

SCIENCE AND ENGINEERING RESEARCH COUNCIL
RUTHERFORD APPLETON LABORATORY

COMPUTING DIVISION

D I S T R I B U T E D C O M P U T I N G N O T E 6 2 4

VISITS

issued by
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Notes on a visit to Drs Gurd & Watson
University of Manchester - 6 May 1982

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DISTRIBUTION: R W Witty
 D A Duce
 Miss G P Jones
 Investigators/Gurd & Watson

The purpose of the visit was to informally review progress on the Dataflow project.

Ten processor boards have yet to be made. Processors can be commissioned at the rate of about two per week. There are two problems at present, the matching store and the processing unit. The maximum speed that can be got from the matching store is 1.2 mips which is roughly one third of the design speed. A revision is in progress which necessitates the re-design of three boards. Essentially the re-design is adding extra buffering. It is anticipated that this will take six to eight weeks from now before the matching store is recommissioned. The Perq is being used for PCB editing.

The problem with the processing unit concerns the distribution and reception of work and seems to be a signal timing problem. Eight processors have been built of which seven are running though it is only possible to get five operating in harmony. The speed of a single processor is about 0.2 mip on integer codes. The matching store will deliver around 1 mip but with five processors it is only possible to get .91 mip from the machine. John thinks the problem will take one week to solve and appears to be a signal which is arriving too fast.

There are some other minor problems. One of the matching functions cannot be done and the processor unit microcode is not complete, in particular, floating point has not yet been implemented. Work on the machine currently involves Ian, John and the new hardware RA (Brian). Brian is very good (better than Jose). They have recently appointed a second RA, Vicky Bush, who did an MSc on Dataflow with John. They have also recruited a very good Portuguese PhD student (also called Jose II). John originally intended that these people would work on the

design of algorithms of the Dataflow machine but both have shown a keen interest in the semantics of Dataflow. Accordingly they have been set to work on program transformations and correctness proof techniques. I told John of John Darlington's recent work on programme transformation and John intends to have his people visit Imperial College.

During conversation a number of points arose:

- (1) Is it possible to upgrade a quarter megabyte Perq to one megabyte? Their Perq is already running out of memory!
- (2) How should the Perq be connected to the Dataflow machine? I recommended that they use serial lines in the short term as the Cambridge Ring interface is unlikely to be available in the time scale they are currently looking at (September 1982). Is it possible to have more than one RS232 interface on a Perq? (They are interested in connecting their existing tablet and also the paper tape punch for PCB production.)
- (3) They would like a licence for Omsi Pascal version 2.
- (4) If we have a spare blue box LSI-11 they would like it.
- (5) They need a mag tape unit which works! The Department have recently bought two Cipher streamer tape decks from Arrow Computers Systems Limited. The Cipher deck is a TU10 lookalike as well as being a streamer device. It operates only at 1600 bpi phase encoded. If possible they would like one of these in exchange for the EMI deck. The Cipher looks to be a very nice compact product, and is used in TU10 compatible mode on the departmental LSI-11/23 Unix systems.
- (6) John would like me to arrange a date for the formal review of the rolling grant. The periods suggested are early in the week beginning 13 September or late in the week beginning 6 September.