



February Meeting

ADVANCED INDUSTRIAL COMMUNICATIONS SYSTEMS IN VENEZUELA



GUNTHER KARGER

Mr. Gunther Karger, Staff Consultant with Microwave Services International, Inc. has been engaged in a variety of communications projects including the COURIER Communications Satellite, and is presently responsible for a consulting project concerning a total communications system for a Venezuelan electric utility firm.

He is also known for extensive IRE activities within its Professional Groups and currently holds the following offices within the NNJ Section:

1. Professional Groups Coordinator and member of the Executive Committee, and
2. Professional Groups Editor of the Section Newsletter.

The majority of current technical discussions concern subjects related to military and government functions. Too often we neglect to think of the varied applications which are suitable for industry and commerce and especially those concerning foreign nations.

This discussion will cover a broad spectrum of communications systems in Venezuela and will include a projection into the future. Petroleum firms such as Creole and Shell have extensive microwave communications as do Pan American Airways and local utilities. Practically every form of communication will be covered. For instance, the Electric Company of Caracas utilizes microwaves, VHF sub-station alarms, supervisory control and telemetry as well as a private telephone system and mobile communications. The discussion relative to this system will be particularly interesting because special considerations were required due to extremely rough terrain which presented propagation problems. It might be well to refer to the PGCS page in our October issue of the Newsletter, which presented a sketch and brief discussion of this application.

The speaker will be VISTOR J. NEXON and GUNTHER KARGER, both associated with MICROWAVE SERVICES INTERNATIONAL, INC., Telecommunications Consultants in Denville, N. J.



VICTOR J. NEXON

Mr. Victor J. Nexon is president of Microwave Services International, Inc. and is considered an authority on worldwide industrial communications. He also heads the joint venture of Microwave Services, Inc.—Edwards and Kelcey which is responsible for site selections, propagation analyses and interference coordination for the new Western Union Microwave project, approximately 6000 miles in length.

Mr. Nexon is a member of several professional societies and currently is Chairman of the New York Area Chapter of the IRE Professional Group on Vehicular Communications.

MEETING FACTS

Speaker: Mr. Gunther Karger and Mr. Victor J. Nexon
When: 8:00 P.M. Tuesday, February 20
Where: Bell Telephone Laboratories
 Murray Hill, N. J.
Dinner: 6:00 P.M. Old Heidelberg Restaurant
 Scotch Plains, N. J.

EAST VS. WEST DIAGRAMS VS. EQUATIONS

THE COMPUTER'S ANSWER TO A LONG-STANDING COMPUTER ISSUE.

For a decade East Coast and West Coast computer designers have been using different methods of representing computer logic—the Easterners with diagrams, the Westerners with equations.

$$\begin{aligned} \text{LBSMI} &= (\text{LXA1})(\text{LXA2}^*)(\text{LFCA}^*) \\ &+ (\text{LXA1}^*)(\text{LXA2})(\text{LFCA}^*) \\ &+ (\text{LXA1}^*)(\text{LXA2}^*)(\text{LFCA}) \\ &+ (\text{LXA1})(\text{LXA2})(\text{LFCA}) \\ \text{LFCAJ} &= (\text{LXA1})(\text{LXA2}) \\ \text{LFCAK} &= (\text{LXA1}^*)(\text{LXA2}^*) \end{aligned}$$

In the example illustrated here, the diagram and the equation tell us exactly the same thing. Either represents a serial full adder where the sequence of pulses at the output, LBSM, will represent a serial binary number that is the sum of two serial binary input numbers occurring at LXA1 and LXA2. (The asterisks indicate binary complements; for example, whenever LXA1 is energized LXA1* is not, and vice versa. LFCA is a carry flip-flop.)

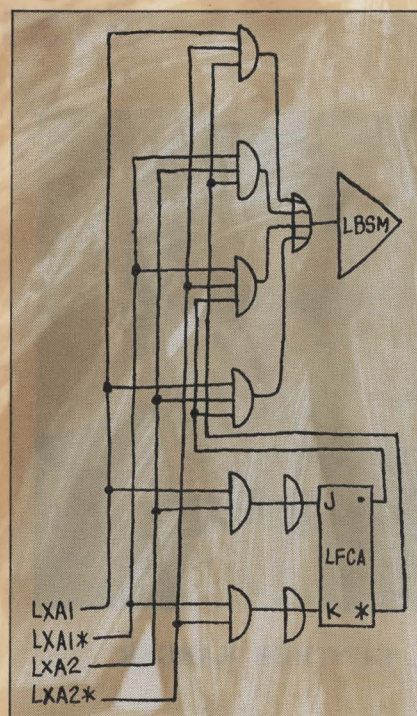
There are persuasive arguments on both sides. Eastern proponents of diagrams point out that the logical interconnections can be seen at a glance and followed through any number of stages by eye. The logical structure of an entire system can be understood from a diagram more directly and intuitively, they maintain, than from a set of equations.

The Western argument for equations goes like this. It's not true that diagrams communicate better to the viewer's intuition, except at first exposure. The human mind is highly adaptive. After working analytically with the equations for a while, the mind begins to operate intuitively in that symbology. Then the intrinsic superiority of equations over diagrams begins to make itself evident. One advantage, say the Westerners, is that equations can represent the same information more compactly and efficiently, as our illustration shows. Another is that equations lend themselves better to computer manipulation of logical design information.

As evidence of the latter advantage Westerners point to a recent achievement of some Litton Systems people: a completely mechanized procedure for translating logical designs into wiring lists, including operational simulation of the design to verify its accuracy. A procedure enormously facilitated by the computerizability of logical equations. It's easy to picture the benefits in cost, delivery schedules, reliability, price. Using only a partial development of this method Litton Systems recently brought a major computer system from concept to operation in less than a year.

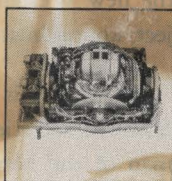
Now under consideration at Litton: a machine that will accept as inputs a supply of standard computer components and a set of coded specifications defining the logical functions desired, and will crank out completely fabricated systems.

Maybe you think we've loaded the argument in favor of equations. You're right. But we're ready to listen to arguments on either side. Drop us a card. Or better still, drop in in person. You'll like the



imagination-stretching atmosphere generated by Litton management's appreciation of the rewards of creative controversy. We have a few excellent opportunities for computer design people. Ask for Harry Laur at Litton Systems, Inc., Data Systems Division, 6700 Eton Ave., Canoga Park, California.

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