

Preface

The *IBM Systems Journal* joins the Company in celebrating the twenty-fifth anniversary of IBM Systems Engineering. In 1960, IBM created a series of new field professional positions by merging the former applied science and systems groups. Systems engineers, working in concert with marketing representatives and customer engineers, have since jointly formed the primary interface between IBM and its data processing customers. Throughout this quarter century, IBM systems engineers have offered technical marketing support with expertise in many areas including installation planning, programming, systems management, and industry specialties.

This issue of the *Systems Journal* is quite special in that all the authors are either practicing or former IBM systems engineers. The articles cover a wide spectrum of topics and reflect the diversity of activities that fall within the varied disciplines of systems engineering. Systems engineering careers take many paths, and you will discover viewpoints and interests in the articles focusing on different aspects of software, hardware design, management, support, organization, marketing, and requirements analysis. Also of note is the worldwide nature of IBM systems engineering—authors hail from Australia, Hong Kong, and Israel, as well as the United States.

The opening paper, by Peck, chronicles the evolution of systems engineering and provides a look at the ongoing forces and changes which are advancing this evolution. Peck provides an interesting perspective for those who have had experience in systems engineering, those who work with systems engineers, and those who may be considering this field as a career alternative.

Accompanying the evolution of systems engineering has been a computer support system that has offered field personnel a variety of software tools and data bases to aid their productivity. The paper by Boos describes this system, which is known as HONE. As a system, HONE is a model of successful evolution, from an equipment base of dial-in typewriter-type

terminals linking branch offices with a single main-frame computer to an archetypical multisite complex accessed through several networks. Users can interact with the system by utilizing a variety of devices, including color and intelligent workstations, and can route output documents back to their local laser printers. HONE's user community has expanded beyond systems engineers to include all branch marketing and administrative personnel, and its design allows for the possibility of direct use by customers. Most branch professionals can reflect fondly on hours spent—with coffee cup in hand—at the HONE terminal pulling together material for customer proposals using configuration, pricing, performance analysis, installation planning, and product description information from the system.

Designing systems for high availability is a complex process, involving difficult trade-offs between component costs and the type and duration of anticipated disruptions. The paper by Agassi discusses an analysis completed as part of a customer proposal for a system that had to furnish continued application availability in the event of several types of failures, including loss of the central site. The author also demonstrates use of the HONE performance analysis program ANCICSVS to model the transaction-based applications.

Analysis of an enterprise's information needs using a top-to-bottom approach has proved to be effective in providing insight into the information needs of an organization as a precursor to implementing the individual application subsystems. Hein describes a software tool that brings a useful degree of automation to the Business Systems Planning process, as an aid throughout the planning, design, and implementation processes. An IBM program offering has been announced recently that substantially incorporates the software described.

The IBM 3270-PC offers a single workstation with the capability of supporting up to four host 3270 terminal sessions, in addition to local personal computer

processing. Workstation software known as the Application Program Interface (API) allows PC applications to interact with the host session screens on behalf of the user. This capability makes possible a wide variety of applications which range from simple automation of the logon process in connecting to host systems and synchronizing the clock on the PC with that of the host, to transferring complete files between systems. Most exciting, however, may be the cooperative applications using the PC to accomplish processing of host-managed data as well as to sustain a continuous dialogue with the operator. The paper by Ghiotti examines this system's capabilities in the light of experiences with customers in varying industries.

In addition to Agassi's paper, two other papers expand on the theme of increasing system availability. Newton emphasizes a strategy of problem prevention, and in particular the use of rigorous testing and a second processing site to contain the risks involved with increasing business dependence on data processing. The paper by Brooks also offers insight into a number of topics relative to availability, with a particular focus on removing unnecessary resource sharing as a strategy to minimize induced outages. The declining cost of processors makes either approach to increased availability applicable to a wider class of applications.

The mainstream of computer processing was taking a new course in the late 1960s as customers saw the potential of directly accessing from terminals the files which were being batch-processed on their systems. Although it was comparatively easy to demonstrate the usefulness of accessing and updating such information from a terminal on a time-sharing system, these systems were not designed to support substantial numbers of terminals that had to access a few data records at a time, using relatively short-running programs. Numerous problems had to be solved to bring resource requirements within bounds, as well as to support effective application development and data recovery for transaction processing. The IBM Customer Information Control System (CICS) provided a solution to these problems and continued to grow in capabilities in the following years. The paper by Yelavich gives us a comprehensive look at the history of this product with a view toward its future role.

The rapid deployment of personal computers and the increased use of Information Centers has created a vast number of operational application systems

with loose ties to the traditional data processing organization. Simultaneously, older production systems have reached the point where reimplementa-tion may be necessary to restore manageability and capitalize on advanced technologies. The paper by Buckelew provides a planning model and framework with which to categorize these systems and help develop a strategic plan leading to an integrated information system.

Fundamental tasks of the systems engineer include matching the needs of the customer to the offerings in the product line, as well as helping the customer understand organizational strategies to aid in successfully implementing these solutions. The paper by Mudie and Schafer offers a concise view of aspects of organization, classification of application environments, and a set of product attributes with the potential to provide a range of increased benefits with reduced costs.

The IBM 3880 Storage Control Subsystem furnishes systems implementors with an opportunity to take advantage of the reduced cost of memory technology to yield improved access time to DASD storage. By utilizing up to 64 megabytes of cache storage, substantial performance improvements can be provided to operating system and application programs with a minimum investment of personnel time. Grossman gives us a comprehensive look at the developments leading to the current design of the IBM 3880, as well as a discussion of its operation and performance.

The *Systems Journal* staff hopes you will find in this issue some new and varied perspectives of the role of the systems engineer. I myself, having joined IBM as a systems engineer and having served as a systems engineering manager, look back at my experiences as both very enjoyable and highly rewarding. My associates and I extend our best wishes to all systems engineers—past, present, and future—on this their Silver Anniversary.

Gary Gershon
Editor