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Electronic Bulletin Boards for Business, Education and Leisure

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ELECTRONIC BULLETIN BOARDS FOR BUSINESS, EDUCATION AND LEISURE

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ABSTRACT

Electronic communication is one example of how technology is impacting and changing lifestyles. The result of this technology is one of benefiting the individual, especially since the cost of this technology is within the reach of most families.

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INTRODUCTION

Using computers to communicate with other people and to forward and store messages has been possible for many years. But until recently, this capability was available to only a limited number of people due to expense and technical difficulty. However, with the advent and rapid acquisition of personal computers, the ability to communicate electronically has become readily available in offices and homes. Personal computers have made the costs of electronic communication inexpensive due to the low costs of both the host computer and personal computers used to communicate with it. Microcomputers costing less than $1,000 can serve as the host computer and home computers with required communication equipment and programs can be purchased for under $500.

This dramatic reduction in cost of equipment is only part of the reason computer communication has exploded in the last 2-3 years. Equally important, people are recognizing that this form of communication can serve a real, and heretofore unmet, communication need. For example, in today's busy office professionals often play a steady game of "telephone-tag"--I call you and you are out, then you call me and I'm out, and so it goes. All of us have had those frustrating experiences of exchanging missed calls to the point where we have forgotten who placed

the original call! With an electronic communication network, I can store a message to you and you can read and respond at your convenience. No lost time with missed connections and both of us can have a printed record of the communicaion if we desire. It is worth restating that this capability has been available for many years, but the key difference today is that now it is inexpensive and easy. Another unique communication need which can be met by this "new" form of electronic communication is to locate people with answers to specific questions you may have. Often we find ourselves needing specific information which someone else has, but we don't know who that someone is. By posting our questions in a public bulletin board, we can connect with a variety of other individuals who may be able to help us. The list of possible uses of computer communication and electronic bulletin boards goes on and on, but the point should now be clear--using computers in business, educational and leisure communication has vast potential which is only now beginning to be recognized. Growth of interest and activity is phenomenal. Not only are computer sales soaring, sales of modems (the devices which allow computers to communicate) are one of the fastest expanding sub markets in the computer industry.

Microcomputer based electronic bulletin boards are sprouting up like mushrooms in all sized communities. It is safe to predict that almost all readers of this journal are within a free telephone call of at least one electronic bulletin board. To find out about ones in your area, contact your local computer store, neighborhood teenage computer buff, or the authors.

TYPES OF BOARDS

There are four types of computer bulletin boards. One of the most common is the public board which invites any and all to call in to read and leave messages, upload and download computer programs and other files, post notices or ask questions. Most leisure bulletin board activity occurs on this type of board. A second type of board is semi-private. These boards welcome new members, but often screen applicants to determine whether it is appropriate for them to participate. Semi-private boards usually are devoted to specific topics and discourage casual users. Examples are a board devoted to business applications of computer based spreadsheets, or one devoted to discussion of educational applications of computers. A third type, the private board, is even more restricted and may require membership in an organization or payment of a fee for participation. Examples are a board limited to dentists in a given area or a board for licensed realtors. A fourth type of board is offered as a proprietary service by an individual or company for profit. Proprietary boards usually have membership fees and also charge for use of their services. An example is a board which conducts searches of specialized literature and posts the results for its subscribers. This last type of board is often quite expensive and carefully guards access. Fortunately for beginners, there are many public boards which welcome new members. These boards are particularly valuable to newcomers to electronic communication by providing an environment for experimenting and learning about this form of communication. More experienced users often gravitate to more restricted

boards, but many continue to be active in public boards as well.

Novel uses of electronic communication are constantly being discovered. For example, The University of Georgia recently established a bulletin board at Savannah, Georgia where the University maintains an off-campus doctoral program for health professionals. The semi-private bulletin board is available for those students to post messages to each other and the faculty. The faculty may leave messages for specific students and post notices for the entire group. Individual messages may be password protected to retain their confidentiality. Another use of the board by Savannah students is for developing their doctoral research proposals. As each student prepares an initial prospectus, it is posted for the advisor and other students to comment upon. As the proposal is refined, the student continues to post it on the board, but eventually it may be read only by the advisor. The completed proposal then becomes the basis for the dissertation, the preparation of which is simplified since the proposal is already in a computer file. This file can be incorporated into any one of several word processing programs for preparing the final dissertation. While a similar bulletin board is of considerable value to students on campus, the value is multiplied many times for students in Savannah which is almost 200 miles from the campus in Athens. Since the faculty member is able to communicate with students while sitting in an office in Athens, travel costs and lost time due to being on the road are greatly reduced. As a result, both the quality and quantity of communication with individual students increase.

Bulletin boards are also of growing interest to the breed of professionals who by virtue of their work often practice in isolation. These include doctors, dentists, and accountants. Developing a network of fellow professionals with whom to regularly communicate can be a rewarding source of new information and answers to current questions. For example, dentists might carry on an extended discussion concerning the desirability of new practices such as coating of children's teeth. Participants can share their personal experiences, which research indicates is often much more believable than journal reports and convention presentations. Accountants are establishing bulletin boards to discuss pending and passed tax legislation, new court rulings, and how to treat unusual cases that they face. Physicians can share medical information when connected to a bulletin board. The appeal to these professionals is a reduction in their sense of isolation, in addition to the valuable information obtained.

Searching for that one coin to complete your collection from the Denver mint? A bulletin board notice to that effect just might help you find it. Leisure time interest groups are also finding that bulletin boards can increase their knowledge and sense of belonging. Coin collectors, stamp collectors, antique gun buffs, and even trivia fanatics are finding electronic communication adds an exciting new dimension to their leisure time activities. Social groups, clubs, and informal hobby groups are also establishing bulletin boards. Want to get up a group to go rafting down your favorite white water river? Sign on to a recreation bulletin board and see who else wants to go (and may even have started to get a group together before you had the idea). How about a fishing trip or chartering a boat to go on a cruise to the Bahamas? An electronic bulletin board can contact a lot more people than that piece of paper put

on the company or community bulletin board. And of course, if you are retired, work at home or work alone, you don't even have access to the conventional company bulletin board. We are also waiting for our local congressional representatives to install a board so we can more readily express our opinions and hear what is of local interest happening in the legislature. Given the wide range of uses, rapid drop in cost, and their relative ease of use, you can see why electronic bulletin boards are becoming so popular.

EQUIPMENT

An electronic bulletin board requires only two basic pieces of equipment: a computer to serve as the "host" and a modem to connect the computer to a telephone line. There are probably as many types and combinations of equipment used to run electronic bulletin boards as there are makes and models of computers. Bulletin boards around the country run on everything from small personal computers to large mainframe computers. The same information that can be exchanged or stored using an IBM mainframe can be transmitted and stored using a $250 Atari. Personal and business microcomputers are the most popular for bulletin boards because they are cheap, readily accessible, and relatively easy to set up and run. What this means is that whatever type of computer equipment you may have, you probably have the capacity to set up a bulletin board service for either public or private use.

The host computer in the bulletin board system serves as a repository for information that may be of interest to users of the system. The amount of information that can be stored depends on the disk storage capacity of the host computer. Storage is measured in "bytes" of information. A byte is approximately the amount of capacity needed to store a letter of the alphabet. An average microcomputer with one "floppy" disk drive can store from 150,000 to 400,000 bytes of information. A microcomputer with a "hard" disk drive can store 10, 20, 30, or even 40 million bytes of information. A 20 megabyte (20 million byte) hard disk can be bought for about $500. Many smaller bulletin boards now run on two, three, or four floppy disk drives, but hard drives are becoming more common due to increased storage capacity and falling prices.

The RAM, the active memory capacity, of the host computer, need not be large in order to run a large capacity bulletin board. A computer with a memory capacity of 256K RAM (256,000 bytes of memory) is more than adequate to run the software that controls most bulletin boards, and some run on as little as 64K RAM. To put this in perspective, the average new personal computer now comes standard with 128-256K RAM. Thus, the host computer can be very small, if its operator is on a limited budget. Of course larger computers operate faster and can store more information.

The second piece of critical equipment is the modem. This is the device that connects the host computer to a telephone line and allows persons to call the host by means of their own computer and modem. The modem of the host computer must have the capacity to "auto-answer" (answer the phone automatically when called and emit a signal that is

recognized and responded to by the caller's modem). Modems come in a large assortment of types and prices. The specific choice of a modem for the host computer depends on the type of computer and of controlling software used.

A term that you will often hear in relation to modems is "Hayes compatible". The standards for modem communication established by the Hayes Microcomputer Products Company have become the de facto standard for the microcomputer industry. One way to ensure that your modem will work with your communication software is to be sure both observe the Hayes' conventions for communication, i.e., they are both "Hayes compatible". Another term that you will hear is "baud rate". Baud is the speed with which a modem can transmit or receive data. The vast majority of bulletin boards use modems that operate at either 300 or 1200 baud. Three hundred baud modems are cheaper, but 1200 baud modems handle information four times as quickly, thus require one-fourth as much telephone connect time to transfer the same amount of information. Higher baud rate modems automatically slow down their operating rates when receiving a signal from a lower baud rate modem. Today a good name-brand 1200 baud modem can be bought for about $300. Modems of 2400 baud and faster are becoming increasingly available, but are not yet common on local bulletin boards. As an indication of the future, one company is now advertising a modem that handles error-free transmissions at a baud rate of 10,000.

No special type of telephone line is required. The modem connects to a standard pulse or touchtone phone line by means of a modular telephone jack. Most bulletin boards operate with one modem and one telephone line, but a single host microcomputer with expansion cards can handle as many as nine telephone lines.

SOFTWARE

Both the user's computer and the host computer rely on communication software to manage their communication. For the caller, communication software is available for every type of computer and usually comes with the modem at the time of purchase. In addition to commercial programs, there are a number of excellent communication programs available in the public domain. PC-TALK, QMODEM, MEX, and RedRyder are programs that are available at no or very low cost.

The one really unique element in the electronic bulletin board system is the host computer operating software. This computer program controls operation of the host computer and modem and allows them to perform the special functions that are characteristic of electronic bulletin boards. Some of the common functions supported by BBS software include:

1. Management of a file of messages that are left on the bulletin board by callers and by the system operator. This file often contains two types of messages: open messages that can be read by any caller; and private messages that can be read only by the person to whom they are addressed and also by the system operator. Some bulletin board software

offers several levels or degrees of protection for messages. Some systems also keep track of the last message a caller read so that the next time the caller logs on, software automatically shows the caller only new messages since the last log-on.

2.   Management of a file of callers. When you call an electronic bulletin board, you will usually be asked to identify yourself. Your name is put into a file of callers, and you are granted access to certain features of the board. The degree of access granted depends on the rules of the particular bulletin board you are calling. Some allow open access by all callers; others allow new callers to read and leave messages only; still others allow new callers to leave their name, address, and other information along with a request to be added to the list of persons allowed full access to the system; and some allow only persons who are pre-registered with the BBS to sign-on (these are usually private, or closed boards). Many boards require the caller to use a password, known only to the caller and the bulletin board operator, as further means of identification. Some boards keep extensive records of the use of the board by its callers, such as how often a call uses the system, and which features of the system are used by the caller.

3.   Management of uploading and downloading of files to and from the bulletin board. Many boards maintain a collection of files that are available for transmission to a caller ("downloading"). These files may contain computer programs, manuscripts, advertisements, or any of a wide variety of written or graphic communications. Many allow callers to contribute personal or "public domain" programs to the bulletin board. The caller transmits the files ("uploading") which are stored, labeled, and sometimes posted for downloading by other callers. Just as with messages, bulletin boards often maintain some computer programs and files that are available for access by any caller, and others that are restricted to use by selected callers.

4.   Maintenance of system security. All bulletin board operating software must have some provision for security to protect the operating integrity of the system. Many bulletin board programs allow different security levels to be assigned to different callers or classes of callers. By using these security features, the bulletin board operator can regulate access to different parts of the bulletin board. This feature provides privacy and reduces the possibility of accidental or deliberate damage to the bulletin board's operation.

Electronic bulletin board operating software is available for all sizes and types of bulletin board systems and computer hardware. Software can be purchased for as little as $50.00 and for as much as several hundred dollars. However, some of the best bulletin board software is in the public domain and can be obtained free from computer user groups and other bulletin board operators. The references at the end of this article contain sources for BBS software, and the authors can supply copies of several of the better public domain software systems.

Starting a computer bulletin board is best described as a learning experience. It is exciting, rewarding, and a lot of hard work. If you are ready for a project that will expand your knowledge, make new friends, and give you new standing among your colleagues, in addition to providing a very effective and unique medium of communication, then you may be a good candidate for starting your own electronic bulletin board. If you have a computer with two disk drives (preferably including a hard disk), an auto-answer modem, a telephone line you can dedicate, at least during certain hours to the bulletin board, then you are practically in business. Probably the best first step is to log on to some bulletin boards to become familiar with typical operations and the different features boards can have. Computer magazines often have lists of phone numbers that you can try. It's a good idea to locate two or three boards that use the same kind of computer you have. Find out from the system operators what kind of equipment they have, what kind of bulletin board software they use, how they like their systems, and what recommendations they can make.

If you are new to the operation of electronic bulletin boards, setting up and running one will require both a lot of independent work and also some help from experienced BBS operators. When you run into those inevitable problems, don't expect that your friends or colleagues, even though they may be experienced computer users, will necessarily know anything about the mechanics of bulletin board operation. But don't be frightened by the prospects either. Even if you don't know your RS-232 from your baud rate, you can set up and run a very good quality and effective computer bulletin board, and have a lot of fun doing it. If you begin with BBS operating software that is proven and reliable, and use its regular features without getting really fancy right at first, you can be in operation in a matter of hours. The best single piece of advice we can offer is to find a bulletin board system operator who is willing to help you get started. When we set up our first board, we were lucky to have the help of the Sysop (system operator) of the board operated by the Athens IBM PC Users Group. During the first weeks of our first board's operation we spent many long nights and several weekends trying to figure out why our board had "crashed" unexpectedly in the middle of the night. It always crashed in the middle of the night, never during working hours. If we hadn't had the help of a person knowledgeable in the operation of electronic bulletin boards, we might still be there trying to figure out some of those problems! But once in operation, we have been trouble free for months, had thousands of calls from callers from as far away as Alaska and Hawaii, had thousands of messages, have made many friends and acquaintances, and have, we firmly believe, provided a valuable service to computer users in the educational community.

In summary, electronic communication is no longer the private preserve of the rich and powerful. Inexpensive equipment, easy access via conventional telephone lines, and simplicity of use are all contributing to the explosive increase in the number of computer bulletin boards. Applications range from serious business communication to electronic trivia. Active scholars and professionals and active retirees are all finding compelling reasons to dial up and log on. If you aren't yet an electronic bulletin board user, we encourage you to give it a try.

For additional information check some of the references provided, or better yet, contact a local computer buff. One of the nicest things about public bulletin board users is that many are eager to assist others in getting started. The authors are also available to respond to your specific questions. Our bulletin board number at The University of Georgia is (404) 542-8813.

SUGGESTED READINGS

Computer Magazines and Articles

80-Micro (the magazine for TRS-80 users), July 1985. The theme of this issue was electronic bulletin boards and it contains an extensive national listing of BBS phone numbers.

Profiles (the magazine for Kaypro Users), February 1985. The theme of this issue was also electronic bulletin boards. Several boards are described and reviewed.

PC Week , October 1, 1985. Contains a buyers' guide to modems. See also, PC Week , March 19, 1985, for an extensive list of communication software.

How to do it Publications

Welch, La A., "Using electronic mail as a teaching tool." Communications of the ACM, 23, 1982, 105-108.

Weis, J., "Electronic mail" Judges Journal, 22(3), 1983.

Hiltz, S.R. & Turoff, M. The Network Nation. Addison-Wesley, 1978.

Research Oriented Publications

Johnson-Lentz, P., Johnson-Lentz, T., & Scher, J.M. "How groups can make decisions and solve problems through computer conferencing." Bulletin of the American Society for Information Science, 4(5), 1978, 15-17.

Kiesler, S., Siegel, J., & McGuire, T. "Social psychological aspects of

computer-mediated communication." <u>American Psychologist,</u> p October, 1984, 1123-1134.

A SAMPLING OF BBS'S

ASTRONOMER'S RBBS, TITUSVILLE, FL (305) 268-8576. DATABASES OF ASTRONOMY-RELATED PROGRAMS, ASTROPHOTOGRAPHY, ENGINEERING, MATH, SCIENCE, AND HAM RADIO.

CBBS - CHICAGO, (312) 545-8086 OR (312) 849-1132. THE ORIGINAL BBS BY WARD CHRISTENSEN, THE FATHER OF BBS'S. A RESOURCE FOR TECHNICAL INFORMATION ABOUT BBS'S AND COMPUTER PROGRAMMING.

CHICAGO PUBLIC LIBRARY, (312) 235-3200. THE ONLY PUBLIC LIBRARY BBS IN THE NATION. YOU CAN ASK FOR GENERAL INFORMATION AND DATABASE SEARCHES.

GASNET - RUN BY NASA, GREENBELT, MD. (301) 344-9156. DETAILED INFORMATION ABOUT SPACE SHUTTLE FLIGHT ASSIGNMENTS, PAYLOADS, RESERVATIONS, SPONSORS, AND SPACE SHUTTLE NEWS.

GREENPEACE BBS, SAN FRANCISCO, (415) 621-5492. INTERNATIONAL BBS HEADQUARTERS FOR THE GREENPEACE ENVIRONMENTAL MOVEMENT. NEWS AND EVENTS.

HAM RADIO NETWORK, NEWTON, CT (203) 665-1114. ALL ASPECTS OF HAM RADIO, DATABASES, NEWSLETTERS, BIBLIOGRAPHIES, ETC.

McGRAW-HILL BOOKS, NEW YORK, NY, (212) 823-8392. ORDER ANY McGRAW-HILL BOOK ONLINE. WRITERS AND EDITORS CONVERSE INFORMALLY.

NATIONAL BUREAU OF STANDARDS BBS, WASHINGTON, DC, (301) 948-5718. GENERAL SERVICES ADMINISTRATION BBS (703) 860-7894. BULLETIN BOARDS RUN BY U.S. GOVERNMENT AGENCIES WITH LOTS OF INFORMATION OF INTEREST IN THEIR RESPECTIVE FIELDS. DATABASES, BIBLIOGRAPHICES, NEWS, MESSAGES.

PHYSICIAN'S INFORMATION SYSTEM, WINCHESTER, TN (617) 967-6889. FOCUS ON MEDICAL SOFTWARE AND INFORMATION. ONLINE MEDICAL JOURNAL ARTICLES.

RUTGERS UNIVERSITY MICROLAB BBS, (201) 932-3887. INFORMATION ON MOST ASPECTS OF MICROCOMPUTERS.

SCIENCE FICTION WRITERS' NETWORK, WINSTON-SALEM, NC, (919) 922-3308. VERY LITERATE AND INTELLIGENT. RUN BY A NEWSPAPER EDITOR. CONTAINS AN ONLINE NOVEL, NEWS COMMENTARIES, AND TECHNICAL PAPERS.

SAUDI ARABIA. 966-92-651-5259. MESSAGES. DISCUSSION OF THE FUTURE OF TELECOMMUNICATIONS IN THE MIDDLE EAST.