Application of Technology ■

Medical Informatics on the Internet: Creating the *sci.med.informatics* Newsgroup

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Abstract A Usenet newsgroup, *sci.med.informatics*, has been created to serve as an international electronic forum for discussion of issues related to medical informatics. The creation process follows a set of administrative rules set out by the Usenet administration on the Internet and consists of five steps: 1) informal discussion, 2) request for formal discussion, 3) formal discussion, 4) voting, and 5) posting of results. The newsgroup can be accessed using any news reader via the Internet.

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We have created a Usenet newsgroup called *sci.med.informatics* to provide a forum for discussion of medical informatics on the Internet.¹ Newsgroups are like electronic bulletin boards, where "articles" (which are messages) are posted to each newsgroup by anyone on the Internet. These consist of thoughts, assertions, questions, replies, etc., and are the online and interactive equivalent of a mixture of newspaper editorials, letters to the editors, op-ed pieces, and classified ads. The content is determined on each newsgroup, either by a moderator who referees the messages before they are posted, or by the group understanding that grows up around the newsgroup as it is used. Due to the vast influx of new users, the thematic "culture" of a newsgroup may not be self-maintaining. It may require "shepherds" or advisors who do not turn down articles as might a moderator, but who gently suggest after the fact whether particular ones are appropriate and, if not, where to post them in the future as an ongoing teaching chore.

Why create a newsgroup when medical informatics electronic mailing lists already exist? Receiving mail from a mailing list is often disruptive to normal work

flow. With a newsgroup, one may check for news on one's own time, just as one would pick up a magazine or newspaper when one has the time and inclination to read news. Furthermore, e-mail takes up storage space locally, whereas newsgroup articles are stored on the news server that is shared by many computer stations in a participating institution.

Background

Usenet News or Net News has been described as The Biggest Bulletin Board in the World.² Access is worldwide, through the Internet. Over 12,500 newsgroups exist, with new ones created daily. Topics are arranged in a hierarchy, with a "." delineating levels in the hierarchy in the newsgroup names. System administrators at local sites can create newsgroups at the fringes of the hierarchy, e.g., *vu* newsgroups for Vanderbilt University. However, a formal process is required for creation of newsgroups within the mainstream of the hierarchy, which consists of the "big seven" areas: *comp* (computers); *misc*, *news*, *rec* (recreation); *sci* (science); *soc* (social); and *talk* (discussion). Medical topics are represented in the *med* branch of the *sci* area, with 16 newsgroups at present (Table 1).

Usenet originated in late 1979, when Tom Truscott and Jim Ellis, graduate students at Duke University, conceived of hooking computers together to exchange information within the UNIX community.^{2,3} Steve Bellovin, a graduate student at the University of North Carolina, put together the first version of the news software by constructing a system of UNIX shell scripts to transmit messages across phone lines

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Table 1 ■

Newsgroups in the *sci.med* Branch of the Usenet Hierarchy

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sci.med
sci.med.aids
sci.med.dentistry
sci.med.diseases.cancer
sci.med.immunology
sci.med.informatics
sci.med.nursing
sci.med.nutrition
sci.med.occupational
sci.med.pharmacy
sci.med.physics
sci.med.psychobiology
sci.med.radiology
sci.med.telemedicine
sci.med.transcription
sci.med.vision

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using UNIX-to-UNIX CoPy (UUCP).^{2,3} These messages formed the basis of a "floating bulletin board" with copies at each of the first two sites, "duke" and "unc." Usenet News spread throughout the UNIX community, with many of these sites also Internet hosts. The Network News Transfer Protocol (NNTP) was introduced in 1986 to project Network News to the Internet-at-large.² Multiple versions of news software have been developed, including the current "C news" developed at the University of Toronto, which features increased article-processing speed and improved reliability.³ The time to carry out the necessary Usenet administration is contributed by organizations and individuals.

The magnitude of Usenet traffic is increasing rapidly, with recent two-week statistics revealing that 1,447,789 articles, totaling 3,880 Mb, were submitted from 67,488 different Usenet sites by 254,592 different users to 12,505 different newsgroups, for an average of 277 Mb/day.⁴

Creation Process

The creation process consists of five steps^{5,6}: 1) informal discussion of the idea, 2) request for discussion (RFD), 3) formal discussion in *news.groups*, 4) voting, and 5) posting of results.

If a newsgroup proposal directly affects an existing group or groups, informal discussion may be necessary to confirm (or deny) interest in the proposed newsgroup. Volunteers experienced in the newsgroup creation process are available for questions via e-mail at group-advice@uuu.net.uunet. Informal discussion is occasionally necessary to decide on the name of the newsgroup.

An RFD states the name of the proposed newsgroup, whether it is to be moderated or unmoderated, a charter stating the goals of the group, a rationale for creation of the group, and a list of cross-postings, showing where this announcement is to be distributed (Fig. 1). The RFD is sent to *news.announce.newgroups*, a moderated group. Once approved by the moderator, the RFD is automatically cross-posted to the other groups listed, and may now be submitted to the specified mailing lists by the proponents.

Open discussion then takes place on a newsgroup called *news.groups*, along with similar open discussions involving the RFDs of other proposed groups. A large portion of the discussion about *sci.med.informatics* revolved around the issue of moderation. Unmoderated newsgroups allow anything and everything to be posted by anyone. When a posting is submitted to a moderated newsgroup, a moderator must approve the posting before it appears. The advantage of moderation is that totally inappropriate postings can be screened out, increasing the signal-to-noise ratio. The disadvantages include the required manpower, the decreased speed with which articles appear on the newsgroup, and the potential for over-censorship. We were hoping to implement "auto-moderation," where an author had to be approved once by a moderator before having all subsequent posts automatically approved. However, there was an overwhelming response to keep the newsgroup as open as possible, so we changed it to unmoderated. There were also a number of suggestions regarding additional topics to include in our charter: clinical information systems (including radiology, laboratory, pharmacy, nursing, etc.), policy making (including procurement and certification of medical software), medical software engineering, cultural/sociologic changes, and medical software security. A modified charter including these topics appeared in the call for votes (CFV), which is discussed below.

The discussion period lasts for a minimum of 21 and a maximum of 30 days, depending on the extent of ongoing discussion. After the discussion period, a request is sent to the Usenet Volunteer Vote-takers (UVV), coordinated by Ron Dippold (rdippold@qualcomm.com), for a CFV. An e-mail questionnaire is sent to the chief proponent by the UVV, who then coordinate the votes once the completed questionnaire is returned.

The CFV is posted up to three times during the voting period, which runs 22 (usually) to 30 days, at the discretion of the vote-taker. We received a number of incorrectly cast ballots from people who read the CFV off a mailing list and then tried to cast their

votes by using the "reply" function on their mail readers. These votes were mistakenly sent to the originator of the CFV, instead of to the vote-taker. We attempted to inform these voters of the correct

voting procedure. Once a voter successfully cast a vote, an automatic voter acknowledgment was sent.

Passage of the proposal requires a two-thirds major-

REQUEST FOR DISCUSSION (Posted 8/18/94)

Group Name: *sci.med.informatics*
 Status: moderated
 Distribution: world-wide
 Summary: discussion on all topics related to the emerging field of medical informatics
 Proposed by: Aamir Zakaria, M.D. (aamir.zakaria@cbmi.vanderbilt.edu)
 Dean F. Sittig, Ph.D. (dean.sittig@cbmi.vanderbilt.edu)

This is a formal Request for Discussion (RFD) on the creation of a moderated newsgroup, *sci.med.informatics*.

CHARTER

Biomedical Informatics is an emerging discipline that has been defined as the study, invention, and implementation of structures and algorithms to improve communication, understanding and management of medical information. The end objective of biomedical informatics is the coalescing of data, knowledge, and the tools necessary to apply that data and knowledge in the decision-making process, at the time and place that a decision needs to be made. The focus on the structures and algorithms necessary to manipulate the information separates Biomedical Informatics from other medical disciplines where information content is the focus.

The focus of this newsgroup will be the discussion of the grand challenges facing medical informatics today (and tomorrow). Appropriate topics include, but are not limited to:

- * Medical Information Standards (e.g. UMLS, HL-7)
- * Medical Informatics Training
- * IAIMS (Integrated Academic Information Management Systems)
- * Computerized Medical Records
- * Physician Order Entry Systems
- * Computer-Aided Instruction
- * Medical Expert Systems
- * Nursing Informatics
- * Announcements of Interest, e.g. conferences, journals, societies
- * National Library of Medicine
- * Health Information Networks
- * Medical Software Reviews
- * Research Funding Opportunities

RATIONALE

Medical Informatics is an emerging discipline with its own societies, journals, conferences, and training programs. However there does not exist on the Usenet any newsgroup specifically geared towards this large audience of scientists, physicians, nurses, engineers, and hospital administrators. There is a *sci.med.telemedicine* newsgroup which only addresses one aspect of medical informatics. The best network informatics resource at present is a mailing list [ai-medicine@stanford.edu] run out of Stanford which has more than 650 subscribers. A Usenet newsgroup would be the perfect complement.

CROSS POSTINGS

This RFD is being posted to *news.announce.newgroups*, *news.groups*, *sci.med*, *sci.med.pharmacy*, *sci.med.radiology*, *sci.med.telemedicine* and *sci.med.nursing* newsgroups, as well as the ai-medicine and SMDM-L (Society of Medical Decision Making) mailing lists.

All discussion will take place on *news.groups*.

Figure 1 The request for discussion (RFD) for the *sci.med.informatics* newsgroup.

Table 2 ■

Results of the Vote for Creation of the *sci.med.informatics* Newsgroup

Voted yes	682
Voted no	10
Abstained	1
Invalid	3
TOTAL	696

Table 3 ■

Distribution of U.S. Votes by Network Domain

Network Domain	No. of Votes
Educational institutions	315
Commercial organizations	123
Government agencies	17
Nonprofit organizations	15
Network backbones or information centers	8
Military organizations	2
Other/not specified	2

Table 4 ■

Distribution of Votes by Country

Country	No. of Votes
Australia	17
Austria	2
Belgium	9
Brazil	2
Canada	45
Colombia	1
Denmark	2
Finland	2
France	11
Germany	26
Greece	1
Iceland	1
India	1
Ireland	2
Israel	1
Italy	5
Japan	4
Kuwait	1
Netherlands	20
New Zealand	5
Norway	4
Singapore	3
Slovenia	2
South Africa	2
Spain	5
Sweden	5
Switzerland	1
Taiwan	2
Tunisia	1
United Kingdom	21
United States	492

ity and at least 100 more yes votes than no votes. If the proposal is rejected, it cannot be voted on again for six months. After the completion of the vote, the tally is posted on *news.announce.newgroups*, as well as on the cross-posted newsgroups and mailing lists, for review. Results of the voting for *sci.med.informatics* were posted on October 19, 1994 (Table 2).

Tables 3 and 4 show the distribution of the origins of the 696 votes. Votes were cast by individuals from 31 different countries. The largest single group of voters (315) were from American educational institutions.

Current Status

Following the successful vote and uneventful review period, *sci.med.informatics* was created on October 25, 1994. In the first two months of its existence, over 500 messages were posted. In the first two weeks of February 1995, we reviewed 100 consecutive messages and categorized them according to their main topics (Table 5). Most of these messages (79/100) were directly concerned with medical informatics as defined in the charter. Many of the "medical questions," which should not have been posted to *sci.med.informatics*, were the result of replies to cross-posted messages. For example, there was a thread about "fetal alcohol syndrome" that was cross-posted to *sci.med* (an appropriate forum for discussion of this topic). Due to the nature of the cross-posting mechanism, replies on *sci.med* were cross-posted back to *sci.med.informatics*. Other medical question posts were the result of confusion on the part of Usenet partic-

Table 5 ■

Categorization by Main Topic of 100 Consecutive Messages Posted to *sci.med.informatics* from February 2 to February 14, 1995

Category	Number
Computer-based medical records	23
Medical questions	20
Information about PC applications	12
Coding systems	10
Medical references/pointers to research	8
Internet resources	7
Fellowships/jobs/training programs	4
FAQ*	4
Information about billing software	3
Conference announcements	3
Physician use of computers	3
Shepherding	2
Magazine subscription request	1
TOTAL	100

*FAQ = answers to frequently asked questions.

ipants regarding the definition of informatics. While medical informatics is defined in the charter [and in the answers to frequently asked questions (FAQ), which is discussed below], many Usenet participants see informatics and think general information, and therefore post questions seeking general medical information to *sci.med.informatics*. Because we created the newsgroup, we have provided shepherding in some of these instances; however, no one is formally "in charge" because it is an unmoderated newsgroup.

We have also created an FAQ. As with the creation of a newsgroup, there is an "official" procedure one goes through to create an FAQ. In our case, we began by compiling several questions and our best answers collated from the group and the literature. We then posted this first draft back to *sci.med.informatics* for discussion, revisions, and additions. Following a two-week discussion, we submitted our FAQ to *news.answers* for official approval and inclusion in the Usenet FAQ archive. Approval was granted February 19, 1995, and it is now available via anonymous ftp at *rtfm.mit.edu* (cd /pub/usenet-by-group/sci.med.informatics).*

*A number of other useful FAQs may be found in the /pub/usenet-by-group/news.announce.newusers directory.

How to Participate

Anyone interested in participating in *sci.med.informatics* discussions can use one of the many free or shareware news readers available to connect to a local news server over the Internet.³ Some of the commercial online services (e.g., CompuServe, America Online) also offer Usenet access. For those without access to a news reader, there is currently no cross connection between this newsgroup and any mailing list. However, messages may be posted via e-mail to *sci-med-informatics@cs.utexas.edu* (note how the dashes are used here).

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