Digital Rights Management - Creative Commons Perspective

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Abstract - This paper is addressed to an area with a significant development in recent years: Digital Rights Management (DRM). These data copyright can be applied to several types of digital materials as images, audio recordings, videos, and text. To be more specific, we present in the paper, Creative Commons (CC) technology, as an alternative to classical DRM. We bring in discussion layers and types of a CC license, and we include a study case of most popular platforms under CC license. We make some recommendations and extract some conclusions.

Keywords: DRM, Creative Commons, Public License, CC platform, video, audio, text

I. INTRODUCTION

According to the Romanian Copyright Office, Copyright is a legal term that it recognizes rights of creators of literary, scientific or any work of intellectual creation. Digital Rights Management (DRM) is an intellectual property right that the authors have over their creations. By creation, researchers refer to any material: photos, audio recordings, videos, written materials (text), etc. These rights represent a method of protection recognized by law, and they apply to everyone, regardless of status, education, race or religion [1]. The Romanian law, for example, gives the author the right to authorize or prohibit (quoted from the Law) [1]:

• Reproduction of work, distribution of work;
• Commercialization of copies with author approval;
• Renting work, loan work;
• Public communication of the creation directly or indirectly;
• Broadcasting the work;
• Cable retransmission of the work;
• Making derivative works;

These are the rights (patrimonial rights) that the law recognizes the author. Of course, there are some exceptions, but not major. Copyrights apply to published materials and unpublished materials, finished or unfinished. The material is recognized and protected by the simple fact of its implementation, even if it was not brought to the public attention [2].

Digital Rights Management is connected with systems that restrict access to the digital media space. It is a technology used by content providers to control the usage and distribution of images, digital music, video or files [3]. DRM fights against illegal modification, copying, viewing or distribution/distributing of digital media materials. Some of the copyright holders argue that DRM handles large losses due to illegal distribution of copyrighted material.

The DRM system is designed to adjust the dissemination of digital information for following types of digital materials: video, music, audio, electronic books, software, video games. The technology associated with DRM is intended to provide the seller control over digital content or devices after they have been entrusted to the buyer. Content owners may use different types of DRM to protect their intellectual property [4]:

• Restrictive Licensing Agreement controls access to digital materials, copyright, public areas, etc.;
• Encryption (Encryption);
• Scrambling control online information access and reproduction (e.g. backup copies for personal use);
• Digital signatures - provides secure content and allows secure transactions;
• Fingerprint/watermarking incorporating information about ownership to facilitate tracking and monitoring the use, copying and distribution [5].

II. ALTERNATIVES

Open licenses are those materials considered to be implicit protected by law and provide access to the work that can be reused and redistributed [4]. Creative Commons is a global non-governmental organization dedicated to supporting a free and open Internet, enriched through free knowledge and creative resources so that people everywhere can use them, distribute and develop [6].

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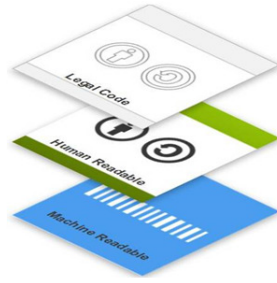
Fig. 1. Layers of a CC license [6]

All Creative Commons product licenses have common features. Any license helps creators (referred here as licensors) retain their copyright while allowing others to copy, distribute or use their contents. Licenses incorporate an innovative design with a structure composed of three layers: Legal Code, Human Readable, and Machine Readable (Fig.1). This organization has four types of items that may constitute the type of license required [7]:

Attribution: people using the material must give credit to the author.

Noncommercial: Individuals are not allowed to distribute, modify or re-use the material if the purpose is a commercial advantage or monetary compensation.

No derivatives: The material can be distributed, but must be kept in original form without modification.

Share Alike: The adapted or modified material should be distributed under the same Creative Commons license

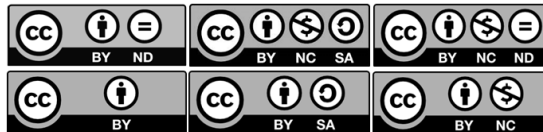Fig. 2 reveal the possible combination of CC licenses:

Fig. 2. Types of CC licenses [4]

Attribution CC BY - this type of license allows others to share, remix, modify/add to the original work as long as credit is given for the original work. This type of license is one of the most convenient services of this kind offered by Creative Commons (CC).

Attribution NoDerivs CC BY ND - allows redistribution (for commercial or non-commercial purposes)with the condition that the content is not altered.

Attribution-NonCommercial Share Alike CC BY NC SA – allows others to remix, add or remove parts from the non-commercial material with the condition to recognize the source and to license the new content respecting the same terms.

Attribution-Share Alike CC BY SA - offers the opportunity to remix, modify or add to the content (even commercial usage). The procedure has to be as described above at other licenses. CC BY SA is often

compared to open source software licenses. Any derivation from the original work will carry the same license. This type of license is used by Wikipedia and is recommended for Wikipedia materials that allow improvements or additions or may be used in similar projects.

Attribution Non-Commercial CC BY NC refers to non-commercial materials that can be remixed, modified, updated without the need for additional licenses for the resulted content.

Attribution Non Commercial No Derivs CC BY NC ND is the most restrictive of all licenses, allowing others only to download and share the content as it is, with the condition that they acknowledge the source, without being able to make changes or use for commercial purposes [7].

III. CASE STUDY - CC LICENSED PLATFORMS

There are a series of platforms, online applications that have collections of images, music, videos and documents that can be reused under certain restrictions related to copyrights. These can be divided into four categories, namely: an online database of images, an online database for audio-video materials, an online database of texts, and online database for multimedia searching applications. In the current study, we have identified those under Creative Commons (CC), cataloged with Alexa ranking and briefly described them.

Table 1

Application	Domain	Alexa Rank
Flickr	Images	130
Google images	Images	2.587.437
Pixabay	Images	1.040
Fotopedia	Images	169.411
Open clipart	Images	18.964
Instagram	Images	34
Kepguru	Images	265.400
Gorgraph	Images	57.189
Creativity 103	Images	349.467
Deviant Art	Images	160
Jamendo	Audio- video	20.233
ccMixter	Audio	62.954
Free sound	Audio	12.868
Sound cloud	Audio	176
Tribe of noise	Audio	1.436.736
Europeana	Audio- video	53.996
Youtube	Audio- video	3
Blip tv	Audio- video	14.975
Vimeo	Audio- video	172

Wisdom Commons	Text	447.235
Travellers point	Text	39.525
Intra text	Text	336.002
Creative Commons	General content	3899
Internet Archive	General content	234
Freebase	General content	1.740.431
Wikipedia Commons	General content	207

A. Images

Flickr, www.flickr.com is a site that hosts photos and videos. It enjoys great popularity among bloggers that store a lot of pictures for later use distributing them. It can also be used to a mobile phone or with a computer [8].

Google image, https://images.google.com is a search and storage platform for images that allows users to search the Web for image content. Keywords for the image search are based on the image's file name. When an image is sought, it displays a thumbnail. When the user accesses the image, it is displayed in a box on the website belongs to. The user can close the image and can browse the web, or view the full image in various sizes [9].

Pixabay, http://pixabay.com is a site that provides access to a database of high-quality images under free licenses. The images can be distributed and used without any restriction because they are shown under Creative Commons CCO dedicated to the public domain. Images can be copied, modified, distributed, and even used for commercial purposes without the need for permission or without having to pay for them. There is still the possibility that what is found in these pictures to be under the protection of trademarks or because of private rights [15].

Fotopedia, http://www.fotopedia.com was created by five former Apple employees and represents a database for images of photographers and authors who have entered a form of cooperation. The collaborators names have attached a hyperlink directly related to their personal website where you can find the entire gallery with high-quality pictures on various topics from around the world. Unfortunately, in July of 2014, Fotopedia management announced its cessation asking users to store their data in personal computers because if they did not, they would lose all materials stored on the company server.

Open clipart, https://openclipart.org is a digital media community that can store vector clip creations under a free license. The project started in early 2004 by the Inkscape developers desiring to collect specimens of flags from around the world. It had a positive development therefore objectives were extended to generic clipart.

Instagram, www.instagram.com is a fun and different way to share life with friends through a series of images. It was created from the desire to allow the sharing of life events through images as close to the time they occur. The application was named from a combination of two words: instant and telegram.

Kepguru, http://kepguru.hu is an online application, launched in Hungary that became very popular. To upload images is required an email address, username, password, and the users consent to the rules imposed by developers.

Gorgraph, www.geograph.org.uk at the moment of launching had the main goal to collect, publish, organize and archive the information or images representative of Great Britain, Ireland and the Isle of Man. Through this website was created access to a geographic database freely available to the public. All photographic observations are registered under a Creative Commons Attribution-Share Alike license granting those who access the site, rights to use the materials for any purpose, as long as credit is given to the copyright holder and that derivative works are used under the same license.

Creativity 103, http://creativity103.com is a source of photographic materials that has all sorts patterns and textures, unusual and abstract; all available for free under a Creative Commons licenses. It was released in 2001 due to the lack of sites for people who wanted to use textures and backgrounds in their projects. The platform currently contains more than 2500 files, 6GB of free photos. The downloads are designed to be used directly in the drawings, as layer textures or as a source of inspiration and ideas for further development.

DeviantArt, www.deviantart.com is described in Chapter IV.

B. Audio-video

Jamendo, www.jamendo.com is a music website and an open community of music authors. It is an economic model that allows free music downloads for Internet users while providing revenue opportunities for artists through commercial usage [11]. The name "Jamendo" comes from the fusion of two musical terms, i.e., "jam session" and "crescendo".

ccMixter, http://ccmixter.org is a website that offers remixed music under Creative Commons. It provides the possibility to download and listen to any type music anywhere, anytime and with anyone. Some songs may have certain restrictions, depending on the applied licenses. The site supports popular formats like MP3, WMV, OGG and others. Those who wish to upload audio material on this site are advised to archive their materials before sending them.

Free sound, www.freesound.org aims to create a database of audio snippets, samples, and records provided with Creative Commons licenses that allow reuse. It provides new ways to access materials by

browsing using keywords; uploading and downloading tons to and from the database under the same Creative Common License; also offers the ability to interact with other sound artists.

Sound cloud, https://soundcloud.com is the largest social music platform in the world, where any user can create sounds and can share them. Recording and uploading sounds on this platform allow users to share easily either privately with friends or on public blogs, websites, and social networks. Also, sound creators can use the platform to receive detailed statistics and feedbacks from SoundCloud community. It can be easily accessed via smartphone applications for iPhone and Android.

Tribe of noise, www.tribeofnoise.com is an ever-growing community that has at this moment 25,000 artists from 185 countries. It connects amateur musicians with professionals from the media and enterprises worldwide that need to provide music with all rights included. Independent artists can preserve their rights and at the same time, can take advantage of the best collective business deals.

Europeana, www.europeana.eu is an Internet portal that acts as an interface for books, paintings, films, art objects and archival records that have been digitized in Europe. These stored data on a single Internet address allow users to explore Europe's cultural and scientific heritage from early prehistory and until today [12].

YouTube, www.youtube.com is a platform that allows a large number of people to discover, watch and share videos. It provides a forum for people to connect, inform, but also to inspire others. You can find videos, TV clips, music videos, and other content such as video blogging, short original videos, and educational videos. The access to this content is free and can be made by any device as long as there is an Internet connection [13].

BlipTv, www.blip.tv belongs to Studios Maker. It develops, manufactures and distributes the best web original series from well-known productions to potential successful productions. Provides user's free access to a variety of materials of various types, such as drama, comedy, artistic, sports and other shows and makes facilitates the search with the help of keywords. Since it was launched in 2005, BlipTv turned into the largest platform for digital videos in the world, reaching hundreds of millions of views per month.

Vimeo, www.vimeo.com was released in November 2004 by a group of filmmakers who wanted to share their creations and special moments with the whole world and from lives. As time passed, more and more people have discovered the usefulness of this site and helped build a community to support people with a wide range of passions. It is possible to upload videos from all categories, but from July 2008 the site management does not allow the upload video games

tutorials, one reason being they're's extremely large size.

C. Text

Wisdom Commons, www.wisdomcommons.org is an interactive website containing a collection of over 3.000 poems, fables, essays and more that can be used without restrictions. It is a place to find and discuss the virtues of life that are considered important such as generosity, compassion or courage. As a user or member, you can search or insert quotes, sayings, meditations, stories or essays from all the places of the world.

Traveller point, www.travellerspoint.com is one of the largest and most active community of web travel with members representing every country in the world. This platform is designed for people seeking guidance before traveling or people who cannot decide on a destination for their holiday. There are more than 30,000 blogs that share stories over 175,000 and more than 1.4 million photos posted.

Intratext, www.intratext.com is an online library managed by experts, publishing works very accurate and with detailed scientific precision. It contains over 12 million written materials dating from 900 years BC to the present. A large amount of materials are licensed under the Creative Commons Attribution-NonCommercial-ShareAlike allowing others to modify, remove or add to a work (to non-commercial materials) with the condition to recognize the source and to license new content in compliance with the same terms.

D. General content

Creative Commons, www.creativecommons.org is designed in such a way as to ease the searching process for the types of materials on the Internet under free licenses and at the same time to link the existing platforms through a single interface. This site is not a search engine but a platform that provides access to other platforms, such as the ones presented above in sections A, B, and C.

Internet Archive, www.archive.org is an on-line library whose main aim is to provide permanent access for researchers, historians, students, people with disabilities or the general public to historical collections of all types of materials that may exist in digital format. Currently, Archive includes materials as text, audio, moving images, and software as well as archived web pages in their collections and provides specialized services for people with disabilities and the blind.

Freebase, www.freebase.com was launched as a search engine powered by the community for all kinds of materials under free licenses. It contains approximately 20 million subjects. Most of the items are related to several categories such as people, places, books, movies, etc. Therefore, when searching

for a specific title, it might be found in many categories and topics at the same time. From March 31, 2015, the platform became "read-only" meaning that materials can no longer allow additions or modifications of any type.

Wikimedia Commons is an on-line storehouse for images https://commons.wikimedia.org, sounds, and other media files. This deposit is not created, maintained and developed by specialists, but by volunteers who enjoy collecting and archiving multimedia content. Materials found on this site can be used by anyone who has Internet access, whether or not they possess a user account [14].

IV. TUTORIAL

We developed a tutorial for uploading images on Deviant Art. The results can be follow-on to the address:http://mihai.cm.upt.ro/projects/atracting/tutorial/DeviantArt and consist of next step:
• Account creating;
• Profile settings;
• Submitting one photo or collection;
• Settings for resolution, watermark, tagging, Creative Commons characteristics;
• Uploading;
• Results: an image with the important metadata displayed and with the characteristic established in preview steps.
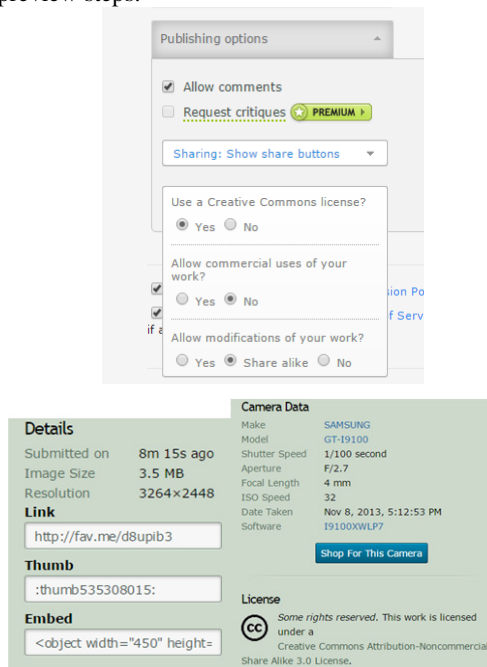

Fig. 3. Deviant Art

The platform has free account version, but after creating the account, the site offers the opportunity to buy "premium membership". It has a storage space of 10GB compared to 2GB the classic one. The update to premium can be monthly or on a one-year period, the price being $ 2.49 a month, and for a whole year to 29.95 dollars. It is a platform that gives artists and art lovers the opportunity to interact in different ways with each other. Application developers support the movement for creative expression liberation so that the access is unlimited allowing any user to create a cultural context to how art is created, discovered and shared. From August 2000 until March 2013 the site registered over 25 million members and over 36 million visitors.

V. CONCLUSIONS

Digital Media is part of the life of each as it is the quickest form of information dissemination, yet the instant access to a huge volume of information has both positive and negative effects. Positive because information can travel the World in just minutes, and negative because it is very difficult to monitor a large volume of content. The described platforms represent just a part of what the Internet has to offer as the criterion collection of materials under copyrights. The current paper is the result of the first approach into the world of these kinds of applications. Imposing Copyrights for materials created in digital media should be a priority as big as it is imposing copyrights applied to materials that come from traditional media. Because of the digital media evolution and the Internet it has become possible for widespread and free or almost free, distribution of copyrighted works to take place. Creative Commons developed and made available several easy to use copyright licenses known as Creative Commons licenses (CC licenses). It comes to help content creators to make their materials available for others to access and reuse or limit their rights completely.

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