VOLUME 17, 2004

NUMBER 2

Editorial: Online SCAR Expert Hotline

A NEW ONLINE RESOURCE, the SCAR Expert Hotline Archive, has debuted in March to make one of the Society's most valuable member assets more usable and more widely available. Accessible at <http://scarhotline.mcw.edu>, the site combines all past questions and responses into a searchable, indexed database that will allow for regular incorporation of new material. The SCAR Expert Hotline is already a popular free service that allows members of the Society to submit questions about clinical implementation of information systems in imaging. Questions are sent out to a group of experts for review and answers. In the past, under the able direction of Ronald Schilling, PhD, answers came back, were compiled, and then sent back to the requesting member. Subsequently, questions and answers were anonymized and published quarterly in *SCAR News*. Over the past 5 years, more than 200 questions have been compiled to create a rich and diverse knowledge base. Recognizing the potential of this substantial body of accumulated expertise, SCAR applied for and was awarded a grant from the National Library of Medicine/National Institutes of Health (1G07 LM007875-01, "Improving Access to Digital Imaging Expertise"). The goal of the project was to take the Expert Hotline knowledge and put it online for the benefit of the entire imaging community. Eliot Siegel, MD, chair of the SCAR Publications Committee, served as the principal investigator. When Dr. Siegel discussed the project with me, I naturally was intrigued. I chair the SCAR Online Communications Committee, and our goal is to develop a strong web infrastructure and assist

other SCAR committees in making important content available. I saw the Expert Hotline as a wealth of knowledge and the project as an opportunity to build a "FAQ on steroids." Many websites have lists of frequently asked questions that focus on common queries or ways in which the site can be used, but these are usually quite small and accompanied by limited (if any) search engines. A growing database of several hundred questions requires more sophisticated search and classification tools.

The major online development of the expert hotline archive was done in the summer and fall of 2003 at the Radiology Informatics Laboratory of the Medical College of Wisconsin, where my lab has completed several web development projects. We are probably best known for ClubPACS, an online PACS administrator community. The lead developer for the Expert Hotline was Max Warnock, a young lead developer in several of the lab's projects. We developed the expert hot line using Zope, an object-oriented web-publishing environment, and MySQL as the backend database. Both tools are freely available, open-source, platform-independent programs that are powerful and robust tools for web development. The website is dynamically driven from the database. The site will update itself as new questions come in. Our first task was to build a repository for existing questions. The last 5 years of questions were imported into the database and re-edited for content by SCAR staff. Each question was also classified into concepts. A user can see all concepts associated with a question and choose to jump to another con-

Fig 1. SCAR Expert Hotline page showing navigation bar.

cept to see what other questions are related. This semantic mapping feature allows users to browse through various topics to search for questions most relevant to their needs. The Expert Hotline web site and workflow engine is being made available under an open-source BSD license to other organizations at no charge. This innovative tool may prove helpful to other professional organizations in building accessible knowledge bases.

The first step is to create a login for yourself by going to the register button on the home page. Although visitors can read the questions without logging in, creating a login provides extra functionality. Once logged in, you can rank questions, track which questions you have read, and, if you are a SCAR member, submit new questions to the experts. There are many different ways to find the question most germane to you. Located at the top of each page is the main navigation bar, which offers several ways of finding questions (Fig. 1):

- Latest: Provides a list of the most recent questions published in the archive.
- Browse by concept: A pull-down menu provides a drill-down menu to browse by concept (Fig. 2). You can select multiple topics to find interrelated articles and sort the results by age or by ranking. As you drill down, the number of questions is listed next to each concept.
- Glossary: A short description of concepts along with a link to questions that use them.
- Top Ten: The highest-ranking questions and answers as rated by users.

- Search: Type in keywords and search through questions and answers for hits.

Answers on the site are listed directly beneath each question, as shown in Figure 3. To the left of the question is the concept cruiser. Selecting a concept will list all the questions related to that concept. Users who have logged in will also be able to rate each question. Pull-down boxes allow users to rank the material on a 1–5 scale (1 = poor and 5 = excellent). To submit the ranking, users press the “submit vote” button at the bottom of the page. The resulting values will come up whenever a user comes back to the page. This can be used to let users know they have read a question previously.

Behind the front end of the knowledge base is a powerful workflow engine to handle a peer review process for soliciting answers and prepare them for publication. This process will be initiated in May, and the complete web site functionality will be demonstrated at SCAR 2004. SCAR members will submit questions to the Expert Hotline by logging on and clicking “add question.” After the question is submitted, the expert hotline editors will receive e-mail notification. They will review and edit the question for personal or vendor-specific material and for information previously addressed adequately in the database. (As a guideline for submitting questions, I would recommend first searching through the knowledge base. Not only might you find the question you were about to submit, but you will also get a good feel for the types of questions suitable for sub-

Fig 2. Browse by concept page.

Fig 3. Answers are displayed beneath the question.

mission. Many questions are time sensitive, and similar questions should be submitted again, especially if the previous answers are somewhat dated.) The editors' goal is to respond to questions within 24 hours. Once editors accept a question, it will be emailed to experts for responses. The experts go online to submit their answers, which the editors review and publish. Once the question is published, the submitter of the question is emailed, and the question is available on the website. Our goal for the backend workflow engine is to emulate a peer-review publishing methodology and to make it

as convenient as possible for experts and editors.

Paul G. Nagy, Ph.D.
Radiology Informatics Laboratory,
Medical College of Wisconsin,
9200 West Wisconsin Ave.,
Milwaukee, WI, 53226, USA.