Computer Society and ACM sponsor Eckert-Mauchly Award

A major new award, the Eckert-Mauchly Award for contributions to computer and digital systems architecture, has been announced by the Computer Society and the ACM. The winner of the award, which was established in honor of J. Presper Eckert and John W. Mauchly's pioneering work in the hardware and software design of the UNIVAC I computer, will receive a certificate and $1000.

The first award will be presented at the 1979 Annual Symposium on Computer Architecture sponsored by the Computer Society Technical Committee on Computer Architecture and the ACM SIGARCH. The selection committee will consist of representatives from each of the sponsoring associations. The work nominated for the award may be in any form that demonstrates and propagates computer architecture concepts.

For further information contact G. Jack Lipovski at the Dept. of EE, University of Texas, Austin, TX 78712.

Errata

A. L. Hopkins was inadvertently shown on the roster last month as a member of the 1978-79 IEEE Computer Society Governing Board (Computer, January 1978, p. 4). In fact, Professor Hopkins' term on the board ended December 31, 1977. We apologize for the error.

Ed.

COMPSAC 78 chairman named

Wallace A. Depp of Bell Laboratories has been named general conference chairman of COMPSAC 78, according to an announcement by Philip Enslow, vice-president for conferences and meetings. Named in the same announcement as program chairman was C. V. Ramamoorthy of UC Berkeley.

COMPSAC 78, scheduled for November 14-16 at the Palmer House in Chicago, will be the second IEEE Computer Society Computer Software and Applications Conference—the first one having been held in Chicago last November also (see the December 1977 Computer for a conference summary). The call for papers for COMPSAC 78 appears on p. 4 of this issue.

Depp, who is executive director of Bell Laboratories' Processor and Common Software Systems Division at Naperville, Illinois, is responsible for the development of the hardware and the maintenance, operating systems, and support software associated with the processing complexes of electronic switching systems. With Bell Labs since 1937, he received his BSEE and MSEE from the University of Illinois. He has been granted 17 patents and has authored several papers. He is a Fellow of IEEE and a member of Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

C. V. Ramamoorthy is a professor in the Department of Electrical Engineering at UC Berkeley. A current member of the IEEE Computer Society's Board of Governors, Ramamoorthy has been a long-time leader in the society's education, conference, and publication activities. He presently chairs the Education Committee and serves as a member of the Editorial Boards of both the IEEE Transactions on Software Engineering and the International Journal of Computer and Information Systems. A member of the Technology Advisory Panel for Ballistic Missile Defense by appointment from the Secretary of the Army, Ramamoorthy is a holder or co-holder of several patents in memory and logic circuits and computer systems. He received the MS and ME degrees from UC Berkeley and the AM and PhD in applied mathematics and computer theory from Harvard University.
Computer Networking Symposium held at NBS

Helen M. Wood
National Bureau of Standards

Over 500 people attended the Fourth Symposium on Computer Networking, held December 15 at the National Bureau of Standards in Gaithersburg, Maryland. Chaired by Shirley Ward Watkins of NBS, the conference was cosponsored by the NBS Institute for Computer Sciences and Technology and the IEEE Computer Society Technical Committee on Computer Communications. "Computer Networks," a tutorial sponsored by the Computer Society, was conducted on December 14 in conjunction with the symposium, attracting 160.

While noting in his welcoming remarks that NBS' work in I/O peripheral standards has attracted a lot of attention, M. Zane Thornton, acting director of the NBS Institute for Computer Sciences and Technology, stated that NBS sees important related requirements in the area of network protocols. This type of interface standard, although it has not received as much popular attention, is every bit as significant in the interconnection of computers, communications, and computer components, he said.

Thornton went on to identify work underway at NBS in this area.

Keynoter John W. Luke of Computer Sciences Corporation explored current trends and issues influencing the direction of computer networking (see accompanying story).

The technical program, organized by Program Chairman Ron Larsen of NASA-Goddard Space Flight Center, included sessions on the design, implementation, and analysis of both computer networks and communications subnets; the management of data in a networking environment; and standards. In the latter session, entitled "Standards: Organizations, Activi- ties, and You," individuals from both government and private industry who are actively involved in the development of computer and data communications standards reported on national and international standards activities.

The symposium proceedings are available from the IEEE Computer Society Publications Office (see The Bookshelf).

Symposium keynoter calls for solution of networking problems

High costs, user resistance, legal restrictions, diverse national standards, the concern for data privacy, and varying national regulations—these, according to John W. Luke of CSC, are some of the problems that must be solved before computer networking technology can be fully exploited.

Luke, president of Computer Sciences Corporation's newly formed Data Services Group, was the keynote speaker at the Computer Networking Symposium cosponsored by the IEEE Computer Society and the National Bureau of Standards held in Gaithersburg, Maryland, on December 15.

Reviewing the rapid progress of computer networking technology and its capacity to improve efficiency and productivity, Luke pointed out that the capability to share communications links through network information service companies is reducing the cost of communications to those areas of government and industry taking full advantage of these services. Similar gains in computer hardware technology indicate that cost is a manageable factor in the widespread use of computer networking. However, other issues restricting the broad application of computer networking may be more difficult to resolve.

Luke, who has headed the Los Angeles-based firm's Infonet Division since 1970, cited electronic funds transfer systems as an example of some of the issues currently affecting the expansion of computer networking. Most experts agree that EFT would resolve many banking and retail merchandising problems. However, legal restrictions in some states limit the use of EFT, and insufficient legal precedents do not provide the consumer with the same safeguards on his money that he now enjoys with traditional banking methods. The high cost of automated teller machines and lukewarm public acceptance because of the fear of invasion of privacy and resistance against the relative impersonality of EFT transactions also inhibit the application of EFT.

In the international arena, Luke pointed out some of the difficulties in tracking and controlling the international flow of data, unresolved jurisdictional questions, and the problem of inconsistent tariffs and other national regulations that compound the problems of international computer networking. He also stressed the need for a unified U.S. position on transborder data flow and the development of international standards.

Indicative of the general nature of the problem, tariff regulations make it less expensive for network information service companies to establish computer-communications traffic between Europe and the US than between Brussels and Paris, Luke noted. In Germany data cannot be transmitted over a common carrier dial-up mode at more than 2400 baud to prevent networks from competing with common carrier functions. And until very recently, Japan didn't allow foreign computer data to be transmitted at all over their telephone lines.

As countries develop their own domestic networks, they are placing tight restrictions on foreign networks. France and Japan, for example, are developing regulations requiring a foreign network to tie in with their national networks. Luke anticipates that to protect their investments many other countries also will prohibit foreign networks from operating independently within their borders.

In order to control data flow, Sweden and Germany have legislated stringent restrictions on data based on the basis of privacy. This type of legislation will soon be enacted into law by several other Western European countries, making the gathering and storage of personal data abroad by U.S. companies a delicate issue, Luke said.

European countries are attempting to conclude an international agreement on the privacy and confidentiality of personal data, no matter where it is stored. Yet the U.S. does not have a national policy on transborder data flow. Since the free flow of data is of vital importance to companies

Continued on p. 103
Convention Center adds wing for NCC '78

An auxiliary exhibit hall will be constructed at the Anaheim Convention Center to accommodate an additional 270 exhibits for NCC '78. Requests for exhibit space, the most ever received in the history of AFIPS-sponsored conferences, have so far exceeded available space in the Convention Center that the NCC Board approved construction of the auxiliary hall in order to accommodate them. Overall cost of construction to meet the high standards required by an NCC exhibit program is projected at more than $100,000.

According to Gerard F. Chiffriller, director of NCC conference operations, the new facility, to be called the "West Hall," will be located just outside the West Corridor of the Anaheim Convention Center. The Hall will be well-lit, completely air conditioned, and carpeted. All exhibits will be in the column-free environment typical of an NCC exhibit. A covered walkway will connect the West Hall to the North and South Halls.

Current reservations for NCC '78 exhibit space in the North and South Halls and the Arena stand at 1108 booths. The addition of the 270 booth units makes NCC '78 the largest exhibit program in the history of US computer conferences, topping the previous record of 1146 booths at the 1977 NCC held in Dallas last June.

Reservations for West Hall exhibit space will be taken first from companies on the waiting list. Any additional space will go to any interested companies that fulfill NCC exhibit requirements. Interested exhibitors who have not previously contacted NCC headquarters should contact Carol Sturgeon, National Computer Conference, c/o AFIPS, 210 Summit Avenue, Montvale, New Jersey 07645; 201/391-9810, as soon as possible.

Symposium keynoter
(Cont’d from p. 9)

with business interests abroad, government organizations, and specialized international networks, the development of such a unified response is essential, he asserted.

America also lags behind the rest of the world in adopting standards that will allow us to compete in the international marketplace. For example, the X.25 protocol has, in effect, been adopted by almost every Western European country. The U.S. private and federal sectors, however, have not taken a unified stance on this issue either.

By a failure to act, he suggested, we can lose our position of dominance in international teleprocessing. "It may no longer be pertinent," said Luke, "that we have highly sophisticated domestic networks if they do not have the capability to interconnect with indigenous foreign networks either because of an incompatibility of standards or a different approach to data privacy."

"From a standpoint of technology," Luke concluded, "there is no question that computer networking applications will continue to make major contributions to our standard of living. But there are factors beyond technology that also will affect the growth of networking, and they have to be addressed as fervently as we attack technical problems."

Activities in education planned

At its first meeting on November 29 in New York City, the Computer Society’s recently organized Subcommittee on Continuing Education announced plans to prepare course outlines for continuing education courses in computer science, to design techniques for evaluating such courses, and to offer joint regional university/industry seminars to familiarize academics with the industry’s needs.

The subcommittee welcomes opinions and comments from the professional community. Address remarks to Rahul Chattergy, Department of Industrial Engineering, Texas A&M University, College Station, Texas 77843.

Healthy growth predicted for computer market

The next five years will see annual computer market growth of 8 to 9 percent in the United States and 11 to 13 percent elsewhere, says a study from Arthur D. Little Impact Services.

The report noted that IBM’s new 303X family of large computers has intensified industry competition by offering unprecedented levels of price-performance. The 303X’s, which can be expanded and updated through modular additions or changes, have strengthened IBM’s market position relative to other US computer manufacturers, particularly those making plug-compatible CPU’s.

The five-year forecast of the general-purpose computer industry predicts a US installed base (cumulative shipments minus returns) of $76-80 billion (constant 1977 dollars) by the end of 1982. The 1977 year-end value is estimated at $52.2 billion. The firm forecasts that the installed base in the rest of the world at the end of 1982 will be $79-85 billion (in constant dollar US equivalent prices). The estimate for the end of 1977 is $47.4 billion.

The study forecasts that US manufacturers will have $52-58 billion in installed base overseas by the end of 1982, an annual increase of 8 to 11 percent. The US share of the market will drop from 72 percent in 1977 to 68 percent in 1982, primarily because of aggressive marketing of plug-compatible CPU’s by the Japanese.

The US manufacturers’ share of international markets will continue to vary from country to country, the company predicts. Foreign manufacturers—particularly the Hitachi Fujitsu combine—will cut into the US share in general, largely through aggressive marketing of plug-compatible CPU’s. Also, efforts being made in some countries to support domestic general-purpose manufacturers and to hold onto the minicomputer business domestically will lessen foreign sales.

Plug-compatible CPU’s became a significant factor in 1977 with shipments valued at $400 million worldwide. The Arthur D. Little report predicts that counteractions by system manufacturers, partly based on increased reliance on microcode in machines, will constrain the rate of plug-compatible CPU growth.
New interface standard introduced for data terminal, data circuit terminating equipment

A new standard, providing a functional interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for use with the electrical characteristics specified in EIA Standards RS-422(1) and RS-423(2), has been developed by the Electronic Industries Association (EIA).

Standard RS-400, “General Purpose 37-Position and 9-Position Interface for Data and Terminal Equipment and Data Circuit-Terminating Equipment: Employing Serial Binary Data Interchange,” retains all of the functional capabilities of EIA RS-232C and also introduces 10 new interchange circuits to enhance functional capability. It provides standardized 37-pin and 9-pin interface connectors together with latching arrangements for these connectors.

The resulting interface, which is compatible with the current state of the art of integrated circuit technologies, is technically superior to the now archaic EIA RS-232 C interface. It offers greater immunity to noise and an increase in data signalling rate to 2 Mbit/s, and it permits an increase of up to 60 meters in the length of the interconnecting cable. Its augmented functional capability was not available in earlier interfaces.

Equipment designed to use RS-449 can be made to operate with existing, unmodified RS-232C equipment, subject to the restrictions and technical limitations of RS-232C. Detailed information is provided in EIA Industrial Electronics Bulletin No. 12.

Ten new interchange circuits have been defined in RS-449 which did not appear in RS-232C: three circuits for the control and status of testing functions in the DCE (circuit local loop-back; circuit remote loop-back; and circuit test mode); two circuits for the control and status of the transfer of the DCE to a standby telecommunication facility (circuit select standby and circuit standby indicator); and a circuit for DCE transmit and receive frequency selection (circuit select frequency). Circuits for an “out-of-service” function under the control of the DTE (circuit terminal in service) and a new signal function (circuit new signal) are also provided.

Copies of RS-449 and Industrial Electronics Bulletin No. 12 are available for $9.50 and $4.25, respectively, from the Standards Sales Office, E1A, 2001 Eye Street, N.W., Washington, D.C. 20006. In order to correctly interpret RS-449 and to facilitate a necessary transition from RS-232 equipment, EIA strongly recommends that RS-449 and Industrial Electronics Bulletin No. 12 be procured together. An Index of EIA and JEDEC Standards is also available from this office free of charge.

Computer store owners form trade association

The Computer Retailers’ Association, a trade association of computer stores, has been formed with 24 founding members. Incorporated in California, the retailers will meet at the Second West Coast Computer Fair in April to elect nine directors. The directors will then adopt a set of bylaws for the group.

The objective of the organization is to provide services that individual stores cannot effectively provide themselves, such as compiling industry statistics, working to improve the relationship between computer stores and manufacturers, arranging for group insurance, providing information about the computer store business to the financial community, and encouraging high standards among computer retailers.

The group had its start in an informal meeting of computer store owners at the First West Coast Computer Fair last April. There was strong agreement among the owners that an association was needed. Portia Isaacson, consultant and co-owner of the Micro Store in Richardson, Texas, suggested that owners meet at the National Computer Conference in June to get the plans underway.

At NCC more than 30 store owners met and formed a committee with Portia Isaacson as chairwoman. The committee then set about implementing a plan, proposed by Kenneth S. Wideltz, a Los Angeles attorney, to set up an association. All known computer stores were sent letters asking them to indicate their interest by sending a $100 check to the organization’s trust account.

Two more meetings to recruit members were held in August, at Personal Computing ’77 in Atlantic City. By the end of December, the group had enough retailers to incorporate.

ISA Fortran extensions recommended for international standardization

The real-time industrial computer extensions to Fortran, described in ISA Standard S61.1-1976, have been recommended for international standardization by a working group of the International Organization for Standardization (ISO). The action was a major result of a recent London meeting among programming language experts from the United Kingdom, Germany, France, and the United States. The national experts, comprising Working Group 1 of ISO Subcommittee TC97/SC5, recommended to SC5 that the ISA standard be balloted as an international standard.

The standard, well known as an American National Standard in the United States, and adopted as a standard in Japan, was developed by the ISA Standard Committee SP61, a working group of the International Purdue Workshop on Industrial Computer Systems. It provides for a limited set of executive program-control functions, calls for process I/O, bit manipulation functions, and access to system time and date information. In its recommendation, the working group specified additional explanatory information to be added to S61.1-1976. The additional material will add technical content to the standard and will be prepared by the international experts to the working group.

In other actions, the working group deferred consideration of proposed ISA Standard S61.2 on file handling, since a similar proposal is being developed in Europe. The United States and European groups were requested to propose a unified document at the next meeting.

The working group discussed a proposal to consider Coral 66, a standard language at the United Kingdom Ministry of Defense. The group decided that the definition of Coral 66 provides a unique language which widens its scope of applicability beyond industrial real-time systems. It was therefore recommended that SC5 consider Coral 66 but that the United Kingdom experts should consider the submission of real-time extensions for Coral 66 to Working Group 1.

The working group also made progress toward the definition of functional requirements for industrial
real-time computer languages. These criteria, intended primarily for the use of the working group, are to be used for the assessment of language proposals submitted to Working Group 1.

The meeting, hosted by the British Standards Institute, was attended by 20 experts from France, Germany, the United Kingdom, and the United States. The next meeting is scheduled tentatively at AFNOR, in Paris, November 6 through 9, 1978.

US participation in this international activity is the responsibility of the Measurement and Control Standards Management Board of ANSI, relying upon the American regional organization of the International Purdue Workshop for guidance and participation. US attendees at the London meeting were Merritt E. Adams of Western Electric, Matthew R. Gordon-Clark of Scott Paper, Thomas J. Hart of IBM, and Lt. Col. William A. Whitaker of DOD.

NBS seeks comments on proposed user-terminal protocols

The National Bureau of Standards has published for review and comment a proposed standard for computer user-terminal protocols. The proposed federal information processing standard, "User-Terminal Protocols—Entry and Exit Procedures Between Terminal Users and Computer Services," was published in the Federal Register (December 12, 1977, page 62408).

The proposed standard protocol includes standardized user, system, and error messages, user and system signals, message sequences, and a list of definitions.

The protocols would apply to all user-terminal interactions involving a federal government user. The provisions of the standard would be mandatory and would go into effect a year after formal promulgation.

NBS is seeking comments on the proposed standard from all interested parties. Comments and questions should be addressed to the Associate Director for ADP Standards, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234. Comments must be received on or before March 13, 1978. Single copies of the Federal Register notice may be obtained from the above address.

CBEMA elects 1977-78 officers

Roy L. Phelan, vice president, corporate research and development for NCR, has been elected the 1977-78 chairman of the board for the Computer and Business Equipment Manufacturers Association. Carl A. Kuhrmeyer, vice president, Graphic Systems Group, 3M Company is the new vice chairman of the board.

Phelan, an electronic business machine designer since 1950, was with Philco, IBM, Burroughs, and Victor before joining NCR. He has been responsible for the direction of large engineering groups since the early 1960's and now directs NCR's worldwide research and development effort.


Beckett is director of government relations for Hewlett-Packard Company. Geater is manager, market research and development, of Eastman Kodak's Business Systems Markets Division.

B. J. Moore electronics achievement honored

B. J. Moore, president of Biomation Corporation, has been honored with the 1977 Electronics Magazine Award of Achievement.

Moore was cited for pioneering the electronic logic/analyzer, now an industry standard device for precision measurement and testing of microprocessor and other digital electronic equipment.

He shares the honor with Hewlett-Packard's Charles House, who simultaneously and independently designed a similar device.

Moore joined Biomation in 1969 as vice president of engineering and was named to head the company in 1971. He spent the first decade of his career working in design engineering for instrumentation companies in Tennessee, including Oak Ridge National Laboratory, and Radiation Instrumentation Development Laboratory, then a division of Nuclear Chicago. He was formerly with Ortec, a subsidiary of EG&G, Inc. He received his BSEE and MSEE from the University of Tennessee.

Buyer's guide compares 15 data base management systems


The report is designed to help prospective users evaluate and select the DBMS best suited to their needs by comparing the key characteristics of 15 leading systems—Adabas, Datacom/DB, DBMS-10, DBMS-20, DL/1DOS/VS, DM-IV/I-D-S-II, DMS II, DMS/90, DMS-1100, IDMS, IMS, Inquire, Model 204, System 2000, and Total.

The charts identify the vendors of each system, the number of users, configuration information, data base features, recovery, and other system features, including pricing.

In addition, the report includes an in-depth evaluation of these six selected systems: Adabas, IDMS, IMS, System 2000, Total, and Datacom/DB.

"A Buyer's Guide to Data Base Management Systems" is available at $12 per copy from Datapro Research Corporation, 1805 Underwood Boulevard, Delran, NJ 08075.

Mini/Micro Conference calls for session proposals

Proposals for half-day sessions at the 1978 Mini/Micro Computer Conference and Exposition are being requested by the conference program chairman. The conference will be held April 18-20 in Philadelphia, Pennsylvania.

Session proposals, rather than individual papers, are sought. The proposals should be for 2½-hour sessions consisting of approximately four individual publications, each complimentary to the others.

Previous conference topics have included LSI memory, small business systems, the micro impact on the mini, and distributed processing.

To propose a session topic, send a 75-100 word abstract to Conference Program Chairman, Mini/Micro Computer Conference, 5628 E. La Palma Avenue, Suite 1, Anaheim, CA 92807 or call (714) 528-2400.
Big growth predicted for consumer microprocessors, data base industry, clinical lab instrumentation

Continued growth into the 1980's is predicted for the consumer microprocessor and clinical lab instrumentation markets, and for the data base industry, while the data communications market will peak by 1980, according to recent reports by Frost & Sullivan, Inc., market research specialists.

Other recent Frost & Sullivan studies foresee greater corporate use of computer/communications-based cash management practices, and predict a 12 percent annual growth of the instrumentation market in India.

A report on dedicated consumer microprocessors and microcomputers projects that the worldwide market will climb from its current 12 million units to 130 million units by 1984, as the microprocessor continues to make major inroads into games, appliances, automobiles, home computers, and other consumer products.

The study adds, however, that total dollar revenues will significantly lag unit volume growth as prices plummet for high-performance, low-end microcomputers. Automobiles and games will develop into the largest volume markets for microprocessors and dedicated microcomputer systems, respectively, according to the report.

Other Frost & Sullivan research indicates that the market for clinical laboratory instrumentation—at $315 million in 1976—will reach $450 million by 1980, and $477 million by 1986. A typical 300-bed hospital will use a Technicon SMA 12/60 to do routine screens, an Abbott ABA 200 to do enzyme testing, a DuPont ACA for off-hours and stat testing, and possibly a Beckman glucose analyzer for stat and other general tests.

The report hailed the advent of LSI circuits and the microprocessor as representing the first major breakthrough in small analyzer design. "The instant interfacing of memory storage and peripheral logic have imparted the control, speed, and simplicity that are necessary in an ideal small analyzer," the study says.

Frost & Sullivan found that "instruments that do not satisfy the necessary performance" are either dropping out, or have already disappeared from the clinical laboratory instrumentation market. It added that those instruments most likely to retain a "first-order relevance to laboratory operation" will have the flexibility to perform both screening profiles and selective, individual tests or test panels.

In its investigation of the data base industry, Frost & Sullivan predicted growth to $1.5 billion by 1985, up from $740 million in 1976. Law firms, businesses, government, and financial institutions were among the largest markets.

The study cited declining costs as a major force behind the healthy data base market, which is expanding to include medium-size and small companies.

Frost & Sullivan found that the data communications equipment market will grow from its present volume of $928 million to $1.2 billion by 1980, but will drop back to $1 billion by 1985. Some categories, such as modems, telephone couplers, and communications test equipment, will begin to decline immediately, while others, such as front-end processors, remote concentrators, multiplexers, and messengers, will undergo big market gains through 1980, before starting into decline.

Increased use was forecast for minicomputers, which the study called "one of the most promising elements in the datacomm environment."

Other studies published by the market research company reported increased corporate use of computer-based cash management systems, primarily as a result of electronic payment mechanisms, and predicted a 12 percent annual growth in India's instrumentation market through 1987. Despite a government policy in India encouraging local manufacture of laboratory, scientific, and process control instruments, rapid technological advances prevent the lesser-industrialized nation from meeting its needs alone, Frost & Sullivan found.

ACM awarded NSF grant

ACM has received a grant of $63,826 from the National Science Foundation for a continuation of the "Study on Courses in Computer Literacy and the Impact of Computers on Society" project. Richard H. Austing, University of Maryland, and Gerald L. Engle, Old Dominion University, are the principal investigators.

Phase 1 of the project, the collection of an extensive annotated bibliography and the development of course objectives at various levels, was completed last year.

Phase 2 of the project, which the new grant supports, will (1) further develop and refine the bibliography and the information storage and retrieval system supporting it, (2) organize and conduct a workshop on computer impact involving individuals other than computer professionals, and (3) develop and disseminate a collection of position statements in the area of computer impact by various concerned professionals. The project is expected to be completed by the spring of 1979.

The bibliography from Phase 1 is available on microfiche from Gerald L. Engel, Dept. of Math and Computing Sciences, Old Dominion University, Norfolk, VA 23508. The complete set, prepaid, is $2.30 for US orders and $3.30 for others.

Users name 32 top packages to Datapro software honor roll

Thirty-two proprietary software packages have been named to the 1977 Datapro Software Honor Roll in recognition of their outstanding performance as judged by their users. Each package was rated excellent in overall satisfaction by the respondents to a survey of proprietary software users.

Six of the 32 honor roll packages were selected again for the fifth consecutive year. The five-time winners are Alltax, Disk Utility System, EPAT, Grasp, The Librarian, and Panvalet.

The detailed results of the survey are available in an 18-page report, "User Ratings of Proprietary Software," from Datapro Research Corporation, 1805 Underwood Blvd., Delran, NJ 08075. The price is $12.