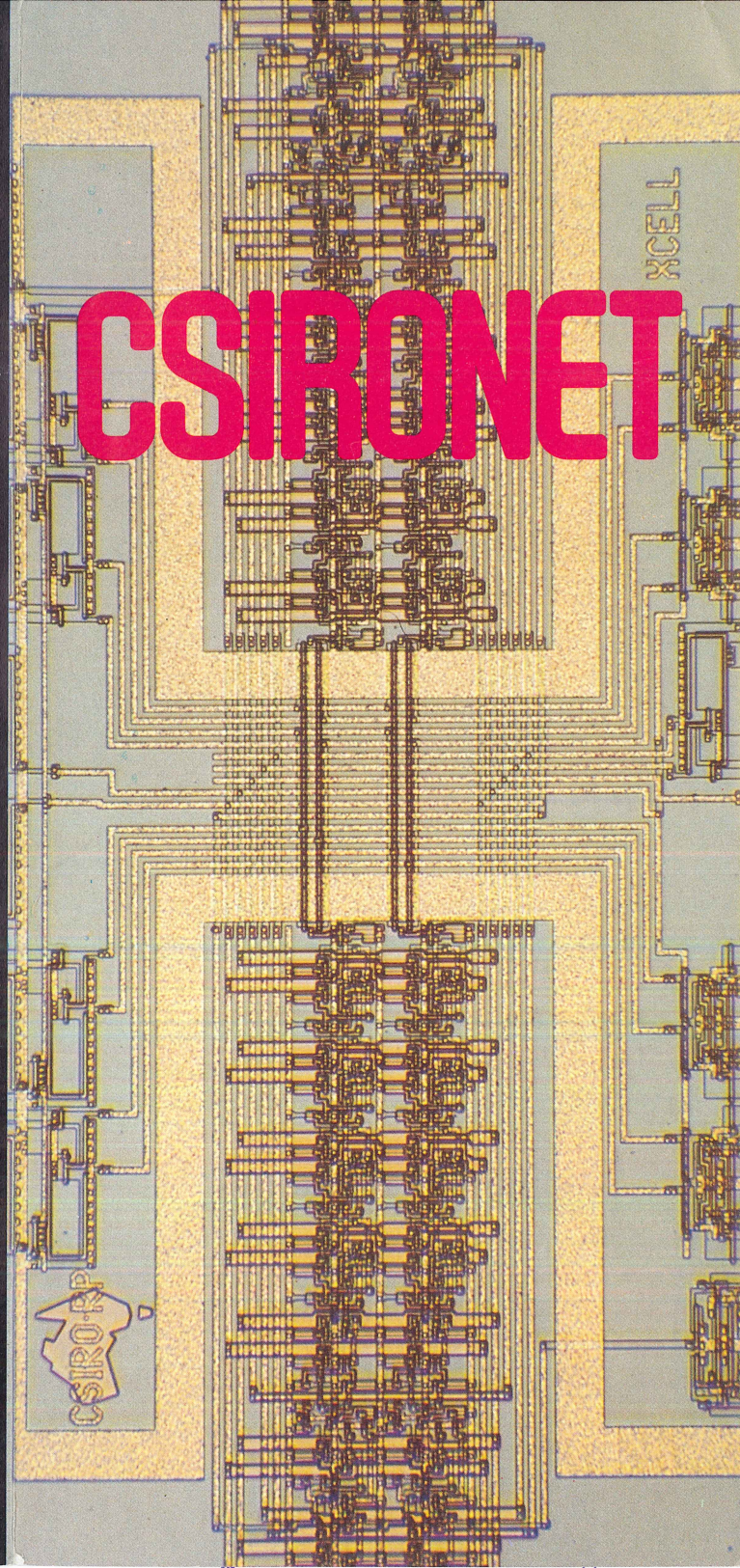CSIRONET Micronodes.

Research and Development

CSIRONET (often in collaboration with other organizations) conducts research into computing techniques and the application of computers to specific problems. Current research and development areas include:

- computer communications, including international standards
- software engineering, especially Cyber 205 applications
- graphics and image processing, including
  - interactive colour mapping
  - computer-aided design
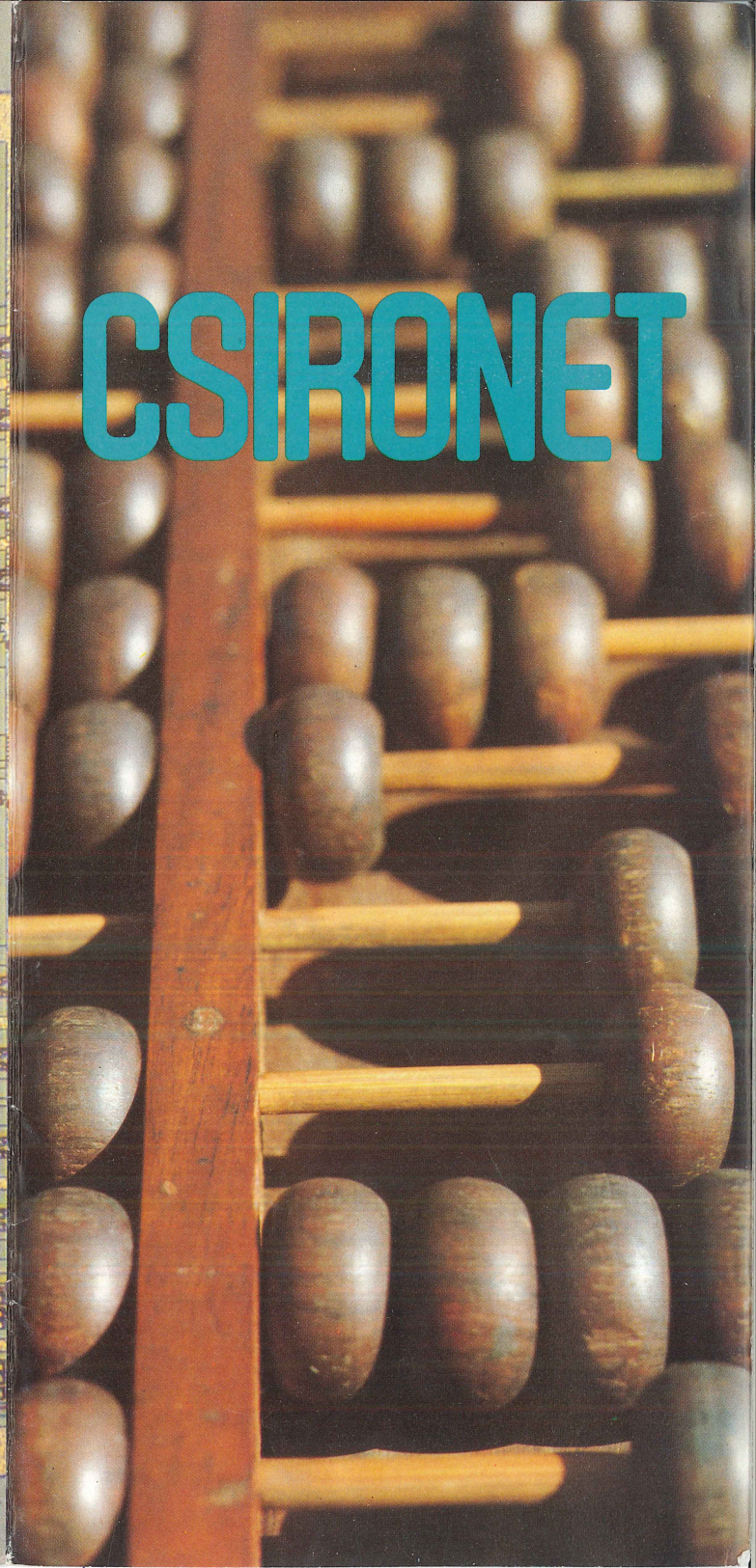 - satellite image processing
- workstation design.

A recent major joint project developed the CSIRONET Micronode, now in use at many sites on the network.

The research and development staff consist of those who design and improve the way in which the computing equipment is used, and those who are concerned with applying these techniques to other fields. The results of this work are made available to users in the form of improved services and facilities, and those of wider significance are published as papers in scientific journals both in Australia and abroad.

Right: One of the 46 different designs on the first Australian Multi-Project Chip. This is a digital correlator for radio-astronomy applications, from the CSIRO Division of Radiophysics. It occupies an area of 3.24 mm by 1.72 mm and contains 643 transistors. The section shown here is magnified approximately 70 times).

CSIRONET

GPO Box 1800, Canberra ACT 2601, Australia
Tel. (062) 433299

June 1985

CSIRONET

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Using the System

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Users typically communicate with the central computers through interactive terminals in their offices or laboratories. Jobs can be changed or rewritten, processed, and the results examined almost immediately. In this operation, therefore, distances do not matter. A scientist in Hobart, Perth or Townsville can get results just as quickly as someone sitting at a terminal in the main CSIRONET building in Canberra, where the computers are located. Alternatively, users can submit jobs in the form of punched cards or from their own microcomputer. In either case, results can be output on a variety of equipment, including line printers, laser printers, plotters, or film.

Support Services

CSIRONET provides its clients with support services such as assistance with system and programming difficulties, library services, and consultation on specialised projects. Most of the staff (totalling about 150) are located in Canberra, with Regional Offices in Adelaide, Brisbane, Darwin, Hobart, Melbourne, Sydney and Townsville providing local support.

The Chief Executive has overall responsibility for all staff, half of whom are graduates specialising in computing. Scientific, technical and administrative staff work on research and development projects, maintenance of the network, assistance to users, accounting, documentation and other supporting tasks.

Basic equipment such as interactive terminals is provided at CSIRONET Headquarters in Canberra, and at our Regional Offices for those users who do not have personal access to the network. In addition, some specialised output devices, such as plotters and laser printers, are available at Regional Offices; otherwise output is sent by overnight courier from Canberra.

Software packages are maintained (and in some cases, developed) to provide users with standard methods of analysing and displaying data. Some of this software is designed for easy use by non-programmers.

Library and Information Service

The resources of the Library and Information Service include periodicals and serials on computing and applications. The main collection is located in Canberra, and smaller collections are held in CSIRONET Regional Offices. Abstracting services are available. All users of CSIRONET are welcome to use the Library.

CSIRO DIVISION OF COMPUTING RESEARCH
BROKEN HILL. 30095-23412 08JUN78 C S31-37/E141-44 D102-002 SUN EL21 A042
LEFT PERSPECTIVE FROM 340 DEG

FILM WRITTEN BY CSIRONET 21-AUG-81 15:56:31   CSIRO.COPYRIGHT

ORIGINAL 'BUG'   CORRECTED BUG

Top: A mosaic of six Landsat scenes covering an area of about 100 000 sq km in the Simpson Desert, central Australia. Computer processing has enhanced colour variation and concealed the joins between individual scenes. Left: Computer-generated relief-shaded elevation image of Broken Hill area, viewed at an angle from the north, from 40 km height. Above: Electron micrograph of Scarabaeid beetle, before and after geometric correction by computer.

CSIRONET

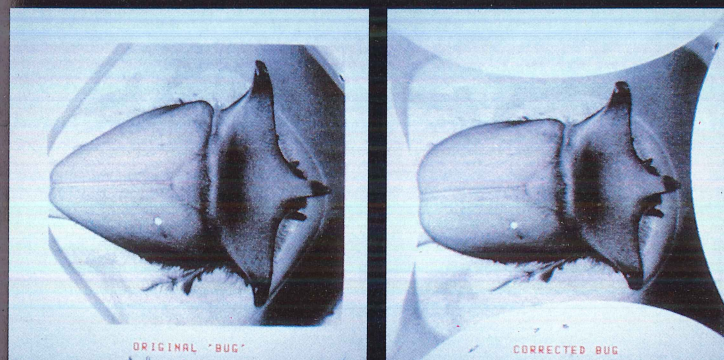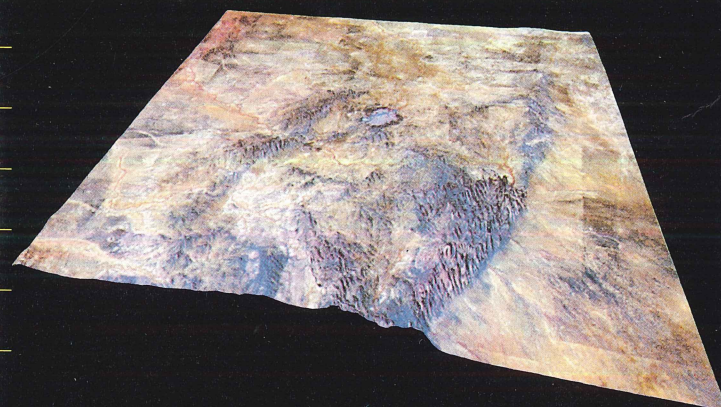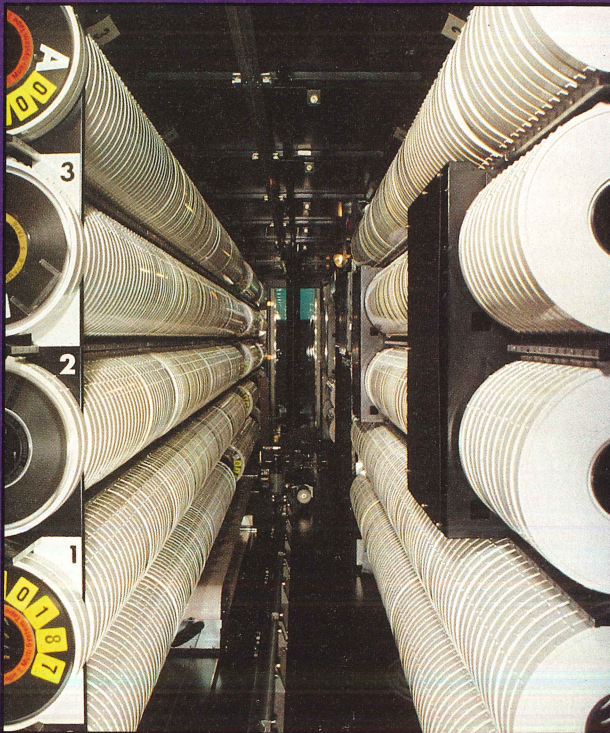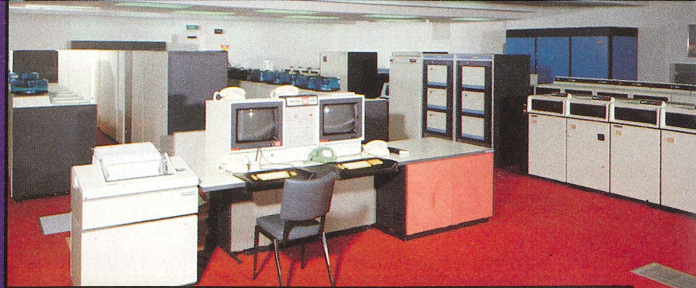Computer-generated perspective view of new road design. (Drawing courtesy National Capital Development Commission).

LANDSCAPE OPTION 3
INCORPORATING CARRIAGE VIEWED FROM 10.00 ABOVE CH -350.0

FACOM equipment and interior of Automated Tape Library

Typesetting and Printing

Computer typesetting and printing facilities on CSIRONET include output to microfiche, several sizes of film and paper (35mm, 16mm, and full 228 x 301mm), and two types of laser printer (Xerox 9700 and Imprint-10).

Related publishing facilities include a workstation which produces forms, diagrams and special characters interactively; a graphics scanner which digitises original artwork for computer processing; and a multidisk reader which converts data from a wide variety of floppy disks to a format suitable for CSIRONET.

COMp 80, some of the typesetting fonts available, and the Xerox 9700 laser printer.

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Cyber 205

The Control Data Cyber 205 'supercomputer' is a very fast pipelined vector processing machine with a performance approaching 400 million floating point operations per second. Suitable applications for the Cyber 205 are in the area of numerically-intensive problems with large requirements for central-processing time or memory; for example:

- oil, gas and mineral exploration
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- climate and oceanographic studies
- chemical and biochemical studies
- large scale economic modelling
- satellite image processing
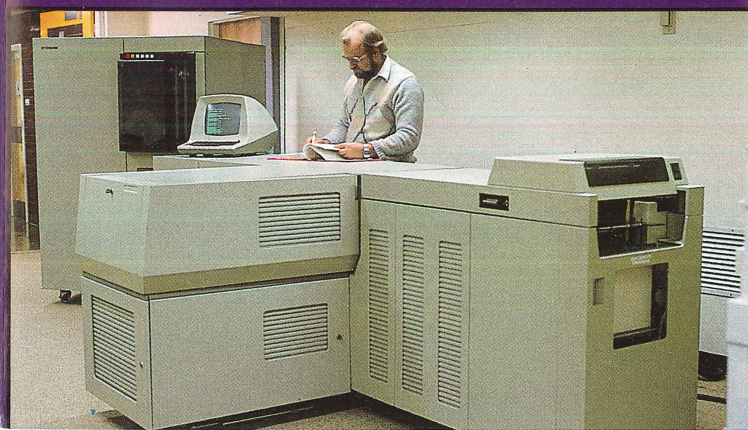- scene simulation (film & television)

Image Processing

An Image Processing Laboratory in Canberra is available to users. It has facilities for interactive image enhancement, satellite image processing, and image restoration. The programs can also be used with other images and graphically-referenced data (e.g. ecological, geophysical, environmental). Much of the software can be installed on users' own workstations.
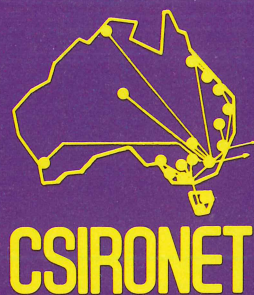
Sperry Mapper

Sperry Mapper (an acronym for Maintaining, Preparing and Producing Executive Reports) is a general purpose, real time, interactive report processing system available through CSIRONET. It allows a non-programmer to generate, update, reorganize and perform over 100 functions to the report processing database, using powerful but simple and easy-to-understand commands.
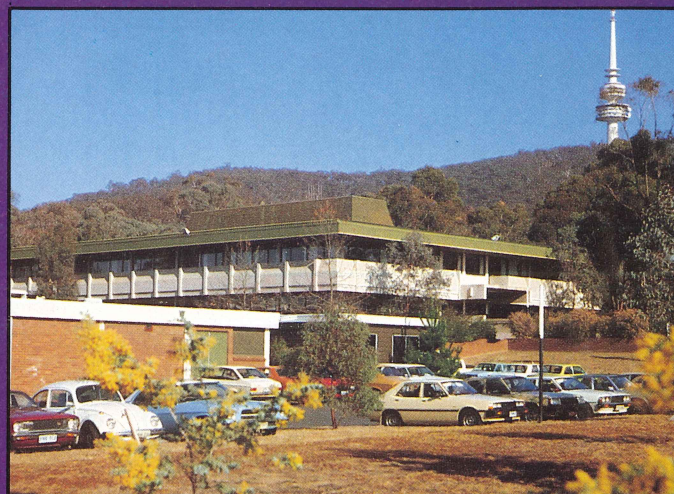
Publications

The major publications of CSIRONET are a series of Users Manuals, other Reference Manuals, Introductory Guides and Services Notes. New services, facilities, and changes to the existing system are announced through system bulletins and the bimonthly magazine, *CSIRONET News*. An Annual Report is also published. Copies of CSIRONET publications may be obtained by writing to:

Publications Assistant
CSIRONET
GPO Box 1800, Canberra, ACT 2601.

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CSIRONET Headquarters, Canberra.

The Network

The CSIRONET computing network comprises a range of host computer services (see list), connected to each other through local area networks and to the end user by a packet-switched network utilising telecommunications lines.

The links between the local networks and the telecommunications lines, and between those lines and the end users, are known as 'nodes'. These nodes are located at CSIRONET offices and other centres around Australia. The node computers can each drive a card reader, line printer, plotter, and several interactive terminals. There are more than 160 nodes and 1500 terminals on the network.
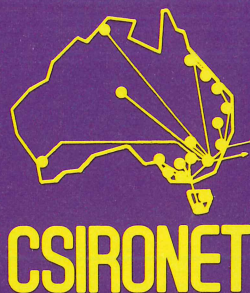
Facilities and Services

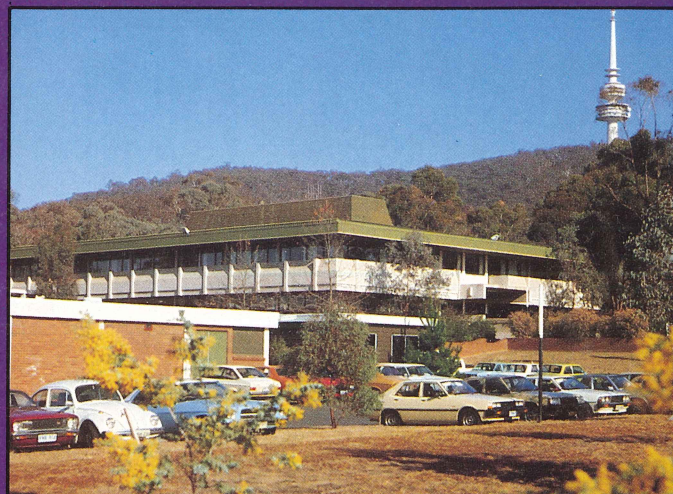CSIRONET offers a wide range of facilities:
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A computer hall at CSIRONET, Canberra.

The Control Data Cyber 205, with disk drives in foreground.

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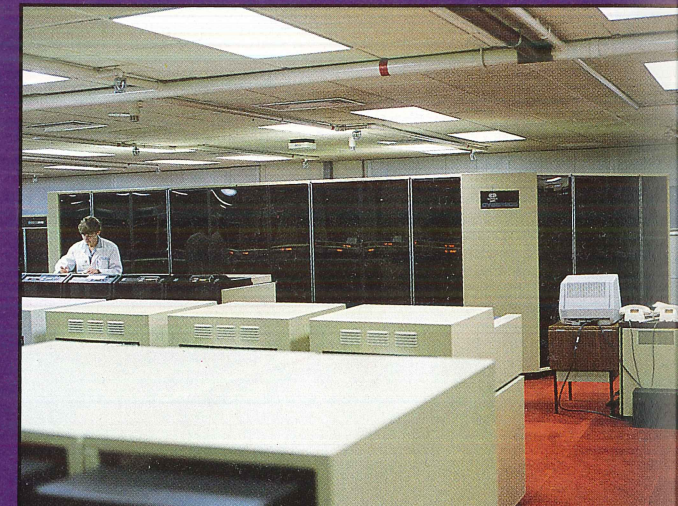

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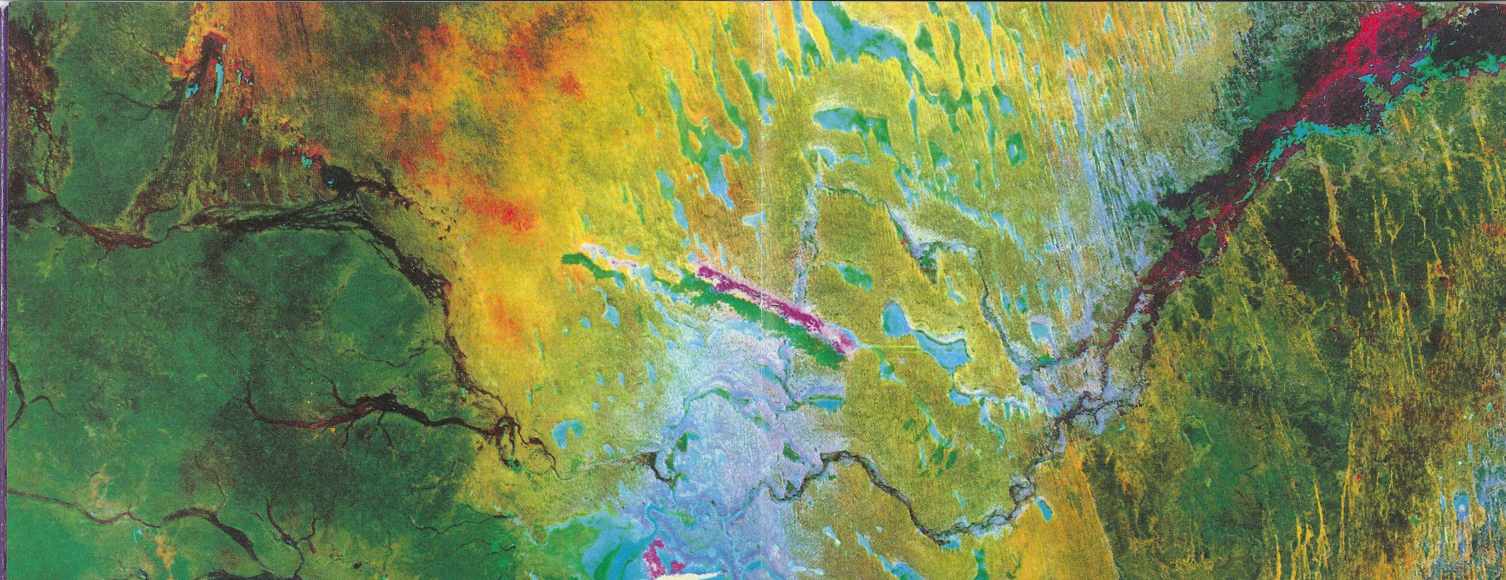CSIRONET Headquarters, Canberra.

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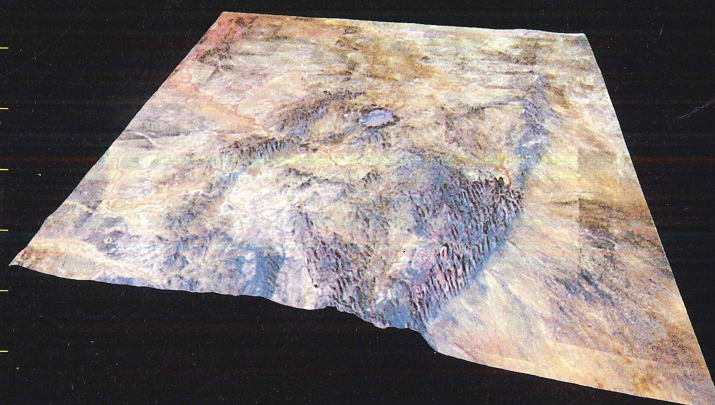

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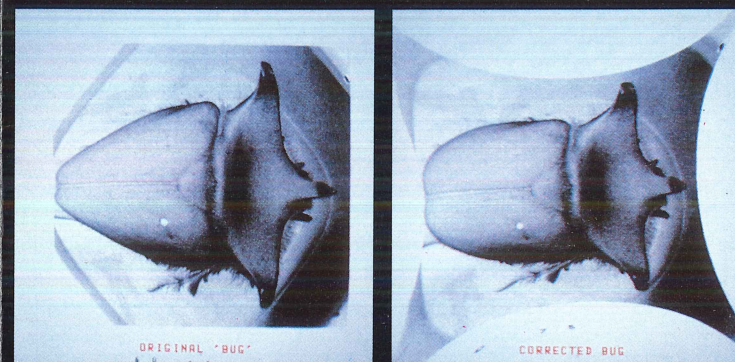
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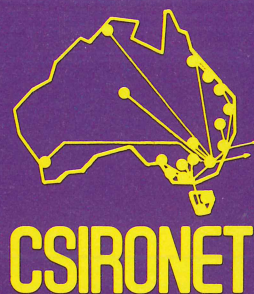LEFT PERSPECTIVE FROM 340 DEG
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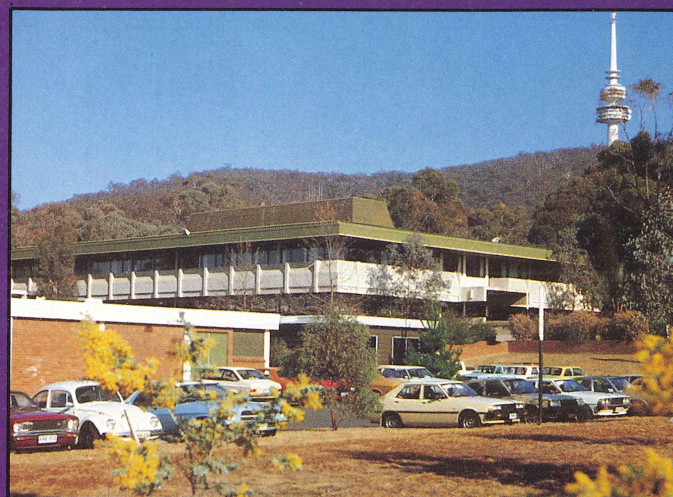

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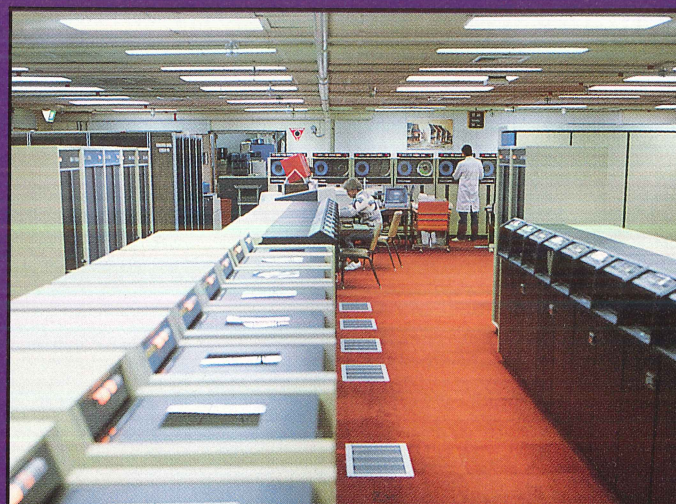
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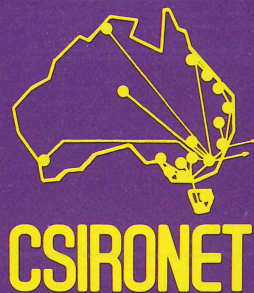A computer hall at CSIRONET, Canberra.

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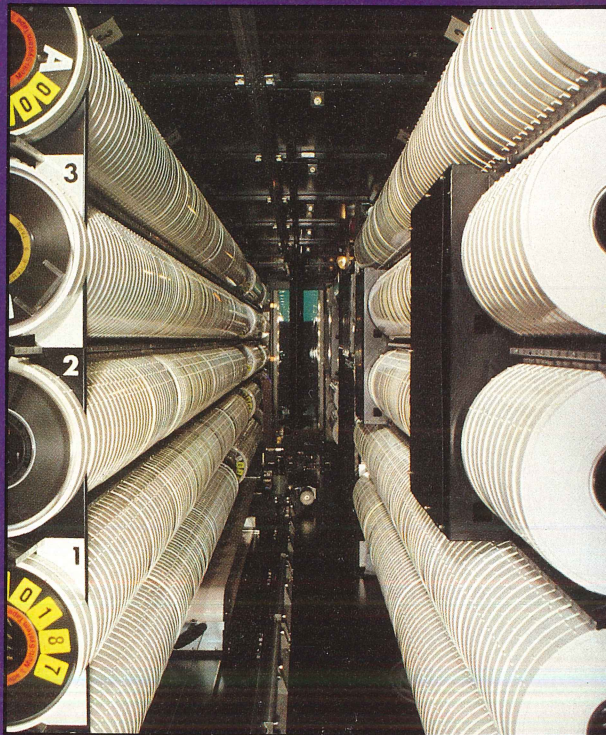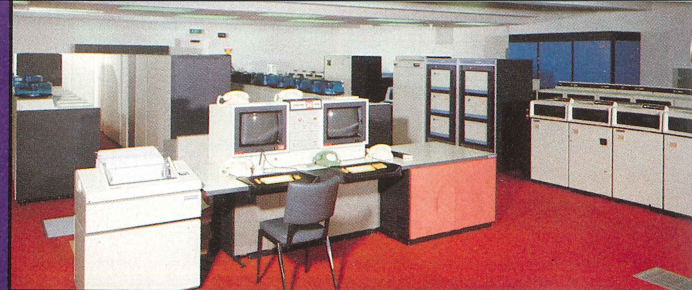- Connections to personal computers and workstations

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