

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 5 2 0

VISITS

Notes on a visit to Prof B Randell
University of Newcastle 20th November 1981

issued by
D A Duce
24.11.81

DISTRIBUTION:

R W Witty
F Chambers (Logica Ltd)
D A Duce
Miss G P Jones
Investigators/Randell (Reliability)

STAFF

Peter Lee has now gone to DEC, Eike Best to GMD and Graham Wood to Bell.

Lindsey Marshall (PhD with reliability project some time ago) and Dave Brownbridge (PhD with Treleaven) have joined. Brian hopes to get a man from Waterloo (working on similar project there) to fill the third post.

OVERVIEW

There are basically three reliability projects:

1. DCS grant.
2. Tom Anderson's command and Control System grant.
3. Fabio Panzieri's project on reliable networks (funded by MoD).

In addition Santosh Shrivastava is setting up a project with RSRE Malvern.

Brian believes that the Newcastle work being programming language and abstract type based has a lead over the work of Liskov and at Parc because the Newcastle approach is applicable at all levels of a system.

The recoverable distributed file system is the latest example of the use of their techniques. Nested recovery points can be set by Unix commands, even when servers distant from the login system are involved.

Newcastle have come to the view that byte streams are not the right approach - remote procedure calls are preferred, which they would retro-fit under the file system.

They have looked at putting Mascot on the system. Santosh is looking at recoverable Mascot for RSRE.

Flavio at a recent course for ICL demonstrated a formal approach to system design by considering the conversion of two unreliable disc drives into a virtual disc drive of proven reliability. The final proof was based on stochastic predicates.

The Command and Control project is also using Mascot and the hardware recovery cache. That project will produce an application written in Mascot which they will try to implement in distributed Mascot. The design for the CC system is complete and interviews for the programme post have just been held. Mike Moulding of CAP has done the design. CAP and ASWE are very keen about the project.

CAMBRIDGE RING

Newcastle are unhappy about the ring protocols used at present. They question the professional quality of the definitions and the performance on Unix.

DAD agreed to talk these issues over and to organise a meeting between Newcastle, Kent, Cambridge and RAL.

Newcastle have a preference for an RPC protocol in place of bsp. Fabio has produced a definition (WPS has a copy). Feedback has so far only come from Bruce Nelson at Parc who encouraged them in this approach.

They have some comments on WPS's basic block driver which are probably best raised at a meeting.

Brian thinks protocols should be professionally defined, eg by EMR to MARI.