The role of the Technical Committees is to strengthen the Society and the membership at large by promoting technical excellence in a specific area. In addition to the smaller workshops where workers in a particular discipline exchange information and discuss problems of mutual concern, the Technical Committees serve the overall interests of the Society by sponsoring many seminars, symposia, sessions at the Society's conferences and other conferences (e.g., at the IEEE International Conference, WESCON); they also sponsor technical sessions in conjunction with the Spring and Fall Joint Computer Conferences. The TCs prepare papers for special issues of the Transactions, and contribute articles to COMPUTER magazine.

Why join a TC? For a little effort there can be a good return: new dimensions in professional development; personal satisfaction outside your particular organization; regenerative experiences to combat creeping mediocrity. It can be a much needed change of pace or an opportunity to recalibrate your thinking. For many the TCs open doors to greater acceptance, recognition and involvement.

The key to realizing these benefits is participation. Joining a TC usually means becoming actively involved in a subcommittee (usually between two and four meetings a year); helping with one or two of the TCs activities during the year, which often means soliciting some presentations or papers for technical meetings, and occasionally participating in the organization of a workshop or in the authorship of a committee-sponsored article.

Below are short descriptions of the scope and typical activities of the Society's Technical Committees. When you run across one that seems to match your interests, contact the TC chairman and ask him about becoming involved. You'll find his name and address on the enclosed insert; he'll be more than happy to talk to you.
Applications in Design Automation

This committee's interests cover the use of computers in any design process, a field that now extends beyond electronic computer-aided design to uses that range from ship design to urban planning.

Membership in this committee is open to workers in the field of design automation, regardless of application area — whether involved with electronic applications, civil engineering, optics, or any other area in which the computer is integral to the design process.

Activities are structured to allow users of design automation in many different fields to interchange experiences and techniques. The TC sponsors the annual Design Automation Workshop, cosponsors design automation conferences and is active in assisting the IEEE as a whole in its computer-aided design activities. For example, the committee publishes a CAD news column in COMPUTER magazine and acts as a clearinghouse for all computer-aided design activities and design automation for all IEEE Groups regardless of application area.

Applications in Management Data

Among this committee's interests is business data processing and executive command & control processing, primarily to identify desirable equipment and systems design characteristics. The committee also examines the uses of computers in management information systems.

The members of the TC use workshops as their primary means of communication. Over the past ten years the members have examined such topics as mass storage, interactive languages and systems, the effect of peripheral equipment on applications design and scope, and other related areas. Their technical orientation is emphasis on the state-of-the-art as it applies to the use of computing systems as contrasted with the design of components of computing systems.

Computer Architecture

This committee is concerned with the physical realization of logical propositions in the development of computer systems. Although not directly concerned with technology or switching models on one hand, or with specific applications on the other, each of these topics are relevant insofar as they influence the selection of particular algorithms to be implemented or to exercise control of a system resource.

Subcommittees include: 1) microprogramming; 2) computer arithmetic; 3) computer performance measurement and evaluation; 4) architectural studies; and 5) real-time operating systems/resource control, real-time/input-output considerations.

Among the committee's activities are workshops, special Transactions issues, subject bibliographies and, in general, the development of the areas represented by the subcommittees. Workshops on microprogramming, computer arithmetic, techniques of computer performance evaluation, modular computers and computer networks, and advances in high-performance computers are being held in 1971-72.

Computer Communications

In a world where more and more data communication takes place between computers or between a central computer and many time-sharing terminals, the vital subject of computer communications continues to increase in importance. The Computer Communications TC is actively working to find solutions to the many problem areas in this complex and active area. These efforts can be described as: a) organizing or sponsoring sessions and meetings at which timely developments in computer communications are discussed; b) organizing or sponsoring workshops at which solutions to specific problem areas are sought; and c) the cooperative publication of information on computer communications.

The committee recently organized an invitational workshop which included senior policymakers from the common carriers (both domestic and international), representatives from government and industry and users of Telecommunication Policy, the proposed new special-purpose common carriers, research organizations, modem and other communication equipment manufacturers, business systems companies and consultants, computer manufacturers, and representatives from important users of computer communications. Additional workshops of this type are to be held in addition to the committee's regular meeting and publications efforts.

Computer Elements

Coordination of device and circuit techniques with the changing requirements of computers is the primary concern of the TC. Most of its activities are channeled through its subcommittees. Its Packaging Subcommittee, by the growth of its activities and membership recently moved its status to a full Technical Committee. The other two subcommittees, Logic and Systems and the Memory Subcommittee, function independently or collectively as needed in interrelated matters.

The committee's orientation is basically toward hardware, spanning the spectrum from the realization of basic elements to the use of these elements in data processing systems and including the impact of these elements on the many dimensions of our business and professions. For example, the Logic and Systems Subcommittee has recently been examining the many facets of LSI; the Memory Subcommittee has concentrated on the many technologies of memory and memory hierarchies.

Typically this committee holds four meetings a year in addition to sponsoring workshops, conference sessions and working together to author articles in the field.

Computer Elements Packaging

Packaging and its related technology is easily defined in its simplest context, but the factors that influence and mold the direction of packaging techniques and forms and the effect of packaging consideration on system cost and performance is broad and very complex. For this reason, this committee has covered the spectrum from device fabrication to system thermal considerations. Technical discussions over the past three years have uncovered general trade-offs between signal characteristics and interconnections, monolithic and hybrid
yield and cost relationships, testing and assembly methods, component structures and resulting thermal restrictions and encapsulation and open package structures. The point of view taken concerning the influences of these system factors on packaging and conversely the effect packaging has had on these factors. These discussions have taken place at one day technical meetings and at an annual workshop.

Membership and meeting attendees include people from the device, assembly, fabrication, materials, circuit and system technology and from industrial and commercial manufacturers of conventional packages. One of the basic functions of the committee is to explore the many disciplines that impact packaging to prevent a package technology stalemate and hopefully, to create an atmosphere which promotes advancements in packaging.

Data Acquisition and Control

The committee is concerned with on-line data acquisition and control as it affects manufacturers, users and system houses. The committee has formulated a number of goals that are felt to be feasible and useful for industrial data acquisition and control. Among them are: 1) a glossary of terms coordinated with software standards activities of ISA and Purdue University; 2) classification of relevant hardware and software; 3) interface standards and commonality meetings; and 4) search for common user problems which should influence hardware, software, and systems design.

These goals will be pursued through workshops, technical meetings, and participation in various conferences and symposia as well as independent research and correspondence between committee members.

Fault-Tolerant Computing

This committee has as its scope: computer design using protective redundancy for fault masking and automatic repair; fault location and diagnosis of digital systems; hardware and software techniques for recovery from errors; and the estimation of the reliability and availability of fault-tolerant systems.

Although only recently formed, the Fault-Tolerant Computing TC has already organized and conducted the first highly-successful International Symposium on Fault-Tolerant Computing which was held in Southern California in February 1971. The committee has held several well-attended technical meetings at the JCCs and Computer Society conferences and has recently begun work on a glossary of fault-tolerant computing terminology.

Pattern Recognition

The scope of the Pattern Recognition TC includes theoretical research, methodology, applications, systems organization and technology concerned with the processing and recognition of visual and time signal information. Current interests include optical character recognition, speech recognition, picture processing, time signal classification, biomedical image processing, learning and adaptive machines, and artificial intelligence.

A subcommittee on reference data bases and performance evaluation standards is currently locating and developing reference data sets in active areas of pattern recognition. A subcommittee on optical character recognition is being formed.

Activities include sponsoring the highly successful Pattern Recognition workshops, organizing symposia and participating in computer conferences. The committee also provides material for Transactions special issues on pattern recognition.

Peripheral Equipment

The scope of this committee includes concepts design and hardware associated with equipment which is separable from but used with major memory logic and control units of general purpose computer systems. It includes: 1) storage systems; 2) hard copy output (COM, plotters, printers, etc.); 3) hard copy input (OCR, recorders, microfilm readers, etc.); and 4) terminals and displays.

Full time committee members include active members who directly guide the undertakings of the committee and participate in conferences, workshops and other committee sponsored activities. Associate members receive copies of pertinent workshop and conference papers as well as meeting notices. Activities include meetings and presentations at the JCCs; participation in regional meetings; assisting with the generation of standards; sponsoring a series of articles in the Transactions on the state-of-the-art; and sponsoring informal workshops.

Switching and Automata Theory

The Switching and Automata Theory TC concerns itself with: a) theoretical aspects of applying information theory to the total information required in a computer to perform given functions; and b) treatment of the internal design of the computer by circuit minimization by mathematical methods, including computer-executed programs for the application of the minimization algorithms.

One of this committee's primary activities is to hold the annual Symposium on Switching and Automata Theory. The Symposium has become the leading forum for workers interested in theoretical aspects of computers, computation and program programming to discuss their current research work. The Committee often co-sponsors workshops and conferences with other professional societies. Committee meetings are held at the JCCs and at the Computer Society's annual conference.

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