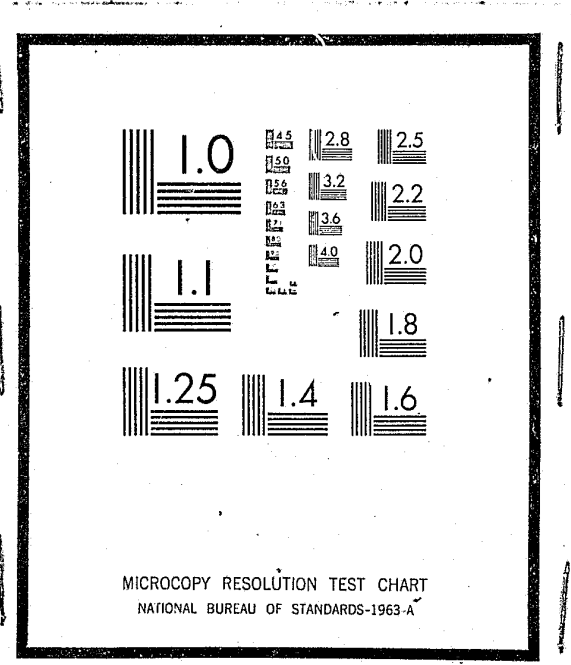


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U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
NATIONAL CRIMINAL JUSTICE REFERENCE SERVICE
WASHINGTON, D.C. 20531

2/15/77
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LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
POLICE TECHNICAL ASSISTANCE REPORT

SUBJECT: Rhode Island; Needs Analysis and Specifications Development for a Computerized Message-Switching System
RPEORT NUMBER: 76-139
FOR: Rhode Island Governor's Justice Commission

NCJRS
OCT 5 1976
ACQUISITIONS

CONTRACTOR: Westinghouse Justice Institute
CONSULTANT: Robert L. Marx
CONTRACT NUMBER: J-LEAA-003-76
DATE: September 1976

36801

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FOREWORD

This request for Technical Assistance was made by the Rhode Island Governor's Justice Commission. The requested assistance was concerned with performing a user needs analysis and developing specifications for a computerized message-switching system for the Rhode Island State Police.

Requesting Agency: Rhode Island Governors' Justice Commission,
Patrick J. Fingliss, Executive Director

Approving Agency: LEAA Region I (Boston), John M. Keeley,
Police Specialist; Alfred G. Zappala,
Systems Specialist

1. INTRODUCTION

Rhode Island, a State of approximately 1,000 square miles and about 900,000 people, is served by police departments of greatly varying sizes, sophistication, and service needs. Provision for telecommunications services to local law enforcement agencies and the State Police within Rhode Island provided the focal point for this technical assistance task. Such communications can be accomplished through microwave links or through telephone lines, using teletypewriters or video display units with keyboards as communications terminals.

In February 1975, the Governor's Justice Commission issued a request for proposals (RFP) for the "Communication Computer System" component of a criminal justice information system. The RFP was a relatively standard attempt to receive bids for a turnkey installation of a stand-alone, store-and-forward, message-switching computer system. For those who are not familiar with the jargon of computer systems, "turnkey" means that vendors were asked to bid on the complete design, development, installation, and test of all computer hardware and software to perform the functions outlined in the RFP; "stand alone" means that the system would not be allowed to rely on any other computers to accomplish its function, and would not be expected to accomplish any functions other than the switching functions described in the RFP; "store-and-forward message switching" means that the system would not establish a direct communications line between the two points that wished to communicate with each other, but rather would receive a message from the point wishing to originate the communication, break that link, and then forward the message to the receiving agency. The RFP was published, a prebid briefing was held to enable vendors to ask questions concerning the specifications, and bids were received from seven vendors. During this technical assistance, the Consultant reviewed the RFP, minutes of the bidders briefings, and all proposals submitted in response to the RFP; these documents give the picture of a standard procurement for message-switching capability similar to procurements already carried out in dozens of States and many more counties.

One thing made this procurement unusual and led to this technical assistance assignment: No money was available to pay the winning contractor. Although Rhode Island intended to use LEAA grant funds for the communications system, no grant had been awarded for that purpose and, in fact, still has not been awarded. Although more rigorous definitions of the problems facing Rhode Island in this regard will be attempted in subsequent sections of this report, the problem basically boils down to "what do we do now"?

During the course of the technical assistance, the Consultant requested and received data from the following individuals:

- Mr. Patrick J. Fingliss, Executive Director,
Governor's Justice Commission.
- Mr. Normal Dakake, Deputy Director,
Governor's Justice Commission.
- Mr. Robert Johnson, Director, State Police
Teletype Operations.
- Mr. Donald Fleming, Director, Criminal
Justice Information and Communications
Systems.
- Mr. Alfred G. Zappala, Systems Specialist,
LEAA Region I.

In addition to the aforementioned individuals, personnel at the Lincoln State Police Barracks, the North Scituate State Police Headquarters, and the State Bureau of Criminal Identification were most helpful and kind.

2. UNDERSTANDING OF THE PROBLEM

To understand (and hopefully solve) the problem with which Rhode Island is faced, it is important to understand, first, that the problem is neither unique nor even particularly unusual. Message-switching capability for law enforcement or criminal justice purposes provides substantial opportunities to increase the efficiency and effectiveness of law enforcement within the State; but it also raises many serious questions concerning interrelationships between the local and State police agencies, between police agencies and other criminal justice agencies, and between planning agencies and operational agencies. Without substantial criminal justice data-processing experience, as in Rhode Island, message-switching implementation often causes problems out of all proportion to the relatively minor expenditure of funds involved. As long as progress is being made in the identification and solution of issues, the passage of time (even the passage of over 18 months since publication of the RFP) should not be a source of discouragement.

Six questions have been identified, which together make up the problems and opportunities facing Rhode Island. These are discussed briefly in the remainder of this section, and provide the framework for the remainder of this report.

- Is message switching needed? -- Rhode Island law enforcement personnel are not presently totally without communications capability. If a police officer in East Providence (or any other locality with a police department) wants to check the stolen properties file or wanted persons file maintained by the FBI in the National Crime Information Center's (NCIC) computerized files in Washington, he places a telephone call to the State Police information operator, who keys in the appropriate inquiry data on the computer terminal at State Police Headquarters, receives the response from the FBI, and forwards that response to the inquiring officer by telephone. If the officer wishes to send an administrative message to another police department within the State, he can do so by using the teletype equipment (ASR 28) at any of the 44 terminal locations serving the State Police and local police departments. The teletypes are connected by telephone lines to State Police Headquarters, where a paper tape is punched with the message, transferred to another transmitter by an operator, and forwarded to the final destination. In a similar manner, the officer can send an

administrative message out of State from his teletype machine to any of 30,000 police departments. A message is forwarded to State Police Headquarters and a paper tape is punched in the same way as described previously, after which it is transferred to a terminal connected to the National Law Enforcement Telecommunications Systems (NLETS) computerized switch located in Phoenix, Arizona. Each of the 50 States (and several Federal agencies) is connected to the NLETS computerized switch and, in turn, provides connections to the local agencies within its boundaries. The officer can also inquire into data bases held in computerized form in the Massachusetts Law Enforcement computer system (LEADS); to accomplish this, the officer must call the information operator at the State Police Headquarters, who has yet another terminal connected by telephone line to the Massachusetts computer, and can respond via telephone to the inquiring officer. In short, the message-switching capability outlined in the RFP provides no new functions, but only the capability to carry out those functions more efficiently, more effectively, and more quickly. Therefore, it is legitimate to ask whether any message-switching capability is required in Rhode Island.

- Is the proposed message switching capability too large? -- The RFP (Section II.1) specifies the "present system message load" with average message length and monthly message volume estimates for administrative messages, NCIC messages, NLETS messages, and (future) Rhode Island Crime Information Center messages. The largest load is shown for the future Rhode Island Crime Information Center, and leads to legitimate questions concerning the validity of the estimates, the estimation methodology employed, and the sensitivity to these estimates of the final configurations bid by the vendors.
- Is there a hidden agenda? -- Decisionmakers want to be sure that they understand exactly what questions are being asked of them, and what future decisions are being preempted depending on the outcome of the current decisions. In the case of message switching, they want to be sure that future decisions concerning the configuration and management

of an overall Criminal Justice Information System (CJIS) have been adequately separated from the message-switching decision. That is, if the message-switching capability is implemented, must CJIS move forward, or can that decision be made separately? If message-switching capability is implemented, does it automatically mean that stolen property files, warrant files, and criminal history files go onto the same computer or under the same management? If message-switching capability is implemented, do the courts, the Attorney General, and the correctional agencies still have a viable role in CJIS, or have the State Police (or Governor's Justice Commission) preempted their roles.

- Is the regional terminal concept sound? -- The RFP specifies a system concept heavily dependent on regional terminals at population centers, serving not only the local law enforcement agency of that population center but other smaller localities in the vicinity. Ten such terminal locations are specified to receive advanced video display terminals connected by high-speed lines to the computer switch, and replacing for the host agencies the existing ASR 28 teletype equipment. All other local police departments would retain the local teletype equipment presently installed, which would be connected to the computerized switch at the lower speed necessary for proper operation of the teletypes. In operation, administrative message switching for any local department would be via the existing teletype terminals; whereas data base inquiries to NCIC, systems in other States, or future State data bases would be by telephone from the inquiring agency to the regional center, where a terminal operator would key in the inquiry and transfer the response by telephone in a manner very similar to that now done at State Police Headquarters. Knowledge is necessary about how deeply ingrained this concept is in the system specifications, and what would occur if the concept were changed or a substantial number of police departments refused to cooperate with the concept.
- How do message switching and the microwave network fit together? -- This technical assistance was not directed to an analysis of the microwave communications

system recently installed in Rhode Island. Nevertheless, it is clear to even the most casual technical observer that the microwave system is embroiled in technical, legal, and emotional difficulties within the State, and that it may not be possible in the near future to use the microwave capabilities to support the message-switching capability. Therefore, knowledge is necessary about how seriously this would impact on system performance, system cost, and system changes if begun with a telephone line configuration and later changed to microwave.

- Is Rhode Island adequately committed to the project? -- No matter how technically advanced or sophisticated the computerized message-switching may be, it will fail unless it is strongly and enthusiastically supported by those whose job it is to make it run. Therefore, it is legitimate, even mandatory, to ask whether enough people, and the right people, in Rhode Island really want computerized message switching and are willing to commit themselves and their agencies to the effort necessary for its success.

3. ANALYSIS OF THE PROBLEM

This section is organized around the six questions posed in Section 2, presents some discussion of each of those question areas, and provides the setting for the findings and conclusions provided in Section 4.

3.1 Need for Message Switching

As pointed out in Section 2, no new functions would be provided by the computerized message-switching system, and its "need" must be sought in the areas of efficiency, effectiveness, and response time. This technical assistance did not permit the collection of detailed statistical information concerning these three factors; therefore, experience and judgment must be relied upon for discussion.

Note first the method by which local law enforcement officers have access to the national file of wanted persons, as well as the national file of stolen articles. The entire State is "funneled" through a single telephone operator at State Police Headquarters. A single inquiry can take a couple of minutes to work its way through this funnel; and during that time, no other inquiry can be processed from anywhere else in Rhode Island. Compare this situation to that existing in over 30 other States that have already implemented computerized message switching capable (as would be the Rhode Island system) of processing at least one such inquiry per second. Such inquiries, and especially wanted person inquiries, usually occur at a time when the law enforcement officer is in an exposed position in direct contact with the person involved (e.g., car stops). If he knows that he has to wait a minute, or 10 or 15 minutes, before his turn comes to send his inquiry through the funnel, undoubtedly, he often does not make the inquiry and thus increases his own risk and decreases the possibility that wanted persons will be removed from the streets.

Consider next the situation involving NLETS use by law enforcement officers in Rhode Island. In this case, all law enforcement officers share two telephone lines for terminal traffic associated not only with administrative message switches between law enforcement agencies, but also concerning motor vehicle inquiries and drivers license inquiries from other States. Over 30 States have already provided instant access nationwide to their drivers license and motor vehicle registration files via NLETS. Use of the driver inquiry capability by Rhode Island law enforcement agencies is at less than half the rate (adjusted for population) of the average of the other 49 States. Use of the nationwide motor vehicle registration inquiry capability through NLETS is at less than 1/20 the national average. A major reason for these discrepancies surely lies in the inconvenience with which they can be exercised

by local law enforcement agencies within Rhode Island. If one has to share a single teletype line with 16 other agencies competing for transmission time, then wait while the inquiry is punched at State Police Headquarters, physically transferred to another terminal, and repeat the same process for the return message, it is no wonder that existing national capabilities are not often used in the State.

Finally, consider the actual cost of the message-switching capability presently available to law enforcement in Rhode Island. No detailed analysis of the teletype rental or telephone rental was made during this analysis, although such a process could easily be undertaken. However, a contingent of 13 State troopers are assigned full time to operate the information desk and teletype switching operation at State Police Headquarters. There is no question that at least eight of these positions could be eliminated in a computerized message-switching environment, with an attendant cost saving that would probably cover virtually all of the ongoing cost of operating the computerized system.

3.2 Capabilities of the Proposed Systems

A detailed analysis to determine the actual requirement for message-switching capability in Rhode Island was not conducted nor is it recommended that any such analysis be performed.

If such analysis were to be performed, two methods are available: Projection from current experience, and "bottom up" estimation. Projections do not work well in situations like Rhode Island, where the present configuration imposes so many constraints on message transmission that people have simply given up on the idea of communicating with each other. Installation of adequate capability almost always exposes a large and relatively unpredictable "latent demand" that defeats the projections. "Bottom up" estimation is sometimes more successful, especially since many States have already provided this capability and their experience can be used, with proper adjustment for geographical and population situations in Rhode Island. The reason for not approaching the problem in this way rests on the characteristics of the State message-switching "marketplace" as it has evolved in the last few years.

Over 30 States have already provided message-switching capabilities for local law enforcement agencies, along with connection to NCIC and NLETS. In response to the demand for such systems, a number of hardware and systems vendors have developed relatively standardized system packages that they now bid in response to almost all requests for proposals in this area. This marketing approach has had several advantages for States: They are able to procure systems that are tested and installed in several other locations, that can be inspected ahead of time, and

that have intentionally been designed in a modular fashion that ensures flexibility and ease of maintenance. The disadvantages to States, if such it can be called, is that vendors are generally unwilling to develop a new "product" unless they can be assured of future marketing activity. If they are required to bid a "customized" installation, they will charge accordingly, with all their development costs amortized over a single procurement. The result for a small State like Rhode Island is that it ends up getting a message-switching capability somewhat larger than it needs if it buys one of the standardized products, or must pay additional money to get a smaller system if it wants it customized to its exact size requirements. In short, if Rhode Island wants to buy less capability it will cost more.

Suppose for a moment that the throughput specifications defined in the RFP are accurate (as indicated earlier, they may or may not be). Of the seven responses to the RFP, the lowest capability offered by any vendor is probably 10 times as large as the State capacity requirement. It is clear that if vendors thought they could substantially reduce their bid price (and thus increase their probability of winning) by offering capacity nearer to those specified, they would have done so. The fact that they did not, suggests very strongly that everyone offered the "bottom of the line".

3.3 Separability of Message Switching

Rhode Island has a series of difficult and important decisions to make concerning the configuration and management of criminal justice information systems within the State. It is natural to be concerned about the impact of message-switching implementation on those decisions.

It would have been technically feasible to go to bid on a single, integrated procurement for an entire criminal justice information system; several States have already taken that path. It would also be possible to "back in" to a CJIS configuration by using the excess capacity represented in the proposed switching computers. That course of action would be undesirable for three reasons: First, it would preclude the calm-reasoned consideration of policy and management factors present in the CJIS situation. Second, the amount of money "saved" by using the so-called excess capability is not likely to be large. Third, the level of personal and agency commitment necessary to build a successful CJIS so far surpasses that necessary to build a successful message-switching capability that it is probably unattainable until more people become knowledgeable about the uses and abuses of computers, a process that will be assisted by the implementation of message switching.

This does not preclude later use of the message-switching computers for the data-processing functions involved in CJIS. Any of the computers

proposed has sufficient growth potential to accept additional processing tasks if policy decisions are made to levy those tasks on those computers. In short, even though many States have combined the message-switching and CJIS computer functions, and even though it might cost slightly more for Rhode Island to separate those functions, it is probably still a good idea to separate them in the interests of using message switching as a learning experience for the entire State and of keeping the policy issues separate.

3.4 Relationship to the regional concept

All of the vendor proposals were reviewed to determine the sensitivity of the regional concept, in which 10 population centers are to service the entire State for NCIC inquiry purposes, and found that none of the proposals is sensitive to the region concept. In all cases, each of the existing ASR 28 terminals is to be connected to the switching computer, in addition to the 10 new video display terminals to be procured during system implementation. Except for the fact that they operate at different line speeds and require different telecommunications protocols, the switching computer is capable of handling all of these terminals in the same fashion. That is, any terminal will be capable of making NCIC inquiries, motor vehicle inquiries, initiating or receiving administrative messages from within or outside the State, and so on. The computer will actively "block out" certain terminals from certain kinds of inquiries, but this is a matter of computer software and can be changed within a few minutes whenever the decision is made to give a different terminal different access or capabilities. It is a matter of complete indifference to the computer whether 10 or more than 10 video displays are provided, whether only the video terminals or both the video terminals and teletypes are allowed inquiry/response capability, or whether local inquiries always emanate from the terminal in the local agency or are telephoned in to regional service bureau.

3.5 Commitment to Success

There is essentially no technical risk in the proposed procurement. Since the same functions have been automated in literally dozens of installations, there is almost no question but that the computer hardware will do what it is supposed to do, the computer software will do what it is supposed to do, and the telecommunications terminals will do what they are supposed to do. This is not to say that the system will do what it is supposed to do.

The message-switching capability will change relationships between police departments, between police departments and the State Police, and between the State Police and the Governor's Justice Commission. Adequate use of the system will require training, quality control, and a level of

management not before needed. Even if every physical component of the system works to exact specifications (and they probably will), the system still may fail if it is not actively supported, and worse if it is actively resisted. Active support will be needed by all local police departments, by State Police management, by the Governor's Justice Commission, and especially by the Director of Criminal Justice Systems. Even with active support from these agencies and from these people, the system may fail if it is actively resisted by other components of the criminal justice system, including the Attorney General's office, the courts, and correctional agencies.

In addition to the support (or nonsupport) from agency heads, it is important that one person within the operating agency have direct authority and responsibility to make the entire system work. Besides adequate authority to carry out his responsibilities, the person must have a deep personal and professional commitment to success.

4. RECOMMENDATIONS

No criticism is merited or intended for the time already spent in considering a message-switching capability for Rhode Island. However, it is recommended that from this point forward a clear path be delineated so that necessary decisions can be made with dispatch and actions carried out in accordance with those decisions. It is believed that the following recommendations delineate such a path.

- The Executive Director of the Governor's Justice Commission and the LEAA Regional Administrator should meet, review this report, and reach a personal understanding that grant funds will be made available if the actions described in the subsequent recommendations are carried out.
- Based on the assumption that the State Police will be the operating agency charged with responsibility for implementing the message-switching system, a firm commitment should be made by that agency to the system. This commitment should take the form of a written endorsement of the system concept by Colonel Stone; the preparation by State Police employees of a suitable grant application that defines the functions to be carried out; the organizational placement of the system within the State Police; staffing plan for the system including, if possible, naming the system manager; understanding of and commitment to ongoing funding of the system; and a timetable of events through the first year of system operation.
- To establish the level of support available from other elements of the criminal justice system, the grant application should be submitted to the newly formed Criminal Justice Information Systems Advisory Committee, and they should be requested to approve, unanimously and in writing, the submission of the grant application to LEAA.
- The grant application should be submitted to LEAA and LEAA should act promptly to assist Rhode Island in bringing the grant application into conformity with LEAA requirements, and then fund the project.
- If allowed by the procurement regulations of LEAA and the State, the procurement should be made to

the vendor that was selected during the previous bid process. If it is not allowed, the RFP should be refined slightly and a new bid process initiated.

- After 1 year of system operation, usage statistics of the system should be analyzed to determine the amount of capacity remaining in the system, and additional burdens on the system should be postponed until such analysis occurs.

END

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