Status
QUARTERLY
OF THE WESTERN AUSTRALIAN REGIONAL COMPUTING CENTRE
MARCH 1988

Computer system can cut risk factor

The WA Regional Computing Centre, encouraged by the successful use of its expert systems for weather prediction and university course checking, is turning its expertise to systems capable of accurately assessing risk.

"Recent research within WARCC has led to the development of a methodology highly appropriate to this area," said Terry Woodings, Applications Group Manager.

"This has particular relevance to the insurance industry, where the mass of human ability and experience in risk appraisal can be replicated in an expert system."

Risk assessment is an important consideration for the Government sector as well, according to Kaye

• The Cup to Dennis Conner, with help from an expert system.

Stott, an Applications Group programmer who has researched expert systems designed to assess the escape potential of prisoners.

"Expert systems have the capacity to employ knowledge to solve problems that ordinarily would require human intelligence," Kaye said. "The systems combine this knowledge base with the ability to reason, enabling them to give non-expert users rapid solutions to complex problems.

"Knowledge in the form of an expert system becomes a tangible asset for a company."

Terry said the Centre's experience in expert systems dated back to the early 70s, when he had written intelligent game-playing programs. In the 80s the Applications Group had intensified work in the area of artificial intelligence, resulting in

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INSIDE STATUS

Director's Desk . . .

Welcome to the first edition of our new quarterly publication, *Status*.

WARCC has provided computing services to West Australians for more than 25 years. It all started with the first true computer to be installed in WA, in September 1962.

Since that time WARCC has serviced an ever-widening circle of computer users. It has grown to become the largest centre for computing expertise in WA.

So it occurred to us that there must be many many applications of computing that have been accomplished by our users. And that it would be of enormous value to other computer users to learn of these achievements.

Thus *Status* was born. It is an attempt to share some of the exciting ideas for the application of computing technology developed by people like yourselves. We hope all our readers will benefit by this sharing.

We are very grateful to all those who have contributed to this first issue. Please pass your copy on to your colleagues, and feel free to call us if you would like to add your name to our distribution list.

Alex Reid
Director

Boot-strap starts, stretched tapes at Centre's beginnings

As one of the first users of the computing facilities at the University of WA, Phil Harvey, Deputy Commissioner (Engineering) with the State Energy Commission, has seen the Western Australian Regional Computing Centre develop into one of the largest and most diversified computing centres in Australia.

"When the IBM 1620 arrived at the University in 1962, I was an engineering student studying power system applications," Mr Harvey said.

"Prior to the IBM, we used a Blackburn Network Analyser for power system modelling. The IBM, with its electric typewriter, card punch, printer and some limited software, enabled us to carry out load-flow calculations much faster."

However, load-flow analysis was only partly successful because of the size of the machine and limited software. Other applications such as determining sags and tensions on transmission line conductors were more reliable.

"In 1965 the University acquired a DEC PDP6 time-sharing computer which was at the forefront of computing technology and well in advance of anything in Australia at that time," Mr Harvey said.

• Phil Harvey . . . dogwatch shift with the PDP6.

"I used to book the entire machine from 2am to 4am to run some programs. This meant knowing the basics of everything to do with the computer - how to start the machine, mount and dismount tapes, and carry out a boot strap start if something went wrong.

"However, disasters can occur. One night my program had been running for about two hours when the tape drives started turning in opposite directions. The tape stretched until it was a fraction of its normal width!"

As a result of the need for technical and engineering computing by University users, government departments and some private companies, the concept of the Regional Computing Centre emerged.

Along with five other government departments and the University, the SEC contributed towards the purchase of a Cyber 72. Through a user terminal and dedicated data line to the Cyber, the SEC was then able to use the computer at any time and it became a major tool for its scientific and engineering computing.

In 1976 the SEC recognised the need for commercial computing and established a large in-house IBM system. The customer billing application alone justified the new system. Under the manual system, it took two weeks from the time the meter was read to the customer receiving the bill. The computer system allowed the time to be reduced to less than 24 hours. The increased cash flow from that single application paid for the system.

The SEC now has an IBM system with almost 800 terminals spread across the State. It continues to use the Regional Computing Centre for some complex computing problems which the powerful Cyber 840A can easily handle. ❑❑

Computer can cut risk factor

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expert systems in a number of areas.

"In fact the success of our weather prediction system could probably have helped Australia lose the America's Cup," he said.

The system, designed under a commercial contract for a private-enterprise weather-forecasting agency, used the human expertise of weather forecasters and the stored knowledge of 11 years of weather data to make a weather prediction within seconds.

"Over the Cup finals period Dennis Conner used the system to predict the wind speed to within 2 knots each day, the wind direction to within plus or minus 20 degrees, and, most importantly, the arrival time of the Fremantle Doctor to well within 20 minutes."

The system designed to check the validity of the annual 10,000 student enrolments at The University of Western Australia could lead to a 90 per cent saving in the labour spent on the checking procedures.

"While the system is not saleable to another tertiary institution, owing to the specific regulations applying at this university, we have created the expertise to write the systems, and can now do this cheaply for other organisations." ❑❑

WARCC offers Sun systems at discount to tertiary sector

The Computing Centre will distribute a range of powerful graphics-based workstations to the tertiary education sector under an agreement signed with Sun Microsystems Australia Pty Ltd.

Under the agreement, the WA tertiary institutions - including universities, the WA College of Advanced Education and TAFE departments - can buy Sun workstations, servers and high-performance distributed computing systems at considerable discounts.

The Sun range will complement Macintosh and IBM PS/2 products on offer to educational institutions through WARCC Micro Support.

Mr Kevin Collins, WARCC Assistant Director, said Sun - the largest of the workstation manufacturers - had recognised the Centre as a good launching pad from which to enter this market.

"Part of the reason behind our selection would be the experience we have gained as the most comprehensive university-based micro-support operation in Australia. Sun would also have been influenced by our business-like approach and our success in providing computing services in many other areas."

Bob Schrader, WA branch manager for Sun Microsystems, said the agreement with WARCC would prove attractive to tertiary institutions seeking the best possible deal in the fast-growing market for powerful technical workstations.

"Today, Sun is the premier company offering a complete distributed computing environment with a true open-system architecture in its range of high-performance workstations and servers. We are the 'glue' for uniting incompatible systems such as those from IBM, DEC, Wang, Unisys, Prime, Apple and others."

Micro Support Manager Rob Van Zanten said WARCC could now present a totally balanced offering in micro sales and rentals and ancillary services.

In the range of smaller micros, the Centre was offering new IBM PS/2 micro-computers to University departments, staff and students at substantial discounts under a dealership arrangement with the WA College of Advanced Education.

Macintosh products, which continued to be very successful, were available to university students and staff through the Apple University Consortium. ❑❑

• Bob Schrader with Sun workstation . . . best deal for the WA tertiary sector.

Scanner speeds text input time

A scanner which reads both text characters and graphics is a new service to the public from the Centre's Microcomputer Support Group.

Micro Support has installed the sophisticated Remington Dest PC Scan Plus, a product which is helping the word processing and desktop publishing industries achieve major economies in the input of text data.

Micro Support manager Rob Van Zanten said the Scan Plus enabled clients to input text data 10 to 20 times faster than an average typist.

The scanner's present software meant that it worked best with non-proportional spacing, in san-serif type, ranging from10 point to 12 point. ❑❑

Staff 'key to excellence'

The key to professionalism and excellence in the data-processing industry lies in the quality of computing staff and their attitudes, according to a senior executive from Alcoa Australia.

Mr Bob Smythe, Information Systems Manager at Alcoa, told the Perth Computer Operations Group that an operations section and its operators were the front-line troops of the data-processing department in any big organisation.

It was important that these people had a vision of what they could achieve for their organisation.

Mr Smythe was addressing a seminar at The University of Western Australia entitled "Professionalism and excellence in D.P. operations" and hosted by Ray Nayar, WARCC Operations Manager.

Members of the Group are senior operations staff of IBM installations. ❑❑

New software gives WA the edge in engineering

A new computer software package which can significantly cut engineering and design costs in major plant construction is now available in Australia.

PDMS (Plant Design Management System) is offered by WA CYBERNET Services, a division of the WA Regional Computing Centre, and runs on the Centre's Cyber 840A mainframe computer.

PDMS, one of a number of sophisticated software packages in the areas of mining, engineering, construction and exploration available from CYBERNET Services, benefits engineers and designers working in projects involving vessels, pumps, steelwork and piping.

The initiative taken by the Centre in making PDMS available in Australia represents a major advance in technology transfer.

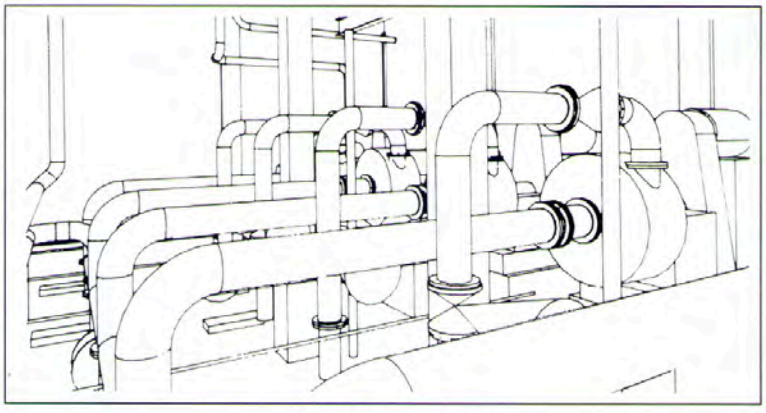
Access to PDMS means that Australian firms can gain a competitive edge when tendering for big engineering projects. Dollars which previously were spent overseas can now be retained, and the competitiveness of local industry in export markets will be enhanced.

The initial use of PDMS is likely to be on major construction projects associated with Western Australia's abundant energy reserves. Overseas it has been used almost exclusively in the design of offshore oil and gas structures in the North Sea.

PDMS is offered by the WA Regional Computing Centre as agents for the bureau service of Isopipe Ltd, of Cambridge, England. It is the copyright property of CADCentre Ltd, of Cambridge, and was originally jointly developed by CADCentre, Akzo bv, of the Netherlands, and Isopipe.

While contractors stand to receive major benefits through PDMS, reports from completed projects suggest that its greatest advantage accrues to owners and investors through more-accurate budgeting, scheduling and commissioning.

PDMS can model any size of plant. It provides the opportunity for interactive design, with an entire project team able to access information. ❑❑



• **PDMS construction plant drawing.**

Linotronic 300 cuts costs, lifts quality

An electronics firm and a foreign language translation and typesetting company are among the growing number of commercial users of the Centre's Linotronic 300 Laser Typesetter.

The typesetter's capability to print ultra-accurate, high-resolution negatives for printed circuit boards has led to significant savings in time and money for Laocon Control Technology Ltd, according to chief engineer Walter Wallenborn.

"The Linotronic is the missing link I have been seeking in our production line. It is bringing significant savings in the time previously spent on an ink plotter and is producing a superior final product in much-higher resolution at a lower price."

Jerzy Brodzki, principal of Brodzki and Associates, is combining sophisticated software with the typesetter to produce foreign language typesetting of high quality.

"I have worked with programmers to develop what I believe is the only software package in Australia which can insert from the keyboard the sometimes complex symbols required for a range of 75 Latin-based foreign languages," he said.

"All our high-quality work is printed on the Centre's Linotronic."

The Linotronic prints PostScript output from desktop systems at up to 2540 dots per inch resolution, compared with 300dpi from laserwriters. Along with other highly specialised equipment at WARCC, the typesetter is available for public use . ❑❑

• **CALM's Glyn Courtice . . . dramatic increase in computing areas.**

Our man helps CALM build computer network

"The expertise, professionalism and backup offered by the Regional Computing Centre in the area of computer operations are exactly what we need," said Glyn Courtice, Systems Control Officer for the Department of Conservation and Land Management (CALM).

The Department operates a Concurrent system 3280 computer and a network of 90 terminals from Wanneroo to Albany. A Intergraph computer is used for mapping, timber inventory and research.

"As our computing requirements have increased, we found that we needed additional operations support," Glyn said. "We negotiated a one-year Facilities Management contract for the Centre to provide a computer operator to alleviate the immediate problem and to assist us meet longer term developments."

For operator Jamie King it is a chance to build further on his experience not only with different systems but also with different working environments.

"At the Computing Centre we deal with a wide range of computing systems for DEC, VAX, IBM and Cyber," Jamie said. "Once you learn to operate a number of systems it is much easier to learn new systems.

"It was a challenge for me to learn about the Concurrent system as quickly as possible."

Apart from undertaking operations tasks such as system checks, terminal faults and output control, Jamie is also writing documentation to help others learn about the new machines.

One of the main services run on the computers is the fire-control system which monitors the State's fire patterns during summer. Other services include an accounting system, a system for harvesting pine and hardwood logging and various research projects such as dieback and leaf damage.

"The Department also undertakes its own software design," Glyn said. "We are currently developing a general licensing and kangaroo management system.

"The whole area of computing has increased dramatically in the last couple of years. Our aim is to provide the State with up-to-date computer applications in the area of conservation and land management." ❑❑

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WARCC SERVICES AND FACILITIES

Situated on the campus of The University of Western Australia and at Technology Park, the Centre provides computing power and a wide range of related services for the University, education, government and private organisations.

Programming and Applications Development
The Applications Group specialises in writing software for clients. Programs of any size or complexity are developed on client mainframes and microcomputers or on the Centre's machines. Programming languages include PASCAL, FORTRAN, C, LISP, COBOL, PROLOG and MODULA.
(Applications Manager 380 2618)

Facilities Management
The facilities management service provides operation, technical and systems support for client computers. Contracts are arranged for the Centre to house equipment or to operate client installations.
(Assistant Director 380 2598)

Help Desk
Assistance and advice on all matters relating to the Centre's services are provided in the first instance through the Help Desk service. The Help Desk office contains reference sets for the Centre's computers as well as for many programs. Manuals and documentation can be purchased.
(Help Desk 380 2606)

Contract Consultation
Consultation and unbiased professional advice in all areas of computing are available at the Centre.
(Assistant Director 380 2614)

Data Preparation
A key-to-disk data preparation service is offered by the Centre.
(Supervisor 380 2601)

Statistical and Survey Analysis
All stages of analysis are undertaken from questionnaire design, data entry, statistical analysis and data presentation including graphics.
(Applications Manager 380 2618)

Database Systems Development
Database programming for mainframes and microcomputers as well as database design are undertaken at the Centre. A range of database systems is available on the Centre's computers.
(Applications Manager 380 2618)

Research and Development
As part of The University of Western Australia, the Centre is a recognised research organisation. Eligible research projects contracted to the Centre can attract a 150% tax incentive.
(Technology Park 451 0879)

Electronic Mail
Through the MAIL computer, clients can access campus and international electronic mail services.
(Postmaster 380 2620)

Networks
Through the MAIL computer, clients can access host computers on the AUSTPAC and international packet networks. Clients around Australia and overseas can access the Centre's computers via AUSTPAC.
(Technical Services 380 2620)

Technical Services
The Technical Services group can provide system programming and hardware support for a range of micro, mini and mainframe computers and operating systems.
(Manager 380 2612)

Data Communications
Data Communications can provide advice on terminals, modems and other communications devices. Assistance in liaising with Telecom and design and manufacture of customised communications hardware is available.
(Data Communications 380 2626)

Training Courses
Training courses are generally held during the University vacations on various aspects of the Centre's computers and services. Customised training courses can be organised on request.
(Services Manager 380 2613)

CYBERNET Services
WA CYBERNET Services is a bureau service providing affordable access to expensive computer software for specialised fields such as mining, construction and engineering.
(Acting Assistant Director 380 2616)

Program Libraries
Collections of programs for a wide range of purposes are kept in program libraries on the DEC10, VAXA and Cyber. Program librarians can advise clients on the most suitable software packages for their needs.
(Help Desk 380 2606)

Graphics and Plotting
The Centre has a wide range of hardware and software to enable clients to produce graphics and plotting work. Hardware includes a large flatbed plotter, inkjet plotters, digitisers and graphics terminals. (Librarian 380 2627)

Laser Typesetting
A high-resolution (up to 2540 dots per inch) laser typesetting service enables clients to transfer text and graphics from microcomputers and mainframes to the typesetter for producing commercial-quality printed material.
(Microcomputer Support Manager 380 2621)

Microcomputer Support
The Microcomputer Support Group provides rental and support services for Apple Macintosh, IBM PC and compatibles. Staff members and students of either The University of Western Australia or of Murdoch University can purchase most hardware and software at a large discount.
(Manager 380 2621)