SCIENCE AND ENGINEERING RESEARCH COUNCIL
RUTHERFORD APPLETON LABORATORY

COMPUTING DIVISION

DISTRIBUTED COMPUTING NOTE 519

issued by
TRIP REPORT   R W Witty
CMU 9-16 November 1981

24 November 1981

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HIBBARD - 10 November 1981

Agenda
1. Possible RAL/CMU exchange of staff
2. IFIP Workshop Jan '82
3. Joining Industrial Affiliates scheme
4. ICL
5. Getting Accent and other software

Industrial Affiliates Scheme

Hibbard realises that SERC is not industry, but would like uncommitted
money. CMU not that short of money (47 Perqs - many under-used at present).
Realises that SERC might be 'embarrassed' to give uncommitted funds to
CMU. We examined following ideas:

(a) EXCHANGE PROJECTS
    1. VLSI work   (possible) CMU→RAL
    2. Camb Ring   (unlikely)
    3. Man Machine Interface   (possible) both ways
    4. Physics type applications (doubtful)
    5. Office Automation   CMU→RAL?
    6. ARPAnet USA-UK links   (Hibbard keen for personal reasons!)

    On exchanges Hibbard says that Siemens have an office in CMU department
    and employ 2 staff to work on Spice. They go occasionally to Siemens
    USA place at Cherry Hill. CMU like this because 2 extra staff!
    This sort of thing would go down well from SERC. Possibility of CMU
    people doing sabaticals in UK too, especially VLSI, MMI and Office
    Automation.

(b) LOAN OF LISP MACHINES
    SERC would purchase 2 Symbolics Lisp machines for indefinite loan to
    CMU for evaluation. CMU seem to like them ($50K each). Colour (8
    bits→48) with Rasterop is $25K extra.

(c) USA-UK SATELLITE LINK
    Again Hibbard liked this idea.

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IFIP Meeting Jan '82

Wirth, B Lampson, W Newman, C Sutter (DEC) plus others did not want to give lectures. I said ok if they turn up as Panel members at Hibbard's workshop then I would get funding for travel.

Getting Accent

I asked for Accent stuff formally this week. Hibbard will ask Rashid, Robertson, if we can take away unfinished product to 'set the precedent'. Hibbard says should be no problem because all public domain but 'IA people' can have preferential treatment. We should not ask too many time wasting questions. I said we understood!

Conclusion - 10 Nov '81

Much sparring about IA Membership fee format. Hibbard clearly bidding to get as much out of us as possible but not greedy. He will talk to others about my preference for exchange of people but no cash. Aim to reach agreement by Monday 16 November 1981 - the departmental budget meeting day.

(FRAH: Have you been to the Mexican restaurant in the old railway station by the river?).

Wednesday 11 Nov '81 - THREE RIVERS

Jim Gay

3RCC are soon to get another building of 36,000 sq ft for manufacturing reorganisation. They will keep 720 Gross Street.

Since RWW's visit in November 1980 quite a few changes at 720 Gross Street but still looks pretty chaotic.

1 Mbyte memory

We saw 1 Mbyte memory board prototype.

It may be in production December 1981. It is field upgradable with 1/4 Mbyte existing version.

I/O option boards

Two are planned. The short term one will contain the ethernet interface and the Canon laser printer interface. In the longer term the ethernet interface will go on the new I/O board (see below) and the I/O option board will contain the following:

1. CDC SMD disk drive controller interface
2. Canon laser printer
3. A second ethernet interface (gateway)
4. Perq to Perq link

Because each I/O board can only have 2 I/O channels into the Perq bus, all 4 cannot be on the same board, so the user will have Perq to Perq link, plus 2 out of the other 3 on any one board. We actually saw a CDC disk and 3RCC prototype interface. It might be product by 2Q82.

I/O board

A new I/O board is planned for mid 82 which will contain an ethernet interface, a fast Z80B (possibly with more RAM) and the Intel 8087 floating point chip.

16K writeable control store

We saw this. It is in final debug phase. They aim to get it to CMU by end Nov '81. It is field upgradable for existing 4K wcs versions. Jim said might be product by 2Q82 but that they did not want this to be 'volume product'. They wanted to design a board which could handle both 4K and 16K versions.

The 16K wcs version has a modified CPU incorporating corrections and 'clean ups' suggested by CMU. "Not much of change" said Jim.

Colour

The colour display has been designed. It is essentially a 2 Mbyte Perq (maximum memory size possible with 20 bit physical addresses). The memory and display controller will sit in separate box. A colour video monitor of 1024 x 1024 resolution, interlaced with 4-8 bits per pixel is envisaged. The programmer sees all the 2 Mbytes and Rasterop works unchanged.

Streaming tape deck

Running in factory but will not be product. Envisaged as being facility on network. (Manufacturer doing ethernet interface perhaps?).

Canon laser printer

Jim referred to problems with it due to Canon's lack of field maintenance. (Perhaps we should be wary?). It has 240 dots per inch.

Monitor

These are now coming from VMI in 3RCC designed frames.

Winchester problem

It is reported that belts come off Winchester occasionally during start up.

Fortran

ICL and 3RCC have been discussing problem and 3RCC taking some action, possibly jointly. Jim mentioned possible compilers in 3 months time for P.O.S. D5 from Advanced Computer Techniques of New York and Silicon Valley Software who have a portable Fortran compiler which is used by UCSD Pascal system and runs on 68000 (Apollo?).

Temperature

3RCC now have crude temperature testing. Run Perq at 95° by putting in cardboard box (yes really) in heated room. Jim says they will think about how to check if all 5 fans running. Should be 20° rise in temperature for air leaving machine.

The Z80 problem

3RCC are going to redo all Z80 code and associated Perq microcode because performance just not good enough. Rumours about 8086 seem unfounded — certainly caused confusion when mentioned. Might have come from suggested way of driving 8087 chip.

Lee Harris

New Software Manager to take Dan Selza's place now he is in Advanced Development. Lee did some time in Buckingham working on Wordplex word processing project. He has been with 3RCC for 5 weeks. He is recruiting people at the moment. Most of the software team seem to be new people.

Overall Comment

Software development seemed in a real mess. Too many new people and no real driving force and direction.

INDUSTRIAL AFFILIATES MEETING 12 & 13 November 1981

Brian Rosen

Brian gave me unofficial estimates of the cost of new memory products as follows:

    16K W.C.S: $8K new, $10K to upgrade
    1 Mbyte memory : $5K new, $7K upgrade.

Brian seemed to think that ICL would charge somewhat more! I am not sure that 3RCC are too happy at the increase in price made by ICL. Perqs are still $30K in the USA.

Brian was happy to talk about their plans for colour although no timescales could be given. The colour display will be a separate box and monitor connecting into the memory board slot. It has 2 Mbytes of memory (the maximum possible with current 20 bit physical addressing). It will be 1280 x 1024 resolution which Brian says is new emerging CAD standard. It will be 4 bits non-interlaced or 8 bits interlaced per pixel. He has seen a suitable monitor. The display controller is switchable to address memory as planes or as byte per pixel to suit different applications.

The colour table can be updated at beginning of each refresh from main memory. It has 10 bits per primary colour. Brian says need 12 for some image enhancement type work but technology not quite there yet.

The cursor is 128 x 128 pixels, in separate area in display controller but can be updated from main memory at refresh time ('vertical retrace') like colour map. Brian says might be some new functionality (like additive functions) as well as logical operations for adding cursor into main picture. Rasterop too might have some other functions but no real clean ideas yet. Rasterop will work on 'byte' or 'plane' mode so making it appear to work the same as black and white version by making it add appropriate offsets.

There might be some alignment restrictions because of need to switch between 'byte' and 'plane' modes.

Brian says no 8086 for I/O board. Floating point delayed by printing routines!

Norway

    Gisle Hannemyr
    ViT øf Datafag
    P.O. Box 693
    N-9001 Tromso
    Norway

Gisle did computer science degree at Manchester. Now working on document production system at Tromso. Got 2 Perqs. Going to order 4 more, hoping to bypass ICL to buy them. Technician maintains them now. Gisle says Norway going to standardise on Perqs much like SERC.

Olivetti

    Giovanni Granata
    Corporate Systems Research
    Ing. C. Olivetti 2C. S.p.A.
    Via Jervis, 77
    10015 Ivrea
    Italy

Giovanni has just bought a Perq - one from the October '81 batch which has power supply problems. I told him to contact Reg or Peter L at ICL. Olivetti have a lab in Palo Alto which has got Perqs but could not find out what they were doing.

Apollo

Ric Rashid said that Apollo has spent a week at CMU with machine to try to sell to CMU. Rashid has given it close scrutiny and rejected it because it could not perform well enough.

ARPA and Unix

I talked to ? Adams of Arpa in Washington. (Adams at ISI is Arpa mail address?) He runs VLSI and had handled RAL Technology Division request for Mead & Conway tapes. (Bob Conn was other Arpa guy). Adams told me that Bell have produced a Unix machine for $300K which is 3-4 times a VAX 780. Bell will be announcing maintenance contract offer for series 3 Unix (which is V7 and all previous versions). S3 Unix does not have paging. V32 Unix will not be maintained. Adams said that USA universities like CMU get Unix free because 'education' included research. He was surprised that we had to have commercial licences. He suggested we talk to Joe Hunt at Western Electric. Arpa is trying to get Bill to issue a single site wide licence to stop the overhead of licencing large numbers of individual CPUs.

Adams said we could get direct ARPA link if we had formal collaboration with CMU say. RSRE linked to ARPAnet via Satnet.

Adams surprised we could not join CSnet. Suggested we talk directly to NSF rather than Farber.

Raj Reddy

Raj has friends in India who have a Perq. They are producing a Cobol
compiler to run a subset of ICL 2904 Cobol. Reg said he would send me
the compiler (free) by 1 January 1982. I should call him and ask for it
if I have note received it by then! The Compiler will be given to 3RCC
and ICL to market.

Nick Shellness

Nick was not at the IA meeting but was doing the USA tour for BNOC and
was visiting IBM, HP, 3RCC and Apollo. He had dinner with Hibbard on
Wednesday. He got me out of bed on Wednesday night by 'phoning me to ask
for a meeting. We had breakfast on Thursday.

Nick is looking at getting the Yale Ascii terminal system that runs on IBM
Series 1. It makes any ascii terminal look like IBM 3270 full screen.
BNOC have big IBM 3033 and lots of ascii terminals. BNOC are looking to
get 100 Gigabyte IBM Mass Storage System. He said IBM 3081 designed to
run as 16 processor machine. (He knows its architect).

Nick said someone called John Ellenby has just left Xerox PARC to form
own company. He has a good idea which should hit market in March 1982.
Nick said it will significantly impact commercial market but would give no
details.

I should visit Nick at BNOC in Jan '82 when I go to Edinburgh to give
seminar.

Hibbard

CMU got 47 Perqs. 15 for Spice. Rest on other budgets. Not buying any
more. Looking for next real Spice machine e.g. Symbolics 3600. Many CMU
Perqs under-used because of lack of software. No plans for any applications
because of this. Good rumour that Gosling C compiler scrapped by Hibbard
who feared that Unix on Perq would suck all users into it and drain away
effort from Spice. (Raj Reddy very interested in Unix on Perq!)

Siemens

Swartz of Siemens said he tried to get Siemens to do ICL style deal with
3RCC but Siemens senior management turned it down. He was disappointed
to say the least but took it well. Siemens got Perqs and should be buying
more from ICL. They are into document production systems. Siemens fund
two full time CMU people to work on Spice. They have quite big interests
in USA including Cherry Hill research lab.

Ada

CMU seem to have stuck at Subset Ada compiler. No project going to
produce real Ada compiler so York might be first Perq/Unix Ada compiler.
Bill Wulf's year's leave of absence to set up Tartan probably has something
to do with lack of Ada compiler.

3RCC Ethernet Order

British Embassy warned that cables, taps etc on original Perq order not
delivered. I told Brian that we did not want delivery until ethernet is
actually working properly.

Miscellaneous

1. Spice 81 3 months late because microcode so hard to write and debug. They failed to use Perq-Perq link to debug microcode.

2. Built 8 Perqs, 3 MHz ethernet connections so far. Not going to use 10 MHz ethernet because of existing investment.

3. Suggestion from Xerox people:
   First things to put on LAN of Perqs is good mail facility and good text editor if they want sceptical applications users to migrate to it.

THE DEAL WITH HIBBARD (16.11.81)

We agreed the following:

ICL

1. RWW to try to get ICL to join the Industrial Affiliates Scheme.

2. PH to try to get ICL to join the Industrial Affiliates Scheme.

3. RWW to arrange a CMU/ICL/SERC meeting in Jan '82 to cement relations. J Panter of ICL to be invited. (Hibbard will arrive on 19 December 1981 for 2 weeks).

SERC/CMU

RWW will write to Nico Habberman, Chairman of Dept, cc P Hibbard as follows:

1. Can SERC be Research Affiliate, analogous to Industrial Affiliate, with terms based on IA document (get latest copy via Arpanet read Basic. MSS [p100 splc]).

2. Offer £9,999 or $20K.

3. Offer symmetrical software interchange scheme. CMU retain all rights to their software but we can modify and distribute it. The modifications belong to CMU. We cannot sell it without further negotiations. The converse would apply to SERC software. Scope of software limited to Spice project topics.

4. Annual renewal.

Note

1. CMU want our Fortran compiler for Spice! CMU began to realise that we were likely to be significant producers of good software.

2. CMU would like Ada compiler for the Perq! (York?)

3. RWW should get:

   1. IA latest version.
   2. PH to send 3RCC IA agreement copy
   3. PH to send another IA request letter

LONGER TERM COOPERATION

Hibbard would like to explore possibility of joint SERC/CMU research
project (RG2 style) on Spice topics. This would not broaden CMU topics
but add equipment and staff posts at CMU. To be discussed further in Jan
'82.

IFIP

PH to sort out what he requires by end of this week. Butler Lampson
(Xerox) and Sam Fuller (DEC) will pay own way. Hibbard, G Saltzer, N
Wirth need SERC travel funds – less likely to need subsistence. William
Newman will arrange venue. He will contact RWW if he needs help. Jan
7th target date, other activity is WG2.1 in Newbury organised by Richard
Bird of Reading University, who is a friend of Hibbard (simultaneous
sabaticals at Vancouver).

Hibbard will get me Arpa account at CMU and mail me requirements.

ACTIONS ARISING

1. Check got CMU account.

2. Get Lilian to check CMU mailbox daily.

3. RWW to get IA details latest copy.

4. PH to send IA 3RCC agreement.

5. PH to send IA request letter.

6. RWW to foster Norway Link

7. RWW to foster Olivetti

8. RWW to foster Siemens Link (get in via Habberman)

9. RWW to order another 3RCC ethernet board and get cables etc.

10. RWW to look at upgrading existing machines.

11. RWW to look into changing outstanding orders to be upgraded to 1 Mbyte.

12. RWW to bear in mind that J Gay might not know extent of our source
     licence.

13. LOF to get list of IA participants.

MUSIC

Paul McAnnway – Spice Music proposal as MMI plus performance test.

YORK ADA

CMU upset that Charrette CMU compiler work cribbed but not acknowledged
Ada Conference, Dec 80, Boston. Hibbard knows Andy Wellimgs of York.

(York say nothing taken from Charrette work. RWW 23.11.81)

GOSSIP

1. Spice project going to DEC on Wednesday.

2. Only 2 IAs actually paid $100K. Others did deals.

CMU upset that Charrette CMU compiler work cribbed but not acknowledged
Ada Conference, Dec 80, Boston. Hibbard knows Andy Wellimgs of York.