

Report to MTT Electronic Products Committee  
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## INTRODUCTION

I was requested to be an observer at the IEEE PUB/TAB Electronic Product Committee Meetings this year. I have been able to attend two out of the three meetings that have been held in that time. In the interest of keeping this report brief, I will try to relay only those things that are most directly related to us.

The chief recommendation of this report is that MTT use the IEEE JOLLY/OPERA project to start its electronic publishing. I also describe some of the Computer Society's efforts, some other considerations that should be taken into account in electronic publishing, and conclude with speculation on future trends that we should be planning for.

## HOW CAN MTT GET INVOLVED WITH ELECTRONIC PUBLISHING?

Last year the IEEE started a web area known as JOLLY, for Journal On-Line Launch Year, at the behest of several societies. This area is now known as OPERA, for On-line PERiodical and Research Area. This web area supports bibliographic searching of all IEEE data since 1988, as well as having the complete contents of the current year's transactions of participating societies. Access to transactions may be restricted to members of the societies, and access to bibliographic searching is restricted to IEEE members, thus giving value to membership.

The cost of participating in OPERA is approximately \$12K per annum. This is a flat rate, and does not depend on how many publications the society chooses to put up, or how many pages are published. Payment is supposed to defray the costs of new equipment and labor, and there have been rebates when costs fell below payments.

The indexing and abstract work is done in HTML; full papers are in Adobe .pdf format. Equations are not readable on a monitor, but are of typeset quality on hardcopy. The IEEE has a method of converting the SGML archive to .pdf; MTT would not have to do any additional work to participate, and the cost of conversion is contained in the annual fee. I have attached hardcopies of documents obtained through OPERA. They show the Table of Contents, Abstracts, and two articles from CAS-44, no. 1. Text, tables, drawings, data, and equations are all good quality, and are equal to or better than what I would photocopy in a library.

Journals may be kept in OPERA for somewhere in the 1-3 year time frame. OPERA is not meant to compete with the IEEE Electronic Library (IEL), which is meant for archival purposes.

The bibliographic search contains citations from periodicals, conference proceedings, and standards. Again, an abstract in HTML format is brought up, and the article itself will appear in .pdf if it is available on-line. For articles that are not on-line, a user is brought to the Web page of a commercial document distribution company, KR Source One (Knight Ridder).

Current members of OPERA are: Circuits and Systems, Electron Devices, Laser and Electro Optics, Neural Networks Council, Signal Processing, Information Theory, Journal of Lightwave Technology, and Proceedings.

At present, the only other example for publishing on-line journals that I have is HighWire Press, from Stanford University. They charge \$35K-125K to develop the on-line journal, and "several thousand dollars per month in maintenance costs." The associate director has been quoted as saying "We think it is a good deal." (From the Chronicle of Higher Education, 5/16/97, pgs. A21-A22.) At \$12K per annum, the IEEE is evidently a much better one.

In summary, I think that the IEEE OPERA effort is well done, has the confidence of a number of societies, and is worth MTT's time and effort to join if budget permits. I believe that this is the fastest and easiest way to get involved with electronic publication.

#### WHAT ARE OTHER SOCIETIES DOING?

The society that is furthest along the electronic highway is the Computer Society, which at 90,000 members is the largest society in the IEEE. They decided that the best way to get involved was to start, and to make their mistakes early and learn from them. They are now doing several things that MTT may want to consider:

- 1) They offer their members a CD at the end of the year which contains all Computer society periodicals from that year. They charged \$95 to members and \$895 to non-members in 1996. They are working on bringing all their conference proceedings into a separate CD. "The Digital Library" may supersede this in the future.
- 2) In 1998, the Computer Society will offer members "The Digital Library" - an electronic subscription for any of the 17 titles that they produce. They will charge 80% of the print subscription cost for the electronic version, and 130% of the print cost for the combined version. This pricing is similar to that from other computer organizations.
- 3) The Computer Society started an on-line bookstore this year. They carry both Computer Society and other publishers' books; this has turned into one of the most popular locations on their Web site. They are capable of secure processing of credit card numbers over the web, and ship their orders from their warehouse within 24 hours.

- 4) The Computer Society has been developing a method of rendering equations on the Web. In several weeks, they will be throwing their Digital Library open for all to see the results; this will be SGML based for full text search capability. They believe that it renders well on both screen and laserprinter.

## OTHER CONSIDERATIONS

In other efforts, the IEEE has put Spectrum on-line. To date, this effort must be described as unsuccessful. They have conducted a poll, and concluded that 70% of IEEE members do not know that it is available on-line. Some number are not interested, anyway, since on-line is not as convenient as hardcopy for them.

There are two lessons to be learned from this: put the right material on-line, and publicize it well. Transactions seem to be well suited to on-line work, and some societies have had guest editorials announcing the on-line availability of their transactions. The MTT should definitely consider a guest editorial or other "splash" if we decide to go on-line. Some societies have offered the electronic subscription for free to print subscribers during the first year. This allows people to gain familiarity with the on-line version and builds up a constituency that may be willing to pay for it at a future date.

The biggest worry to all who are involved in the publishing business is pricing. What is the proper price point for an electronic product so that income is maximized without either print or electronic product being killed. The 80% / 130% pricing is the Computer Society's best guess, but no one knows if it is the right answer.

## FUTURE TRENDS

- 1) Digital Video Disks (DVDs) will supercede CD ROMs over the next 5 years, due to a 30:1 storage advantage.
- 2) Contrary to popular belief, web sites will not replace CD ROMs (or DVDs) for archival storage.
- 3) Contrary to popular belief, electronic publishing will not completely displace hardcopy.
- 4) E-mail "Push" will displace web based "Pull" for electronic subscriptions. The "Pull" technique will still be useful for research browsing.
- 5) The electronically distributed, refereed journal will be displaced by electronically distributed, refereed articles.
- 6) Librarians and scholars will discover new ways to acquire, catalog, and cite electronic holdings.

- 7) Embedded viruses will continue to cause problems in electronically distributed products.
- 8) Financial pressures on corporations will lead to continued downsizing of library staff and acquisitions. Engineers will need to get the information for themselves, probably electronically. Search engines may incorporate AI techniques to compensate for the lack of reference librarians or knowledge of sophisticated search constructs.
- 9) The IEEE will eventually put the IEL online, as a member service for fee.
- 10) The order of material durability for archival purposes shall continue to be stone, clay, vellum, paper, film, optical disk, magnetic media, web.