

## **HVD.15.12.70**

### **Report on CCITT Meetings on New Data Networks 23–27 November 1970 at Geneva**

A working party was set up at the last CCITT Plenary Assembly (1968) to deal with new data networks. Its parents are Special Study Group A and Study Group 10. Its title is CCITT Working party GM/NRD. The Chairman is Mr. Ohlmer of the German Bundespost.

This is a joint report from the PO representatives present at the first meeting of NRD held in Geneva from 23 to 27 November 1970.

About 150 people attended including representation from the Post Office (TDD, ResD, NRD and ETE) and from UK industry.

#### **General**

It was clear early on that the German Bundespost, Siemens, Italy and the Netherlands intended to get priority for consideration of the German telegraph type data network proposals.

The Chairman (Ohlmer) Jansen (Netherlands) and Hummel (CCITT Secretariat) several times proposed that it should be given priority and at one stage that discussion should be confined to the telegraph type network only.

The UK Post Office view was that NRD should not restrict itself, but discuss the fundamental, need and possible services to be provided by a data network. This was supported by France, Sweden, Canada ISO and IBM. The Chairman finally agreed to this and a general discussion took place. Following the discussion there was some further attempts by the German EDS pressure group to restrict the discussion. Finally however, three sub working parties were set up to consider both anisochronous (German type) and synchronous (UK type) of networks in parallel. Ohlmer had already prior to the meeting, selected his Chairman for these sub working parties as follows:

International-Interworking—Puccioni (Italcable)

Customer Interfaces—Warden (IBM)

Data Services and Requirements—MacDonald (Department of Communications Canada)

Japan protested initially at these “outside the meeting” arrangements but subsequently they were agreed.

## **Information from Discussion During Meeting**

**USA**—No papers were presented by the USA and they contributed very little to the discussion, Mr. Kahn (Bolt, Beranek and Newman) described the ARPA packet switched network to the Interworking Sub WP. Vaughan AT&T Co. made an off the record statement to the main meeting that no agreement had been reached at a discussion between the FCC and the American Carriers hence no official information could be given on the work on new networks in the USA but that they were nevertheless very active and USA contributions could be expected at future meetings of NRD. Private discussion with ATT Company (see Annex 1) showed that they were highly interested in synchronous type data networks. They will offer synchronous private wire digital facilities in 1973, they have not yet made a decision on the type of switching. They apparently envisaged finally a synchronous network throughout the USA. PCM links would be synchronised to the Data multiplex establishing initially “local” synchronous areas. On the other hand, Frankel, Western Union Domestic said in private discussion that they would provide EDS or Metaconta exchanges in connection with their plans to integrate WUD telex and TWX. They are also considering data services up to at least 4.8 kbits/s. Western Union International and RCA are adopting a “wait and see” policy but they intend to interwork with a 200 bit/s telegraph type service when it emerges in Europe.

**Germany**—Does not intend to have PCM links on any significant basis for fifteen years, but clearly wish somehow or other to adapt EDS for carrying customer originated synchronous data.

**France**—Intend to introduce an integrated synchronous type network by the second half of 1970. “Caducee” is an interim network but is not intended as a really serious public service data network. It will come into operation 1971/2, and is based on special quality telephone lines and crossbar switching.

**Sweden**—Will go to a synchronous network but incorporating FDM telegraph (start/stop) channelling for speed below 200 bits/sec.

**Switzerland**—Considering synchronous networks.

**Netherlands**—The PTT are committed to a telegraph type network for the immediate future but Phillips representative appear to support the principle of a synchronized network.

**Canada**—Telephone companies will follow the lead of AT&T Co. and railways may do likewise but some consideration is being given to gateway problems.

**Italy** (Italcable)—Clearly committed to German EDS type. They are going out to tender shortly for data exchanges at Rome and Milan carrying up to 9.6 kbit/s, but including a message switching facility—Univac, Siemens and others will be invited to tender.

**Belgium and Denmark**—Took part in the discussions but are committed to an improved telex network approach.

### **Progress of Sub-Working Parties**

It was agreed at the UK Post Office suggestion, that each of the working parties should primarily confine itself to:

- a. start/stop, and
- b. synchronous type customer facilities.

This would facilitate interworking between the various networks.

**Sub Working Party No. 1** was concerned with International Interworking between the two types of network synchronous and anisochronous or telegraph type. The Post Office were represented by Daniels (TD5), Duerdoth R8. The Chairman Puccioni (Italy) asked Daniels (UK) to act as Secretary.

After a long meandering inconclusive discussion two sub-sub working parties were established as follows:

Sub-Sub WP1a. Interworking between anisochronous networks (German type with Netherlands modifications).

Sub-Sub WP1b. Interworking between synchronous networks (UK type).

Both sub-sub working parties will bear in mind at all times the need for interworking between the two types of networks. The chairmen were 1a. Daniels (UK) and 1b. Silwer (Sweden), and would meet in the Spring of 1971. Later Lindberg of Sweden (Head of Swedish delegation) privately said that he was not consulted about the appointment of Silwer and had complained to Puccioni and Ohlmer. Silwer was a relatively inexperienced man on this subject with some telex knowledge and a German EDS bias.

**Sub Working Party No. 2** the chairman was Warden (ISO but actually IBM) and the secretary Brenton (UK). It was concerned with customer interfaces and made some very good progress. It

was the best run sub-working party due to the chairman's understanding of the subject and intentions to make progress.

The Post Office were represented by Smith and Brenton (TD14).

**Sub Working Party No. 3** this sub working party was responsible for defining data services and facilities as an input to sub working parties 1 and 2. It was badly run under the chairmanship of MacDonald (Canada) who had no clear plan and did not appear to have much grasp of the subject and had little or no will to progress. It achieved little except when it broke up into two small separate groups and managed to produce a tentative list of speeds and facility headings.

The Post Office was represented by Kelly (NP4), Allery (TD14), and Paramor (ETE).

### **Future Time-Table**

It was agreed that further meetings of NRD would be as follows:

1971

15–17 March	NRD Sub Sub 1-A	International Interworking-anisochronous
21–23 April	NRD Sub Sub 1-B	International Interworking-synchronous
28 June–2 July	NRD Sub 3	Data Services and requirements
5 July–9 July	NRD Sub 1	International Interworking
27 Sept–1 Oct	NRD Sub 2	Customer Interfaces
6–10 December	Full NRD	Plenary Session

Locations for NRD Sub 2 and Sub 3 have not been found and the UK will probably be expected to help in holding one of these meetings in London.

### **Remarks**

The UK type of network has been included co-equal with the German type for further study. However, it is clear that the Germans (probably with support from the Secretariat and others) will press ahead as fast as they can and that the UK synchronous type of networks will need strong backing by us within all NRD meetings if it is to progress. In this connection the forthcoming meetings listed will be a formidable load for the UK representatives. This is particularly true, as apart from NRD Sub 2 (Warden) none of the chairmen are in favour of the UK type network. The appointment of Daniels to Sub Sub 1A should be used as a means of achieving full consideration of signalling problems to enable interworking between the German and UK types. Its terms of reference covers this point. Close co-operation between TD5 and TD14 on this point is particularly essential. The French and Japanese are vaguely interested in

packet switching and the Germans against it but was clear that there is so far no enthusiasm for packet switching.

However the advantages of a single line network access facility for multi-access computers is accepted but this needs to be covered by Sub WP3. The French wish to arrange a bilateral discussion with UK on synchronous networks probably in January. It will be initiated at M Libois/Prof Merriman level.

## **Conclusions**

The UK objective at the meeting of getting its proposals into the study programme were very largely achieved. There is support for our position on synchronous networks particularly from IBM and ISO, ECMA, France, Sweden, AT&T Co. and latent support from a number of others as the long term solution.

Most of the support for Germany is from countries wishing to improve their telex networks without necessarily being committed to this approach as a solution of the data network problem.

The Germans said that EDS (with some adaptations) was for them a permanent solution (not interim) for a full data network.

Italy (Italcable) *may* go the same way as the Germans but no other country so far seems so committed.

The position of the AT&T Co. may be important in influencing the technical views of other countries on the best solution and close contact with them and France and Sweden will be necessary.

Any progress on the UK synchronous proposals must come from interested countries and strong technical representation from UK. Little help can be expected from the Secretariat or the present chairman of the sub working parties other than Sub WP2.

Little support was given for packet switching by any delegation.

Annex 1 — AT&T Co. Document.

TDD, ETE, NPD ResD

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### **Private Line Digital Data System**

The technical features of the system are still in the formative stage and any information at this time should be considered to be preliminary and is subject to change.

It is anticipated that the initial system will be a point-to-point, full duplex, full period synchronous data service at 2.4, 4.8, 9.6 or 56 Kb/s beginning about 1974. Shortly thereafter, service will be expanded to include other features.

A synchronous clocking network in which customers would be required to accept clock from the network is planned for the Digital Data System. This would be based upon the use of highly stable crystal clocks located at cities throughout the country and under normal operation the network would be slip-free, that is, bits would not be lost or repeated. It is planned that the entire system would be referenced to the U.S. Frequency Standard to insure absolute time for future international connections. The clocks in each of these cities would serve to provide timing information for a number of local office clocks in the region surrounding that city. These local office clocks would then be used to provide the timing which would be passed to the customer.

Loops are expected to be ordinary 4-wire cable pairs with load coils removed. A regenerative channel terminating unit would be provided for the customer's premises and the serving central office. The loop signal is expected to be bipolar.

Local transmission will be via T1 digital lines driven by a new synchronous time division multiplexer. A combiner will be provided to allow combined digital voice and data operation or as an add/drop arrangement. This new T1 multiplexer will provide a number of 56 Kb/s channels. Synchronous submultiplexers will be provided to derive 2.4, 4.8 and 9.6 Kb/s channels.

Long haul transmission will be provided using 6.3 Mb/s digital channels derived from L4 mastergroup and TD radio channel facilities. The 6.3 Mb/s T2 digital line would be used for medium haul transmission.

Where neither 6.3 Mb/s long haul digital channels nor T1 digital lines are available, access to the network is expected to be via modified 200 series voicegrade data sets or 300 series wideband grade data sets arranged to accept timing from the network. Also provided at a later date will be the ability to remote the above mentioned synchronous submultiplexers over wideband facilities.

RJB : ppc

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