



# PRENTICE COMPUTER CENTRE

ANNUAL REPORT 1986





**PRENTICE COMPUTER CENTRE MANAGEMENT COMMITTEE 1986**

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The Prentice Computer Centre provides computing and associated data network facilities for the teaching, research and administrative activities of the University of Queensland, Griffith University and related areas such as the Queensland Tertiary Admissions Centre.

#### Computing and Network Developments

A major new computer, a Digital Equipment Corporation VAX 8650 was installed in mid-1986, mainly to enhance the facilities available for the development of advanced online administration and management support systems for the University of Queensland. Until such time as the administrative systems require the full capacity of the equipment, the VAX 8650 will also be used to meet the growth in teaching and research computer use.

The IBM 3083E computer system installed in 1984, operated for the most part in virtually unattended mode and has provided a low cost computing service, particularly for large research computations. It is now operating close to saturation. The system has demonstrated the need for large 'number crunching capacity' and scientific data base facilities and has permitted research to be progressed in areas not possible with previous equipment. One thousand student accounts are also active on the IBM system. This provides students with experience on the use of a range of software packages.

During the year, the Academic Resources Planning Committee conducted a study into the need for an advanced 'supercomputer' facility within the University. The large scale computing power of such a system would provide capabilities consistent with those of a number of major universities worldwide and encourage new areas of research and discovery. It would also provide to government and industry in Queensland access to a facility which is not likely to be otherwise available in the State. Following considerable discussions across the University, it was decided that the significant additional equipment costs could not be justified at this stage in priority with other requirements. The facilities available from CSIRO in Canberra would continue to be used for work beyond the capacity of existing central computers.

The Data Communications Local Area Network facilities on the St. Lucia Campus continued to be upgraded by the extension of optical fibre between buildings. A high speed ETHERNET data communications systems was installed at the Princess Alexandra Hospital to link workstations of the Departments of Medicine and Surgery to a new MicroVAX computer system. This system is also linked to the central computer facilities at the Prentice Computer Centre. It will provide university medical departments at Princess Alexandra Hospital access to a wide range of computing and network services.





During 1986, the Prentice Computer Centre assumed a leading role in the establishment and development of the South Pacific Education and Research Network (SPEARNET). The aim is to adopt a standard set of procedures for data communications between Australian and New Zealand Universities. By the end of 1986, all New Zealand and eight Australian Universities had joined the network. The Australian Vice-Chancellors Committee has under review the requirements for the formal management of the network and its ongoing development.

The data communications network at Griffith University was enhanced by - the installation of optical fibre, the expansion of the circuit switch from 120 lines to 368 lines, and the installation of a DEC MicroVAX II as a communications node with two 56,000 bits/sec lines to the Prentice Computer Centre.

The Centre provided its specialised services at contract rates to the Universities and approved external organisations. Some of the significant projects were:

- \* Planning and installation of computer and data networks facilities for the University College of the Northern Territory.
- \* Development of a Student Information System for the University of Technology Lae, PNG, under an ADAB sponsored program.
- \* Modifications to improve the efficiency of the computer system for Queensland Tertiary Admissions Centre.
- \* Development and installation of a computer system to monitor and assist with the operations of the Central Animal Breeding House.
- \* Extension of the computer system for equine blood typing to accommodate additional blood typing factors.
- \* Development of special communications software for the Australian Computer-Based Beef Auction system.
- \* Evaluation, jointly with Buildings & Grounds Section, of an energy management system; assistance with the preparation of a tender document and evaluation of responses.
- \* Consulting support throughout the year to the Queensland Institute of Medical Research.
- \* Assistance to a Queensland technology company in the design of complex layered printed circuit boards using the Centre's CAD/CAM facility.
- \* Development of a wide range of smaller projects for Teaching and Research departments; the number of small contract jobs on behalf of departments of the universities increased by 75% in 1986.





The Centre's advisory service to assist departments with planning, acquisition and operation of local computer and network facilities continued to be heavily used. The Centre's involvement ranged from large systems in the Department of Mathematics, the Faculty of Commerce & Economics, the Division of External Studies, Administration and the Library to a wide range of smaller personal computer systems which are now pervasive across both the University of Queensland and Griffith University. The demand for assistance in the latter area grew to the extent that, in 1986, an additional staff member was allocated to the Centre's Personal Computer Support Group. In addition to coordinating purchases on behalf of departments, this group arranges educational software licences and provides general consulting support.

Contract hardware maintenance services were provided for 35 departmental computer systems and 550 terminals. A maintenance service for personal computers was introduced in 1986.

In 1986, 70 short courses with an enrolment of 568 university staff and post-graduate students were conducted. These courses cover introductory and advanced subjects and contribute to the effective use of the University's computing resources.

#### Financial and Operating Results

In 1986, operating costs increased by 3.7% over the previous year to \$2,656,000 and receipts increased by 11% to \$2,794,000 resulting in a surplus of \$138,000 transferred to Reserve Account. The Reserve Account of \$281,400 as at 31.12.86 will be required to meet deficits in 1987 and 1988 resulting from additional costs incurred in bringing new computing equipment into operation.

Revenue from use of central computing facilities increased by 10% and revenue from contract programming and maintenance work increased by 23%.

Salary costs were 2.3% lower than for the previous year. General Maintenance costs increased by 23% as a result of establishment costs of the new VAX 8650 computer and full year costs of new software for the IBM 3083E. Travel costs increased by slightly more than double that of the previous year reflecting travel associated with contracts in Lae, Darwin and Sydney, recruitment costs and AV-CC subcommittee meetings. Travel associated with attendance at specialised courses and approved conferences amount to 33% of the travel expenditure.

Usage of the KL10 and VAX systems increased slightly (by 2.4%), mainly from increased Administration usage by University of Queensland and Griffith University. Other than the annual processing runs for QTAC, the IBM 3083E is used for teaching and research work for both Universities. Revenue from use of the IBM 3083E increased by 66% to \$334,000 and capacity of the system was consumed to the extent that, at the end of 1986, approval was given for memory size to be increased and for some restrictions to be placed on resources associated with each kit.





It is relevant and pleasing to note that the IBM system has provided the opportunity to allocate adequate levels of computer time for special computing research grants approved by the Research Committee.

Central computer systems were available for effective use at satisfactory levels of performance. (IBM 98.1%, KL10 97.9% and VAX 11/780 97.4%).

A surplus of \$62,263 was achieved for Campus Data Network operations. This surplus is committed for repayment of the establishment loan which will be reduced to \$2,394 by 31.12.86.

### Staffing

All labour hours worked by Prentice Computer Centre staff are costed to approximately 300 activities. Centre staff worked 123,962 hours in 1986 and the distribution over major activities of the Centre was as follows:

	%
Executive, Common Services	15
Central Computer Operations	22
Applications Development	17
Software Maintenance and Development	12
Engineering and Communications	15
Distributed Computing	19
<b>TOTAL</b>	<b>100</b>

(Note: Staff Overheads in previous annual reports were included with Executive and Common Services. They are now apportioned across each of the major activities)

The costs other than salary have increased as a result of external factors and there is little opportunity for savings. In order to increase the Centre's reserves to offset future expected deficits resulting from the initial costs of installing new equipment, it was necessary to hold staffing levels down despite increases in workload. In 1986, the Centre had 8 resignations and 5 cases of long service and special leave, totalling 20 man months. This further increased the staff management problem.

The containment of staffing levels when demand for services continued to increase has had some adverse impact on the grade of service as did resignations of experienced staff in key areas. The demand for computing staff in commerce and industry remains high and we can expect wastage of staff to remain high in the foreseeable future.



5.

Nevertheless, the staff of the Centre has continued to act with dedication and professional ability to meet the challenges during 1986 of installing a new mainframe computer, of extending the capabilities of the IBM 3083E computer, of introducing the latest technology in the local area networks, of expanding our specialist contract programming and systems support, of increasing the Centre's support of personal computers and, at the same time, of maintaining the normal operations of the Prentice Computer Centre.

I record my thanks to the staff of the Centre and acknowledge with a great deal of gratitude the cooperation and assistance that has been received from the Centre's users.

Alan W. Coulter  
Director

Attach:



FINANCIAL STATEMENT

PRENTICE COMPUTER CENTRE OPERATIONS ACCOUNT SUMMARY - 1986

	<u>REVENUE (000'S)</u>	<u>Budget Actual</u>	<u>EXPENDITURE (000'S)</u>	<u>Budget Actual</u>
		<u>1986</u>		<u>1986</u>
Computer Use:				
Internal University of Qld		1200	1130	2059
Internal Griffith University		280	353	1877
Other Educational Institutions		5	19	
External		260	293	
CAD/CAM System Use:				
Internal Users		30	38	70
Others		10	14	112
Programming and Hardware Services(2)		590	656	20
Engineering and Comms Services		-	13	
Cash Sales		5	8	10
Operational Services - Griffith University		-	5	6
Charges to General Fund for approved services rather than charges to individual users -				15
University of Queensland		195	195	20
Griffith University		27	27	-
Network Development charged to CDN		16	4	21
Transfer to Reserve Fund		172		138
		<u>2790</u>	<u>2755</u>	<u>2790</u>
				<u>2755</u>

(1) Budget estimates are based on expected December 1985 rates - Award & CPI increases being covered by Salary Supplementation of \$39,280 calculated by Bursar's Office.  
 (2) Prepayments for 1987 services deducted - \$27,971.96  
 (3) Outstanding Debtors 31.12.86 = \$50,152      Outstanding Orders 31.12.86 = \$39,834





PRENTICE COMPTON CENTER OPERATIONS ACCOUNT SUMMARY - 1982-1986

	<u>REVENUE (000's)</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>EXPENDITURE (000's)</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Computer Usage: (1)							Gross Salaries (2)	1317	1508	1770	1957	1916
Internal University of Qld.		785	896	1104	1092	1130	Maintenance	129	173	254	392	483
Internal Griffith University		100	145	209	284	353	Stationery	46	51	57	65	62
Other Educational Institutions		8	10	9	8	19	Electricity	64	73	105	104	112
External		225	265	212	261	293	Insurance	11	12	18	14	15
CAD/CAM System		-	-	-	32	52	Magnetic Tapes & Packs	1	1	8	8	15
Contracts - User Services &							Furniture and Fittings	2	2	1	3	1
Equipment Maintenance		315	336	445	534	656	Air Conditioning Maint.	18	10	11	9	16
- Eng/Comms Services		-	-	-	-	13	Travel	10	10	10	9	21
Cash Sales and Courses		7	7	3	6	8	Publications	22	20	8	1	3
Operational Services - Griffith Univ.		-	-	-	24	5	Rentals	3	-	-	-	-
Salary Supplementation		125	44	107	47	39	Labpak Patent Costs	-	-	-	-	12
Charge to General Fund for												
Approved Services - Univ. of Qld		105	116	167	185	195						
- Griffith Univ.		10	14	23	25	27						
Network Development - CDN		-	13	-	15	4						
Transfer from Reserve Fund		-	14	-	49	-	Transfer to Reserve Fund	58	-	37	-	138
		1681	1860	2279	2562	2794		1681	1860	2279	2562	2794

(1) Low priority terminal rate reduced from 50% to 40% of prime rate from 1.5.80; VAX 11/780 system introduced at 3/4 KL10 charge rates on 17.8.81; KL10 primary memory charges reduced by 15% from 1.2.82; VAX 11/780 charge rates reduced to 1/3rd of KL10 equivalent charges; KL10 primary memory charges reduced by 10% and charge for file I/O reduced by 15% from 1.3.83; introduction of User Kit charging on IBM from 1.8.84.

(2) Actual staff costs including payroll tax, overtime, penalty payments and other staff costs.



REVENUE EARNED 1982 TO 1986 (\$000's)

	UNIVERSITY OF OLD GRIFFITH UNIVERSITY											
	YEAR	ACADEMIC ADMIN	AFFIL.	ACADEMIC ADMIN	AFFIL.	ACADEMIC ADMIN	AFFIL.	OTHER EDUC INSTIUT.	EXTERNAL	CASH SALES	HARDWARE	TOTAL
COMPUTING AND CASH SALES	1982	335	351	99	56	39	4	8	226	7	-	1125
	1983	361	450	87	60	72	26	10	265	7	-	1338
	1984	421	590	78	68	85	56	9	212	3	-	1522
	1985	428	601	77	77	87	133	8	258	6	-	1675
CONTRACTS	1986	423	701	45	91	105	106	16	282	1	-	1770
	1982	60	2	32	2	64	1	1	15	-	-	177
	1983	55	12	8	2	54	49	2	9	-	-	191
	1984	46	61	6	11	60	73	-	8	-	-	265
	1985	49	21	6	11	76	146	-	3	-	-	312
HARDWARE & PC SUPPORT	1986	40	31	12	4	90	57	19	9	-	-	262
	1982	-	-	-	-	-	-	-	-	-	138	138
	1983	-	-	-	-	-	-	-	-	-	146	146
	1984	-	-	-	-	-	-	-	-	-	179	179
	1985	-	-	-	-	-	-	-	-	-	222	222
	1986	-	-	-	-	-	-	-	-	-	245	245
TOTAL	1982	395	353	131	58	103	5	9	241	7	138	1440
	1983	416	462	95	62	126	75	12	274	7	146	1675
	1984	467	651	84	79	145	129	9	220	3	179	1966
	1985	477	622	83	88	163	279	8	261	6	222	2209
	1986	463	732	57	95	195	163	35	291	1	245	2277

- Notes: 1. Figures refer to revenue earned during the year. There may be variations between these and revenue brought to account in expenditure and revenue statements.
2. Figures do not represent relative work load on computers due to variations in use of priorities, changes to charge rates and charge factors for different classes of users. External users are charged at 3.7 times the internal rate and other educational institutions at 1.7 times the internal rate.
3. UO Affiliated figures for 1982 includes \$64,000 for QTAC, whilst QTAC revenue of \$73,000 for 1983, \$123,000 for 1984, \$262,000 for 1985, \$157,010 for 1986 is included with Griffith University Affiliated.





SYSTEM PERFORMANCE REPORT - 1/1/86 to 31/12/86

	KL10	GRIFITH	VAX 11/780	IBM 3083E
	HHH:MM	%	HHH:MM	%
1. Attended system running time	4414:00		4104:32	4192:00
2. Plus unattended system running time	4339:12		4658:00	4568:00
3. Equals total system running time	8753:12	100.0	8762:32	8760:00
less time used for:				
4. Scheduled maintenance	283:50	3.2	18:11	20:07
5. Dedicated operations tasks	-	0.0	12:40	-
6. Dedicated systems development	-	0.0	5:30	-
7. Equals time scheduled for use	8469:22	96.8	8726:11	8739:93
less lost time due to:				
8. Unscheduled maintenance	50:39	0.6	5:37	-
9. Hardware faults	16:07	0.2	40:48	34:33
10. Software faults	18:31	0.2	115:47	28:51
11. Unresolved	0:09	0.0	2:24	-
12. Environmental conditions	96:12	1.1	58:00	83:42
13. Equals time available to users	8287:44	94.7	8503:35	8593:67
14. Effective user uptime (13./7.)		97.9		98.10
				98.33







