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MASSACHUSETTS INSTITUTE OF TECHNOLOGY
PROJECT MAC

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Reply to: Project MAC
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TO: R.G. Mills

FROM: A. Vezza

SUBJECT: Position on Direction of the Cambridge Project
with Regard to Terminals, Modems, Data Networks,
and Computer Interfaces

I strongly agree with your position of setting up and abiding by a set of standards with regard to terminals and data communications. Some of the proposed methods of operation we heard discussed at the meeting yesterday, to put it nicely, are awkward at best. Also, medium speed terminals like ARDS are rather new devices. How, exactly, they will be used and what kind of a load they will place on the computing facilities is, I think, difficult to ascertain. But if we are not careful I can picture 20 or so ARDS simultaneously connected to a computing facility each receiving one or two hundred character bursts of information at a 1200 baud rate, and then sitting idle for 10 or 20 seconds before another burst of characters would be received. Not only would this frustrate the user, but it could have a disastrous effect upon the efficiency of the computer.

*Computer
disrupt
Sue*

The CDI proposal for obtaining four ARDS ports on the 360/67 solves an acute present need. But I wonder whether it is a long term solution. Will this device support other terminals that arrive on the scene? How about medium speed input from paper tape readers, graphical tablets, etc. Also, whether or not 16 ARDS at the 1200 baud information transfer rate could be connected to CP/CMS through this device is difficult to determine because of so many possible unforeseen problems. One such possible problem prompts me to ask the following question: How much output buffer space is available in CP or wherever it exists for the 360/67 system? I know that A-core presently sets this at 6000 characters in the 7750. This is okay for teletypes, 1050s, 2741s and up to three ARDS. But if there were eight or ten ARDS on the 7750 I think that the response time of CTSS could be adversely affected because of the output buffer size limitation. The reason for this

is complicated, but I will attempt to explain it: (1) It would be quite natural for users of medium speed terminals (1200-10,000 baud) to develop a propensity for doing more on-line output. Thus several of these terminals would be competing for allocations from the pool of output buffers. (2) Usually users' programs can generate output faster than it can be output. (3) If buffer allocations are not of sufficient size, users' programs are swapped in for the sole purpose of passing characters to the output buffers. (4) Thus swap time is run up needlessly. Admittedly, I don't know enough about the 360/67 system to determine if an analogous situation exists there.

One should note that the buffer size limitation can occur anywhere along the serial link to the users' terminals.

I guess the tone of this memo is that there is more to connecting ARDS and other medium speed terminals to computing systems than just turning up the output clock speed. (This is one reason why I think information concentrators start at \$50K.) Therefore, we should move as fast as possible toward supporting these terminals without being stampeded in the wrong direction. For if we are, I foresee a situation where we would be patting ourselves on the back over the design of the system when we all knew we should be dissatisfied with it.

To start with, I suggest that we design a questionnaire which the participants of the Cambridge Project be asked to fill out. Thus, if they are going to be heavy users of an M.I.T. system, future modifications to that system can be slanted to better satisfy their needs.

AV:em

cc: J.C.R. Licklider