Median salary for Telecom Directors: $45,000

The median salary for a Director of Telecommunications at colleges and universities in the United States for 1990-91 was $45,000, according to a survey by the College and University Personnel Association (CUPA).

West Chester's TFMS solution

By Terrence L. Stratton
West Chester University
Region 1, Northeast

In the November 1990 issue of the ACUTA News, Ruth Michalecki outlined a procedure for selecting a "telecommunications facilities management system" (TFMS) product. Her article is not only interesting, but also describes a logical method for converting from a manual to a computer-aided information system.

Advice from her column, Party Line, has guided this telecommunications department through the transition from hand-produced orders and reports to our present, computer-aided situation. This article summarizes a number of Ruth's guidelines and reflects the thinking of the West Chester (PA) University Telecommunications Department.

Define Your Operation Clearly

West Chester University uses a Centrex telecommunications system for voice applications in (Please turn to page 8)

Jan. 8-11, 1992

Two programs set for Tucson seminar

Two programs are planned for ACUTA's Winter Seminar, set for Jan. 8-11, 1992, in Tucson, AZ.

Topics for the two programs, which will run concurrently, are:
• Managing Telecom Resources
• Distance Learning and Teleconferencing: Technology and Applications

The double program was approved at the June Board of Directors' meeting in Lexington, KY. "This will be our first seminar with more than one topic," said ACUTA Executive Director Del Combs. "We've held an 'Understanding Telecommunications Workshop' in conjunction with a seminar, but never a seminar with two main programs." A record 200 attendees were on hand for the January 1991 Seminar in Ft. Lauderdale, he noted. "That indicates to us that the Winter Seminar is a good place to begin expanding existing programs."

The Board also approved topics for the two other 1992 seminars. The Spring Seminar topic, to be held in Lexington, KY, April 26-29, will be Data Communications. At the Fall Seminar, Nov. 1-4, 1992, in Hilton Head, SC, the topic will be Disaster Planning.
I am particularly distressed with the FCC’s interpretation of the Operator Services Act which includes universities in the classification of “aggregator.”

I think it is important that ACUTA continue to fight this interpretation.

Under the FCC’s interpretation, an aggregator cannot charge the consumer any more for 800 and 950 access calls than they charge for calls placed using the pre-subscribed provider of operator services.

Independent coin phone owners, acting through the American Public Communications Council, are calling for compensation for 800, 950 and 1-0-XXX access calls made from their pay phones.

My university presently makes a commission of from 10 to 50 percent through our “pre-subscribed” operator service providers. If we have to provide free access to other interstate common carriers, I believe we, too, should be asking for compensation.

In our case, when a customer uses their “preferred” carrier instead of our pre-subscribed carrier the lost revenue would range from 5 cents to 12 cents per minute.

Bruce Campbell
Abilene Christian Univ.

Don’t forget internat’l code

If you are contemplating PBX programming changes to restrict 1-0-XXX-1+ service but allow 1-0-XXX-0+ service, remember the extended programming necessary to handle international calling.

Although 00 and 01+ allow international calling via alternate billing arrangements such as credit cards or collect calling, remember that 011+ allows direct-dialed international calling.

To prevent direct-dial billing of international calls via 1-0-XXX-0+, programming must extend to 1-0-XXX-XXX to allow 0+ but deny 011+ calling.

Randy Hayes
Univ. of Iowa Hospital

1-0-XXX put to use almost immediately by Virginia Tech callers

Within 30 minutes of unblocking the 1-0-XXX-0 and 950 access codes on May 23, phone customers at Virginia Tech were using them to complete calls. “And that was with absolutely no announcement,” says Doris Ostroth, Assistant Director of Network Services.

Since unblocking the access codes, the Tech telecom department is routing all equal access calls to special trunk lines for which the university has ordered call screening. Presently, the local telco (Chesapeake and Potomac) is turning back any direct-dialed, long-distance calls which come over these trunks. C&P does not guarantee the screening, however. If a call does get through, the university telecom department will be billed for it and will investigate on a case-by-case basis.

The cost of each trunk line with special call screening is approximately $28 per month, according to Ostroth. Calls over these trunks will be billed on a separate account, so the university can more closely monitor their use.

There are approximately eight hundred access codes currently in use in the United States, Ostroth has been told by Bell Communications Research.

Also known as Bellcore, formerly a division of the old Bell System – BCR retains authority to assign telephone code numbers, such as area codes, prefixes and access codes. The Carrier Identification Code (CIC) list which includes all access codes is available from BCR for $40.

“Having that list will allow us to monitor which carriers are being used,” Ostroth points out.

The number for Bell Com Research customer service is (800) 521-2673.

Private phone systems served by “message rate” trunks, as Virginia Tech is, pay a fee for every completed local call. Ostroth has learned that local telcos may not apply the message rate charge to 950 calls. “If we have any 10 cent calls – C&P’s message rate charge – on the account for our equal access trunks, then we’ll know that the system is not working properly,” she explains.

The opinions expressed in this publication are those of the writers and are not necessarily the opinion of their institution or company. ACUTA as an association does not express an opinion or endorse products or services. ACUTA News is published 11 times per year by the Association of College and University Telecommunications Administrators, a nonprofit association for telecommunications managers and staff in higher education. Subscriptions: $40 a year, $4 per issue. Please send material for ACUTA News to Bill Robinson, ACUTA, Suite 2420, Lexington Financial Center, 250 West Main Street, Lexington, KY 40507-1739; telephone (606) 252-2832; fax (606) 252-5673.
turnouts for the Portland and Ft. Lauderdale seminars. Sponsor and exhibitor support are at an all-time high. Fiscally, ACUTA has never been stronger.

The enormous amount of valuable information obtained from the Media Services Survey was a major achievement of the year. The responses concerning direction, publications, seminar and conference topics are being used by the Program Committee to plan future events.

The high interest in new and expanded publications has resulted in the Board of Directors adding to its number a Publications Director who will oversee the expansion of our publishing efforts.

Also, a wide-ranging request for information was included in this year’s dues notice. The response will be entered in a comprehensive membership data base. The new membership roster you will receive later this year, will show what type of switch a school uses, who their long distance carrier is and what types of student services they offer. This should facilitate networking and sharing of information. It may be a few years to develop our data base to the depth and breadth that many members have sought, but we are on our way.

Additionally, we had a very active Program Development and Evaluation Committee which spent the year reviewing how seminars are planned. Recommendations adopted at the June Board of Directors’ meeting refine the roles of the Program Committee and the Lexington Office in tailoring programs for our audience. I think the result will be even better seminars and conferences in the future.

One change which we can look forward to is a double program for the Winter Seminar in Tucson this coming January.

ACUTA Secretary Pat Searles, working entirely outside the lime light, has compiled all of the Association’s governing documents, and with the assistance of Immediate Past President Mike Grunder, created a Policy and Procedures Manual.

When material was missing, they created it, and when it was outdated (which was almost always) they corrected it. If we’re smart, we’ll keep it current.

My sincere appreciation goes to those individuals who worked very hard on ad hoc assignments this year, above and beyond the normal call of duty: Coley Burton, Media Services; Paula Loendorf, Program Development and Evaluation, and Pat Searles and Mike Grunder, Policy and Procedures Manual.

And the biggest praise and appreciation to everyone who participated in the survey, filling out the data base questionnaire. This is your organization and you can feel proud in some way, however small it may seem, that you helped give us direction.

For the coming year, Paula Loendorf has many good ideas to continue building and strengthening this organization. I hope you will support her in the same cheerful manner in which you have supported me and respond without hesitation when she asks for your help.

Thank you all. I hope to see you all at future events.

P.S. Effective Aug. 3, the prefix of my telephone and fax numbers will change. To reach me by phone, dial (314) 935-4599. To send me a fax, dial (314) 935-8595.
Lawmakers urge caution on AT&T deregulation

The U.S. Federal Communications Commission is planning a major meeting in August to consider several related telephone issues, including proposals to streamline regulation of AT&T and give the telecommunications giant more flexibility to meet competition in the business market, the Wall Street Journal reported in June.

The agency also hopes to assuage the fears of a growing coalition in Congress that has expressed concern that the FCC is clipping the wings of fledgling competitors and ultimately boosting prices for consumers, the newspaper said.

The FCC, especially Chairman Alfred Sikes, has leaned strongly toward continuing to ease regulation of the company, particularly in the business sector, the Journal commented, adding that the commission's inclination is supported by the White House.

To underscore their concern, all 14 members of the House telecommunications subcommittee, led by Chairman Ed Markey of Massachusetts, have written the commission urging it to proceed with caution.

The lawmakers also want the FCC to take a careful approach as it considers changes to an obscure policy that helps AT&T's competitors, especially when AT&T is regaining market share, the newspaper added.

In 1989, the FCC adopted a price-cap regulation for AT&T, giving it flexibility to change prices on 14 days' notice, down from 45 days, as long as prices for certain groups of services remained below a specified ceiling. The agency also has allowed AT&T to offer big corporate customers customized packages of services.

Now the agency is getting ready to vote on proposals to let AT&T change prices or offer new services on only one day's notice with no supporting cost data, the Journal pointed out. It is also considering new rules on charges for connection with local phone networks that could raise costs for AT&T's rivals.

Subcommittee member Jim Cooper of Tennessee says the proposed changes "might initially lead to price breaks from AT&T, but those aren't likely to last if competition is crippled."

A new telephone headset that rests entirely within rather than on an operator's ear is being tested this month by Bell Atlantic. The set resembles a hearing aid, yet contains both a microphone as well as a speaker.

First demonstrated to the public at the Consumer Electronics Show in June, the device, known as Audissey, could replace conventional headsets for those who require hands-free use of a phone. Tests by Bell Atlantic operators will help determine if the piece stays in the ear securely and is comfortable for extended use.

Developed by Norris Communications of Poway, California, Audissey used the principle of bone conduction. The microphone picks up vibrations of bone and soft tissue set in motion as air passes over the vocal chords. A thin line connects the earphone set to a control unit that plugs into a standard telephone.

Audissey also eliminates most background noise, says Michael Kendall, Bell Atlantic's manager for the project. "That suits it well for use with cellular phones and in crowded offices. Kendall has worked on the project for two years as part of Bell Atlantic's Champions program to foster entrepreneurial spirit.

Elwood Norris, founder of Norris Communications and inventor of Audissey, says he's working on a cordless model that will transmit to receivers within 10 feet.

Despite the convenience, there is a drawback to the tiny earpieces, Norris admits. "I use one around here, and people thing I'm talking to myself."

According to CUPA survey

Median salaries range from $22,328 to $51,816

(Continued from page 1)

To ensure confidentiality, responses were received and tabulated by the staff of the Brookings Institution and reported to CUPA.

The names of responding institutions were published in an appendix to the survey.

The responses were also broken down into a variety of categories including:

- Enrollment
- Institutional Budget
- Affiliation – Public/Private/Religious
- Doctoral granting institutions
- General, baccalaureate inst.
- Comprehensive institutions
- Two-year institutions

The median salary for Directors of Telecommunications at institutions with budgets of $8.8 million or less, the smallest schools, was $22,328.

At the next step, schools with budgets of $8.8 to $19 million, the median was $33,000.

At schools with budgets between $19 and $48.9 million, the median was $38,100.

In the top category, institutions with budgets exceeding $48.9 million, the median salary for Telecommunications Directors was $51,816.

For more information, copies of the survey or supplemental reports, contact CUPA, 1233 20th St., NW, Washington, DC 20036.

Phone (202) 429-0311, ext. 2.
By John Pryma

Over the last five years extensive use has been made of fiber by colleges and universities for campus backbone and building riser applications.

The decision to go fiber usually has been implemented after an earlier decision to install a new telephone switch on campus. Because of its low loss, fiber can carry analog or digital signals over long distances. Its high bandwidth allows for simultaneous transmission of voice, video and data signals. And its immunity to electromagnetic interference preserves the integrity of these signals.

Although initial installations may have remoted only voice switching capabilities on campus, upgrades of these systems usually provide the capability of interconnecting Ethernet and Token Ring LANs (local area networks) as well as transporting video for remote classroom instruction.

Currently, there is considerable interest in running fiber from the wiring closet directly to the desk. This is driven by four market factors.

• The MIPS (million of instructions per second) of desktop work stations are rapidly increasing resulting in the need for higher speed LANs. In the near future, Ethernet operating at 10 Mb/s and Token Ring operating at 16 Mb/s will not be sufficient and this will require an upgrade to FDDI (fiber distributed data interface) which operates at 100 Mb/s.

• While the cost of copper cables has been increasing, the cost of fiber has been decreasing and now a point has been reached where a fiber-optic cable is only slightly more expensive than a data-grade copper, twisted-pair shielded cable.

• The electronics for transporting data over fiber have rapidly been dropping in price and early this year a point was reached where fiber MAUs (multiple access units) for LANs became priced comparably to those for copper.

• Contractors are pricing fiber installations competitively since the fiber-optic cable can be pulled just as easily as a twisted-pair copper cable. Connectors are also becoming user-friendly through the use of hot-metal adhesives and crimp-on designs.

These conditions have created widespread interest in running fiber directly to the desk.

To put wiring performance and cost parameters in perspective, let’s look at the twisted-pair verification program which Underwriters Laboratories has just adopted.

Table 1 shows performance of each of the five copper cable constructions and how these compare to fiber. Relative prices for these products are also given. Table 2 compares the performance of a data-grade copper twisted-pair cable to that of fiber distance and bandwidth calculations indicate the following:

• Because of its low loss, signals going over fiber-optic cable can go 60 times as far as those over copper.

• Because the bandwidth of fiber is so wide, a signal on fiber-optic cable can transport 300 times more data than a copper cable can.

A recent survey of cable users, summarized in Figure 1, showed that only 28 percent of users expected cable plant to last only five years or less. The other 72 percent expected their cable installation to last anywhere from six to more than 15 years.

| TABLE 1
| Plenum Cable Comparison – Twisted Pair vs. Optical Fiber |
|---|---|---|---|
| Level | Description | Attenuation @ 1 MHz | Price/1,000 ft. |
| 1 | 4 Pair UTP Voice | 10 db | $105 |
| 2 | 4 Pair UTP Data | 8.2 db | $115 |
| 3 | 4 Pair UTP 10 Base T | 7.8 db | $140 |
| 4 | 4 Pair UTP 16 Mb/s UTP Token Ring | 6.0 db | $250 |
| 5 | 2 Pair STP IBM 4/16 Mb/s STP Token Ring | 3.2 db | $640 |
| Fiber | 2 Fiber FDDI | 1.5 db @ 1300 nm | $835 |

| TABLE 2
| Plenum Cable Comparison – Twisted Pair vs. Optical Fiber |
|---|---|---|---|
| Twisted Pair | Fiber Optic | Fiber Advantage |
| 30 dB/1,000 ft. @ 10 MHz | 1.5 dB/km @ 1,300 nm or 0.50 dB/1,000 ft. | 60X |
| 16 MHz/100 meters | 500 MHz/km or 5,000 MHz/100 |
| 300X |
Affordable fiber is finally coming to desktop

(Continued from page 5)

years. The only practical way to satisfy this criteria, because of the rapidly increasing demand for the transport of high-speed data and video, is to install fiber.

According to market data in 1989, as Figure 2 illustrates, the typical LAN consisted of 12 nodes with work stations averaging 1.8 MIPS each, resulting in a network requirement of 22 MIPS.

By 1993, it is forecasted, the number of nodes in a typical LAN will jump to 30 and the MIPS capability at each work station will increase to eight, resulting in a total work group MIPS of 240, which is almost an order of magnitude greater than the throughput only four years earlier.

If this growth continues and it probably will because of bandwidth-intensive requirements for imaging and graphics - even 100 Mb/s FDDI will not be adequate by the end of the century.

Figure 3 illustrates the connectivity possible with an FDDI rung to accommodate mainframe connections and LANs.

Most structured wiring systems now utilize fiber between building and up the riser. The wiring closets typically have a smart hub or concentrator. Up until now these concentrators were attached to copper horizontal runs for distances of 100 meters or less in a typical office environment. In the future, because of the factors discussed earlier, the horizontal runs will migrate rapidly to fiber, resulting in fiber going all the way to the office and ultimately to the work station itself. This will not only increase acceptable distances for horizontal wiring from 100 meters to one kilometer or more, but will also allow for an easy upgrade to FDDI and future higher data-rate systems. Fiber is the only way currently known for "future proofing" a wiring system for voice, video and data.

(John Pryma is Anixter Bros. Inc. Vice President for New Technology)

Berea College installing fiber optic campus network

Berea College in Kentucky has installed the first phase of a fiber optics network that can connect all computer users on campus to a data communications system.

Phase One has linked 11 buildings, but by the fall of 1992 all buildings on campus will be connected. In addition to the network cabling system, the project includes the design and implementation of other communications services such as voice, video, telemetry and control.

Trellis Communications of Manchester, NH, is under contract to install and connect the fiber.

When the project is complete, a student from any residence hall study lounge will be able to communicate through a microcomputer to other computers in any building on campus. They will be able to log-in to the library's computer system and look up information from the card catalog and may turn in assignments electronically to their instructors.

Faculty members will be able to send "electronic mail" from their offices, access the library system, view data about student advisees, and communicate with faculty on other campuses via a national network.

File and resource sharing, electronic mail, print spooling and automatic backups will be available on the network.

The first phase of the network went into operation on June 1, when the college computer center opened in its new facility in the newly constructed Hutchins Library addition.

The new computer center also will provide office space for staff, a student micro-computer laboratory and two "electronic" classrooms equipped with a computer at each student workstation.

Software will allow students to view programs running on the instructor's computer, and the teacher will be able to control and view programs running at student computers.
Utility bill audit may not give complete picture

By Frederick S. Wood, P.E.
SUNY/Buffalo
Region 1, Northeast

In these times of severe budgetary constraint, many organizations are investigating cost cutting techniques. Utility billings have come under close scrutiny, with the telephone bill often singled out as an area where billing inaccuracies abound.

The discovery and correction of discrepancies hold the potential of obtaining significant rebates from local telephone companies.

Accounts of large users are just as likely to be underbilled as overbilled.

Many government agencies, businesses and industries have been solicited over the past several months by a growing number of utility bill auditors offering a "no-cost" examination and audit of the user's telephone bills. Should they uncover billing overcharges, they will negotiate credits and/or rebates to the user and for their efforts claim a portion of any refunds. This appeals to most users since it involves no outlay of scarce financial resources.

Prior to divestiture, the telephone company periodically audited its larger accounts to validate inventory and correct customer billing. Since the breakup of the Bell System in 1984, this service is no longer provided. Over the past six years discrepancies on some accounts have grown to the extent that audits have become lucrative for these auditors with their current charging methods.

While it is true, as most auditors claim, that the telephone bills of large users often contain overcharges, it is equally true that many may be under billed for any number of reasons. The main goal of an audit is to uncover financial errors in procedure and/or process and correct them. The result should be a bill truly reflecting the service provided to the user. Since an auditor's return is a function only of discovering overcharges, there is little incentive in truly correcting the users bill, particularly if charges rather than credits are involved.

Fees

Most telephone bill auditors use a contingency fee structure, charging the user a percentage (commonly 50 percent) of the credits received from over billing. In addition some auditors collect a percentage of all future savings for some period into the future, typically 60 months. This fee schedule is generally included in a contract which the customer is required to sign prior to any system review.

Some, including this author, view such a fee arrangement as unethical since these charges generally have no relationship to the effort involved with the audit. Practitioners in professional fields such as architecture and engineering for many years used contingent fee structures. Such industry-wide contingent fee schedules were based on experience from previous similar assignments. The trend today, however, is away from such arrangements and to a charging algorithm more reflective of effort expended.

While I have no axe to grind with bill auditors and their method of operation, users should be aware that the result may be a bill that is still not 100% correct. A complete review of a user's telecommunications facilities should encompass other areas of concern.

Physical Inventory

One component of a true audit is an inventory of assets. In the case of a telephone system, this would include inspection of all circuits, instruments and equipment to ascertain that billed items are present and in use. Since many bill auditors do their work by mail only, such verification is not included.

Busy Studies

A subset of the physical inventory is the busy study. Telephone services - particularly the number of lines in the various service groups, such as incoming and outgoing trunks, tie lines, long distance access lines, etc. - are designed and selected based upon actual or anticipated traffic and the required grade of service.

A 'busy study' may find facilities modifications needed to meet objectives.

Conditions may have changed since services were first installed. A "busy study," conducted by the telephone company and/or PBX vendor as a part of the overall inventory, may uncover facilities that need modification to meet service objectives. In some cases severe blockage, which is adversely effecting customer service, may be discovered. Such studies are not normally provided by bill auditors for lack of any financial incentive. If the auditor works by mail only, physical inventories and busy studies are many times out of the question.

Needs Analysis

As any organization grows and changes, so does its requirements for telecommunications services. With rapid technological advancements and significant price reductions in telecommunications over the past several years, systems may become obsolete after only a relatively short period. A service that satisfied a customer's requirements yesterday may not be
A TFMS solution

(Continued from page 1)

conjunction with an AT&T datakit Virtual Circuit Switch (VCS), and Central Office (CO) LAN, that provides data connectivity. The installation provides simultaneous voice and data service, satisfying the university's stated need for low-speed data switching.

The data over voice function is provided by Integrated Voice Data Modems (IVDMs) that combine data rates of up to 9600 bps as well as voice traffic over a single pair of Centrex station wire. Communications from the packet switch flow through asynchronous ports, multiplexed over T1 facilities from the CO to the university mainframe. Original implementation of this system in April 1985 included 348 ports, expanded by 156 ports by April 1986.

Until Fall 1986, West Chester's Telecommunications Dept. consisted of two employees.

Until Fall 1986, West Chester's Telecommunications Department consisted of two employees with all telephone equipment rented from AT&T. Department personnel handled requests for adds, moves and changes, while Bell Telephone of Pennsylvania provided service. To reduce the costs of telephone service, the university hired a new telecommunications manager, replaced AT&T equipment with university-owned sets and added ex-Bell technicians to its staff to provide service. From these changes, the West Chester realized a savings of $50,000 the first year.

At divestiture, the department hired a full-time technician, responsible for deciding whether to call Bell or AT&T for a particular problem. The technician also set up a computer database to track the telephone equipment used on campus. PCFile – a flat, rather than relational – shareware database program was employed. Work orders for adds, moves and changes were generated by hand, in respective departments, and forwarded to the Telecommunications Department. Outstanding work reports, completed job reports, as well as all summary reports also were generated by hand.

At this point the department began considering a system that would not only keep track of dial tone and equipment, but would also store adds, moves and changes. We wanted a system that could:

- Show the history of a particular telephone extension, or all the telephone numbers in the system, and
- Link with the trouble-order file to generate work orders mechanically.

While PCFile was adequate for storing the information, it was very cumbersome when changing or updating information. Since PCFile is non-relational, files could not be linked to supply needed flexibility. The original database of 1,599 records was stored on one 5 1/2 inch floppy. To expand the information base and incorporate new linkable files, a new system had to be developed.

Involving Staff in Planning

A module to track departmental purchases was suggested, since all equipment orders were generated directly from the department. Information stored on the mainframe in the campus purchasing program was hard to decipher. It did not provide an item description of up-to-the-minute open or pending status. Equipment returned for repair also needed to be tracked, and the department wanted to identify items that were under warranty to avoid spending money for repairs on this equipment.

Projects funded through the campus Facilities Department needed tracking because our contractor would hire additional help to complete these jobs. And a file was needed to track Bell of Pennsylvania bills because these had to be reconciled before they could be approved and delivered to accounts payable for payment. An application also was needed to track the growing number of Alternate Operator Charges not included on the Bell tape we received each month.

Next came a suggestion for a file to track all the CO LAN connections. This application was growing and because of a number of discrepancies between the departmental records and the CO records, it was decided that a file listing all of the ports was necessary. All of these applications, and any new applications that might be developed, needed to be linked together so that changes and updates that affected more than one file could be made as efficiently as possible.

Budget and limited switch features precluded buying a vendor-developed database.

Vendor Search

A vendor-developed database would have been ideal. But the limited number of switch features controlled by the department and our limited budget precluded this option. The vendors we contacted offered systems that were too sophisticated and much too expensive for our central office-based campus system.

We needed a system that could store:

- Telephone extension and location information
- Equipment inventory
- Trouble orders
- Adds, moves and changes, and
- Departmental purchase orders.

The system also had to be easy to use, easy to learn, easy to change, and most of all, not very expensive.

(Please turn to page 10)
In partnership with Corporation for Public Broadcasting

Annenberg funding math and science network

A $60 million grant from the Annenberg Foundation will launch a new nationwide project to help students from kindergarten to 12th grade excel in math and science through innovative uses of telecommunications technologies.

The Corporation for Public Broadcasting will use the Annenberg grant to “develop and apply telecommunications and other state-of-the-art technologies in two critical areas of national need – mathematics and science,” CPB President Donald Ledwig said in a June 19 announcement.

Up to $5 million a year for 12 years has been committed to fund the Annenberg/Corporation for Public Broadcasting Elementary and High School Project for Mathematics and Science.

Headed by Dr. Mara Mayor, the Annenberg/CPB Project has already developed an extensive collection of television-based course materials and new applications of communications technologies to benefit college and university students, independent learners and working adults seeking a baccalaureate degree in the liberal arts.

The goal of the new project is to increase scientific and mathematical understanding of the nation’s elementary and high school students. This collaboration of Annenberg and CPB will help teachers in kindergarten through the 12th grade better convey the concepts and principles of science and the ways in which science, mathematics and technology depend upon one another.

The project will use communications and educational technologies – including computers, two-way video, laser discs and electronic networks and data services – as a means of achieving its objectives.

Mary Ann Meyers, President of The Annenberg Foundation, called the undertaking “an interesting and important experiment. Although we cannot be certain what the outcome will be,” Dr. Meyers said, “our aim is to awaken American school children to the wonder of science and the fascination of mathematics at the same time they are motivated to absorb the facts of these disciplines more thoroughly than ever before.”

She went on to cite three principal reasons for the philanthropic organization’s interest in improving math and science education:

- to assure a more scientifically literate citizenry who can rationally evaluate issues involving science and technology in both their personal and political lives,
- to meet the needs of employers who require technically trained or at least technically trainable workers, and
- to assure an adequate number of future science teachers and future scientists.

CPB will manage the new project under the direction of a council that will include representatives of the Annenberg Foundation.

Walter H. Annenberg, founder and chairman of the foundation, observed that “America’s ability to respond to technological and economic challenges in the year 2000 and beyond will be linked to the educational achievement of her citizenry. To maintain our competitiveness in the world community,” the former U.S. Ambassador to Great Britain said, “we must help all our children to attain proficiency in math and science since technological and economic progress requires mastery of these essential subjects.”

Marshall Turner, chair of the CPB Board of Directors said, CPB is delighted to continue its constructive relationship with The Annenberg Foundation, which has accomplished so much to make a college education more accessible since 1981.

Audit may not give complete picture

(Continued from page 7)
as cost effective today, particularly so far as data is concerned. The decline in long distance rates over the past five years is a prime example.

Training

When new or changed telephone facilities are installed, the vendor commonly provides instruction to all users. As faces change in the work place, and as memories fade, it may be in an organization’s interest to re-acquaint it’s employees with their telephone system. While most modern systems may have 50 or more station user features, most employees will select those two or three that they have found useful and disregard others. A brief user refresher course may familiarize employees with system and station features that can contribute to increased productivity.

Conclusion

Telecommunications services are an asset to be managed and not just an expense to be tolerated and minimized where possible. A bill auditor may be a “cream skimmer” who, for a fee, corrects billing overcharges but may leave the job only half done. While this may lower a client’s bills, it does not result in an in-depth look at the user’s telecommunication services and honest assessment of needs.

Proper telecommunications facilities management, including the bill auditing function, can maximize utilization and efficiency. The result may well be financial savings that far exceed what a bill auditor may be able to achieve through a cursory look at errors and overcharges.

(Frederick S. Wood, P.E., is Manager of Telecommunications for the State University of New York at Buffalo.)
A TFMS solution

(Continued from page 8)

At first glance the problem seemed easy enough to solve. The friendly computing professionals in the Administrative Computing Department would be more than happy to reliefeour dilemma. But the applications backlog, at a minimum, was at least six months. They were already backed up writing new procedures for the Accounting Department, the Registrar, Bursar, etc. Six months was an optimistic time-frame.

Purchasing a system from an outside vendor was not practical, because of costs and departmental requirements. Developing an in-house database system seemed the only alternative. The department had expanded to three full-time employees, a part-time graduate student (business major) and a contractor (providing 53 weekly hours). Still, there was very little programming experience in the group. Computing hardware and software consisted of two IBM PC's (not a hard-drive between them), PCFile, Wordstar, and PCWrite.

System Features

A PC-based system seemed to be the logical solution, since the department already owned the computers and software could be purchased at reasonable prices. DBase, suggested as the initial platform, is not a package for novices with great intentions, but little experience programming.

DBase, with its own programming language is for programmers. Setting up the fields was not difficult, but attempting to format a report, or connecting all those files, was a "monster." There had to be something else.

From articles in a number of PC magazines, we learned about another relational database manager, RBase from Microrom. Finding a copy for evaluation proved impossible. It was supposed to have a number of interesting features, such as auto-numbering, a small RAM requirement (512K for a single user; 640K for network operation), and compatibility with a number of local area networks, including, 3Com. Etherlink, Etherlink Plus, IBM PC Net, and Net One.

Finally, we found a database that solved most of our problems — Powerbase, a relational database, from Compuware Corporation. While providing many sophisticated procedures, Powerbase does not require programming. Setup and definition procedures are menu driven. You make the choices, the software does the work.

Powerbase was easy to set up, easy to use, easy to learn, and best of all, the screens, when completed, are easy to understand. Price was a plus, about one-half the cost of DBase.

The manual is easy to understand, and designing the needed screens is just like designing a paper form. All fields for a particular file fit on the screen, and can be moved anywhere there is room on the screen. Powerbase permits 64 files per application, and 65,000 records per file. It allows a maximum of 64 fields per record, with a maximum field length of 80 characters. And the data can be alphanumeric, numeric, money, date or yes/no. Powerbase prompts for these descriptions as the fields are defined.

On-screen instructions and error messages are written in plain English, describing exactly what is needed. Another helpful feature is the ability to add prompts to each field, giving user information on what should go into a particular field.

With Powerlinks, Powerbase can share data with a number of applications, including Lotus, DBase, Wordperfect, Symphony, PFS, Wang-Wp and DIF. This package reads data in 13 languages and offers password protection, customized labels, a fast on-screen listing – Quicklist – of all records in a file that meet a user’s defined selection criteria.

Global updates permit revision of multiple records simultaneously, and a zoom feature – Datazoom – can be built on any field. Datazoom gives instant access to other files by matching their data. Up to 10 consecutive files can be linked together.

The report feature, especially the ability to make format changes, is easy to use and modify.

There are some drawbacks with this package, however.

The inability to generate numbers sequentially for work orders, invoices, labels, and identification fields makes these operations tedious. The search time for a particular record can be lengthy if the file is very large, especially when searching on a field other than one of the six possible indexed fields, or while doing a multiple field search. (The files are random access, and use a B-tree for indexing).

The most glaring weakness is the inability to update fields in all the related files. Although this deficiency might seem insurmountable, a systematic approach to entering information can keep problems at a minimum. The multiple-user (LAN) package, written for Novell and PC-Net, is not supported by Compuware when set up on other networks.

A number of these problems are being addressed in an updated version due to be announced Spring, 1991*.

The Task is Formidable

The task of converting from paper to computer is a formidable and continuing process. The more information put in the computer, the greater the need for adding files and entering even more information.

Creating New Files and Entering Data

Our original design consisted of files for:

- Dial tone and equipment listing
- Adds, moves and changes, and
- Purchase order tracking, and
- Listing all of the CO LAN ports, and
- Records of equipment sent for repairs.

Files were added for:

- Tracking, reconciling long dis-

(Please turn to back page)
From ACUTA Headquarters

Good Gosh! Where has the time gone?

Bill (our editor) is gently hinting that this article is holding up the press, and Lisa just told me that all the conference material had to be shipped this Friday (day after tomorrow) and not next Friday.

Next Friday, we’ll be in St. Louis assembling all the registration portfolios, she says.

In the mean time, I’m also finalizing arrangements for the Student Services Seminar, Sept. 15-18, in Denver, so the brochure can be in the mail prior to the St. Louis Conference.

Also, hotel contract negotiations for our 1994 seminars are underway. Yes, this far out, choices for hotels and dates are rather limited. Doing four events a year allows only a small “window of time” for scheduling, especially if you’re vying for prime dates and locations.

Add to this, preparation for a Board of Directors’ meeting in St. Louis, consultations with Paula Loendorf – our incoming president – to assure that her goals and objectives get the attention and support they merit. That makes this time of year rather hectic for the headquarters staff.

This period for us resembles spring for you on campus. You’re fighting for your budget needs, worrying how you’re going to divide all the salary increases – if any – that are left after the administration skimmed off the top and passed the rest on to your department. Plus, you’re trying to collect long distant bills from students before they leave campus. Throw in the purchase and/or installation of a major telecom system and you’ve got an experience comparable to ours in the days before the conference.

In the middle of all that, your secretary reminds you that you haven’t sent in your ACUTA conference registration materials and the “early registration discount” deadline has already passed.

Then, did you bite your lip when the boss suggested that you organize your time better?

Bottom line? The beat goes on; the job must get done, and those dedicated to your institution and/or you own commitment will, somehow, see that it does.

In August, along with the ACUTA News, you will receive the Conference and Seminar Planning Guide for 1992. Our Winter Seminar in Tucson, Jan. 8-11, will offer a choice of two subjects. Concurrent programs will be conducted in:

• Managing Telecom Resources, and
• Distance Learning and Tele-conferencing: Technology and Applications.

All meals, social functions, exhibits, etc., will be combined.

If this arrangement proves worthy – providing members with more choices of subjects, which they recommended during the recent survey – you can expect similar offerings in the future. Hotel facilities and accommodations may require some limitations.

Data Communications will be the subject in Lexington, KY, April 26-29, 1992, the week before the Kentucky Derby. Those who may want to stay a few extra days and attend the Derby should start looking for tickets now, or be prepared to stand in line the day of the Derby for infield tickets.

We will return to enchanting San Francisco for our 22nd Annual Conference, July 26-30, 1992. Then it will be on to Hilton Head, SC, Nov. 1-4 for the Fall Seminar on Disaster Planning. An additional subject – running concurrently with Disaster Planning – may be offered at Hilton Head, depending on how things go in Tucson.

Hopefully, budgets will not be as tight next year, and you’ll be able to participate in programs offering the information and training for which your institution has need.

Enjoy your summer. The students will be back sooner than you think!

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**ACUTA Calendar**

- **Fall Seminar**
  Denver, CO
  Sept. 15-18, 1991
  **HOTEL:** Hyatt Denver  
  **TOPIC:** Student Services

- **Winter Seminar**
  Tucson, AZ  
  Jan. 9-11, 1992
  **HOTEL:** The Westin La Paloma  
  **TOPICS:** (separate, concurrent programs)  
  • Managing Telecom Resources  
  • Distance Learning/Teleconferencing: Technology and Applications

- **Spring Seminar**
  Lexington, KY  
  April 26-29, 1992
  **HOTEL:** Radisson Plaza  
  **TOPIC:** Data Communications

- **21th Annual Conference**
  San Francisco  
  July 26-30, 1992
  **HOTEL:** The Hilton on Hilton Square  
  **TOPIC:** Management, Regulatory Issues: Professional Growth, Voice Data and Video
A TFMS solution

(Continued from page 10)

tance charges
- Alternate operator charges
- Special projects
- Contractor charges
- Cable system, and
- Reports on telephone charges downloaded from our mainframe.

In the summer of 1989, the number of telephone lines tripled as student lines were installed in eight dormitories. Inputting the data was an intense and tedious, manual operation.

Automating the Forms

Automating the forms was the next project. Since the current paper form was the model for defining the trouble database, we decided to use the Powerbase outfile and PCWrite’s merge functions to produce a request form for departmental approvals and signatures. This also afforded a chance to get more detailed information on requested adds, moves, and changes.

The process worked relatively well, but because PCWrite’s merge procedure was so cumbersome, we chose another software package.

Formtool – by Bloc Publishing – is very easy to setup and use, and costs less than $60. Besides form fill and merge, options include line drawing, horizontal as well as vertical, large letters, special characters, and mix single and double lines.

Sideways, or landscape, printing of the form is another main feature. Once installed and form templates designed, outputing data using Powerbase’s outfile procedure was a simple matter.

Both work order requests and department purchase orders are produced in this fashion. The Powerbase outfile merges information from the return file with a form designed to track equipment sent for repairs.

Costs

The original installation consisted of one Powerbase software package, installed on one of the existing IBM PC’s. This unit was original equipment with two floppy drives, but the RAM had been expanded to 640K previously. Powerbase cost $259, with the educational discount. To avoid keeping track of numerous floppy disks and to handle large data files, a 20 meg hard drive was purchased for approximately $500. Two additional Powerbase packages and two copies of Formtool were purchased for approximately $640.

The original outlay was approximately $900. The system has been upgraded with LAN cards to include telecommunications on a high-speed network. And the LAN version of Powerbase also was purchased. This five-user package was an additional $259.00. To increase the efficiency of the data management, two Zenith 20MHZ, 386, computers were obtained, using our previous computers as trade-ins.

New prefix at Central Missouri

Effective July 1, all telephone numbers at Central Missouri State University will be changed to (816) 543-XXXX. The last four digits will remain the same as they have been.

ACUTA welcomes new members

The following joined ACUTA between May 16 and June 24.

Region 1, Northeast
Gary Corbett, Univ. of Maine at Orono
Kath Mullholand, Univ. of New Hampshire
Matthew Nocifore, Drexel Univ. (PA)
Arthur Poling, Franklin and Marshall College (PA)

Region 3, Midwest
Holly Grant, National-Louis University (IL)
Paul D. Keen, Franklin College of Indiana
Ron Pedersen, Washington Univ. in St. Louis
Sam Scoma, Trinity College and Seminary (IL)

Region 4, West
Eha Ping, Reed College (OR)
Ellen V. Schunk, Utah State Univ.
Marvin Taylor, Eastern Oregon State College

Region 5, Canada
Michel Lapointe, Université du Québec à Hull

Maryland phones will add access to aid the hearing impaired

On July 1, phone customers in Maryland began paying an additional 45 cents per phone line each month to fund an access system for the state’s 350,000 deaf and hearing impaired residents.

The surcharge, which totals $5.40 a year per line, will appear on monthly Chesapeake and Potomac telco bills as a separate line item.

The funds will be used to subsidize the cost of handling calls for hearing impaired customers, which can run $10 or more for a local call.

Maryland’s telephone access system will provide a relay center to place calls from hearing-impaired customers who use a Telecommunications Device for the Deaf (TDD) to hearing phone customers with conventional phones, and vice versa.

The center, to be staffed by about 180 telephone operators and operate 24 hours a day year-round, is set to open in December.

The system and supporting rates were authorized by the Telecommunications Access bill signed by Gov. William D. Schaefer in May.