C.C.I.T.T. Meeting at Geneva, November 23 to 27

The International Consultative Committee for Telephones and Telegraphs sets the standards required for interworking between the telephone and telegraph systems of individual countries. To deal with the carriage of data on telephone circuits it set up 'Special Study Group A' which has introduced standards for a number of data services, including interfaces between modems and the customer's equipment. At the invitation of the UK Post Office I attended a special meeting in December 1967 and gave a talk on store-and-forward methods for data communication systems. A resolution of that meeting urged the need for the study of a special data network, including the possibilities of store-and-forward methods. The next plenary meeting of CCITT in 1968 set up a mixed group on new data networks (GM/NRD) and this was the first meeting of the group in November 1970.

In the meantime we had determined that one of the first questions to be resolved internationally was the status of a proposal, being pressed heavily by the Federal Republic of Germany for a rather simple type of data network based on extending their new telex system. The UK Post Office had developed an elaborate proposal for a new data network including both circuit and packet-switched facilities which owes a lot to the NPL work. The two proposals, Federal German Republic and UK Post Office, formed the main subject of discussion at the meeting.

Preparation for the meeting

Before the meeting, I prepared a paper setting out my views on the basic purpose of a new data network. Although the points made in the paper were elementary, they implied that the German proposal was only a partial, or interim scheme. My paper was sent as a temporary document to the Geneva meeting.

Also before the meeting, I circulated to all the UK representatives (including industry representatives) a discussion of the points at issue concerning the German proposal and this is reproduced in appendix 1.

The proposal of the Federal Republic of Germany arises from the development by Siemens of a new kind of switch called EDS which, for larger telegraph exchanges, is very economic. Its use could be extended for data but its speed is limited and a different principle would be needed for higher speed data. The basic principle of the German scheme is transparency to time-dependent information. The only advantage this gives is the ability to handle certain kinds of facsimile information but it has the major disadvantage of allowing an indefinite number of data

formats and speeds to be used without any possibility of intercommunication between the various systems. The main disadvantage for the UK Post Office would be the impossibility of useful interworking between the proposed German scheme and the synchronous network of their proposal.

The proceedings

Before the meeting, 18 papers had been prepared and 22 further temporary papers were introduced during the meeting. Most of the prepared papers dealt with the detail of particular schemes and ignored the major issues mentioned above. Much of the first day's meeting was therefore concerned with procedure.

Fortunately, the UK Post Office were able to establish that there were two main modes of operation for a future network, 'start-stop' operation based on anisochronous networks and synchronous operation. Other modes, such as time-analogue transparent were identified as of low importance.

The UK Post Office also established that the purpose of a data network should be discussed, and the temporary document based on my paper, was used for this purpose, resulting in a reasonably satisfactory statement for the report of the meeting.

The meeting divided into three sub groups concerned respectively with interworking, the customer interface and data service requirements. Each of these was charged with examining the subject from the point of view of both start-stop and synchronous working.

The sub groups divided themselves further into working parties to settle individual questions and in this way some progress was made.

The key sub group was NRD 3 which was asked to establish the data services required by the users. As well as the statement of the purpose of a network and a list of services, it made a start with the selection of a number of speeds for both start-stop and synchronous working. The selection of some discrete speeds (instead of ranges of speeds or a sliding scale) was a major step which was necessary if there was to be useful interworking between the two kinds of network. In the start-stop method, 16 modes of operation were admitted of which 4 were shown as preferred. For each mode, the make-up of the start-stop envelope was described. In the synchronous case, there were 6 admitted modes including 4 preferred modes. The number of admitted modes is too large for convenience, and later developments might lead to concentration on the preferred modes.

Further work of the new data networks group

Meetings of the three sub groups will take place throughout the year followed by a second meeting of the whole group in December 1971. This will report to the meeting of Special Study Group A in Spring 1972, the last meeting before the CCITT plenary meeting of that year. Progress during 1971 is therefore essential if much is to be achieved in the 1968–72 period.

Summary of progress and future action

The concept of time-analogue transparency which arose from the extension of the telex network proposed by the Federal Republic of Germany was rejected as a principle for the new data network. Instead, the concept of bit-sequence independence has been adopted and the purpose of a data network defined in terms of sequences of binary digits. Though this is an elementary step, it is a critical one.

Interworking between different modes of the network has been accepted, implicitly, and with this in mind only a finite number of modes are admitted for each of the main methods of transmission.

A start has been made with the definition of services including modes of transmission and with the problems of interworking and the definition of customer interfaces.

At this stage, packet-switching is too advanced a concept to be discussed by the majority of network administrations. However, interest in the principle was expressed by the French and Japanese delegations and, wherever necessary, a reference was included in the papers to the existence of two kinds of switching principle. For example, the important network parameters were identified for both types. For the moment, it seems sufficient to keep the matter in front of the delegates without pressing it until the basic questions are resolved.

Firm decisions are made only at plenary meetings of CCITT and it will therefore be necessary to watch the progress of the various sub groups the main NRD group and Special Study Group A very carefully until 1972.

For future meetings, fuller preparation would seem to be necessary, including the production of a number of papers as permanent documents together with others ready for introduction during the meeting at appropriate times.

D. W. DAVIES
November 1970