

SCIENCE AND ENGINEERING RESEARCH COUNCIL

RUTHERFORD APPLETON LABORATORY
COMPUTING DIVISION

D I S T R I T U T E D C O M P U T I N G N O T E 5 7 7

issued by
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VISITS

Notes on a visit to Professor C A R Hoare

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DISTRIBUTION:

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D A Duce
Miss G P Jones
Investigators/Hoare
DCS Notes file

The purpose of the visit was to informally review progress on Professor Hoare's DCS grant and to discuss the Software Technology Initiative.

1. DCS GRANT

Carrol Morgan has arrived and looks a very suitable person to work on the DCS grant. It is likely that he will take up a full-time RA post when his visiting fellowship expires. It is hoped that the second RA post will be filled soon.

The self hosting UCSD interpreter is now up and running on an 11/23 with Winchester disk which is now available. Usage of the Cambridge Ring is proceeding well. Formally the DCS grant work has not yet started.

Tony Hoare said that he would like to meet Fred Chambers and this will be arranged.

2. SOFTWARE ENGINEERING GRANT

Jean-Rene Abrial has resigned and a replacement has been appointed. The new man Rufkovsky is from Essex. Bernard Suffrin and Tim Clement are still working on the project. Tim Clements may be seconded to work on an IBM project (concerning formal specification techniques) for a period of six to seven months.

Research students associated with the project are making good progress. Tony may appoint a programmer temporarily to start work on say a syntax checker.

The group experienced difficulties publishing specifications in that anything you write could be written better.

The UK specification community in Tony's view consists of Rod Burstall, Cliff Jones, Michael Jackson, Coleman and Hughes. Burstall is looking at the underlying algebra of specification and is using category theory to try to find a formal structure for a specification. The functional programming people seem to be moving towards specification.

3. OTHER PROJECTS

Tony Hoare has many visitors in the department at present.

Dr Olderog from Keir in Germany has come for one year and is investigating logics. He has a world-wide reputation in this field. He is looking at the integration of specifications and programmes. The programming notation can be used as part of a specification but one has to be careful because programme properties are not the same as specification properties (akin to continuous functions in mathematics where the assumptions one can make about arbitrary functions and continuous functions are not the same).

There are a number of practical projects in progress for example:

- Unix like filing system
- File back-up system
- Processor server
- A Kwic index
- Word Processing system

The latter is based on Guttag and Horning's visible filing system (ie the integration of what is on the screen with what is in the machine). This project is starting from the User's Manual. A student project is looking at the specification of games (eg Ludo and Snakes and Ladders) which turn out to be interestingly difficult.

Joe Stoy is currently spending sabbatical at MIT and is working with Jack Dennis on the VAL project.

Steve Sehuman (a colleague of J R Abreial) has worked with the US Navy on formal techniques and ADA. He is currently helping with teaching in the department and would like to stay for a further year as a visiting fellow. Tony said he would like someone to look after industrial contacts for the group and organise courses etc. Sehuman is looking for a permanent UK post as he has an English wife. Various possibilities were discussed as to how Sehuman could be funded. It was finally felt that a nine months SVF was appropriate and it was agreed that he should visit RAL to discuss possibilities if interested.

4. PERQ

Tony was told that his application to the DCS Panel for loan of a Perq had not been successful but his Software Technology application was yet to be considered. Tony was under the impression that his DCS grant is a rolling grant and due for a review in September 1982. David Duce agreed to check this with John Monniot.

5. MISCELLANEOUS

Tony has written to Softech regarding Version 4 UCSD Pascal and source code for the LSI 11 interpreter. Pascal Plus has been put onto the 11/23 and the Computer Laboratory's VAX. The 11/23 version is based on that from Belfast but uses code paging to increase programme store size. PRG are looking at hosting the compiler itself on the 11/23.

Tony Hoare would like more publicity for the MSC course. He is seeking an industrial sponsor (BP) and hopes it will be possible to advertise a Bursary. Rob Witty thought the Software Technology Mailshot could be used to publicise the course. It was also suggested that Tony send details of the course to IT Year at the DoI (Michael Wright). Rob Witty said that he would mention Tony's name to Michael Wright in the context of the IT Year Conference at the end of 1982.

6. SOFTWARE TECHNOLOGY INITIATIVE

Tony Hoare was appraised of the plans for the Software Technology Initiative.

He thinks the Initiative is a good idea and hopes that the availability of funds and hardware will attract good people to the area.

In terms of research priorities he would like to see more publication quality software with the design development exercise done in public (along the lines of the journal Computer Physics Communications). For the longer term research strategy he felt that the list contained in the ST launch was good. His main interests would be in the formal treatment of specific applications and specification. Security and reliability of protocols are recognised as very early problems. He felt that a UK strength in the specification field was the Michael Jackson method which could well be promoted.

There was discussion of networking issues. David Duce agreed to send Tony copies of the Rainbow series documents.

7. PASCAL

Tony's views on the dialect of Pascal to be used for the common base were sought. His immediate reaction was that ISO standard Pascal was probably the best starting point, providing an upgrade path to Pascal Plus and possibly a path to ADA.

Tony's view of Pascal-m was that Pascal Plus is more suited for shared store environment and Pascal Plus and Pascal-m are two different things.

Tony said he would give his considered advice on Pascal after some thought.