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Association of College & University Telecommunication Administrators

VOLUME 16, NUMBER 3 MARCH, 1987 RUTH A. MICHALECKI, EDITOR

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President's Message

—John R. Curry,
Thomas Jefferson University

Enclosed in this month's newsletter you will find a special subscription offer from Business Communications Review (BCR).

This offer is being made to you with the consent of your Board of Directors but should not be interpreted as an endorsement of ACUTA.

If you are unfamiliar with Business Communications Review and would like additional information, call them at (312) 986-1432.

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Verification forms for updating our membership directory will be forwarded to you shortly. Your timely response will be greatly appreciated.

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By the time you receive this newsletter our Spring seminar will be history. For those of you who will not be attending, a summary report of the meeting will appear in the next issue of the newsletter.

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This year's 16th Annual Conference will be held in Minneapolis July 26 - 30. The theme will be "Managing the Telecommunications Resource."

The Mariott hotels offers excellent meeting facilities, is located in center city, and is part of the famous Minneapolis skyway system.

An interesting and well received adjunct to our Fall seminar in Orlando and Winter seminar in San Antonio was the introduction of exhibitors. Because so many favorable comments have been made regarding exhibitors, we plan to include them as part of our program in Minneapolis.

Jack Curry with Elwyn & Esther Hull at San Antonio. Elwyn is Past President of ACUTA and hosted the annual ACUTA Conference in Snowbird, Utah.

PARTY LINE

—Ruth Michaleckl, Nebraska

The United States Telephone Association's (USTA) Eastern Showcase was exciting, from my perspective as a participant and as a spectator. The exhibit area was huge and I literally walked my feet off getting around to all the exhibits. I was pleased to see many of our ACUTA Industry members at the showcase, as well as some of our members from universities. If you have an opportunity to attend the USTA Showcases, please do so. Their programs are good and the exhibit area is filled with every product line you can think of. All of the major switch vendors, long distance carriers, and supply companies are well represented, plus some of the more interesting "niche" market suppliers. Best of all, registration is free!

ACUTA was asked to participate in the USTA program. Our presentation was entitled "Major University Telecommunications Requirements---The Customer Speaks". ACUTA was represented by Stephen Merrill, University of Utah; Dino Pezzuti, Ohio State University and me. I gave a brief overview and history of ACUTA, then discussed telecommunications needs at universities and concluded with a review of our operation at the University of Nebraska and why we have elected to remain a CENTREX customer of Lincoln Telephone Company. Stephen Merrill has managed to live in both worlds, purchasing some of his telecom equipment, doing considerable bypass and yet remaining a CENTREX customer of Mountain Bell, and his presentation provided considerable insight as to the excellent telecommunications operation at the University of Utah. Dino took the third approach, that of becoming your own telephone company---something Ohio State and Dino have managed very well. Believe me, Dino's presentation was most impressive as he took the participants through all the various steps from the rationale behind the decision thru implementation of the Northern Telecom SL-100. Our session was followed by three members from the vendor, industry area. I was moderator of their session, entitled "New Industry Responses". The panel members were Paul Singer from Southern Bell, Joseph Hegarty from Vista-United, and Tim Reilly from AT&T; all familiar names to most ACUTA members. They focused on how their companies were changing to meet the needs of universities and how important this market segment is to their respective organizations.

Both sessions were very successful. We had a large and attentive audience and fielded a lot of questions and general comments following our program. The program will be repeated at the USTA Western Showcase in Las Vegas, Nevada, April 14-16, 1987 and we hope to see a few of our fellow ACUTA members there.

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I have shared with all of you my many trials and

(continued, page 2)

POTPOURRI

—Connie Gentry, Emory University

A local newspaper columnist has come up with a new name for the month of February; he says it should be called "Feb-u-weary." As I sit here on a cold, grey, rainy, utterly depressing afternoon, I tend to agree with him totally! Days like this always put me in a thoughtful mood (sometimes that's good and sometimes it's disastrous!) so I'm going to share my thoughts with you and we'll both take our chances!

One of the things I've been musing about is stupidity. You may recall that I haven't been thrilled with Northern Telecom's line of Unity station equipment. Whatever Northern may lack, it's not guts. They actually asked us to evaluate a brand new, not-yet-released Unity phone. This set is known as the Unity IV or (drum roll, please) THE MANAGER. This set has a built-in speakerphone, a Do Not Disturb key, eight programmable buttons and several other interesting features. Want to know how to adjust the ringer? (This is what got me to thinking about stupidity) You take the cute little red plastic screwdriver that comes with the set, turn the set upside down, find the appropriate hole (it's the one with the bell outlines above it), and adjust away...if you can get the little red screwdriver tip in the groove correctly. If you lose your little red screwdriver, tough noogies, 'cause the hole (the one with the bell outlines above it) is too small to use a paperclip or any other handy tool you might have in your desk. Now, I'm sure you know that we're professional enough not to base our evaluation of this set on a silly little thing like how one adjusts the ringer, but doesn't it make you wonder what was going on in the minds of the people who designed this marvel?

I saw an article in a recent issue of Network World concerning the Grumman Corporation installing a 20,000 line digital Centrex system. The telecommunication manager at Grumman was quoted to the effect that they didn't want to be in the telephone business. This 20,000 line Centrex was replacing several analog Centrex services, several PBX's and a microwave radio system with the digital Centrex. I think he meant that by having a homogenous system serving their various locations he wouldnt need to fool with a mish-mash of equipment, but I do believe that with a 20,000 line Centrex system he's going to find himself in "the telephone business" whether he want to be or not. What I wonder now, is how many people he's going to need to hire to keep track of the billing! Well, maybe he's got some software he can use.

I read an interesting group of articles on ISDN in a recent issue of TE&M. That made me think about a conversation I had with some colleagues from our state telecom group. While we very casually discussed the state of ISDN and it's potential, I got a sense of underlying panic. It was like, "My God, everybody's talking about it but I don't really know what it can do or how my company can benefit from it, but if I don't jump on the bandwagon I'm not doing my job!" Then recently I heard a comment to the effect that once upon a time we, the users, drove technology and now it seems to be driving us. I think that's very true, but I also think that it doesn't matter how much ISDN hype is floating around, until someone can show me some practical applications, from an economic and operational, as well as technical standpoint, for my university, I'm not going to get my knickers in a twist, as it were. The key word here is "practical." I'd be very interested to hear your feelings on ISDN.

That's about all the thoughtfullness I can muster up for one rainy, winter afternoon. I'll leave you with this little thought from James Branch Cabell..."The optimist proclaims that we live in the best of all possible worlds, and the pessimist fears this is true."

See you next month.....

PARTY LINE, CONTINUED:

tribulations getting a 56K network together, connecting eleven midwestern universities to a super computer network. Guess what---success at last! AT&T will provide our network and it will be in and working by June 1, 1987. My personal thanks to Sandy Ellsworth and Tim Reilly of AT&T for helping to make this happen.

During our hectic search for a vendor, we held several meetings with NTN, National Telecommunications Network. NTN is a consortium of seven companies, each having a regional fiber network. By joining their regional networks and filling in the gaps in between, they have fiber facilities covering most of the United States. We were impressed with the NTN people and if their network facilities development had been a little further along, we would have used their services. Dick Rodgers from Consolidated Network, Inc., one of the NTN partners, was especially helpful during the entire process.

Speaking of networks, they are really beginning to sprout all over the place. I was reading in **Network World** about Nysernet, Inc. Nysernet will implement a packet-switching network, transmitting data at 56K bit/sec between net locations. The network is comprised of six regional packet nets to be built and operated by New York Telephone and Rochester Telephone, with a subsidiary of Rochester Tel (RCI Corp) linking the packet nets across LATAs. This network is significant because it will serve users from the universities and from private industry, and the $5M price tag is being provided by both private and public sources. The universities will use it to access the super computer at Cornell. Four State University of New York locations, Rensselaer Polytechnic Institute, Rochester University and the Brook Haven Labs will all be linked to the net. It is an interesting trend: that of a working relationship being established between universities, telco's and private business for the benefit of all three. I believe we will see this trend continue to grow as networking needs continue to increase.

Our local operating company (LT&T) has helped solve a big problem for us with their packet switching network called "Prairie Link". We have always found it difficult to serve our vast outstate locations, since our state is quite large geographically and we are located in the southeastern corner, yet we must serve outstate stations 350 to 400 miles from Lincoln. Through LT&T, we have managed to establish a packet switch network connecting our outstate areas with the university. LT&T built the network and after it has been installed to serve the university and/or state government in an area, they market the network to private business. It has worked very well. In addition, we are using Data-Over-Voice units and Prairie Link's Packet Switch to provide access to university data bases for our faculty, researchers, staff and students from their private residences; sort of a mini metropolitan area network. Although we have only a few users of the service at this time, we anticipate it will grow as interest and needs increase.

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Overheard at the USTA Eastern Showcase: Lots of pro and con concerning the deregulation of the RBOCS, permitting them to enter the interexchange carrier business (outside their jurisdiction), getting into manufacturing, and most of all hearing comments about Northern and AT&T making modifications to their central office switches (the DMS-100 and #5ESS) and selling them as large PBXs in direct competition with the telcos. Several of the excellent sessions at USTA covered the Justice Department's proposal which would allow the RBOCs to get into the long distance and manufacturing businesses, and would also allow them to sell information services, ranging from voice mail to electronic classifieds.

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PARTY LINE, CONTINUED:

William L. Weiss, CEO-Ameritech, said in his keynote address: opposition to increased competition in the communications industry arises from "some pretty big folks out there who simply don't want us competing in the markets they dominate. They dust off the simplistic, tired old saw about a local exchange bottleneck, after all, that's more respectable then coming out against competition. I, for one, will take their opposition as a compliment: They know that if we're allowed to compete with them, we'll do a fine job."

It was interesting to hear the different views and comments; with all the RBOCs in favor of the DOJ proposal, some of the independents in favor, some not, and all of the interexchange carriers against such action, except in the area of selling information services. Interesting, to say the least!

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I visited the US West exhibit and had a demo of the new directory assistance capabilities of MPOW (Multiple Purpose Operator Workstation). It combines the power and benefits of advanced microcomputer technology to the central office operator services environment. It handles both toll and directory assistance functions on the same workstation system, interfaces with Northern Telecom DMS-200 and DMS-250 switches and is compatible with IBM, CCI and Volt DA Systems.

We have been asking Northern for enhanced operator consoles. We would like to combine the features of the Northern TOPS technology, with our CCI Directory Assistance System and make it work on the DMS-100 switch. We believe it would provide us with superior operator workstations, allowing them all sorts of multi-functional capabilities. The US West exhibit interested us greatly and we are following through to see what options are open to us. I will keep you posted, and if any of you have any thoughts concerning this, please call me. We are also investigating the possibility of sharing the TOPS software that is used by our local telephone company, if it will do what we want on the DMS-100 switch.

And speaking of the DMS-100 Switch, our cutover date is December, 1987. I can use any little bits of advice and experiences any of you might have had recently with the DMS-100. Have any of you used the authorization codes tied to a telephone number software? If so, please share your experiences with me. Also, we are interested in the MAC applications, telephone sets, etc. Is anyone using store & forward voice mail on a DMS-100? Does your local telco offer SMDI technology at this time? Is anyone electronically interfacing with the DMS-100 switch (in a CENTREX environment), with their management information systems to provide billing, inventory, order entry, statistical and summary management reports, as opposed to using mag tapes?

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I have been fortunate enough to visit several fellow ACUTA members recently. Last month I told you about my trip to North Carolina and my visit with Jim Dronsfield at DUKE and Steve Harward at the University of North Carolina. While I was in Indianapolis, I went to IUPUI (Indiana University Purdue University Indianapolis) and spent an afternoon with them. They have just recently cutover a Northern Telecom SL-100 switch, and with great success! They have large, comfortable and attractive offices and an enthusiastic staff. I was impressed with their efficiency and professionalism, but most of all with their courage. As usual with universities, their staff is not as large as they need, but they hope to correct that problem as they go along. They have a major hospital on their campus and the unique requirements and demands of this sector can be challenging at times.

They developed an outstanding training program, along with professional booklets describing the various telephone sets and features available to users on the new system. I can't begin to tell you how good this material is. It is obvious that a lot of thought and careful planning went into the project. We were treated to a private training session, complete with instructor and video. The video was done on campus and uses the staff of telecommunications in familiar campus settings rather than buying a canned presentation from the vendor. I hope to interview Connie Pottenger in the near future for an article in ACUTA News, but for right now, my personal thanks to Connie and all the staff for freely sharing their experiences with me and my admiration for a job well done!

ACUTA is really getting to be an organization full of accomplished and experienced professionals, running large telecommunications operations and doing it very well, conquering a tremendous learning curve in a short time. And the best part of all, they are always willing to share their experience with fellow members.

Thats all for this month; been a very busy one, but most productive. Before I forget, Steve Merrill and I will be in Sacramento, California May 27-29, and in Boston, Mass on June 3-5 with ACUTA's "Introduction to Telecommunications" training seminar. If you have any members of your staff that could benefit from a program designed for the novice in telecommunications, be sure to contact your regional director for information. Donna Powell (916-278-6923) is making all arrangements for the Sacramento Seminar and Art Hartigan (617-353-2097) is the contact in Boston.

See you next month.....

We were sorry to hear of the death of Dorothy Heinecke's mother. It is never easy to lose a loved one and our heartfelt sympathy is extended to Dorothy at this time.

Steve Merrill and your editor---doing what I do best!

NOTICE OF ELECTIONS AND CONSTITUTIONAL AMENDMENTS

——John W. Sleasman, Past President

Officers

Article V of the ACUTA Constitution provides for the succession and election of officers of the Association.

In accordance with the Constitution, at the Annual Conference in Minneapolis this summer, current Executive Vice President Kia Malott will become President of the Association for 1987-88; current Vice President Bill Morris will become Executive Vice President; and current President John Curry will become the Immediate Past President and ex-officio Chairmen of the Nominating Committee.

Elections will be held for the positions of Vice President, Secretary, and Treasurer. Del Combs is completing his second term as Secretary and can not run for re-election. Traditionally, the individual in this position becomes a nominee for Vice President. Treasurer Mike Grunder is completing his first term and is eligible for re-election for one more year.

I herewith issue a formal call for nominations for the positions of Vice President, Secretary, and Treasurer. Please submit nominations (after confirming with the individual that they are willing to serve) to:

John W. Sleasman
Administrative Services
Case Western Reserve University
Cleveland, Ohio 44106
(216) 368-4396

Nominations should be received by June 1, 1987 to assure that I can contact nominees with additional information, including an invitation to arrive early in Minneapolis to attend the Board Meeting.

Constitutional Amendments

Article X of the ACUTA Constitution states that amendments to the constitution may be "proposed in writing by any member of the Association to the Board of Directors. Such, proposed amendments shall be presented to the members in writing no less than fifteen (15) days prior to the annual meeting."

To insure proper distribution of any amendments to members, I request that amendments be submitted in writing to me at the above address by June 1, 1987.

NOTICE

Business Communications Review (BCR) has extended an opportunity for ACUTA members to subscribe to their magazine at greatly reduced prices. The special rate is 63% off the regular subscription price of BCR.

Simply complete the enclosed order card and return to BCR to take advantage of this special discount offer. The special rate is available for new subscribers only or for those who haven't subscribed within the last 90 days. Renewals are excluded from this offer.

If you have any questions, please call BCR at 312-986-1432.

M E M O R A N D U M

——Bill Morris,
University of Central Florida

Last Fall the Florida Public Service Commission held hearings on shared Tenant Service. Service to dormitories from a PBX was a specific topic on the agenda. Representatives from the Independent Colleges and Universities of Florida and the Florida Board of Regents made presentations. The case was presented that the students were transient, that they were normally on campus only 9 months of every 12 months and that many often changed rooms during that period. It was also noted that most of the universities required phone service for safety and that the cost of local phone service was lumped into the room rate.

After the hearing, the PSC staff was recommending that the institutions continue to offer local service via the PBX but that usage sensitive rates apply.

On January 15, 1987 the Public Service issued the following order.

DORMITORY SERVICE

Many institutions of higher learning within Florida provide shared local telephone service to dormitory residents via a PBX. Students are transient in the sense they enter, leave and often change residences several times during the school year. Students often lack the credit needed to obtain telephone service. It would also create logistical problems for the LECs to provide direct service to large numbers of students at one time and then remove the accounts at the end of the school term.

All of these factors suggest that local exchange service provided to dormitory residents does not duplicate with nor compete with local exchange service. Most LEC has advocated abolition of this tariff exception. In the absence of local exchange service provided by colleges and universities, many students would otherwise be without service. We believe that dormitory service provided by colleges and universities to students is in the public interest and should continue under the present rate structure.

OTHER ISSUES

Several other issues merit brief discussion. The STS providers claimed that different rate structures for STS providers, individual PBX users and shared PBX users would be discriminatory. We disagree. The rates and conditions of service for STS and other forms of sharing should not necessarily be the same. As discussed in detail above, certain other shared telecommunications arrangements are so unique as to require special consideration. Contrary to our Staff's recommendation, we do not find it appropriate at this time, to require usage-sensitive rates for these other unique sharing arrangements. STS providers differ from individual PBX users in at least two respects: resale and usage characteristics. STS providers resell local service unlike the individual PBX user. STS also concentrates more traffic over fewer trunks, resulting in a different potential impact on the LECs.

It is gratifying that the PSC did not find it appropriate to apply usage sensitive pricing. I hope that each of you can work within your state to quiet what I feel is an unwarranted attempt to charge students a discriminatory rate.

In Conclusion: I think the large turnout of students at the PSC meeting was the main reason the PSC did not find usage sensitive rates appropriate at this time.

YOUR FUTURE IN TELECOMMUNICATIONS

——Steven S. Ross

Speeding toward the 21st century, this industry is changing the way we do business---creating 200,000 new jobs a year.

Freed from most government regulations and powered by new technologies, the telecommunications industry has emerged over the past five years as the largest source of new jobs in the United States and perhaps the world. But the jobs are so scattered among equipment manufacturers, installers, and users that the Bureau of Labor Statistics' Occupational Outlook Handbook has tracked only 320,000 of the nation's 2 million telecommunications jobs. Of course, the same technologies that help create close to 200,000 new jobs in the field each year in the U. S. also take some away.

The growth has come in management, as newly deregulated utilities staffed up for marketing and for raising capital in unfamiliar ways; in sales, as new technologies and new pricing policies opened a bewildering array of options to potential customers; and in installation work forces, as customers took advantage of the options at hand and ordered new equipment.

TYING COMPUTERS TOGETHER

Newly decentralized, leaner corporations need more communications services to tie their scattered computers together. The growth of international trade required that bankers, shippers, and factory managers coordinate their actions worldwide, around the clock.

Americans write fewer letters, but make more phone calls. And they are now using their phones with their computers to retrieve information from databases: American homes are equipped with 800,000 modems—up from zero in 1980—and even children are using them.

One of the biggest areas of change is in the telephone industry, where a revolution has come about in switching centers. These are the modern-day equivalents of the wire patchboards operators once used to connect callers with their parties. The patchboards yielded long ago to mechanical "crossbar switches," which make the connections automatically as relays and electrical contacts rotate into place.

Crossbar switches are still used in much of the U. S. Telephones connected to them, however, cannot have new features such as call waiting and call forwardings. But companies can get around most of the limitations by bypassing the local phone company with direct lines, or by installing their own private branch exchanges (PBXs). The result is that workers and managers who once were employed by AT&T to handle central switches now often find themselves working for small companies that sell, install, and service PBXs.

Not all the new employers are small, either. IBM has purchased Rolm, one of the up-and-coming makers of PBXs and switches that tie data and voice communications together within a company, a building, or a city.

SKILLS IN PROGRAMMING OR ENGINEERING NEEDED

As old crossbar switches are being replaced by all-electronic switches from Rolm, AT&T, and others, skills and needs change. The new switches are, in effect, giant computers. People who work on them are mainly reprogramming so that customers may add to their services. Managers need training in programming or in engineering.

Automation does not account for all of the changes in the telecommunications industry, of course. Deregulation has also played a major role. When the AT&T breakup took effect at the beginning of 1984, U. S. District Judge Harold H. Greene issued rules that the seven regional operating companies had to follow in order to engage in new businesses. They needed court approval to enter new fields, and they could not gain more than 10% of total revenue from such businesses.

Within a few year, however, NYNEX, (serving New York and New England) had set up DataGo, a chain of computer stores, and had purchased IBM's retail outlets as well. NYNEX, in turn, was challenged on its home turf, New York City, by another regional holding company, Southwestern Bell, which established competing Yellow Pages directories. Yellow Pages, with their large advertising revenues, are a very profitable sideline. The Manhattan editions alone yielded $60 million in revenues in 1985.

Bell Atlantic was supposed to be one of the lackluster companies among the seven regional operations because its service area, the Middle Atlantic states, is growing more slowly than the rest of the country. But Bell Atlantic purchased companies that ran maintenance centers for electronic equipment in the U. S. and Canada, manufactured communications equipment, built real estate developments, and in one case, even built a marina. Bell also created a separate enterprise group to oversee those companies.

In fact, some of the results of the breakup of AT&T have been quite unexpected---particularly in the international arena. At a 1985 Congressional hearing Judge Greene complained: "There is a strange gap between the public desire to have good local telephone service at reasonable rates and the almost frenzied efforts of the regional holding companies to diversity. No one dreamed at the time the decree was written that the regional companies would be spreading out all over the globe."

At the present time, some of the most populous countries in the world have the fewest number of telephones. For example, China, which has a quarter of the world's population, had only as many telephones in 1985 as the state of Florida. Ameritech International, one of the seven regional holding companies split from AT&T, has gone after business there. So has AT&T itself, in partnership with Philips Telecommunications B. V. of the Netherlands.

Siemens' 1985 International Telephone Statistics noted that the U. S. and Switzerland had 80 telephones for every 100 people. Sweden topped them both, with 89 per 100 (about one phone for every person).

Americans use their phones more than anyone else—an average of four calls per day per person. That added up to 380 billion calls a year in 1985. In comparison, only 25 billion calls originated in West Germany and 22 billion in the United Kingdom, with populations one-fourth and one-fifth of the U. S. respectively.

It would seem on the surface that there is plenty of room for marketing more telephone services in Europe. But it isn't that easy for American companies. For one thing, European phone systems are incompatible with ours—and often with each other.

The difference between foreign and domestic markets can be seen especially in the use of facsimile machines. Languages that use characters rather than alphabets find it easier to transmit messages with fax machines. Approximately 97% of the faxes now installed are in Japan, and China is following its lead. But the use of fax is growing in the U. S. too, and the process has become considerably faster in the last decade.

First-generation facsimile machines from the 1970s took 6 minutes to send a page. Transmission time has been cut to between 18 and 25 seconds, and with a new

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FUTURE IN TELECOMMUNICATIONS, Continued:

generation of equipment coming on the market, will be as little as 3 seconds.

Foreign firms, mainly with American staffs here, are also selling in-office interconnect equipment (phone handsets, small PBXs, even wire), and central switching equipment. Outside the telephone industry itself, the picture is most promising among corporate users of telecommunications devices. Here, opportunities are wide open.

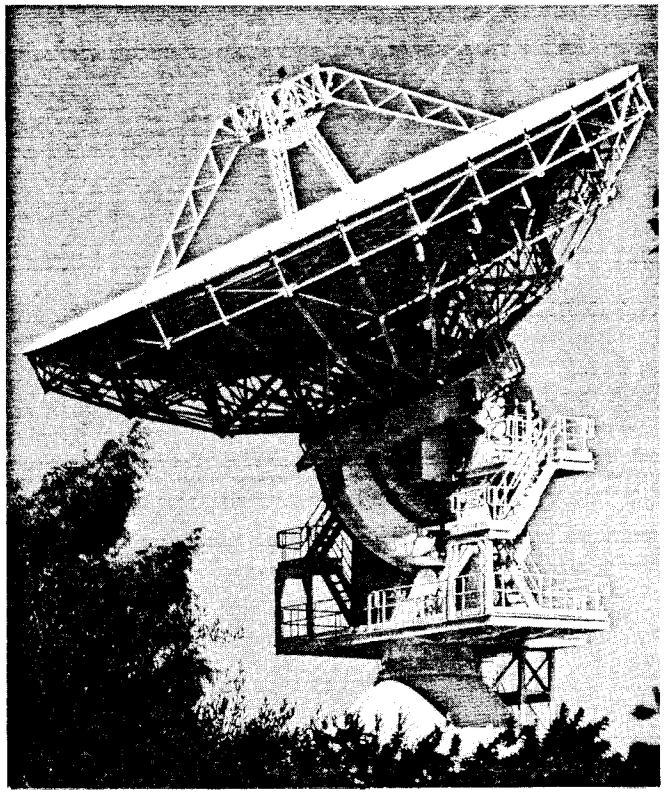
Few companies have their own telecommunications departments unless they are installing direct office-to-office links (such as General Motors), or are heavy in-plant users of pieces of automated equipment that communicated among one another.

However, management information systems (MIS) departments are a growing source of jobs. And even outside MIS, there are many new communications jobs in software-related fields and in accounting. Manufacturing, banking, and retailing firms--all of which must transfer large amounts of data--have been hiring lately. The domestic market is $80 billion a year, and growing at six times the rate for capital equipment generally.

A recent study by Touche Ross & Co., the giant accounting firm, found that a quarter of all large businesses have installed systems to bypass local operating companies. And that could by 50% by the end of 1987. The Conference Board says a third of such companies already bypass local phone companies for at least some of their communications needs.

ARMIES OF TARIFF SPECIALISTS GONE

Large companies once had armies of "tariff specialists," who would constantly seek out the cheapest way of sending messages and data back and forth. With deregulation, rates have gotten so complicated that whole new computerized services have grown up. Even small offices can now afford switchboards that automatically send calls out on the lowest-cost lines.



MIS departments once tended large mainframe computers and delivered reports on paper. Now they often link the mainframe computers and delivered reports on paper. Now they often link the mainframe to remote terminals with the same PBXs that carry human voices.

Assembly lines once relied on human communications for coordination. Now, they use robots to "talk" with sales offices to determine when to schedule production of specific models of their product and to order raw materials from the company's suppliers.

All these developments create fewer jobs for clerks and analysts, but more for managers. They are also giving rise to some sales jobs. Ironically, some large companies are selling their excess communications capacity to other companies, and therefore need sales staffs.

While you're considering a career in telecommunications, however, don't overlook opportunities outside both the telephone industry and corporate users of electronic information systems. Amazingly, a quarter to a third of all new jobs in telecommunications--a total of 50,000 to 75,000 per year--will come in nontraditional fields.

By the turn of the century, almost 20% of all workers will be working mainly at home, compared to 5% in 1985. The big change will be due to advances not in sending and receiving data, but in the technologies for bringing the office into the home via systems that transmit pictures and sound.

In 1984, the last year for which figures are available, $95 million worth of video teleconferencing services and equipment was sold in the U. S. Cost, the biggest barrier to wider use, has begun to decline. Prices have fallen 17% per year since 1981, not only because line and satellite charges have dropped, but because new techniques allow more information to be sent using less expensive lines and less satellite transponder capacity.

ACUTA thanks BUSINESS WEEK CAREERS for this article, which appeared in Winter/86 issue. Consultant Steven S. Ross is the author of Construction Disasters: Design Failures, Causes and Prevention.

DOROTHY HEINECKE, ACUTA's FIRST LADY

At ACUTA's 2nd Annual Conference and our 15th Annual Conference. Can you tell which is which?

Dorothy, tell me, how do you stay looking so young?

THE STORY OF HOW THE UNIVERSITY OF CHICAGO CONVERTED TO A NEW TELEPHONE EXCHANGE

—Patricia Todus
University of Chicago

Anyone facing the prospect of changing his telephone number does not look forward to the period of inconvenience which will follow until his new number is safely in the telephone book and his number is well distributed among his friends and associates. Imagine how an entire University, consisting of 8,000 students and a faculty and staff of nearly 10,000 faces such a change? But for the University of Chicago and the Medical Center, the conversion to a new 702 exchange number on January 1 was not the first time in recent memory that they had changed telephone numbers. In 1981-2 the University purchased its own telecommunications system, changing the majority of telephone numbers completely over a period of 1 to 2 years. The recent change, in contrast, did not involve changing the last 5 digits of any numbers, so that internally there were few concerns. However, unlike the earlier change, this conversion happened within a much shorter time frame, which necessitated careful planning. The story of the conversion from the 962 to the 702 exchange may help to prepare the groundwork for those contemplating a similar change, while providing relief for those who don't count changing their telephone number among the problems they face in the near future.

Planning for the new exchange began several years prior to the actual number change when the University's Office of Telecommunications approached Illinois Bell about the need to increase the number of Direct Inward Dial (DID) numbers available to the University, and Illinois Bell's central office serving the University was converted to an ESS office. There were a number of problems and the solution at that time was not clear. The University had exhausted its supply of the 962 exchange numbers. Because it shared the 962 exchange with other users, there was no feasible way to make more 962 numbers available without changing the numbers of other Bell customers, a costly and cumbersome alternative. Illinois Bell offered to make parts of other exchanges available to the University; this was rejected because of the confusion which would result from having several exchanges. Finally, the University wanted to have an exchange which would end in "2," in order to keep the last five digits of all University telephone numbers the same, thus avoiding having to make extensive changes in its internal dialing system.

Another problem confronted the Office of Telecommunications. The existing 962 exchange was brought into the University by way of a microwave from a remote Illinois Bell Central Office. This was in place because at the time the University installed its new telecommunications system, DID service was not available from their local Bell office. Now the University needed more trunk lines into this system. The existing lines into the microwave system were operating at near capacity. The cost of increasing the microwave capacity to accommodate more trunk lines was prohibitive. The microwave system was in trouble as well: incoming call transmission through the microwave system was vulnerable to noise and other transmission quality problems; and the FCC had informed the University that the microwave frequency would be discontinued in the near future. Again, the cost of changing to another frequency was very high.

Last summer, Illinois Bell and the University's Office of Telecommunications reached a solution: Illinois Bell would increase the capacity of the local central office in order to provide the University and Medical Center with a new 702 exchange. The exchange would consist of approximately 10,000 DID numbers, which would accommodate future growth. The University ordered 200 land trunks to handle the incoming calls. The existing 148 microwave-based trunks would then be phased out: 48 would be immediately discontinued, and the remaining 100 would be in place during the transition period from the old system to the new. The University was thus able to resolve all of its problems at the same time: it solved the number shortage without having to change its internal telephone numbers; it eliminated the microwave system and all of its problems; and it increased its incoming trunk lines to accommodate the increased traffic.

When the Office of Telecommunications announced the change to the 702 exchange in late August, the shortage of DID numbers had reached a critical stage. Somewhere between 20 and 30 new DID telephone numbers are installed each month, and it was difficult to keep old numbers out of circulation for an appropriate length of time. As a result, new DID numbers were only given out on an emergency basis. The Office of Telecommunications decided to give out numbers of a different exchange on a temporary basis. Clearly, the University had to move to the new exchange quickly. Illinois Bell needed three months to send out a "world letter" informing all other Bell companies and others of the change and instructing them to change their software. So January 1, 1987 became the official date for the change.

The announcement marked the beginning of a second phase: to prepare the University and the rest of the world for the transition to the new change. Office of Telecommunications staff met with many members of the University community and the Medical Center to discuss concerns and help them plan for the change. For many, the memory of the last change to the IBX system made them uneasy and they worried that another change would cause great disruptions. Those in the Medical Center worried that patients would not be able to reach the hospitals in emergencies. The Admissions Office was facing a peak period of prospective student requests for information and wanted assurances that telephone requests would reach them without difficulty. Others feared that their contacts would be put off by difficulties in getting through to them. These discussions produced many suggestions about handling the transition which were incorporated into the plans for publicizing and implementing the change.

In order to minimize delays and other problems, the Office of Telecommunications put together a system which would allow both systems -- the old 962 and the new 702 -- to function simultaneously for a period of two months from January through the end of February. During this period, callers dialing 962 would automatically be connected to a new 702 number without any delay. Beginning in March, however, the 702 exchange would be on its own: the 962 system would be disconnected. To assure a continued smooth transition, a second plan went into operation: Illinois Bell would route 100 lines to intercept the 962-dialed calls with a short message informing the callers that the number had changed and that they should redial or wait for operator assistance. If the caller waited, he would be then routed on one of 26 lines back to a special University team of intercept operators. Illinois Bell agreed that 962-dialed calls would receive the intercept message after no more than two rings. The University has implemented its own call distribution system to make sure that calls will be handled efficiently. This later plan will last throughout 1987. Both Illinois Bell and the Office of Telecommunications monitor the calls regularly and cut back on lines as the volume of 962-dialed calls diminishes.

Meanwhile, the Office of Telecommunications was also working on a plan to publicize the change to the University/Medical Center and to the outside world. Almost immediately, Telecommunications contacted the publishers of the local telephone directories and had

(Continued)

THE UNIVERSITY OF CHICAGO, Continued:

the University and Medical Center numbers changed. The University's News and Information Office and the Medical Center's Public Affairs assumed the task of publishing news about 702 in their various publications and sending out news releases to related institutions and to the media. The Office of Telecommunications took on the responsibility of informing the University community and Medical Center community about the change to 702.

The publicity campaign for the Telecommunications staff had two goals: (1) increasing awareness of the new 702 exchange among the faculty, staff, and students (while at the same time reassuring everyone that only the first 2 digits of their number would change, thus not affecting internal dialing), and (2), even more crucial, encouraging them to take steps to inform as many of their work-related and personal contacts as possible about the telephone number change. The latter goal assumed that it is the University and Medical Center faculty, doctors, deans, directors, staff, and students who know best who their contacts are with the rest of the world. Therefore, every message that went out from the Telecommunications Office regarding 702 contained some kind of reminder to "be sure to tell your friends and associates about dialing 702."

Many Telecommunications staff members began meeting together to plan and implement a publicity campaign. The first task was to inventory all the possible ways of reaching people, including signs, brochures, posters, messages on the University-wide computer system, the intra-University mail service, and payroll distribution. Telecommunications staff prepared a wide variety of materials, including brochures and posters, to be distributed throughout the University campus and the Medical Center. Teledata, the newsletter of the Office of Telecommunications, contained articles about the 702 conversion. Some attention was given to informing students through their departments and dormitories about the change, although students were considered less likely to need to call University numbers from the outside. Early on, departments were urged to anticipate updating their stationery and other printed forms when stocks ran low.

IMPORTANT NOTICE
Effective January 1, 1987

Please note that the 962 telephone number exchange for the University of Chicago and the Medical Center will be changed from **962** to **702.** The last four digits of the telephone number will remain the same. As a result, the telephone number for

_____

_____

(Dept./Section/Function/Person)

will change from

962-__ __ __ __ to **702**-__ __ __ __.

Please begin using the new 702 exchange on January 1, 1987.
Thank you.

To achieve the second goal, that of assisting University/Medical Center members to participate in spreading the news, the Office of Telecommunications printed "702 conversion" postcards and made them available in large quantities to all faculty and staff to use in sending news of the number change to contacts outside the University. (See illustration.) Checklists helped people to cover all bases when sending out postcards. The Office also printed large quantities of reminder stickers which were placed on every telephone. Telecommunications Director, Patricia Todus, sent letters to all deans, directors and administrative staff, urging them to direct an all-staff effort to inform outside contacts. People were also encouraged to be creative in getting the message out: some departments had their own stickers printed; the Medical Center's Professional Services department had a computerized message printed on all bills going out to patients.

The Office of Telecommunictions has continuously monitored the incoming calls since the January 1 date and, in mid-January, found that the volume of 962-dialed calls continued to be heavy. This started another round of publicity. This time, a brochure went out to all 10,000 faculty and staff (see illustration), suggesting that they "include a friendly reminder about 702" in daily telephone conversations. Results were good: there was a new flurry of orders for "702 CONVERSION" postcards from the University/Medical Center community.

Incidently, publicity drew attention also to the fact that the main numbers for the University and Medical Center also changed: the University from 753-1234 to 702-1234; and the Medical Center from 947-1000 to 702-1000. But, technically speaking, it wasn't necessary: the new ones were simply added on and the old ones have been retained. This was a practicable solution for telephone numbers which are so vital to the telecommunications function of the University.

Some final thoughts on the whole process: one tremendous advantage the University's Office of Telecommunications had in planning and implementing the conversion to 702 was a highly professional, creative, and resourceful staff which put in many long hours and hard work into the effort. Their counterparts at Illinois Bell were extraordinarily cooperative and responsive to the needs and requirements of the University throughout the conversion and were especially helpful in setting up and testing the dual 962-702 system. Equally important, the faculty and staff at all levels of the University put forth a tremendous effort to get information to the outside world about 702. Without their participation, the task would have been immeasurably more difficult. As is often the case, the change was essentially a technological one, but, in the end, it took a human effort to make it a success!

Patricia Todus is Director of Telecommunications at The University of Chicago in Chicago, Illinois.

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