

# **Enabling collaborative eHealth research using Web 2.0 tools**

Martin Szomszor, Dasun Weerasinghe, Patty Kostkova, Gawesh Jawaheer  
City eHealth Research Centre,  
City University, London, UK  
firstname.lastname@city.ac.uk

***Abstract:* In this paper, we describe two Web 2.0 based systems designed to facilitate and enhance collaborative eHealth research activities. Using a combination of Forums, Wikis and connectivity to 3rd party social networking systems, we have designed systems to support collaborative document creation (including editing, reviewing and publication), dissemination of material to relevant communities, discussion of ideas, and sharing of opinions. The ECDC Field Epidemiology Manual Wiki and Medicine Support Unit Online Forums are presented herein, including an overview to the system architectures, and user interaction models. We present our planned methods of evaluation, focusing on the ability to measure successful and sustainable community involvement.**

## **Introduction**

In recent years, the Web has evolved from a static, publish and consume oriented platform to a dynamic and interactive shared space where users can easily publish material, view and comment on other people's contributions, and connect easily with others via social networking. This new generation of the Web, or Web 2.0 as it is commonly known, supports a wide range of services that enable lightweight publishing (Blogs), collaborative knowledge creation (Wikis), and sharing of ideas and opinions (Forums). Much interest is developing [1,3] into how these tools can be used to support better eHealth related activities, including teaching and research. Wikis have been successfully used as platform for the creation, dissemination, and management of teaching materials [4,5], and Forums have been utilised to enable question and answer type discussions between both citizens and healthcare professionals [2]. In the following Sections, we describe two systems developed to support eHealth research activities: the ECDC Field Epidemiology Manual Wiki (FEM Wiki) – a system for epidemiologists to collaboratively build, review, edit, and publish a training manual using a community of professionals and students; and the Medicine Support Unit (MSU) Online Forums – a discussion site for Optometrists.

### **MSU Forums ([www.med-support.org.uk](http://www.med-support.org.uk))**

An Online Forum is a web application that hosts discussions and postings from online users, much like a bulletin board. Posts are organized by threads (or subjects), where a history of all comments on a particular topic is kept. This kind of interaction model is particularly suited to question and answer situations: a user with an inquiry starts a new thread with their question or comment as the subject. Others may respond, giving their ideas or opinions on the matter, creating a conversation between all contributors.

Medicines Support Unit (MSU) for Optometrists website brings together resources for optometrists in the UK. It is dedicated to providing a web resource that supports optometrists in the safe and effective use of drugs. This project is funded by the Central LOC Fund and the College of Optometrists. The Online Forum is the latest phase in the development of the MSU website. Its function is to act as a discussion board on topics relating to prescribing and therapeutics. It also has the potential to create networking opportunities and develop a community of optometrist prescribers. Forum users can create topics related to the field of optometric and reply to the existing topics and posts in the site. Meanwhile, the user can choose to receive an email alert when a reply is received to a posting and administrator can make decision on approval and un-approval of posts in the Forum.

### **FEM Wiki ([www.femwiki.com](http://www.femwiki.com))**

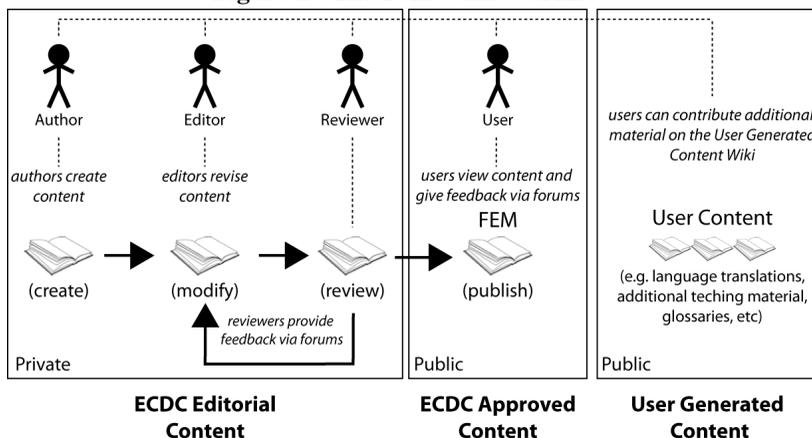
The current ECDC Web Portal <http://ecdc.europa.eu> serves as a principle access point for information relating to disease control, including news, upcoming events, recent publications, and press releases. As part of this Web Portal, ECDC will host a Wiki platform to enable the sharing of information between experts and professional networks in the EU. Central to this effort is the Field Epidemiology Manual (FEM), a set of essential training materials reflecting the core competencies required by intervention epidemiologists. The European Program for Intervention Epidemiology (EPIET) has developed 18 draft chapters of 'lecture notes' from the core scientific lectures in this training program.

The aims of the FEM Wiki are twofold: (i) To provide a platform on which the Field Epidemiology Manual can be created, edited, reviewed and updated easily by a number of contributors. Using state-of-the-art Web2.0 technology, the FEM Wiki enables collaborative document creation and supplements coordination between contributors through the use of online Forums. The FEM Wiki will automatically maintain two versions of the Field Epidemiology Manual: a private, editable version (visible only to authors, editors, and reviewers), and a public, non-editable version (visible

to anyone that visits the site). Once material in the private version has been edited, properly formatted, reviewed, and deemed suitable for public dissemination, it can be published to the public version where it will remain static and officially approved by ECDC. This separation will allow ECDC to maintain control over the content and ensure that only quality-assured material is made public. (ii) To create a social network for individuals interested in field epidemiology, such as EPIET fellows, EPIET Alumni, ECDC staff, academics, researchers, professionals, teachers, and students. This network will enable people to advertise their affiliations and expertise, link-up with others sharing similar research interests, provide help and advice to others, disseminate new ideas and opinions, create a share useful material, and to generally foster a community centered on epidemiology research. Users of the FEM Wiki are given the opportunity to create profile pages that lists their interests, areas of expertise, professional affiliations, and links to other online profiles (such as Facebook and Twitter).

The FEM Wiki has been implemented using the Telligent Community platform ([www.telligent.com](http://www.telligent.com)). Figure 1, shows a high level overview of the reviewing, editing, and publishing workflow: Users of the system are assigned one of four roles: 1) User, 2) Author, 3) Editor, and 4) Reviewer. Once authors, editors, and reviewers have finished creating the FEM content, pages are published to the ECDC Approved Content Wiki where anyone can view it. Users may comment on the articles and discuss the content using the Online Forums but they may not edit them directly. Users may also generate their own content, such as language translations of the FEM, additional teaching materials, glossaries of terms, etc. using the User Generated Content Wiki.

**Figure 1 - The Fem Wiki Workflow**



## Planned Evaluation

Standard logging of both the FEM Wiki and MSU Forums will be undertaken, recording the number of visitors to pages, the number of Wiki edits made, the number of Forum posts made, visitor geo-location, etc. Such a log will enable us to perform a number of interesting evaluations:

- How does the community grow over time? Little is understood about the dynamics of online communities. Our intention is to gain better knowledge of how new communities evolve over time, in terms of the number of users, how active they are, the amount of interaction between users, the amount of new material contributed. One important point is to investigate how links with Social Networking Sites effect the growth of communities.
- What is the relationship between feedback and contribution? With the FEM Wiki, we will have detailed logs of the comments made by reviewers (and users once the page is made public) and an edits that are made as a result of them. Such logs will enable us to measure the improvements made to articles over time, and assess how feedback and commenting affects the quality of pages.
- How does the behaviour of users differ? Using information gathered about site users from other sources, such as academic publications, their activities on other Social Networking Sites (e.g. Twitter, Delicious.com, Facebook), their professional affiliations, we will identify correlations between user behaviour and their identity. We also attempt to profile users, i.e. classify them by activity and connectedness, and identify whether these traits are universal.

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