

ELECTRONIC PUBLISHING IN ACADEMIC ENVIRONMENT

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The article informs the reader about various forms of electronic publications, about the various possibilities of publishing themselves ways of their security and also about the ways of creating these electronic publications. It also includes a draft of realization this electronic publications, draft of security of electronic publication and draft of way of publishing these publications in the academic environment. There are mentioned also the ways of using these electronic publications in the article.

Keywords: EPUB, electronic publishing, electronic publishing

1 INTRODUCTION

The electronic publishing theme is extremely actually at present because of fast development of information Technologies. The most needs are to attend to this theme if we focus on academic environment. Electronic publishing on the foreign universities is at a higher level. The aim of our effort was to support electronic publishing in Faculty of Aeronautics, create new opportunities of creating educational resources and bring the new view on educational process by using electronic publications in Faculty of Aeronautics.

2 ELECTRONIC PUBLICATION

Electronic publication is a medium to social communication differing from traditional types not by content but by formal characteristics especially by digital way of recording information. It is set of information as computer file format which can be displayed by all types of computers including devices made for reading e-book especially.[1]

Electronic publications are able to contain a multimedia content as audio, video or various animations. They are also able to contain internet links, which can to add or extend hashed issue. The individual electronic publications can be different by size, structure, style of writing and so on. We can mention some of these electronic publications e.g. electronic textbook, electronic book, scientific article, scientific magazine. Electronic publications have to satisfy characteristics as the ability to change text formatting, division of the document into smaller parts with the creation of hypertext links structure, easy formal transformability, possibility condensed text to minimizing information loss and interactivity document, to be more useable for readers. If electronic publication has these characteristics readers can use benefits of this publication forma as easy handling with data, incorporation of multimedia formats in electronic publications, possibility of speedy data transfer and making copies without reducing the quality of the original.

3 PUBLISHING IN ACADEMIC ENVIRONMENT

Publishing in an academic environment can be characterized as an activity aimed at the production and

distribution of documents publishing within the faculty. In the field of electronic publishing in academic environment is PDF the most widely used format for electronic documents.

In electronic publishing is important to address the issue of copyright protection. Copyright belongs to the field of intellectual property. It is about literary and other art work and scientific work, which is the result of author's own intellectual creation. One option for providing electronic publications is to use DRM - Digital Right Management (digital rights management). Based on the level of protection we can decide between hard and social DRM.

Hard DRM is a form of protection, which requires for its operation the user's authorization and his teleprompter. *Social DRM* on the other hand deals with protection of electronic books only against sharing and dissemination on the internet. To protect the dissemination of books are used security features that combine the book with the buyer. Using hard DRM we can choose between three main providers of DRM security – *Amazon DRM* (based on original encryption Mobipocket and it is applied on MOBI format), *Adobe DRM* (dedicated for EPUB and PDF formats), *Apple FairPlay DRM* (applied on EPUB format and at present it is able to use it in iBooks Apple app on iOS devices).

There is able to use some ideas of *Open Access* in problem of electronic publishing. It is about reaching free availability of literature on web. The main benefits of open access are unlimited availability of high quality scientific works, fast sharing of new knowledge, effective scientific communication, propagation of the authors and the results of their scientific work, greater using and greater resonance of publications, higher impact publications (outputs from projects supported by public funds), as well as visibility results of scientific institutions (increasing its prestige).

On the idea of Open Access work *Creative Commons* License too. They are open licenses, which cover all potential users of the work. Licenses is added to Copyright Act and enable to publish author works, so that the author has a greater opportunity to decide how can be his work used.



Figure 1. Example of Creative Commons licenses label

The author can choose from the following licenses:

- *Attribution* – State the author (abbreviated by): Allows others to reproduce, distribute, exhibit and derivative works with requirement to state the author.
- *Noncommercial* – Not to use the work commercially (abbreviation nc): Allows others to reproduce, distribute, exhibit work and derivative works for non-commercial purposes only.
- *No Derivative Works* - Not to interfere in the work (abbreviation nd): Allows others to reproduce, distribute, exhibit work only in its original form, not derivative works.
- *Share Alike* – Propagate it without changing the license (abbreviation sa): Allows others to expand to other derivative works only under conditions of use license identical to derivative works.

Author can choose from these licenses – on the basis that are determined rights for others users of the work. Currently, for non-compliance with copyright law SR is Slovak localization of these licenses unavailable. But it is possible to choose an international license. [6]

For the distribution of electronic resources is good to use management systems of digital libraries. Digital library is a library which collections are stored in digital formats and they are accessible by computers. Systems managing digital libraries can be except publishing electronic publications used in publishing scientific journals, scientific papers and any digital content (audio, video, presentation, etc...) too. They also allow to store metadata of publications which are not in digital form and they are stored on a fixed medium (CD, DVD, etc.). The user can order printed version then and personally pick it up at a specific location.

Library systems can also be used to publish scientific articles. But there are other and more effective ways to visualize these articles in access open access. One of the opportunities is to use *Libraries of electronic magazines – Elektronische Zeitschriftenbibliothek*. It is the project of university library in german Regensburg. Project is open, not only for university libraries from german spoken countries, but it is for all Professional libraries in Europe.

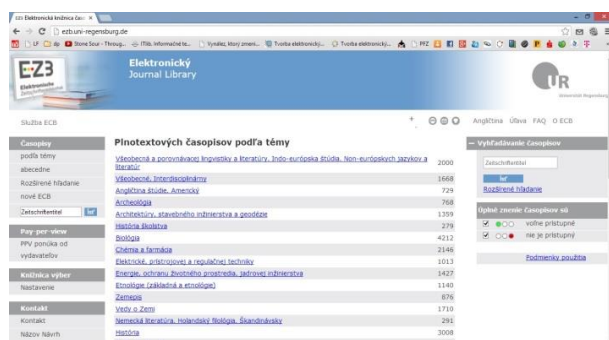


Figure 2. Library of electronic magazines - Elektronische Zeitschriftenbibliothek

4 TECHNOLOGIES OF CREATING OF ELECTRONIC PUBLICATIONS

4.1 Format of electronic publications

There is not only look of text depending on format of electronic publication, but especially the possibility to open this publication overall too. Depending on the use of electronic publications, the three most commonly used formats of distribution of documents - EPUB, PDF and MOBI.

The most widely used format of e-books is the EPUB format. The reader can optimize the text for specific imaging equipment. The format is created on XHTML which gives it great support for creating and viewing the document. In creating or editing can be added various objects of audio or video to electronic publications too. The big disadvantage of the format is that it does not support e-book reader Amazon Kindle.

The next very frequent format is *Portable document format (PDF)*. It is an open file format created and developed by Adobe Company. [4] It is the standard ISO format since 2008. [5] The advantage of this format is that a document is always displayed equally on any device. PDF files are able to include vector and bitmap images. It may contain other various objects such an audio, video, hypertext too.

MOBI format is developed by Amazon Kindle. It is based on the Open eBook standardly using XHTML language. This format is binary, which means that after addition of all the parts of the content file is compiled and the one resulting file is created. This format is very popular because of its accessibility, openness and wide support for mobile platforms.

Table 1. Compare electronic publications formats

Properties/Format	Reflow table text	Support Adobe DRM	Support e-book readers devices
EPUB	yes	yes	except Amazon Kindle
PDF	no	yes	most devices
MOBI	yes	no	most devices (also Amazon Kindle) except Nook

We can see in Table basic properties the most used formats in electronic publications.

4.2 Tools for creating electronic publications

If we want to create a high-quality electronic publication, we need quality software. As we tried to make our solutions available without the financial burden, all the recommended software is freeware. Despite the free license, this software offers all the functions you need to a create high-quality electronic publication.

The first possibility for creating electronic publications is using *text editors*. A text editor is a program that is used when working with a text. It is used

for text editing – it allows us to write a text, modify, rewrite, or amend its parts, print it on paper. It enables to make adjustments and corrections in the document while typing. An example of such text editor is *Notepad* which is part of Windows operating systems.

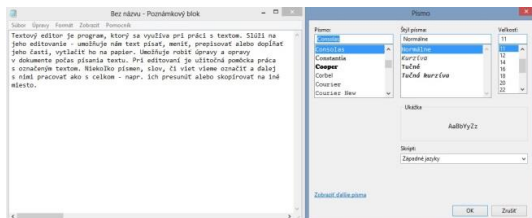


Figure 3. Notepad with editing fonts

The second possibility is to use a *word processor* with WYSIWYG feature. These programs have the options for automatic creation of content, register, and allow inserting images into a text in a variety of formats. They enable to create simple images. The word processor stores the additional information about the appearance into a text, which are not displayed in WYSIWYG mode. The best known and most widely used word processor based on Windows operation system platform is *Word* by Microsoft Corporation. It is part of MS Office.

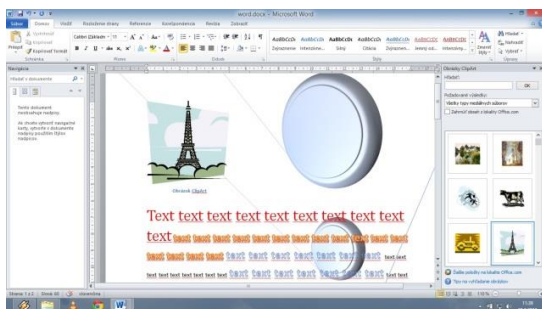


Figure 4. MS Word

Another technology that can be used when creating electronic publications is *DTP programs (desktop publishing)*. From word editors and processors they differ in higher quality, accuracy and broader possibilities, but in some cases also in price. An example of such software is a program *Scribus*. It is an open source program developed by the Scribus Team group. It enables the WYSIWYG screen output when creating documents. It is particularly useful for users who have no knowledge of formatting TeX-u commands.

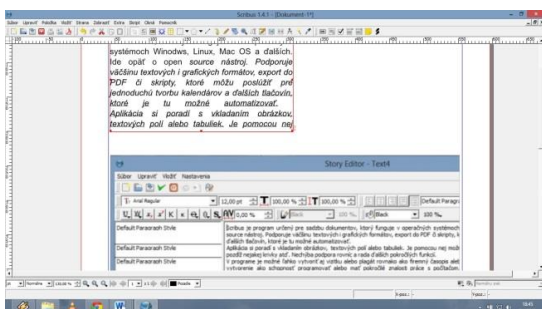


Figure 5. Scribus

Another of the available DTP solutions is the Open Source program *Sigil*, which is ideal for users who are familiar with HTML code, but it also allows the creations of electronic publications in the WYSIWYG editor.

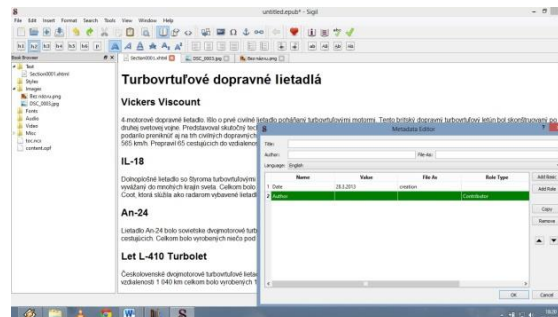


Figure 6. Sigil

When creating electronic publications we have to mention *programs designed for font rate* such as TeX and LaTeX. They are often used in the academic environment. Text formatting is done by the agreed text commands directly in the text, as when programming. LyX is a program developed by The LyX Team. It is an extension of LaTeX. LyX produces text outputs in the format for processing by TeX or LaTeX tools.

When we want to include well-prepared pictures into electronic publications we need quality software for their processing. Graphic editors can be divided into vector and bitmap.

One of the freely available vector graphic editors is *Inkscape* produced by The Inkscape Team. Advantages of the program are easy work with vectors, free license, a lot of functions and filters, work with SVG, and easy export to PNG.

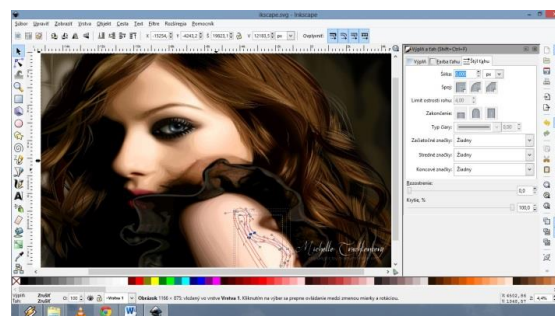


Figure 7. Inkscape

From variety of bitmap editors, we can choose an open source application *GIMP*. The advantages of GIMP are as follows: it's freeware, it supports many different platforms and allows you to work with layers, it has comparable features with Adobe Photoshop and it's functionality can be extended using plugins, which are also free to download.



Figure 8. GIMP

If you find yourself in a situation, where your electronic reader device does not support a given format, we advise to use the *Calibre* application. It's a quality freeware application by Illusion Software. It allows you to edit existing documents. You can take any format, and export it or import it into your personal electronic reader device. On top of that, the application provides you with quality user friendly interface. Thanks to all of that, this is a great tool to manage e-books, regardless of its format.

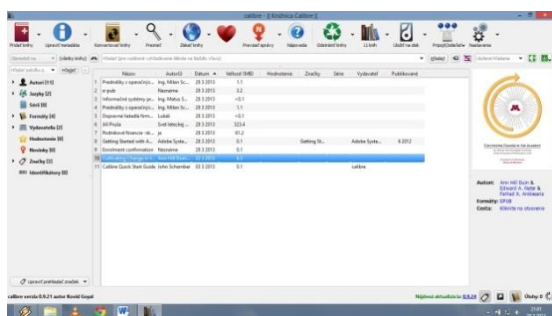


Figure 9. Calibre

There are two common ways, to create an electronic publication. The first option is to prepare your text in your preferred text editor or text processor, followed by a conversion into the required format. Second option would be to use one of the specialized applications for electronic publications, with which you can create your electronic publication directly in the preferred format. Then if required, you can always use an application for converting your electronic publication into another format.

5 REALIZATION OF ELECTONIC PUBLICATION

To create electronic publication we chose EPUB format. Main reasons were ability to configure size of screen and big software and hardware support.

As the best option for creating the electronic publications we chose *DTP program Sigil*. DTP program Sigil is available for all spread out desktop operation systems (Windows, Linux and Mac). The Program is well arranged, intuitive, enable to insert and format text (type of font, size, ect.) and also insert pictures, sound and video, including creation of cascading style (CSS) and metadata.

From the very beginning the creation of the electronic publication consists from insertion and formation of the text, pictures, creation of metadata and also this newest format version EPUB 3 enables to insert sound and video. The last step is to save the electronic publication as EPUB format. Text is possible to create several ways. The text can be created directly in the WYSIWYG editor. The second option is to use XML editor. The third option of creation is to insert already created XHTML or XML file.

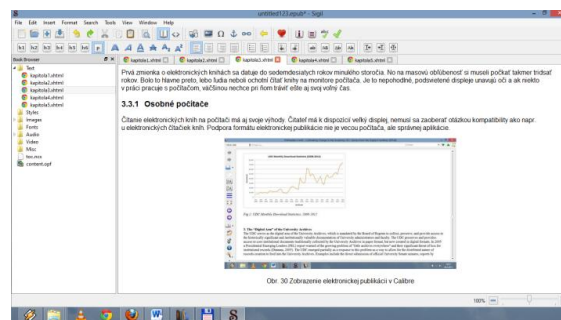


Figure 10. Sigil – WYSIWYG editor

The EPUB format (EPUB 3 version) and Sigil program enables us to insert audio and video files in to the electronic publications. Supported audio formats are: aac, m4a, mp3. Supported video formats are: m4v, mp4, mov, org and webm.

For easier arrangement and searching in the electronic publication in the list of publication we have to create metadata. The Sigil program enables it by Metadata Editor Tool.



Figure 11. Metadata Editor

The Sigil Program enables to save electronic publication only in EPUB format. If we want to convert already created electronic publication to different format we can use a convert book tool in Calibre Program.

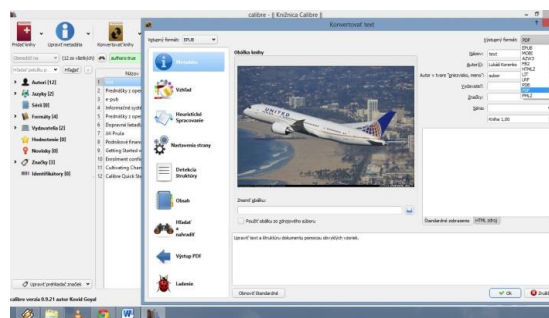


Figure 12. Calibre - format conversion

Created electronic publication may be beneficial for educational process on Faculty of Aeronautics. They are not increasing the costs and can be offered for lower price than printed publications. Since electronic publications are allowing us to attach, or insert multimedia files into the document, we think that this type of publication will be interesting for the students. Electronic publications are allowing the students advance of mobility. There is no need to wear the large number of books, there is required only one device, which will allow us to store and read all of the publications. Also accessing the publications that are published online can be done in much easier and faster way.

Regarding copyright question we've decided to use open license from Creative Commons. Main reason was that technologies such as Adept DRM, Amazon DRM and FairPlay are paid technologies. Choice of license can be seen on Fig. 13.



Figure 13. Choose Creative Commons license

Document protected by license Creative commons can be seen in Fig. 14.



Figure 14. CC license in PDF document

We need control system for management of digital libraries for distribution of electronic publications for students of Faculty of aeronautics, possibly for the general public. We've suggested system DSpace for its prevalence, possibilities of viewing the electronic publications and basically - because of price.

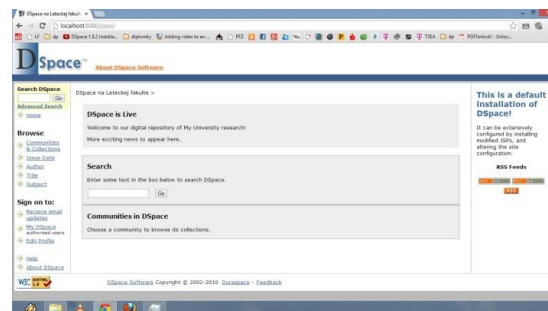


Figure 15. DSpace in Faculty of aeronautics

6. CONCLUSION

Our primary aim was to design process of creating and publishing electronic publications for needs of faculty of aeronautics without creating expenses on creating and publishing. Therefore all used software is freeware or open source. Result of the design is certain process of creating and protection of electronic publications. We've also designed use of system on control of digital libraries, which allows archivation and distribution of the electronic publications and also printed documents and any other digital content.

Manual for creating of electronic publications can be used to create educational resources. Electronic publications created by this way may be involved in improving of educational process on faculty of aeronautics. It doesn't increase expenses for publishing and can be offered to students or general public for lower price than printed books. Since electronic publications allow us adding multimedia files, we think, that this will be more attractive for students of Faculty of Aeronautics. Also this form of publishing is giving more possibilities of realization for the teachers. There are no financial expenses, no recalculation of return on investment, the only activity, which is needed for the electronic publication is time for publishing of electronic publication by our designed solution. Nowadays, probably each student owns smartphone, tablet, or e-book reader. Connection to the internet is also matter of course, therefore another advantage, that can be attractive for students of Faculty of Aeronautics are speed, how they can get study materials, or that there is no need for carry all books along, but they can have all stored in one device.

Also, we shouldn't forget also the constant development of IT and should be ready for different changes regarding creation of publications or publishing. What is actually today may be history tomorrow. For example we can mention prepared version of Creative Commons licenses 4.0. Another example can be the efforts of Creative Commons Slovakia to create Slovak localization for these licenses. Actually the Slovak republic is in preparatory phase with the aim of introducing system of licenses in the future.

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