

# COMMERCIAL-IN CONFIDENCE

'My' DCS low card

SCIENCE AND ENGINEERING RESEARCH COUNCIL  
RUTHERFORD & APPLETON LABORATORIES

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   4 6 6

VISITS

Notes on a visit to Prof R L Grimsdale  
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issued by  
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DISTRIBUTION:

R W Witty  
D A Duce  
Miss G P Jones  
Investigators/Grimsdale file

INTRODUCTION

The primary purpose of the meeting was to discuss a forthcoming grant application from Professor Grimsdale and Dr Halsall, but there was also a very useful discussion of a probable cooperative award from Professor Grimsdale and Redifon Computers Limited for the December round (Commercial in Confidence).

DCS GRANT

The grant application is entitled 'An Investigation into Decentralised Resource Management Computer System'. The basic idea is that of a virtual ring of resource elements. When a process wishes to access a resource a message is sent to the resource manager on the processor the process is running on. If the resource (e.g. file) is located on that processor the request is serviced, otherwise the request is forwarded to the next element on the ring and so on. When a resource element fails to reply to a call, that element is removed from the ring and the request forwarded to the next element and so on until a reply is received (or all elements have failed to respond).

Sussex see the idea of more general applicability than Polyproc. Polyproc is merely a useful vehicle on which to try out the idea.

They intend to build a model transaction processing system in which terminals and files are managed as distributed resources. They will then look at the applicability of the idea to maintaining multiple copies of files.

The idea arose from work by a PhD student Richard Hull who will, if the application is successful, take up the RA post. Richard wrote part of the application including the relationship to other work section.

The Sussex approach seems to have defined out of existence a large number of problems. The following suggestions were made:

1. Indicate the framework of program design/execution in which this idea fits. Comment on the relationship to Randell's work etc. (They see Randell's recovery blocks sitting on top of the layer enshrining this idea. They also believe in specification/unification).
2. Enlarge on how faults are detected.
3. Enlarge on benefits of this approach to consistency problem (serialisation of updates).
4. Polyproc references will be moved to end of case for support as idea is not linked to Polyproc.
5. Mention how idea will be texted in an application in opening paragraph.
6. Include plan of work, milestones, timescales.
7. Include funds for a trip to INRIA (Le Lann) and possibly USA.
8. Mention typical resources early in first page.

The investigators will be asking for some hardware - an upgrade to the pool 11/02 to an 11/23 to support larger compilations etc. The options open to the Panel were discussed. Single ownership, be it pool or Sussex, seems the best option.

COOPERATIVE AWARD  
COMMERCIAL IN CONFIDENCE

Dick Grimsdale is in the middle of negotiations with Redifon (Computer Systems) Ltd for a collaboration project to construct a broad band local area network (like WANGNET).

Redifon's background is television and cable television. They feel they have most of the components for a broad band network, and are keen to enter this market as fast as possible.

The principle of broad band operation is frequency division multiplexing of a 360 MHz (about) bandwidth. The FDM is under the control of the 'user' to provide a given number of channels of given bandwidth. Channels can be used for almost anything, independently. Thus one can have voice, video and carrier sense multiple access channels over the same physical medium. One could provide an ethernet or (with separate send and receive lines) "Cambridge Ring" services. The logical, though not electrical interfaces, would be the same as the real thing. Protocols would be unaffected.

WANGNET is available now (in the American sense!), 3M's are announcing a product. Ferranti's VIDEODATA system is a broad band service, but only provides video (+ possibly speech) channels at present (development plans unknown).

Broad band systems use either one or two coax cables between junctions. Dick tells me that the maximum length of a CSMA LAN is dependent on propagation and is a property of the CSMA mechanism - there is no intrinsic

limitation on a broad band system, though there are limits on the lengths of CSMA channels. Repeaters have to be used at distances determined by the loss characteristics of the cable used. 3M's are offering a 1/2" diameter coax which costs £2-3 per foot, (compared to multi-core cable £7-10 per foot).

In a laboratory one might get away with UHF TV coax. Redifon have the necessary cable technology available, and the necessary experience in broad band amplifier design.

Sussex will be asked to do some engineering work, but it will involve modules in which they already have experience (modem design, key shift filters (?), frequency synthesisers etc).

The Technical Director of Redifon's computer division in Brighton is meeting Robin Lingard (DoI) on 28 August to discuss possible DoI involvement.

I suggested Dick contact John Monniot initially about what can and cannot be done under the Cooperative Awards Scheme. I offered to look at a draft case for support if they felt this would be useful.

#### MISCELLANEOUS

Dick asked me if SERC were keen to see Martlett put on a PERQ. I said I felt not. He is happy with this, he was only keen to propose the project if SERC were enthusiastic.