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PREFACE

Technology advances and innovative applications in the computer industry continue to occur at a rapid pace. The semiconductor industry is a prime example of a technological driving force providing capabilities not even contemplated several years ago. When advances in any technology area are being made at such a pace, it becomes difficult to determine the driving force in the application of this technology to the marketplace. That brings us to our theme for COMPCON Fall '77, technology thrust versus user requirement.

Traditional experience shows that technological advances have gone hand in hand with well perceived and identified needs for new technical products and processes. What we now see are advances anticipating problems. One can argue that this is both proper and necessary to maintain our computer industry at the forefront of global competition. The computer industry cannot afford to become obsolete in world markets due to an unwillingness to change or an inability to visualize the potential of the latest technological breakthroughs. However, it is equally important that the introduction and application of new technological breakthroughs be carefully considered to assure that change is not made for the sake of change but that there are sound economic, technical, and social improvements that will result therefrom.

In keeping with the conference theme, we have attempted to structure the conference around the forefront of technology, emphasizing innovative application ideas and concepts. The response to the call for papers was the greatest we have yet experienced. Regretfully, time limited the number of papers we could utilize. The COMPCON Committee is appreciative of the time and effort expended by all those who submitted papers.

We also emphasized the international nature of COMPCON this year and made considerable effort to assure true international participation. These efforts were successful, and papers from eight countries are included in this digest. We appreciate this participation and encourage even greater participation in the coming years, hoping to achieve a more fully balanced international conference.

Our keynote speaker this year was Mr. Mark Shepherd, Jr., Chairman of the Board and Chief Executive Officer of Texas Instruments. He was followed by technical keynote speakers who highlighted the problems, opportunities, and the state of technology in each major technical area of the conference.

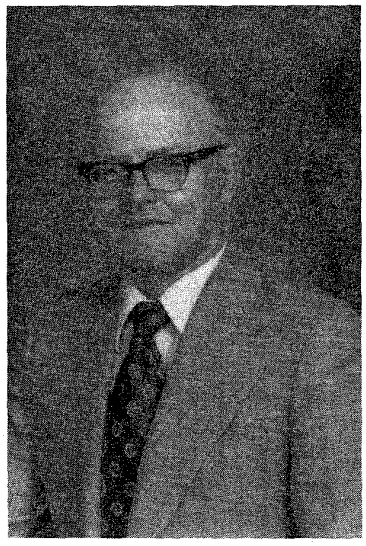
This volume contains the digests of papers presented at COMPCON Fall '77. A small number of papers of outstanding quality, but which could not be accommodated in the individual sessions, are also included and assist in making the document more complete.

Not covered in this volume, but a significant part of the conference, were the Personal Computing Workshop and the DOD Standardization Panel. The recent explosive growth in personal computing led us to introduce this evening session for both professionals and hobbyists alike. It was one of the highlights of the conference. The DOD Standardization Panel focused on both hardware and software aspects. Because the DOD is such a large purchaser of computer hardware, software, and services, their specifications and what they procure greatly influence the marketplace. This session also was a first for COMPCON.

I would like to thank the Program Committee area chairpersons and the group and session chairpersons for their excellent work in assembling the papers, organizing the sessions and in doing all that was necessary to make COMPCON Fall '77 a success. Special thanks also to True Seaborn, Editor of IEEE's magazine, *Computer;* Harry Hayman, our IEEE Computer Society Secretary; and their staffs, who supported us with timely assistance and whose patience was infinite.

Paul S. Skartvedt
TRW

A MESSAGE FROM THE COMPCON CHAIRMAN



When the COMPCON 77 Committee began planning this conference, some of us wondered whether we could compete with the spirit of 76, and equal last year's success. Thanks to the enthusiastic participation and contributions of everyone of you, the momentum created by the bicentennial has actually been exceeded. COMPCON now has a new plateau from which to better serve our expanding profession.

The computer community is achieving a new maturity while maintaining its youthful tradition of innovation and dynamism. This maturity is reflected by a departure from the introspection of bygone years to an outward looking attitude, which seeks to contribute to and collaborate with a wide variety of technologies and disciplines. It is symbolic that our youngest offspring, microprocessor technology, should be the one to provide the bridge between computing and so many new fields of applications. This year's COMPCON Theme: "Technology thrust versus User requirements," attempts to capture that 'Outward thrust'—Can we meet the needs of the rapidly increasing number of users of our technology. . . .

What an opportunity for all of us! What a responsibility!

This year's program included a number of 'Firsts'. The special evening on PERSONAL COMPUTING, with its exhibits open to the general public, reflected the realization by many that we can, indeed we must, unlock and tap the enormous pool of creativity available in all of us. Scientists, engineers, laymen, high school students, we can all be participants in this personal 'Adventure of the Mind'. The response has been overwhelming. . . .

Program Chairman Paul Skartvedt and his dedicated committee worked many months to put together a stimulating, comprehensive, and balanced program, truly representative of our fascinating field. The conference keynote given by Mark Sheperd, Chairman of the Board of Texas Instruments Inc., gave us a blueprint for the future of microprocessing. Isaac Auerback, President of Auerback Corp., gave us his vision for Computer Technology through 1985, while Edson De Castro, President of Data General Corporation, periscoped the trends in system technology. Portia Isaacson, Chairperson for this year's NCC, was the spokesman for 'Personal Computing' and, with her enthusiastic team, was responsible for the success of that very special evening session. The international character of COMPCON Fall was highlighted by the participation of delegates from as far afield as Japan, Australia, Western Europe, and the Popov society of the USSR.

It takes hundreds of contributors and volunteers to put on a technical conference of this magnitude. Our sincere thanks go to everyone of them for giving so generously of their time and effort. In the final analysis, the success of COMPCON 77 will be measured by what each delegate puts into and gets out of the conference; the cross fertilization of your ideas with those of your professional colleagues, and the renewed enthusiasm you take home.

On behalf of the entire steering committee, welcome to COMPCON 77. We look forward to your active participation at YOUR conference!

Paul L. Hazan
Johns Hopkins University
Applied Physics Laboratory

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