

CONSULTATIVE COMMITTEE ON CONTROL COMPUTERS (400)Minutes of the 16th Meeting held on 2 March 1979Present

C. Andrews, J. Altaber, P. Andersen, F. Beck (Chairman), P. Brummer, L. Burnod, M. Clayton, M. Collins (secretary) M.C. Crowley-Milling (part), E. d'Amico, B. de Raad, P. Faucher, V. Hatton, G. Jennings, H. Kuhn, B. Kuiper, M. Rabany, R. Rausch, G. Shering, B. Stumpe, M. Tyrrell.

Apologies for absence : B. Carpenter.

The minutes of the 15th meeting held on 18 December 1978 were approved.

This meeting was opened by F. Beck who outlined the agenda.

1. Proposed procedure for data-module software changes

Collins outlined briefly the the proposals of Brummer and Jennings. The purpose of such procedures was to make sure that all data module software (DMS) changes were agreed and properly tested and documented before installation in an operational computer.

A general discussion was opened on the advantages and disadvantages of the proposed procedures.

Hatton said that AOP group found it unreasonable to be expected to accept software changes of which there was no prior knowledge or documentation. After four years the DMS documentation in the Main Control Room was in a deplorable state and new operators or engineers starting to write application programs could not make progress without documentation.

Kuhn said deadlines needed to be set for software installation. Delays of up to six months have occurred. He felt that the proposed checkpoint procedure would slow the system down and this would force people to cheat if the honest way did not bring quick results. Beck saw the danger that ACC group might be accused of stifling innovation.

Brummer indicated that the proposed checkpoint time limits and installation dates were intended to be a subject of mutual discussion between the data-module programmer, the software management team and the Operations group.

D'Amico criticized the one-sidedness of the procedures. He felt that if ACC and AOP groups did not give their approval to new software within a definite time limit then unacceptable time delays would be introduced.

Burnod was of the opinion that the bureaucratic level of the checkpoint procedure forms was too high and this would prevent progress. Beck said he had also been of this opinion, but had persuaded the authors to assist the programmer when filling in the forms.

Jennings outlined the rationale for the proposals. He agreed with Hatton that the centralized data-module handbook was never up-to-date. His aim was to provide a decentralized system where information could flow between the right people at the right time. Documentation provided initially by the data-module writer could be used to inform users of new software in the pipeline, so that application program changes could be planned well in advance. Current data-module information would be embedded in the on-line data module thus rendering the central handbook obsolete in due course.

Tyrrell felt that the problem of application programs had not been stressed enough. In general the DM author does not know where his DMS will be used. Changes in a DMS are therefore very important and should be widely publicized beforehand.

Shering suggested a DMS modification book. He said it was bad practice to make changes and rely on programs to find faults.

The reason for a DM software change was not always obvious. Often the hardware configuration was modified or expanded and this entailed a corresponding DMS change. Clayton suggested that the user and not the DMS author should initiate the demand. He also suggested that the proposed checkpoint forms should be streamlined so that everything would appear on one form.

Altaber proposed to operate the checkpoint procedure for a period of 6 to 9 months. He felt the new procedure would actually go faster and provide the basis for improved documentation.

Beck summed up by thanking the meeting for the very open discussion and noted the agreement to operate the suitably modified procedures for a trial period as Altaber had suggested.

## 2. Software support for Microprocessor Projects

Altaber reported on the present software support for such projects which was being provided on the MACS computer. There were lots of customers he said, but the computer was overloaded, and this resulted in bad response times. It was therefore planned however to provide a second computer to share this workload.

Collins stated that this second MACS computer which was to provide microprocessor support facilities for many teams in the AC groups would be installed shortly.

Shering indicated that the NEWS computer for physics display was also urgent. Collins admitted that he was not aware of the high priority of this installation. In any case the computer would be installed during the Easter shutdown when the necessary hardware changes were planned for the CCR.

Collins asked if the NODILER could be used to speed up some of the MACS hardware test programs. Altaber agreed to look into this possibility with Rausch.

Altaber indicated that the NODAL front end compiler for ACC hardware would be available from NITTEDATA during April.

### 3. Possible connection to PS and DD computer networks

Faugeras stated that for future projects some mathematical computing facilities would be needed to calculate certain machine parameters. The calculations foreseen involved returning only a small amount of data from existing large programs running on the CDC 7600 computer. This data has to be transmitted by some suitable connection to the SPS Control Room.

Altaber explained that number crunching programs were normally launched from a RIOS terminal. With CERNET now operating well it would be possible to make one of the consoles in the MCR look like a RIOS terminal for the purpose of activating CDC 7600 programs. The results could be 'spooled' and plotted on a printer in the CCR.

Clayton was in favour of a link to CERNET. Physicists on the EA computers could use these facilities. The IBM has facilities for storing large quantities of data for OFF-line analysis. The data transfer rate foreseen is not fast. Archiving facilities would be useful for dumping experimental beam-line files.

Altaber stressed again that nothing definite had been proposed, but he felt that the current discussion was a mandate to look further into the possibilities offered by CERNET.

Burnod supported the possibility of limited data transfer from the consoles.

For the  $p\bar{p}$  developments, De Raad considered that in view of the small amount of data, it would be sufficient to install a standard RIOS terminal in the Control building. Faugeras confirmed that this would be adequate for his needs.

Beck then enquired about the usefulness of a link to the PS network. It should be feasible to execute programs and transfer files between the PS and SPS networks.

Kuiper did not regard such communication as a matter of urgency although some long term requirements may be forthcoming. Of course the link hardware would depend on installation of cables and repeaters. He saw that work would have to be done at the EXECUTE command level and further work on file compatibility would also be necessary. He was willing to collaborate but it would be difficult to dedicate software effort to this project at the present time.

#### 4. NORD 10M progress

Collins outlined progress on the NORD 10M. A factory visit had been made to Norway following a further delay in delivery of the first production units.

In general the situation was not so bad as expected. A large number of cards were in production and 5 main frames had been assembled for card testing and other in-house requirements. It became clear that the component cards to be delivered to CERN would be fully compatible with future production.

The major delays were due to one or two additional design stages necessary for full debugging of the highly integrated card designs.

The benchmark tests gave better results and led us to expect at least 20% speed improvement over existing NORD 10 machines.

The bootstrap card design specification was finalized. Installation in remote auxiliary buildings will not be possible however, until this card is manufactured in sufficient quantity.

Compatibility problems on the External I/O bus adaptor were to be resolved when the first computers are delivered to CERN\*).

M. Collins

---

\*) Since the meeting, the first two NORD 10M computers with 128k memory and paging have been delivered and are undergoing tests. The long term reliability appears to be good. Work continues at the present time on resolving external I/O bus design problems.