

# Guest Editorial

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This special issue of the magazine on Technology Update was originally conceived by Steven Weinstein, Editor-in-Chief of this magazine, as a means for conveying to the membership of ComSoc some of the many exciting new developments spanning the spectrum of our profession. In response to that challenge, we have solicited the authors of the articles, each of whom have a well-earned reputation for significant contributions to their specialty, to write about what is new in their area and about the direction that the field is heading. While we could not possibly cover all areas in one issue, the topics are a cross section and a subset of those currently covered by ComSoc. Indeed, the solicitation of articles was actually done through the technical committees of the Society.

The first article, by Vickers and Vilmansen, provides an excellent history of the evolution of Telecommunications Technology. The second, by Judice and LeGall is an excellent report on the status of new and future services that ISDN and developments beyond will bring. The next paper by Wolejsza et al discusses some of the major issues that impact the possibilities of "instant" data networking with very small aperture terminal (VSAT) satellite communication networks. This is followed by an article by Boyd and Johnston on Network Operations and Management (CNOM), which is also the name of the newest ComSoc technical committee.

The article by Mouftah and Shanmugan on Computer-Aided Techniques illustrates the tremendous power of modern, high-speed digital computer aided modelling, analysis and design for sophisticated communications systems. The article by Privett on the economics of custom Telecommunications VLSI illustrates the major technology and its economics, which is, along with computers and materials research, the engine that drives the new frontiers of communications. The next one by Hatamian et al is a further example of a special purpose VLSI application that is of particular relevance to communications.

The proliferation of data communications use for sensitive information, electronic funds transfer, and telecommunications access to restricted databases resident in host computers has given new impetus to problems of communications security and digital authentication techniques. Omura's article on dial access public key techniques presents general original ideas of authorization and certification for access control, including those that take advantage of "smartcards." Stuck, in his article on image communication technologies gives us a glimpse of a future that exploits most of the development that has and will continue to take place in materials, photonics, and software technology. In particular, he presents us with the prospect of a dramatic advance in image communications that will likely effect our thinking about communications.

The article by Malec covers hardware and software reliability and quality. Wilkens discusses the need for standards in the telecommunications industry.

Finally, Marcus addresses an example of how both technology and regulatory policy work together to effect possible advances in communications.

In more ways than one this issue is a special tribute to the ComSoc membership and, in particular, to the technical committees whose members act as editors, conference and workshop organizers, technical referees for our publications, etc., etc. In the most real sense, the technical committees run the Communications Society's engine and give the Society its expertise and status. However, technical committees are not faceless organizations. They are made up of dedicated and enthusiastic ComSoc members who volunteer their time and skills for the betterment of a profession we can all be proud of.



Raymond L. Pickholtz



David B. Newman, Jr.

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**Raymond L. Pickholtz**, Professor in and former chairman of the Department of Electrical Engineering and Computer Science at The George Washington University received his Ph.D. in Electrical Engineering from the Polytechnic Institute of Brooklyn (now New York) in 1966. He was a researcher at RCA Laboratories and at ITT Laboratories. He was on the faculty of the Polytechnic Institute of Brooklyn and of Brooklyn College, and was a visiting professor at the Université du Québec and the University of California. He is a Fellow of the Institute of Electrical and Electronic Engineers (IEEE) and of the American Association for

the Advancement of Science (AAAS) and a recipient of the IEEE Centennial Medal. He was an editor of the *IEEE Transactions on Communications*, and guest editor for special issues on Computer Communications and Military Communications. He is editor of the Telecommunication Series for Computer Science Press. He has published scores of papers and holds six United States patents.

Dr. Pickholtz is president of Telecommunications Associates, a research and consulting firm specializing in Communication System disciplines. He was elected a member of the Cosmos Club and a fellow of the Washington Academy of Sciences in 1986. In 1986 he was elected Vice President of the IEEE Communications Society.

**David B. Newman, Jr.** has his law office in Rockville, Maryland, where he practices the law of technology and intellectual property, including patent, trademark, copyright, computer, and telecommunications law. He is also an Associate Professor, Department of Electrical Engineering and Computer Science, George Washington University. Prior to entering the practice of law, he was an engineer with the Central Intelligence Agency from 1974-1983. Dr. Newman received the Ph.D. degree in Electrical Engineering from the Pennsylvania State University in 1974, and the J.D. degree from the Washington College of Law, American University in 1983. He is admitted to practice before the U.S. Patent and Trademark Office, and the Maryland, California, and District of Columbia Bars. He is a registered Professional Engineer in Maryland, California and the District of Columbia; he is a member of the honor societies of Phi Kappa Phi, Tau Beta Pi, and Eta Kappa Nu.

Dr. Newman is very active in the IEEE and in the Communications Society in particular. He is a Feature Editor for the *IEEE Communications Magazine*, where he writes a column entitled "Communications and the Law". His column includes articles on intellectual property and telecommunications law. Dr. Newman is a Technical Editor for the *IEEE Network Magazine*, and is an active member with the IEEE Committee on Defense R&D and with the IEEE Committee on Communications and Information Policy. In addition to serving as Co-Guest Editor for the present special issue of the *IEEE Communications Magazine* on Technology Review, he was Guest Editor of the *IEEE Communications Magazine*, Special Issue on Telecommunications Regulations, vol. 25, no. 1, Jan. 1987, and was Co-Guest Editor with R. L. Pickholtz, *IEEE Network Magazine*, Special Issue on Network Security Systems, vol. 1, no. 2, Apr. 1987. Dr. Newman is a Senior Member, IEEE. ■