

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
PROJECT MAC

Reply to: Project MAC
545 Technology Square
Cambridge, Mass. 02139

Telephone: (617) 864-6900 x6201

August 27, 1969

To: F. J. Corbató, R. Daley and J. H. Saltzer

From: J. C. R. Licklider

Subject: My reactions to the G. E. counterproposal.

Enclosed is a copy of a memorandum for record that I wrote after our discussion on August 26, 1969. If you record any of your impressions, I would like to have a copy. I have sent a copy of this to Dick Mills.

JCRL:dcs

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To: Memorandum for the Record

From: J. C. R. Licklider

Subject: Reactions to the Multics "Counterproposal" from General Electric.

The purpose of this memorandum is to record my reactions to the document, "Proposed Agreement, G.E.-645 Multics," submitted by General Electric under the covering letter from Mr. J. S. Warren, August 22, 1969. That document is a counterproposal to the proposal contained in my letter to Mr. Walker Dix of General Electric, June 26, 1969. These reactions are recorded on August 27, 1969, the document from General Electric having been received late in the afternoon of August 25, 1969.

My overall reaction is that the General Electric counterproposal is not nearly as closely in line with my proposal as the interim letter from Mr. Dix, dated July 10, 1969, suggested it would be. Just how nearly in line, or how far out of line, the counterproposal is depends heavily upon interpretation of the several somewhat ambiguous parts of the counterproposal. A consistently optimistic interpretation of the counterproposal leads me to think that, if General Electric is flexible in its further negotiation, we may be able to arrive at a basis for continuing the Multics project to mutual advantage. A pessimistic interpretation, on the other hand, leaves me with the feeling that the only possibility of finding a basis for continuing Multics is to approach General Electric at a higher level than that on which the General Electric counterproposal was prepared. Indeed, as of this moment, my feeling is that the future of Multics is too important to leave to the negotiation process that is now shaping up on the basis of my proposal and this counterproposal. The fact is that the date of October 1, 1969, has become a crucial date for Multics. Ever since last winter, it has been the date on which Multics would enter its second main phase. There is not much time left between now and October 1st. I am worried that the General Electric people who would participate in the meeting, suggested in Mr. Warren's letter for the first week in September, will have sufficient flexibility and latitude to adopt a position that would be possible for us at

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M.I.T. As for us, I am afraid that we can not be flexible enough either, or have sufficient latitude, not because we are not motivated to make almost any adjustment in order to give Multics an opportunity to prove itself, but because we are constrained by funding limits. It seems to me essential that we get General Electric to recognize what our limits are, and to recognize it at a sufficiently high level within G.E. Given such a recommendation, we should still be able to reach a mutually satisfactory position.

The following paragraphs of this letter will refer to paragraphs in G.E. counterproposal.

(1) I think that the phrase, "that will not impede," is a curious one. I think that the stipulation should be that the participation should continue at the present level through the third quarter of 1969.

(2) If possible, I think that M.I.T. should retain the flexibility of having Multics "go public" either under the auspices of IPC or under the auspices of MAC. Personally, I favor the former, but I can imagine circumstances that would force us to adopt the latter.

(3) The stipulation here that IPC offer Multics to MAC (instead of having MAC be allotted a definite fraction of Multics as a part of the fundamental agreement) sets up a problem that will develop later. The problem will develop when the basis for pricing is specified. MAC would not be able to pay for the amount of Multics access it would require at a rate figured on the basis proposed later in this G.E. document.

(4) The equipment paid for by Project MAC is System A. The "A" was omitted.

(5) It would be appropriate, I think, to specify how it will be determined whether or not the conditions are met. I think that we should not enter a binding agreement that is based on a decision for which the decision process is not specified. I think that the limitations upon the binding of Project MAC for three years, the limitations set forth in my proposal of June 26, must be retained.

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(6) We should note explicitly that the dual system proposed here is less powerful than the dual system that I proposed. We can adjust to this proposal. It might turn out to be better, however, to have more memory than provided for in this proposal, perhaps even at the expense of the second processor.

(7) Insofar as possible, M.I.T. should retain flexibility in determining the basis for billing. It is essential that M.I.T. retain flexibility in determining internal billing arrangements. It is highly desirable that M.I.T. retain flexibility in determining arrangements for billing other universities. We can adjust to G. E.'s evident desire that we bill external non-academic organizations on a basis that will not set a precedent for spuriously low pricing of Multics. There is a question, here, as to the precise nature of the "fully implemented dual system installation." There is a suggestion that the dual system is defined by the equipment listings contained in the G.E. document. However, there is also the suggestion that that equipment would operate as two independent simplex systems. It should be noted that one of the two simplex systems would be extremely inefficient in independent operation. This fact raises the question, is G.E. thinking about providing equipment for two systems equivalent to the present System B? Note that, if so, the total cost is greater than what is indicated by the listings.

(8) This should read, I think, "Beginning with the month that starts 1 October 1969,..." Note that the whole price of second shift maintenance is considerable -- about \$15,000/month for the equipment specified in the listings. The provision that M.I.T. pay one-half of the gross monthly excess revenue is very significant in relation to the question of billing for use of Multics inside M.I.T. and by other universities. This provision suggests that G.E. would not be happy with our setting low rates for such use (note, non-industrial, non-business use). We could adjust to this if G.E. would recognize our right to give rebates to users who develop software for Multics before the excess is figured. But notice that the wording, as it stands, excludes such a practice of rebating. There may be a fundamental conflict of objectives or philosophies here. From our point of view, it is of the essence to build up a large and powerful system of user-oriented software. That is the essential nature of the coming phase of Multics. It

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will be necessary to offer low rates or rebates in order to foster the development of such a software base. That will maximize the value of Multics later, and contribute greatly to the profitability of Multics, as seen from G.E.'s point of view. However, if G.E. wants to limit its losses now, that conflicts directly with the objective of a large, powerful user-oriented software base. Note that the basis suggested by G.E. for determining the payments to G.E. does not recognize operating and overhead costs.

(9) Note that the amount of access that G.E. wants without charge appears, when examined on another basis, to be considerably more than "20%." The 20% is 20% of a total capacity for access of which G.E. estimates that only about 40% would be used by all users. Thus G.E. is asking for about one-half of the total actual access to Multics. Perhaps it is slightly less than that, because there is some access estimated for the period midnight to 8 in the morning, but very little access in that shift is estimated, and nothing at all is said about weekends. The matter of G. E. priority is somewhat ambiguous. Is G.E.'s priority lower than any other user, or is it just low enough to keep G.E. from saturating the system? And, does "G.E. usage" mean all G.E. usage, including that by the G.E.-Multics development team?

(10) This paragraph is not at all clear to me. Does it mean that G.E.'s support will increase as the system becomes more stable, or does it mean that, as the system becomes more stable, less support will be required and therefore less support will be given by G.E.? In short, what does "commensurate" mean here?

(11) Project MAC intends to do this. In order to do this, Project MAC must have about 40% of the total resource of a dual Multics system, for which Project MAC is able to pay about \$400,000.

(12) We need to have a review of the prior agreement to which reference is made here.

(13) As I see it, nothing in this paragraph is essential to the finding of a mutually satisfactory basis for proceeding with Multics. I would prefer to see the part about G.E.'s agreement to furnish new hardware retained, but the part about the cost of new hardware -- that is the additional information about costs specified here -- removed in order to leave the situation flexible for future negotiations.

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That concludes my discussion of specifics of the elements of the G. E. counterproposal.

There are several directions in which we can look for a satisfactory basis for continuing Multics. One of these is direct financial support from G. E. to M.I.T. Another is underwriting by G. E. of about \$400,000 of the use of Multics each year for three years. Another is reduction of rental price below the figure contained in the G. E. counterproposal. Another, which exposes us to some risk, but which we should explore if necessary, insists upon a full duplex system at the total cost -- not at the one third rate -- indicated in the G. E. counterproposal. This would have to be coupled with permission to us to use an extensive arrangement of rebates both within M.I.T. and to other universities. We would have to get out and sell Multics, but we could probably do it if we could make people very good offers. The final line along which we should explore, if we can not quickly find a mutually satisfactory basis for continuing Multics, is one that would create a large "captive" user of Multics. It would take several months, at the very least, to do that, and the probability of being successful in such an undertaking is not high. Nevertheless, if worse comes to worse, I would be inclined to pursue that line.

JCRL:dcs