SCIENCE AND ENGINEERING RESEARCH COUNCIL
RUTHERFORD APPLETON LABORATORY

COMPUTING DIVISION

DISTRIBUTED INTERACTIVE COMPUTING NOTE 882

issued by
W P Sharpe

IKBS
Visit to Sloman, Sussex, 8 September 1983   14 September 1983

DISTRIBUTION: R W Witty
                       W P Sharpe
                       D B Thomas
                       K Robinson
                       C Prosser
                       D Toll
                       Investigators/Sloman file
                       EMR/POPLOG ON PERQ file

(see next page)

1. ·PURPOSE

The main purpose of the visit was to discuss the difficulties Sussex have encountered in their EMR to put POPLOG on the PERQ and to discuss future contracts for POPLOG support and development in the context of the GEC infrastructure plans. It was also an opportunity to discuss Sloman's forthcoming grant application.

2. PEOPLE

Three people are working on POPLOG. John Gibson is the main expert and is employed on the PERQ EMR. Jonothan Laventhol and Chris Slymon are both learning about the system by porting it to the M68000 under Gibson's supervision. Sussex have an agreement with SDL whereby SDL market and support the VAX/VMS version and collaborate on the M68000 version. Sussex get royalties on the sales. This agreement will not prevent Sussex supplying the M68000 version at distribution cost to academic sites. The royalties are currently paying for Slymon and Laventhol.

3. EMR for POPLOG on PERQ

The letter which Sloman sent to Wilmot (attached) about his difficulties with the PERQ was written before WPS had arranged for CP to talk to them, and .was prompted by Tom Addis who suggested that going to the top was the only way to influence ICL. WPS stressed that SERC has mechanisms for influencing ICL and that it would be better if in future a coordinated approach were made.

A continuing problem on the contract has been the failure of ICL to fix a very simple symbol table size restriction in this linker. No usable system can be produced until this is fixed. It was reported through the appropriate CBP mechanisms and the last Sussex heard was from Trudy Watson who said that someone from ICL wanted to discuss it with them. Could KR please ensure that something is done about this so that some sort of system can be delivered according to contract.

ACTION: K Robinson

The difficulties listed in the letter are of a fundamental nature and WPS has asked John Gibson to produce a complete, detailed and accurate report of these problems so that they can be taken up with ICL through the senior SERC/ICL collaboration meetings. Edinburgh have apparently faced similar difficulties on the Franzlisp contract and it seems sensible that ICL should be asked to state their position on the use of the PERQ for IKBS. WPS asked Gibson to discuss his report with CP so that it should be an agreed SERC statement; CP's cooperation in achieving this would be appreciated.

Given the problems it was agreed therefore that the final output of the contract should be:

(i)   Completion of a basic system that will run small applications with low performance. N.B. this is predicated on fixing linker restriction.

(ii) Agreed SERC/Sussex statement of PERQ/PNX limitations relevant to POPLOG.

It was also agreed that no further development should take place under the follow-on support contract (see below) unless ICL make changes in the system to cure some of the problems. The only exception is that some work has to be done to use the PNX window manager so that the mouse can be used in the POPLOG editor.

4. EMR FOR POPLOG SUPPORT

This contract to be funded by IKBS was approved by the IEC and is due to start on October 1 when the current contract expires. It seems to be stuck on a desk at Swindon.

ACTION: W P Sharpe

The contract is for maintenance, support and development of POPLOG on the PERQ and IKBS infrastructure machine. When it was put in it was assumed that the infrastructure would be VAXs. WPS emphasised that the first stage of the contract should be dedicated to producing a technical specification of the system, particularly with POPLOG virtual machine, and ensuring the system is brought to a well engineered and documented state so future releases and enhancements can proceed in an orderly way.

Aaron said that they were assuming that in the case of PERQ software distribution their responsibility was to deliver software to RAL who would then distribute to user sites.

5. FUTURE CONTRACTS

The jobs to be done over the coming year are:

(i)	VAX/UNIX POPLOG support and distribution	)	1 MY
(ii)	PERQ/UNIX POPLOG support	)	
(iii)	Enhancement of Prolog subsystem of POPLOG	)	1 MY
(iv)	Port POPLOG to GEC Series 63	)	1 MY
(v)	Support POPLOG on Series 63	)	
(vi)	Local system management on Series 63 (+ VAX if awarded)	)	½ MY

(i) & (ii) are John Gibson's contract above.
(ii) was requested by SIGAI and a proposal has been written. WPS will put it into system for approval.

ACTION: W P Sharpe

The system management and GEC work together justify a minimum of 1½MY support from the Alvey GEC project. The commercial arrangements with SDL should allow the total manpower to be rounded up to four so an extra man will be recruited if all the projects go ahead.

GEC have been discussing POPLOG for the series 63 with SDL so some money may come that way reducing the amount that Alvey need contribute. SDL would contract most of the work to Sussex.

Sussex would be able to use a GEC to start the porting work as soon as there is a single user UNIX system with an assembler, so they should be early on the installation schedule.

John Gibson will be the technical liaison on POPLOG for the Alvey GEC project.

6. SLOMAN GRANT

Aaron put in a big proposal for an intelligent HELP system which was rejected at the last round. He is now putting in a prposal under the small grants procedures. His starting point is that in a large complex system the number of HELP files is likely to be very large and difficult for the novice to find his way around. The structured menus do not necessarily help because they must either present a lot of choices or require ill-informed decisions at each level. Experts in a system can quickly direct a novice to the right part of the HELP system and he is interested in exploring the domain concepts and knowledge representation techniques that would allow this expertise to be encoded. From one point of view the problem is just the explanation facility of expert system without the problem solving part.

He was not aware of the proposed work by Du Boulay & Gray on a metadata advisor and will look into it. Du Boulay is going to Sussex on one of their IT posts.

7. AOB

GEC have sent a letter to Sloman (and it is presumed some other sites) inviting collaboration on a single user system project.

Mike Rogers of ESPRIT has written to Sloman inviting him to collaborate on planning IKBS strategy. WPS suggested that he should direct Rogers to seek collaborations via the Alvey directorate.

Chris Mellish has a small grant proposal in that he is waiting to hear about. People are suggesting that the small grants procedure is slower than the normal procedure because there is no automatic follow up mechanism.

The University of Sussex
School of Social Sciences
Arts Building
Falmer
Brighton BN1 9QN
Telephone: (0273) 606755

date   August 16, 1983

Mr. Rob Wilmot,
ICL House,
Putney High Street,
London SW15.

Dear Mr. Wilmot,

Can the PERQ be made useable for IKBS work?

Our group was recently given a contract by SERC to transfer
our POPLOG system (part of the IKBS software infrastructure)
to PERQ computers running UNIX. Our experience now suggests
that the PERQ has very serious design flaws that will make
it unusable for serious IKBS work. Here are some examples.

1. The rigid separation of <u>instruction</u> and <u>data</u> spaces makes
    it impossible to use incremental compilation, required
    for many IKBS/AI systems.

2. The 64K Byte (or 128K Byte) page size chosen for the
    virtual memory system is far too large; paging will
    be intolerably slow if every page fault requires that
    much data to be transferred. This might have been
    overcome by allowing a large physical memory - but that
    is restricted to 2 MBytes.

3. The UNIX system will not allow processes to "fork" if
    the data area is greater than 128K Bytes. This
    effectively prevents access to one of the most useful
    features of the "UNIX" operating system, making the
    claim to be a UNIX virtually fraudulent.

4. The loader will not allow a large enough symbol table
    and the assembler restricts identifiers to 8 characters.

5. The maximum virtual memory size is too low at 4 MBytes for
    data.

6. The assembler and machine instructions allow only the
    operations required for C programs, whereas IKBS
    system builders (and others) require more general
    facilities e.g. chaining out of subroutines, checking
    for integer overflow.

7. Pipes do not work as expected in UNIX, for a pipeline
    of more than two processes. There are several other
    <u>known</u> design bugs, and we suspect many unknown ones.

Our chief POPLOG systems programmer has stated that continuing
to work on the PERQ as it stands would be a complete waste
of his time as it would require considerable effort and
ingenuity and the resulting system would be too limited for
serious use.

I believe others have reached similar conclusions, including
systems staff at the Rutherford Laboratory (as opposed to
management staff).

I believe there is even considerable dissatisfaction among
ICL programmers who have been forced to use the PERQ.

Is there any chance that you can take action to bring about a
fundamental re-design? If not, pressure on academics and
others to use the PERQ rather than superior machines will lead
to a serious waste of British talent at a time when the nation
cannot afford it. Can ICL afford it?

 Yours sincerely,

Dr. Aaron Sloman
Reader in Philosophy & Artificial Intelligence