

MEMORANDUM
RM-3420-PR
AUGUST 1964

ON DISTRIBUTED COMMUNICATIONS:
I. INTRODUCTION TO
DISTRIBUTED COMMUNICATIONS NETWORKS

Paul Baran

PREPARED FOR:

UNITED STATES AIR FORCE PROJECT RAND



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PREFACE

This Memorandum is one in a series of eleven RAND Memoranda detailing the Distributed Adaptive Message Block Network, a proposed digital data communications system based on a distributed network concept. Various items in the series deal with the concept in general and with its specific features, results of experimental modelings, engineering design considerations, and background and future implications.*

The series, entitled On Distributed Communications, is a part of The RAND Corporation's continuing program of research under U.S. Air Force Project RAND, and is related to research in the field of command and control and in governmental and military planning and policy making.

The present Memorandum, the first in the series, introduces the system concept and outlines the requirements for and design considerations of a digital data communications system based on the distributed concept, especially as regards implications for such systems in the 1970s. In particular, the Memorandum is directed toward examining the use of redundancy as one means of building communications systems to withstand heavy enemy attacks.

While highly survivable and reliable communications systems are of primary interest to those in the military concerned with automating command and control functions, the basic notions are also of interest to communications systems planners and designers having need to transmit digital data.

Various aspects of the concept as reported in this Memorandum were presented before selected Air Force audiences in the summer of 1961 in the form of a RAND briefing (B-265), and contained in RAND Paper P-2626, which this Memorandum supersedes.

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