends or colleagues.

Both screens can interact in an unparalleled fashion. For example, the consumer can look up terminology or unfamiliar vocabulary online (Google or Wikipedia) on the left hand side while the e-Book stays to the right.

This device has built-in loudspeakers, a microphone and a camera with video recording option – the consumer can record lectures or business meetings, take photos, listen to music or watch a video. Professional specialists or students can do presentations via a USB-Video adapter.

The device can switch to vertical or horizontal display, open up like a book or a netbook or fold in a way that only one of the screens remains visible.

Kindle has been the most widely-distributed e-Book reader in the world in the last two years. The new Kindle 3 generation has got a similar display: 10:1 contrast, no reflections and guarantees no glaring effect in direct sunlight. The optimized image quality of the reading device is achieved by enhancing the built-in font types. The size and weight of the device have greatly been reduced (21% less than Kindle 2), the 6" eInk screen has been preserved and its weight is only 241 grams. The built-in WiFi modem provides unlimited internet access wherever there is wireless connection (be it at home or when we travel). The speed of page flick-through has also been enhanced (20% faster in comparison to the previous model). There have been considerable improvements in the work with PDF files - looking up words in a dictionary, note-taking, underlying of passages in a given text, password protection of documents. Last but not least, it has to be pointed out that the new WebKit is based on a browser which allows free internet access and browsing.

Amazon, the undeniable leader in the sphere of electronic books, has taken yet another thing into consideration – it avoided the annoying clicking sound of the pages. The new Kindle model is equipped with silent buttons for page flick-through. Thanks to the wireless connection provided, you do not even need a computer in order to download or buy the next book for Kindle in less than 60 seconds.

V. CONCLUSION

With the sudden decrease in the demand for traditional printed books, the e-Book market has undergone a rapid development in the last few months. Understandably, the reason why is in the dozens of newly released electronic reader models, smart phones and tablets and they attract more and more people on a large scale.

According to analysers, people prefer to read their favourite books in electronic format, which has its logical explanation – it is easier and lighter to carry *The Lord of the Rings* in an electronic version than having the 1100 printed pages. At the same time, there are still many avid readers who consider the printed books to be the genuine ones, as it does make a difference when you can touch them or open their pages for real.

Despite the many different opinions of consumers and book enthusiasts, the electronic book industry has definitely extended its scope and this progress will continue in the future.

For the first time in December last year, the sales of electronic books exceeded those of the printed ones. The

statistics were displayed in the popular online store Amazon on 25 December, TechNews.bg stated. The best-selling product there was the electronic book reading device, Kindle [9].

The electronic revolution in book publishing is now at its height. According to data taken from a written report by the American Publishers Association, the electronic book sales in the USA have increased by 115.8% for the first month in comparison to January 2010, quoted Reuters [4]. With this data the association also indicates that the interest in digital editions has had a negative effect on the sales of printed books, having dropped by 30% for the first month of the year [6].

These statistics show a continuous tendency of switching to electronic versions. In January, one of the biggest on-line shops, Amazon, announced that in 2010 it sold more electronic books than paper ones. For every 100 paperback books the company sold, the website sold 115 electronic editions for its Kindle device, and with hard copies the ratio was almost 3:1. As a reading device, Kindle itself is product with number one sales in the whole history of the company.

The sales of hard copy editions have dropped by 11.4% and the sales of paperback ones have dwindled by 30%, according to estimates made by the association. Overall, the book market in the USA has shrunk by 1.9%. The only category which still remains relatively undisturbed is the educational paperback editions.

Similar is the situation in Bulgaria – according to data sent by BG Book, one of the companies responsible for the distribution of electronic literary editions, more and more publishing agencies turn to electronic versions, either in parallel or at the expense of paperback editions [9].

On the other hand, the paperbacks continue to be of preference to the educational sphere. Lecturers and teachers still support the idea that the education of pupils and students should stick to the same-old educational standards. The electronic books, however, have been approved by publishing houses and new authors as a key element in achieving greater demand and higher profits.

REFERENCES

- [1] <http://chitanka.info/lib/liternews>
- [2] <http://gizmodo.com/5629812/5-reasons-why-best-selling-authors-are-going-direct>
- [3] http://myebook.bg/?page_id=218
- [4] <http://pressboard.info/article/131057>
- [5] <http://technews.bg/product.php?pid=19762>
- [6] http://www.dnevnik.bg/tehnologii/2011/03/18/1061428_prodajbate_na_elektronni_knigi_sa_se_uvelichili_sus/
- [7] <http://www.ebookarchitects.com/conversions/formats.php>
- [8] <http://www.the-ebook.org/?p=7384>
- [9] <http://www.trud.bg/Article.asp?ArticleId=330060>