Supercomputing

Meeting British academic needs

A CENTRAL facility for advanced research computing is recommended this week by the report of a working party chaired by Professor A. Forty from the University of Warwick and commissioned by the Advisory Board for the Research Councils (ABRC), the Computer Board for Universities and Research Councils and the University Grants Commitee (UGC).

The report proposes that the central installation should consist of the most powerful supercomputer available; the existing joint academic network (called Janet) should be enhanced for good communications; there should be a distributed system of other forms of advanced research computing to enhance local resources; and there should be a national organization to ensure effective use of resources, industrial and international collaboration and to stimulate new developments.

The cost of implementing the proposals will be about £47·5 million between 1986 and 1991. This includes £15 million for installation of the Cray X-MP multiprocessor array system at the Rutherford Appleton Laboratory, £8 million for high-speed lines and switches and £16·5 million for special purpose computers such as developments of ICL's DAP and GEC's GRID systems, which use distributed arrays of processors to perform operations in parallel. Running costs will be about £1 million a year. Purchase of a further supercomputer should be considered in 1988.

The report also proposes the machinery for running the facility: a board to advise ABRC, UGC and the Computer Board on advanced research computing needs and to award fellowships; and a peer review system to regulate use of facilities.

ABRC, UGC and the Computer Board must now decide whether they agree with the proposals and, if so, whether to allocate the money. ABRC is waiting for the individual research council's reactions to the report.

Recent advances in computing — vectorization and "parallel architecture" (simultaneous similar operations) — mean that the Cray 1 is 200 times faster than the VAX superminicomputer and 3,000 times faster and cheaper to use than the Atlas, the British supercomputer of the 1960s. Scientists in Britain currently have access to two supercomputers, the Cray 15 in London and the Cyber 205 in Manchester, linked by Janet. The London centre is now oversubscribed and Manchester is reaching saturation point. (There are also two DAPs in London and Edinburgh.) These supercomputers are not the most powerful models at present available.

The Forty report says the situation is different in other countries. In the United States, the National Science Foundation programme started in 1984 involves the setting up of four supercomputer research centres ultimately to be linked by a national communications network. The government provides $7–13 million a year to each centre and an equivalent sum is provided by industry, institutions and individual states.

In Japan, the seven main universities have a "special relationship" with one of the three major computer manufacturers (Hitachi, NEC and Fujitsu). Tokyo University, for example, has a Hitachi 5–810/20 supercomputer and Kyoto University a Fujitsu VP1100, both having replaced scalar machines at no extra cost. Other European countries such as France and West Germany are rapidly installing supercomputers and providing coordinated research programmes.

The new report's assessment of British needs is based on a questionnaire sent to more than 400 individuals and scientific organizations and a detailed review of each subject provided by specialists in the field. The survey conclusively shows the need for a wide range of supercomputing facilities in astronomy, physics, earth sciences, engineering, biological and biomedical sciences, economics and information science.

Apart from the rapid understanding of many diverse scientific processes, the report emphasizes the use of supercomputers in industrial applications such as design and testing of pharmaceutical products using simulations, simulation and testing of aricraft engines and oil field modelling.

According to the report, there are compelling reasons for a coordinated and ambitious plan for the development of supercomputers in research in Britain. Haste is urged if Britain is to remain a world leader in the computer arena. Whether the bodies that commissioned the survey will agree, and if so, where the facility will be built and developed, remains to be seen. **Maxine Clarke**

European training

Commission plan for mobility

Brussels

A FURTHER boost is to be given by the European Economic Community (EEC) to cooperation between European industry and academic institutions. The European Commission is advocating an 80 million ECU (about £44 million) four-year programme to stimulate on-the-job advanced training for students in companies in European countries other than their own. The scheme will also support exchanges between academics and those employed in new technology industries.

Later this year, the Commission hopes to persuade the ten ministers to agre to the four-year initial phase (1986-89) of the COMETT programme (Community in Education and Training for Technology).

Following in the steps of other Community initiatives such as ESPRIT, BRITE, the stimulation programme steered by the CODEST committee and the plan for transnational development of support in innovation and technology transfer, the programme will concentrate on new technologies, where it is felt that there is a particular need for more investment in training to keep up with rapidly changing technology.

The proposed programme would include exchange schemes between people in industry and universities as well as joint training projects between companies in different countries and the setting up of a European liaison network between university/industry training partnerships (UITPS).

Specifically, the Commission intends to start by offering some 2,000 six-month grants worth 4,000 ECU each for students to train with a company in another Community country, with 3,000 places in 1988 and 5,000 in 1989.

A smaller number of grants (50 in 1987, to be doubled in 1988 and again in 1989) of 9,000 ECU would be available to university teaching staff willing to spend two or three terms in one year broadening their industrial experience in a company in another EEC country.

The Commission hopes there will be two kinds of joint training projects, one focusing on specific topics where skill is scarce and one designed to improve the flow of research results between industry and the universities. The Commission is prepared to pay 35 per cent of the cost up to a maximum of 500,000 ECU. It is also prepared to cover up to half the cost (a maximum of 400,000 ECU) for multilateral university/industry projects aimed at using new technologies in education and training itself. The COMETT team would also carry out a feasibility study for a European technological open university.

Some Community money would also be set aside (50,000 ECU a year) to cover half the running costs of promoting links between university/industry training partnerships, forming a Community-wide network coordinated by the Commission that would link up 40 UITPS in 1987 and 150 by 1989.

Finally, the Commision would also sponsor round-table meetings to bring industry and university together and would set up a database on cooperation, monitoring and analysis of Community trends and issues in advanced training.

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