The end of an era for Computing Services as EMAS switches off

Dr Joanne Lamb, the first registered user, switches off EMAS watched by Dr Richard Field, Director of Computing Services   *Photo: Neil Hanna*

When student Joanne Officer became the first user of a new computer service in Edinburgh in 1971, she was making history. Twenty one years later, when - as Dr Joanne Lamb of the Department of Sociology - she switched it off, she brought a unique and remarkable era to a close. In those 21 years, many thousands of students and academics at Edinburgh enjoyed some of the best computing facilities in the world.

The computing system, EMAS (Edinburgh Multi-Access System), created in Edinburgh in the late Sixties and early Seventies, has served Edinburgh University for two decades and contributed much to the University's reputation as a centre of excellence in computing.

In the mid-Sixties several universities, such as Glasgow and Cambridge, were working hard to develop multi-access computing systems. At Edinburgh the Edinburgh Multi-Access Project was led by Mr (later Professor) Harry Whitfield, of the University's Department of Computer Science. By Christmas 1971 it was ready to launch a fully multi-access system - EMAS.

Operating systems like EMAS and Multics broke new ground. Gone was the old world, when scientists left a box of punched cards in their computing centre, to return later in the day - or the next day - to collect their cards and the printed output from the job they had submitted. At last the dream was fulfilled: 30 or more scientists could log onto a single computer simultaneously, enter their instructions at the terminal - and see the result displayed on their console within seconds.

EMAS was handed over to the Edinburgh Regional Computing Centre (ERCC) in 1972 and a service started which was to continue for 20 years. Throughout the Eighties EMAS had been maturing as a

sophisticated, robust and many-featured operating system, particularly well suited as a general service in a University environment. At its peak use EMAS was supporting up to 250 concurrent active users at any time and well over a thousand users a day. Over the years a vast range of utilities and subroutines were developed which added to its popularity. These included, for example, locally developed editors, text processors, graphing and drafting packages, archiving and file transfer software and an electronic mailer.

Despite all this, the days of EMAS were numbered, for technical, financial and political reasons. EMAS was developed to solve the pressing technical problems of the Sixties. Now the era of massive general purpose computing systems is drawing to a close: universities are adapting themselves to a future of distributed personal computers and workstations. There was pressure on Edinburgh, along with other universities, to move towards what was becoming the more standard Unix environment.

The University's Computing Service produced A Computing Strategy Report in 1989, which finally spelt out the end of EMAS. It was to be scrapped, its place to be taken by central Unix mainframes together with a massive, complex distributed network of interlinked microcomputers (both PC and Macintosh), workstations and departmental minicomputers.

The Computing Service then embarked on a long and ambitious journey: to create one of the largest and most complex distributed computing environments in any British university.

Many universities have opted for a single technology - Suns, for example, or PCs. Edinburgh decided to support a wide range of computing

systems and give them all access, over the Edinburgh network, to a wide range of facilities, including high quality printing, archiving, data collections and worldwide communications services.

Thus there are two central Unix service machines (both Sequent Symmetry) and a central Vax/VMS machine (as well as a number of departmental Vax machines). These offer a rich choice of software. For example, 16 statistical packages are available on the mainframe machines alone.

Complementing these central services, new local networks are installed almost monthly. These run under a variety of LAN software, primarily Novell, PC-NFS and Appleshare. Here again there is variety: within the Arts Faculty, for example, there is a network of 50 PC compatibles for academic staff and postgraduates and another of 40 for languages students; a group of social science departments has combined to provide a student computing lab of 52 Apple Macintoshes.

As well as departmental networks, there are a number of Macintosh and PC networks around the University, which are open to any student. In the Library, for example, there are 86 Macintoshes, used primarily by students for writing essays and dissertations.

Bringing this all together into one massive, wide-spread interlinked network has taken three years. It has involved digging up a main road to lay eight kilometres of high speed (100 Mb a second) fibre optic (FDDI) cable to connect the various parts of the central University area with the science campus some two miles away. Attached to this central spine are over 50 Ethernets.

The result is that there are nearly 3,000 outlets on this new labyrinth of networks, known as EdLAN. When added to the existing 1600 outlets on the older X25 network, EDNET, this means that nearly 5,000 terminals, microcomputers and workstations can be connected to the Edinburgh network system.

The University strategy is to expose all students to information technology.

With a current population of about 11,000 undergraduates, 3,500 postgraduates and 2,400 academic staff, the network now offers an outlet for every three or four students or members of staff.

Such an ambitious development programme is only possible because the Computing Service has the network support equipment and the people who understand how to use it. Edinburgh has considerable expertise in monitoring networks and identifying and rectifying faults.

Networks and communications are areas in which Edinburgh's Computing Service has a particular strength: they are developing a range of products, such as communications software to link Unix machines, which are used by the academic community or marketed by computer suppliers.

Another exciting product being developed in Edinburgh is a Microsoft Windows mail program, WhiteMail, which gives PC users access to the rich facilities of the X400 international mail standard. The Computing Service also wrote the Rainbow communications software, heavily used by British universities and also available commercially.

Another area in which Edinburgh has a particular strength is its Data Library: this holds a large data collection of interest to academics, policy-makers, and market researchers, with a variety of software for statistical analysis and graphic display.

Yet, although Edinburgh's Computing Service continues its tradition for development, the emphasis is shifting inexorably towards being a service organisation. So, the closing of EMAS is not just the end of an operating system, but of a whole culture. Where once problems were solved by writing local solutions, now, like most other universities, solutions tend to be bought in.

Twenty years on, then, the challenge for Edinburgh is not to create an operating system, but to create out of the existing labyrinth of networks a smooth running computing environment, flexible enough to cope with change in the future.

Operators at the IBM 360/50 machine at King's Buildings in the early 70s where punch cards and paper tape were the standard methods of input