

particular, the benefit to a smaller academic society is even greater.

It should be noted that the information system resources have not been the only things that UMIN has provided to academic societies. The UMIN staff has been afforded opportunities to meet secretariats of many academic societies, and is familiar with the actual performance and problems of their information services. Thus UMIN staff has usually played a role as a consultant for the digitalization of member services of academic societies, and I believe that its advice has been useful to each society.

As for the merit for each individual researcher, only one UMIN ID is required, which enables access to all the member-only homepages of academic societies of which the researcher is a member. In Japan, there are many academic societies, and an average Japanese faculty medical researcher is usually a member of several of them [10]. Thus one common ID for every academic society would be very convenient for each researcher.

OASIS has contributed greatly to online distribution of academic information in the Japanese medical community. I believe that a similar information system would be beneficial to other countries. However, it would be difficult to promote a similar project in countries where most major academic societies have already initiated their own member-only information services. The software specification and operational procedures would be different among academic societies, and it would be very difficult to coordinate common software specification and operational procedures. One of the most important reasons for the success of OASIS is that it was initiated when most major academic societies in Japan had not launched their own member-only information services.

As far as I know, there are no other information services for medicine in the world comparable in service scale and functions to OASIS. There is a similar, but different, network information service called CTS Net, which is a non-profit organization sponsored and owned by The Society of Thoracic Surgeons, The American Association for Thoracic Surgery, and The European Association for Cardio-Thoracic Surgery [11]. It has called for the participation of other societies for cardiovascular and thoracic surgery in the world, and now has about 18,000 registered users. CTS Net is an international network based on the one specialty in medicine, while UMIN is a domestic network for all medical specialties. The merit of CTS Net is international communication and information, while that of UMIN is the coverage of interdisciplinary domestic academic societies and user support based on the native Japanese language. Both have their merits, and the Japanese Association for Thoracic Surgery registers its members to both sites. Most net venture businesses for medical information services established in the mid 1990s have failed, and those which have survived are small in size and not very profitable. I suspect that the OASIS project has succeeded because it is a non-profit business managed by a publicly authorized

organization. It would be difficult for a private company to carry out a similar project because of the difficulty in gaining the participation and cooperation of many academic societies.

Technical characteristics

In a web-based service, each user has to actively open a URL or follow a given link in order to access information, while in a mailing list, each user receives information via email in a passive manner. The former and latter types of information services are usually called "pull-type" and "push-type," respectively. The characteristics of OASIS are the combination and coordination of the two types of information services. Both web-based and mailing list services mutually cover the weaknesses of the other. For example, in a web-based service, users may miss information updates if they do not access the web site frequently. Using a mailing list service simultaneously for notification of the information update, such misses will be dramatically reduced. In a mailing list service, there is strict limitation in file size for transferred information, while in a web-based service, there are no such limitation. In addition, a user may lose provided information because of a local hard disk crash or erroneous operation, while in a web-based service, information will not be lost unless the web administrator deletes it. If mailing list archives are provided in a website, such loss of information can be avoided.

In OASIS, UMIN email addresses are used for an all-member mailing list for an academic society. As a considerable proportion of regular email addresses of society members change every year, this method is reasonable. A secretariat of an academic society does not have to maintain regular email addresses of its members. Each society is responsible only to deliver its messages to the UMIN mail addresses of its members, who can then access the UMIN mail server directly to read the messages, or can forward them to the mail servers that they usually use.

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