

The Need for Evaluation when Managing the IMIA.ORG Web-site

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Abstract. The International Medical Informatics Association (IMIA) has built up a web-site to support international scientific exchange and facilitate organizational tasks. Regular monitoring is required to get information on whether the site is actually used and by whom. Main aspects of the evaluation are function, structure and contents. As main evaluation methods the logfile analysis and user questionnaires are used. The number of visits to IMIA's web-site has constantly increased in the last year. In January 1998 the site had 418 visits, in December 1998 there were 6002 visits. The user questionnaire showed that the web-site offers an adequate platform for the members. It is concluded that the members as the main target group are reached by the services and in addition that the growing number of non-members require further development of the public part of the site.

1. Background Information

The International Medical Informatics Association (IMIA) is a world-wide organization of Medical Informatics societies. More than 40 national societies, and a similar number of institutional and corresponding members are linked together within IMIA. About 100 international experts are key figures representing more than 20.000 members of the national Medical Informatics societies.

In Summer 1996, IMIA started to build up its electronic services. The first application after a gopher-server was the electronic distribution of the Newsletter via WWW. In 1997, the content of the public web-site has been constantly extended. A password protected area with member lists and a document archive was created in the same year. Since 1998, a member-database is available as well as web-based email-services. The goal of IMIA's electronic services is to support international scientific exchange and facilitate organizational tasks [1].

2. Methods and Description of Application

Regular monitoring of a web-site is required to get information on whether a web-site is actually used, and by whom. The evaluation is a constant process to recognize the changing needs of the users. In the past a lot of criteria for the evaluation of medical web-sites have been published [2][3][4]. Many authors criticize the lack of reliable methods for evaluating the impact of a web-site [5][6]. Therefore measures of process and structure are proposed to be used as indirect indicators of quality [5]. Function, structure and content are the main aspects of the evaluation [7].

In general monitoring of a web-site is done by analyzing the web-server log-files. These records have to be interpreted very carefully. In the log file the IP-addresses of the visitors and the requested html-pages are stored. To analyze the data, clear goals have to be defined. One task is to find out whether the site is visited by the intended audience. It is very difficult to exclude "accidental visitors" who are following a link from a search engine and who are not continuing their visit to the site. Another evaluation method is a user questionnaire. This method often fails as a result of low feedback [8]. In the case of IMIA user questionnaires are used at the General Assembly with a feedback rate of 90 percent.

For IMIA it is essential to find out whether its members are using the site. When analyzing the log-file, it is not possible to identify members who are visiting the public area of the site. The requests of the index page of the password-protected part of the site represent the visits of members to this area. Non-members cannot request this page as a result of the password protection. To get more information on the user behavior and requirements a questionnaire on technical and content issues is distributed to the attendants at the yearly general-assembly.

IMIA's electronic services are used for the preparation of the General Assembly and the Board Meetings. Daily communication is mainly based on email. Documents are distributed via email as ASCII text or attached pdf-file (portable document format). All documents are put into the password-protected area of the web-site in the archive. To evaluate the preparation of meetings in each of the last two years a user-questionnaire was distributed at the General Assembly. Most of the national representatives, working group chairs and board members are present.

Table 1

Evaluation of IMIA's Web-Site		
Criteria		Method
Function	Accessibility / Availability	Logfiles + User Questionnaire
	Use of site	Logfiles + User Questionnaire
	Profile of users	Logfiles + User Questionnaire
	Links to IMIA	Link Analysis
	Navigation	User Questionnaire
Structure	Performance	User Questionnaire
	Technical requirements	User Questionnaire
	Ease of use	User Questionnaire
	References	Publication Guidelines
	Currency / Updates	Publication Guidelines
	Quality of links to other sites	Regular manual check
Content	Quality of content and services	User Questionnaire
	Reliability	User Questionnaire

To evaluate IMIA's electronic services three evaluation methods are regularly used:

1. IMIA's web-server is running under Windows NT, as web-server the MS Internet Information Server is installed. The log-files of the server are analyzed using the shareware version of Marketwave Hitlist. Weekly and monthly reports are generated automatically. Visits to the site and requests of selected key-pages are counted. In addition the visitor countries and the kind of entries from search engines are extracted. A visit is a collection of requests for all pages and graphics seen by a particular visitor at one time. The requests by the office staff at the Department of Medical Informatics in Goettingen where the site is managed are not counted in the statistics.

2. For each General Assembly, a user-questionnaire is prepared. Technical questions regarding soft- and hardware are included as well as questions on web-access and performance. In addition, the users are asked about their experiences with the services.
3. To complete the monitoring a regular link analysis is done using the Altavista Search engine. This task has the intention to find links to IMIA's Homepage and put them in relation to the number of visits.

In addition a basic set of publication guidelines for the publication on IMIA's web-server including information for style, references, currency and updates are used. The links from the web-site are regularly checked by the office staff. Table 1 summarizes the evaluation criteria of IMIA's web-site and the applied evaluation methods.

3. Results

The number of visits to IMIA's web-site has constantly increased in the last year. In January 1998 the site had 413 visits, in December 1998 there were already 6.002 visits. In total 42.554 visits were counted. About 85 percent of the users started their visit at the homepage before requesting other pages. The most popular page at the public site was the coming-events list beside the links-page to the national member societies and other Medical Informatics resources. Most of the visitors came from the United States (17.392). Less frequent were visits from Germany (1.795), the Netherlands (1.235), and the United Kingdom (1.162). About 10 percent of the visitors are accessing the site by using search engines. In 60 percent Altavista is used, in 21 percent Yahoo followed by Lycos (9 percent) and Hotbot (8 percent). The number of visits to the index-page of the password protected area for board members and national representatives increased in the year of 1998. About 200 request were counted in December 98 in contrast to 42 visits in January 1998. The number of possible users is about 50 people.

Additional information was obtained by the analysis of the questionnaire. In 1997 and 1998, about 90 percent of the attendants at the IMIA General Assembly visited IMIA's web-site. At the public area the coming-events list and the links-page were most attractive for the members. The emails sent out before the General Assembly reached all members, except one. In this case email-problems were known. The pdf-format for the documentation was well accepted by 90 percent of the members. The analysis of the technical equipment used by the members yield an important result for the technical development. The Windows 95 Operating System is used by 70 percent, 30 percent are using DOS, Windows 3.11, Windows NT, Unix or MacOS.

Most of the members have Internet access via the high-speed university/company network. S-VGA is the most common screen-resolution. As web-browser about half of the members uses Netscape Communicator 4 the others Internet Explorer 4. Regarding the email clients there is a very heterogeneous environment to be found with at least 8 different software products.

4. Conclusions

Constant monitoring of the site gave us the possibility to analyze the user behavior and draw conclusions for the further development of the services. The promotion and development of the services in 1997 and 1998 focused on IMIA's members. Regarding the number of visits of the password protected area from different locations in relation to the

number of possible users of the service one can conclude that the site was accepted by IMIA's members. This conclusion is confirmed by the comments given by the members in the user questionnaire.

Surprisingly, the number of visits at the public area of the web-site increased tenfold without further promotion in 1998. In mid 1997, the site had only few links from Medical Informatics sites which were related to IMIA. In January 1999, there were more than 200 links to IMIA's homepage. This might be one reason for the increasing traffic at the site. The analysis of the user-questionnaire showed that the members were satisfied with the system performance. The increasing number of visitors of the public area did not cause performance problems. This can be attributed to the fact that the server is running on a fast machine, and that the web-site is not graphic intensive. Taking into account the evaluation results of the public area and the sufficient performance for the member services it can be concluded that the public area should be extended. Since 1998 IMIA's electronic services have received enough recognition to base the further development of IMIA on the functions of these services.

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