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Digital Computer Laboratory  
Massachusetts Institute of Technology  
Cambridge, Massachusetts

SUBJECT: GROUP LEADERS' MEETING, April 7, 1952

To: Group Leaders

From: David K. Brown

Date: April 9, 1952

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Auth:	20254
By:	RE
Date:	3-15-60

Attending were: J. W. Forrester, C. W. Adams, D. R. Brown, S. H. Dodd,  
R. K. Everett, H. Fahnestock, N. H. Taylor, C. K. Wieser,  
P. Youtz

Agendum: Time Schedule

Taylor distributed copies of Memorandum M-1444, "Time Schedule for Whirlwind II Computer." He emphasized that this schedule was made in an attempt to obtain a complete computer by the end of 1954. This schedule may or may not be possible, certainly it will be difficult to meet. The schedule does not include a prototype or intermediate computer, and calls for a vacuum-tube arithmetic element to be based upon WWI experience. The Mechanical Design Section, mentioned in the memorandum, is not shown on the schedule. The Arithmetic Element Section, which will probably be working with vacuum tube circuits, might be formed largely from the present Transistor Section.

Brown commented that if we are to fall back on vacuum tube circuits, we should have people with WWI experience in the group.

Forrester remarked that conversion of the Transistor Section to a vacuum tube circuit group might cause serious difficulties. We should not expand the present Transistor Section.

Fahnestock asked if Professor R. B. Adler's group might be able to carry on enough transistor work to satisfy us in case we have to drop transistor work.

Taylor replied that Adler's group does not have a specific program and is doing more basic work, very little circuit work and only one man is on pulse circuits.

Everett remarked that Dr. R. Rediker was working on transistor pulse circuits.

Taylor replied that his work was limited to about 100 kilocycles.

Taylor also pointed out that many in the present Transistor Section are working on theses.

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Forrester suggested that the Transistor Section might continue as a sub section of a larger Arithmetic Section. He asked that since we plan a magnetic memory and a magnetic-core control, would not a magnetic-core arithmetic element be a rather small step.

Taylor replied that he did not think so. We now have only one man working on magnetic circuits who is not doing a thesis. This is George Briggs.

Forrester suggested that Briggs might work on a vacuum-tube arithmetic element.

Forrester continued to say that Taylor is adding two, two-hour meetings per week for the purpose of making important decisions on WWII. These meetings will be attended by Forrester, Everett, Taylor, Wieser, Brown, plus technical representatives of different sections working on magnetic circuits, transistors and logical design. Dudley Buck might also attend, also, some WWI people, perhaps Steve Dodd. This group will make important decisions on the structure of the machine we are to build. Its scope will be much more than block diagrams. Technical questions including possible components, reliability and simplicity will be discussed in this series of meetings and many of the decisions called for by the time schedule can be fixed.

Adams commented that current discussions of the WWII code were going through the same phases that the WWI code went through without benefiting from WWI experience with operation codes. He also stated that the WWII meetings are not very well suited for the interchange of information between WWI and WWII groups. The situation would be improved if the meetings could be planned in advance.

Forrester commented that the WWII meetings are for the purpose of intergration and are meetings which all WWII staff are invited to attend.

Taylor remarked that one difficulty at the WWII meetings is that subjects such as coding are not discussed because no WWII people are able to discuss coding. If WWI people are to participate, they must lead the discussion.

Brown stated that he thought that having WWI people attend meetings was of very limited value. A transfer of a few staff members with WWI experience would be much more satisfactory.

Dodd replied that at the present time WWI people are evenly divided among the various groups. Furthermore, we have only a few people with WWI experience.

Taylor replied that we need people with experience in making decisions.

Forrester commented that transfers are not a solution and asked to what extent the decisions should rely on full-time work of WWI people.

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Taylor replied that new people need supervision for day-to-day decisions.

Everett stated that for these day-to-day decisions WWI experience should not be required.

Forrester commented that the important decisions will not be made by new people. They will be made by this group and by the group attending the new series of meetings mentioned earlier.

Taylor then asked if the schedule which had been presented seemed feasible and added that in order to carry it out, he would have to have two group leaders, the one for control immediately.

Forrester replied that we probably have to wait and make the decisions in the series of meetings which has been planned. We have a wide range in what we can do and must take a large step in improving reliability and in creating a large system, but the amount of development and the time required for development is subject to large variation.

Brown then asked when must we decide on what components we should concentrate our effort and drop those which appear less promising.

Taylor replied that July 1 would be the last date.

Everett then asked about the importance of the date, January 1, 1955. Is it soon enough and how does it fit into the overall air-defense picture? We could duplicate WWI, incorporating a magnetic-core storage. Should we gamble on building something which may be a lot better, but may be a lot worse, when we could be sure of meeting the deadline with a satisfactory computer by duplicating WWI?

Wieser stated that he thought that this schedule was ahead of the overall air-defense effort. The Cape Cod system will be running too late to be of any use in affecting decisions in the design of WWII, but we can decide now what is needed in a computer for air defense.

Dodd stated that trouble in the WWI arithmetic element and control is very small. The terminal equipment and electrostatic storage require most maintenance. The arithmetic element and control probably require about three hours of preventative maintenance and two hours of unpredicted maintenance per week. If power supplies, air conditioning, etc., are included, these figures should be increased to about five hours and three hours, respectively. Routine maintenance is in addition.

Everett commented that these figures sounded rather good. We might need four computers like this instead of three.

Taylor stated that the WWI arithmetic element and control contained

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about 1,600 tubes. A system of 9,000 tubes would not be satisfactory.

Dodd then presented time schedules for WWI and Cape Cod terminal equipment. The schedule calls for completion in September of 1953. The ERA Buffer Drum and equipment for handling three radars will be complete and operating about May 1, 1953. The azimuth and range counters will be intergrated into the system and the radar set capacity expanded gradually after that date. The schedule shown is a summary schedule. Detailed schedules have been prepared but were not presented. The time scheduling of manpower has not yet been completed. Also the schedule does not include all equipment, such as, high-speed printers, display scopes, etc. Making the schedule has been of considerable value in showing that the completion date is going to be later than anticipated, in indicating where some facilities need to be expanded and in forcing some decisions which should have been made. The schedule is not pessimistic. We will do well to get the work done on schedule. The schedules were presented at the meeting for information. They will be turned over to someone who will be responsible for keeping them up to date and who will follow the work.

Wieser stated that he thought J. K. Hewitt would be good for that job.

Taylor then asked if a completion date of September, 1953, was satisfactory for Cape Cod.

Wieser stated that he would like to have it operating in six months. The radars should be ready at the end of the year. There will be an operable three-radar system in May, 1954.

Forrester asked if the gap during which nothing happens is too long.

Wieser replied that he has plenty of non-experimental work to do. The buffer drum is the main thing determining the schedule. It takes eighteen months and there is nothing much we can do about it.

Forrester concluded the meeting by stating that the main question continues to be WWII.

Signed

*David R. Brown*  
 David R. Brown  
 Secretary

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