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Vol. VIII, No. 12

IBM Security Chief Warns Users

On Program Costs

By a C&W Staff Writer

NEW YORK — The data and programs on which "you spend the most money are not necessarily the most sensitive or valuable," Robert H. Courtenay, manager of data security and privacy for IBM, warned users attending the American Management Associations' 20th Annual Systems Management Conference here last week.

Users, he said, therefore have to determine what are those most sensitive programs, and it would be the ones that would be of greatest benefit to the organization.

For example, he said, IBM spent the most money on circuit design programs, but it would consider benefiting prospective customers more sensitive data or programs to be of benefit to the organization.

While authorization codes are important in providing security for shoppes, (Continued on Page 4)

By doing this, he said, DP can be used to make a real contribution where it counts — in earnings per share. (Continued on Page 4)

Looking Ahead

Through detailed knowledge of the long-range prospects for a company, Rockwell said the DP manager can play an important part in helping the company identify those projects that have the greatest potential.

At the same time, however, DP managers often do not understand the importance of input and output, he said, indicating that DP managers should get more familiar with return on investment, earnings per share and share of market figures for their company — and how DP can work to increase those figures.

"If you are going to interface with top management, you should know what you are talking about," he said, (Continued on Page 4)

Mass. Police Under Investigation

For Alleged Sale of Crime Data

By E. Drake Lundell Jr.

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George B. Rockwell, who reached his current position as president and chief executive officer of Boston's State Street Bank and Trust Co. through the DP department, said DP managers who leave the company's long-range plans and the needs of their firm's customers were almost "asured of success."

Long-range planning is the key, he said, since it allows the DP manager to relate his personnel and equipment needs to the overall goals and programs of the corporation.

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It's a new era of man-computer relationship, Bayer predicted that "responsible actions" by the DP industry and its customers would "shatter the myth that man will be enslaved by computers." 

"More and more people are entering the work force who know how to use computers," Bayer said. "The U.S. will not be able to compete with computer experts. The U.S. will be filled with people who understand how to use computer power.

"We must learn how to use what we already have," Bayer said. "It is not a question of what is possible by technology, but of what needs to be done for the betterment of mankind."

(Continued from Page 1)


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Economy of Operation Key Consideration in On-Line Programming

PRINCETON, N.J.—The cost factors involved in installing and operating an on-line system for program development should be carefully weighed before a firm commitment is made, according to ADR, the Princeton-based software house. The cost of remote terminal devices and T/C controllers may be insignificant when compared to the costs associated with installing and integrating the software into a particular environment and operating it for many hours each day. These combined expenses may far exceed monetary savings resulting from improved turnaround and increased programmer productivity.

A careful analysis should be made of additional resources—larger CPU, more core, more direct access devices—that may be required to maintain an acceptable level of batch production during the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation. Dedicated an entire CPU to program development as the hours that the on-line programming system is in operation.

Roscoe Cost Effective

ADR suggests that its conversational test editing BJF system, ROSCOE, meets cost-effectiveness criteria better than comparable IBM-supplied software. ROSCOE provides versatile services to applications and systems programmers as well as to operations, design, and clerical personnel. The system contains data entry and editing facilities, compressed library storage services, and remote job entry and output retrieval functions. Also included are syntax checkers for COBOL, FORTRAN, PL/I and the Job Control Language (JCL). A unique capability of ROSCOE is its command procedure language which supports terminal I/O operations, and includes decision making, branching, and iterative types of instructions. ROSCOE command procedures are commonly used for job stream generation and prompting (or training) of clerical personnel.

To increase the versatility of the system, ROSCOE monitor services allow an installation to interface auxiliary programs with ROSCOE for on-line execution in a conversational mode. ADR supplies with ROSCOE a limited number of auxiliary programs, including a UTILITY subsystem which provides OS data set management services to systems programmers.

ROS COE will operate on S/360-40 and S/370-135 CPUs and larger under OS MFT and MVT with or without RASP, or with VS1 and VS2. It supports a variety of remote terminals including 2741, 2200, 3270 and teletypes of all speeds.

The system is generated to the user's specifications and installed by ADR personnel usually takes about one hour and is followed by classroom training of systems programmers and application programmers. User guides and detailed system operation manuals are provided; source code is available on request.

The system is available under monthly or annual licenses which incorporate a 30-day no-obligation acceptance period. ROSCOE is alternatively licensed at 27 sites in the U.S., Canada, and abroad. ADR reports that 15 additional installations are scheduled for the second quarter of 1974.

ROS COE In Use At VS Sites

PRINCETON, N.J.—Almost half of the existing ROSCOE installations are using one of IBM's virtual storage operating systems, according to ADR, manufacturer of the remote programming package. The most common environment for ROSCOE is an S/370-145 CPU with 512K of main memory operated under VS1. These installations generally have 3320 disc drives and local 3270 display stations. User reports and terminal response time is consistently good, and background batch processing is not noticeably affected by operation of the on-line programming system. One of these VS1 installations recently upgraded to VS2, and ROSCOE was successfully transferred to the new operating environment. According to ADR, several additional VS2 installations of ROSCOE are scheduled for the second quarter of 1974.

Operates Entirely in Virtual

In a VS1 or VS2 environment ROSCOE operates entirely in virtual storage under control of the VS paging supervisor, usually in a virtual region or partition of 100K. In an OS MFT or MVT environment a minimum of 80K main memory partition or region is required. In most cases, installations can change from one operating environment to another without reconfiguring ROSCOE.

Utility Aids OS Data Set Maintenance

PRINCETON, N.J.—A major new facility has been added to ROSCOE, ADR's conversational programming system. The new capability, called The Utility Subsystem, provides on-line OS data set management services to systems programmers responsible for the maintenance of OS and its direct access resources. Working from a ROSCOE remote terminal, a systems programmer can now allocate, catalog, rename, write and scratch data sets; he can also build, edit and delete entries in the OS catalog. All operations are password-protected, allowing access by authorized personal only. The data management functions provided by the ROSCOE UTILITY Subsystem are comparable to those provided by TSO and the IBM batch utility packages.

Runs Under Monitor

The Utility Subsystem operates under the ROSCOE monitor and requires no special knowledge of real or virtual storage. It can be used with other auxiliary programs serviced by the ROSCOE monitor, or in an IBM environment with a special purpose program written to communicate with other installation utilities. The ROSCOE UTILITY Subsystem and other monitor programs are supplied as a standard part of the ROSCOE package.

Did You Know?

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Roscoe Puts Your Designers, Programmers, Operations People (Almost Everyone) On-Line

ADR's ROSCOE is your Declaration of Independence from IBM's TSO or VM. You don't need another CPU to run ROSCOE. You don't need more memory or discs. Your daily batch production will not be reduced to a trickle. ROSCOE costs you less in both direct and indirect costs.

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New York — "Use your ingenuity on applications, not equipment," and shop your vendors — IBM and the phone company "equal motherboard, but there may be better vendors for your application." William P. Davenport, telecommunication systems manager at General American Transportation Corp., told an audience of computer users at the American Management Associations' annual meeting here last week. "In bringing up a system, get the user involved, don't leave it up to you. If you don't, you end up with a system that is not user-oriented to the degree that you'd like."

The efficiency with which a system is used depends heavily on the operator, he said. Systems people, financial people, com- munications people and vendor representatives should be part of the acquisition team, as should the users. But the user comes first, he stressed. Staff early and get the technical re-sources from early on.

Develop in-house expertise as soon as possible. "If nothing else, it prevents snow jobs," he said.

For example, he said, "Who in your house can say that it is better than Brum for your installation?"

Users can also expect better-on-the-spot trouble analysis and decisions if they have in-house talent, Davenport said.

As for programming costs, Davenport asked, "Have you got any idea what your programming costs will be unless you have some in-house talent?" One of his ven- dors once wanted $3,000 for three lines of coding that his in-house people could easily handle, he mentioned.

In the RFP [Request for Proposal] "you should have an outline of the for- mat, the type of proposal you expect to see." He said this helps with quick evaluations of what the different vendors are willing to offer in particular categories. It is no replacement for a face-to-face discussion with the user, he emphasized.

Be modular, he added. This allows flexi-bility in systems, and as one system provider, flying machine software modu-larity as well as hardware modularity to allow for some downtime, he said.

Do be realistic. A balanced schedule, neither too loose nor too tight is best. "Nobody likes a tight schedule but it brings out the best in you," he said.

Don't underrate costs. The job, the time it will take and potential gain is not the only factor. Someone will always use the system, and you can pull it off on time, within budget and it does what the user expects, but growth. If it doesn't work out so smoothly, you may be out of a job," Davenport warned.

"A devil's advocate... is the most valu-able man you have in your shop." This person is a "visionary" — get the person who says, "Don't do it that way, you're going to have problems."

Make changes in the system easy. In a communications system there are always changes," he said.

He also said, "So it reports when it reaches predetermined bottlenecks in file care and communications line utilization.

Make the man-machine interface easy to aid in training, for example, he noted.

"The gap is ubiquitous. It plagues busi-ness. It creates problems in government. It complicates hospital administration. It troubles educational institutions," Davenport said.

The problem is caused because "too often systems promoted as money savers and efficiency improvers develop intract-able appetites" for hardware, software and supplies, he said.

"After over-anticipation, perhaps the next biggest cause of the expectations gap is the computer system itself," Anderson added, ex-plaining that users have "often done a poor job" of clearing up the lingering misconceptions about comput-ers.

"In the year 1974 there are still those who view the computer as a king of mechanical Moses, capable of leading all and sundry to a promised land where systems problems no longer exist," he stated.

This type of management also allows the DP department to "interface" with all segments of the firm and to become intimately familiar with the objectives of all divisions or departments in the com-pany.

For example, Rockwell said, any of the task forces set up by State Street always includes a representative of the DP de-partment. It is working for State Street, since he noted that although busi-ness has increased 50% in the past 10 years, the DP department has been able to keep up with the work with the same budget it had 10 years before through long-range planning.

At the same time, he said, DP people had to become familiar with the customers, because "if the customers don't like it, there is no need for a project."

Top management involvement can help keep the DP department informed in this area, he added, pointing out that at State Street management sends a monthly pub-lication of customer trends and needs to the DP department.

This problem, however, could be over- come by placing terminals away from walls or rearranging the office housing the terminal, he added.

It has been no proven cases of wiretapping in the data communica-tions environment, Courtney said it was technically possible and the more toward more terminal- and communications-oriented systems could "invite wiretap-ping."

It need to include coding and encryp-tion in the computer environment, there-fore, "cannot be ignored," he said.

For the DP manager, it is extremely important to have some type of encryption for his data and to prevent someone from learning the author-ization code and dispensing himself on-line cash-dispensing terminals, he said, on-the-spot trouble analysis and decisions if they have in-house talent, Davenport stated.

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Data Communications Set 
To Enter '3d Generation'

By Patrick Ward

NEW YORK — Data communications is about to enter its own "third generation" that will match the needs and capabilities of the latest computer systems, according to Robert A. Kitchener, director of communications, Card Division, American Express.

In his keynote speech last week to the computer networks session at the 20th Annual Systems Management Conference of the American Management Associations (AMA), Kitchener said digital communication nets will comprise the third data communications generation — the first actually designed to transmit data to and from computers.

The third generation may be here before the end of the year, Kitchener mentioned, although "full development will probably take three to five years," he said.

Looking Back

The first data communications generation lasted from 1958 to 1968, Kitchener explained, and involved the adaptation of voice and telegraph services, using modems leased from the common carriers.

Cost per unit of data transferred was high, but there was little reason to innovate because of the restrictive rules in the common carriers' tariffs and the lack of alternatives.

Tariff revisions in 1969 changed that and the second generation of data communications began. Resourceful users could assemble more optimum equipment from a variety of competitive vendors for use on the carrier voice bandwidth analog circuits.

However, these efforts have met with only moderate success in terms of improved cost effectiveness," Kitchener remarked, "and with little improvement in reliability or error rate.

Worse, the second generation brought "a proliferation of independent, non-standard, application-specialized systems, with little apparent progress toward the development of integrated data networks for large users with many heterogeneous data processing systems.

Third-generation alternatives will come from several sources, Kitchener feels.

DDTS This Year

AT&T's Digital Data Service (DDTS) is scheduled to start operation this year and will offer leased data channels with improved performance... at considerably lower cost than present leased channel rates," he said.

Western Union's plans for domestic satellites, the first to be launched in April, will probably have a favorable effect on rate structures because of the extra capacity they will provide, he added.

Specialized common carriers and packet-switched networks provide additional third-generation alternatives, he noted.

Goldwater's Challenge: Get Involved With Privacy

NEW YORK — "The time has come for the American business community to get totally involved with the issue of privacy of personal records in computerized data collection systems," Rep. Barry Goldwater Jr. (R-Calif.) told the American Management Associations' conference.

Goldwater challenged the businessmen's group to "begin to think about privacy rights and how to protect them" since "you, of all people, are in the best situation to correct the ills."

Noting the threat to privacy posed by computerized data banks is a "growing menace," the congressman said "it is not difficult to determine the adverse potential of today's technology on the right to privacy."

"What is difficult," he continued, "is making certain our traditional liberties can be secure against growing technological onslaughts against privacy."

At the same time, he said, the worst enemy to personal privacy "is not the computer, but rather apathy and ignorance" on the part of the people of the country and a growing "computer mentality" where people want to store more and more information in such systems.

"The potential of privacy invasion is always present in a sophisticated computer operation," he warned, noting that "remarkably, the misuse of information held about individuals in computer systems has been held to a minimum."

But, he warned, "the potential for misuse is still there and certainly data surveillance has grown to very menacing proportions due to the technological advances which allow such information to be given multiple use and consolidation."
March 20, 1974

COMPUTERWORLD

It's the Age of Project Control and User Has Big Role

By E. Drake Lundell Jr.

NEW YORK — The Seventies should see the coming of age of project control in computer operations, even though there was not much progress in the area during the 1960s, Charles P. Lecht, president of Advanced Computer Techniques Corp., said here last week.

The only thing that has really changed in the past 10 years, Lecht told a session of the American Management Associations' 20th Annual Systems Management Conference, is that users now know more what to expect in the way of project specifications on later iterations of the project, he stated. Lecht said resource estimates are "hard to come by today," since estimating is still more of an "art" than a science, and the accuracies of estimates vary widely depending on the people making them. Status reporting, he noted, should not really be thought of as a tool just to inform management of the progress of different projects, but should also keep people working on a program informed of the goals of the project and of their role in the overall system.

Use What's Available

Today there are only five tools that can be used in the sphere of project management, Lecht indicated, even though these tools are "still not satisfactory."

These tools include the creation of specifications, drawing up work plans, resource estimates, status reports and person-to-person meetings.

We have to acknowledge the fact that specifications are generally "lousy" today, he said, indicating "there is a lot of fantasy in most plans."

By realizing this, users can discount the effects of those fantasies and come up with realistic specifications on later iterations of the project, he stated.

The computer function "contributes much more to project control" than "it is generally assumed," he said. "It is the Age of Project Control and User Has a Big Role, and the user can do as much as the computer can do, if not more." A call to one of the more than 200 ENTREX installations the company has "would be divine."

The big difference is pre-processing in System 480's batch edit and output edit software — simultaneous with data entry.

No other key-to-disk system gives you so much control over the quality of your output, so much independence from the main frame, so much versatility in managing the data while you have it.

Files can be sorted, merged, and collated. Error message files can be created. Partial output can be done in a tab room you can do on System 480's batch edit and output edit software — simultaneous with data entry.

Why Is Crime Up?

NEW YORK — While data security and auditing techniques have not kept pace with advances in computer technology, criminals have, and this accounts for the rising rate of computer-related crime, Donn B. Parker of Stanford Research Institute told the American Management Associations.

Parker, however, indicated the problem might be at its peak now since better security techniques are being developed and auditing practices are becoming more refined.

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The computer function "contributes much more to project control" than "it is generally assumed," he said. "It is the Age of Project Control and User Has a Big Role, and the user can do as much as the computer can do, if not more." A call to one of the more than 200 ENTREX installations the company has "would be divine."

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U.S. Study Pinpoints Tricks to Improve Operations

By E. Drake Lundell Jr.

NEW YORK — Many of the tricks of the trade that make computer operations more productive and efficient are learned from experience and common sense. With this in mind the U.S. Government has just completed in-depth investigations of 43 particularly efficient computer operations in an attempt to learn the secrets of their efficiency, according to Dennis R. Chastain, computer systems performance analyst with the General Accounting Office.

The study, which investigated 13 military installations, 11 civilian installations in the government and 19 commercial operations, found the improvement tricks fell into six categories: applications software, systems software, operation considerations, scheduling considerations, hardware considerations and workload considerations.

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It could have been the program and it could have been a faulty tape. Heaven only knows. But you'll find no peace on earth when an error is raising the devil with your orders. What you need to find is a way of narrowing your possibility of error. And the easiest place to start is in your selection of computer tape. How? By specifying BASF. At BASF, we produce tapes that are a lot better than they have to be. For example, our special coating technique provides a more even dispersion of oxide particles in the binder, so no matter what your packing density, you get improved bit-to-bit uniformity and fewer sins of omission.

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Special low-cost software packages are now available.
Program Mixes Theoretical With Practical

Pollution Game Promises Students, Firms Real Results

By a CW Staff Writer

PITTSBURGH - A computer-based game which mixes theoretical with practical applications is being used to train students and aid government agencies and industries in heading off air pollution disasters and in planning strategies to deal with pollution problems.

This spring, the Air Pollution Episode Game (Arpege) is being used as a teaching tool in 120 computer centers, sharing, process control, and upward compatibility.

The major uses of the Air Pollution Episode Game (Arpege) are:

- For classroom work as a supplement to lectures and source material.
- For professionals in air pollution episode control.
- For pollution source managers with economics as a consideration.

- For research scholars as a tool for behavioral and administrative studies.

Arpege was begun early in 1971, resulting from a joint project between Carnegie-Mellon University's (CMU) Environmental Studies Institute and the Air Pollution Control Board of Allegheny County.

A preliminary version was developed and tested with undergraduates in 1972; a full version was tested with participation by actual industrial managers, bureau personnel environmental leaders and educators.

Arpege is currently run in Fortran on an IBM 360/67 and on a Univac 1108 with a Fortran compiler.

Conflicting objectives characterize the behavior and decisions by each player. Players are given roles as managers of the major pollution sources, as members of the regional air pollution control agency or as judges who rule on disputes.

Computer-implemented models simulate industrial operations, weather and meteorology, atmospheric dispersion of pollutants and resulting air quality and associated adverse effects.

The Arpege program was written at CMU by Prof. Anthony S. Walters, School of Urban and Public Affairs; Prof. Matthew J. Reilly, Environmental Studies Institute at CMU; and several students.

Geographically Flexible

Arpege considers short-term episodes rather than long-term air pollution problems. "The beauty of Arpege is that it is easily adapted for a particular geographic region," Walters said.

Each time the area of play is changed, a whole list of variables, including land use, weather conditions, prevailing winds, etc., has to be changed. Once it is programmed for that area, however, the only input is changes in decisions that students make concerning particular plants or laws, Walters added.

Three Phases

The game is divided into three phases: episode planning and preparation, simulation of an episode; and analysis and evaluation of players' roles and strategies.

The last phase provides government officials and pollution source managers with "mutual understanding that can be valuable in ameliorating air pollution problems," Walters said.

"There is no specific winner of the game," Walters said. "Every time a set of decisions is put in, they affect the status of the plants, air quality, etc., in this hypothetical Arpege county."

Batten the Hatches

"At some point, if weather conditions get bad enough, you get air pollution episode conditions and these have to be met by either cutting down on plant pollution or by enforcing laws to cut back production," he said.

Though the players would never "wipe out" the population, he said, they could receive printouts stating that pollution levels are so high that their children are being kept home from school or that no traffic is being allowed on freeways due to the carbon monoxide level.

A private consulting firm is utilizing Arpege in California and several industrial firms and universities have ordered copies of the game from CMU.
That's the decision faced by many users of large IBM computers. It's a tough decision, but Cambridge makes it even tougher. Because our 370/STOR 155 add-on memory has features that can make your Model 155 processor perform like a 158—and then some. Take a look at the checklist—and then make your decision:

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<th>Model 155 with 370/STOR</th>
<th>Model 158 from IBM</th>
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<td>V 7. Virtually no conversion or installation costs</td>
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<td>V 9. Ability to reconfigure main memory</td>
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<td>V 10. 35% less costly than a Model 155 with all IBM hardware</td>
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That's what 370/STOR 155 can do for your installed Model 155 processor. We almost turn it into a 158—and then some—for about one-third less than it will cost from IBM.

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CAMBRIDGE MEMORIES, INC., 696 Virginia Road, Concord, Mass. 01742 (617) 259-9680
Bank Finds Way To Cut Turnover

By Toni Wiseman
Of the CW Staff

HOUSTON - Career pathing, combined with flexibility and caring, is the way to decrease personnel turnover and improve operations in a DP shop, a Computer Caravan workshop was told here recently.

Scorning abstract concepts of promotion, the Bank of the Southwest has developed a concrete personnel flowchart, so that all employees know exactly how far they can advance and what their alternatives are along the way, Mickey Metcalf, DP manager, told workshop attendees.

"Better for All"

His shop has instituted some other procedures, all of which, he said, makes the operation more satisfactory and efficient.

For instance, each employee and his superior decide on the worker's goals and how and when performance should be measured against these goals. "This becomes a signed contract between the man and his superior," Metcalf said.

At the Bank of the Southwest, Metcalf went on, much effort is expended to make sure personnel are working where they are best used and most capable. "If a man chooses to train for programming and we find out he just can't hack it, we counsel him to try something else," Metcalf said. "If the guy doesn't agree with us on potential, I'd rather lose him at this point than later when his productivity has gone down through discontent."

The bank, he said, moves people where management thinks they can do the best job, even if this means people going 180 degrees out of DP operations. One supervisor, for instance, is currently in charge of customer contacts.

Regular Rotation

Programmers are assigned to jobs on the basis of availability and interest, but all are rotated on a regular basis. "You can't afford to have a bunch of specialists. You can't afford to depend on them and then you can't afford to lose them so you cater to them, and you can't afford that either," Metcalf said. "I'd rather have five men competent in the same five areas than five specialists in each of those areas."

Another move which reduced turnover, he noted, was the addition of technical writers to the staff. "The secret to success here is making human beings more effective in their environment," Metcalf said. "A programmer doesn't want or like to code, and if he's coding, he isn't programming and you're not using your resources."

The bank, he said, has found that one tech writer can satisfy the documentation load put out by two or three programmers, and therefore he has seven tech writers and 22 programmers.

All this, he concluded, has reduced the turnover rate in DP from 35% in 1968, to 15% in 1970 and 4% in 1972. "We only lost one person out of 93 last year," he noted.
Editorials

Suing for Privacy

Computer users are beginning to make themselves heard on the nature of legislation that is certain to generate new organization and use computer files.

And not a minute too late. Some of the suggestions for safeguards contain logic which can best be deemed questionable.

For example, one proponent of privacy safeguards suggested the best way to stop abuses is by suing the alleged perpetrators of wrongdoing.

We have always advocated the avoidance of litigation, and we do not see the threat of a citizen lawsuit as presenting any real incentive for a credit bureau, police agency or large educational institution to change its policies on information handling.

Furthermore, the average citizen has neither the time nor the financial resources to sue the holder of an erroneous record (which could be the cause of unemployment).

The citizen lawsuit is a last resort, and suggestions that it be used as the normal means of protecting privacy are irresponsible.

'Total People'

The unsophisticated data processing manager is on his way out of the American business scene. The increasing importance of the computer function to the need for managers to be concerned with corporate policy and goals, social and legal implications of computing, and business principles in general.

One of the government's top computer experts, Dr. Ruth M. Davis of the National Bureau of Standards, reported to the Federal Executive Board that it is "technological suicide" to introduce computers into one part of an organization without considering the effects of that change on other parts of the process.

The company, she suggested, is just one part of a process of change in management or operations, and should not be considered as "an end in itself."

But given the propriety of computers in business and administration, how does one make them more meaningful?

The president of NCR told members of the American Management Association that the role of systems managers in corporations will become more important, and systems development, rather than technical development, will comprise the "leading edge of most information processing advances."

Overanticipating the benefits of automation has caused problems in recent events point to the need for corporate board members, possibly accounting for the scarcity of computer people as chief executive officers.

But the increasing importance of the computer function and the institution of long-range planning for the application of technology to corporate problems could change this.

DP managers must be ready for their changing role, however, and this means relating to the long-range and policy goals of an organization, not simply implementing those policies that might help achieve goals ... not simply relating to operational problems at the expense of long-range goals.

And if this isn't enough, we are beginning to hear more and more about legal challenges to the use of computers in keeping records. Serious questions are also being raised about whether society wants all the "benefits" that computers can offer since, as a vice-president of Honeywell said last week, "We want to know how technology affects the total human condition."

But what all these events indicate is the need for computer people to be "total people."

After years of warnings about the need to broaden our interests and education, evidence is piling up supporting those who issued the warnings.

Letters to the Editor

Will I Be Programmer Or Microprogrammer?

In reference to "Odds Stacked Against Employment of Programmers" [CW, Feb. 27], a much better analogy would be the recent change from discrete semiconductor to integrated circuit technology. This comparison is particularly interesting, since one of the main factors contributing to the increasing programmability of the hardware is the integrated circuit.

With the advent of the integrated circuit, an electronics engineer, especially a digital one, was confronted with two main choices. If he liked the nitty gritty work, he could work for an integrated circuit manufacturer. Of course, he'd better be prepared to work to a new set of standards. Or he could turn into a systems designer, in which case he might as well forget much of the electronics he ever learned.

The programmer of tomorrow will have a similar choice. If he likes the nitty gritty, he will probably be working for a computer manufacturer, writing microprograms for microcomputers which allow direct execution of higher-level language statements.

With the increasing use of writable control store, compilers and interpreters will be written almost completely in microcode. This kind of work will require a much better understanding of the hardware than was needed of to-day's programmers, but has a disposition for highly detailed work.

If, however, he would rather work with overall concepts, and put to use the higher level languages and machines that are being developed, he needs to study the latest languages, data base management techniques and some of the more usable artificial intelligence concepts.

The ideal is to be predictable and consistent. The objectives themselves are negotiable. Machine dependence is a very conflicting effective objective in some situations. And if that is the case, machine efficiency and dependence could be better achieved with assembly language.

In summary, let us encourage each other toward professionalism in a reputable way to do business by what we say, do and publish.

Philip N. Bergstresser
System Programmer
TRW, Inc.
Vandenberg, Calif.

Cobol Professionalism

The Cobol Clinic has offered some provocation that I think should be further discussed in reference to the DP professionalism that many desire. One facet of professionalism is the consistent adherence to stated goals, but the Cobol Clinic is encouraging exactly the opposite.

Specifically, Cobol is usually utilized to meet several objectives, such as source program readability, programmer effectiveness and machine independence. (There are other reasons, but these three are probably widely accepted.) If these are valid reasons, we should strive to meet them as often as possible when we do use Cobol.

In contrast, the Cobol Clinic column is replete with examples of Cobol which defeat these objectives. The extent to which the contributors have gone to produce machine-dependent efficiencies, at the expense of program readability, demonstrates inconsistent behavior or a commitment to Cobol for reasons other than the three cited.

It is my judgment that we need to state our objectives, plan to meet those objectives and then adhere to that plan until a better one is established for an entity (installation or industry). Cobol could then be selected as the language to meet those objectives.

Finally, program development should be administered to meet the objectives as well as possible. If we attempt to meet them only superficially, we are being unprofessional in our conduct and should rightly be called technicians.

The ideal is to be predictable and consistent. The objectives themselves are negotiable. Machine dependence is a very conflicting effective objective in some situations. And if that is the case, machine efficiency and dependence could be better achieved with assembly language.

In summary, let us encourage each other toward professionalism as a reputable way to do business by what we say, do and publish.

Donald E. Tarbell
Miraleste, Calif.

Ads Turn Him Off

I have a real problem with advertisements and Computerworld articles which imply that without any consideration customers would use 360 equipment rather than 370 equipment. I would not be so disturbed if users were encouraged to consider the cost/benefit ratio of 360s to 370s.

My criticism of this type of advertisement has nothing to do with any "allegiance" to IBM. I manage a 370/158, a 370/145 and a 360/50; 48 Memorex disk drives; 25, 3420-type tape drives, some from IBM and some from STC; Sanders data communications systems; and a host of I/O peripheral devices from a leasing company and/or IBM depending on the expected life in our shop.

Each of the hardware decisions in our shop was made on its own merit. And all three of the CPUs are leased, each one under the best plan available at that time.

I am galled by the implications of some advertising (and many of Computerworld's articles) that customers do not need to consider the 370s as they are more expensive than 360s and the performance/cost ratio is not justified. It may or may not be, depending on your situation. We have found that for on-line processing 370s offer a level of service that we could not attain on a 360 because of overall hardware reliability of the CPU, automatic recovery and retry features of the 370 and the extensive logging of hardware failure conditions on the log file for use by the field engineers.

This type of advertising may get a number of customers who don't think (and who may be presently under IBM's wing for that reason) but this type of advertising may also turn away a few customers who would be willing to consider 360 equipment on the merit of its intended use and application.

L.L. Jones
Vice-President
DP Operations
First & Merchants Corp.
Richmond, Va.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.
The 1974 technical revolution continues. The Cambridge Memory Accelerator for the IBM 370/155 follows the family of products that had already established many of the techniques of effectively attacking the 20-year-old traditions that many of us have come to consider as laws of nature. In this case, the tradition which is being attacked is the conscious marketing of "hobbled" machines—those that are slow for some way that makes them less valuable than the newer versions which are available.

**Hobbling machine**

Hobbling machines were used to reduce the speed of IBM sales resulting either from technical obsolescence, or else from overpricing, or lack of substantial marketing effort. However, before hobbling became a conscious design tactic for marketing purposes.

There were three areas where hobbling could be practiced:

- Low-Entry Systems—Hobbling was used to provide a limited, cheap system that could be sold out, but which would remain on the market.

- No-Development Cost Systems—Internally, any system is examined for development cost/marketability possibility. Hobbling systems effectively had no development costs; the costs had already been expensed on the unhobbled system. This allowed budget cutting at the design phase.

- Purchase System Designs—This is in some ways the hardest hobbling tactic of all. Most major computer companies had a disheartening number of copies for non-commercial use, and these were sold for a much reduced price.

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**Accelerator Challenges tradition of mid-term Kicker**

The Taylor Report

By Alan Taylor, CDP

The Unhobbling of the IBM 370/155

The Original 370/155

A slow (2 PAC) IBM memory resulting in wasted processing cycles when data is stored or accessed from the main memory.

The IBM Mid-Term Kicker

A faster (1 PAC) IBM memory installed, but only in conjunction with virtual memory circuitry, making it a 370/155.

The Unhobbling Version

A faster (under 1 PAC) non-IBM memory with special logic circuitry that permits the waste of processing cycles to be reduced by an estimated 22% without requiring virtual circuitry.

---

**Technical Revolution Continues**

Actuators have been developed to control the level of precision in these systems. They are capable of solving large systems of simultaneous linear algebraic equations, employing the new computer technology that Atanasoff had invented.

By this time the U.S. was at war and since the ABC and related research were not war-connected, Barry was subject to military service. If Barry had been drafted, the computer would play a vital part in the development of the hydrogen bomb. At that time both men moved to jobs where their knowledge and training would make a direct contribution to the efforts of the nation struggling to make up deficiencies in equipment and material. Barry went to Peasdon to take a job with Consolidated Engineering where he became an expert in mass spectrometry, and Atanasoff accepted a research position with the Naval Ordnance Laboratory (NOL) in Washington, D.C., where he became head of the Acoustics Division.

Friendly Help

Prior to his leaving Iowa State an agreement was reached that the college would contribute $650 towards the cost of the defense research which never accomplished. When Iowa State lagged in taking action, however, Atanasoff on his own initiative located a man skilled in the mysteries of obtaining research funds, applied for the drawings and specifications for his personal.

The lack of action was discouraging and Barry had no better luck and gave up. He could have forced the college in the courts but one gets the impression that controversy is distasteful to this man. It is the stimulation and development of the hydrogen bomb.

When Atanasoff went to NOL, Barry now at the Moore School of Electrical Engineering at the University of Pennsylvania was still widely interested in computers.

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**Unhobbling the IBM 370/155**

A mid-term System that is no longer recommended by the Accelerator. The IBM 370/155 is now obsolete and has been replaced by a faster system.

---

**Unhobbling the IBM 370/155**

A fast (1 PAC) IBM memory installed, but only in conjunction with virtual memory circuitry, making it a 370/155.

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Digital Concept Didn’t Take Shape Easily

(Continued from Page 15)

He had written a highly significant letter to Atanasoff after his June 1941 visit. Dated Sept. 30, 1941, and addressed to “Dear J.V.” he posed the question:

“As there is no objection, from your point of view, to my building some sort of computer which incorporates some of the features of your machine?… Ultimately a second question might come up, of course, and that is, in the event that your present design were to hold the field against all challengers and I get the Moore School interested in having something of the sort, would the way be open for us to build an ‘Atanasoff Calculator’ (a la Bush analyzer) here?”

The letter closed “Sincerely yours, John W.Operates with any COBOL compiler

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The letter closed “Sincerely yours, John W. Mauchly” but was not signed. In anticipation that the letter’s authenticity might be challenged, Honeywell lawyers revealed the extensive research it had conducted on distinctive type defects. Mauchly subsequently admitted he had written the letter.

At the Moore School, Mauchly began working with Dr. J. Presper Eckert on a project which eventually became the Eniac, developed for the U.S. Army Ordnance Corps which started funding them in June 1943, though commercial rights were held by the University of Pennsylvania.

In March 1945 Eckert-Mauchly pressed the university to recognize their commercial interests in return for assurances they would help the university fulfill its Army contract. Unhappy recognizing the necessity for cooperation with Eckert and Mauchly the university yielded any patent rights obtained based on the work for the Army.

However, one year later in 1946 Dean Pender of the University of Pennsylvania demanded they subjugate their personal commercial interests to the interest of the university or terminate their employment. They submitted resignations effective March 31, 1946. They filed patent applications for Eniac June 25, 1947.

Sperry Rand eventually acquired the patent rights from Mauchly and Eckert, but since Dr. Edward Teller in the Minneapolis trial testified he had used the Eniac for calculations on the hydrogen bomb more than a year earlier this was one factor in Judge Earl Larson’s declaring the patent invalid. Public use of an invention more than one year prior to application for a patent renders that patent invalid.

Port III details how Atanasoff survived the pretensions to his invention of the first computer and emerged as the “real father.” Now in his 70s, Atanasoff refuses to rest on his laurels.

Letters to the Editor

CPP Decides to Disband

The active members of Computer People for Peace (CPP) have decided to disband. This is a painful decision for those of us who have been involved with CPP for many years.

For this reason we have tried to keep CPP and \textit{Interrupt} going even as local activities declined. The interest is still there. In the past year, CPP has received more mail and requests for literature than in any previous year. But the realities are that it takes a strong local group to keep the organization going and that \textit{Interrupt} cannot be written or distributed without input from groups actively involved in research and action groups.

While CPP can no longer do this, our friends in Science for the People (SfP) would like to continue relating to computer people. SfP is a national organization of scientific and technical workers committed to the policies and concerns that CPP represented.

We believe that SfP, through its organization and magazine, can fill many of the needs that CPP and \textit{Interrupt} met over the last six years.

New York Steering Committee

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March 20, 1974
**Independent Sort Handles Fixed-Length Nova Records**

**PLAINVIEW, N.Y. — Data General users under RDOS or DOS can sort sequential, random or contiguous files of fixed-length records with a Disk Sort Package now available from GP Computing Services, Inc.**

Records can be up to 256 words long, but blocked records can be handled only if the blocks themselves are not more than 256 words long, the company said.

File parameters and sorting instructions — sort keys, ascending or descending sequence, etc. — are entered as the programmer sets up the sort, which is set up a subroutine, written in Fortran IV.

The routine requires 2,300 words of memory plus room for an internal buffer which is defined by the user but must be at least 10K.

The package can be purchased for $950, 41 Burton Ave., Islandia, 11701.

**Object Decks Repunched, Listed by Utility Package**

**ANAHiem, Calif. — Object decks can be repunched to incorporate changes from REPLACE cards, or listed in hexadec-imal or EBCDIC characters, column by column, with the X4744 program from Pilkerton International.**

The listings are formatted and key words such as TXT, RLD, ESD and END are shown to identify the type of card being printed. The program will work on any OS or VS system, the company noted, and it is available in both source and object code for $195, from P.O. Box 6372, S206.

**Call-a-Computer Network Gains 'Information' Retrieval/Report Tool**

**SAN PEDRO, Calif. — Users of the Call-a-Computer remote computing network can perform data retrieval, analysis and reporting operations with the Information Retrieval/Report Tool recently installed by the network.**

Whole business applications can be structured around Inform facilities, and related applications can be run on the system and a Regulator Module that analyzes and restructures the system's activities, second-by-second, to optimize its performance.

In addition, a System Performance Module that measures the time each activity and of every component in the system and a Regulator Module that analyzes and restructures the system's activities, second-by-second, to optimize its performance.

Synchronous Adapter. This updated feature is free to Model 6 or Model 10 users.

**‘QCM’ Times, Adjusts, Reports User’s Performance Under OS**

**PITTSBURGH — Users of IBM's Operating System/3 (OS/3) can measure their installation "more accurately with IBM's SMP", improve performance "signi-ificantly" and report the results in terms of time, dollars and percentages, with the QCM (QCM) package from Duquesne Systems.**

Software within QCM includes a Timing Module that measures the time each activity and of every component in the system and a Regulator Module that analyzes and restructures the system's activities, second-by-second, to optimize its performance.

In addition, a System Performance Module that measures the time each activity and of every component in the system and a Regulator Module that analyzes and restructures the system's activities, second-by-second, to optimize its performance.

The remote job entry feature has been extended to support data entry from the S/3 disk as well as from tape and unit record devices as before. Reading from several devices is now possible and this ability is reflected in the feature's new name: Multi-access RJE Work Station (MRJE/WS).

A Communications Control Program (CCP) has been added as a feature to the IBM's OS/3 and takes no significant storage of its own. The complete QCM package is available on license for prices ranging from $1,400.00 for small installations to $5,000 for large installations.

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**WHITE PLAINS, N.Y. — The System Control Program (SCP) for IBM's OS/3 has been enhanced by IBM to allow more effective use of the small system as a terminal to 370 mainframes operating under OS/VSE or OS/V2S, or as host to its own set of terminals.**

The remote job entry feature has been extended to support data entry from the remote node to the S/3 disk as well as from tape and unit record devices as before. Reading from several devices is now possible and this ability is reflected in the feature's new name: Multi-access RJE Work Station (MRJE/WS).

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**If ALL that makes a lot of sense to you, try it out on us. We’re demanding. . .but reasonable.**
NEW YORK—While users of IBM's Customer Information Control System (CICS) face problems, careful planning—and the use of at least one, newly available support package—can solve some of them, and the forthcoming VS implementation of the system should overcome others, according to a consulting firm specializing in CICS.

At a recent seminar it sponsored for technicians and managers, Computer Horizons Corp. (CHC) identified lack of storage protection as one of the more serious problems. All tasks in the CICS partition are similar to separate programs in the operating system. Core fragmentation can develop at such a rate that a task may find it impossible to get the core it needs.

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Assembler Seen Key to CICS Use

The Dynamic Mapping software package recently announced as a Field Developed Feature (FDG, March 6) is "another helpful tool, letting the programmer review core and storage chains during CICS execution," he added.

Core consultation is a major concern, Koehmle went on, because core estimates are often inaccurate. Applications should not be written in a high-level language if they are operating in any CICS environment where the memory dedicated to CICS is extremely limited.

The reentrant coding interface for each program will require a "substantial percentage" of total space available, he warned. However, "reasonably accurate, yet complex" core estimation formulas may be found in IBM's general information manuals for the particular CICS hardware in use.

Also significant, however, is that core fragmentation can degrade throughput of a CICS task. If a 5K area is needed, CICS will search for contiguous core but core will not be organized dynamically to make the needed space available even if there are enough interactive tasks that could be eliminated.

Instead, the new task requiring space not available will wait until the space becomes available.

In this situation, standard-sized task programs would help, and of course paging under VS should eliminate the problem altogether, the seminar was reminded.

Terminal Selection

Terminal response time is sometimes less than satisfactory, Moglielky noted, but this is "usually caused" by an improper hardware configuration or inefficient application coding. Terminals should be chosen very carefully, especially if the user expects to move to VS. Support for the IBM 1130 and 140, and the 2790 and 2260 units, will be dropped under VS, as will backing of TCAM software, he said.

A booklet outlining the "problems" session and all the other presentations made at the seminar is available for $1.50 from CHC at 747 Third Ave., 10017.

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Sherry Says...

The Data Communication Forum

"Shortages" are making today's headlines, but they're nothing new to data transmission users. The problem is one of getting highly conditioned phone lines in some areas. If this is a shortage that affects your data transmission, don't despair. ICC has two solutions—modems that operate reliably over unconditioned and dial-up lines; and modems that can transmit several streams of data over the same line at the same time. Both are available to data transmission users. Like the problem of getting highly conditioned phone lines in some areas. If this is a shortage that affects your data transmission, don't despair. ICC has two solutions—modems that operate reliably over unconditioned and dial-up lines; and modems that can transmit several streams of data over the same line at the same time. Both are available to data transmission users. The reentrant coding interface for each program will require a "substantial percentage" of total space available, he warned. However, "reasonably accurate, yet complex" core estimation formulas may be found in IBM's general information manuals for the particular CICS hardware in use.

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Is IBM Software Affected?

**Data Link Standards Differ on Numbering Methods**

By Ronald A. Frank
Of The CW Staff

WASHINGTON, D.C. — A major difference has been noted between the data link control procedure now being considered for an industry standard by ANSI and the latest proposal from IBM. The difference centers on the control field numbering, according to industry experts. And it may be causing a delay in first installations of IBM's software.

IBM's proposal is called ADCCP with dependent numbering; and the latest proposal is known as SDLC with independent numbering.

Much of the original work in developing a bit-oriented data link control was devoted to a single number system. Both U.S. and European standards organizations continued work on this version of ADCCP when IBM first introduced its double numbering or independent numbering proposal in 1971. The single number system, or one finite system, is now in its final stages as an ANSI standard although it is difficult to predict how soon a standard will be adopted.

The current question raising people, equipment suppliers and standards experts is how the methods will interact with one another. Very little is known about IBM's intentions in proposing the SDLC protocol at a time when work on the original version was already well along in the ANSI study cycle.

The real question plaguing users, equipment suppliers and standards experts is the relationship between the dependent and independent schemes, an IBM spokesman said. Little said: "In light of the complexity of the subject, one should expect that there will be a point in time. We would hope that the end result would be an appropriately related family of standards."

The standards that are finalized for data link control in any of these communications systems are obviously important for users who must plan several years ahead. IBM has announced several terminal-oriented systems that will use SDLC. It is assumed this will be the independent SDLC Protocol that the company has proposed.

One of the first implementations of SDLC, scheduled for the first quarter of this year. This would have been a software module of IBM's Virital Telecommunications Access Method (VTAM) to allow 370/3705 front-end processors to communicate with each other or with a virtual storage 370 mainframe, using SDLC.

But IBM has announced that first customer installations using this VTAM model 370 SDLC have been delayed until the first quarter of this year. An IBM spokesman said the delay was necessary "to provide additional time for testing and performance enhancements and to better synchronize with the new IBM SDLC.""Establishment of data link standards will be an important step toward the compatible communications networks of the future, according to one standards expert. Until the link control procedures are finalized, it will not be possible to begin work on standards to interconnect separate networks, he pointed out.

**Front End Handles University's Terminal Mix**

By Patrick Ward
Of The CW Staff

KINGSTON, R.I. — The University of Rhode Island here is using a variety of terminal equipment to suit the needs of its various departments.

In the university's inventory are 48 IBM 2741s, six ITT 3501 Asicscope video displays, two Harris Communications (Datel) Cope 1030s, one Model 33 ASR teletypewriter, two Memorex 1,200 keyboard/printing terminals, one Portacon terminal and two Cope 1200 RFDs.

Transmission rates vary from 100- to 1,200 bit/sec. Asci, Ecdis and BCD codes are used.

The university's 1M-byte IBM 370/155 controllers communicate via a network.

The controller's ability to translate various communications codes and speeds allows the user departments to select the terminals they want, according to Dr. Nelson Little, assistant director of the University Computer Laboratories.

Within the CPU, input from the diverse equipment looks like it originated from either a 2741 or a teletypewriter with a full ASCII keyboard, said George Little, assistant director of the laboratory.

The 370's Call-Os Time Sharing System had supported 64 key teletypewriters, but it was reprogrammed to accept full ASCII.

The 1270's automatic speed (autospeed) recognition allows a terminal to send an identifying number that selects the speed and the terminal control, Little noted.

"So if it looks like a 2741, the identifying character selects the hardware control for a 2741. If it looks like an ASCII device, the hardware selects the ASCII controller" and also the speed, Little stated.

The Call-Os system has been able to handle the faster devices without problems so far, Little said, though he mentioned that other users had found this a problem.

The university has a DEC PDP-5 used in data transfer from a graphics application and also occasionally as a remote job entry unit transmitting at 1,200 bit/sec.

"They have I/O handlers in the PDP-9 to control the line and the standard I/O devices," Little said. "By the time it gets on the line it looks like a time-sharing terminal," he added.

**Analysis**

In the SDLC or dual numbering proposal, three bits are assigned to the primary, three bits are assigned to the secondary for each end of the line; and two bits are used for command and response purposes.

The term SDLC is used by IBM but within ANSI standards committee the original protocol is called ADCCP with dependent numbering; and the latest proposal is known as SDLC with independent numbering.

**AT&T Files 209 Data Set Rates**

**With Multiplexing, Conditioning**

WASHINGTON, D.C. — AT&T has filed proposed interstate private-line rates for its 209 data set with the Federal Communications Commission. The 9,600 bit/sec modem will be the first from the Bell System to offer users a multiplexing capability.

The basic rate for the 209 is proposed as $230/month with a $100 one-time charge for installation. This will include a new level of line conditioning for 3002 lines designated as "high-performance data conditioning." This conditioning will be designated as D-1, according to an AT&T spokesman, and will not be confused with "real" voice usage of the line.

In addition to the basic rates for the 209, a user who selects the multiplexing capability will have to pay monthly line charges and an installation fee depending on data speed and location of the terminal and/or CPU, the spokesman said.

For "remote terminal interfaces" which are not hardwired but are in the same building, the additional costs are 2,400 bit/sec will be $115/month with $150 instal-

For 4,800 bit/sec this charge will be $255/month and $250 installation.

For interfaces not in the same premises, the cost at 2,400 bit/sec will be $135/month and $150 installation and at 4,800 bit/sec the charges will be $275/month and $250 installation.

Set for March 25

The added charges will apply to every data set at the appropriate transmission speed. The 209 will be compatible with 2,400 bit/sec data streams from the Bell 201, and with 4,800 bit/sec data streams from the Bell 208 data set. The proposed rates are scheduled to take effect March 25 unless suspended by the FCC.

Assuming approval of the rates, first installations could begin by the end of March, the spokesman said. A prototype installation of the 209 has been operating at a General Electric facility in Schenec-

dady, N.Y., where 200 were installed between CPU's about 100 feet apart, the spokesman said.

**Establishment of data link standards will be an important step toward the compatible communications networks of the future, according to one standards expert. Until the link control procedures are finalized, it will not be possible to begin work on standards to interconnect separate networks, he pointed out.**
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The basic configuration of the 734 includes a 734-1 modular terminal controller with 16k 8-bit bytes of memory, adapter logic for the card reader/printer, a synchronous communication line adapter, operator panel, keyboard/display and 200 User Terminal emulation control. The user has a choice of two card readers and two line printers.

The CDC 734 batch terminals are now available. CDC said. Purchase price for a typical configuration consisting of modular terminal controller, low-speed card reader and low-speed printer is under $27,000. One-year lease price for the same configuration is approximately $750/mo, excluding maintenance.

2780 Controlware

The 27801-10 controller has 16k 8-bit bytes of memory and includes adapter logic for the card reader/printer, cyclic encoder, synchronous communication line adapter, operator panel, keyboard/display and controlware for IBM 2780 emulation. The user has a choice of either a 300 or 600 card/min card reader, and one of three line printers.

First deliveries of the 27801 Batch Terminal are scheduled this month. Purchase price for a typical configuration, including low-speed card reader and printer, is approximately $25,900. The commercial term plus lease price for the same configuration is $515/mo, excluding maintenance.

Low-Speed Coupler Ready

FORT WASHINGTON, Pa. — An acoustic coupler with -50 decibel/min sensitiv-
ity has been announced by Tele-
Dynamics. The Model 7102AD is portable and may be used for low-speed data transmission with a variety of terminals and tele-
phones. The unit is available as originate-only, answer-only or originate/answer and provides simultaneous TTY and EIA (RS-232) output as well as terminations for direct tie-in to a Bell Data Access Ar-
rangement. Prices start at $292 from Tele-
Dynamics, Division of Ambac, 525 Vir-
ginia Drive, 19034.

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March 20, 1974
A Look Toward 1985—Part III

Nets Locked In; Change Could Be ‘Catastrophic’

By Vic Farmer
CAMBRIDGE, Mass. — The computer user, after all these years of development of the fourth-generation computer systems to be available during the next 10 years, will find himself no longer able to distinguish his individual computer components clearly by either boundary or size.

This is one conclusion of a DP technology assessment Arthur D. Little, Inc. (ADL) conducted for the U.S. Air Force recently.

By 1985 the user will have many modules — some collected into DP centers and some geographically dispersed — but all modules will be interconnected, ADL predicted. The users will no longer be able to replace the entire network without a ‘catastrophic upheaval.’

But “it should be easy to replace or add a module, as long as it is compatible with the system software, which is completely responsible for the user’s interaction with the machines and which has become the computer industry’s most important product.”

The study defined three system architectures: the central system which can be connected to either the hierarchical network or the loop network for real-time, on-line processing. (Figures 1, 2 and 3)

The central system will provide memory access because the virtual high-speed memory and its backing store — reached through the file controller — are logically integral. The memory will include several separately powered banks, so the system can operate even if there is a partial failure.

A hierarchy of file storage devices will connect to the memory through multiple controllers, and these controllers can conduct most file maintenance, automatically managing the devices in a virtual mode.

Communications Networks

Connected to this general computer system will be large and complex communications networks of either the hierarchical or loop structure.

The hierarchical structures will be used when the applications involve interaction with a single set of central files, and terminals will connect into the system with data concentrators to reduce line costs. “The terminals themselves are likely to have internal processing capability, for editing of input data, assisting operators in following procedures correctly, and generally performing whatever operations the data can conveniently be done locally with access to the central data base,” according to ADL.

Satellite processors with file-handling capability will, moreover, handle applications in which the records are only needed locally, such as local payroll and inventories.

Even though such a satellite will be tied up on local processing, it will provide data for the central system.

Satellite processors are connected to the central system by a network or loop network.

These networks usually operate on the basis of transmitting fairly large packets of data, both for economy and because most information systems still produce data primarily on a batch basis.

Figure 1. Fourth-Generation Central System

Satellite processors with file-handling capability will, moreover, handle applications in which the records are only needed locally, such as local payroll and inventories. Even though such a satellite will be tied up on local processing, it will provide data for the central system.

Where use of a central file is not needed, interconnection will still be needed in the interest of sharing computational workloads and exchanging the smaller amounts of data and can be accomplished through a loop network.

Figure 2. Hierarchical Network

Loop Networks

These networks usually operate on the basis of transmitting fairly large packets of data, both for economy and because most information systems still produce data primarily on a batch basis.

Figure 3. Loop Network

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What's The Outlook For The Computer Industry in JAPAN

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March 20, 1974

Bits & Pieces

Floppy Disk Interfaces Most Minis

SUNNYVALE, Calif. - A floppy disk system from Xebec Systems, Inc., with a universal formatter can be used with almost any minicomputer, such as those of Modular Computer Corporation, Datascript and all of the Intermec 180 series.

The XFD-100/U flexible disk system includes a disk assembly with one or two disk drives, a formatter and about one half of the interface and controller hardware that interfaces the formatter with the selected mini-computer. The other half of the controller can be supplied by Xebec or can easily be built by the user using instructions and documentation supplied with the XFD-100/U, according to the firm.

Price of the XFD-100/U is $3,350 with a single disk drive or $4,400 with two disk drives.

General specifications of the XFD-100/U are: disk capacity of 256K byte; 64 tracks; 32 sectors; 375 rpm rotational speed; 10 msec track-to-track access; and 31 byte/sec transfer rate. Xebec is at 566 Sun Xavier Ave., 94086.

EC 'Standard 8' a Tumby Mini System

MAYNARD, Mass. - A turnkey minicomputer system, built around the PDP-8/E minicomputer, has been announced by DEC. The system employs both disk and cassette storage peripherals, OS/8 software, and costs approximately the same as the same configuration in its minimum configuration when it was introduced in 1965, according to the company.

The standard 8 system is priced at $18,000 - a 13% savings over equivalent configurations previously available, DEC said.

The standard 8 system is composed of a PDP-8/E with 8K of core memory, a moving-head disk and a dual-drive DEC cassette, all mounted in one cabinet, plus a standard DEC software consisting of OS/8 system and diagnostics. (The first PDP-8 in its minimum configuration consisted of the processor with 4K of core and a teletypewriter.)

Dual Floppy Disk Drive Stores 4.4M Bits

DENVER - Dynavator's Model 40 dual floppy disk drive has storage to the other. A mini controller, called FAD by Dynavator, is optional.

Dynavator's disk drives utilize a noncontact mylar disk, perforated and certified, with track-following servo information not available with IBM-compatible contact recording disk memories, according to the company.

The dual drives are priced at $1,100 (OS/8 disk cartridge).

DUCS VI (Display Unit Control System - Version 6) is a widely used office automation program that runs on both IBM 2760 and 2760 printers operating under DOS or DOS/VS. A simulation feature permits DUCS to be executed on 2760's. No program changes are required by the user.

DUCS VI provides a new and unique Format Facility and Mapping Facility which provide a simple, convenient method of using all of the 3270 enhancements including full field manipulation, selector light pens, operation at card readers, etc.

DUCS VI interfaces with program problems written in COBOL, PL/I, FORTRAN or Assembler Language. Programs using DUCS VI do not need any knowledge of Assembler Language.

DUCS VI requires minimal core (2K to 6K) for either 2760 or 3270 support and may be furnished by any DOS or DOS/VS user. Those considering CICS should evaluate DUCS VI before commitment.

DUCS VI is a licensed Program Product available from C. F. S. Inc. on monthly, yearly or one-time lease. Basic DUCS VI, including both local 2760 and 3270 support, is leased at $76.00 per month. The optional 2760/3270 simulation feature of DUCS VI leases for an additional $15.00 per month. The optional remote 3270 support of DUCS VI (available 2nd quarter, 1974) leases for $55.00 per month. Special yearly or one-time lease rates are available.

Send requests for DUCS VI to C. F. S. License agreement includes complete documentation with implied right of use by resident and inquiries may be directed to Mr. Richard K. Goran.
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Performance Measuring or 'How Is My System Loaded'

By Patrick Ward

CINCINNATI — Performance measurement boils down to the question, "How is my system loaded?", Ray Hitti, director of hardware and software evaluation for Sohio, told a Computer Caravan forum on performance measurement.

DP installations can't use hardware or software monitors effectively if they can't describe their loads and the resources they use based on the commitments they have. "The only way to truly understand what you are doing is to model your workload," Hitti said.

The two 370/158s at Sohio's central installation run under the ASP operating system, Hitti said, and the staff wrote a simulator in Fortran for it over a period of a year and a half.

The simulator is job-oriented and is used in case studies to account for the way memory and I/O are utilized, Hitti added.

What Commitments?

The DP manager should go down through the list and ask what commitments have been made to the users on each of these jobs. These commitments might be issue times or turnaround times, he said.

Hitti defined a committed issue time as an agreement between a DP manager and his user that "if you bring in data at 9:00 I'll have results at 11:00." Promised response times for real-time users would be another form of commitment, Hitti added.

"Any DP manager," he said, "should at least have a mechanical or manual log to verify whether you have met your user commitments and how your resources have been used in fulfilling your commitments.

A rudimentary way of doing this, he said, is with a "slack ratio" equal to committed turnaround divided by processing time.

Turnaround time is equal to the committed completion time minus arrival time. Arrival time is when the job package is complete and ready for processing. Processing time is equal to run time plus setup, plus staging, plus library fetch, plus printing, plus decompiling time, Hitti said.

Any value of the slack ratio beyond 1 measures "breathing room," Hitti explained, while a value of one means you have a full or "dedicated" system with no room for slack.

At Sohio, Hitti said he prefers a slack ratio above one to accommodate users who are late with data. The slack ratio is a "business-like tool" that users and executives can understand, Hitti pointed out.

"Using this tool helps identify how much capacity remains," he said. "Now you can cite empty resources and when you're filled, and by whom and at what level of commitment."

It also can help with commitments that are no longer valid. In his own firm, "users were less upset by revised times when the slack was high," Hitti said.

"Under no circumstances — whether real-time or batch — can you have very high levels of utilization without hurting response time or turnaround time," he noted.

Where Are We?

Asked to describe a plan for measurement, Hitti advised DP managers to know what level of utilization they are at; to know whether they have properly used that resource (the utilization rate alone won't say); and to know what capacity is left.

But the user must understand enough about his workload to know what kind of work can be added on, he remarked.

Operating Procedures Of DP Room a Key To Overall Security

TORONTO, Ont. — A simple way to determine the security of your computer system is to check it against the following "musts" concerning computer room operating procedures:

* Consider using special printers or output terminals to handle the printing of sensitive data, such as salary data or market forecasts, and consider having a representative of the user department and the computer room shift supervisor present supervisory.

* Supervise computer operations at all times to ensure that no operator can use your computer equipment and time to run jobs for outsiders without your knowledge.

* Establish procedures for preauthorization of all overtime use of the computer equipment, programs, tapes and disks.

* Ensure there are operating instructions for every job in the computer center, that they are properly updated when changes are made, and that they are frequently reviewed by the shift supervisor to ensure that standards are being maintained.

* Clearly document rerun procedures for each system to reduce the possibility of operator error.

* Schedule all computer processing for operational systems to reduce peak workloads and thereby reduce the risk of operator error.

* Delegate to a production scheduler or controller the responsibility for dispatching jobs to the computer room, recording which equipment is used, what time the job is submitted and what time it is completed, and for following up data not yet received when a job is scheduled.

* Record the progress of jobs through the computer room on a run control log showing estimated versus actual times, reruns, errors, restarts and interruptions.

* Ensure that all systems provide a set of standard messages and instructions to the operator under various conditions, thereby reducing the required training for the operator to make decisions.

* Establish procedures to protect, the computer during off-shift hours, such as: locking computer room doors, having security guards check all called and doors to make sure they are locked, giving guards a list of authorized off-shift personnel, keeping a log of off-shift computer users, recording meter readings before and after off-shifts.

This checklist was compiled by DCF Systems Ltd., 74 Victoria St., Toronto, Ontario MSC 2A5.

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Color's the Key

At his own installation, Hitti stated, there is a board, updated daily, that lists the most recent commitments of the shop. The board either stays green or turns red depending on how well the shop is doing. And, Hitti said, "the DP manager's raises are based on how red or green the board gets.

The board serves as a communicator to the staff and how well we're performing," he added.

"Under no circumstances — whether real-time or batch — can you have very high levels of utilization without hurting response time or turnaround time," he noted.
Taking the Measure of Crime
LEXINGTON, Ky. — Technological developments as applied to law enforcement, security and crime prevention will form the basis of sessions at the 1974 Carnahan and International Crime Countermeasure Conference, April 16-19, at the University of Kentucky's Carnahan House.

Sessions will cover research and development of advanced sensor technologies, standards for law enforcement equipment, police systems and automatic vehicle monitoring.

Papers scheduled for presentation during an electronic data processing session include "Design and Application Considerations for Obtaining RF-technical Secure Areas;" "EDP Security through Positive Personal Identification;" and "Research and Development of Personal Identity Verification Systems."

Several papers by authorities from the UK will be presented, including: Technical Support Unit for the Police at Durham, England, and "Perimeter Intruder Detection System of Microwave Energy." Registration for the Conference is $150. Further details are available from John S. Jackson, Department of Electrical Engineering, University of Kentucky, 40506.

Safeguarding Privacy
SAN FRANCISCO — "Law Enforcement Information Systems Management" will be the subject of a two-day workshop, sponsored by Continuing Education in Engineering and the College of Engineering, University of California, Berkeley.

Topics at the April 26-27 workshop will include experiences in implementing privacy and security controls; administrative and technical security measures taken in a large state law enforcement computer center; problems and prospects of national telecommunications networks and mobile computer terminals; specifications and guidelines in selecting equipment.

Use of outside contractors, legislation and policy trends and advanced computer applications will also be considered.

Featured speakers include Robert Gallati, former head of the New York State Identification and Intelligence System; Col. James Newman of the Kansas City (Mo.) Police Department; and William Herrmann of the Law Enforcement Assistance Administration.

World Symposium Set
SAN FRANCISCO — The second International Symposium on Criminal Justice Information and Statistics Systems, sponsored by Project Search and the Law Enforcement Assistance Administration, will be conducted April 30-May 2 at the Hotel St. Francis here.

Over 60 papers will be delivered on systems design, applications and evaluation.


Preliminary plans for the symposium include an address by Attorney General William Saxbe.

Further information is available from Thaddeus Numara, California Crime Technological Research Foundation, 7171 Bowling Drive, Suite 190, Sacramento, Calif. 95823.

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Don't wait till the last minute. Now's the time to make sure your schedule includes a visit to the computer show that has already benefited more than 40,000 computer users in its first two years. Here are some of the details of our updated '74 program.
The Computer Users' Forums give you a unique opportunity to exchange information with other users and independent experts about current practical problems. Forums run from 9:00 A.M. to 2:30 P.M. each day, including an opening report, panel discussions, morning and afternoon workshops and luncheon. If you register in advance for the User-to-User Forums, you'll save $5 per day from the price at the door. If you attend all three days, you'll save $15, just for acting early. (Note that no advance registration is required if you attend the Exposition only).

Here are the Forum topics for '74:

First Day - Personal Computer Applications
Second Day - Data Communications Update
Third Day - Operations Management

Free afternoon sessions
Each day an important, current topic is discussed in an open afternoon session at 2:45 P.M. — free to all Caravan attendees. In 1974 we'll be looking at:

First Day - Source Data Automation Today
Second Day - Data Communications Update
Third Day - Operations Management

Check city

Registration at the door: $35 per day
Advance registration: $30 per day

For additional registrations, please copy this form.

THE FORUMS
user-to-user in '74

The whole Exposition is designed to let you get the facts you want from the people you want to see. And the people you want to see will be there. Here's a partial list of the companies that we'll be keeping on our '74 tour:


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A Mini Stands Among Giants

By Robert L. Glass
Special to Computerworld
CENTRALIA, Wash. — In the middle of a pristine Pacific Northwest forest, where the only noise for miles around used to be the wind caressing the fir trees, sits a computer.

A Data General Nova 1200 is housed in a protective shed complete with its own power source. Its task? On-line monitoring... of tree growth!

Weyerhaeuser Co. is responsible for this odd-sounding, odder-looking application. If tree farming ever is really going to be farming — and not just seeding and harvesting — then there is much more to be learned about making trees grow.

So says Dr. Jim Woodman of Weyerhaeuser's Forestry Research Center here, who is responsible for the installation and the research program it supports. And to back his position, he cites the following points his project has established:

• Trees grow seasonally. The trees in his test plot obtained all their growth in March through September, none the rest of the year.
• The bright growth season is different than the circumference growth season.
• Trees shrink as well as grow. The test trees shrank during the day, grew at night; and they shrunk for weeks at a time during droughts.
• Fertilization, irrigation and thinning can mean more than double tree yields.

But why put a computer in the woods? Speed and accuracy, low operating costs (vs. manual methods), highly usable data (90% is typical; 70% used to be excellent); timing information; and the previously mentioned, and important, malfunction detection — these more than make up for the high initial cost of the computer, and its attendant shelter and power supply problems, Woodman says.

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UTILIZATION & COSTING from

DAS users know that when we say "HASP", we don't mean we will run with HASP (just about any program will run with HASP). We mean we deal with the problem HASP presents. We do the same for ASP version 3 and VS.

Some of the key questions you should be able to answer are:

• How specifically are system resource costs distributed to jobs? As thoroughly as hardware vendors break down my charges? Are the same units consumed and charges summarized on account code structures suitable for distribution to users?
• Does the system prevent units consumed and charges summarized on account code structures from charging the user?
• (If yes) Are you charged for a tape, or a private disk, and never does a single EXCP, is the tape or disk charged for? [It should be!]

Can I differentially price TSO jobs?
Can I charge 140% of my base rate for high priority mid-day runs and 55% of my base rate for low priority mid-night runs? How many ways can I break down priority for this purpose?
Can I apply sliding charges for limited resources such as core or tape?
Can I charge for forms consumption?
Can I distribute any OS overheads, such as initiator and IOS functions, back to users, such as initiator and IOS functions? Equitably?
Can I apply minimum charges?
Can I establish a set of rates for CPU, core, etc. for each of my mainframes. Can I cause an entirely different set of rates to be applied to a selected group of users on that mainframe WITHOUT modifying the accounting software?
Can I have in “dirty up” my operating system to do daily costing [or cut down weekly or monthly “accounting system” overhead]?
Install Hooks to Catch Openings in Data Files

The authorization control problem has economic ramifications. The authorization data base needs to be built into the computer. In a large system, with innumerable data sets, personnel, programs and remote entry devices, it becomes an administrative nightmare to lay out various authorization combinations. The authorization possibilities are normally stored in what has been called an access matrix. In large systems this access matrix is sparse and immense. This leads to the interesting possibility of requiring an authorization computer many times larger than the computer that is supposed to do the processing.

Assuming selective authorization is a desirable property, how would one go about it in the absence of facilities provided by the vendor? One approach is to install hooks into the existing operating system to trap openings of data files. It is a relatively simple procedure to write code that analyzes certain data for read or write privileges by certain people, jobs or programs. This could be on a selective basis, so the overhead is kept at a minimum.

In addition, it is possible to trap and collect statistics on use of data. IBM's SMF (System Measurement Facility) can be used to develop reports on a current basis that print out usage of important or sensitive data by certain people, jobs, user name, accounting parameter field, date, time and other parameters.

There are numerous procedural mechanisms one can install to help limit use and access of data. The first is that of change control. Whenever a data format is changed, a program is altered, a system configuration is changed or new processes are developed, it is essential that such changes are documented.

### Part VIII: Access & Audit

Authorized by appropriate management and controlled closely. No device, terminal, program, data set or file should have the same name. If this principle is rigidly followed, change control procedures appropriate to any application can be easily installed and monitored.

A viable data processing standard programs, an organizationally distinct quality control unit, and a central point for the placing of well-tested production programs on the system will do wonders for security and control.

Audit of data processing is achieving high viability. The results of either internal or external DU audits can be used to define and plug security loopholes in the system.

Recurring security audits should be accomplished periodically. Such audits would look at the entire information system and its use regarding adequacy of controls, levels of risks, exposures and compliance with defined standards and procedures. Even though there is a possibility of some loss of independence, it is a good idea to get computer security specialists involved with the audit function in the development of audit plans, review of the security programs, and in the actual audit.

Peter Brown is manager of the security operation, General Electric, Information Services Division, Bethelnda, Md.
Future 'Peripherals' to Be Integrated Into CPU
By E. Drake Lundell Jr.

SAN FRANCISCO — Peripherals as they are known today are definitely on their way out. In the future, peripheral equipment will be integrated into mainframes as terminal devices in the field assume more intelligence.

That was the word from IBM's chief scientist Lewis M. Branscomb speaking at the recent Comcon '74 meeting here of the IEEE Computer Society.

"Today's machine room subsystems which can be functionally integrated into the central storage and processing system will become transparent to the user and no longer 'peripherals,'" he predicted.

In addition, "hardware-controlled storage hierarchies will strongly influence system architecture thinking," he noted.

"Specifically, system structures which take these matters into account will make traditional peripheral wheelhouses such as strips, drums, disks and tapes out of the planetary coupling mode of classic computer structures into the nucleus of the data handling system," he added.

Branscomb also pushed the magnetic bubble memory idea as "an example of new technology with promise for the future.

"The [bubble] technology offers a wide range of possible device configurations, with the potential of sustained improvements in device properties," he said, adding that the first encroachment by bubbles on the traditional disk market should occur in the small file area.

Can Data Entry Keep Up?

The increasing amount of digital storage capabilities in future systems, however, raises the question of whether data entry will keep up with the vanishing appetite of storage." Branscomb said.

"This issue, particularly important since data entry represents an increasing fraction of data processing costs, as computers are increasingly applied to the management of large data bases and information systems," he said.

Because of this, he said, future data entry systems will rely less on keystroking and will turn more to scanning devices and possibly even speech recognition in limited application areas.

"Another highly important area of data entry," he added, "involves sensor-based systems. Just as we now have terminals serving as one man-machine interface, there will be an increasing number of 'terminals' designed as an interface between the computer system and the physical world, with various hybrids in between (e.g., a cash-dispensing bank terminal)."

In the printing area, "non-impact technologies will play an increasingly important role," he said, noting that the matrix approach to printing offers several distinct advantages over other approaches under consideration.

Burroughs Nets Swift Award
DETOUR — Burroughs Corp., has received an order from the Society for the Worldwide Interbank Financial Telecommunications (SWIFT) for equipment valued at over $6 million to be used in a new international telecommunications network.

Burroughs will supply two dual processor B3700s, four data communications processors and 14 data concentrators.

The Society was organized to provide its 246-member banks with a private system for transmitting payments and other international banking messages.

Amplex Realins Divisions
REDWOOD CITY, Calif. — Amplex Corp. has announced the tape and disk operations from the core and semiconductor operations with the creation of two new divisions.

The new divisions, which reflect a "new corporate directional alignment," are the Memory Products Division and the Data Products Division, replacing the instrumentation and computer products divisions.

The core and semiconductor operation will be handled by the Memory Products Division, while tape and disk fall under the Data Products Division.

Informatics OKs Merger
CANDORA PARK, Calif. — Informatics, Inc., shareholders have approved the merger of Equitable Computer Corp., with Informatics. Upon completion, Informatics will become an indirect subsidiary of The Equitable Life Assurance Society of the U.S.

Supershorts
Honeywell has topped the $1 billion mark in orders for its Series 6000 equipment.

Hazeltine Corp. has installed its 10,000th Hazeltine 2000 video display terminal.

For contest buffs — win a tour of the Interdata plant or $1,000 for the best ad idea for the company's Model 7/32 mini-computer.

NCR has opened an automated service parts center in Peachee City, Ga. The plant is designed to facilitate delivery of parts around the world within eight hours of receipt of order.

Univac has begun marketing direct in Puerto Rico with the acquisition of its distributor, Casa Lee Computers, Inc.

National Semiconductor Corp. has formed a memory systems group to design, test and build custom semiconductor memories.

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"Scotch" is a registered trademark of 3M Company.
Centralized Programming Grows

By Marvin Smallheier

Centralized Programming Grows

Stronger Software Industry Seen

Shukan.

Who can sell computers in Japan?

In Japanese it's called Shukan Computer and in English, it means "Computer Weekly." Whatever you call it, Computerworld's new sister publication is an excellent vehicle for selling EDP products and services in the large and expanding Japanese EDP market. Here are some of the reasons why.

Shukan Computer is a joint venture of Computerworld and Dempa Publications, the leading Japanese publisher of electronics information services. With the combined resources of the two companies, Shukan has the largest news-gathering organization of its kind in the world.

Shukan Computer is the only weekly publication for the fast-growing Japanese computers industry.

Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which grew Computerworld's highest paid circulation in its field in less than two years.

Shukan is your line to the action in the world's largest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 12,577 in 1971. 11,000 mainframe systems installed, up from 1,070 in 1971, and 3,000 industrial systems installed, up from 1,086 in 1971.

Strong growth likely. The latest report of general-purpose systems revealed that there were 14,806 systems installed as of September 1972: a one-year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 27.1% respectively. And more than 76% of these new systems were American made.

It is true that there are import restrictions. But Japanese vendors and users can get permission to import almost anything they want and need. As a result, 1972 imports were over $360 million.

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March 20, 1974
Dearborn Completes 360 Portfolio Sale

HOUSTON — Dearborn-Storm has completed the sale of its IBM 360 portfolio to a group of private investors for $17 million in cash.

The new company, Dearborn Computer Leasing Co., will continue with the same management and staff which previously operated Dearborn-Storm's Computer Leasing Division.

There are no changes in leases, noted controller Ira Levy.

The portfolio sale has significantly improved Dearborn-Storm's financial position and earnings opportunities, according to Arthur Weiss, chairman and chief executive officer.

Under the Itel plan to divest itself of its 360 portfolio, users may acquire their 360s at the end of their leases. Itel has established a net locked-in receivable, or the amount it must receive as of the end of 1975 on each machine, based on the age of the machine when Itel acquired it and earnings opportunities.

Each price is individual, Lussier stressed, depending on these factors. The firm is writing 18- to 24-month leases, as it has agreed with its accountants to write off its inventory by the end of 1975.

In 1973, according to estimates, there were 250 158s shipped, and this will reach 550 by 1974, while shipments of 168s will jump from 70 in 1973 to 175 in 1974, he noted.

In the memory line, Itel will bring out an AMS memory for the 158 this spring, and a memory for the 168 later in the year. Lussier noted that DP would be a tough business if all a firm was doing was trying to be compatible with IBM. "I'm glad we're not in the manufacturing business," he added.

Orders & Installations

New York University Computer Center has leased two 658-word ARM-1108 memory units from Ampex Corp. for its Univac last year. Any additional loss — or profit — on the disposition of the 306s will be shown at the end of 1975.

No Slackening

Itel sees a considerable market in 370/158s and 168s for this year for full payout leases. Most of these leases are for eight years. Lussier said he sees no slackening in 1974 in these long-term leases.

Bank Clearinghouse

Expands With B6700

NEW YORK — The New York Clearing House Association has installed a Burroughs B6700 in the third expansion of the organization's communications network to handle a growing volume of interbank money transfers.

The Clearing House Interbank Payments System currently handles interbank transactions of $40 billion to $50 billion a day. The B-650 will assume work being performed by two B-350s which store and release payment messages and process interbank book transfers. The system includes 99 Burroughs TC 500 terminals.

Orders & Installations

New York University Computer Center has leased two 658-word ARM-1108 memory units from Ampex Corp. for its Univac 1108.

The Research Corp. (TRC) of New England has leased a Xerox 530 for environmental research and business data processing.

Supplementary, my dear advertiser.

In-Depth Reports on important subjects in selected 1974 Issues of Computerworld.
March 20, 1974

DPF 6- to 60-Month Lease Gives 360s Lift

By Vic Farnen

HARTFORD, Conn. — With the announcement that DPF's lease term will be extended to 60-month lease last week the firm confirmed its philosophy of handholding with users to keep its 360 installed base viable.

The Flexi Leasing plan, DPF is working on include an adaptation of technical developments in its line controller "because the independent peripherals, systems, and software enhancements almost continually so the user doesn't feel tied down to any specific IBM configuration.

As part of the handholding, DPF supplies system design analysis and evaluations using hardware and software monitors that will give the user as efficient a system as he can get, according to Michael J. Creedon, vice-president, marketing.

DPF is positive of the cost performance of the 360 line, and is willing to offer the short-term lease to prove the 360 has the capabilities the user needs. And if the user outgrows the 360 line, DPF will also install a 370 system.

In a sense the lease will allow the user to get a progressively growing system as he needs it without having to install a larger system than he presently needs because of anticipated future needs.

The turnaround for system changes may be as little as six months, Creedon said.

Some of the independent technical developments DPF is working on include an adaptation of an 80-column type disk drive for a Model 30, and several software enhancements.

Creedon said these studies have shown most users can get higher throughout and performance by using faster memory and higher-speed tapes and disks.

DPF is also working on a package to convert Model 20 RPG I programs to DOS Model 30 RPG II.

For the users operating their Model 30 in single partition DOS, "we can add Edos from The Computer Software Co. and additional memory to convert to multipartition operation."

On performance measuring, DPF will work with a user to determine his needs, either with its own monitors or through the use of Boole and Babbage help.

"Our object is not so much to sell the user a product but to come up with alternatives and suggestions the user can select to get an understanding of what improvements can do for him," he said.

CDC to Sell MTI Add-Ons for 370s

SUDbury, Mass. — Control Data Corp. has included Memory Technology, Inc. (MTI) add-on memories in its line of IBM 370 peripherals. Under a nonexclusive arrangement, CDC has bought MTI's installed base of 370 add-on systems and will purchase and market additional units. CDC also handles memories made by Advanced Memory Systems.

CDC will include the MTI units as part of its disk drive line, providing field maintenance, spare parts and field technical support for all MTI-installed units, an MTI spokesman said.

CDC is purchasing MDS semiconductor units for the 145, 155 and 165 and the contract calls for 135 and 158 and 168 systems in the future. The contract is "a major step in our efforts toward making Memory Technology a significant OEM supplier of computer products ... from complete memory systems and special memory devices to memory components," observed MTI President John J. Marino.

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With offices in thirteen cities, Randolph backs up its IBM S/360 and IBM S/370 leases promptly with unique customer support services. For details, call Randolph... your neighborhood computer leasing company.

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• IBM's own analysis of the advantages and disadvantages of 370 models against the competition. (Your Software and Hardware experts both need this information.)

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• IBM's plans for the 'death' and replacement of 370 models — and data about their successors. (A unique feature that everyone should read and understand.)

• IBM's use of error-containing hardware for part of the 370 line — hardware that was supposed to be scrapped.

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If you'd like to know more about Audit, Privacy and Security in Data Processing Systems, vote 'yes' below.

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Mr. Wasserman will lead the seminar and coordinate presentations of several other experts in various aspects of the security field.

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Your vote on the coupon below will give us an indication of the demand for this seminar in several cities. Your vote does not obligate you in any way, but it will put your name on our mailing list. When plans are completed, you will receive a complete brochure and seminar registration form. If you're interested, don't delay. The seminar offering depends on your response today. We anticipate that the total fee for the seminar will be $325, including the resource notebook.

To: Walter Boyd, Computerworld, 779 Washington Street, Newton, Mass. 02160

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IBM Price Hikes Reach UK Users

LONDON — Users of IBM DP equipment in the UK have been hit with price increases, and others are on the way. Many of the increases were announced in 1972 but were frozen because of the government's Phase One regulations, noted Fred Clarke, IBM UK's director of data processing.

On Feb. 21, increases of up to 10.5% were levied on purchased equipment. However, the increases do not apply to units shipped within six months of that date.

Rental increases generally occur in two stages: March 1 and Aug. 21. For example, rental on a typical 370/158 rose 0.5% on March 1 and will rise 7.5% Aug. 21. Rental on a System 370 will not increase until Aug. 21, when it will jump 7%.

Maintenance charges on purchased equipment are being increased up to 25% in two stages: as of March 1, generally 15%, and the remainder as of May 21.

Other charges are also being raised. Program products will go up as much as 76% as of May 21. Education courses will cost 20% more after April 1.

ICL Gets First Order For NewRange System

BATH, England — Bath University has ordered a P4, the first of International Computer Ltd.'s New Range computers, according to a report in Computer Weekly.

The unit will service Bath, Bristol and Exeter Universities and will be linked with the Cardfit Joint Computer Center, which serves three other institutions.

The P4 will be linked with a Control Data Corp. 1700 as part of the present System 4 network, which includes an ICL 4/75 at Bristol, a 4/70 at Cardiff and 4/50 at Bath and Exeter.

Two U.S. Firms to Share Canadian Network Contract

MONTREAL — Two American firms, Interdata, Inc. and Sanders Associates, Inc., will share in the $17.5 million contract let to CAE Electronics Ltd., a Cana- dian firm, for the trans-Canadian air traffic control network called Jets (Joint Enroute Terminal System).

Interdata of Canada, Ltd. has received a contract to provide more than 200 Model 70 minicomputers valued at more than $2.5 million over the next three years.

Initially the units will be made in the U.S., but the firm will begin manufacturing subsystems at Mississauga in the second quarter of this year.

Sanders will supply the first two display subsystems, which will then be manufactured by CAE. Sanders will continue to make the indicator modules.

The contract to CAE is the first part of a three-phase, $65.9 million project under which CAE will build a simulator, a pre-production development system, an air traffic control network, several area control systems and two terminal control systems.

Singer Business Machines Expects Good Year in UK

LONDON — Singer Business Machines is expecting a good year in the UK.

Mike Burton, marketing chief, is predicting a 40% increase in the company's revenues in 1974 compared with 1973, according to an article in Computer Weekly.

Retail terminals, he estimated, should comprise about 30% of the total orders placed this year.
Position Announcements

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The text on the page contains advertisements for various types of computer equipment and services. The ads include details about memory availability, leasing options, and general information about the products and services offered by different companies. The text is structured in a way that makes it easy to read and understand the offerings of each company.
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   (b) 1407 Model 1 Input/Output Controller SN.
   (c) 1415 Model 5 Control Unit SN.
   (d) 1440 Model H. Processor Unit SN.
   (e) 1465 Model 7 Printer Keyboard SN.
   (f) 1466 Model 8 Console Typerwriter SN.
   (g) 1484 Model 2 Mag Tape Unit SN.
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For First Quarter

**HP Earnings**

Palo Alto, Calif. — Hewlett-Packard reported a 67% increase in earnings and a 49% increase in revenues for the first quarter of fiscal 1975. Earnings totaled $14.5 million or 54 cents a share compared with $8.7 million or 33 cents a share in the similar year-ago period.

Revenues reached $189.2 million compared with $127.2 million in the corresponding quarter last year.

President William R. Hewlett said: "Despite the energy crisis and its potential negative effect on some of our markets... incoming orders for the quarter were up 39% to $217.3 million compared with orders of $156.1 million last year.*

* A flurry of firsts!

International orders amounted to $108 million, up 59% from last year's first quarter, while domestic orders were up 24% to $109.2 million, he said.

Hewlett also noted that the company has cancelled its previously stated plans to seek long-term financing of approximately $100 million. "We had planned to use this financing to pay off a portion of our short-term debt, which currently amounts to about $110 million," he said. "However, with our improved profit margin, long-term financing is not necessary at this time."

**Itel Net Climbs Despite Charge**

For Discontinued 360 Operation

San Francisco — Itel Corp. reported sharply higher earnings for 1973 despite a $30 million charge from the discontinuance of the 360 leasing business.

For the year ended Dec. 31, the company earned $5.6 million or 70 cents a share compared with $1.1 million or 24 cents a share a year ago.

Revenues from continuing operations reached $108.5 million compared with $40.5 million. Income from continuing operations rose to $8.2 million or 1.09 a share, compared with $600,000 or 60 cents a share in the corresponding period.

The charge for the discontinued 360 business was partially offset by a $1.9 million gain on the sale of Information Storage Systems, Inc. and an extraordinary gain of $2.1 million from a tax-loss carryover.

President Peter S. Redfield said continuing operations contributed significantly to the profit rise.

The 1973 results included a $100,000 loss from discontinued operations and a $1.2 million tax credit. Last year's results were restated to reflect the discontinued operations.

"The increase in pre-tax income from continuing operations dramatizes clearly the extent to which Itel's mainstream business — capital equipment leasing, transportation services and data services... has developed," he noted.

Redfield said the '1973 results are still largely predicated on certain future events." He said the accountant's report "will be subject to the final outcome of the discontinuance of the 360 business and the final determination of the gain on the sale of Information Storage Systems."

**Six-Month Results**

Set CompuScan Record

Teterboro, N.J. — CompuScan, Inc., manufacturer of optical character recognition systems, had record results for the second quarter and six months ended Nov. 30.

For the six months, earnings rose 41% to $336,000 or 27 cents a share from $273,000 or 18 cents a share a year ago. Revenues for the period rose 40% to $3.4 million or 2.5 cents.

In the quarter, the company earned $215,000 or 15 cents a share compared with $166,000 or 11 cents a share in the same year-ago period. Revenues totaled $1.8 million, up 28% from $1.4 million last year.

Both years included tax-loss carryforward credits.

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Earnings Reports

REDAGRON
Three Months Ended Dec. 31
1973 1972
Net Income $53,458,400 $2,820,000
Earnings Per Share 25.00 $0.00
Cash Dividends 18.00 $0.00
Less Earnings Per Share 5.00
NATURAL PRODUCTS
Three Months Ended Dec. 31
1973 1972
Net Income $21,179,000 $17,610,000
Earnings Per Share 10.00 $0.00
Cash Dividends 8.00 $0.00
Less Earnings Per Share 2.00

BUNKER RAMO
Year Ended Dec. 31
1973 1972
Net Income $209,262,000 $251,965,000
Earnings Per Share 10.50 $0.00
Cash Dividends 9.00 $0.00
Less Earnings Per Share 1.50

SYSTEM DEVELOPMENT
Three Months Ended Mar. 31
1973 1972
Net Income $166,486,000 $71,700,000
Earnings Per Share 6.00 $0.00
Cash Dividends 4.00 $0.00
Less Earnings Per Share 2.00

ADVANCED MEMORY SYSTEMS
Three Months Ended Dec. 31
1973 1972
Net Income $7,374,000 $17,500,000
Earnings Per Share 0.00 $0.00
Cash Dividends 0.00 $0.00
Less Earnings Per Share 0.00

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March 20, 1974

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