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Department of Computer Science



Memorandum

To All Staff
Postgraduates
Student Workrooms

From Peter Schofield

Date 5th January, 1984

AGENDA for DEPARTMENTAL MEETING

to be held on

Friday 6th January 1984

TIME: 15.30

VENUE: Room 5210

1. The future of the Department.
 - (a) The second established Chair.
 - (b) Other developments.
 - (i) Priority areas for research.
 - (ii) Vacant Lectureships.
 - (iii) Alvey.
 - (iv) Teaching and research co-operation with AI.

Note by PDS. No items having been submitted by other people, I thought we should have a discussion on how the department should be trying to develop. Item 1(a) has been known about for many weeks and a letter from the Dean went to all teaching staff on 12th December (copy attached). Arising out of this we shall probably get on to the topics of item 1(b); but as these have only 24 hours notice, I expect that we shall deal with them briefly and not feel bound to follow them all to a conclusion on this occasion.

Some Alvey documents are circulated herewith to Lecturing and C.O. staff and senior technical staff. Anyone else wanting to see them can see a copy on the coffee room table.

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DEAN: Professor M.M. Yeoman
VICE-DEAN: Dr. J.C.P. Schwarz
ASSOCIATE DEANS: Dr. D.W. Arthur, Mr. G.M.H. Carrie
SENIOR ADMINISTRATIVE OFFICER: Mr. M.H. Lucas, BSc.
SCHOOLS LIAISON OFFICER: Dr. J.C. Campbell
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MHL/EW

To all members of the teaching staff
in the Department of Computer Science

12th December 1983

Dear Colleague,

New Chair in Computer Science

As you will be aware, the University Court has approved the Faculty's recommendation for the establishment of a second Chair in Computer Science.

I would therefore welcome any views which you may care to let me have, in confidence, on the filling of this Chair and more generally on the future of the Department. You may also wish to suggest names of people within or outside the University who might serve on the appointment committee which will be set up in due course by the University Court. Comments should be submitted to me as soon as possible and not later than 23rd January 1984.

Yours sincerely,

M M Yeoman.

DEAN

Copies for information:

Heads of Departments	Artificial Intelligence
	Astronomy
	Chemical Engineering
	Chemistry
	Civil Engineering
	Electrical Engineering
	Mathematics
	Mechanical Engineering
	Physics
	Statistics
Dr G.E. Thomas ERCC	

The new Established Chair in Computer Science

There appear to be two alternatives for the main criterion on which to base the appointment to the new Chair:

- (1) To appoint a man who is a leading researcher or scholar in his field and who is expected to make the department prominent in this field. He would also take his turn as chairman.
- (2) To appoint a prominent academic who undertakes to be Department Chairman for a considerable period, as his principal duty.

I am strongly in favour of the second alternative, provided it is acceptable to our present chairman, and I would like to say why.

Computer Science is perhaps the most - and certainly one of the most - expanding disciplines within the University (and elsewhere). Already our department has grown considerably. In the future, the subject will grow in directions which we cannot fully predict at present; it may also exhibit a strong tendency to divide into separate topics, each of which would then suffer. There will be an increasing demand for an increasing variety of courses. The fast-changing teaching matter, the even faster development of computing equipment (soft and hard), the demands by both Industry and Government for research which will pay off in the short term, and our own resolve to continue research which will place the subject on a sound academic basis for the long term; all these elements imply a need for strong and active management, and therefore imply that the chairman's task is an exacting one - probably not compatible with first-hand involvement in research in such a vigorously growing subject.

The department is lucky to have been led hitherto by two people who - progressively as it became more necessary - were willing to accept the task on these terms. I (and I believe most of the department) would be happy if Peter Schofield were to continue as chairman, but it is reasonable for him to wish not to do so. I believe his increasing success is evidence that the headship should not change as frequently as every three years. Nor is it a good solution, given the particular weight of the task, to place it on a rotating basis in the hands of those who are currently leading the research - unless they both have the aptitude and wish to treat it as their predominant activity.

I would therefore prefer to see the new Chair offered to one who, though he should preferably have a significant record of achievement in the subject, is willing to accept the different but exciting challenge of managing this rapidly evolving department for at least six years to come. The international reputation of the department, the excellence of the University and the special prestige of an Established Chair should give us a chance of attracting very able candidates who look for this kind of role as a leader.

Robin Milner, Jan 1984

Notes on Departmental Meeting held on Friday 6th January 1984 at
1530 in Room 3309, James Clerk Maxwell Building.

1. The second established Chair.

The meeting considered (a) RM's paper circulated with the agenda and (b) a paper tabled by RMB. The latter proposed that PDS should be asked to consider continuing as Chairman of Department (with some proposals for lightening his load) and that the chair should be filled by someone who would provide extra "firepower" in Computer Systems, particularly in the co-ordination and presentation of research.

PDS felt that policy on filling the chair should come first, and that consideration of the Headship of department could come later, when it was known who would be in post, and when.

After some discussion the meeting agreed that the Chair should be advertised as a Chair of Computer Science with emphasis on Computer Systems.

The question of timing was discussed and the meeting emphasised its view that if no sufficiently outstanding candidate were found at the first attempt, then the department should appoint temporary lecturers until such time as the right person could be found.

Action PDS

2. Other Developments.

(a) Administrator.

KBD proposed the appointment of an administrative assistant. This was discussed and it was agreed that an administrator/computing officer would be a suitable choice. PDS would investigate the precedents in other departments.

Action PDS

(b) Vacant Lectureships.

The meeting discussed whether new posts should be filled quickly or held in abeyance until the new blood money was decided in March. It was suggested that the department should hold one new post over until the appointment of the new professor. It was, however, felt that all appointments should be filled as unscheduled vacancies could occur at any time.

(c) Alvey.

RMB suggested that Rod Witty should be asked to come and talk to department about the use of Alvey money. PDS drew attention of the meeting to item 8.7 in Alvey VLSI-CAD Strategy document. SM suggested possible collaboration with software houses such as Lattice Logic; GDP said BP would be willing to be collaborators.

Action RMB

(d) Teaching and research cooperation with AI.

PDS would consult the department for comments on cooperation with AI on teaching and research before the next meeting of the sub-committee on Undergraduate Teaching. The possibility of resuming the 4th year option on AI (dropped owing to staff shortage in AI) was mentioned.

Action PDS

3. Any Other Business.

On behalf of the department SM thanked PDS and Aline Schofield for hosting the Christmas Lunch. This has been an event which he hoped might be continued by the department in the future.



Department of Computer Science

Memorandum

To All Staff
Postgraduates
Student Workrooms

From Peter Schofield
Date 2nd February, 1984

AGENDA for DEPARTMENTAL MEETING

to be held on
Friday 3rd February

TIME: 15.30
VENUE: 5210

- (1) Matters Arising from January Meeting
- (2) Chairman's Business
 - (a) Staffing
 - (b) Information Technology Fellowships
 - (c) Any Other
- (3) Computing Facilities
 - (a) VAX lines; request for more in machine halls
 - (b) Filestore/APM Reliability
- (4) ICL Course in Easter Vacation
- (5) Length of Examinations in CS2
- (6) Minor Works in Block O/P
- (7) Proposed Company to develop APM's
- (8) Equipment Bids 1984/85
 - (a) VAX Disk Upgrade
 - (b) Development of Other Proposals

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Notes for Departmental Meeting to be held on Friday 3rd February 1984

Item 2(b): Information Technology Fellowships

See separate paper.

Item 3(a) VAX lines; request for more in machine halls

Short term: 11 out of the 12 terminals in Block O/P are now functioning as a number of little used lines have been borrowed from their owners.

The expected return of the faulty terminal lines should happen within one week. Efforts were made to find a source of a replacement board with no luck. The faulty board has been returned to Emulex for repair. A spare board for the new Unix VAX has also been ordered and I would expect this to arrive first. It will not be needed in the Unix VAX for two or three weeks.

Steps are being taken to ensure that no repetition of this situation occurs again, probably by carrying a spare board.

Long term: As the Unix VAX comes into service a number of terminal lines will be freed. In addition we can expect to be able to use the DMF-32 shortly - this will give us a total of 14-18 lines to display. Terminals will become a problem but if possible I feel that many of them must go into public areas, several of them being in the machine halls.

George Cleland

Item 4: ICL Course in Easter Vacation

Matthew Hennessy proposes to run another course for ICL staff during the Easter vacation. All being well, the only computing facilities used would be the RMB/RW/MPA Unix VAX. However, should this not become available on time, he would like the use of six terminals on the departmental VAX for half a day. In view of reservations expressed about a course for another company with defence connections, and some unfortunate remarks in an Edinburgh anti-apartheid pamphlet, it is important to make sure that the department is happy about this proposed course.

Peter Schofield

Item 5: Length of Examinations in CS2

It is proposed that the examination for Computer Science 2h (Systems) and Computer Science 2h (Real-Time) should be two hours each. This is in line with present practice. For the Computer Science 2h (Foundations) which will probably have a slightly lower level of coursework, it is proposed to have one 3-hour paper.

Peter Schofield

Item 6: Minor Works in Block O/P

A laboratory is required to house equipment for the real-time course. Until we can demonstrate fuller utilisation of our existing areas, it is going to continue to be an uphill struggle to prize space away from other departments. A deadline for submitting some minor works proposals arose earlier this week. I took the hurried opportunity to put in a proposal to erect a fixed partition in Block O/P West. This would partition off the corridor and have two doors into the laboratory area. Power points would be re-sited on the walls. At least initially, my idea would be to utilise this for the real-time course. Many other permutations of space usage are possible. The present bid is to some extent a tactical one to get something on the table in a hurry, and is below the fixed level at which more cumbersome procedures are required. (Otherwise I should have put in to partition both halves of Block O/P.

Peter Schofield

Item 7: Proposed Company to Develop APM's

Hamish Dewar and Igor Hansen have formed a private company with which they hope to exploit the APM commercially. They would like the University to issue them a licence to make use of the APM hardware and software developed in the department. They have submitted a first exploratory draft proposal which has been considered by the University authorities. I have made certain further suggestions and the Secretary to the University has asked me to encourage them to proceed with more detailed proposals. They and I will explain a bit more verbally at the meeting.

Peter Schofield

Item 8(a): VAX Disk Upgrade

See separate paper.

Item 8(b): Development of Other Proposals

I do not yet know the time-scale for equipment bids for 1984/85.

However, we are likely to be invited to submit proposals that have to go before the Computing Equipment Panel by the end of term. I propose that people should start co-ordinating proposals as follows:

- (i) SM (with APM Committee) - APM related items + laser printers?
- (ii) GIC - VAX related items
- (iii) RNP - ISI items
- (iv) RC - Real-time course items
- (v) RM - CSI Equipment items

Any items that do not fall into any of these categories should be given directly to me.

Peter Schofield

Item 2(b) : Information Technology Fellowships



DEPARTMENT OF COMPUTER SCIENCE
James Clerk Maxwell Building
The King's Buildings,
Mayfield Road,
Edinburgh EH9 3JZ

25th January, 1984.

Ext. 2750

Chairman of Department:
Mr. P.D.A. Schofield
Professors of Computer Science:
Professor R. Burstall
Professor S. Michaelson
Telephone: 031-647 1061
Telex: 71341 (UNIVED G)

Dean of the Faculty of Science,
Faculty of Science Office,
King's Buildings.

Dear Dean,

The Information Technology Fellowships Committee

Last year the University decided that it would fund several fellowships in the field of Information Technology for the financial year ending in the coming July. These are to enable outstanding scholars to work for a period in the University to contribute towards collaborative research and the preparation of research proposals. Awards may also be made to release members of the staff from some or all of their departmental duties for the same purpose. The awards are made or overseen by a small committee which consists of Professors S. Michaelson, Department of Computer Science (Chairman), M. Anderson, Department of Economic History and J.H. Collins, Department of Electrical Engineering.

The Fellowships Committee has decided that nominations must comprise:-

A curriculum vitae of the nominee.

His name and address.

A clear statement of the collaborative research to be conducted.

It is likely to have a positive effect on the Information Technology programme of the University.

The proposed duration of the fellowship.

The costs involved including salary, travel and subsistence expenses.

Nominations must be made by members of the University and must be sent to:-

Professor S. Michaelson,
Department of Computer Science.

The Committee has also decided that, at the end of his fellowship, each Fellow shall submit to the Committee a report (about 2000 words) on what he has accomplished.

PROPOSED ECSVAX DISK UPGRADE

ECSVAX disks are getting old and expensive to maintain. If ECSVAX is seen as a viable departmental resource for more than three years, then disk replacement should be considered now. The total capital cost will be £38,000 less the second hand value of the existing system. (This could be between £5,000 and £15,000, depending on the energy (and integrity) of the seller).

Proposed system:

- 3 System Industries 9751 disk drives
- Fujitsu Eagles
- 1 9900 controller
- 1 mass bus (.SBI) interface

This is the same as the system ordered for the new Unix VAX (2 disks instead of 3). ERCVAX is also acquiring 3 similar disks.

Savings:

This year:	> £5,000	maintenance
	> £1,500	power
	= £7,000	total

In future years it is fairly certain that maintenance costs will rise sharply. If DEC had not offered to maintain our SI equipment last year, our current maintenance agreement (with SI) would have been several thousand pounds more expensive. DEC, because of logistics problems, are beginning to withdraw from SI disk maintenance

Disk Space

Under the new subsystem disk capacities will be:

User disks	:	2 x 414 Mb.
System disk	:	1 x 414 Mb (256 Mb is all that will be used for technical reasons)

80-100 Mb of each of the user disks will be reserved for incremental backups (see below). This will result in an increase of about 22% in user disk space.

Performance

The Eagle knocks spots off our present disks.

Data transfer rate	Eagle - 1.85 Mb/s	9766 - 1.2 Mb/s
Average access time	Eagle - 26 ms	9766 - 38 ms

This will give a much needed boost to the paging and swapping performance of the VAX. Short of getting more memory on the system it is the best thing we can do for it.

Backup

Because of the winchester technology of the new drives, pack to pack copying, which is a real saving grace on our present system, will not be possible. This will however, at last, force us to implement a "real" backup system (with all the associated problems of tape management and storage. A reliable system with no more operator cover than at present should be fairly easily devised. I would expect to maintain the present regularity of cover (every night by cross backing disks) while also maintaining full weekly archives for the previous 6 months and quarterly archives indefinitely.

Maintenance and Reliability

These Fujitsu disks require no regular maintenance and do not go wrong (even if they do, they take 20 minutes to fix).

Addendum

It is likely that SI will have brought out their 600 Mb disk (also Fujitsu) by August. These will be a more acceptable replacement for our system as each drive will map as exactly 2 of the 300 Mb drives we have at the moment. The performance of these disks is 50% better than the Eagle disks so the reduced number of spindles will not adversely affect performance. The cost will be reduced by £2,000-£4,000 and maintenance will be proportionally less.

at 1530 in Room 5210, James Clerk Maxwell Building

1. Matters arising from January meeting.

- (1) Arising out of last meeting PDS had written to recommend that every effort should be made to fill the Chair with a specialist in Computer Systems. The Court had appointed a selection Committee of 13, including SM, RMB, PDS, 8 others from within the University and 2 external assessors.

(2a) PDS had started enquiries about departmental administrators in other departments.

(2c) RMB plans to invite Rod Witty.

2. Chairman's Business

(a) Staffing

George Ross has been appointed as System Programmer to UNIX VAX. He will work in co-operation with GLC.

(b) Information Technology Fellowships

There was still money available for importing people. Names to SM.

Action ALL

3. Computing Facilities

(a) VAX lines: request for more lines in Machine Hall. GLC's document Agenda Item 3(c) was circulated as part of the Agenda. PDS was aware of the problems and mentioned possible need for lines in the Machine Halls. GLC had received a terminal driver from MUX which should help to provide a number of new lines in Machine Halls. It was suggested that switches fitted to terminals to make them either VAX or APM could be a solution but GLC felt this might cause some conflicts. It was reported that RS232 boards would be needed before APMs can run directly from VAX. Although more terminals were needed for the students' use in Machine Halls the service was so poor that more lines might make it worse. It was agreed that we should look into the loading of EMAS terminals in Block O/P.

Action PDS/GLC

HMD said originally the APMs with graphics were not intended to have dedicated terminals as well. Decision about this should be made in due course. IBH said that if we introduced separate key-boards, this should help the situation and that there was a possible key-board which cost £100-200. JJ said that as soon as Ethernet Boards were available more terminals would be required to bring APMs into service. PDS would initiate an audit of the number and location of VDU's Priority was to be given to Public APMs. JCD, PDS, SM, GLC would try to get enough terminals going and if necessary APM group would modify their shopping list. Key-boards would be discussed at next APM Review Committee meeting.

Action SM/GLC/APM Group/PDS

(b) Filestore/APM Reliability

HMD said there was no problem with APM reliability but there was a severe problem with the filestore which the filestore group had tried, without success, to rectify. He suggested that the solution would be to bring in the new filestore more quickly than planned. The software was being tested but, if introduced quickly, would not have had sufficient testing. He planned to give people the option to be moved to the new filestore at some stage during the coming week, if they wished, but users would need to accept the service in an untested state.

Action HMD/GDMR

4. ICL Course in Easter Vacation

Meeting approved the course. PDS & MCH agreed to try and negotiate a higher price for the course.

Action PDS/MCH

5. Length of Examinations in CS2

It was agreed that this should be 2 hours for the Computer Systems and the Real-time half courses and 3 hours for Computer Science 2h (Foundations). Discussion followed on staffing and resources for the Real-time course approved by Board of Studies and Faculty. PDS intended to make clear at the forthcoming Board of Studies that the Real-time course depended upon us obtaining additional teaching and technical staff, either from our New Blood/IT bids or from Faculty sources. These bids had already been lodged. More APM's would be required and would be requested from the 1984/85 Equipment Grant at the usual time. GLC would call a meeting on the implementation of Modula 2 on APMs and would report on this in due course.

Action PDS/RC/GLC

6. Minor Works in Block O/P

A bid has been made for Minor Works money to partition off the corridor of Block O/P (West). PDS has told JCMB Committee that Comp.Sc. will need more lab space.

7. Proposed Company to develop APMs

HMD and IBH had formed company with which they hoped to exploit the APM commercially. Their intention was to continue on staff as full-time lecturers for the immediate future. HMD answered several questions about their plans and then both withdrew from the meeting. After some discussion the following points were agreed:

(1) The Department did not wish to tie its own hands to an unreasonable extent by giving exclusive rights to the new company but company but agreed that an assurance could be given that we would do everything reasonable to protect the interests of the company.

(2) PDS said that originally HMD and IBH intended to operate their company from premises outwith the University. However, they had now asked if they could, in the initial stages, operate from within the department and use some departmental facilities. The department agreed - conditions and charges to be discussed with the Head of Department.

(3) The Department liked the idea of the University taking out equity in the firm as a possible alternative to obtaining payment of royalties for goods sold. PDS would put this forward to the Secretary to the University for his consideration.

Action PDS

8. Equipment Bids 1984/85

GLC raised question of purchase of new VAX in 3 years time. It was agreed that the following people would prepare bids:

SM and APM Committee - APM-related items, laser printers.
GLC - VAX (see Item 8(a) VAX Disk Upgrade)
RNP - ISI
RM - CS1
RC - CS2 and Real-time Course
DJR - VLSI
MCN - Database requirements.

Action ALL

Notes for Departmental Meeting, 2nd March 1984

Item 1: Policy on M.Eng., B.Eng. and other new degrees

Teaching and C.O. staff received from me on 13th February a copy of a paper sent to the Board of Studies in Engineering. Further copies are in the coffee room and room 3316. A briefer report to Faculty is attached. For policy discussion, I propose:

1. We aim to move our existing CS degree to a B.Eng (enhanced) degree. The same for CS and Electronics.
2. These should also allow transfer to 5-year M.Eng degrees for the abler students.
3. We should introduce a more theoretically-based 4-year honours degree in Computer Science under the Science regulations. There would, of course, be a major amount in common with the B.Eng.
4. The students wishing to continue on from the 4-year "theoretical" flavour, would normally go on to M.Phil. or Ph.D.
5. Consider the relationship of 5th year of M.Eng and our present M.Sc.
6. We should introduce AI properly into our courses. AI are sensitive to retain their separate identity, so perhaps instead:
7. We should ask AI to offer the first (or perhaps a faster) half of AI2 to be taken by our students along with the three newly-structured half-courses.
8. An equivalent of the project phase of AI2 might be included as practical work in CS3.
9. At least, further AI options should be introduced into CS4. These were dropped some years ago owing to staffing shortages in AI.
10. The AI department should be drawn into a 3-department joint degree with EE, to be called "Information Technology". This to have B.Eng and M.Eng forms.

Peter Schofield

Item 2: Equipment Requests

For various reasons which I sent by VAX mail to teaching and C.O. Staff, I asked SM to organise a working party to draw together the thinking presently going on over the preparation of our equipment bids. One meeting has been held and we should hear a brief progress report for our comments. RNP and ERCC have produced some fairly detailed documents, also for comment.

Peter Schofield

Report of Board of Studies in Engineering

15th February 1984

(Following the practice introduced last year in the interests of economy in both paper and staff time, the full submissions considered by the Board are not attached. It is hoped that Faculty will consider it sufficient to receive the attached summary of changes of any major significance; the full proposals, including in particular the detailed Calendar amendments, are available on request from the Faculty Office.)

1. Enhanced and Extended Degree Courses in Engineering

In the light of recommendations contained in the Finniston Report of January 1980 the Engineering Council was set up to be responsible for, inter alia, establishing and maintaining standards for the registration of various grades of professional engineers and for the accreditation of courses leading to the different stages of registration. The Engineering Council accepted the Finniston proposals that qualification for registration as a Chartered Engineer should be via new degree programmes leading to Bachelor of Engineering (B.Eng.) and Master of Engineering (M.Eng.) degrees.

The proposed B.Eng. corresponds roughly to existing 4-year degree courses in the Scottish universities, but with the specific inclusion of two new courses, Engineering Applications (EA) 1 and 2:

EA1 - "An Introduction to the Use and Fabrication of Materials" and

EA2 - "Application of Engineering Principles to the Solution of Practical Problems Based Upon Engineering Systems and Processes".

Finniston envisaged these courses being based substantially if not entirely on practical work, case studies and projects, and as integral parts of restructured courses rather than as discrete modules added on to existing curricula. The M.Eng. degree should be a 5-year course with selection at the end of the second year of the B.Eng., with the three post-selection years involving an intensive curriculum oriented throughout towards design, synthesis and engineering applications, and covering more ground in greater depth than either current undergraduate courses or the new B.Eng. (In fact the Engineering Council has specified selection for the M.Eng. at the end of the third year of the B.Eng.) The term "enhanced" has become accepted terminology for the proposed B.Eng. courses, and "extended" for the M.Eng. courses.

A working party of the School of Engineering has been giving consideration to the Engineering Council requirements that all accredited degrees must be based on an enhanced course for a 4-year B.Eng. and an extended course for a 5-year M.Eng. The Board of Studies is strongly of the view that it is essential for Engineering at Edinburgh University that such courses be developed and accredited. Consequently the Wokingparty was asked to continue, with appropriate additions from other interested departments, to initiate the drafting of regulations for specific enhanced and extended degrees, under Resolutions for 4-year B.Eng. and 5-year M.Eng. first degrees. At the same time, the working party will give urgent consideration/

consideration to the resource implications which these new degrees are likely to involve; in this respect, the Board was concerned to note how little attention appears to have been given to these resource implications by the Engineering Council, UGC and CVCP.

The Board was also concerned to note that the Engineering Council is planning to begin implementing its proposals for the new B.Eng. and M.Eng. degrees in mid-1985, and agreed that action needs to be taken to enable students to be admitted under the new regulations as soon as possible, particularly since a number of enhanced and extended courses are already in operation in other universities. It is already too late for appropriate entries to be included in the Prospectus and UCCA Handbook for entry in 1985, and entry in 1986 requires the relevant material to be finalised by autumn 1984. It is hoped, therefore, to bring forward to Faculty in the summer term firm proposals and regulations for the new degrees and at the same time clearly to quantify the resource implications which are likely to be of major significance to the University and to require extensive discussion. In the interests of expediency, however, it is recommended that the appropriate Resolution(s) be promoted as soon as possible.

2. Calendar Amendments

The Board approved a number of minor Calendar amendments in the following:

Chemical Engineering 2 and 3
Civil Engineering 2h, 3h and 4
Civil Engineering Management 3h
Structural Engineering 2
Electrical Engineering 2
Mechanical Engineering 2, 3 and 4

Equipment Bids For The Appleton Tower Micro Laboratory

Last year the CEP accepted the case for a LAN, file and printer server for the Micro Lab. Nothing has happened since to weaken that case or fundamentally change the Micro Lab's equipment priorities. What has changed are the means of implementing this proposal.

It has been suggested that CS hold back on equipment proposals for 1st year teaching as a whole for this coming year and put in a more ambitious bid embracing both ISI and CSI for the year after. However, I would argue that a pause in the development of the Micro Lab is impractical, even for one year, for the following reasons:

1) Growing numbers in ISI and the likely impact of providing an alternative half course for CSI means that there is increasing pressure on the Micro Lab time-table. Also the use by other depts. is growing - and should be encouraged - but the result is that sessions for the extra numbers are scarce. There is also a strong case for providing freer access to facilities than can be contemplated at present so that students can progress at a more rapid rate.

2) The Micro Lab is supporting precisely the kind of computer facilities for teaching that the recent Computer Board Working Party Report has identified as being of special importance. It is vital that the Lab's development should not be halted. If it is then an opportunity to investigate and find out more about the longer term needs of the Lab will be lost.

Accordingly, CS should bid for money for a LAN etc as before plus three APM work stations. Specifically:

- APM based file server with 160 Mbyte disk & 16 RS232 ports
- APM based laser printer with sheet feed
- 3 APM work stations with colour graphics screen, keyboard & mouse, UCSD operating system

Exact figures are not yet available, but the cost would be about £35 K. Initially, the LAN provision for existing Sirius work stations would be via the RS232 ports, upgrading to Ethernet when the Sirii are replaced.

The equipment will achieve three objectives:

- a) Increase the number of work stations.
- b) Improve communications, student access and ease the management problems.
- c) Introduce APMs into a public teaching environment and encourage the building of software resources for teaching etc. The experience gained should be of some relevance to future plans for CSI.

Since the above proposal was formulated, the ERCC have declared their intention to install a 16 user UNIX machine in the Micro Lab. This is independent of whatever CS may propose for the Lab. Details (so far) are, briefly:

- 16 user machine
- 40 Mbyte Winchester (min)
- Ethernet
- RCONet connection

The consensus of opinion is that as a computing environment, it does not represent a forward development of the kind that we would be looking for in the next generation of work stations. However, the possibility arises that this machine could furnish the Lab with the vital LAN and file server facilities. If this is the case, and at present it remains to be proved (more information is required) then the CS bid could be modified to take advantage. Specifically, it would create the opportunity to concentrate upon bidding for a printer server and APM work stations only:

- APM based printer server (as above)
- 6 APM work stations (as above)

A disadvantage is that it makes the CS bid dependent upon the success of the ERCC's.

Software

There is a continuing need to provide a sample of the best of what application software is available in the commercial world. This year, micro data base, expert system and spread sheet packages have been added to the inventory. The cost so far has been minimal, but it is clear that we should not assume that procurement can continue on such a favourable basis. Some real money will have to be spent.

Rob Procter.

From ERCC

EDINBURGH REGIONAL COMPUTING CENTRE

Microcomputer Teaching Laboratory

For the attention of the Edinburgh Computing Committee

Summary

This paper reviews experience with the Microcomputer Teaching Laboratory in Appleton Tower. It makes recommendations, quite apart from enhancements which the participating departments may suggest, for central funding for a forward looking development for both teaching and general experience purposes. The main points of this are:

- a) instal a 16 user UNIX system, based on a 16 bit microprocessor
- b) attach 8 terminals directly, and connect the system to EdNET
- c) secure tenure of Level 4 as a microcomputer laboratory from 1984 until 1987.

1 Objective of Laboratory

The Microcomputer Teaching Laboratory was established in 1980 specifically for the Information Systems 1 course then being introduced by the Department of Computer Science. This was an innovative course modelled on one or two similar courses in North America. It was designed to give students, predominantly from faculties other than Science, exposure to new and forward looking ideas in computing. Now in its fourth session, the course has matured and currently attracts about 140 students. ERCC has participated in the laboratory to help provide and run a teaching facility of wider relevance than just ISI, but not simply to replicate what is prevalent in industry and business today.

2 History

Most of the funding of the laboratory to date has been a combination of ear-marked UCC grants, and allocations to the Science Faculty and ECC from the UCC Equipment Grant. Progress has been as follows:

- 1980 - 81 10 Apples IIs with colour television
 2 Terak 8510s
 2 Paper Tiger printers
 16 RGOnet connections
 Flexibility crate

1981 - 82 10 Visual 200 VDUs, for use with EMAS added
 Saunders high quality matrix printer added

1982 - 83 10 Sirius I workstations added

1983 - 84 5 Apple IIs withdrawn
 2 Sirius workstations added
 Colour graph plotter added

The software emphasis throughout these four sessions has been the UCSD P-System on both Apple and Sirius, EMAS on the mainframe and Pascal as the common language. There has been some use of packages, and other departments using the laboratory for teaching have made use of Apple DOS, CPH 86 and MS DOS, and also of Basic and Fortran.

3 Accomodation

The Microcomputer teaching laboratory has been secured for the three years to July 1984. Three years ago, a serious flood in Appleton Tower made necessary substantial renovation which has resulted in the laboratory being tailored much more to the requirements of computer teaching. It is now timely to seek tenure for three further years. In expectation of this, the Minor Works Committee has accepted ERCC proposals to convert half of the former Biology Preparation Room to a fully serviced lecture room for 25 people. This will make Level 4 better equipped for teaching as well as for running practical work. It will also make sharing of the lab between two simultaneous courses easier, though for this we will also need to instal suitable acoustic screening (estimated cost £1500).

4 Proposals for 1983/84

Last year, the major proposals considered by Computer Science and ERCC were as follows:

- a) instal local area network (to replace flexibility crate, to provide file server and print spooler, and aid course management)
- b) instal more Sirius workstations
- c) instal colour graph plotter
- d) replace colour graphics on Apples

In the event, no central money was available and, from their own resources, ERCC added 2 Sirius Nicros (with OffLoad courses in mind) and Computer Science installed 2 plotters.

5 Proposals for 1984 - 85

The Micro Lab Review Committee will be addressing itself to several issues, including replacement of the remaining Apples, the ongoing need for Siruses, and the needs of other departments now using the laboratory. This paper is concerned with a significant new development which moves us forward in the direction we believe the market will go, and also has potential to enhance the laboratory in other ways.

We propose to instal a multi-user mini using UNIX in the laboratory prior to the academic year 1984 - 85. The reasons for doing so are:

- a) Provide a UNIX teaching vehicle; needed because using the Electrical Engineering VAX for this purpose causes problems with both access and accommodation, and is placing unreasonable demands on the department. We cannot increase our teaching of UNIX and the C language until we have a secure resource of practical work.
- b) Provide general experience of representative hardware (16 bit micro-processor and Winchester disk) and software environment (UNIX) as will become increasingly installed both in the university and elsewhere.
- c) Provide access to a central UNIX facility via a directly connected terminals, as well as less satisfactorily across the network.
- d) Provide, as a secondary benefit, at least an interim answer to the problems of networking and management in the laboratory which were not resolved last year.

6 Details of UNIX Proposal

It should be noted from the outset that this will not be an experimental system; we must instal a system which already has a good track record, is supplied by a sound company and, perhaps of most importance, runs on a standard version of UNIX (that is either AT&T's System V, or Berkeley BSD 4.1 or later). This last requirement will ensure onward compatibility. If source of the chosen system is available, then the system would probably be suitable for the development and maintenance duties of our UNIX Support Group, in which case it would behove ERCC to purchase a second system for these essential (and currently unsatisfied) functions.

Several contenders have been studied recently, either by our UNIX support group or by the Edinburgh Local UNIX Users Group (EdLUUG, which includes members from both Heriot-Watt University and Ferranti Ltd). At this stage, we can report that:

- a) suitable choices exist (together with many unsuitable ones)
- b) the system is likely to have
 - Motorola 68010 or National Semiconductor 16032 microprocessor.
 - 512 K or 1M bytes RAM
 - 40 MB minimum Winchester disk
 - fast backup device
 - 16 terminal ports
 - Ethernet connection
 - EdNet connection (eg., York frontend)

- c) So far, one system with a suitable Ethernet connection has been identified, which would make possible the attachment of a group of Computer Science APNs, thereby further enriching the teaching environment.

- d) price, including the above components, a suitable UNIX licence, 8 directly connected terminals, installation and VAT would be about £35,000, but falling as competition increases

- e) relevant application software exists, though more must be identified, and a sum of £5,000 should be set aside for this.

7 Timescale

As time goes by, the choice will widen and prices will drop. The target is to have a system installed and working effectively by the end of August 1984, so that course materials can be checked out before the start of the new session. Thus the choice should be made and the order placed by mid-June. Meantime, as well as evaluating other products, ERCC should consult with other potential users of this UNIX facility to identify their requirements.

VAX-related Requests

Costs (inc VAT)

Capital Recurrent

Item 1

Memory Upgrade

Upgrade cost to switch to 64Kb memory controller

Upgrade + 2Mb DEC memory

4Mb non-DEC memory

£13,000 ~£900

£ 9,000 -

Proposed Supplier

DEC and National Semiconductor or MOSTEK or DATARAM
(Decision to be made at time of purchase)

Enhancement

Extra memory boards. This new configuration will accept up to 6Mb

Purpose of Equipment

The existing memory subsystem is very old (1978) and is extremely expensive to maintain (~£3,000 pa). ECSVAX has for some time now been in need of extra memory. During normal term time operation it pages and swaps heavily. Although DEC announced the 16Kb to 64Kb memory upgrade a year ago, it was too expensive to consider it. This new exchange package makes this upgrade more reasonable.

Item 2

Disk subsystem

3 x System Industries 9751 (Fujitsu Eagle) disks

1 x 9900 Controller

1 x SBI VAX 11/780 Interface

£36,800

~£2,300

Proposed Supplier

System Industries Europe

Enhancement

None

Purpose of Equipment

Replacement of existing System Industries disks. These are now expensive to maintain and are proving unreliable.

The new configuration, while having the same capacity as the existing system (1200Mb), because of an enforced change in backup policy forced by this switch to Winchester technology, will offer about 25% more disk capacity than the old configuration.

George Cleland

Notes on Departmental Meeting held on Friday 2nd March at 1530
in Room 5210, James Clerk Maxwell Building.

1. Policy on M. Eng. B.Eng and other new degrees

PDS drew the attention of the meeting to papers circulated with the agenda and also an earlier paper he had circulated. SM said BCS was likely to be awarded a Royal Charter for Computer Science students which might have a bearing on these issues. PDS referred to the proposed degrees of M Eng and B Eng and it was pointed out that Universities who were not offering these degrees could put their graduates at a disadvantage in the employment market. The proposed 5-year course was intended for 'high-flyers' who would then be expected to get rapid promotion within their organisations. The possibility of the Engineering Council claiming the right to licence software engineers was also mentioned.

In the discussion, some members felt the department was in danger of being pressured into undesirable or hasty action by moves from the Engineering Council. Some would be worried about the title "Engineering" for our degree. Others were more favourably inclined towards change. SM intended at a later date to propose a further possible degree placing more emphases on applications.

It was agreed that in meetings with the School of Engineering, PDS should retain the status of an observer, and endeavour to keep our options open.

PDS suggested a 1/2 course in AI for CS students in 2nd year and an AI course work exercise in 3rd year would be desirable. DJR made a proposal that we should get AI taught by the members of AI staff as part of our courses.

2. Equipment Requests

HMD asked RNP about the future of the IS1 course. RNP said he thought that the course would evolve from an introductory course to cover more sophisticated applications. It would therefore need more sophisticated equipment.

3. Appleton Tower - ERCC proposal

Dr G E Thomas, Bill Aitken and Keith Farvis from ERCC joined meeting to give the details of their UNIX proposal for Appleton Tower. They had looked at a company called Convergent Technology and Keith Farvis gave the meeting some figures which were followed by a number of questions. Keith Farvis said 8 to 16 users could use each application processor. GET added that there was still much detailed researching to be done. He wished to recover and utilise £30K due from Medical Faculty for UNIX support but CS would have to decide whether or not it was appropriate for their teaching before joint funding could be discussed. He would have more information by the meeting on 22nd March. He thought this could give APMs an opening to commercial markets and agreed to keep in touch with HMD and RNP.

Notes on Departmental Meeting held on Friday 4th May 1984 at 3.30 p.m.
in Room 5210, James Clerk Maxwell Building.

Action

Chairman's Remarks

The Chairman reported that the Dean's Committee had allowed us a temporary Computing Officer to work on the real time course. It would be necessary to do some advance preparation for the course which would be starting the year after next.

(1.) Equipment Bids for 1984/85

(a) The bids would have to be ready within two weeks. A meeting will be held at 11 a.m. on Monday 14th May to put these in priority order.

The following were asked to develop bids for this meeting as follows, based, where relevant, on the previous bid to the Computing Equipment Panel.

- | | | |
|-------|--|---------------|
| (i) | Terminals for CS1 (GLC to discuss with RM/MRJ) | <u>GLC/RM</u> |
| (ii) | Filestore, Print Server and 4 APMs for Appleton Tower. | <u>RNP</u> |
| (iii) | Gateway | <u>JHB</u> |
| (iv) | VAX Memory and Disk Sub System | <u>GLC</u> |
| (v) | Next Block of APMs | <u>SM/RC</u> |

Additional requests

- | | | |
|--------|---|---------------|
| (vi) | Robots for Teaching CS2 (two required) | <u>RC/JHB</u> |
| (viii) | Laser Printers | <u>RNP</u> |
| | SM pressed for 3 laser printers - one in copy room. SM should make a case for 2 laser printers. | <u>SM</u> |

(ix) Binding Machine

PDS told meeting the binder in the copy room had been repaired and was now on a maintenance contract. GLC would investigate costs of both a replacement binder and a heat sealing machine.

GLC

(x) Work Stations

PDS told the meeting the Clan Systems would not be able to provide workstations due to difficulties involved with the University licensing procedures. It would be necessary to ensure that the department could make the work stations.

APM Cttee/SM

(xi) APMs - 330 Megabyte File Store + 1 other one

APM group should look at the special requirements for the file server. FK suggested it should be done as a bulk order. HMD said that there would be a problem with the software for ISI. The allocation of APMs to public areas and the micro lab was discussed and PDS thought we should be prepared to allocate 4 or 5 to the A.T. Printers and disks and special interfaces should be designed and installed for October and FK was asked if RS232 would be made for October. He said a prototype would be tested within the next two weeks and PDS asked the APM Group to see if resources could be produced to get ISI going.

APM Cttee/SM

(b) Arising out of item 1(a)

- | | | |
|------|---|------------|
| (i) | It was agreed that PDS should approach CICL for suggestions on a possible producer for the APMs. | <u>PDS</u> |
| (ii) | Vacation Students- PDS reminded staff to put in their bids for vacation students as soon as possible. | |

(2.) Progress Report on B.Eng and M.Eng

ASW had substituted for PDS at a meeting to discuss these degrees. It was felt that CS should not put this in just now for students who would come in 1985. He reported that CS and Electronics are in the list although the course has still to be formulated. We could use the course which was provided by the Engineering Departments and start our own B.Eng. Although a formal letter has still to be sent to the department stating this, both joint and CS degrees will be given accreditation for 5 years. CS/E was the only degree which slightly committed us. As the Board of Studies would be dealing with this in the future there was time for us to sort out our ideas. Professor Collins of EE has said that an extra 50K would be required for every B.Eng course (4 or 5 extra degrees excluding cost to CS1) and it was obvious that additional resources would need to be found. The meeting discussed ASW's report and it was agreed that the department would be prepared to say that we do see that some of our students should take a B.Eng degree which would include some course labelled EAI and EA2. This was agreed.

PDS/ALL

3. Matters arising from previous meeting.

ERCC Proposal for Convergent Technology machine in Appleton Tower.

Since the last departmental meeting, CS have disengaged themselves from the proposal.

Vacant Lectureships

The meeting agreed that the interview committee should consist of SM, PDS, HMD, DJR, RM, Dean of Science and Dr J Hannah (EE). There were two permanent lectureships to be filled. Money for temporary posts to replace RMB, RM and GDP was expected shortly, as well as one temporary computing officer.

Time table Reorganising Committee

RC said that the Faculty of Science timetable review committee were considering the possibility of easing timetable problems by scheduling some lectures (subjects not defined) in the 1-2 pm slot. The meeting raised no particular objection.

Staff to teach 1st year.

AB suggested the department import more staff from outside the department to assist with teaching of 1st year. PDS asked CSI and ISI coordinators to look into this.

RM/RNP



Department of Computer Science

Memorandum

To: All Staff
Postgraduates
Student Workrooms

From: Peter Schofield

Date: 7th June, 1984

AGENDA for DEPARTMENTAL MEETING

to be held on

Friday 8th June 1984

Time: 11.15 a.m.
Venue: Room 5210

- | | <u>Raised by</u> |
|--|------------------|
| 1. Chairman's Business | PDS |
| (a) Progress with Staffing | |
| (b) Equipment Bids | |
| (c) Accommodation in JCMB | |
| (d) Proposed Laboratory for Foundations of Computer Science.
(Paper Attached) | |
| 2. Matters Arising from May Meeting. | |
| 3. News from Two Committees | RC |
| (a) Revision of Timetable Committee | |
| (b) EMAS Resources | |
| 4. Real-Time Experiments in Computer Science 2 | RC/PDS |
| (a) Proposed Pilot Course in 1984/85 | |
| (b) Accommodation Issues | |
| 5. Allocation of Teaching Duties for 1984/85 | PDS |
| 6. Any other Business (if any) | |

Item 1(d):

[rm.lab]4.lay
2 June 84

Laboratory for the Foundations of Computer Science

Discussion Document

G. Plotkin, R. Milner, M. Hennessy, R. Burstall

AIM

We propose to establish a well-founded laboratory for the work of the Computation Theory group in the Edinburgh Computer Science Department, to enable it to proceed efficiently and to expand under the Alvey program. Some of the themes of the research will be as follows:

Further development of our basic theoretical research
eg Concurrency, Institutions, Data types, Programming logics;

Study of formal systems which embody these theories
eg CCS, Clear, ML, LCF;

Promulgation of the products of these ideas and systems into industrial and academic practice
eg an ML environment for VAX and for APM;

Development of some educational technology and packages for Computer Science (for both academic and industrial use)
eg an ML instruction kit, a learn-to-prove-it package, a mechanised teaching assistant for communicating systems.

Our main purpose will be to develop appropriate computation theory, and the criteria guiding this research will be robustness, lucidity, coherence and applicability. Supporting purposes will be: (1) interaction between academia and industry through application studies and experiments; (2) the enlargement, in the industrial and academic community, of knowledge essential for grasping and applying soundly-based methodologies. The case for a laboratory along these lines, and with these priorities among its purposes, is argued in the final section of this paper; the next two sections outline the basic required resources and the envisaged structure.

NATURE OF REQUIRED RESOURCES

We already have a large and widely recognised research effort in the foundations of computer science; this effort deserves to grow and will attract the funds to do so. We are confident that research ideas and projects will be forthcoming, but we lack resources and a coherent framework within which they can flourish. We urgently need

ACCOMMODATION
COMPUTING POWER
PROGRAMMING SUPPORT
ADMINISTRATIVE SUPPORT

To achieve this we propose to set up a Laboratory for the Foundations of Computer Science, within the Department of Computer Science. This will promote a sense of shared purpose and endeavour among the researchers; it will also contribute to the academic development of the department. When we are assured of sufficient resources of the above nature, specific projects may be undertaken without continual administrative strain and consequent inefficiency.

Steps are currently being taken to discover the possibilities for space to accommodate the Laboratory within or adjoining the James Clerk Maxwell Building, on the scale outlined in the next section. We envisage a close relationship with the parent Computer Science department, and for this it will be important to occupy space near to the department - adjacent if possible. The cost to the University of the required building extensions and modifications is being assessed at the same time.

THE ENVISAGED STRUCTURE

The current effort engaged on foundational research, in terms of people and machines, is approximately as follows:

5 Academics
10 Research fellows
1 Visiting Professor
1 Computer manager
1 Secretary

1 VAX750
5 PERQs
3 APM's on order
Access to a dying DEC10

Associated with the group are about 12 postgraduate PhD students, and we have industrial contacts with BP, ICL, STL, DEC, Software Sciences, Bell Labs. These contacts are all significant; for some years they have taken the form of joint research, workshops and educational courses as well as funding.

Besides the above, further projects are already under discussion with the Alvey Directorate and with Industry. These will involve more people and more equipment; bearing them in mind we may reasonably hope to expand by the following:

2 Academics
6 Research Fellows
1 Visiting Academic
3 Visitors from Industry
3 Programming Support and Industrial Liaison Staff
1 Technician
1 Secretary
1 Manager
Additional Postgraduates
Substantial Computing Resources

Considering the required resources listed in the last section as well as the proposed man-power and equipment, it is clearly of early importance to determine the proportion of funding which must be assured in order to set up the Laboratory, leaving further funding to be sought for specific projects. This must be discussed with the Alvey directorate.

ARGUMENT FOR THE LABORATORY

Alvey proposes the increased awareness, exploitation and development of formal methods in Computer Systems engineering, both hardware and software. The UK is well placed to achieve these ends, as the groundwork for such an advance has been laid by theoretical researchers in UK perhaps more than anywhere else in the world (and certainly so in proportion to the size of its research community).

In parallel with this advance, it is essential that UK maintain its leading position in theoretical research. For this purpose, we wish to argue that a centre is needed whose primary aim is to advance computation theory, now that the theory is beginning to find application and to influence design to an extent which few would have predicted even five years ago. Such a centre will certainly flourish and bear fruit in the very positive climate which now exists, provided by interplay between the intrinsic challenge of computer science as an academic subject on the one hand, and on the other hand by the demands of industry for application.

Several theories have emerged in Edinburgh from this double stimulus, during the past decade. One example is the theory of specifications embodied in CLEAR, which adapts the mathematical theory of categories to the structured presentation of specified software systems; at the concrete end this has led to a language for executable specifications called HOPE, many of whose features are incorporated in the programming language ML which is now being standardised with Alvey support. Another emergent theory is the calculus of communicating systems CCS, arising from extension of the semantic theory of programming languages to encompass heterarchical distributed computing systems. CCS is finding application already in industry, particularly in the description of communication protocols; a language based upon CCS is currently proposed for an international standard (for ISO protocol service description). Both these theories are therefore applicable, but remain far from complete; both were originally inspired by mathematical and logical considerations, but new insights continue to come not only from these sources but from application too.

Such successful advances have been achieved by giving first place to the intrinsic intellectual coherence; this experience strongly points to the importance of a centre which takes theoretical development as its primary aim.

3. News from Two Committees

(a) Revision of Timetable

As might be predicted, the result was that it was too difficult to make any major changes, given the enormous variation in the number of lectures and lab hours of nominally equally-weighted courses. But it was admitted that CS had had a poor deal, and that it might be possible to fix it up as a special case. Could we think out what we would like ideally for CS1 and 2, and specify clearly what we find objectionable about the present arrangement?

(b) EMAS Resources

Again, as predicted, everyone wants more, but may well get less, because of increasing use outside the Faculty. On balance the "Funds" scheme was thought to provide a reasonable mechanism for rationing, but there were various ways in which its administration could be improved.

Warning: everyone is gunning for CS1, which is seen as being wildly extravagant with resources. I think, on average, it probably isn't, but it's not easy to prove this with the statistics available.

Rosemary Candlin

4. Real-Time Experiments in Computer Science 2

(a) Proposed Pilot Course in 1984/85

It was agreed at an earlier staff meeting that we should not commit ourselves to running the new real-time computing course in 1984/85, but that if preparations went well, we might take a limited number of students into a pilot version of the course, incorporating some of the new experiments and some of the existing material in Computer Science 2B. At the last Deans' Committee, I was authorised to recruit a Temporary Assistant Computing Officer and a Temporary Technician; this has now been done. On Tuesday, my bids for equipment will be considered. If these are successful, I propose to accept a small number of students into a Pilot course as indicated above.

(b) Accommodation Issues

The equipment used for the real-time experiments will consist of

- (1) some APM's and (2) dedicated devices to be driven. Out of laboratory hours, it would be better if group 2 is locked away, but of course the APM's should be available for general service use. A possible solution seems to be to lock up the dark room off the North machine hall and house the dedicated devices there at all times, wheeling the relevant APM's in for laboratory periods and back into the machine halls at other times. There may be one experiment which involves water flow. A possible site for this is our preparation room adjacent

It would be short-sighted indeed to suppose that our theories are so mature that it only remains to erect appropriate methodologies upon them; the latter is a formidable task in itself of course, but we argue that it must proceed hand-in-hand with theoretical advance. To this end, in keeping with the goals of Alvey, two supporting aims are also essential for the centre: (1) to interact with industrial and applied research, both by proposing techniques based upon the growing theory and by taking account of application studies when seeking to develop the theory further; (2) to extend the understanding of computation theory to a wider community, using the medium of the academic department in which the centre exists. Thus, not only are these activities central to the Alvey purpose of developing techniques based upon known theory; they are also part of the very means by which useful theories will emerge for application in the future.

The theoretical group at Edinburgh has pursued these aims, both primary and supporting, for the last decade. Its theoretical research is widely known and accepted; its postdoctoral researchers and doctoral students have carried its ideas into industry and other universities; its prototype methodologies have been explored, and are increasingly so, in collaboration with industry. The Edinburgh Computer Science department appears on these grounds to be uniquely qualified for support to continue and amplify these activities. It can do this efficiently only through the foundation of a laboratory with recognised status both within its parent Department and outside, and with base resources - space, administrative support, equipment and posts - explicitly devoted to its aims.

to the lecture theatres (2904).

Would this be acceptable for 1984/85?

The proposed modification to Block O/P to place a partition separating the west end of Block O/P from the corridor has been agreed in principle by the Minor Works Committee, but there seems to be some uncertainty as to when the money will be available for spending. I was asked to say whether the real-time course would be going ahead in 1984/85 and I have said there will be a Pilot version only. In these circumstances, I think it is unlikely that the money will be forthcoming for about a year.

Peter Schofield

5. Allocation of Teaching Duties

As I shall explain under item 1(a), there is some delay in the confirmation of money for replacements for Rod Burstall, Robin Milner and Gordon Plotkin under BP and SERC schemes, chiefly because of "ALVEY" ramifications. There is therefore still uncertainty as to just who will be available for teaching but I am confident that there will be further appointments to make. Nevertheless we cannot delay much longer in the allocation of teaching duties for the next year. I propose that I circulate a document on which individuals will indicate their duties this past year and their desires for change in the coming year.

I will summarise the results and propose that we have our usual round-table meeting. How about (a) p.m. on Friday 15th June, (b) a.m. on Monday 18th June and (c) Monday 25th June?

Peter Schofield

Notes on Departmental Meeting held on Friday 8th June 1984
at 11.15 am in Room 5210, James Clerk Maxwell Building.

Action

1. Chairman's Business

(a) Progress with Staffing

PDS said G Milne had accepted a lectureship post. Another post had been offered to one of the candidates who was likely to accept. David Baines has been made a temporary computing officer to work on realtime. Marion Dyer, the technician, has been given another year's extension.

Interviews for joint lectureship in Epistemics would take place shortly. The person appointed would be housed in Computer Science for at least half of his time. Subject to resolving certain problems there could be three vacancies as a result of RMB, RM and GDP's absence on the BP contract.

(b) Equipment Bids

A bid for £218,000 was made and it was anticipated that the department would get something less than half this amount. PDS has informed Equipment Committee that he would be making an application to borrow money for the new professor. GLC's proposal for VAX and Disc Sub System could be paid for by borrowing ahead.

(c) Accommodation

PDS reported that Chairman of JCMB Users Committee expected 12 extra rooms to be available, most of which would be offered to CS. Rooms in corridor 16 would be looked at to see if they could be utilised.

(d) Proposed Laboratory for Foundations of Computer Science

Rod Burstall gave the meeting an account of the project outlined in his paper attached to the Agenda. He told the meeting that Rod Witty of Alvey had indicated that Alvey wished to see some sort of Software Engineering Institute in the UK and had indicated their support for CS's proposal. He said that funding would come mainly from individual grants and sub-structure money but agreed that the

Alvey grant did not carry any overheads with it. In order to meet Alvey's requirements projects would be done on a collaborative basis. Any additional staff would be appointed within the Department and people who had been awarded Research Fellowships would continue to carry out their work for the department within the Laboratory. Any new appointees, while located in the Laboratory, would also work for the department. PDS suggested that it should be stated that the people who would be working within the Laboratory should continue as members of the department.

The main reservations on the proposal came from the prospect that members of CS who worked in a location (the Laboratory building) would lose touch with the department and the two groups would become separated to the detriment of both. RMB had this very much in mind and said that he would make every effort to ensure that both the Laboratory people and the department worked in close cooperation with each other. PDS agreed that any visitors who came to the Laboratory should be made available to the department. SM stated that this proposal was a very good one for the department to consider. The proposal was then approved by the meeting.

2. Matters arising from May Meeting

It1(b)(b)(i)

CICL had produced a possible manufacturer for the APMs and he would come on Monday. Nick Shelness of Britoil would also come to see the APMs.

Item 1(x)

HMD wished to point out that the wording should read "Clan Systems would not be able to provide workstations due to licensing and other difficulties". PDS agreed to the amendment but pointed out that these were Notes and not Minutes.

3. News from Two Committees

(a) Time Table Committee

RC Reported that David Vass's proposal to change the entire timetable was not accepted by all the departments. A number were satisfied with the existing arrangements. It was agreed that CS had a case and the following suggestions were made:

(a) Use of lunch hour from 1 to 2 pm with students

lunch hour from 12 - 1pm

(b) Use of Wednesday afternoons (Optional Laboratory)

PDS agreed that Course Coordinators for CS1, CS2 and IS1 should meet to discuss this between themselves.

RM/RC/RNP

(b) Report from EMAS Committee

Statistical records had shown the CS students used more processor time to do the same exercise as students taught in other departments. It was thought that the method of compilation of statistics should be looked at and JHB's suggestion that he gather some statistics to present to the committee in future was agreed by PDS. HMD said the department need to produce some documentation to dispel the bad image which other departments have of CS1 students and PDS agreed to write this document when information had been obtained. SM and RNP said that a better compiler could help to reduce the student load and it was agreed that RNP should be involved in the evaluation of ERCC's new compiler. PDS would write to GET to ask if this could be arranged.

PDS/JHB/RNP

4. Real-time in CS2

(a) Proposed Pilot Course in 1984/85

It had been agreed that a small number of students, including CS2B, would be taken in and a pilot version of the course would be given. Dean's Committee have funded some staff for this purpose. The question of equipment would be decided later.

(b) Accommodation Issues

The partitioning of Block O/P would be left until we would run the full-time Real Time course. A discussion about the location of the equipment followed and PDS proposed that the Dark Room should be made available for the Real Time course this year. SM asked that people should work in pairs in this location. PDS would arrange to have locks fitted to the dark room door.

PDS

5. Allocation of Teaching Duties for 1984/85

Documents would be circulated by PDS asking people to

state their views on what they have done and wish to do.
This would be made available for a meeting on Monday
25th June at 9 a.m.

6. Any Other Business

As there was no other business the meeting close.



Department of Computer Science

Memorandum

To All Staff
Postgraduates

From Peter Schofield

Date 5th July, 1984

AGENDA for DEPARTMENTAL MEETING

to be held on

FRIDAY 6TH JULY

Time: 11.00 a.m.

Venue: Room 5210

1. Chairman's Business
 - (a) Progress with Staffing
 - (b) Equipment grant 1984/85
 - (c) Any Other
2. Generation of New Blood and I.T. bids for 1985/86.
3. Conditions for export of departmental software
4. Matters arising from previous meetings.

Deadline 1/9/84

mail
DJR

CCL

Notes for Departmental Meeting to be held on Friday 6th July 1984

Item 2 : New Blood and I.T. Posts 1985/86

The deadline for submitting these bids is not yet known. I should however like to set up appropriate groups to work on likely bids.

Peter Schofield

Item 3 : Export of Software

We have traditionally laid down certain conditions when releasing departmental software to other academic establishments. An updated version which George Cleland has been working on is attached. In addition, some recent VAX mail on the subject is also attached for discussion.

Peter Schofield

* * * * *

University of Edinburgh
Department of Computer Science

The software described below was developed in the Department of Computer Science in Edinburgh University. It is available free of charge to establishments who sign the undertaking below.

While the University will accept no responsibility for the correctness or suitability of the product for any use whatsoever, we are keen to obtain responses from users and reports of any bugs. These will be examined and, where appropriate, used in future releases of the product.

Where sources are supplied, they may not be modified without the explicit permission of this department. Any modified systems resulting from such work will remain the property of Edinburgh University.

This software may be used on any system within the institution to which it is supplied as long as no direct commercial gain is realised by this. (e.g. using part or all of the product in a further product for which real money is paid). No further distribution may be carried out without the explicit agreement of this University.

Product name: _____

Departmental Contact: _____

telephone: _____

I have read the conditions above and agree to abide by them. I accept that responsibility for the use and suitability of the product requested remains with this establishment and I absolve Edinburgh University from any explicit or implied liability for circumstances resulting from its use.

I further undertake that this software will be used only within this establishment and that it will not be passed on to a third party without permission from Edinburgh University.

Name: _____

Signature: _____ Date: _____

Establishment: _____

Address: _____

Telephone: _____

To: PDS

From: AJS 21-JUN-1984 10:44
To: HMD
Subj: CS4 exporting software

Several members of CS4 would like to take with them into the real world some software from the department which they have been accustomed to.

The following is a list of the packages that we would like to take with us.

BECOME, CLEAN, FILES, LAYOUT, USERS, NOTIFY, EDWIN, ML, VECCE and IE.

IMP would also be nice, but I believe that this can only go to educational institutions and Lattice would not be keen, understandably, for it to be exported to commercial sites.

Please could you give some indication as to the department's view on this.

Alastair, for various CS4

From: GDMR 21-JUN-1984 12:19
To: AJS, PDS, GLC, GDMR, RMM
Subj: CS4 export drive

In general we have no particular objection to CS4 taking away any of the code we have written -- any contribution to the spread of useable systems can't be bad. However we would ask that anyone who does should abide by (at least) the following conditions:

- a) that the software should not be used for direct commercial gain without our prior approval (which will inevitably involve some arrangement on profit-sharing);
- b) that the software should not be passed on to any third party without our prior agreement;
- c) in the case of source code, that each file should contain a heading stating (i) by whom the code was written, and where; (ii) to whom the code was given; (iii) a statement of all these conditions; and that a listing of each file taken (including the heading) should be deposited with one of us (note that most of the source files do not, at present, contain such a heading -- we expect the person taking them to add it himself);
- d) any more-or-less direct translation of the code into any other language should also be subject to these conditions; and
- e) the person taking the software is responsible for making it work to his satisfaction.

The person taking the software will, of course, have to make his own arrangements regarding compilation of the utilities taken.

The recipient list of the mail AJS sent (PDS, GLC, AJS, RMM, GDMR) is, of course, incomplete. It should also have included HMD, KEVIN, JGH and NJR. They will undoubtedly have their own opinions regarding the taking of their code.....

GDMR & RMM

P. S. Speaking for JGH as he is away, EDWIN is NOT available for free! (RMM)

From: [redacted] 21 OCT 1964 14 20
To: GLC, HMD, RMM, GDMR, PDS, AJS
Subj: Software Export

Perhaps it is worth making clear that the questions AJS is asking require a Departmental response, which will be forthcoming after the examinations are over. In general, the Department's attitude has been along the lines indicated by GDMR and RMM, except that in specific cases, eg VECCE, the policy is one of open export, including commercial sites. Individuals are not free to distribute software developed on Departmental machines independently of Departmental policy.

MINUTES OF DEPARTMENTAL MEETING HELD ON FRIDAY, 6 JULY
1984 AT 11.00 A.M. IN ROOM 5210, JAMES CLERK MAXWELL
BUILDING

Action

1. Chairman's Business

(a) Progress with Staffing

PDS reported that Gordon Brebner had been reappointed as a Temporary Lecturer and Kyriakos Kalorkoti had been appointed as a Temporary Lecturer. David McCarty had been appointed IT Lecturer jointly with our Department and Epistemics.

PDS also reported that Clan Systems is progressing well and, consequently, HMD and IBH wish to reduce their commitments in the Dept. to zero time for HMD and by 50% for IBH.

PDS informed the meeting that further particulars concerning the Professorship post in the Dept. are currently being circulated to other Depts. here and abroad.

(b) Equipment grant 1984/85

PDS detailed some of the equipment expenditure: 100K for special items, 28K base allocation, 10K real time computing (non-APM equipment), 4.5K for another laser printer, 88K APM-related equipment (out of which we have to provide the APMs for the real time course), filestore for Appleton Tower, gateway machine, etc. SM will consider such expenditure in the reconvened APM Committee.

SM

(c) Any other

The efficiency of CS3 tutorials had been queried by 2 people. This item had been omitted from the Agenda, but AB had wished it to be raised. The meeting took note of this query.

2. Generation of New Blood and I.T. bids for 85/86

PDS reported that the University is currently thinking about its procedures concerning further bids. The deadline is unlikely to be before 1 September. Having done reasonably well on the first round but not so well on the second, with our previous bids, the meeting discussed the areas we should bid for this time. It was agreed that the VLSI design post should go in again, but rewritten to include some AI buzzwords.

HMD suggested having a special subcommittee to take decisions on research areas. It would then delegate individuals to prepare the documents. DJR will convene the group he sees fit for the VLSI side. PDS will try and get the Professors together to form views on this matter.

PDS/DJR

Department of Computer Science

Memorandum

From PDS

To jhb

Date 19-OCT-1984

OUTSIDE PAID EMPLOYMENT - INSURANCE COVER

On 4th August, I circulated VAX mail stating that the Finance Officer was reviewing the "University's exposure to potential claims being made by Third Parties, arising out of work which we undertake for and advice which we give to Third Parties". I was then completing a questionnaire concerning work or advice given by this department on behalf of the University.

Separately from this, I am now asked by the Principal to draw your attention to the question of legal liability for work carried out by members of staff as individuals. The regulations concerning outside employment are shown in the booklet 'Information for Members of the Staff', page 62-63. General conditions are given on page 62 (copy attached). I have been sent an extract from the revised booklet (to be published this month) concerning insurance cover, legal liability and recommended disclaimer. I also enclose a copy of this. The Principal comments "In any event, I am advised that, in law, this disclaimer has only limited value".

I am required to collect certain information on each consultancy or other commitment that you may currently hold. For simplicity, I enclose a form for you to send me in connection with each consultancy. Please return this as soon as possible and in any case by the end of October. It is clear that the University is groping to get its act together, so don't feel guilty and delay response just because you may feel your answer to me is unsatisfactory! I have written off the clarify what constitutes "approval by the University" (draft note on insurance cover). I assume that approval by Head of Department will suffice.

Please let me know separately if there are any possible questions of legal liability arising from work carried out by any of your RA's.

P.D. Schofield

Outside Employment (under review)

It is a condition of appointment of all full-time members of the teaching staff that they undertake no paid employment outwith their University appointments other than employment arising naturally from the teacher's University duties (such as external examiner-ships, occasional lectureships, and reviewing and other forms of literary or broadcasting work) except with the express approval of the Head of the Department concerned, or, in the case of Heads of Departments, except with the express approval of the Principal of the University. The University Court reserves the right to require a teacher to discontinue any paid employment outwith his University appointment, should its extent be found to be excessive or detrimental to the due performance of his University duties.

p62.

(INSURANCE COVER AND LEGAL LIABILITY)

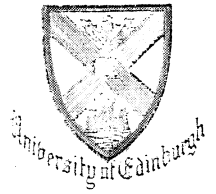
The University has effected a policy which provides cover in the event of a claim being made against the University following professional negligence. The amount of cover may require to be varied from time to time on the advice of the University's Insurance Brokers. It is therefore important that the Finance Section of the Secretary's Office should know of all commitments undertaken by University Staff which might attract insurance claims of this nature. Staff are advised that the University does not provide them with insurance cover against liability which may arise from activities which are not approved by the University.

In the interest of themselves and the University all staff of the University are asked to ensure that the following DISCLAIMER OF LIABILITY clause appears on all relevant literature and that no written or oral contract, agreement, arrangement or undertaking is made unless this clause forms part thereof.

(UNIVERSITY OF EDINBURGH)

DISCLAIMER OF LIABILITY

Neither the University of Edinburgh nor any member of its staff will be liable for any loss or damage, whether caused by negligence or otherwise, arising out of the work done for, or the services rendered to, any person by the University or any such member, but this clause shall not restrict liability for breach of duty arising in the course of any business or from the occupation of any premises used for business purposes of the occupier in respect of death or personal injury if the contract is a contract to which the Unfair Contract Terms Act 1977 applies.



Department of Computer Science

Memorandum

To All Staff
Postgraduates
CS2, 3 & 4 Noticeboards

From P.D. Schofield

Date 1st November, 1984

AGENDA for DEPARTMENTAL MEETING

to be held on

FRIDAY 2nd NOVEMBER

Time: 3.30 p.m.

Venue: Room 5210

1. Chairman's Business
2. GEC Series 63/30 Processor (paper attached).
3. Departmental bulk printing requirements (paper attached).
4. Board of Studies. What proposals for changes in 1985/86?
5. Management of departmental computing service.
6. Matters arising from previous meetings.
7. Conditions of Alvey contracts.
8. Any other business.

Notes for Departmental Meeting to be held on Friday 2nd November 1984

Item 2 : GEC Series 63/30 Processor

I have just heard that there is a possible proposal from ERCC to request a GEC series 63/30 processor. It would be obtained under the "Butcher Report" proposals and GEC might be prevailed upon to give it away cheap. The expected cost to the university: £50K capital and about £15K per annum running cost. The proposal envisages the machine being used for undergraduate teaching in the School of IT. I am told the processor has 1.5 times the power of the VAX 11/780, it would run the UNIX operating system.

- Questions:
- a) Do we wish to bid for a share in this machine and presumably pay the equivalent share of the cost?
 - b) In any case ERCC would be keen to house it in our machine halls. Paper from Keith Farvis attached.

Peter Schofield

Item 3 : Departmental bulk printing requirements

This item is for advance notice, I do not intend the departmental meeting to get involved in detailed technical discussions but would welcome any quick input from the meeting. If necessary, the time and date of a technical discussion will be arranged.

Peter Schofield

Item 4 : Board of Studies

Curriculum changes for 1985/86, if they are of the form that appears in the calendar, should go to the preliminary meeting of the Board of Studies in Physical Science later this term. Deadline is November 26th. ASW will tell us a bit about the development in the School of Engineering.

Peter Schofield

Item 5 : Management of departmental computing resources

With the departure today of Hamish Dewar, it is appropriate to review the structure of our software support group and the APM review committee.

It is becoming increasingly clear that we should separate out the service component of our departmental computing facilities from testing and development work. I have asked Fred King to investigate what equipment needs to be set aside to enable hardware testing and development to continue without impacting upon the service, and to take charge of this side of the work. I have asked John Butler and George Cleland to make proposals for organising software development and also to arrange mechanisms for ensuring that new developments are tested and introduced with minimum prejudice to the service. The whole question of future policy about the kind of service we require also needs review. It is probably time that something like Rod Burstall's committee of two years ago were resurrected. John and George are working on a paper on this topic which may be available in time for the meeting.

Peter Schofield

Item 7 : Conditions of Alvey contracts

Members of lecturing and CO staff will have received a memo from me about the conditions applicable to Alvey contracts. Any questions have yet to be notified to me. Last chance now.

Peter Schofield

Executive

Papers for Departmental Meeting to be held on Friday 2nd November 1984

Item 2 : GEC Series 63/30 Processor

(Covering letter from Keith Farvis)

Dear Peter,

The information you require for the m/c hall requirements is attached. The space is for 3 GEC 63 series machines.

Machine 1 - as on attached sheet

Machine 2 - as for machine 1 but with added 4060 front-end processor.

Machine 3 - as for machine 2 but with 1 extra disk.

Front End Processor

Size: 26 in wide, 30 in deep, 54 in high.

Please do not hesitate to ask for more details.

Keith Farvis
1st November, 1984

Item 2

1 Configuration

Series 63/30 Processor
8 Mbytes memory
Floating Point Unit
Local System Multiplexor (LSM)
Asynchronous Communications Device Controller (ACDC) with 16 V24 ports
Normal Interface Secondary Processor (NISP)
3 x 275 Mbyte exchangeable disc drives
York Box for X25 communications (using 1 ACDC port)
460/600 lpm upper/lower case lineprinter
System console
45 ips 800/1600 bpi magnetic tape drive

2. Size

	Width x Depth x Height		
	in	in	in
Three cabinets	26	30	46
Three disc drives	23	36	36
Line printer	30	36	44
Magnetic tape drive	26	30	54
York box	?		

3 Power Supply

Three 30 amp miniature breakers and two 15 amp miniature breakers are required with a single isolator switch. The continuous consumption is 7KVA and a 10 KVA supply will suffice. The high capacity breakers are required for switch on surges and during running-up discs. The supply must be on one phase.

4 Environmental Conditions

Temperature range 16 to 32C (Max Gradient 6.6C per hour)
Relative Humidity 20 to 80 percent (without condensation)

Seven Kwatts need to be dissipated, plus any heat produced by other equipment. In general, some form of cooling is required. Filtration may be required if the machine is in a dirty environment.

Departmental Bulk Printing Requirements (Item 3)

The Dataproduct 600 line per minute (LPM) printer in the machine halls is now 3 years old and should be replaced as soon as possible. Below are the three main contenders I am aware of at the moment. The main advantages and disadvantages of each type of printer are outlined. There are many other issues to consider but this is only intended as a basis for further discussion. This document does not address our need for high quality printers. In this field, as always, it is better to wait until next year.

Dataproduct B600 (600 lpm) band printer.

This printer is almost exactly equivalent to the old printer. It uses an old (mature?) technology which will ensure that it will give us the reliability we got from the old dataproducts. It costs however about as much to maintain as the old one (although the cost quoted here is probably unrealistically high as this is DEC's quote - others would be cheaper)

Final Cost (inc VAT, installation, delivery, 3 month warranty)	£6773.50
Maintenance (per annum - through DEC, other may be cheaper)	£1440.00

C. Itoh CI 600 shuttle matrix printer

This is based on the same technology as the Printonix printer that we have but represents the next generation. It will print conventional data processing quality text at 600 LPM. High quality, which was used for this document runs at about 200 LPM. It can print **bold text** and *slanting text*. It can do 200 dots/inch graphics, but this will impose a heavy load on the host system and be extremely slow. This document was printed on the 300 LPM version of this device which we have on loan.

Cost (including VAT, installation, delivery and 6 months warranty)	£5475.50
Maintenance would be (per annum - through Newbury, Livingston)	£600.00

Hewlett Packard 2686A LaserJet Printer.

This is based on the Cannon print mechanism that we already have. Availability is likely to be early next year. Its capabilities are probably more limited than the C. Itoh as it not a bit mapped device, but it does have a modest range of portrait and landscape fonts available with some limited (block) graphics capability. I have a manual on this available for loan. It will not be compatible with our existing laser printer, although it will probably be a reasonable replacement for our existing Spinwriter and Sanders devices. Costs per page are likely to be about twice those of impact devices above as there are toner cartridges and 'real' A4 paper involved. The maintenance cost is unknown at the moment but it will probably carry a penalty if we exceed 3000 page a month. This is 1.5 boxes of lineprinter paper which is not very much, so this device is probably not suitable as a candidate for replacement of our bulk line printers.

Cost (including VAT, delivery, installation and 3 months warranty)	£2755.68
Maintenance costs unknown at present.	

George Cleland 1-Nov-1984

MINUTES OF DEPARTMENTAL MEETING held on FRIDAY 2ND NOVEMBER 1984
in ROOM 5210 at 3.30 p.m.

1. Chairman's Business

PDS reminded the meeting that the period of service as Head of Department for which he had volunteered had expired in October but, that the administration had then sent him a letter saying he was appointed until the end of March. The Department should give some thought to the future after that.

2. GEC Series 63/60 Processor
Item 2 attached to the Agenda

GLC told meeting that Rutherford were unable to support these machine and another location was needed. It was agreed that the department should accept the machines provided that

- (1) there would be no involvement in extra costs
- (2) GLC confirmed that the space was available.

PDS would write to GET

Action PDS

3. Departmental Bulk Printing Requirements
Item 3 attached to the Agenda

A number were in favour of replacing the line-printer and GLC agreed. PDS suggested Afgo-Gevaert printers could be looked at.

Action GLC

4. Board of Studies - What proposals for changes in 1985/86?
Item 4 attached to the Agenda

The deadline for proposals had been reached. The first students would start in 1985 and major changes would follow in 1986. Meeting discussed various proposals and the meeting agreed that ASW should produce a proposal for the Board of Studies.

Action ASW

The AI involvement was discussed and PDS agreed to investigate the content of the I T degree and the opportunity for a joint CS/AI I T2 post. ASW would talk to EE about timetabling.

Action PDS/ASW

RNP wished to withdraw proposed time for IS1 tutorials and ASW asked for specification for CS/Management Science degree to be altered to allow students to take more CS if they wished. ASW's proposal was agreed.

Action ASW

5. Management of Deptl. Computing Service
Item 5 attached to the Agenda

(1) A new future policy committee was proposed to replace RMB's previous one, which rendered its final report a couple of years ago. GLC to be secretary of new committee. It would make suggestions to the Departmental Meeting and circulate relevant papers.

(2) GLC should have service responsibility for VAX, JHB for the APM; some people were worried about the implications of the word "Manager".

PDS would have further discussions with JHB, GLC AND FK on this. JHB would give PDS an outline of the powers he felt necessary to operate the service,

Action PDS/JHB/GLC/FK

6. Matters arising from previous meetings
Item 2 of Minutes of Meeting held on 6th July.

4 CS bids and 1 New Blood bid jointly with AI had gone forward.

7. Conditions of Alvey Contracts
Item 7 attached to the Agenda

PDS proposed that Bob Bent from the Finance Committee would be a suitable choice to negotiate the contracts. Meeting agreed.

Action PDS

8. Any Other Business

Letter from the Dean

PDS had a letter from the Dean asking if CS had sufficient space to increase their student numbers. The following comments were made:

- (1) Lecture Theatres - shortage for 3rd year.
- (2) Shortage of space in Console Rooms
- (3) CS1 had approached the limit of A.T.
- (4) CS2 almost filled Lecture Theatre C.
- (5) Space for extra staff needed to support the teaching.
- (6) Staff/Student ratio was still too low.
- (7) Increases in Engineering would add to CS load.

Action PDS

Agreement with Clan Systems

PDS had agreed that 1 APM (with 1 megabyte storage) and 1 VDU could be sited at the Bush for Clan System's use. Clan have designed a floppy disc controller and are making the design available to the department. HMD had agreed to complete runtime diagnostics for Pascal and Imp and would make this and such other enhancements of these compilers as he undertakes, available to the department. Clan also proposed to make a small sum of money available to the authors to cover the use of their system. Either party would be entitled to terminate this arrangement upon giving 3 months notice.

Meeting closed.

COMPUTING RESOURCE FOR CS1

George Cleland
26-Nov-1984

CS1 this year are finding new heights of frustration with the computing resource offered to them. While the situation should improve with the promised introduction of the Amdahl V7 processor by the start of next session this will offer only transitory relief as the chemists and physicists will soon expand (as we shall ourselves) to fill the available capacity, and the ritual squabbling over funds will resume.

The only real solution to the problem is for a dedicated resource. An APM based system would cost close to £150,000 capital and an unknown amount in recurrent costs. A workstation system based on commercial units would cost even more. This kind of cash is simply not available from University coffers for this kind of activity so other solutions, if a switch from EMAS is desired, must be sought.

One opportunity which will arise for next session is to use the DECsystem-10. This is currently part of the SERC's Interactive Computing Facility but funding for it will cease by September next year. This is happening for reasons of political and financial expediency on SERC's part rather than the technical demise of the system. Some components of it are ageing somewhat, but modest investment will result in performance improvements and savings in recurrent expenditure. The processor is still the most powerful one that DEC have ever shipped (the VAX 8600 is announced but not yet available). More details of the configuration and capital and recurrent costs are given below.

The system benchmarks, for CPU intensive tests, at about three times the power of a VAX 11/780. Because it has a front end (PDP-11 based) it handles interactive loads better than the VAX can. Other educational sites support user communities of in excess of 100 users simultaneously on similar configurations.

The machine was moved from ERCC's K.B. machine hall to Appleton Tower recently to make room for the Amdahl machine, so it is ideally placed to support a CS1 lab there. The present hardware will support up to 64 directly connected terminals. It also has a network link which can handle up to 20 simultaneous users.

There would be two options as far as the operating system is concerned. The machine currently runs TOPS-10 but it could also run TOPS-20 which has developed a reputation for being particularly good for undergraduate teaching. This option would probably cost more however. ISO Pascal is available on both systems. Screen editors are available as is Imp, so porting of VECCE is a possibility.

It is likely that most of the costs except that of hardware maintenance will be absorbed by ERCC or covered by selling time on the machine during vacations or overnight. (There are already some

suitable customers using it.)

Timing

If this option is to be pursued, a decision must be made by early in 1985 in order that new hardware can be ordered, software support arranged and other matters tidied up.

Because of the extra work involved it is probably not worth moving on this proposal unless an initial commitment of three years can be made. In this timescale we could realistically plan implimentation of a workstation environment for the end of this period. (Coincident with moving CS1 to K.B.?)

System Configuration

Present

1091 SB processor
768 K words (36 bit) Memory (MF 20)
4x176 Mb disks (RP06)
1x88 Mb disk (RP04)
2x800/1600 6pi tapes (TU 77)
DN20 front end.

Proposed Upgrades

Replace the MF20 memory with 1 M words of MG20 memory.
Buy a second hand RP07 disk (512 Mb) for user file space.
Remove all other disks except 1 RP06 which will be retained as the system disk.
Retain only one tape transport.

Finance

The present maintenance and running cost is around £35,000

The proposed upgrades above would result in maintenance saving of £14,900.

The cost of the capital investment for the upgrades will be about £33,000.

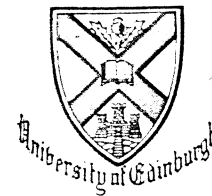
It is hoped that a formal report including details of impact on the Department's budget can be made at the Departmental meeting in January. A final decision will have to be made shortly after that in order that all can be arranged for 1st October. In the meantime informal discussion should take place over this issue and the benefits and disadvantages weighed up. Comments and technical queries to myself and Peter Schofield please. If there are strong reasons for not proceeding, I would like to hear them as soon as

possible in order not to waste what will be a large amount of time over the next six weeks.

For information, AI are also investigating use of this machine. The possibility of sharing and what the areas of conflict will be are being looked at.

Copies to:

All CS lecturing and CO staff
Jeff Phillips, ERCC
Peter Ross, AI
Dr. G.E. Thomas, ERCC



Department of Computer Science

Memorandum

To Lecturing and CO Staff

From Peter Schofield

Date 29th November, 1984

Papers for emergency meeting tomorrow, Friday, at 13.00 in room 3309.



UNIVERSITY GRANTS COMMITTEE
14 Park Crescent London W1N 4DH

Telephone 01-636 7799 ext

RECEIVED
22 NOV 1984
22/11/84

The Principal and Vice Chancellor
University of Edinburgh
Old College
South Bridge
EDINBURGH EH8 9YL

Your reference

Our reference Circular Letter 18/84
2034/090

Date

22 November 1984

Dear Principal and Vice Chancellor

THE SHIFT TO SCIENCE AND TECHNOLOGY: A POSSIBLE INITIATIVE

In his letter of 1 September 1983 the Secretary of State for Education and Science sought the Committee's advice on how the universities could contribute to a further shift towards "technological, scientific and engineering courses and to other vocationally relevant forms of study". The Committee's response in its Strategy Advice was that a significant increase in the number of places in science and technology could be provided only if the necessary resources were made available and that such resources could not be found within the financial provision indicated in the Secretary of State's letter.

2. We understand it to be the Government's view that on present policies and funding assumptions the higher education system is unlikely to be able to produce as many engineers and applied scientists as the national interest requires. The areas of principal shortage are expected to be those identified in the first report of the Butcher Committee on information technology skill shortages; ie, electronic engineering and computer science. But unsatisfied needs, calling particularly for a systems engineering approach, may arise in other areas of advanced application of technology to manufacturing.

3. There is the possibility - and I must emphasise that it is no more than that - that the Government may make available additional resources and that these will include some provision for accommodation and equipment as well as direct teaching costs. I am writing to you now so that, if the resources are provided, the Committee and individual institutions may be able to take action as quickly as possible.

4. We would expect the distribution of such resources to be governed by the following principles:

- (i) the Government would indicate a target number of places and the disciplinary areas in which they should be provided;

- (ii) the resources would be strictly related to the costs of providing places for students not included in universities' present admission plans. The extra students would be additional to those in engineering and vocationally relevant subjects which some universities said, in response to Circular letter 15/83, that they would aim to admit as a special measure, in 1984 and 1985 only, without additional grant;
- (iii) the places would be allocated selectively, with the object of focussing expansion on departments of high quality which are best able to demonstrate that industry values their graduates and is willing actively to help to teach them;
- (iv) at the same time the Committee would be concerned to make the most cost-effective use of the resources, and would allocate them in the light of costed proposals from universities.

5. The scale of the initiative must be speculative but the hypothesis which the Committee is offering for present purposes is that the resources would be intended to provide for the following number of students:

by 1988:	from conversion courses, 1,500 pa from first degree courses, 400 pa
thereafter:	from conversion courses, 1,500 pa from first degree courses, 1,000 to 1,250 pa

We are assuming for the purpose of this hypothesis that there would be increased admissions in October 1985 and that conversion courses would last for one year and would be aimed at graduates from a relevant scientific or technological discipline.

6. We cannot say precisely what the scope of the exercise would be but we would expect that the main emphasis would be on information technology and that a high proportion of the additional places would be allocated to electronic engineering and computer science. Places might also be allocated in other relevant areas, including general engineering, and such branches as production, systems and control engineering. It would however be for universities to judge which of their departments (or departmental groupings) could best contribute to the general objective.

7. In allocating resources the Committee would have to take account both of quality and cost, as I said in para 4 (iii) and (iv) above. It would make appropriate arrangements to determine the consensus of industrial opinion on departments best able to meet industry's needs. It would consider proposals (for example, from Scottish universities and institutions which offer sandwich or enhanced engineering courses) for

first degree courses of four or even five years duration. It would not expect to limit the allocation of places entirely to institutions requiring no adaptation or extension of buildings or with no major equipment needs. On the other hand the Committee would have to secure a certain number of extra students for a certain sum of money: it would have difficulty in doing this if too many bids carried a high cost.

8. The Committee needs further data on appropriate departments to enable it to make a proper assessment of the potential of institutions to meet the requirements of industry in the area covered by the initiative. As a first step, may I ask you to arrange for the attached questionnaire to be completed for each such department or group of departments which you would wish to be considered. Further copies are available from the Secretariat (Mr A P Smith). I would be grateful if completed questionnaires could be returned by 20 December 1984.

9. At this stage we want no more than academic profiles and general statements of intent, with a very rough indication of the resource implications. If the Government does decide to make extra resources available, I shall be writing again later to seek specific proposals, with a detailed statement of costs, from selected institutions.

Yours sincerely

Peter Swinnerton-Dyer

SIR PETER SWINNERTON-DYER

ENC:

C. CONTRIBUTION TO THE SHIFT

The purposes of the proposed shift to science and technology are set out in the Circular Letter sent to universities with this questionnaire. The Department is invited to state (concisely, on not more than two sides of A4 paper):

1. What it can contribute to the shift.

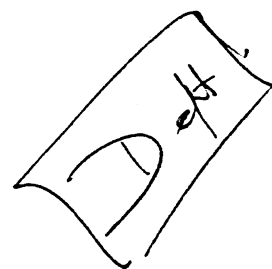
2. Why it wishes to participate.

3. How its contribution could be made.

(including an assessment where appropriate of inter-university collaboration).

4. Evidence of past achievements to support the case.

5. A rough estimate of resource and accommodation implications (capital and recurrent).





Department of Computer Science

Memorandum

To All Staff
Postgraduates
Student Workrooms

From Peter Schofield

Date 13th December, 1984

AGENDA FOR DEPARTMENTAL MEETING
to be held on
FRIDAY 14TH DECEMBER 1984

1. Chairman's Business
2. Committee on Future Computing Policy.
3. Running the departmental Computing Service.
4. Possible additional ERCC Services.
 - (a) GEC 63
 - (b) Dec 10 (Bring GEC's paper)
5. USC Initiative - "The Shift to Science".
6. Accommodation in JCMB.
7. Report from Preliminary Board of Studies.
8. Matters arising from previous meeting.

* * * * *

Notes for Departmental Meeting to be held on Friday 14th December, 1984

Item 2 : Committee on Future Computing Policy

SM has agreed to convene this committee and GEC to be the secretary. Names of other members will be discussed at the meeting.

Peter Schofield

Item 3 : Departmental Computing Service

Proposition 1 : Normally, no changes in the service arrangements may take place except with the approval of the person responsible for that service, i.e.

VAX's GEC
APW's JHB

Proposition 2 : Those named above shall publish guidelines indicating circumstances in which others may take decisions for them. These guidelines shall be subject to discussion.

Peter Schofield

Item 4 : Possible additional ERCC Services

- (a) We await figures from ERCC on GEC 63 proposal.
- (b) Please bring GEC's paper.

Item 5 : The Shift to Science

Following an emergency meeting two weeks ago, I had to fill in a vast questionnaire at short notice. This has now gone off. I enclose a copy of the fuel section. Please note that it is only preliminary shot - there is no commitment. Some papers attached.

Peter Schofield

Item 6 : JCMB Accommodation

I have put down a claim for 1 Professor's room and 14 other rooms to meet the possible staff implications of the item above.

Peter Schofield

Item 7 : Preliminary Board of Studies

ASW reports that Physics propose to introduce a scheme whereby entry to 4th year honours can be obtained by a pass in the September resit, but that the June marks are still carried forward to final Honours assessment.

Possible idea for us?

Peter Schofield



DEPARTMENT OF COMPUTER SCIENCE,
James Clerk Maxwell Building,
The King's Buildings,
Mayfield Road,
Edinburgh EH9 3JZ

Chairman of Department:
Mr. P.D.A. Schofield
Professor of Computer Science:
Professor R. Burstall
Professor S. Michaelson

Telephone: 031 - 667 1081
Telex: 777442 (UNIVED G)

Mr. M. Cornish,
Old College,

11th December 1984.

Dear Melvyn,

The Shift to Science.

I enclose several copies of part C of my questionnaire. I have a few additional observations.

1. My point in the second paragraph of section 2 is a serious one for the UDC initiative. The university system as a whole may have to face the extremely thorny possibility that special salary scales will be needed to attract people in these Information Technology areas.
2. Accommodation in the J.C.M.B. is a problem. Our possibilities for expansion are bound up with the future of other groups in the JCMB. The JCMB Users Committee is discussing some of our needs tomorrow.
3. It seems to me that, if in doubt, we should put in bids at this stage. If asked to tender later, we can always decline then.

Yours sincerely,

P.D. Schofield.

C. CONTRIBUTION TO THE SHIFT - COMPUTER SCIENCE DEPARTMENT.

1. What we can contribute to the shift.

Our courses give students a deep understanding of Computer Science; Hardware, Software and the Theoretical foundations. The courses and equipment we have designed and built enable us to give a training second to none. Our association with the department of Artificial Intelligence, and with Electrical Engineering containing the Edinburgh Microfabrication Facility, adds even more to the suitability of the environment. The trouble is that our staff and our equipment are overloaded and will have to be considerably increased.

2. Why we wish to participate.

The shortage of trained personnel in Computer Science and Information Technology has been widely recognised, for example in the Butcher report. Scottish industry needs more such graduates and it is appropriate that a Scottish university should make every effort to satisfy this need.

To undertake the total additional teaching proposed, the university system as a whole will have to attract a large number of additional staff; this will be difficult in competition with the salaries offered to these same people by industry. The standing of the University of Edinburgh, both in Information Technology disciplines and generally, will give us a significant advantage in this respect.

3. How our contribution could be made.

(a) From first degree courses.

A most important contribution should be through an increase in Honours undergraduates. For a considerable time we have hoped for the resources to introduce a joint Honours degree in Artificial Intelligence and Computer Science. We should like to see this course build up to 20 students per year. (By the time the fourth year of the course is running, this will amount to 27 FTE's in each department). If the acute accommodation problem in Electrical Engineering can be overcome, we should like the joint Honours course in Computer Science and Electronics to grow from 10 to 20 per year.

If the Laboratory for Foundations of Computer Science described on page 4a is funded, we should hope to introduce a variation on our existing single-subject Honours degree in Computer Science. This would allow a relatively small number of students the option of specialising in the Theory of Computation to a greater degree than is permitted with our present broader syllabus. If this comes about, the single-subject Honours course could grow by about 15, otherwise by about 5.

(b) From postgraduate courses.

Our M.Sc. course in Information Technology (Computer Systems Engineering) is currently running with 12 full-time and 3 part-time students registered in Computer Science. This is part of a common programme in Information Technology run jointly by the departments of Artificial Intelligence,

Computer Science and Electrical Engineering, in which students registered in one department normally take some of their course modules from other departments. Given adequate resources, we could increase our Computer Science intake by about 12 full-time equivalent students. It should be noted, however, that increased numbers of students are being proposed by the other departments already in this programme and other departments (Epistemics and Physics) are expecting to join the scheme. Judging from past experience, these changes will lead to a net increase in demand for modules in Computer Science, particularly those on VLSI design and Graphics.

As a result of current plans, the number of possible "main themes" open to a student in the Information Technology M.Sc. programme will increase to six (3 in AI, 1 in CS, 1 in EE and 1 in Epistemics). If the laboratory for Foundations of Computer Science is funded, an additional slightly more theoretical Computer Science theme will be added.

4. Past Achievements.

External examiners, employers and accrediting bodies have frequently commented on the high standard of our students, both undergraduate and postgraduate. Our Computer Science single-honours degree as well as our Computer Science and Electronics degree has been accredited by both the British Computer Society and the Institution of Electrical Engineers.

Our students are much in demand, many of them receiving up to six separate job offers. The main employers who recruit our students always appear keen to come back for more.

Together with the department of Electrical Engineering, we were chosen as one of three sites in the country to be specially funded to set up the M.Sc. course in Integrated Circuit Design, now absorbed into the Information Technology programme.

5. A rough estimate of resource and accommodation implications.

A considerable increase in computing resource, largely in personal workstations, will be required to undertake any of the above. A rough estimate of the cost is as follows:

	Postgraduate (12 FTE)	Undergraduate (67 FTE)
Additional teaching staff	2	7
Additional support staff	2	5
Other recurrent costs (p.a.)	£ 8K	£ 30K
Capital.	£ 75K	£ 300K

The department's shortage of accommodation in the James Clerk Maxwell Building would at present pose a real problem, but the users committee of the building is aware of the problem and is investigating possible solutions.