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STANFORD UNIVERSITY SCHOOL OF MEDICINE

February 14, 1967

Memorandum: To Faculty, Staff, and Students interested in computer support.

Subject: The ACME (Advanced Computer for Medical Research)

Our IBM /360-50 computer system has been installed and the operating software being developed for it is being checked out while construction of the glass enclosure is being completed. Despite serious problems of financing, and resulting problems in coordination, the program is only a few weeks behind schedule, and some experimental demonstrations of remote terminal sharing are not far off, with routine service after that. Technical details of the system can be obtained from the Associate Director for ACME, Mr. Gio Wiederhold, at Ext. 5818.

Financial support for this effort comes from the Macy Foundation and from the National Institutes of Health under grants for which I am the named principal investigator. However, the policies of computer utilization are set by a committee named by the Dean, and it is dedicated to the widest possible participation by the medical school community. The funding is predicated on its wide availability for research purposes within the school; however, closely related activities can also be supported on a minimal cost basis.

The grants provide an annual subsidy of about $500,000, which is not nearly enough to cover the total costs of a system to provide the broad service needed here. The NIH has not so far been able to fund us at the level of the original application. The subsidy will be stretched as far as possible; we must then seek further income to build the system. We will try to get additional grant support as soon as possible: this will be most feasible by a demonstration of our positive use of this system. In addition, it is NIH policy to encourage the relief of facilities funds by charges to individual user grants as new systems become routinized. Our policy will, however, be to move the frontier so as to capture the best current technology: we might then expect continued centralized grant support for the latest innovations, while user charges take up the costs of routine work. By universal experience, people using computers will spend very little on actual computer time compared to their investment in programming support and in preparing data for the computer. Routine time charges should not, therefore, be a realistic obstacle to anyone contemplating taking advantage of these facilities. In any case, the central subsidy will result in minimizing such charges to a very reasonable level.

One help to our fiscal crisis was an offer of support from the Stanford Computer Center (SCC). They have 'bought back' 20% of the 360-50, part of which time will be used to set up a routine batch-processing system as background, and during the night-time hours. They will then retail this time as an SCC service to all campus users who want to start running such jobs (e.g., Fortran IV) on the 360 system. Medical school requirements will be given close attention.

This availability will simplify the problem of certifying users with no or incidental research interests, or outside the medical school who have a valid interest

in the system: for example, hospital operations. SCC will also handle a limited number of console lines under their buyback. If necessary, the 20% allocation of cost and time can be fairly adjusted in accordance with our income needs and other customers for the system. We will, of course, go as far as we can to meet our local needs to the extent our resources can pay for it. Further announcements about batch-processing (Operating System/360) will be made by the SCC group (Rod Fredrickson, Associate Director).

Our present plan calls for a daytime shift of time-sharing, i.e., service to many remote consoles. We are now charging $200 installation plus $200 per month for such consoles both to help in the problem of allocating them, and to earn some additional income for the system. No further charges are made, by present plan, for computer time used in time-sharing operation. These consoles will also drive data-acquisition from laboratory devices as part of our research effort in computer usage techniques. In addition, the $200 fee will also cover one hour of batch-mode time per month.

Two public consoles (or more if financial support can be found) will be installed in the Fleischmann Labs, for medical school users who do not have access via their own departments. If "free time" beyond this level becomes an issue, we will have to find additional funds for it. Meanwhile, medical students and others are urged to affiliate with departments and research projects who have made arrangements for supporting computational work, or to use the two public consoles.

Besides the batch-mode and time-sharing, two additional functions will be met by ACME. One, behind the scenes, is the system-programming to support the whole effort. The other is the preclusive use of the whole machine for special experiments needing maximum computational support. Such demonstrations will, of course, have to be specially scheduled to minimize interference with the main shifts. They should, however, be invaluable to investigators in the development of advanced designs to the point where they can justify additional funding. With the eventual perfection of public utility time-sharing service by SCC with its 360-67 on order, a larger fraction of ACME's time can be made available for such special purposes and for handling the expected increase in data rates from laboratories.

Figures previously distributed reflect the essential hardware costs for various facilities. As far as possible, we will use the central subsidy, but overage costs will eventually have to be met from the users -- for example, for extensive use of files -- when specific expenses can be most readily isolated.

In addition, users are urged to integrate their own special hardware with the ACME system to facilitate the widest possible use of it. For example, the Genetics Department has installed an IBM 1800 data-acquisition computer, purchased with departmental grant funds in excess of $100,000, for general utility with ACME. Other special devices like plotters, scopes, analog tape units, etc. will have to be sought on a similar basis if we are to have such facilities.

The ACME system will then not be a financial panacea to a user who merely needs an immense number of machine cycles. If his needs are well defined, he should be in a position to finance his utilization. However, ACME will help him to demonstrate his application and will provide a framework in which it is possible for him to get his needs met at the lowest possible overall cost. In addition, inexperienced users will have the easiest access to a very powerful system.

In the end the larger costs will be for personnel. ACME can support only a limited number of applications-programmers from its budget, and users will have to contemplate paying for programming personnel in the same light as they now employ other kinds of technicians. However, the ACME office will do all it can to maintain a staff for odd-jobs on hourly-recompensation, and to assist users in the very difficult task of finding experienced programming assistance. It will also continue a regular pattern of training and indoctrination.

The use of the computer in clinical applications is being studied by a separate committee under the chairmanship of Dr. Peter Rosenbaum (Psychiatry Dept.).

The membership of the computer policy committee at present is:

Dr. Joshua Lederberg, Chairman
Genetics Department

Dr. Edward Feigenbaum
Computation Center

Dr. Robert J. Glaser
Dean, Medical School

Dr. Keith Killam
Pharmacology Department

Dr. Frank Morrell
Neurology Division,
Dept. of Medicine

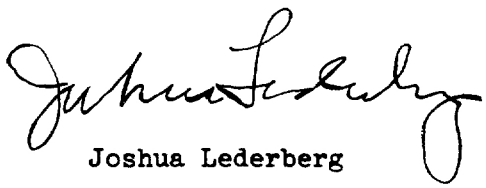
Dr. Lincoln Moses
Statistics/Preventive Medicine

Dr. Peter Rosenbaum
Psychiatry Department

Dr. Lubert Stryer
Biochemistry Department

Dr. Jobst Von Der Groeben
Anesthesia Department

Mr. Gio Wiederhold
ACME



Joshua Lederberg