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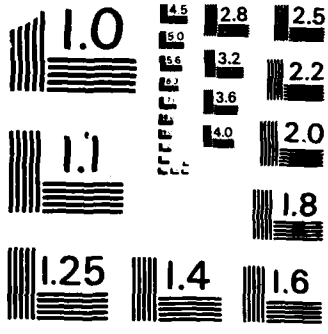

MICROCOPY RESOLUTION TEST CHART

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REPORT NUMBER 14

RESEARCH EFFORT TO DEVELOP OPERATIONAL IMPROVEMENTS TO BIOLOGICAL RECORDS

FINAL REPORT
August 1967 - March 1979

ACT TECHNICAL STAFF

TIMOTHY J. SCULLY
Principal Investigator

April, 1979

Supported by

U.S. ARMY MEDICAL RESEARCH & DEVELOPMENT COMMAND
Fort Detrick, Frederick, Maryland 21701

CONTRACT NO. DADA17-68-C-8106

Advanced Computer Techniques Corporation
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FORWARD

The present contractual effort is a continuation of a research project initiated in August of 1967.

This research is conducted under the overall cognizance of Col. Craig J. Canfield, M.D., Director of the Division of Experimental Therapeutics, and is conducted under the immediate direction of Lt. Col. David Davidson, head of the Department of Parasitology.

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I. INTRODUCTION

Walter Reed Army Institute of Research (WRAIR) had developed a complex network of computer programming systems for the storage, retrieval and association of chemical structures information and related data resulting from biology tests. These tests were (and are) performed at various universities and other laboratories and the results reported to WRAIR. Walter Reed is faced with accommodating it into a format that can be processed and evaluated at WRAIR.

Since August 1967, Advanced Computer Techniques Corporation has been providing systems analysis and programming services to WRAIR staff in the implementation of computer based systems to quantify and generally assist in the research efforts conducted by the Division of Experimental Therapeutics. In December 1978, William H. Smith was replaced as principal investigator by Timothy J. Scully.

During the period August 1967 to March 1979 the following research activities were conducted:

A. Development of biology systems for IBM 7090/94;

B. Conversion of biology systems to UNIVAC 1106 and CDC 3500;

C. Production assistance for both regular system production and data analysis for special conferences;

D. Provide unique programs for special search of master files;

E. Redesign and implementation of biology systems for disk based master files;

F. Conversion programs for moving data to new system formats; and

G. Standardization of coding structures within the data base.

Keywords: See DD 1473

II. OBJECTIVES

A. Apply changes in laboratory procedures employed by researchers to the biology system.

B. Implement new test systems as new research is initiated.

C. Document the biology system.

III. ACCOMPLISHMENTS OVER THE YEARS

A. Implementation of three biology systems, each a significant improvement over the previous version of the system.

B. Continued improvement in data storage both from a space required standpoint and ease of retrieval.

C. Increased emphasis on user requirements for more management information as well as exception reporting.

D. Delivery of timely reports for both regular production and special reports.

E. Liaison with researchers to resolve problems in data submission and correction of errors.

F. Scheduling of computer time and operations at sites other than Walter Reed when resources were not available.

IV. CONCLUSIONS

The evolution of the biology system has been one of continued improvements. Going from a sequential, magnetic tape-based system to modern indexed-sequential, disk files, the system now has the capabilities for fast, timely data retrieval. And, because of its modular construction, test systems may be added or deleted without impacting the remaining programs.

However, as with anything that is worthwhile, there is always room for continual improvement. Here then are some suggestions for future implementation which will enhance the biology system from an efficiency point of view.

A. The Overdue Processing Subsystem is slightly cumbersome in operation in that tapes must be saved each quarter and used on succeeding runs. With modern disk speeds, it is not unreasonable to pass the entire data base of biology data once a quarter to obtain the current test results. This requires no programming changes and eliminates one program (BIOOVDU8) from the inventory.

B. The Transaction Processing Subsystem could be enhanced in several ways. First, the concept of reformatting transactions prior to editing is not particularly efficient when dealing with multiple input formats. Editing is best done using raw data formats so that errors can be reported and corrected using the original input format directly. I would recommend that the edit logic be incorporated in each preprocessor of the test systems and that the BIOEDIT program be eliminated. Each preprocessor/edit program would be called from a single control program which would segregate transactions by test system and pass them to the appropriate editor program. The edit program would sort the transactions, if necessary to group control records with test results, perform the edit, produce an error list, and reformat valid transactions for addition to the master files.

The system, as delivered, has been unit tested with a subset of transactions. Before considering the system ready for production, a full volume system test should be conducted to identify any remaining deficiencies present in the system.

REPORT DOCUMENTATION PAGE

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Biology, Information Processing, Chemical Structure, Computer Information System.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Synopsis of activities performed by Advanced Computer Techniques Corporation in developing a computer system for storage and retrieval of biological test data produced by antiparasite and antiradiation drug development projects of the Division of Experimental Therapeutics, WRAIR.

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