Preface

This issue of the *IBM Systems Journal* is dedicated to "World Communications Year 1983," proclaimed by the United Nations. Applications combining the use of computing and communications have broadly influenced our business and personal lives. In the business environment we have access from our desks to systems and data bases that are continually and consistently being updated to reflect current activity. With the emergence of the communicating microcomputer, we have access in our homes to data base services providing information on a broad range of topics from stock quotations to airline schedules. In addition, we can communicate with one another using the facilities of a variety of network services and offerings. The application of telecommunications capability has had a profound positive effect on our lives. It is hoped that the benefits that have accrued to developed nations through the application of telecommunications can be exploited by emerging nations as well to support their orderly social and economic growth.

Scherr, in his essay "A perspective on communications and computing," examines the evolution and future potential of communications facilities. He portrays the migration of data processing systems from batch back-office operations into the on-line front-office environment. Included is a discussion of the new technologies that have laid the groundwork for this evolution. The future potential to exploit and build upon these technologies in both the personal and business environments is also presented.

Packet-switched data networks provide cost-justified applications services at middle-range data volumes. The interface to such services was defined by the International Telegraph and Telephone Consultative Committee (CCITT) in 1980 and is commonly referred to as the X.25 recommendation. Deaton and Hippert review the developmental history of the recommendation, the motivations for its use, and the architectural relationship between X.25 and the IBM Systems Network Architecture. In addition, specific product implementations of X.25 support are presented.

In recognition of the need for office systems to communicate across international boundaries, Teletex was adopted by the CCITT as a standard for such transmissions. Moore traces the evolution of Teletex into a standard, and finally into a service offering. He provides a description of the specific technical features of the Teletex offering, and then speculates about its future.

Local Area Networks offer the potential of high-speed data communications between workstations located within a single building or cluster of buildings. Dixon, Strole, and Markov describe a proposed local area network implementation based on the token-ring architecture. This architecture provides facilities to support a local area network with superior performance and reliability. Such networks will become an integral part of the communications facilities used to support office operations.

An application of telecommunications in wide use in IBM is described in the paper by Mendelsohn, Linehan, and Anzick. Called VM/Pass-Through, it is a system that allows users in a network of interconnected VM systems to access facilities across the entire network. The paper discusses the design, development, and evolution of the Pass-Through facility. The ease of implementation and operation of VM/Pass-Through were foremost considerations in its design and development, and should serve as a model for the creation of similar network facilities.

Satellite communications has become an ever-increasing factor in voice, video, and data transmissions. The satellite environment has unique characteristics which represent opportunities and at the same time impose constraints on its use for communications. The paper by Fennel and Gobioff provides an introduction to satellite communications and describes in detail the implementation of the satellite controller used by Satellite Business Systems (SBS) in their service offering.

Videoconferencing offers the potential of improving productivity through reduced travel, while meeting ongoing business needs for interpersonal communication. The paper by Anastassiou, Brown, Jones, Mitchell, Pennebaker, and Pennington discusses a videoconferencing system that has been developed for use within IBM. It provides for the transmission of two types of high-quality, freeze-frame, monochrome images over dial-up telephone facilities. Extensive use of the capabilities of the Series/1 is made to compress the data so as to reduce transmission time and make the system more responsive to its users while utilizing cost-effective transmission facilities.

As telecommunications hardware is tailored to meet user needs, software support must be provided for these new devices in a consistent and reliable manner. Parr and Strom describe a high-level language that is currently being used in the implementation of prototype communications systems. The Network Implementation Language is designed for writing executable architecture that can be compiled into efficient code for the different machines and run-time environments of a family of communicating products. It holds the promise of consistent and compatible implementations of telecommunications support across hardware systems.

As communications networks have evolved from centralized control to distributed function, and from a few terminals to vast networks, there has been an order of magnitude increase in complexity. Similarly, as they have become an integral part of the basic business processes of the organizations that they serve, their reliability has become imperative. These conflicting trends have resulted in the need for new tools to assist in managing them more effectively. The communications network management support in Systems Network Architecture has evolved to meet these new needs. Sullivan describes this evolution and the communications network management support offered by SNA. A practical example of the implementation of network management for a large, complex network is presented by Garrigues. Included is a review of the organizational implications as well as the hardware and software considerations for the management of such a network.

Not many years ago, few would have foreseen the vast effect that the marriage of computers and telecommunications has had upon our society. Although it has been over two decades since the onset of the availability of such facilities, we are at the threshold of realizing their potential.

Beginning with this issue, we are introducing a new design. We feel that the redesign will result in a significant improvement in readability and will make the *Systems Journal* more attractive and appealing to you, our readers.

John Lacy
Editor