Chapter 16

Implications of Web 2.0 Technology on Healthcare:
A Biomedical Semantic Blog Case Study

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ABSTRACT

Now that the health and medical sector is slowly but surely beginning to embrace Web 2.0 technologies and tactics such as social networking, blogging, and sharing health information, such usage may become an everyday occurrence. This new trend is emerging under the Health 2.0 umbrella where it has important effects on the future of medicine. This chapter introduces some important Health 2.0 concepts and discusses their advantages for health care and medical practice. In addition, this chapter provides a case study for building a Semantic Blog for Gene Annotation and Searching (GAS) among social network users. The GAS Blog enables users to syndicate and aggregate gene case studies via the RSS protocol, annotate gene case studies with the ability to add new tags (folksonomy), and search for/navigate gene case studies among a group or cross-groups based on FOAF, GO, and SCORM metadata. The GAS Blog is built upon an open source toolkit (WordPress) and further programmed via PHP. The GAS Blog is found to be very effective for annotation and navigation when compared with the traditional gene annotation and navigation systems, as well as with traditional search engines such as XPath.

INTRODUCTION

Recently, a new wave of web technology and interactive tools in medicine and health care has been called Health 2.0. Unlike traditional eHealth technologies, that only allow web users to accept information passively, Health 2.0 provides web users with the ability to actively modify web information. Health 2.0 services, applications, and tools are defined as "participatory health care characterized by the ability to rapidly share, classify and summarize individual

health information with the goals of improving health care systems, experiences and outcomes via integration of patients and stakeholders" (Furst, 2008, p.2). Such tools enable (1) social networking; (2) participation; (3) openness; and (4) collaboration within and between user groups (Eysenbach, 2008). Actually, Health 2.0 tools are built on the new vision of the future of the Web or what is known as the "Web 2.0" initiative. Web 2.0 aims to enhance creativity, secure information sharing, collaboration, and functionality of the web. Web 2.0 concepts have led to the development and evolution of web-based communities and their hosted services, such as social-networking sites, video sharing sites, wikis, blogs, and folksonomies. The term became notable after the first O'Reilly Media Web 2.0 conference in 2004 (O'Reilly, 2005). What seems clear is that Web 2.0 brings people together in a more dynamic and interactive space.

The vast implications of Health 2.0 are now beginning to appear. Many sectors in the healthcare industry are rethinking their fundamental business model; and many health care organizations are investing in information technology and implementing e-Health programs. Additionally, e-Health initiatives, such as Web 2.0, have the potential for significant improvement of the health status in rural communities. Giustini (2007) provided a summary of useful Web 2.0 applications in medicine (e.g., Ves Dimov's Clinical Cases and Images Blog; Ask Dr. Wiki; Ganfyd; and PubDrug). MacManus (2008) provided the top ten Web 2.0 applications in medicine (e.g., Patients-LikeMe; Sermo; DoubleCheckMD; Vitals.com; Carol.com; and MyMedLab). Besides various medical websites and portals offering different medical and health services, there are various kinds of e-health systems focusing on:

1. ***Health related web sites or portals*** offering health related information for patients or health professionals.

2. ***Virtual communities and online support groups*** where people share experiences and information about their disease and provide emotional support to each other.

3. ***Electronic Health Records (EHR)*** used in the clinical environment by health professionals and online Personal Health Records (PHR) where the individual is the owner of his/her medical records.

4. ***Home care and chronic disease management systems*** used to monitor chronic diseases at home, to monitor elderly people or to communicate with professionals from home.

5. ***Telemedicine and teleconsultation applications*** in areas such as dermatology, ophthalmology, radiology, and psychiatry, enabling collaboration between health professionals and communication with patients.

Figure 1 illustrates some of the Web 2.0 applications in health care.

Web 2.0 is successful in supporting some of these major e-health applications; however, blogging and tweeting are the most popular Health 2.0 applications as they have made it possible for ordinary users to publish on the Web, and thus become content producers instead of content consumers. A number of blogging and tweeting platforms such as Blogger, WordPress, Twitter, TypePad, or Movable Type allow users to publish almost any kind of data on the web. Blog authors manage their own content in their own blog, structure it through time in the form of discrete blog entries, and are able to categorize these entries (Möller, Breslin, & Decker, 2005). It is also possible to comment on other people's entries or refer to them through links (trackbacks, pingbacks). Most blogs provide a so-called newsfeed that acts as a syndicated table of contents. These feeds are usually published alongside the blog at a separate URL and can contain various kinds of metadata for each entry (e.g., a title, short description, date, author, link). Feeds are used by blog or newsread-

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