MEMORANDUM

To: FEH, DCW, WRC, JBL, AAM, SMO, BPC, HKR

From: Jon Cole

Subject: PDP-1 versus TENEX

Date: March 21, 1973

The issues raised in the PDP-10 vs Tenex memos lead me to a simple conclusion--the NCC (and the IMP guys) needs two time-sharing systems. The NCC operations, such as loading TIPs, broadcasting patches, and distributing new releases, require a time-sharing system with virtually zero down time. Neither the PDP-1 nor Tenex can do the job alone. In spite of its overall reliability, the PDP-1 is a one-of-a-kind machine, with hardware that is not easily repaired. I expect that Tenex will always have several hours of scheduled down time each week. In addition, there may be several more years of Tenex software improvements, which implies software crashes and monitor breakpoints.

If there must be two time-sharing systems, what are the choices and what are the costs?

1) PDP-1 and Tenex System A. The Tenex guys must provide direct access to the Network. The IMP guys must write the operational programs, the assemblers, and Stringcomp. This software effort might be as little as 3 man-months, or could be much worse. It should be investigated before any hard decisions are made.

2) Tenex Systems A and B. The Tenex guys could buy some more hardware, probably another disk controller and some more scanner lines, to make two independent systems. This might restrict future hardware development within Division 5. In any case, the cost is $100,000 beyond the previous choice.

3) Tenex System A and a Tenex elsewhere in the Network. The additional cost would depend upon the use made of the other machine. There might be file security problem. However, the NCC could function if IMP#5 were down.

4) A division 6 Tenex and Tenex System A. A minimal Tenex system might cost between $225,000 and $325,000. For a substantial investment, the IMP guys could control the software and hardware condition of their primary machine.

5) A pair of multiprocessor SUE systems, each with file storage. This coice might involve two or three man-years of good software work, as well as $200,000 for equipment. However it could be the most economical choice if several complete and independent Networks were eventually built.

Although there are many ways to get two timesharing systems, choice #1 looks reasonably cheap and reasonably easily implemented. If implemented, several of hardest issues raised in the PDP-1 versus Tenex memos become unimportant, and a solution can be reached without great hardship to either the Tenex guys or the IMP guys.