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DEVELOPING A VIRTUAL ORGANIZATION: SERENDIPITY OR STRATEGY?*

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ABSTRACT

This paper addresses the question of how virtual organizations that yield strategic advantage are formed. The study uses grounded theory to investigate the organizational processes and structure that facilitate the formation of a successful virtual organization. We present a case study of one virtual organization, a university in Australia, which has gained strategic advantage from alliances supported by information and communication technologies (ICT). The university is now the fastest growing university in Australia in terms of international student enrolments. The case study suggests that this commercial success is based on responsiveness to environmental conditions and organizational factors that include a long history as a distance education provider (an early form of virtualization), sophisticated information communication technologies, and a culture of innovation and risk-taking. The development processes observed included evolutionary growth, decisive actions and management leadership at opportune moments, and examples of technological and entrepreneurial innovations led by individuals. Significant decision making occurred outside formal strategic planning processes.

INTRODUCTION

This paper addresses the question of how virtual organizations are formed to yield strategic advantage. We are interested in the processes that organizations go through to arrive at successful virtual organizations. Virtual organizations are electronically networked organizations that transcend organizational boundaries, with linkages that may exist both within and between organizations (Burn, Marshall and Wild, 1999). Virtual

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organizations underpin many of the business models advanced for engagement in electronic commerce. As such, strategies for the development of virtual organizations have both practical and theoretical significance. At this point, it appears there are few practical guidelines for firms considering or engaged in 'virtualization'.

In this paper we present a case study of one virtual organization, a university in Australia, which has gained strategic advantage from alliances supported by information and communication technologies (ICT). The university is now the fastest growing university in Australia in terms of international student enrolments, which provide a considerable portion of the University's income. As the university is relatively small, and is situated in a regional area in northern Australia over 700 km from the nearest city of any size, its success is remarkable. The supporting ICT for this virtual organization includes an enterprise resource planning (ERP) system, Intranets, the World Wide Web, video conferencing and email.

The case study is retrospective and adopts a grounded study approach. Data was gathered from interviews and secondary sources. In analyzing this case study, our aim was to identify significant contributors to the success of the virtual organization. We look specifically at contributions in the form of strategic planning, external pressures, actions by individual players and the structure and nature of the organization. The case study should contribute to further development of theory relating to the formation of virtual organizations.

THE VIRTUAL ORGANIZATION CONCEPT

In our exploration of the phenomenon of virtual organizations, we consider the character, rationale, and the forms of virtual organization. In addition, we pay attention to the processes by which organizations become virtualized. This study adopts a grounded theory approach, as there appears to be no existing well-accepted theory that provides a comprehensive basis for understanding the formation of virtual organizations. Thus, the conceptual background given here for virtual organization is primarily definitional. In addition, however, we refer briefly to some relevant literature from the field of strategic information systems.

Sieber and Griese (1998, 1999) present an interesting overview of the basic characteristics of a virtual organization. However, a virtual organization—sometimes called a networked organization, an intelligent enterprise (Quinn, 1990) or an electronic marketplace (Bakos, 1991; Benjamin and Wigand, 1995)—will seldom or never match all the characteristics of an ideal type. An organization may have a number of characteristics that make it more or less virtual. Therefore it is better to speak of *aspects of virtuality*. Aspects of virtuality include: linkages/alliances (with quasi autonomy)**,** involvement of partners, boundary crossing, complementary core competencies/pooling of resources, sharing of knowledge,

geographic dispersion, changing participants, participant equality, and electronic communication by interorganizational information systems. The mixture of informal (trust) and formal coordination mechanisms (for example, hierarchical or market) in virtual organizations is an especially important topic (Gebauer, 1996; Jarvenpaa and Shaw, 1998).

Burn et al. (1999) conclude "that there is consensus that different degrees of virtuality exist and within this, different structures can be formed. ... such structures are normally interorganizational and lie at the heart of any form of electronic commerce ...". These authors identify six virtual models. The first, *virtual faces*, is a cyberspace incarnation of existing non-virtual organizations ('place' as opposed to 'space' organizations) (Rayport and Sviokla, 1995). The *co-alliance model* is a shared partnership with each partner bringing in its resources, core competencies and so on. The *star alliance model* is a coordinated network of interconnected partners reflecting a core surrounded by satellite organizations. The core comprises the leader who is the dominant player in the market and supplies expertise to the members. In the *value alliance model*, partners bring together a range of products, services and facilities in one package based on a common value chain model. The *market alliance model* embraces partners that primarily exist in cyberspace, depending on their partners for the provision of actual products and services and facilities and operating in an electronic market. In the *virtual broker model* (Miles and Snow, 1986) virtual brokers are the designers of dynamic networks .

The rationale for virtual organizations is rooted in cooperative advantages such as:

- Performance/productivity enhancement and cost reduction by pooling resources, and cooperative research and development.

- Strategic match by improving the existing objectives of involved partners by international expansion and increasing market share, improving customer satisfaction by local customization product and services.

- Competitive advantage of all involved partners by creating distinctive products and services, and distribution and market relationships that make the displacement of the virtual organization more difficult for competitors.

- Information support for coordination in the field of organizational unit performance control and interorganizational transaction governance (such as monitoring outsourcing contracts).

- Sharing competitive risks for all involved partners by joint investments in the development of high risk projects for administrative, teaching and research purposes.

In this paper we are concerned particularly with the virtualization process and the significant influences that affect this process. This process can be regarded as an example of IT-enabled change or a process of planning for, and adoption of, strategic information systems (SIS). Many researchers have addressed the question of SIS and a large number of frameworks have been proposed for the analysis of the strategic impact of SIS and for suggesting how strategic impact may be sought (Earl, 1989).

In the complex world of e-commerce, it appears that approaches such as that of Ciborra (1994) are required, given the difficulties in planning in an uncertain and rapidly changing environment. Ciborra argues against the "mechanistic" rational planning approach for SIS on the grounds that strategy formulation is difficult to plan before the fact, and competitive advantage stems from the exploitation of unique characteristics of the firm, and the unleashing of its innovative capabilities, to give 'inimitability'.

> *Only if a firm's SIS is valuable and imperfectly imitable, can it be a source of sustained competitive advantage. The sources of a systems' imperfect imitability are numerous and varied. They stem from unique solutions, and usually are created in-house thanks to an idiosynchratic mix of skills existing in the data processing department, a serendipitous application of users' know-how, or a patentable technological advance. SIS which are only imperfectly imitable are special and different, a true innovation.* (Ciborra, 1994: 4)

This conceptual background gives a basis for the categories and concepts we use in presenting and analyzing our case study. The broad categories of analysis are: (i) the environment, (ii) the organizational structure, and (ii) actions by the organization and individual players, particularly those showing evidence of strategic planning behavior.

RESEARCH METHOD

The phenomenon of interest is the organizational virtualization process, a process that can occur over several years and is suitable for case study analysis and a grounded theory approach (Eisenhardt, 1989; Strauss and Corbin, 1994). We have studied a single case of virtualization that involves several partner organizations. The case is analyzed at several levels, including influences from the external social and legislative environment, the industry level, the organizational level, and the level of individuals within the organization.

The primary data sources were interviews with individuals who had been involved with aspects of the virtualization process over a long period. The interviewees had periods of service ranging from 6 to 24 years. Additional information was obtained on specific points from other people by email. In all, ten people were interviewed or supplied information. These individuals were mostly at senior levels at Central Queensland University (CQU) and included people from the IT department, the library, the Distance

Education unit, a planning officer, a financial specialist, a Dean, and an academic. An executive of the main commercial partner was also interviewed. All interviews occurred in January 2001.

Before the interviews, the interviewees were given a skeleton form of the events timeline (see Table 1 in the Appendix), developed from secondary sources, and asked to add or correct any information as they wished. All contributors were given a copy of the table in the appendix and the description of the case study to check before completion of this report.

The interviews were open-ended, beginning with the question "What has contributed to CQU's success as a virtual organization?" Apart from some further minor clarifications, no other details of the nature of the study were given. Notes taken at each interview were transcribed shortly afterwards and verified with the interviewee.

In addition, secondary data was gathered from a history of the university (Cryle, 1992), research reports, organizational documentation, newsletters, government sources and industry-commissioned reports.

THE UNIVERSITY ENVIRONMENT

The educational sector faces similar challenges as other industries in the online world. Significant interrelated issues identified in the current educational environment include (i) commercialization, (ii) consumer demand, (iii) industry competition, (iv) technological change, and (v) university culture. A useful source of information on these issues was the "West Review" (DETYA, 1997), a report commissioned by the Australian Government, chaired by Roderick West. An additional source is Marginson and Considine's (2000) examination of new forms of university governance in the *Enterprise University*.

1. Commercialization

The reduction of public funding for Higher Education and the consequential need for a diversified funding base is seen as a major issue by leading Australian educators (BHERT, 1999). Higher education is an economic activity with considerable potential to create productive jobs and contribute significantly to national wealth both directly as an internationally competitive industry and indirectly through the learning and skill it generates. Education is also a major earner of export income (DETYA, 1997).

2. Consumer Demand

Consumer demand is changing. There is an increasing demand overall for tertiary education (BHERT, 1999). "The twenty-first century will mark the era of tertiary and

lifelong education for everybody—or almost everybody" (DETYA, 1997). In addition, there is evidence of a major segmentation of the market, with new providers targeting the 'lifelong learning' cohort (25 years and up). This includes corporate training/education, a domain only partially catered for by traditional universities, and a profitable market—being largely self-funded and employer-funded (Gallegher, 2000).

3. Industry Competition

Traditional providers of tertiary education are being challenged by competitors public and private, national and international. BHERT (1999) cites the emergence of Melbourne University Private and the proliferation of so-called corporate universities, with between 1,000 and 12,500 now in operation in the USA. The implication is that existing tertiary institutions are not seen as viable suppliers of the requisite knowledge and skills.

4. Technological Change

Technological change is enabling different methods of teaching, different modes and opportunities for study, as well as different types of organizational competition (BHERT, 1999). The West Review (DETYA, 1997) notes that "the information and communications revolution will not only introduce different methods of production and delivery of educational courses and materials, but will also question existing institutional arrangements".

5. University Culture

The West Review (DETYA, 1997) reported "a feeling of unease in the universities. Many believe that traditional intellectual values and sound knowledge associated with higher education—and in particular the pursuit of knowledge for its own sake—are under threat". There is a perception that constraints in funding levels over the last fifteen years or so are making it increasingly difficult for institutions to fulfill their roles in Australia's social, cultural and economic life. Higher education has in recent years become an 'industry' in its own right. Many within the industry are uncomfortable with viewing higher education in this way.

THE CASE OF CENTRAL QUEENSLAND UNIVERSITY

Central Queensland University (CQU) is one regional university in Australia that is responding to the challenge of the online world. With 15,000 students, CQU is now Australia's fastest growing university in terms of international students. Only 25% of its students were in grades 11 and 12 in Australia during the last two years, the remainder are mature or international students. In other words, CQU has a diverse student population quite unlike that of "traditional" universities.

DETYA figures show that in 2000, CQU was 5th among Australia's 37 public universities in relation to percentage of international students and that, because it is growing faster than those above, it is expected to soon have the 3rd highest percentage. The national figures are RMIT 26.2%, Curtin, 25.4%, Monash 18.8%, UNSW 18.7%, CQU, 18.3% (CQU, 2000a). By comparison, in 1996 CQU had 7.3% of the total number of foreign fee paying students (DETYA, 1997). The income from these students is substantial and represents a considerable portion of CQU's budget. These figures are the basis for the claim that CQU is a virtual organization that is successful commercially.

CQU has five campuses in Central Queensland, its traditional catchment area. A key component of this integrated network of campuses is the Interactive System-Wide Learning (ISL) system—a synchronous video link that facilitates networked learning. On these campuses, classes are taught using combinations of synchronous video delivery of live lectures, videoconferencing to connect distributed groups of learners, web-delivery, synchronous and asynchronous computer mediated discussions, and face-to-face classes. This integrated network was given a major impetus by an initiative in 1997 referred to as "Vision97".

CQU has been a distance education (DE) provider since 1974 (Cryle, 1992). Distance education students are now serviced with a combination of printed, CD-ROM and web-delivered material, as well as electronic communication for class discussion and mailing lists, assignment submission, online quizzes, and library access.

CQU formed an alliance with a commercial partner, Campus Management Services, to establish campuses at Sydney in 1994, Melbourne in 1996 and more recently in Brisbane and the Gold Coast. At these campuses the students are mostly of international origin. In addition, there are campuses operating in Singapore, Hong Kong and Fiji. At all these campuses, the CQU programs are tutored by locally appointed academic staff, specifically employed for teaching rather than research. The mode of delivery is face-to-face for tutorials and lectures, supported by the distance education resource materials produced by the CQU academic staff in Central Queensland.

The table in the Appendix shows a timeline of significant events affecting CQU virtualization and outcomes in terms of student numbers.

HOW THE CQU VIRTUAL ORGANIZATION DEVELOPED

The data from interviews about the contributors to the current organizational position is organized in the categories: (i) environment, (ii) the organizational structure, and (iii) actions and processes. Sub-categories are those that emerged as themes in analyzing the data. There was a fair degree of consensus about what had been significant—some

events were commented on by a number of interviewees. Different people commented on different aspects of change, but there were no obvious diametrically opposing views.

The Environment

One senior manager recognized the influence of external change.

> *It has been a matter of survival. When Dawkins ended the binary system we stood alone. We were not physically near anyone. We did not amalgamate. We were still a small organization. We had to do something to ensure survival. We had to 'dare to be different', take risks, have a little bit of 'larrikinism'.* (Dean)

There was also recognition of the significance of government funding to support crucial initiatives. The microwave links and other infrastructure for the Vision 97 initiative was supported by a $2 million grant from the Australian government. The IT division is currently seeking additional funding to upgrade links to Brisbane. A number of 'innovators' among the academic staff have had grants to support projects investigating technology-supported teaching.

Geography has also been seen to play a role:

> *Our innovativeness has been partly driven by our isolation—we innovate or stultify.* (Dean)

Organizational Structure

The majority of the interviewees mentioned the importance of the history as a DE provider.

> *The primary enabling factor was getting into DE early. The models, lessons and experiences we had as an organization in delivering DE to remote locations have been very, very important in shaping the organization—building up a skill base to allow us to become a multi-campus operation.* (Dean)

> *A critical thing at the start was that the distance education material was available in package form. The packaged material is very useful in the lecturing/tutoring environment as it suits international students due to the structured learning process.* (Commercial partner)

The form of the alliance among the partners was seen as a contributor to success. The main commercial partner (the CMS parent, Campus Group Holdings) is 50% owned by CQU. A Board with two members from Campus Group Holdings and two from CQU oversees operations.

> *The other critical thing is the structure. We are a corporation sitting outside the university. We have legal arrangements outlined in a contract. We have high calibre people managing the company. It's important that this is all they do—making CMS work, with a focus on sales and markets. In other universities the managers are only part-time.* (Commercial partner)

The underlying ICT platform was also seen as a contributor to success:

> *Another big part of our success* (at the commercial campus) *was the establishment of a large network of computers for students. We have one computer for every 5–6 students. They can use the Web, email and can get CQU library access. Now we can enrol online.* (Commercial partner)

However, a number of comments were made about false starts with ICT, and learning from mistakes.

> *There were major problems with the WebCT trials due to inadequate funding for infrastructure. This resulted in lots more money and the purchase of a large central web server machine.* (Academic)

The ICT platform alone was not seen as a source of competitive advantage.

> *Others attempting a virtual organization like us would* ***not*** *have failed from a technical point of view.* (IT manager**)**

An innovative university culture was seen as an advantage. The corporate culture was seen as more favorable to commercialization than that at more 'traditional' universities.

> *It is a cultural thing. We are a regional university, unlike the sandstone universities—we are used to dealing with working outside the sandstone box.* (IT manager)

> *We have a history of innovation— just look at the library. I think we were the first library in Queensland to have a fully converted online catalogue. Our interactive teaching project to teach information retrieval skills to external students was stunningly innovative. That's one of the reasons I've stayed here for so long. There has always been support for trying new things.* (Library executive**)**

Actions and Processes

There was evidence of evolutionary growth:

> *A reason that the relationship works really well now is that we have been at it for a while. There were tensions in the early days, caused by demands of the business, pressures from timelines, travel and so on. Over the 5 to 6 years we have matured together. CQU copes well now, considering we have about 3,500 students. The battles were fought when we*

> *had around 500 students. The fact that we have had evolutionary growth has allowed us to grow together, to develop relationships, systems, processes, trust and understanding over time.* (Commercial partner)

> *The idea of using interactive video conferencing evolved out of the previous system of pre-taped lectures (value-added lectures, or VAL) used to teach across campuses. There were complaints about the VAL lectures. We were still a small enough institution that notice was taken of these complaints.* (IT manager)

Mistakes were acknowledged and recognized as a way to learn.

> *The transition to becoming a major international provider was not easy, and imposed a number of burdens on our academic and general staff. Like most universities, we made a few painful mistakes along the way. Few, if any, realized it would be the success that it is. A number of other universities have struggled to replicate the arrangements we have in our Australian International Campuses… To my surprise most of the imitations have failed or performed unspectacularly. I suspect they copied the wrong features of our arrangements. (*Vice-Chancellor, CQU, 2000b)

> *There was a lot of serendipity in setting up the company. This whole venture came out of a mistake. Something that was tried and did not work.* [A prior loose arrangement with another organization.] *We came back from a meeting and said 'What will we do?' 'Close it down?' 'Turn it into a CQU campus?'. It was a defining moment, the decision on whether or not to proceed. It would have been easier to close it down. There were only 22 students. It was very much a trial. There were significant legal issues. We were opening a campus in another state and this had not been done before.* (Commercial partner).

There were comments from interviewees that very significant decisions had been made outside of the usual decision making and consultation procedures. These decisions regarded commercialization and were not part of a formal strategic planning process.

> *We could not do the same thing again in the current climate—it was a combination of people and circumstances at the time.* (Senior executive).

Once a decision was made, formal planning procedures were put into effect to implement the systems needed to support the decisions. For example, a five week study was done by outside consultants to produce a planning document for implementation of the PeopleSoft ERP.

Several interviewees mentioned the impact that different individuals had, either through leadership in a management position or through innovative projects. For example, the Pro Vice Chancellor's leadership in 1996 in obtaining funding for Vision 97 and pushing the initiative through, and the new Professor of Journalism starting online journalism. Several comments were made about university academic managers who led the early entrepreneurial ventures into international markets, often in the face of opposition from

other staff. However, concerted efforts by bodies such as university committees were seen to have little impact.

> *There is very little the organization has done that has had any great impact (the type of organizational policy thing). For example, the White and Green papers that came out of distance education reviews had really very little impact… Change is heavily reliant on individuals and their interests.* (Academic).

A number of innovative projects preceded the adoption on a larger scale of particular technologies—email, videoconferencing, and the Web for teaching. These projects were driven by one individual, or a small group of individuals with particular interests in the area.

DISCUSSION AND CONCLUSIONS

The factors identified as contributing to the successful virtualization of CQU in the interview transcripts and in the event timeline in the Appendix are summarized under our original conceptual categories.

CQU has shown an ability to be responsive to external conditions, and to leverage from these conditions. Significant environmental influences identified included:

- Changes in government policy in the higher education sector.
- The geographic isolation of the core organization, meaning that it had a limited market reachable by non-virtual means.
- Government funding to support innovative and strategic projects.

Organizational structural strengths included:

- A long history as a provider of distance education. In a sense, the core organization has been a virtual organization since 1974, with distance students physically at different locations, though to begin with they were not supported by computer networks. This experience developed core competencies in dealing with distributed systems.

- The form of the virtual organization, which corresponds to the 'star alliance model', with the university as the central core and the other partners as satellites. The alliance allows functions to be differentiated and distributed to match expertise of the partners. The university functions include content production and responsibility for maintenance of academic standards. The commercial partners provide commercial management and marketing expertise and tutoring suited to local conditions.

- A sophisticated underlying ICT platform, which has evolved to meet directions set by management.

- A perception of an organizational culture of innovation and risk-taking.

Important actions and processes:

- Evolutionary growth, with learning from mistakes.

- Opportunistic behavior, with decisive actions by senior executives at serendipitous moments. At times, these actions occurred outside formal planning processes.

- Strong leadership from management in pushing through some major organizational changes (for example, Vision 97 and the four-term year).

- Genuinely innovatively individual projects that used technology to support learning and administration (computer-based training, email, videoconferencing, Web). These projects preceded the later adoption of the technologies on a larger scale.

Analysis of the case study shows evidence of strategic management that has some congruence with the ideas of Mintzberg (1990), Ciborra (1994) and Miles and Snow (1986). Evidence was found of an opportunistic and improvisation-based strategic management approach, and evolutionary development based on competencies and routinized behavior embodied in the structure of the organization. Evolutionary development was seen as necessary to allow trust to build between partners in the virtual organization, and to build the complex systems necessary to support the virtual organization. It appears that CQU has gained advantage through inimitability (Ciborra, 1994) resulting from the competencies in the organization developed in a long history with different forms of virtual organizations (distance education).

At this point we advance a new model for the strategic virtualization process, based on the evidence from our case study. The limitations of analyzing a single case study are noted, and the model is advanced tentatively at this point. The model incorporates concepts from previous theoretical work (Gregor and Johnston, 2001; Johnston and Gregor, 2000)—the notion that both the external environment and the industry structure affect an individual organization, and the notion that, as in Giddens' structuration theory (Giddens, 1984), action and structure operate as a duality, simultaneously affecting each other. This tentative model will be examined in further work, to investigate in more detail the nature and context of the critical activities observed.

The practical lessons suggested for the virtualization process include the need for continued responsiveness to the external and industry environment and opportunistic

strategic management to leverage from changes in this environment. Support for experimentation on a trial basis with underlying ICT is important in learning (from mistakes as well as successes) and encouraging an innovative culture. Strategic advantage in the form of 'inimitability' may be gained by capitalizing on unique skills and competencies in the organization. Incremental development of systems to support the virtual organization is suggested, to deal with complexity and allow trust to build.

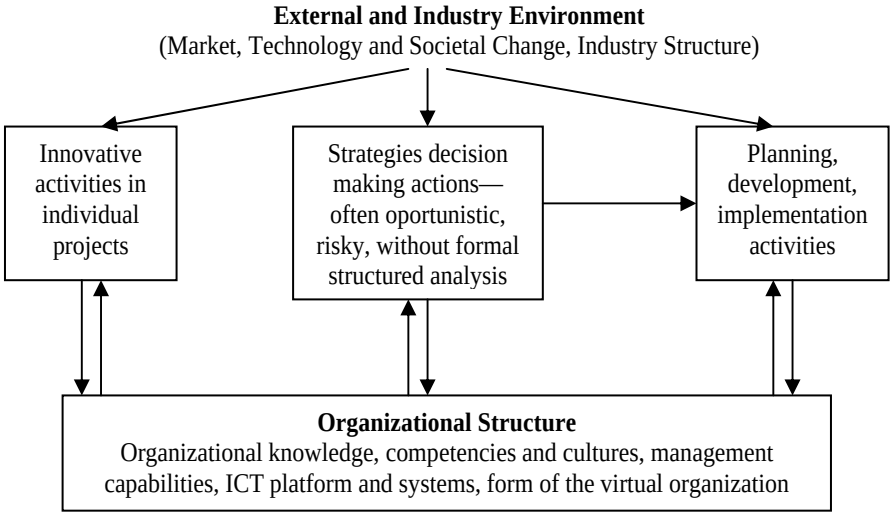

Figure 1. A model of the strategic virtualization of organizations
(The arrows represent information flows)

APPENDIX

TABLE 1
TIMELINE OF SIGNIFICANT EVENTS IN THE VIRTUALIZATION PROCESS AT CQU

		Student numbers[1]		
		Domestic		Full fee pay[4]
Year	Event	OC[2]	DE[3]	
1967	Institution established as Queeensland Institute of Technology Capricornia, primarily as a provider of vocational education to local industry.	71	–	–
1971	Became Capricornia Institute of Advanced Education (CIAE).			
1974	First distance education offering.			
1975	First offering in the world of a professional computing program by distance education.			
1970s	Early use of Computer Aided Learning by individual staff to support distance students.			
1980		1474 (61%)	831 (36%)	–
1983	External enrolments exceeded internal enrolments for the first time.			
1986	Emergence of regional network of campus, (Mackay, Gladstone, Bundaberg, Emerald).			
1989	Binary division between universities and colleges in Australia removed under Minister Dawkins. Institution becomes University College of Central Queensland. Change to research focus as well as teaching.			
1989	CIAE designated as one of only eight DE centres in Australia (1989–1993).			
1990	Connection to AARNET (Australian academic research network) for Internet access. Prior access was via X25 connections to United Kingdom.	2977 (48%)	2951 (48%	234 (4%)
1990-1995	Decrease in government funding to universities.			

TABLE 1 (*Continued*)

		Student numbers[1]		
		Domestic		Full fee pay[4]
Year	Event	OC[2]	DE[3]	
1991	Early use of computer mediated communication by individual staff to support distance learning (Dekkers and Cuskelly, 1990; Gregor and Cuskelly, 1994).			
1992	First partnership arrangements with commercial educational providers at overseas locations.			
1993	Distance Education unit trials PictureTel videoconferencing.	3761 (48%)	3825 (48%)	300 (4%)
1994	Early use of the Web by individual lecturers for course delivery (Jones and Buchanan, 1996)			
1994	Campus opened in Sydney through commercial partnership with Campus Management Services (CMS). This and subsequent CMS campus enabled by ICT platform that gives access to email, Internet, and administrative systems. Student learning also supported by paper-based DE materials.	3676 (42%)	4422 (51%)	588 (7%)
1996	Planning for "Vision 97", a strategy for full course delivery across Queensland campus, supported by interactive videoconferencing. Pushed by Pro Vice Chancellor (Academic) of the time. Microwave links (34 Mb) between Queensland campus funded by $2 million grant from government. This network enabled access across campuses to email, videoconferencing, and administrative systems. Management instituted an "education" program to promote IT-supported teaching to staff, with early users of these methods travelling across Queensland campus.	3952 (37%)	5312 (50%)	1383 (13%)
mid-1996	Appointment of Professor Chipman as Vice-Chancellor, an advocate of new initiatives in corporate arrangements and member of the West Committee.			
1996	Notice given of differential funding model for different degrees to be introduced by government in Feb, 1998. Vice-Chancellor refers to "the new more highly competitive public funding environment" (Chipman, 10 Dec., 1996).			
1996	New technology to enable distributed printing of DE material, nationally and internationally.			

TABLE 1 (*Continued*)

		Student numbers[1]		
		Domestic		Full fee pay[4]
Year	Event	OC[2]	DE[3]	
1998	A decision to replace administrative systems with an ERP, following Vice-Chancellor's decision to change to a four-term year, complaints about current systems and anticipation of Y2K problem. Criteria for new system included ability to support a global operation. PeopleSoft was chosen as ERP.			
2000	Virtual organization with five campuses in Queensland, four CMS campus in Australia, also campus at Singapore, Hong Kong, Fiji.	5230 (35%)	5286 (36%)	4245 (29%)
2001	Forward planning for ICT is leading to closer cooperation among partners to provide upgrades for fuller support of Web delivery of courses to CMS campus. PeopleSoft partly implemented—to be further developed to give access to administrative systems worldwide.			

Notes:

The source for some historical data was Cryle (1992).

1. Student numbers— (not EFTSU (effective full-time student units)).
2. On-campus, domestic students—government (DETYA) subsidized.
3. Distance education students—government (DETYA) subsidized.
4. Full fee paying international students.

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