Web 2.0 and Medical Physics

Web 2.0 und Medizinische Physik

Web 2.0 is a catch phrase that describes a new way of using the internet. O'Reilly Media came up with the term in preparation of a congress in 2004 [1]. The users are no longer only consumers but need to be considered as co-developers, in a reflection of open source development practices [2]. Blogs, Wikipedia and eBay are well known examples of Web 2.0 applications. Although there is no clear definition of Web 2.0, there are two main characteristics: the contents are for the most part added by the users and the services or applications are made accessible via a web browser [3]. As it is difficult in many cases to distinguish between services and applications, in the following the item *application* is used.

Many applications are in parts related to medical physics or especially dedicated to it. They might be divided in platforms offering the exchange of information and data, services and objects. Some applications are listed and described below.

Mailing lists

The participation in a mailing list is either possible using an email client program or the mail function of a provider in a web browser. The contributed mails are often stored in a database and a search function is offered. Mailing lists are used to solve open questions or provide equipment information to other participants. They are either operated by vendors or by medical physics societies [4-7]. A good overview can be found on the homepage of the American Association of Physicists in Medicine (AAPM) [8].

Web forums

One forum which can be found in the AAPM link collection [8] is MedPhys Files [9]. The focus of this forum lies on the exchange of data and program files. All files are distributed under the MIT (Massachusetts Institute of Technology) open source license. Two other forums are related to radiotherapy, but are also of interest to the medical physicist [10; 11].

Other forums are used to share experiences about equipment and software [12; 13].

Journals

Open access journals are scientific journals that are available online to the reader without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.

In 2006 the Nature journal started a peer review trial. The idea was close to the Web 2.0 concept: In addition to open access to the submitted manuscript anyone could post signed online comments. However the reception was bad. Some authors expressed concern about possible scooping and that is a reason for choosing a traditional closed peer reviewed journal [14]. Although the results of the trial were disappointing they don't disprove the hypothesis that open peer review could one day become accepted practice [15]. But it might be difficult to gain a citation index for such an open peer review journal and so economic reasons could additionally reduce the number of contributions.

Encyclopaedias

The best known open encyclopaedia is Wikipedia [16]. The guidelines result in a certain quality of the articles but admittedly they are no guarantee for correctness. An expert-led investigation carried out by the Nature journal comparing Encyclopaedia Britannica and Wikipedia showed similar results in accuracy and number of serious errors in science entries [17]. There are a large and increasing number of articles related to medical physics. Every internet user can correct or add articles. In some cases it is helpful to read the relating article in another language, because not all articles are translations. Pictures are marked whether they are free to copy, distribute and/or modify under the terms of the GNU Free Documentation License [18].

A competing encyclopaedia for medical physics has been established by the EMITEL Consortium [19], but the contributors are members of a restricted group of persons and are hence not part of Web 2.0.

Blogs

As for Web 2.0 there is no clear definition for Blogs, but there are some characteristics: chronological entries to a certain issue or subject from a personal view, typically updated on a much more regular basis than homepages [20; 21]. In the majority of cases blogs include a large number of links, either to another part of the blog or to refer to other blogs. Such a *blog* or *weblog* might give insights in the daily work and problems of a medical physicist. Visitors could add their comments or advice. No Medical Physics related blog was found using web search engines.

Others

On an *online auction* and *shopping website* like Ebay equipment such as linear accelerators, X-ray radiotherapy devices or dosemeters can be found or offered.

At *online bookmark collections* as Del.icio.us [22] web addresses can be added by (registered) users [24]. Marking the web addresses with keywords in the form of "tags" helps finding related links: in July 2009 there were more than 800 queries for "medical physics".

Photo sharing services allow uploading and downloading of tagged photos [23]. Information should be given whether they are free to use or protected by copyright.

At *video sharing websites* or *services* also videos related to medical physics may be shared. Different types of videos are found: interviews, documentations, product presentations of companies, teaching videos and lectures.

This survey shows that Web 2.0 offers a lot of options for medical physicists. Some of them are well established like mailing lists, bookmark collections, online auction websites like Ebay and encyclopaedias like Wikipedia.

Others like blogs are either not existing or barely or not used and there is the chance for more offers. A more intensely usage of the applications of Web 2.0 might help all medical physicists to obtain up-to-date information. Medical physics societies should facilitate these activities offering link collections or establishing web forums on their homepages.

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