



**Australian Government**  
**Department of Education,  
Science and Training**

# **Integration of Information Technology and Physical Asset Planning and Management**

## **A Case Study of Queensland University of Technology**

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# Foreword

The Digital era is spawning massive change in society and the institutions and organisations within it. These changes demand greater disciplines in strategic thinking, planning and management. This applies to the higher education sector. This study, funded by the Commonwealth, describes how a leading Australian university has moved to enhance and reform its planning for the use of information technology, and in particular to harmonise it with its other planning and governance activities.

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## Abbreviations and acronyms

AMP	Asset Management Plan
CMIC	Corporate Management Information Committee
DEST	Department of Education, Science and Training (Australia)
DETYA	Department of Education, Training and Youth Affairs (Australia)
ERP	Enterprise Resource Planning
HR	Human Resources (QUT Department of)
IS	Information systems
IT	Information technology
ITSGC	Information Technology Strategic Governance Committee
OLT	Online Teaching (system)
PC	Personal computer
QUT	Queensland University of Technology
ROI	Return on investment
SMARTA	Strategic Management And Resourcing using Technological Advancements
VC	QUT Vice-Chancellor

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# Executive summary

## Background to the project

Since 2000, Queensland University of Technology has been working to integrate information technology planning and budget with physical infrastructure planning and budget via the Asset Management Plan. Additionally, QUT has radically restructured the top-level governance and management processes for information technology. This has resulted in across-the-board reform in IT planning, management and governance and produced significant benefit for QUT, in the three years since its commencement.

This is a significant development for IT planning and management at QUT and, at the end of 2000, the reforms attracted attention from the then Department of Education, Training and Youth Affairs and led to the research grant from the Evaluations and Investigations Programme. The grant was to conduct a case study on the reform of the information technology planning and management processes. The case study documents the changes, highlights the advantages and disadvantages of the new processes and provides a possible model for change in IT management at other Australian universities.

The case study initially documents the history, rationale and development of the reforms to 2001, and then follows a twelve-month period in the ongoing evolution of the planning and management processes. The research has been conducted through interviews, observations, review of documentation, and through application of a survey questionnaire to a defined population.

## Major findings

The reforms in information technology planning, governance and management have resulted in better alignment of information technology investment with QUT goals and objectives, better benchmarking of information technology investment, better project management of information technology development and innovation, and increased flexibility and accountability in information technology expenditure.

The Asset Management Plan integrates physical and IT infrastructure planning and provides flexible and responsive budgets, and consistent planning and prioritisation of IT implementations. The strategic governance committee has educated the senior managers of QUT in the needs and requirements of the IT infrastructure, and provided a forum for IT planning, prioritisation and management that ensures alignment with IT goals and strategies. IT project management methodology has ensured a level of return of business value on IT investment. IT innovation is visible through the IT Project Registry, and the IT Portfolio ensures better consistency and reliability in the IT infrastructure through benchmarking of IT investment within QUT.

The Asset Management Plan will continue to provide the framework and integrated structure for IT planning and asset management, with a projected result that this 'whole-of-asset' focus will enable QUT to better balance and coordinate its investment in infrastructure. The Information Technology Strategic Governance Committee is following a learning pathway for a holistic vision of IT at QUT. The vision will ensure that the IT infrastructure and projects meet current and future business goals and objectives for the university. Evolving project management reforms will provide a rigorous and effective methodology for new IT developments from conception and adoption, to implementation, and beyond.

QUT is providing a model for IT planning and management, with an integrated physical and IT focus, senior governance and strategic management. It is a model that may be useful, in whole or in part, to other Australian universities facing similar challenges in information technology investment, maintenance and development.

# 1. The Case Study of Information Technology at Queensland University of Technology

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## 1.1 Rationale for a Case Study of QUT's IT Planning & Management

Information technology planning, management and governance have been fragmented within organisations, and universities have tended to keep these functions separate from overall planning and management of the institution. In contrast, physical asset planning and management, of buildings, plant, grounds and capital infrastructure has traditionally been integral to university planning and management at the highest levels. The importance of the information technology infrastructure is very rapidly growing, while the importance of the physical infrastructure is under debate, as modes of off-campus and virtual education develop. Thus the need to develop a governance approach that considers information technology as core business for the institution would appear to be essential.

Information technology planning, management and governance has changed significantly at QUT over the past two years, and measurable progress has been made toward the integration of planning and management of information technology into the physical infrastructure planning and management methods, via the Asset Management Plan (AMP). This approach was adopted as a model of high-level integration and consistent planning and budgeting for development and maintenance. Additionally a high-level, coordinated governance committee for the information technology infrastructure has been established.

These innovations are certainly significant for QUT. They may also be significant for the Australian university sector. In 2000, the then Department of Education, Training and Youth Affairs (DETYA) became aware of the QUT innovation with the Asset Management Plan and supported a QUT application for an Evaluations and Investigations Programme (EIP) Grant to conduct a case study of QUT's integrated information technology and physical infrastructure planning and management. The case study documents the changes, highlights the advantages and disadvantages of the new approach, and provides information for the sector in organisational planning, development and management and a possible model for information technology management at other Australian universities.

## 1.2 The Case Study Methodology

A case study of information technology planning, management and governance at QUT is appropriate to examine the level of integration and compare to the evidence from the corporate sector and overseas tertiary education sector. Such a case study would be useful in extending previous quantitative research conducted across multiple institutions (Lesko, 1999). Yin's (1994) seminal work on case study research design provides the essential methodology for conducting rigorous case study research. Yin describes the value of case studies in deriving research conclusions from practical situations. Benbasat, Goldstein and Mead (1987) confirm that case study research is appropriate for ideographic research in the information systems field to describe phenomena in context.

Benbasat, Goldstein and Mead (1987) point out that research in the Information Services (IS) field usually evolves from studying practical innovations, as in the QUT case study. Benbasat, Goldstein and Mead also note that the 'IS field has also seen a shift from technological to managerial and organizational questions, and consequently more interest in how context and innovations interact' (p.370). Rigorous case study methodology can be used in the current context to describe IT planning and management innovations at QUT. This may lead to more generalised conclusions, applicable to other institutions in the Australian higher education sector.

Using evidence such as examination of documentation, semi-structured interviews with key staff from multiple levels and sections of the university and direct observation of key meetings and committee operations, rigorous collection of data has been conducted to provide support or to refute the research questions and propositions. A detailed list of data sources is provided in Appendix A.

The strengths of the case study approach lies in its ability to discover the reality of a situation and provide depth of insight in description and representation. The strengths of survey research lies in its ability to provide an objective 'snapshot' providing consistency of data and controllability of analysis. In using both methodologies, the interviews, observation and documentation of the case study will provide richness and depth of exploration of the situation, while an embedded survey will aid in interpreting the data and provide more testing of the validity and reliability of conclusions from the qualitative data (Gable, 1994).

In much of their research into integration of planning, King and Teo have used a survey research tool that assesses perceived integration of the planning systems and then uses a series of benchmarks to test the actual level of integration. These benchmarks have proven to be statistically viable measures of integration of business planning and information systems planning and to measure the level of integration against the effectiveness of IT planning and management (King and Teo, 1997). These measures can be adapted to a tertiary education context for measurement of information technology planning integration with institutional planning (Lesko, 1999).

This survey tool has indeed beenvaluable in assessing the level of integration of information technology planning with other planning systems at QUT through the instrument itself and the use of the topics in development of semi-structured interview questions. The statistically valid benchmarks used in the questionnaire provide a specific measure of variables such as the purpose and triggers of

information technology planning within the university, the function of information technology, user participation in information technology planning and evaluation of information technology benefits.

This survey instrument has been adapted and embedded within the current research design to aid in assessing levels of integration and informing interview data for triangulation of evidence. Gable (1994) points out the usefulness of combining survey research with case study research. Careful conduct of this type of combined research methodology can result in the best of both methodologies.

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### 1.3 The Australian Higher Education Environment

Since the 1980's and increasingly throughout the 1990's, Australian universities have become much more entrepreneurial in their management and planning practices. This shift has been driven largely by a corresponding shift to a market-driven environment for universities and changing government policy that has promoted competition for existing funds. Other forces have contributed significantly to this new entrepreneurship. These include an ever-increasing emphasis on accountability and performance, growing internationalisation, the need for universities to generate non-state funding sources, and the need for flexibility to adapt to rapidly changing social, economic, educational and technological conditions (Gallagher, 2000).

Within this competitive and entrepreneurial environment, there is clear agreement on the need for strong planning, governance and management practices. Various government reports and reforms within Australia and the development of policies from federal and state governments have had a marked influence on the changes to management practices (Gallagher, 2000; Meek and Wood, 1997). Gallagher (2000) notes that the best managed universities in Australia employ practices such as performance evaluation, accrual accounting, strong internal accountability and collaboration, external collaboration, flexible staffing practices and strong information systems.

Gallagher (2000) and Meek and Wood (1997) mention the apparent conflict between the entrepreneurial environment and accompanying corporate management practices with the more traditional collegial management that has been perceived to be in place at universities. There exists a dichotomy between the 'administrative bureaucracy' drawn from corporate management practices and the 'professional bureaucracy' of traditional academe.

It is clear that the management practices of such an institution must reflect the cultural norms and values of the prevalent professionals. However, Gallagher (2000) points out that the reforms in governance and management have been essential in developing the flexibility to respond to changes in demand and competition. Gallagher is emphatic that, in relation to management practices, universities must set clear goals, develop multiple income sources, plan for growth, provide services of demonstrable quality and commercial value, and employ staff within a flexible and competitive framework.

Gallagher (2000) also notes that universities in Australia that have 'slack' central planning and management do not excel in innovation and provide mediocre services. Meek and Wood (1997) point out that performance measurement is

endemic within the current political and economic environment of Australian universities and that performance can only be evaluated against clearly specified institutional goals.

The Australian tertiary education sector has invested heavily in strategic planning as a tool for predicting future directions and responding to changing demands in the environment. Anderson, Johnson and Milligan (1999) demonstrate the universal adoption of strategic planning and its relative value within the Australian university sector. Evidence collected by Anderson, et al (1999) shows that strategic plans, in general, have long-range time frames and are based on the missions, values and goals of the universities. The authors also report that,

*...because universities consist of diverse operating areas variously called schools, faculties or divisions which have autonomy in matters relating to their discipline or professional fields, the above patterns of operational and functional planning tends to be reproduced in each area. (p. 4)*

Despite the heavy reliance on strategic planning as a key management tool, very few universities have strongly developed strategies relating to information technology, and demonstrate little synergy between the institutional strategic planning process and the information technology planning process. Only a few of the plans investigated by Anderson, et al (1999), have explicit budgetary provision for information technology. In examining best practice among Australian universities and their use of strategic planning, the Anderson, et al conclude that participation from all levels across the university is needed in planning efforts, and that close links to budgeting processes are essential.

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## 1.4 The QUT Environment

At QUT, Gibson, et al (1999) have analysed the strategic planning and strategic management practices. Some of these practices are specific to QUT, but many are consistent with general practice within Australian universities. One of the main findings of Gibson, et al (1999) is that QUT planning practices are largely driven by high internal cohesion and adherence to broad university mission and goals. However it is important to ensure flexibility and diversity within operational units and faculties. QUT clearly places a very high priority on setting strategic goals and establishing the necessary strategic management framework to achieve these goals and to monitor performance against these objectives.

### 1.4.1 Definitions

It is important for the purposes of this report to understand the terms and concepts being discussed. Case studies are contextual by nature, and that context defines the research questions and outcomes as much as any empirical hypothesis. Many of these concepts have a specific context at QUT.

## **Information Technology**

Information technology (IT) is defined as ‘The use of computers and other electronic means to process and distribute information. Information can be transferred between computers using cables, satellite links, or telephone lines. Networks of connected computers can be used to send electronic mail or to interrogate databases.’<sup>1</sup>

At QUT, Information Technology Services is a department within the Division of Information & Academic Services. IT Services is in charge of all central computer hosts, such as the World Wide Web server and the email servers, and hosts the servers for the Library, Student Administration, HR, Payroll, and many other areas. IT Services controls all voice and data cabling and connections and the telecommunications networks. IT Services is responsible for provision and administration of standard software. IT Services is also in charge of central desktop support of PC facilities, central systems services, corporate information services, and high-performance computing facilities. However, another department within the Division of Information & Academic Services, Teaching & Learning Support Services, runs the student computing support and central student PC laboratories, and supports software development for Online Teaching (OLT) by lecturing staff.

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## **Asset Management Planning**

Asset management is defined from a management accounting perspective as ‘The techniques used to collect, process, and present financial and quantitative data within an organization to enable effective scorekeeping, cost control, planning, pricing, and decision making to take place.’<sup>2</sup>

Planning is defined as ‘To devise, contrive, design something to be done, or some action or proceeding to be carried out; to scheme, project, arrange beforehand.’<sup>3</sup>

At QUT, asset management planning is used for the planning and accounting of all physical and capital assets, such as buildings, plant, grounds and vehicles, as well as financial assets. Asset management planning has been extended at QUT to include ‘virtual’ assets, such as information technology and telecommunications infrastructure, systems, hardware, software and data, as well as maintenance of systems and data. The Asset Management Plan encompasses all aspects of this physical and virtual infrastructure.

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<sup>1</sup> A Dictionary of Accounting. Ed. R. Hussey. Oxford University Press, 1999. Oxford Reference Online. Oxford University Press. [Online]  
<<http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t17.001673>>

<sup>2</sup> A Dictionary of Finance and Banking. Oxford University Press, 1997. Oxford Reference Online. Oxford University Press. [Online]  
<<http://oxfordreference.com/views/ENTRY.html?subview=Main&entry=t20.002223>>

<sup>3</sup> Oxford English Dictionary: Oxford University Press, 1989. Oxford English Dictionary Online. Oxford University Press. [Online]<<http://dictionary.oed.com/cgi/entry/00180683>>

### **Strategic Governance**

Governance is defined as ‘Controlling, directing, or regulating influence; control, sway, mastery.’<sup>4</sup>

At QUT, governance of information technology now begins with the Vice-Chancellor. The strategic governance committee also includes the Deputy Vice-Chancellor, the Pro-Vice-Chancellor (Information & Academic Services), the Registrar, the Executive Director of Finance & Resource Planning and two faculty Deans. Such senior level membership allows for direct influence, control or sway over the strategic development and maintenance of information technology infrastructure and projects.

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### **Project Management**

A project is defined as ‘A set of activities intended to produce a specific output, which has a definite beginning and end. The activities are interrelated and must be brought together in a particular order, based on precedence relationships between the different activities.’<sup>5</sup>

At QUT, the definition of a project, particularly in relation to information technology, is much less strict. Project management methodology is used across a wide variety of tasks within IT Services. Projects may be as major as the design, specification, implementation and evaluation of a multi-million dollar system. They can also be as minor as a ten thousand dollar upgrade to an existing piece of network technology.

## **1.4.2 QUT Technology for Teaching, Learning, Research & Administration**

*IT development during the decade can be described as falling into four approximate periods. The first phase was dominated by the need to develop the essentials in the communications infrastructure and to get our corporate systems functioning in their new amalgamated forms [...] The second phase saw increased debate about the deployment of technology in teaching and also the issue of institutional standards and staff competence and training [...] The third phase saw maturing of the QUT network with the rising importance of web based interaction both externally and on QUT's intranet, initially called the Data Warehouse, later QUT Virtual. This phase saw a critical turnaround in community adoption of tools and processes. [...] The fourth phase can be characterised as a period of rapidly developing service, management and organisational maturity. (Cochrane, 2002, p.4)*

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<sup>4</sup> Oxford English Dictionary. Oxford University Press, 1989. Oxford English Dictionary Online. Oxford University Press. [Online] <<http://dictionary.oed.com/egi/entry/00097297>>

<sup>5</sup> *A Dictionary of Business*. Oxford University Press, 1996. *Oxford Reference Online*. Oxford University Press. [Online] <<http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t18.004322>>

As a university of technology, QUT aims to be an early adopter of quality technologies. Although QUT does not usually aim to be on the 'bleeding edge' of technological innovation, the students and staff expect hardware, networks, systems and software to support current teaching, learning, research and administration trends.

QUT is a highly centralised institution, formed from amalgamations of previous colleges of advanced education and an institute of technology. The focus on teaching and learning has always been strong, and the technology has evolved to support the teaching and learning. For example, in 2001, QUT had over forty multimedia lecture theatres. In the decade since its establishment, QUT has achieved considerable growth in research. The technology is also reflecting this growth, for example in 2001, QUT provided almost 60 percent of its journal collection in electronic formats and also saw a marked increase in use of its high performance computing facilities. Administration at QUT has always been highly centralised, and the systems and technologies reflect this. QUT's secure intranet, called QUT Virtual, has been providing central administrative access for both staff and students for several years (Cochrane, 2002).

QUT is a multi-campus university spread over the central city and northern suburbs of Brisbane. Faculties offer joint degrees and double degrees with the other QUT faculties. Without a moderately high degree of standardisation at QUT, students and staff could not cope with the multi-campus nature of the university. However, faculties have their own servers, systems and installations, and a relative degree of flexibility is allowed in IT architecture and technology to facilitate appropriate teaching, learning and research strategies.

QUT has a standardised, but not proprietary, Online Teaching system (OLT). This facilitates the students' access to teaching resources and technologies. QUT has a highly evolved management information system, called QUT Virtual that provides access to enrolment processes, textbook lists, electronic purchasing and fee payment facilities, tutorial enrolments, lecture and tutorial room allocations, examination results, Internet access information, email distribution lists and personal details. For staff, QUT Virtual also provides access to payroll information.

QUT has developed and adopted 'best of breed' systems for administration and academic operation. Some of these systems are proprietary systems, while others are developed in-house. QUT has not adopted large-scale enterprise resource planning (ERP) systems, such as SAP or PeopleSoft, preferring instead to ensure interoperability of systems and effective data mining and reporting. QUT is a 'wired' university, with a large investment in data networks and telecommunications. QUT's gigabyte, self-managed network is the first of its kind in Queensland.

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## 1.5 Report Overview and Outcomes

Chapter 2 details the background to the current innovations at QUT. The historical problems with IT planning, management and strategic governance are discussed, and the evolution of the consolidated asset management plan, the strategic governance committee and the information technology project management tools and methodology at QUT is described.

Chapter 3 provides a detailed discussion of the implementation and operation of the Asset Management Plan. Much of the research points to success in the initial objectives of the AMP, to consolidate funding and provide an effective strategic planning and operational planning framework for IT at QUT. However problems still exist with the operation of the AMP and the research confirms the need for additional integration with university planning, better communication and life-cycle planning and budgeting for IT projects and maintenance.

Chapter 4 outlines the membership and operation of the Information Technology Strategic Governance Committee as the main vehicle for strategic governance of IT at QUT. The research certainly demonstrates that ITSGC has been effective in enabling integration of IT planning and budget with university planning and highlighting the increasing importance of information technology and telecommunications for QUT's future. ITSGC has been most effective in facilitating budget increases for information technology infrastructure and projects, in line with research that such budgets should grow in proportion to overall funding (Weill and Broadbent, 1998). However, research at QUT clearly demonstrates the need for much improved communication about ITSGC objectives, operations and decisions. Other outcomes from within ITSGC have led to the increased focus on standardised project proposals and sponsorship and the more rigorous use of project management methodology in IT implementations.

Chapter 5 picks up on the theme of information technology project management, highlighting the progress made on establishing a project registry and management of the registry, as well as the methodology for proposal, implementation and evaluation of information technology projects. Most of the research also clearly shows gaps in the project management methods in use for IT at QUT. Other initiatives are underway to address these gaps and project management for information technology is a critical issue in the success of the AMP and ITSGC.

The final chapter outlines the principal conclusions and recommendations of this report. It is hoped that this report will provide critical insights into the current methods of IT planning, governance and management, both for QUT itself and for other Australian universities. This is a single case study of one university in Australia, and provides no comparisons with or evaluations against methods in use at other Australian universities. However, a brief evaluation of the documented processes and procedures for IT management and governance at all Australian universities was undertaken, and informal discussions and interviews with key staff at six other Australian universities were conducted. The evidence clearly shows that QUT is at the forefront of integration of information technology planning and governance with university asset planning and strategic objectives.

QUT has adopted a comprehensive programme of information technology planning, governance and management reform that may well provide an effective model for other Australian universities.

## 2. Evolution of Integrated Information Technology Planning and Management at QUT

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### 2.1 Historical Challenges in IT Planning and Management

Prior to 2000, QUT recognised that there were significant problems in the existing approaches of information technology planning, expenditure and overall governance at QUT. The lack of coordinated planning of information technology development had led to duplication of effort and uneven levels of equipment, software, systems and staffing among faculties and divisions across the university. These problems were primarily caused by decentralised funding and fragmented governance. In contrast, the system of planning, funding and governance for the physical infrastructure was highly centralised and coordinated.

Information technology planning and budgeting at QUT was fragmented into five principal pools, with additional funds injected occasionally for specific projects. There was almost no provision for growth in IT maintenance funding, despite exponential growth in IT infrastructure and systems development. Funding for new initiatives was almost ad-hoc in nature.

*... it was my perception that then there was big clumps of money for separate things. There was IT infrastructure; there was capital and special projects as well.*<sup>6</sup>

Allocations for new IT developments were made on a case-by-case basis with no central purpose or direction. This of course meant that resources and efforts were duplicated across departments and sections and communication about new initiatives was slack. Staff across the university were unsure about the bidding process for funds, about what pools of funding were appropriate for new initiatives or whether their bid was adequate to ensure funding.

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<sup>6</sup> All quotations without citations are taken from confidential interviews and written comments. For a complete list of interviewees and survey participants, see Appendix A. Comments have been edited to omit quotations that may identify individuals or groups as the respondents.

*If we wanted to do a project like install a server or put in a new training room or something like that then we'd apply for that funding, and I don't know what the process was to decide who got what. Whether people just sat around the table and decided whether something was a good idea or not...*

*...in the past, in terms of both IT and capital, the way to get anything done in QUT wasn't always the quality of your proposal. It was being able to convince a particular person...*

The uneven and patchy nature of IT planning had to be addressed at a university-wide level, to ensure maximum business value from investment and an adequate level of standardisation.

The initial step in addressing IT planning was to create the QUT IT Portfolio in order to consolidate an inventory of IT projects and developments across QUT, both within the faculties and divisions. This provided top-level insight into the nature of IT developments and the level of expenditure on IT investments. This information fed directly into the Asset Management Plan.

Evidence from the corporate, government and overseas higher education sectors shows that integration of planning and governance of information technology with overall planning efforts brings significant benefits such as decreased information technology implementation problems and greater acceptance of technology transfer (Teo and King, 1996). Thus, recognition of these serious concerns prompted change to a more coordinated and integrated approach to asset planning and management.

The obvious solution was to draw upon the existing funding and planning models for the physical infrastructure and utilise similar approaches for the information technology infrastructure. The concept was based on a revised format of the Capital Management Plan (CMP), with a focus on 'Virtual Infrastructure' as well as Physical Infrastructure. The CMP provided the overall strategic goals and objectives for capital development and a strong planning framework and consolidated budget for capital initiatives that could be readily adapted for IT infrastructure and maintenance. The new planning and management methodology for IT were developed during 2000 and the new approach was introduced with the QUT Asset Management Plan 2001-2003.

Planning was not the only issue in IT management. Another was strategic governance, which had not been explicitly in place at QUT, prior to 1999. An advisory group existed for central IT planning and management, but this was not a group strategically placed for decision-making. As in many organisations, IT development was patchy and inconsistent and IT maintenance and infrastructure was considered more of a background issue than an issue for strategic development of the university.

It was apparent that, in order to ensure strategic development and consistent maintenance of IT at QUT, senior level governance of the process was urgently needed. Previous attempts at governance were initiated through committees such as the Corporate Management Information Committee (CMIC) and its predecessors. These committees were limited in their focus, however, and chaired at a level that did not really allow for top-level oversight of IT infrastructure across the university.

*I mean we had the old CMIC, the Corporate Management Information Committee [...] I think it became fairly obvious that we had to go broader than that [...] It wasn't strategic particularly it was just developing the corporate management systems ensuring they got some attention and resources..*

To address issues in planning and governance of information technology, QUT has established a governance committee chaired at the highest level of the university and comprising representation from senior management from all sections of the university, as well as external representation from the banking industry and from the University Council. Such high-level governance has been established to ensure coordinated planning and implementation of information technology developments, innovations and maintenance, within the context of QUT overall goals and objectives.

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## 2.2 The Evolution of the Asset Management Plan

IT infrastructure at universities has been historically characterised as a support service. Planning for IT infrastructure has therefore failed to evolve to the same high degree as planning for physical infrastructure such as buildings and grounds. Green and Jenkins (1998) have identified four factors that impede the development of successful information technology plans; the failure to develop asset management plans for information technology, the failure to develop a life-cycle approach to budgeting, the failure to match information technology expenditure with university income sources and the failure to develop benchmarks for return on investment in information technology.

In contrast to this 'downplaying' of the importance of the information technology infrastructure, physical infrastructure has usually been conducted within the context of institutional strategy, and aligned with the goals and objectives set by the institution. Methods and approaches for planning, budgeting and management of physical infrastructures are generally well developed and well integrated and can therefore provide a significant model for information technology approaches (Foster and Hollowell, 1999).

### 2.2.1 Consolidation of IT Budgets

The Asset Management Plan (AMP) evolved from the previous Capital Management Plan (CMP) and the framework used to plan and budget for physical infrastructure was translated to virtual infrastructure. The five principal pools of funds and special funds for specific initiatives were consolidated into a central fund for major IT innovation and development and maintenance of IT infrastructure.

This consolidation into a centralised planning and budget framework was designed to improve IT planning and management by addressing standardisation and consistent maintenance issues, duplication of resources and innovations, rigid funding models, a lack of accountability and performance measurement, and a lack of visibility and transparency in planning and innovation.

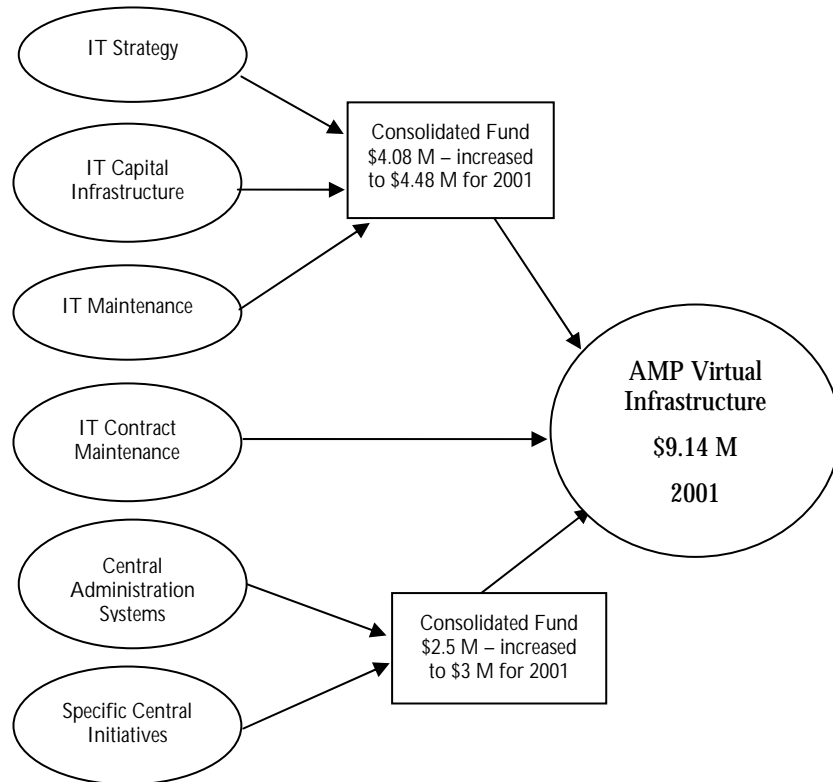
By providing a central IT Portfolio, it is easier to maintain standards for hardware, systems and software. It also facilitates regular updates and maintenance of information technology and telecommunications infrastructure. The Project Registry provides a clear picture of centralised development of IT and allows sharing of IT resources and benefits across the university. With IT projects requiring flexibility in the timing and amount of expenditure, a centralised pool of funds provides the potential for funds to be expended as required on one project and withheld when necessary from another.

With coordinated planning and performance measurement, IT development must be able to meet business objectives and provide organisational benefits. Finally, all sectors of the university can see what major IT initiatives are being undertaken, and the benefits for the university that will ensue from these projects are more visible.

The main pools of funds and planning frameworks that were consolidated for the AMP were: IT Strategy (\$1.98 million in 1999 & 2000); IT Capital Infrastructure (\$1.4 million in 1999; \$1.6 million in 2000); IT Maintenance (\$0.5 million in 1999 & 2000); IT Contract Maintenance (\$1.4 million in 1999; \$1.65 million in 2000); Central Administrative Systems (\$2 million in 1999 & 2000); plus funding for specific Central Initiatives (\$0.5 million in 2000).

The funds from IT Strategy, IT Capital Infrastructure and IT Maintenance were consolidated initially (\$4.08 million) and then increased for 2001 to \$4.48 million before being amalgamated into the AMP Virtual Infrastructure funding. The funds from Central Administrative Systems and specific Central Initiatives were also consolidated (\$2.5million) and then increased for 2001 to \$3 million before being amalgamated into the AMP Virtual Infrastructure funding. The total figure for the AMP Virtual Infrastructure funds for 2001 were then \$9.13 million. The funding model is demonstrated in Figure 1.

Figure 1. Consolidation of funds for the 2001 AMP Virtual Infrastructure



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#### IT Strategy Fund

When QUT was amalgamated in 1990 with the Brisbane College of Advanced Education, the IT Strategy fund was initiated for central provision of hosts and network hardware.

The fund was overseen by the Pro-Vice-Chancellor (Information & Academic Services). The decisions and strategies emerging from this fund were driven by the Pro-Vice Chancellor and the Director (Information Technology Services), with an advisory committee with representation from across the Division and from the faculties.

The major problems with this fund were the static nature of the fund and the lack of flexibility in transference of funding from other projects.

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#### IT Capital Infrastructure Fund

These funds were drawn from the Capital Management Plan, and used for information technology and telecommunications projects associated with capital developments.

The fund was overseen by the then Pro-Vice-Chancellor (Planning & Resources) on advice from the Pro-Vice-Chancellor (Information & Academic Services). The

funds could only be expended with approval from the Planning and Resources department. On one year, they were allocated after a competitive bidding process.

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#### IT Maintenance Fund

This fund originated in the mid-1990s after the first quinquennial review, as it became apparent there was a need to address additional ongoing maintenance of IT infrastructure and systems. The fund was used for the maintenance of network infrastructure, audiovisual equipment and lecture theatre technologies.

The Pro-Vice-Chancellor (Information & Academic Services) had control of this budget.

Half a million dollars was a budget figure that remained constant. It was not based on a detailed assessment of maintenance needs. For example, requirements and usage of audiovisual equipment and lecture theatre technologies have been exploding over the past few years. Indeed, funding requirements for upgrades and maintenance of media-equipped lecture theatres alone are estimated to approximate \$1 million by 2004. Additionally QUT has invested heavily in capital growth over the past decade with new buildings, new PC laboratories and vastly upgraded network architecture to support modern teaching, learning and research. The corresponding need for maintenance and upgrade of this equipment was only fractionally met from the funding in the IT Maintenance fund.

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#### IT Contract Maintenance Fund

This fund was used for maintenance of equipment and systems under contractual arrangements. This included software licenses, the Library system, the finance system, the microwave spectrum between the QUT campuses, server hardware as well as staff overtime costs in maintaining systems and servers.

This fund was taken from operational funds for the Division of Information & Academic Services and under the direct control of the Director of Computing Services/Information Technology Services.

The major problems with this fund were the lack of flexibility in transference of funding from other maintenance funds as well as the obvious growth in equipment and software requirements. The fund was under the control of IT Services, but the scope was beyond IT Services, and the Pro-Vice-Chancellor (Information & Academic Services) and the Director, IT Services experienced significant difficulty in forecasting annual expenditure requirements. Outlays larger than expected directly affected the general division's operating budget, and it was apparent that the planning and budgeting for this type of maintenance had to be broadened.

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#### Central Administration Systems (CASMAC) Fund

This fund was controlled directly by the QUT Registrar and was used for maintenance and development of administration systems such as the Payroll and HR systems, as well as student administration systems. Much operational control for this budget rested with the Administration Systems Coordinator.

Major upgrades and collaborative developments were needed for these systems. However, the separate treatment of these systems from other IT systems within the university meant that no transference of funds was possible when specific needs waxed and waned.

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#### Central Initiative Funds

These funds were derived from planning round negotiations in annual strategic and operational planning for the university. Specific project proposals were submitted and central funds allocated if the projects were approved. Funds that were available at the time of the formation of the 2001 AMP included money for the Library's Course Materials Database for 2002, the ongoing SMARTA (Strategic Management And Resourcing using Technological Advancements) project, the Web Redevelopment project and the Prospective Students Database project. These project bids were evaluated and approved by the Vice-Chancellor.

The obvious advantage of amalgamating these specific project funds with the entire IT funding is to allow transference of funds between projects when specific needs fluctuate.

#### 2.2.2 The QUT Asset Management Plan 2001-2003

The planning deficits implicit in these separate funding pools are obvious. Another consequence of this fragmented planning was a lack of a single, coherent vision for IT for the university. IT developments and implementations were sectional and silo-based, with no coordinated oversight or transparent compliance with the university's business objectives and strategies.

A centralised coordinated planning framework existed for physical infrastructure, and IT infrastructure could readily be equated in terms of planning. Drawing together all the IT developments and maintenance into a coordinated plan with a central flexible budget was the main theme of the QUT Asset Management Plan 2001-2003. The plan has an overarching statement on strategic direction and objectives, and is still clearly divided between physical and virtual infrastructure. In terms of overall planning, IT planning is still distinctly separate and could not be defined as 'integrated'. However the AMP was always seen as an iterative process, with more development of integrated planning processes expected in future iterations of the AMP.

#### 2.2.3 The Theme of Integration

The theme of integrating information systems planning with business planning has been widely explored in the corporate sector. Much has been published that highlights that need for such integration to achieve business aims and contribute to the value of the corporation. If information systems development is not aligned with the strategic aims of the company, then the role that information systems play within the company will be unrecognised and unfulfilled (Teo and King, 1996).

Weill and Broadbent (1998) point out that annual planning for information technology is insufficient and that a long-term focus is needed. This can only be

achieved, they believe, through a planning cycle and structure that takes the broad goals of the company into account, rather than the specific information technology goals and strategies of individual sections. Weill and Broadbent highlight that linkage between the company's goals and strategies and the information technology goals and strategies must be explicit. An explicit trail of evidence that links strategic goals to information technology strategies will demonstrate that the information technology strategies are not motivated by technical rules, but by strategic intent. Conversely, Ciborra (1998) argues that this reasoning is flawed, as too many inferences and 'straight lines' are drawn from fuzzy and indirect evidence.

Another critical factor that is emerging with the exponential developments in information technology is that, rather than simply supporting and reflecting the goals and strategies of an organisation, information technology can influence and even set the directions for the organisation. Also, integrating IS planning with business planning significantly reduces information technology problems and contributes to improved organisational performance (Teo and King, 1996). This integration of planning systems evolves through a series of stages, from separate planning systems, unidirectional planning, bi-directional planning, to fully integrated planning (King and Teo, 1997). The greater the level of planning integration, the more improvements can be detected.

Research on the development of information technology infrastructure and strategic management of information technology suggests that the capital investment in information technology infrastructure is so significant that strategic alignment with business goals and strategies is critical to business success. Weill and Broadbent (1998) state, 'The concepts fundamental to managing information technology are those of business, not of technology: portfolios, business value, investment and alignment of resources with strategic goals.' (p. 24) Weill and Broadbent, examining the process of attempting to align business goals and information technology goals, note that complete alignment is probably not possible, due to the constantly changing nature of information technology, but attempts should be made to bring the goals and strategies as close as possible for the benefit of the business value. Ciborra and Hanseth (1996) also advocate that infrastructure should reconcile local variety and proliferation with centralised planning and control of information technology and business process.

Furthermore, Weill and Broadbent (1998) highlight the need for a strong governance and management infrastructure surrounding the information technology. They point out that, 'Top management must set the vision for how the technology will be used, particularly the business capabilities required of infrastructure investments.' (p. 43) Weill and Broadbent suggest that IT projects must be coordinated at a governance level in order to achieve business aims and maximise value.

In contrast, Yetton and Johnston (2001) point out the difficulties inherent in attempting to align technology with strategy within an organisation characterised as a 'professional bureaucracy'. The tension arises as the needs of the professional group, in QUT's case the academic community, conflict with the needs of the administrative or governing group. Moreover, aligning information systems with business strategies can reduce flexibility by reducing the ability to respond to unplanned future options. This suggests that strategic management of information systems is required, rather than strict alignment of technology plans with business

plans, and that 'strategic alignment is a journey, not an event.' (Ciborra and Hanseth, 1996, p. 308)

Overall, the evidence from the literature of the corporate sector seems to favour the strategic alignment of information technology planning and infrastructure development with business goals and plans of an organisation. Some research suggests that high level governance to set broad goals and objectives, combined with a flexible strategic planning and management framework, is the key to ensuring maximum business value from information technology investments.

Experiences in the higher education sector parallel the private sector, in that strategic alignment of information technology planning, management and development with the goals of the organisation is a critical requirement to achieve current and future objectives of the university. Coordinated budgeting and management of information technology investments within the strategic framework will ensure better future infrastructure and greater institutional benefits. Information technology infrastructure must be managed with benchmarks and criteria for investment evaluation and benefits management. Within the culture of strategic planning and management at Australian universities, and at QUT in particular, alignment of information technology planning and management with university planning and management practices seems incontrovertible.

#### 2.2.4 The QUT Asset Management Plan 2002-2006

One of the issues recognised in the AMP 2001-2003 was the need to review the three-year time frame. Although it can be argued that three years is an appropriate planning timeframe for information technology, this contradicted other planning frameworks within QUT and the reliance on medium-term strategic planning, usually a five-year framework. Thus the QUT Asset Management Plan 2002-2006 was designed to fit the standard five-year planning timeframe. Annual operational and implementation planning allows for short-term funding priorities to be addressed, within a more flexible planning framework.

The revised plan was written with less of a focus on separation of physical and virtual infrastructure. Still, separate budgets and plans exist for physical and virtual. However, the concurrent evolution of the Information Technology Strategic Governance Committee (ITSGC) has ensured a high-level oversight of IT development and maintenance. Additional flexibility in funding and transference of funds between physical and virtual initiatives has also been possible as a result of the ITSGC. Despite the separation in the AMP itself, a more integrated planning process and a more flexible funding model is evolving in QUT.

Asset management planning is not a new concept. However, QUT was the first university in Australia to encompass IT planning and budget within an asset management framework. The process has brought significant benefits for the university, and some inherent challenges. Not all staff agree with the integration of IT planning and management with capital infrastructure, and many find the transition uncomfortable. The perceived benefits and difficulties with IT planning and the AMP will be discussed fully in chapter 3.

## 2.3 The Evolution of Information Technology Strategic Governance

Strategic and well-coordinated information technology planning across the institution, considered within the information technology infrastructure, academic programs and administrative activities, will maximise the resources and effectiveness of the institution. Most importantly, using information technology to enable and fundamentally change the academic and administrative business of an institution will create more opportunities and enhance competitive advantage (Ernst and Segall, 1995, Foster and Hollowell, 1999).

### 2.3.1 The Origins of Strategic IT Governance at QUT

The evolution of the consolidated Asset Management Plan and the evolution of strategic governance at QUT are closely intertwined. A single fund for IT maintenance and development and a single planning framework with which all sections must comply, has meant a need for a more highly evolved system for overseeing development and expenditure.

In the era prior to the AMP, funds were overseen by different authorities. Each pool of money had its own mechanisms for its management. Some governance processes were evolved, and some were primitive. With the instigation of the AMP, all IT developers and planners were required to work within the same framework of governance, answerable to a new, separate authority.

There were some precedents for IT governance at QUT, but none with the scope to oversee development of IT across divisions and faculties. Most central IT planning was done separately within the Division of Information & Academic Services. Strategic objectives for IT development were linked to the Division's Strategic Plan and appropriate budgets. However, no direct relationship to university planning was in place.

The main predecessor for governance was the Corporate Management Information Committee (CMIC). This committee was instigated in 1996, following the quinquennial review of the then Division of Information Services. The review considered the MIS Steering Committee that was chaired by the Registrar, and concluded there was a need for increased ownership of management information systems across QUT. Thus the CMIC was formed, with more senior representation, and continuing to be chaired by the Registrar.

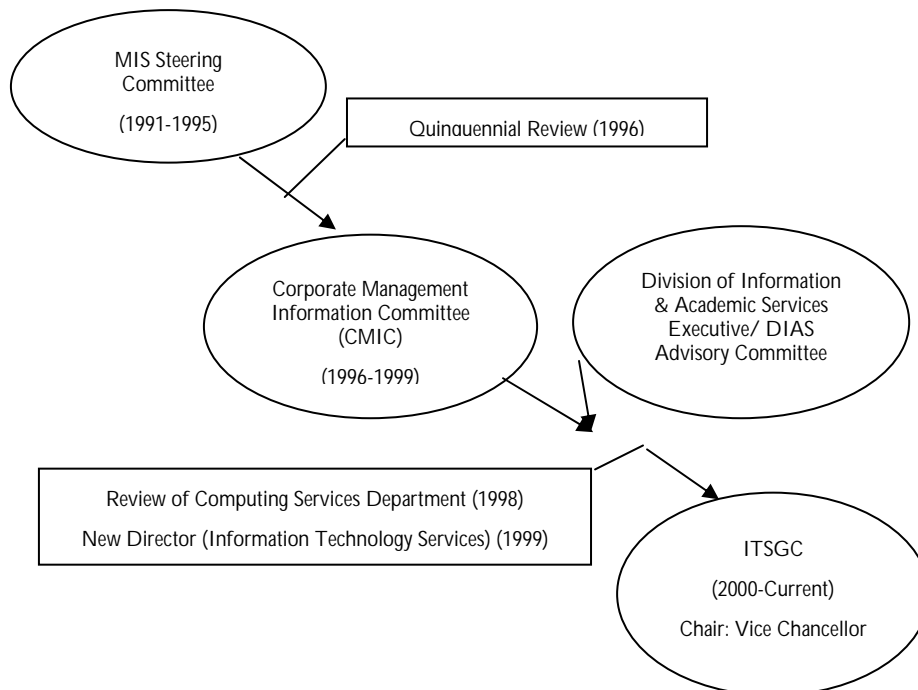
In late 1997, the Pro-Vice-Chancellor (Information Services) canvassed the need for a review into the then Department of Computing Services with the Vice-Chancellor. It was agreed that the review would focus on the issues of management and service culture in the department. The review was conducted by external consultants in March/April 1998. The head of the Department of Computing Services retired from QUT at this time. The outcome of the review was the recommendation of significant changes to information technology governance processes. One significant recommendation was that decisions about information technology developments be made at higher levels and in a more integrated manner. Crucially, it recommended the appointment as soon as possible of a new Director to launch a change and renovation process. This was pursued as a matter

of priority and by the fourth quarter of 1998, a new Director of Information Technology Services had been selected.

Also as a result of the review, the Information Technology Strategic Governance Committee (ITSGC) was formed at the beginning of 2000. Several models were considered for the committee, and the one selected was a very high-level, strategic committee with representation from the faculties and, of course, from the Division of Information & Academic Services as well as the Divisions of Administrative Services and Planning and Resources. The Vice-Chancellor agreed to chair the committee. The committee also includes representation from external industry. The evolutionary path to the ITSGC is represented in Figure 2.

ITSGC has been in operation for over two years to date and the processes and scope of the committee has evolved over that time. Recently new representation was included from QUT University Council, the body appointed by the Queensland Government, reflecting even greater recognition of the significance of IT development and maintenance at QUT.

Figure 2. The evolution of the QUT information technology strategic governance committees



### 2.3.2 The Theme of Strategic Governance

The university sector has traditionally been an early adopter and innovator with some forms of information technology. Universities have utilised information technology to support and enhance academic teaching, administrative functions and information resources. The organisational need for change in information technology planning and management systems has been driven by several historical antecedents, such as the growth in microcomputing, the development of

networking, the problems associated with decentralised funding and support, the change in social culture and adoption of technology and the development of distance and remote education. However, information technology has been seen as a support function in the sector, rather than a critical driver for change and reengineering. This perception must change in order for universities to survive and succeed in this technologically driven age (Nelson and Davenport, 1996, Foster and Hollowell, 1999).

Consideration of the planning and strategies for development and maintenance of information technology infrastructure within higher education institutions must take into account the institution itself, as well as the political, societal, economic and technological forces impacting the sector. However, the 'real-world' considerations of budgetary constraints and historical developments will also determine the ability of universities to develop information technology infrastructure and manage the benefits of technology.

As within the corporate sector, integration of information technology planning and governance with the university planning and governance systems is essential and effective utilisation of information technologies and brings significant benefits to the institution. Lesko (1999) conducted specific research into integration of information systems planning with institutional planning in the North Carolina Community College system. Among Lesko's results, one clear research conclusion was that higher levels of integration of planning resulted in a better planning process.

Technology should be integrated into institutional planning to ensure better coordination and facilitation of institutional objectives, but it is also beginning to drive the change process in academic and administrative activities. Ernst and Segall (1995) point out that, 'administrative work cannot be restructured in fundamental ways without making investments in technologies that will enable new ways of doing business.' (p. 12) In other words, business process reengineering and redesign that does not 'partner' with information technology to achieve the goals will not be successful. Hu (2000) concurs that, not only is technology now beginning to drive higher education's response to the environment, but also that technology agendas that serve the priorities of the institution are essential for success.

Lesko (1999) collected evidence that planning is not sufficient as a process for managing information technology development. Evidence from corporate and tertiary education research shows that strategic planning has pitfalls and problems and that strategic management is an additional layer needed for effective information technology governance, in order to ensure flexibility and effective implementation.

Nelson and Davenport (1996) discuss the development of matrix governance structure for Central Michigan University that has proven more effective in planning and management of information technology for that university. Hu (2000) points out the need for senior persons in the academic and administrative roles to be responsible for information technology governance and that suitable leadership is needed to guide the information technology planning and management process.

Strategic governance of information technology has provided significant benefits and outcomes for QUT in the short time it has been operational. Like the AMP, the ITSGC and associated governance processes are evolutionary, and changes to procedures and even structural changes occur with almost every meeting. The

advantages and difficulties of IT strategic governance for QUT will be discussed more fully in chapter 4.

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## 2.4 The Evolution of Information Technology Project Management

A few years ago, IT management and planning was characterised by appalling performance, particularly in relation to IT project management. There was a reasonable level of achievement in IT innovation and project development, but largely due to very high level of effort, not due to good project management. For example, post-implementation reviews of projects showed that projects only succeeded due to a very high level of hard work... There is an exponential increase in the rate of change - from 5-10% increase to 20-30% increase in rate of change per year. We are spending significant time, resources and money on innovation to deal with this change, and we needed a disciplined approach to be efficient and effective in dealing with this innovation.

With the appointment of the new Director (IT Services) and the recommendations of the external consultants, it was obvious that management of IT development was another area that needed critical attention. Project management methodology was inconsistent and uncoordinated within IT Services, and divorced from other sections, divisions and faculties.

Following the recommendations of the review, another initiative was the creation of the position of Project Portfolio Manager (PPM). The major duty of the PPM position is to coordinate all IT related projects within IT Services and to liaise directly with project managers for other projects across the University. The PPM has no direct line management to staff, purposely to avoid perceived bias or allegiance to a particular area within IT Services or DIAS. The PPM works closely with the Director, IT Services and the Pro-Vice-Chancellor (Information & Academic Services) to coordinate prioritise and recommend on projects.

A first priority of the Project Portfolio Manager was to develop the IT Project Registry as a tool to assist in IT project planning, priority setting and governance. The Registry contains the details of all current IT projects at QUT. The projects may be minor or major IT projects. The projects are classified by their stage of development, from pre-approval to retired. Status reports on all projects listed on the Registry are presented to ITSGC meetings and the Registry provides the basis for ongoing annual planning and budget allocations for projects, as well as financial summaries of IT expenditure by each development. A Project Registry Summary Report is freely available on the QUT web site. Details of each project, including the project proposal and reporting, are available internally for QUT staff involved in IT planning and governance.

Senior sponsorship of projects is widely recognised as a critical step in gaining consistent development, organisational acceptance and strategic compliance for IT implementations. QUT initiated a program of sponsorship of IT projects, by senior members of QUT staff, such as the Vice-Chancellor, Pro-Vice-Chancellor (Research & Development), Deans, Registrar, and the Deputy Vice-Chancellor.

This sponsorship role is also evolving, but has been crucial to successful project management and implementations of IT developments in several key projects.

Another priority of the Project Portfolio Manager was to address the university's need to describe comprehensively its expenditure on all IT-related activities across the university. This eventuated as the IT Portfolio. The IT Portfolio is an informational tool. The portfolio displays all these expenses simply and clearly, for use as a basis for planning. The portfolio also details how the IT expenditure is 'carved up' according to different criteria, such as central versus devolved expenditure, expenditure on development versus maintenance, and expenditure according to the services (eg networks; software; telephones; etc.). The portfolio looks like a finance report and may contain the detail of a finance report, however, many of the costs listed are estimates and may vary by 10%. It was designed for information and planning, not as a financial audit.

Data is gathered for the IT Portfolio each year from submissions from the faculties and divisions. Recently, a data dictionary has been defined for the portfolio, to allow for additional standardisation and as the basis for benchmarking against other organisations. As a tool for benchmarking, the IT Portfolio demonstrates that QUT spends approximately 10% of total funding on IT. This is apparently reasonably consistent with similar organisations, although there is no clear benchmarking standard, which makes comparisons of IT expenditure amongst universities difficult.

The IT Portfolio has provided some impetus for change simply through improving visibility of the differences between faculties and divisions; for example there is gathering momentum for consolidation of labs on campus (central and faculty) and the portfolio allows for comparisons. It allows the opportunity to discuss IT planning and expenditure with all sectors of the university and get a clear picture of trends across the university.

The IT Portfolio has been extremely useful for QUT, as it has provided a much clearer profile of IT staff and equipment. It is not comprehensive and completely accurate in figures but it does clarify directions and initiatives and provides more visibility across QUT. It has contributed to the 'breakdown' of domain barriers across faculties and divisions, and greater acceptance of requests for information.

Information technology project management has clearly come a long way at QUT since 1999. However, there are still issues with strategic governance of projects and project management methodology. In 2002, the QUT Internal Audit section conducted an independent review of IT project management processes. The conclusions and recommendations of the audit are still being considered by QUT senior managers, but many issues and problems with IT project management have also emerged as a consequence of this research and are discussed within the context of chapter 5.

## 3. The Asset Management Plan – Integration or Co-location?

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### 3.1 Asset Management Plan Evolution: 2000 to 2002

The Asset Management Plan has now been through two iterations over the last two years. The first iteration covered a span of three years (2001-2003) and the second iteration covered a span of five years (2002-2006). At the end of 2000, key staff in the Department of Information Technology Services and the Department of Planning and Resources developed the first attempt at integrated asset management, based on the previous Capital Management Plan. Throughout 2001, issues and ideas became apparent with the format and process of the AMP 2001. As previously mentioned, this included the revision to a five-year planning timeframe, to synchronise with the rest of QUT strategic planning. At the end of 2001, a revised AMP was developed and adopted with significant changes.

#### 3.1.1 The Asset Management Plan 2001-2003: A Real World and a Virtual University

Key objectives of the overall Asset Management Plan 2001-2003 reflect both the physical and virtual strategies of QUT during this period. The objectives are based on the QUT Strategic Plan, including: to ensure appropriate infrastructure to support teaching, research and community service goals of QUT; to assess and enhance social, recreational, cultural and sporting needs and build appropriate physical infrastructure; and to improve the management of existing infrastructure to maximise efficiency, effectiveness and economy.

The AMP was still quite clearly divided into capital initiatives and IT initiatives, however these were drawn together under the umbrella of a single planning and budget framework. The focus of this framework was 'A Real World and a Virtual University'. The AMP 2001-2003 aimed for integration of physical and virtual infrastructures into a more coordinated and convergent approach to planning. The AMP 2001-2003 highlighted the needs of the physical and virtual infrastructure in tandem.

The AMP 2001-2003 brought heightened attention to resourcing the core technical backbone, such as the network, web presence, email, and standardisation of the PC environment. This is critical as technology is now considered a significant asset and the networked presence is considered a major 'face' of QUT. The plan aimed to allow consideration of relative merit between IT initiatives versus building initiatives. This was stifled in the former models, with specific funding pools based on historical purposes.

The AMP 2001-2003 also focussed on broader asset management; a strategic, whole-of-asset focus. However, the model still provided a devolved financial management framework with decisions on IT investment resting with operational areas. The focus was not on strategic, whole-of-asset financing over the triennium, but on investment in core information technology and infrastructure.

#### Virtual University Initiatives in the AMP 2001-2003

As a university, QUT is reliant on the Internet and the rapid development of global information sources. Administration procedures are moving to electronic formats, and administrative units are looking at e-business strategies. QUT has also focussed on developing web resources for marketing to domestic and international markets. All of this is contingent on core, underpinning IT mechanisms, such as web development, integration of systems, enabling of e-commerce, and the use of electronic forms.

The AMP 2001-2003 placed a high priority on funding of new initiatives in order to reduce administration and operational costs, reduce delays and improve cooperation. The initiatives outlined in the plan to achieve this included:

**Network Backbone and Access:** aimed to ensure network capability, capacity and reliability, provide access to new and refurbished capital infrastructure, enhance network security measures, and ensure standardisation and ongoing asset replacement on three-year cycle.

**Existing Infrastructure Maintenance:** provided a consolidation program to manage the upgrade and replacement of IT assets such as voice networks, audiovisual and studio equipment, central hosts and PC laboratories.

**Administration Systems:** funded enhancement to systems developed in collaboration with other Australian universities, such as finance, HR, payroll, and student administration.

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#### Funding For Virtual University Initiatives 2001-2003

The funding for IT infrastructure maintenance and IT projects within the AMP 2001-2003 was still completely separate from capital infrastructure funding. Despite stated aims to provide increased flexibility in funding through integration, the mechanisms for achieving this are limited, as they are presented in the AMP model. It is only through the understanding of the relationship of the AMP funding to ITSGC, that the nature of the flexibility becomes apparent.

Table 1: AMP 2001-2003 Financial Estimates and Projections (Virtual Infrastructure)

Year	Income	Expenditure
2000	\$ 7,680,000	\$ 7,910,000
2001	\$ 8,360,000	\$ 8,360,000
2002	\$ 8,360,000	\$ 8,360,000
2003	\$ 8,360,000	\$ 8,360,000

### 3.1.2 The Asset Management Plan 2002-2006: A Virtual Capability

Key objectives of the Asset Management Plan 2002-2006 are to relate development and maintenance of physical and virtual infrastructure to the QUT business objectives and community role. These objectives are framed within a five-year time frame but attempt to offset this by providing for rapid change and the dynamic nature of information technology. The 'Virtual Capability' of QUT is a key theme of this Plan, both in terms of current development of key technological infrastructure for teaching, learning, research and support, and in terms of future projections on the growth of this vital infrastructure. The plan highlights that the Online Teaching (OLT) system access has almost trebled from 2000 to 2001 and access to QUT Virtual is also on a growth curve. Such increases are projected to continue, with OLT growth in the coming decade having the potential to be exponential, as QUT expands based on university growth and innovation by academic staff.

The AMP 2002-2006 carries forward the theme of a 'Real World and a Virtual University', with a more integrated overview of how the physical and virtual initiatives contribute to the organisational goals. The plan aims to address strategic objectives, but in itself is operational, identifying resources, priorities and implementation strategies in staged outcomes. The AMP 2002-2006 also identifies some emerging issues, such as performance monitoring, and project proposals and evaluations that hint at planning reform that may fundamentally affect the AMP itself.

Despite the fact that capital initiatives are still identified separately from virtual initiatives, the budgets co-located. The AMP 2002-2006 also states that the 'physical and virtual assets exist in tandem to support the business objectives of the organisation. Taking this holistic and collective view of assets provides a more appropriate perspective for asset planning, resourcing and management.' (p.24)

Thus the plan itself strongly supports the notion of integrated planning. The extent to which this has been operationalised within the Plan is still limited, however, this AMP 2002-2006 makes clear the relationship of the AMP funding to ITSGC, and how the integrated and strategic nature of planning is being achieved.

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'Virtual'<sup>7</sup> University Initiatives in the AMP 2002-2006

Initiatives within the revised plan are framed around similar themes as the previous plan. Virtual funding in the AMP 2002-2006 includes targeted additional resources for:

- Existing Infrastructure Maintenance: supporting the maintenance, upgrade and quality of existing infrastructure assets.
- Network Backbone Development: maintaining the capacity of the central network to support continually expanding needs.
- Standardisation and Asset Management: reducing diversity where appropriate and managing assets to optimise their return on investment to the University.
- QUT Virtual: enhancing the University's capability to connect with the virtual world and exploit the opportunities of E-Business and E-Commerce.
- Corporate System Development: to improve administrative processes.

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Funding For Virtual University Initiatives 2001-2003

Physical and virtual funding and budgets have been co-located but have separate lines with completely separate priorities and expenditure. Despite acknowledged anticipated growth in IT infrastructure and maintenance needs, there was, at that stage, little corresponding growth in projected budget. The AMP 2002-2006 notes the need for ITSGC to suspend and expend the funding as appropriate, in order to achieve maximum return from the limited available funds.

Table 2: AMP 2002-2006: IT and Virtual Projects – 2002 – 2006

Year	Income	Expenditure
2001	\$10,019,000	\$9,019,000
2002	\$10,500,000	\$11,000,000
2003	\$11,000,000	\$11,000,000
2004	\$11,500,000	\$11,500,000
2005	\$11,500,000	\$11,500,000
2006	\$11,500,000	\$11,500,000

Towards the end of the period of the study, projections were the topic of more frequent revision, and overall funding has increased.

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<sup>7</sup> The AMP uses "virtual" to describe the electronic infrastructure

## 3.2 Evaluation of the Level of Planning Integration

The intention of this Plan is to outline the University's move towards a more strategic, whole of asset focus, which spans the areas of physical infrastructure, IT and other technological asset usage. (Asset Management Plan 2002-2006, p.24)

One of the stated original intentions of the creation of the Asset Management Plan was to create an integrated environment for planning and management of information technology and physical or capital infrastructure. The question therefore arises, 'to what extent has this goal been achieved?' The examination of the two versions of the AMP itself show a concerted and successful effort to consolidate the IT budget and place the IT planning for infrastructure and project developments firmly within the asset management framework.

The AMP 2001-2003 shows only a limited degree of integration of the physical and IT infrastructure. The budgets are separate, the objectives are separate and the overall framework of the plan is more of co-location than integration. The AMP 2002-2006 takes the integration process a step further. The budgets are more integrated and the objectives are framed within the overall goals and strategies for development of QUT. The framework discusses the processes of consideration of IT initiatives conjointly with capital initiatives and the methods of governance to achieve compliance with QUT business objectives.

The evidence from the documentation suggests that the integration of physical and IT infrastructure planning within the AMP is evolutionary. This is widely supported by comments from staff across all sections of the university. The processes for integrated planning are immature, and constantly developing.

Currently, we are about ten percent of the way toward full integration of physical and virtual asset planning and governance.

The process is an iterative process, some progress was made in the first iteration toward integration, but it has not been complete.

### 3.2.1 The Benefits of Integrated Planning

Parker and Benson (1988) state that information technology has historically been aligned with 'backbone' business units like payroll and accounting, rather than 'line of business' units like marketing and sales. This alignment with behind-the-scenes support units may limit the ability of information technology to be used to influence and drive strategic direction and performance.

The survey developed by Teo and King (1996) and adapted by Lesko (1999) is a two-part survey designed to test the level of integration of IT planning with organisational planning and to measure the effectiveness of planning against the level of integration. Teo and King have tested these measures against multiple corporate organisations to determine that higher levels of integration of IT with organisational planning lead to improved support for business objectives and achievement of business value (p.309). Lesko confirmed these findings across multiple higher education institutions in the United States, determining that more

integration of the planning process leads to more satisfaction with the planning process outcomes (p.115).

### 3.2.2 The Current Level of Integration

The Teo and King (1996) survey was adapted for use in this research at QUT both to determine the level of perceived and actual integration of IT planning with university planning, and to determine the correlation of the level of integration with the level of satisfaction with the planning process outcomes.

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#### Survey Design and Administration

The survey was adapted from the original survey to allow respondents the opportunity to provide comments and examples of integrated IT and university planning. The survey is designed to measure:

- The perceived level of integration through a simple choice of four levels of integration.
- The actual level of integration through a series of benchmarks that can be evaluated at different levels. The validity of these benchmarks to determine actual levels of integration has been determined by King and Teo (1997).
- The perceived level of satisfaction with the planning processes.

There are four levels of integration in the King and Teo model.

1. Administrative Integration is defined as having a weak relationship between university planning and information technology planning as shown by the dotted line above. Generally, there is little significant effort to use information technology (e.g. computers, telecommunications) to support University plans.
2. Sequential Integration is defined as having a sequential relationship between university planning and information technology planning. University planning provides directions for IT planning. IT planning primarily focuses on providing support for university plans.
3. Reciprocal Integration is defined as having a reciprocal and interdependent relationship between university planning and information technology planning. IT planning plays a role in supporting and influencing University plans.
4. Full Integration is defined as having little distinction between the university planning process and the information technology planning process. University and IT strategies are developed concurrently in the same integrated planning process.

King and Teo (1997) also have shown that organisations typically move through these levels from one to four, and rarely move backward. Thus integration of IT planning and organisational planning can be seen to be evolutionary.

The respondents at QUT first selected their perceived level of the integration and the benchmarks confirm or disprove this perception. The survey was administered to 54 participants across QUT, from different faculties and divisions of the university and at different levels of participation in IT and university planning, from

the Vice-Chancellor through to Project Managers in IT Services and faculty IT managers. 31 valid replies were received, a respondent rate of 64.6%. The list of respondents is available in Appendix 1. The questionnaire and cover sheet are available in Appendix 2.

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### Survey Results

The overall perceived level of integration from all respondents is 2.4. This level indicates that respondents believe that integration is moving from Sequential (IT planning supports but does not influence university planning) to Reciprocal (IT Planning both supports and influences university planning). The perceived level of integration was higher among senior QUT managers and members of ITSGC, at 2.6, than among middle QUT managers and project managers, at 2.3.

The move towards joint development of uni and IT strategies is starting to happen. Long way to go. Strong recognition of importance of IT when QUT strategies are being developed.

IT applications are driven both by strategy and technology possibility.

We haven't progressed to "consideration that information technology applications play a critical role in QUT strategy".

The first five benchmarks measured the actual level of integration on a four-point scale that correlated to the perceived level of integration. The benchmark mean for the four-point scale questions (benchmarks 1 to 5) was 2.9, showing a higher level of integration than the perceived level of integration. These benchmarks show planning to be at the level Reciprocal Integration, where IT planning informs, and is informed by university planning. This is despite a poor rating (1.8) on benchmark 4, which evaluates the performance measures for IT.

The second group of benchmarks (benchmarks 6 to 10) measured the actual level of integration on a reversed, standard, seven-point Likert scale, where 1 was the highest level, 4 was average, and 7 was the lowest level of integration. The benchmark mean for the seven-point Likert scale questions was 3.4 showing an average level of integration, confirming the perceived level of integration.

Comments on both sets of benchmarks also confirm that integration of IT and university planning is not complete, but is between Sequential (IT planning is informed by university planning) and Reciprocal (IT planning informs, and is informed by university planning).

IT planning is integrated top-down and bottom-up.

We need to do this better [assess the impact of new technologies during planning].

The final four questions measured the level of satisfaction with planning, on a reversed, standard, seven-point Likert scale, where 1 was the highest measure of satisfaction, 4 was average and 7 was the lowest level of satisfaction. The mean for the four questions on the seven-point scale was 3.9, showing a slightly above-average level of satisfaction with the planning processes.

The overall evaluation of perceived and actual integration confirms that QUT is between Sequential planning and Reciprocal planning on the King and Teo scale. IT planning reflects the university's goals and strategies, and is beginning to inform the overall planning processes within the university. Satisfaction with the IT planning processes in the university is above average. This also confirms previous research that the level of satisfaction is linked to the level of integration of IT and organisational planning. Comments about the satisfaction with the IT planning processes were cautiously positive overall.

I believe attempts are being made to ensure this is integrated and efficient.

A lot of effort goes into briefing members of issues, technologies and their impact on QUT.

It is a thorough planning process.

More sectional agreement to projects, stronger collaborative projects, numerous other pieces of evidence.

Integration is at an immature stage as is the planning/governance process. Need a clear definition of roles and responsibilities to make it work efficiently.

In recent years there has been an increased recognition by (and involvement of) senior management of QUT with importance of IT in university planning and competitiveness. Seems to be more "mainstream" now than before.

A more detailed summary of the quantitative survey results is available in Appendix 3. The comments and examples presented here are representative of the positive, negative and ambivalent comments received.

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## Interviews

Following the survey, a slightly smaller sub-group was selected for half-hour interviews to discuss a variety of issues relating to integrated planning, strategic governance and management of IT. The list of interviewees is included in Appendix 1. The interviews were semi-structured with a series of questions to introduce concepts and guide the process, but the process was largely open for the interviewees to respond and discuss issues, as they preferred. The interviews were approximately 30 minutes in duration and were audiotaped and transcribed. As with the survey administration, all respondents were guaranteed confidentiality in their individual responses.

Disconnection between IT planning/governance process and the budget planning process. There is not a clean set of rules for project activities, nor a clear framework/blueprint for introducing major transformation.

Improvement in quality largely results from efforts of individuals.

The lack of tight links between IT planning and university planning will lead to significant problems in years to come. IT will be integral to the success of the organisation and the processes must reflect this.

Many staff commented on the level of integration between IT planning and overall university planning. Most staff feel that IT planning is still budget-driven and not considered largely from the viewpoint of university goals and resources.

Yes, it's not all about managing the budget. Sure budget comes into it, [...] but I think there needs to be a vision and that picture forms the vision of how that supports the university. It shouldn't be separate. It shouldn't be teaching and learning research, community service and IT. It should be those three and then IT underneath it and that's the vision of how you all sort of head towards the one overall strategic goal.<sup>8</sup>

There is general agreement from the interviews as well, that the AMP is not yet fully integrated for physical and IT infrastructure planning. The AMP itself demonstrates that it is an evolutionary integration. Most staff working with the AMP framework believe that the major capital and IT planning processes are separated, and need to be considered more fully together.

I have the impression that they've been put together but I don't have the impression that they're still really weighed up against each other.

I'd characterise us as having made a pretty good start on that integration into the planning process, but it's been a bit force fitted. [...] For example, some of the consultative processes around the asset management plan treat the IT bit as a bit rather than anything that's to be integrated with the rest of the asset management plan.

### 3.2.3 The Effectiveness of the AMP for IT Planning

Most staff agree that the AMP is the appropriate framework for IT infrastructure planning and has provided a much needed structure for the IT budget. Staff comment that the AMP has improved the visibility of IT planning and communication of IT strategies. The AMP has been successful in reducing fragmentation in plans and budgets, and the ability to transfer funds between IT projects has provided great flexibility and improved project coordination and management.

I think one of the good things about putting computing in the capital side of things is that we look three years out on the capital side. So we think about three years ahead for capital programs, etc. So in that sense, putting IT there has been good in the planning sense.<sup>9</sup>

... it's a good process and it's a revolution in terms of the thinking of senior officers of the university to see that the only rational way to deal with this is just another category of assets. So it's a good change and a cultural change.

The AMP itself is seen as a particularly good operational plan. The AMP provides the framework for aligning IT projects, prioritising IT maintenance and

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<sup>8</sup> Comments have been edited to omit quotations that may identify an individual or group as the respondent

<sup>9</sup> This quote relates to the first AMP, with a three-year timeframe.

development, maintaining IT assets and evaluating return on IT investments. However, it is seen as an operational plan, with a primarily one to three year focus on implementation and budget expenditure. This is certainly not decried for IT planning. Most people across QUT agree that one to three-year planning for IT is the most realistic timeframe.

I mean you can make some hard decisions and it's fundamentally about maintaining the confidence of the larger organisation that the money spent on IT is money well spent, because it's well managed in its spending. So the management of the next twelve months and probably the twelve month cycle out from that is quite crucial and that's where AMP's a key tool.

I think you can only deal with concrete planning for the next 1-2 years because it takes that long to put systems in or major projects.

However, most staff also agree that there is a real need for a long term vision for IT at QUT. The vision must fit within the university's goals and objectives, and the strategies that determine IT development and maintenance must be guided by the organisational strategies.

I think you really need, ideally you need a ten-year plan but I don't think that's practical in an IT framework because of the speed of change. I guess 3-5 is probably the most you could go to in a detailed planning sense, but in the visioning you need to vision probably ten years out.

I think you can only really plan for the next 1-3 years and even that is sort of just odds on rather than real planning but I think you have to have a long-term view and be able to make a commitment to a long-term view.

Another issue that has been raised about the framework of the AMP for IT planning is that of research and development. Many staff have commented that making accurate budget predictions for their IT projects is difficult for more than one year. This makes the five-year planning framework of the AMP more difficult, especially when an IT project may require greatly increased funding in two or three years. Some staff argue that more flexibility needs to be built into the AMP planning process, to enable 'proof of concept' or research projects to be completed over a one-year timeframe that may then lead to more accurate predictions of budget and resource requirements for the full project implementation.

I actually think that our governance process needs to differentiate the difference between research and development. You know a project that tries out new technology or new ways of doing things, okay, to see if these will actually work or not work in our environment, and therefore you can shelve it or give that any type of life. I call it research and development; some people call it proof of concept. Does it actually work? Right. And therefore at the end of that proof of concept or that trial period or that research, you can decide okay, we've spent a little bit of money and you know, there's a whole heap of implications and we decide we shelve it.

This argument is directly linked to the concept of the budget driving the IT development and priorities for innovation. When working within a pre-determined budget and timeframe, QUT is trying to maximise its investment in IT

development, rather than setting a strategic vision and working out the most cost-effective, reliable and high quality IT needed to achieve that vision.

...we probably are one of the few organisations within the support services and infrastructure services [that] do not have R&D budgets and therein lies our problem when it comes to projecting into the future. It's guesswork, it's reliance on what someone might read...we do need a formalised R&D for our monitoring to feed into our strategic planning and we've got to stop trying to let it happen by chance.

Across QUT, asset management planning is widely recognised as the appropriate framework for IT infrastructure and development planning. The AMP, however, is not fully integrated in allowing transference of funding between physical and virtual initiatives. The AMP is also budget-driven and, in its current format, does not allow adequate provision for proof of concept initiatives that may be crucial in emerging IT developments.

Despite the limitations to full integration of IT planning with physical infrastructure planning, the AMP cannot be considered as an unconnected planning framework. Much of the real consideration of IT initiatives, as integral to achieving QUT business goals and objectives, happens within the framework of the strategic governance committee. The AMP and the ITSGC are symbiotic in nature; ITSGC considers IT planning and development from the framework of the AMP and the university's overall goals, and the decisions of ITSGC feed into the AMP priorities and budget. The AMP alone is not the only initiative for integration of information technology planning and management.

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### 3.3 Future Development of the AMP

QUT has invested quite significantly in ensuring the AMP as the standard framework for IT planning and budget. It is unlikely that these will be unlinked, unless the university were to undertake significant planning reform. But the future of the AMP itself is less clear.

Many staff across the university clearly believe that the budget and priority setting process for all physical and virtual initiatives should be fully and inextricably linked. However, this is not a universal goal. Some staff have expressed concerns that such complete integration will lead to a 'physical versus virtual' or 'bricks versus electrons' mindset that denies the equal importance of both infrastructures. As a young university, QUT has handled major challenges in improving the standard of the physical facilities and environs are still under constant development. Funding is still required at QUT for new buildings and refurbishment and redevelopment of existing facilities. Hard choices must be made about limited available funding. However, the argument is that such choices should not be made at the level of physical versus virtual initiatives, but at a higher level of overall funds for all university expenditure.

We've still got an IT AMP over here and we've still got the big one, the capital one over there. I think the intention's been stated a number of times that can we put it all under the one umbrella and interchange funds between the two and so on. And I think it can be done to a certain extent. But I think we've got to get away from seeing that IT projects are just like capital projects because they're not.

I think it's just important to identify a significant amount of money is going to be spent on development of computer systems. And it was a convenient place to put it. I don't see that it's in competition, as it were, with buildings. I just think that's not the way to do things. It's a competition of our total sum of money, against the rest of the university. And that's a big issue of; do we have these big developments of IT or buildings, or do we spend it on staff or other equipment? That bigger picture is more important.

Also in terms of the AMP, most staff believe that all of this type of planning needs to be more strategy-driven than budget-driven. IT planning should be directed by the organisation's stated goals and objectives, a model that is widely adopted in the corporate sector.

I think we need to generate an overview or picture. Some sort of picture that shows us the infrastructure that we're heading towards. How that supports the strategic plan of the university and the direction, and that governance should be looking at that in terms of priorities.

I think there needs to be a longer term strategy...that then guides how we do the IT asset management plan, cause I, frankly I don't think that's particularly well done. Cause what we do now is we say these are the numbers of dollars available and we'll get things that will fit into that.

This belief that a clear vision for IT is needed that relates to the university's goals and strategies is shared by the most senior management at the university, and by the new University Council. The first steps to devising a coherent vision for IT at QUT have already been undertaken. Tom Cochrane, the Pro-Vice-Chancellor (Information & Academic Services) has recently written a discussion paper for the university committees entitled 'The IT Agenda at QUT: past, present and future'. It is anticipated that the discussion from this paper will engender a vision for the future development of IT infrastructure and innovation to achieve the best possible outcomes for QUT and its goals and strategies.

The distinctiveness of QUT's mission lies in its relevance and connectedness. The principal focus of its IT agenda in the next five years lies in the strategic development of information technology to critically enhance this connectedness, to transform the student experience before, during and after the time of enrolment." (Cochrane, 2002, p.16)

## 4. Strategic Governance of Information Technology – Advantage QUT?

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### 4.1 Information Technology Strategic Governance Committee

Since 2000, information technology governance has been driven from the most senior management levels of QUT, with the Vice-Chancellor leading the priority setting of IT maintenance and new developments, and approving the budget. The primary vehicle for IT governance at QUT is the Information Technology Strategic Governance Committee (ITSGC). Advice to the ITSGC is received directly from the Director, Information Technology Services, and the IT Project Portfolio Manager, and indirectly from the IT Consultative Group, with representation from across the divisions and faculties of QUT.

ITSGC itself has senior level membership from across sectors of the university. ITSGC is chaired by the Vice-Chancellor, and has as its members the Deputy Vice-Chancellor (as the Chair of the QUT Teaching and Learning Committee), the Pro-Vice-Chancellor (Information & Academic Services), the Registrar, and the Executive Director of Finance & Resource Planning. One faculty Dean is also a member of ITSGC, as the chair of the Division of Information & Academic Services Advisory Committee. Another faculty Dean also sits on ITSGC as a nominee of the Vice-Chancellor's Advisory Committee (VCAC). Since its inception, ITSGC has included an industry representative; currently the Group General Manager of IT & HR for Suncorp Metway holds this seat. The industry representative was deliberately recruited from the banking industry, due to the experience within this industry, with information technology innovation and development. Since the beginning of 2002, ITSGC has also included a representative from the University Council. This is indicative of the increasing profile of IT within QUT and the strategic interest in IT implementation and benefit realisation.

ITSGC advises the Vice-Chancellor on IT matters, including monitoring of IT investments and infrastructure planning, as well as IT projects and other strategic issues. ITSGC also has a monitoring and review role for the AMP in relation to IT planning and budget. For the full terms of reference of ITSGC, see Appendix 4.

Research on ITSGC has been conducted through direct observation of ITSGC meetings in August and November 2001 and in March and April 2002, as well as through examination of the agenda and minutes of all ITSGC meetings since its inception. Staff across the university have commented in the research interviews on the operation of ITSGC and its success in IT governance.

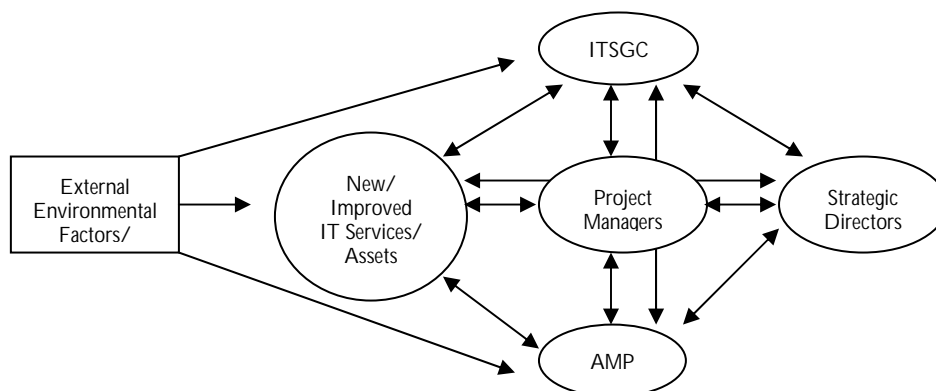
### 4.1.1 Operation of ITSGC

ITSGC meets at least four times a year. In practice there has been additional meetings on occasion. At each meeting, the issues of significance from the IT Project Registry and the AMP are raised and discussed. Some decisions are made on budget expenditure, fund transfer or increases for specific projects. In the second half of each year, ITSGC also discusses the project priorities for the following year and the likely inclusions for the AMP. ITSGC hears strategic briefing on issues that will affect IT maintenance and development at QUT. These strategic briefings may not require immediate action but serve as advance notice for IT development and projects. Strategic briefings may be on a wide variety of issues, for example, e-commerce developments or network infrastructure growth across QUT campuses.

ITSGC is intended to be strategic in nature and technical details are provided to the level needed to understand the strategic implications or budgetary requirements. Other committees involved in IT planning and management in the past at QUT have been involved in technological and administrative details. Some staff have commented that this was a significant reason why these committees have not been completely successful in IT governance. ITSGC is not an operational level committee, and does not discuss detailed implementations of IT maintenance and projects.

Strategic governance of IT is a cycle. ITSGC informs the projects managers, and is informed by the project managers. ITSGC informs the strategic directors who determine the need for new services, and the assets used to deliver these new services. This determination informs the AMP for projects and documentation of changes about asset creation. The AMP, along with external influences, such as the Department of Education, Science & Technology (DEST), new technologies and economic factors, then determines the development of new or improved services and assets. This leads to innovation, which in turn determines the project proposals that complete the cycle in feeding up to the ITSGC.

Figure 3. The Strategic Governance Cycle at QUT



Members of ITSGC frequently serve as Project Sponsors for major IT projects within the university, and are able to apply the broader strategic issues discussed at ITSGC to the more specific issues within their projects, where they have more detailed understanding and knowledge.

## 4.2 Advantages of the IT Governance Model

Information technology planning and management is improving as a result of the ITSGC and strategic governance. Observable benefits are apparent in terms of coordinated development of IT infrastructure and assets, innovation diffusion of IT initiatives and integration of IT developments with physical infrastructure developments and the overall goals and objectives of QUT. ITSGC is aiding the development and implementation of the AMP, and is serving as the link between IT infrastructure and projects and the university's strategic planning.

The VC has been very active in his support. The Registrar has played a strong role in project sponsorship and is a role model for this role to other project sponsors. The Deans of Faculty of IT and Faculty of Business are playing key roles and have been very supportive. Discussions within ITSGC illustrate that the Committee members are learning very rapidly about the strategic role they need to play.

ITSGC has served as a 'learning forum' for senior managers of QUT, who may not have direct knowledge of IT implementations and cutting-edge IT developments, but require broad knowledge of such issues for strategic planning and management of QUT. Previously senior managers in the Chancellery and Planning and Resources division may not have understood the strategic implications of, for example, the replacement of the PABX system, or creating a knowledge management framework within the QUT information systems. Now such initiatives are explained to the decisions makers of the university in terms of the contribution to QUT's business objectives and goals.

The ITSGC has come a long way in terms of the operation of it as a group of senior executives, both [in] the operation as a group of senior executives, and the understanding of the individual members around the table and their roles. So you see people like the Registrar and particularly the Vice-Chancellor having a very good feel for some of that now, and a very good feel for some of the economic trade off issues in terms of infrastructure and how to guide and steer some of the priority processes. A number of the other people around the table understanding what their roles are too, to advocate for certain things, such as the deans advocating on behalf of the deans collectively, not just for themselves.

The new planning and governance system has improved communication and cooperation between the physical and IT planners for new initiatives. At the beginning of each new project, physical and IT planners are brought together, for example when a new building is proposed. So such projects have more realistic budget projections and timelines, and network infrastructure and teaching technology are built into the project plans, rather than added later. The AMP is not (yet) a fully integrated plan for the physical and virtual infrastructure of QUT. Separate projects are envisioned and separate budget apportioned for IT and capital initiatives. ITSGC serves as the forum where links are drawn between capital and IT projects and ensuring that such projects proceed in a coordinated and seamless manner.

If I look back to where we were a few years ago then it's a remarkable change to now actually have what is basically the core leadership of the entire university involved in this process where in the past they [...] had no knowledge really, of some of these trade offs. So now we have them all knowing what the trade offs are at least to a certain level of detail and participating actively in the choices, the very hard choices that are being made. And that's a good thing too, because of the amount of money that's involved you really have to have them in that sort of position to know all that.

Experience at QUT has shown that without strategic governance, innovation happens in isolated silos, and results in duplication of innovation as no one has a strategic coordination role. Another factor that breaks down innovation diffusion in the silo model is the 'ego investment' in the results of innovation. Strategic governance of IT drives innovation in terms of where, when, what and who, and allows all sectors of the university to see the IT investments and take advantage of the central IT infrastructure and developments.

At the university level the Vice-Chancellor rightly recognises that student systems are terribly important. So for example, the one-stop-shop concept, the online enrolment, all of which are very intensive of IT equipment, those are given very high priority in the asset management planning. However, if it stops there and you don't then take the advantage of these new ways, the paperless enrolment, to then carry that through right the way down to the faculties then you haven't gained anything...

Overall, the most significant benefit that has been realised from ITSGC has been the senior level overview of IT infrastructure maintenance and new IT development at QUT. Bringing central IT initiatives together into a single forum for discussion and priority setting has enabled QUT to move forward with IT to support educational and administrative objectives. Almost every person involved in IT governance, planning and management explicitly states this benefit. Staff appreciate the broad representation on ITSGC from different sectors of the university and the objective nature of the forum for discussion and priority setting. ITSGC facilitates collective decision making about IT maintenance and development, rather than selective and political undertakings.

It's not just us, it's us and our systems. How did our systems handle that student, did we handle it really well? Were we fast, efficient, friendly, flexible, modern, all of those things? So I think bringing it all together in ITSGC has been the way to do that and it's important. So I think strategically it's the right thing to do.

So I think having some kind of central forum in which the issues are debated, there's a mechanism in an orderly way in which proposals get presented and there is a place where the merits can be argued against the merits of all the competing bids.

I think the successes have been... that the senior managers of the university are probably better informed about the impact on business. What drives what and I guess a strategic point of view just the importance of technology in the scheme of things and how we need to be placed. I think in terms of information gathering adding rigour to the way in which we argue about IT. Bringing some consistency into the way we should present information itself. Bringing in people to talk about issues to better inform people, that's worked very well.

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## 4.3 Challenges of IT Governance

ITSGC is a relatively new committee in QUT for strategic planning and decision-making. As a new committee, the operation, knowledge and even membership of the committee is still evolving. Many staff across the university recognise that the processes associated with IT governance are immature. Like the AMP, most people involved in IT planning and management expect that more significant benefits will be realised as the processes are embedded and the understanding of IT issues among the top QUT management matures.

These initiatives have achieved visibility and transparency, but must be followed by greater sharing of direction, a more mature defining of that direction, and professional project coordination and, above all, a recognition that traditional organisational silos and discipline divides must not be allowed to subvert this powerful and growing potential for our future way of getting things done. (Cochrane, 2002, p.12)

### 4.3.1 Communication Challenges

One of the process challenges highlighted most by the immaturity of ITSGC is that of effective communication, both within and without the committee. As ITSGC evolves, communication within the committee is addressed; committee members are gradually learning to speak the same language and frame their discussions within the same organisations goals. Recently, however, the greater challenges of outward communication from the committee have become more apparent. Staff across the university are still struggling to understand the objectives, operations and outcomes of ITSGC, and specific decisions from ITSGC are not well communicated.

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#### Communication within ITSGC

Members of ITSGC represent a mix of senior executive and IT responsibility. There is an acknowledgement that improvements are a work in progress and that indeed the Committee itself is learning.

They've certainly been participants in a schooling up process collectively across the university, for them to understand about IT and the people involved in the IT side of things understanding more about the business.

This learning curve is not complete, and gaps are apparent to both committee members and staff involved in IT project development and implementation. The communication issues relate to two major areas. Some staff are still concerned with the QUT senior managers' abilities to comprehend the implications on IT proposals and implementations.

There's a lot more education that needs to occur all round. The technical people don't really understand what the business is doing. They think they do but they don't and the business people don't really understand what's involved in producing some of the technological benefits, or there's some learning that needs to occur...

Some staff are concerned about the possibility of bias toward IT projects and proposals where understanding is more complete or the implications more apparent to the business managers.

I'm still concerned that areas that initiatives that relate to very general areas, which often means things in the Registrar's Division for example, are bleeding obvious and will probably get preference over areas where you require specialist knowledge to understand the importance of the initiative.

There seems to be times when it would've helped a little bit if there was someone who had more knowledge of IT, etc. in the event. It's a little bit about the priority setting type of thing whether it should be taken to such a high level.

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#### Communication around ITSGC

Perhaps the more obvious problems in communication about IT governance come from outside ITSGC itself. ITSGC has been in operation for over eighteen months, yet many staff are still confused about the specific roles the committee plays in terms of project priority setting, budget planning and project approval. Members of ITSGC do recognise this as a challenge and a problems for some of the staff involved in IT planning and management.

I think there needs to be more information put out about how decisions are made in that committee. About what, how major projects, about how it's determined what major projects will go ahead and what won't. It certainly needs to be part of the communication from the university administration to staff in general and those areas that have a lot of involvement with that plan...

Certainly, as ITSGC as it evolves, it will need to address the twin challenges of improving internal communication to ensure a coherent organisational vision for IT, and external communication to ensure all relevant staff around the university share that vision and the IT developments and maintenance needed to achieve that vision.

#### 4.3.2 Project Priority Challenges

ITSGC and the AMP have vastly improved the ability of the managers at QUT to have a total picture of IT needs and expenditure across the university. ITSGC has also enabled the senior managers of QUT to see clearly the strengths and weaknesses from the IT Project Registry and the opportunities and threats from the AMP. However, IT expenditure has always had a finite limit. It is difficult, even for the most senior managers, to envision a way to greatly increase central IT expenditure, budgets for all sectors of the university are stretched. To maximise QUT's investment in IT and facilitate the most effective use of the limited resources requires a great deal of priority setting and some difficult choices.

...computerisation people will give you ten ideas a day about the things you can computerise. How do you actually come up with one from those ten things? That is the one to take top priority. At the end of the year, in the budget process, how do we determine that these of the hundreds of ideas we have, these are the half a dozen that will actually benefit the university?

The challenges of setting priorities are linked to the business-technical communication difficulties previously discussed. Staff outside ITSGC are not always convinced that the most appropriate projects are approved and funded by ITSGC, due to a lack of technical understanding or implications. Without a massive injection of funding in IT expenditure, someone will always be disappointed. However, the process of priority setting within ITSGC is not transparent to all QUT staff. This again is linked to the outward communication issues previously discussed.

One of the most common perceptions among staff at all levels, including some members of the ITSGC, is that the priority setting process is budget-driven, rather than strategy-driven. This is one of the most critical challenges facing ITSGC; the dichotomy of 'fitting the projects into the budget' and trying to lead QUT into the most appropriate 'business fit' for IT development and maintenance.

You do need I think, to have extremely good project and pre-project processes both on the qualitative side and then on the financial side. So I think that they're the areas that still need quite a lot of work and the committee needs to build up a greater level of sophistication in terms of its own understanding of what's important.

Another concern is that priorities may be incorrect, as critical consultation with relevant staff is missing. Many staff feel left out of the priority setting process. Staff have commented that it happens too quickly, it is left too late, and the implications

of the IT implementation are not fully understood by the ITSGC members, when making their decisions.

ITSGC has recognised this concern. In 2002, the AMP planning and priority setting process will commence with the June meeting of ITSGC, to allow a much longer time for planning and consultation with stakeholders. Despite their concerns, most staff are relatively satisfied that ITSGC is the appropriate forum for project priority setting and approval for the AMP. Affected staff feel that the processes for AMP approval in 2001 were vastly improved over 2000, and expect that the processes will improve even more as ITSGC itself matures.

### 4.3.3 Budget Challenges

Perhaps the most vexed issue facing ITSGC is the overall level of funding of IT expenditure. On the one hand, it is easy to look at the IT expenditure for QUT and state that additional money needs to be injected; that money must be found from other sources in the university, such as capital works or staff expenses. The difficult truth, though, is that most staff would be loath to lose money from either of these budgets, despite the advantages that the IT implementations might bring. The IT Portfolio highlights that QUT is spending approximately 10% of its total budget on information technology and telecommunications. From the available data, this seems a reasonable benchmark. However, staff involved in IT projects have a general view that the proportion should be somewhat higher, although no indication has been given of a firm alternative figure.

The thing that I'm critical about into the future, is that we, I don't believe have tackled the problem of what the overall envelope of funding should be and I've tried to raise that at that particular meeting and it hasn't, that particular suggestion didn't meet with a great deal of approval. I can understand why, I'm not being critical of the views of the people that are involved, but it is a difficult issue because they say look we're spending all this money. Enormously greater than has ever been spent before and that's true. Maybe we're spending too much, I don't know, but until we have the debate which says inside the total funding envelope what would be a reasonable amount to spend on this compared to what is spent on bricks and mortar

The critical issue for expenditure is the vision for IT at QUT, the vision for IT in teaching and learning, in research, in administration of students and staff. As previously discussed, this vision is lacking for ITSGC and the university as a whole, and efforts are underway to develop this vision. Until this occurs, however, the planning and priority setting processes will continue to be driven by the limited IT budget available. Only with a coherent strategic vision for IT within the university, can ITSGC look at IT in relation to expenditure on capital development, staffing, overheads, staff development and academic program development. Only with this vision can ITSGC make the difficult choices for IT investment within this framework, knowing that expenditure will be offset by savings or efficiencies in other areas, and developments in other areas will offset the IT projects that are rejected or retired.

I don't think it's the kind of debate that you can resolve by just thinking of a number. We need to think very deeply about what the trends are, what the costs and benefits are and what the mix is between physical infrastructure and information infrastructure.

It's a competition of our total sum of money, against the rest of the university. And that's a big issue of, do we have these big developments of IT or buildings, or do we spend it on staff or other equipment? That bigger picture is more important.

The challenges of ITSGC in relation to the budget are inextricably linked to challenges with the AMP. Issues such as 'proof of concept' funding and acceptance of IT project failure are raised as issues for the governance committee to consider in relation to the budget. Many of the issues of concern for ITSGC, such as project priority, communication and funding, also relate to effective and consistent project management practices. These are a work in process for QUT, as highlighted in the next chapter.

## 5. Information Technology Project Management – A Work in Progress

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### 5.1 Project Management Processes

Along with the introduction of the AMP and the ITSGC at the end of 2000, a new project management framework for IT projects was implemented. This framework was designed to facilitate the proposal, adoption and implementation of IT projects for innovation and major maintenance of infrastructure. The methodology was developed to assist project managers and members of ITSGC with evaluation and priority of competing IT projects.

The major thrust of the new management was to avoid prior problems with project implementation, where there was insufficient linkage between the technological and business changes, and the lack of a standard for project management. The project management framework was designed to drive change that focussed on more effective, efficient and flexible IT processes that facilitated the business goals and academic goals of the university.

All IT project proposals now require a business case outline, stating what benefits the project will bring to the university, what will be developed by the project, how the project will be undertaken, and projections for resources and schedules. If the ITSGC agrees to the proposal, the project is moved to pre-approval, requiring a more detailed investigation of the concept and preparation of a full business case. ITSGC may then approve the project.

If the project is to move to the approved stage, a detailed project plan must be prepared. The plan will expand on the information provided at the registered stage. The plan must include detailed objectives, scope, project manager, sponsor and project stakeholders, detailed resources requirements and timelines. The plan must also outline project management methods and reviews. A template for this plan is available, but not compulsory.

All projects approved through the AMP have steering committees to monitor and report to the ITSGC. All major projects require a project sponsor, a champion from the most senior levels of QUT management. All projects must report regularly on progress and expenditure and the Project Registry is tabled and discussed at every ITSGC meeting, noting projects that have changed status (for example, from 'green' – proceeding on schedule, to 'yellow' – some issues causing concern, or to 'red' – under significant threat and governance action required) due to internal problems or external influences. The Project Registry Framework is available via the QUT web site with additional details on the project management processes.

Although a moderately formal process, it is also extremely flexible, with no definitive guidelines for the creation, formatting and presentation of the proposal,

and no absolute requirements for the inclusion of elements such as performance measures, risk management, best practice or quality assurance, ongoing reporting, or end-to-end costing for maintenance, staffing and upgrades, although such elements are welcomed and appreciated.

The Project Portfolio Manager (PPM) is situated in the IT Services Department, within the Division of Information & Academic Services. The PPM has no direct line management, but ensures regular meetings with IT project managers within the division, and also with project managers in the Division of Administrative Services. The PPM coordinates the presentation of the reports and collates the Project Registry, in consultation with relevant stakeholders. The PPM also creates the annual listing of all information technology and telecommunications assets in the IT Portfolio.

Project management is undoubtedly essential and the project management framework adopted by QUT has assisted in ensuring greater consistency and rigorous evaluation of projects. The project management methodology has been instrumental in raising the profile of IT implementations within QUT. QUT now recognises how vital is its investment in information technology and telecommunications infrastructure, and how development of new systems and infrastructure can enhance the business capability of the university.

Up to 50% of a corporate organisation's resources may be invested in information systems and computing technology. The concept of maximising the value of this investment is, somewhat naturally, of particular interest to the corporate sector. Weill and Broadbent (1998) point out that it is the size of investment in information technology and the societal move toward e-commerce that must make the issue of information technology investment a high priority and the development of this infrastructure critical. Within the higher education sector, the overall investment in IT may be somewhat less, but it is nonetheless a significant proportion of the assets and requires ongoing maintenance and development.

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## 5.2 Pluses and Minuses at QUT

Project management, like the planning and governance processes, is evolving, and significant changes to the IT Project Registry and the IT Portfolio can be observed over one year. The application of the project management methodology has brought significant benefits for IT planning and governance, however, QUT also recognises that there are significant gaps in project management methods and efforts are underway at QUT to address some of these issues.

### 5.2.1 The Advantages of Current Methodology

As discussed, the nature of IT project planning is flexible at QUT. This flexibility is designed to ensure that IT projects are evaluated and approved on their merits, rather than according to a rigid set of criteria. The flexibility of the project management methodology is recognised and valued by staff involved in IT projects. The view was expressed that major projects require rigorous project management methodology, whereas minor projects require more flexibility.

Another benefit of the project management methodology that is widely recognised is the consistency and visibility it has brought to IT implementations. Staff recognise that accountability for the funding and investment in IT is a growing concern for the university, and that the Project Portfolio Manager has facilitated more effective coordination of IT implementations and communication among the disparate sections involved in the implementations, including academic and administrative staff, as well as students and community clients.

If you've got items in the asset management plan then someone is going to be on your case checking up that you're on target to do the things you said you were going to do, and I think that gives a consistency and accountability more evenly than often is the case when people have projects, projects and project money.

Allows for communication across projects and also allows for informing the organisation of the developments across projects, staff members across the organisation are aware of innovation in progress and can accept 'pain' more easily knowing that change is coming to address problems.

The advantages of the relationship of the project managers to the staff involved in implementation, as well as to the strategic directors and ITSGC have been noted. Although staff agree that strategic governance is essential for a broad overview of IT implementations, more specific and technical knowledge is needed to actually progress the project planning and implementation. Similarly, a technical specialist is required for IT development and implementation, but the steering committee is crucial in ensuring ongoing implementation and adoption of the new technology. This model is working well for QUT.

... the project management is there in terms of a central project manager but with someone from the relevant organisational unit being seconded into the project management team, that seems to me to have worked very well and that you'd want always to have those two elements in the project management. Because I think where you're implementing strategic decisions you need to be able to ensure that there's going to be a follow through on those decisions, but you do want the on the ground information.

The use of project sponsors is widely advocated in the literature on project management (Hauschildt and Kirchmann, 2001). The sponsor is a senior executive champion, who can advocate for the project and ensure compliance with strategic objectives and broad business goals. The sponsor can also monitor implementation schedules and budget expenditure to ensure rigorous application of the project management methodology (Gray, 1994). QUT has adopted the use of project sponsors for major IT projects, with great success. Although the sponsors have limited ability to control budget increases or develop IT project concepts and proposals, the sponsors have been instrumental in the steering, monitoring and advocacy roles.

Being a sponsor is to me one of the most important things that a [senior manager] can do, for a start you're using, you're taking the opportunity to have those people who are looking after the central IT to understand what our business is all about.

As a tool for monitoring the project developments, the IT Project Registry has been extremely valuable, allowing ITSGC to see at a glance the ongoing development of IT projects and evaluate new proposals against existing commitments and competing needs. The IT Project Registry is very clear and consistent in its layout and reporting and is framed within business terminology, rather than technical specifications, to facilitate the understanding of the senior managers, as well as congruence with QUT business goals and strategies.

The IT Portfolio is an invaluable tool for IT investment monitoring and benchmarking. EDUCAUSE plays a key role in monitoring and benchmarking IT investment in US universities, through the publication of the annual Campus Computing Survey. Within Australia, no similar benchmarking tool exists for IT investment at universities. The QUT IT Portfolio could serve as a benchmark for evaluation against other Australian universities. At a recent ITSGC meeting, the Data Definitions, Structure and Assumptions of the Model for the IT portfolio was defined, providing even more rigorousness in this methodology.

### 5.2.2 The Challenges of Current Methodology

Despite the conscientious efforts to improve IT project management processes since 1999, gaps still exist. In some instances, the scheduling and budget defines the project from the outset, and staff are working backwards to fit the IT implementations into the pre-existing budget and timeline. The vision for IT development within QUT is not yet fully driving the IT development and maintenance. The gaps in the current QUT IT project management methodology are admitted at all levels of IT planning and governance. They have been recognised to the extent that the Internal Audit Section of the QUT Department of Planning and Resources have conducted a specific audit of IT project management methodology in March/April 2002.

The audit report has made numerous and specific recommendations about project proposal, planning, monitoring, implementation and evaluation practices. Project management methods will become rapidly more rigorous and consistent with the implementation of these recommendations. The findings of this audit were supported by many of the observations of this study.

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#### Project Planning Challenges

Two significant gaps have been identified in the current processes for project planning at QUT. The first is the need to more clearly identify return on investment in IT projects in the planning process and relate this return on investment to the business objectives or strategies of the university. The second is then need for whole-of-life project planning, with budgets reflecting the longevity of the implementation from project proposal to retirement of the project.

Green and Jenkins (1998) and Ernst and Segall (1995) examine the concept of maximising the return on investment from strategic information technology infrastructure management. Kaludis and Stine (2001) state that, 'by measuring the progress an investment returns against a set of strategic goals, the ROI can be compared against other investments that the institution might make.' (p. 55) Nelson and Davenport (1996) concur that information technology investments must be

balanced with current and future priorities and undertaken from a strategic perspective of performance and obsolescence (p. 32). The organisational vision for IT must drive the change processes to design processes that are more flexible and create significant business value.

The issue of return on investment (ROI) or benefits realisation is an ongoing challenge for IT projects. ROI has long been a focus in business and financial investment theory, and a key criterion for the adoption of new projects or strategies. However for IT, ROI is a concept somewhat more difficult to express in standard business terms. Many senior executives are still struggling to understand the implications of IT investment, and the return on investment for 'intangible' technologies such as knowledge management or enterprise systems. IT investments can be extremely significant in terms of Australian university budgets. Therefore, there is a corresponding need to identify clearly the benefits from these investments and the means by which these benefits can be measured.

We have to be driving it probably harder than any other area because we're taking money away from other people hand over fist, and we deserve to be held accountable. Right, because we're claiming such an increasingly large slice of the university's resources. So yeah, we have to do everything we can to be very predictable, [...] we have to know exactly where the money is.

I think we put forward a reasonably strong business case, because we're a business but we're not a business, and you're talking in terms of such investment it is hard to quantify and I get the impression that some people at the very top want to see numbers and figures to say well, why are we doing this. What is the return to our bottom line and that's really hard to quantify because the reward is that you're improving your competitive edge. The ultimate reward is that you're attracting and retaining high quality students. [...] I think it is hard to quantify.

An IT project may span several years from project proposal to retirement. A project that requires minimal outlay in one year for a pilot study may then require a massive injection of funding for full implementation. Retirement of a project due to insufficient funds after a successful pilot implementation is fraught with difficulties and client frustrations. Despite the five-year projections for IT expenditure in the AMP, the specific budget allocations for the IT projects are determined annually. In this way, the one-year budget and schedule can be seen to be driving the project management.

Project managers perceive that they must re-justify their project to the ITSGC each year, in order to ensure ongoing funding. Project managers have expressed the view that, if a proof-of-concept fund was available, more accurate projections of total funding required could be made in the initial project plan. The project could be approved on the understanding of the total needs for full implementation over several years. Projected costs for the project could include post-implementation costs for maintenance and upgrades. In short, whole-of-life project planning and funding. However, this model is dependent on accurate projections of future funding requirements, which can be extremely difficult in the volatile and fast-moving IT environment.

...we're good at planning but I don't think it translates into the budget. It doesn't work for us. We use the right model, but what it does mean is...I want to do a pilot or I want to do a proof of concept, spend a small amount of money and engage an expert. A year after if that's successful, then I'll need a lot more money. I need two more experts and if that's successful I can deliver it in the third year. So what we actually need to do is to look at pieces of work that conduct themselves over a number of years. They need to plan it ... into the budget process at least to connect back there... with some protection that if activities aren't successful well then they choose that jump out point.

...how strategic is it to say yes, we're going to spend a considerable amount of money to have me here and yes, we may get some more money next year to further the project but the reality is that we could quite easily get axed next year.

... what seems to have happened is that, as I can understand it, there's been no informed argument about the necessity to finish a project for which half money has been granted already. So we're going to be left stranded half way. We're going to have half the money for the project and no money allocated next year and therefore unable to finish a project...

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#### Project Priority Challenges

ITSGC considers project priorities at the 'top' layer, and monitors and reviews minor projects (normally those less than \$250,000). There is nevertheless a view that, at a more detailed level, there are deficits in both priority setting and sequencing of activities.

...there are problems because what it has done is put everything at a much higher level and left out a layer. So one of the big problems I struggle with, and managers in this area I'm sure, is priority setting. It's okay for the governance committee to say these are the approved projects for the year and here are the funding and the resources, that's great. But who says what project gets done first? What priorities they set?

A commonly expressed view across the staff interviewed was the need for either a project office for the university or the Division of Information & Academic Services, or for the current scope of the position of Project Portfolio Manager in the IT Services Department to be broadened to encompass all IT projects across the university. The consequences of an office or position that could manage the entire portfolio of IT projects across the divisions and faculties would be to allow for strategic management of these IT projects and priority setting of timing and scheduling of the projects and budgets.

...one option is that you have a project office that's divorced from a particular department. I think it's where it is because of history and ITS has had the major need for it. We've put aside a person to do it and that person is then being used to coordinate some of the other projects without those areas having to put forward the, yeah, and I guess if you took it out and made it a completely separate entity, ... that it may work better.

We need a centralised coordination point for project management, a 'situation room' that tracks the development of projects and has a coordinated view of rapid change. If power needs to be exerted, the centralised coordination point can identify that need and notify appropriate people, however, it is not centralisation of power per se, and the organisation must trust that this is so.

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### IT Maintenance Challenges

The whole-of-life project planning methodology also needs a stronger focus on integrating new IT developments into the maintenance planning schedule and budget, as well as planning for performance measures and review. Green and Jenkins (1998) note the useful nature of life cycle funding in information technology infrastructure management, and advocate it as a preferred method of asset management. Ritschard and Spencer (1999) discuss the issue of information technology replacement and the use of life cycle funding to enable regular replacement schedules.

Another challenge of project management methodology is the tendency to see projects as finite; once implementation of the IT project is complete, the project is retired. However, IT implementations usually have ongoing implications for maintenance and adoption into standard work practices. Additionally, the measurement of project implementation and process reengineering is not standardised in the current project management practices. This gap in the IT project management methodology highlights the need for whole-of-life project planning and management. This gap was recognised in the AMP 2002-2006, which identifies the Division of Finance & Resource Planning to address the improvement of this process (p.2). This is the real issue of whole of asset management and this issue is also linked to the issues of research and development or proof-of-concept funding for IT projects, previously discussed in chapter 3, and the overall budget envelope for IT within the university, previously discussed in chapter 4.

I think that all projects that are in here should have end-to-end costs. The reality is that anything that ends up on this [Project Registry] has to have a technical component to it. So therefore we need to cost the business, the technology and the change control of implementing it in the organisation.

IT project management is undoubtedly improving at QUT, and significant efforts are underway to address gaps in the processes. It is clear that consistent, clear project management processes, when combined with the strategic governance and integrated planning of IT, will provide QUT with excellent business value and academic quality.

## 6. Conclusions and Futures

QUT is a university. The planning, governance and management of QUT is driven by the academic and administrative goals of the university, within the Australian tertiary education environment. As a professional-academic bureaucracy, QUT recognises the dichotomy of trying to maintain the values and qualities of a teaching and research organisation, while operating in an entrepreneurial and increasingly competitive environment. Planning, management and governance of information technology is no exception to this. QUT must ensure that the IT infrastructure provides for innovation and quality in education and research, and facilitates and streamlines the administration and operation of the business organisation.

QUT is attempting to ensure its IT infrastructure is the best for its academic and administrative needs. QUT is integrating physical and virtual infrastructure planning, aligning the IT implementations with university goals through strategic governance, and developing consistent project management practices to provide more efficient, flexible and reliable IT infrastructure.

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### 6.1 The Gains for QUT

QUT has radically reformed its IT planning, management and governance since 1999. The creation of an Asset Management Plan that integrates physical and virtual infrastructure planning has been successful in providing flexible and responsive budgets and consistent planning and priority setting of IT implementations. The establishment of a strategic governance committee has educated the senior managers of QUT in the needs and requirements of the IT infrastructure, and provided a forum for IT planning, priority setting and management that ensures alignment with IT goals and strategies. The reform in IT project management has ensured a level of return of business value on IT investment. The provision of the IT Project Registry has facilitated the visibility of innovation and the maximisation of implementations across the university. The maintenance of the IT Portfolio has ensured better consistency and reliability in the IT infrastructure and provided a framework for benchmarking of IT investment within QUT.

Planning of IT infrastructure and innovation, prior to 2000, was inconsistent and fragmented. Different sections of the university would develop new technologies and separate infrastructures that created 'hidden' IT innovation and poor return on investment for the university as a whole. The central IT planning was largely divorced from other faculties and divisions. The vital funding increases for maintenance and development of IT infrastructure were slow to evolve and patchy in their application.

QUT has created an Asset Management Plan that has a single budget for central IT innovation and infrastructure maintenance. This budget has the necessary flexibility to respond to fluctuating demands and the provision for growth as required. The AMP has also utilised an existing planning framework for capital planning to

provide consistency and visibility for IT implementations. Across QUT, staff can see the IT developments and maintenance underway and participate in the planning, priority setting and benefit realisation of these developments. The AMP has facilitated a whole-of-asset focus in QUT that has brought IT infrastructure to the forefront of asset management and out of the 'back room'.

Literature confirms that integrated planning of IT with other organisation planning and strategic objectives provides benefits, such as maximum return on investment and minimum problems in IT implementation. The AMP model also allows for flexibility in IT infrastructure development and maintenance, focussing on central IT development, and allowing devolved sectors scope for IT innovation and local variance.

QUT has not completely integrated physical and IT planning. Separation in the budgets and initiatives may be addressed in future iterations, but the co-location of these budgets and initiatives has provided a more responsive planning framework and visibility and flexibility in the relative budget demands. The medium-term planning timeframe in the AMP has brought IT planning from a difficult one-year focus to a more realistic focus of three to five years, which may facilitate whole-of-life IT project planning. QUT is perhaps lacking a coherent vision for IT that is limiting IT planning, but efforts are underway to develop this vision for IT in QUT's future. Similarly, QUT is improving linkages between the existing university budget cycle and the schedule of IT activities. The vision and the AMP framework will be the mechanisms for planning, priority setting and budget of IT innovation and infrastructure maintenance at QUT.

QUT saw the need for a more consistent and top-level governance of IT to ensure compliance with the university goals and strategies. Strategic governance evolved from other committees to a committee chaired by the Vice-Chancellor, representative of the divisions and faculties of QUT, and representative of the academic objectives and business and financial management of QUT. The IT Strategic Governance Committee has a focus of facilitating effective, efficient and responsive IT planning and management. ITSGC is closely interwoven with the AMP to achieve this flexibility and responsiveness.

Other commercial and higher education organisations have proven that strategic governance of IT provides essential leadership in IT innovation and implementation, and develops an IT infrastructure that better serves the agenda of the organisation. QUT is proving this again, as most staff concur that the ITSGC is facilitating more effective planning, budget and priority setting of IT. Challenges of communication and priority setting may be taxing the committee, but no one denies the fundamental value it has brought to the university.

The reform of IT planning, management and governance processes have brought significant gains to QUT. The integration with physical infrastructure planning and management is progressing, and the alignment with strategic objectives is ensuring that IT development and maintenance at QUT will be successful.

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## 6.2 The Future for QUT

The future of IT planning, management and governance at QUT is not absolute, nor should it be. IT is a fast-changing and evolving resource, open to a wide variety

of external influences. Planning and management practices must be responsive to this environment and flexible enough to accommodate rapid change. For now, and for the near future, the processes are serving QUT well.

It appears likely that the Asset Management Plan will become increasingly integrated for information technology and physical infrastructure planning, as it evolves. The AMP is certainly evolving toward integration, but whether or not it will be completely integrated is unclear, due to fundamental disparities between IT developments and maintenance and capital developments and maintenance. An integrated budget seems appropriate, with the improved flexibility of transference of funds among projects, as their requirements fluctuate and inevitable hiatus and delay gaps appear. The AMP will also evolve in its links to the IT Strategic Governance Committee, the intertwined framework facilitating better project priority setting and communication between project planners and senior QUT managers.

QUT has commenced the development of a coherent vision for information technology in the university. This vision will enhance the strategic planning, priority setting and funding of IT developments and maintenance. The vision will allow ITSGC to make more informed choices among competing projects, and provide the impetus for funding evaluation of IT investment as a whole.

ITSGC itself is evolving, and communication within the committee is improving, as well as the understanding of the technology for the senior QUT managers. This evolution is likely to increase the benefits that ITSGC brings to IT planning and priority setting, and address some of the technical communication challenges currently facing ITSGC. The committee has been evolving through a period of establishment and rapid development. Now this initial stage is past, ITSGC must begin to address some of its external challenges of communication and dissemination of information.

ITSGC has recognised the need to focus on issues of return on investment and benefits realisation. Such a focus is endorsed by the research from the commercial sector and other tertiary education sectors. This focus foreshadows further changes in IT planning, with the identification of specific business and educational outcomes for IT developments, and the establishment of performance measures and reviews. This again will address some of the challenges and perceived inequities in IT project planning and priorities.

Within higher education IT has been deployed more consistently for administrative and general infrastructure purposes, with greater variability across the sector in its deployment for academic activities. At QUT there is a view that this is changing, with online teaching and learning technologies experiencing rapid growth in the last few years. It is predicted that the balance of IT growth in universities will shift from administration to academic support in the coming decade. The future of IT planning and management at QUT must reflect this shift, as it occurs, and challenges of the total funding envelope for IT infrastructure and innovation must be addressed. QUT recognises the need for IT funding to be addressed at an organisational level, with funding for other infrastructures under review, such as human resources or capital development.

The audit of IT project management practices at QUT is set to produce further improvements in IT project planning, priorities and implementation. The audit examined project management from a selection of current IT projects at various

stages of implementation. The audit identified that examples of best-practice project management methodology were present in all of these projects, but that consistency and universal adoption were lacking. The audit highlighted the best-practice examples from these cases, to be consistently adopted across QUT.

Rigorous application of this project management methodology across all IT projects will assist strategic planning, strategic management and benefit realisation for IT development and maintenance. With the adoption of a stronger focus on benefits planning and performance evaluation, a whole-of-life project planning approach should emerge.

A recent ITSGC meeting examined the IT Portfolio as a benchmarking tool, which resulted in the refinement of the Data Definitions, Structure and Assumptions of the Model. It is envisioned that this tool can now be used for benchmarking against other relevant Australian universities, allowing QUT to examine both its current level of investment in IT and its gaps for development of IT infrastructure.

QUT has already taken significant steps to address prior problems in IT planning and management, and to integrate the planning and management into a whole-of-asset focus. This demonstrates QUT's willingness and ability to adapt. QUT will evolve its method of IT planning, management and governance to reflect current best practice and the shifting IT environment.

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### 6.3 QUT as a Model

All Australian universities are addressing IT planning, management and governance challenges in their own, unique ways. Some practices at QUT are reflected in practices at other Australian universities, and in universities in the United States. Other practices are more specific to QUT.

QUT itself is distinctive, in its origins and development to date. QUT evolved from the amalgamation of several educational institutions, and rapidly adopted centralised models for administration and governance. Over the last four years, online teaching has also become a major coordinated exercise. QUT has chosen to adopt best of breed enterprise systems, rather than implement a single-vendor ERP system. This, in itself, presents challenges of interoperability and process reengineering that cannot equate directly to universities that have adopted an ERP model.

A modest investigation of documented practices at other Australian universities revealed that most had not chosen to integrate information technology and physical infrastructure planning and management. The University of Tasmania has recently moved to create a centralised asset management register that includes most central IT hardware, but not IT software, systems or network infrastructure. The model at University of Tasmania is an operational asset management framework, focussing on data collection, analysis and management. The asset management framework at University of Tasmania has no financial administration role, and is not obviously linked to a strategic planning and governance process.

Several other Australian universities report high-level planning and governance committee arrangements for IT. From the evidence gathered, none of these committees is chaired at the most senior level of the Vice-Chancellor; most are

chaired at a divisional level by the relevant head of information services or its equivalent. To date, none appear to have made direct linkages to an integrated planning framework that considers all university IT assets and a single budget for central IT development and maintenance.

The comprehensive reform at QUT, to IT planning, management and governance processes, is perhaps the most important aspect for other Australian universities to consider. The evidence from corporate and tertiary education research clearly demonstrates the value of integrating IT planning and management within an organisation and linking this planning, at the highest level, to the strategic objectives of the organisation. QUT has achieved this through a strategic, non-operational focus at ITSGC and through a coordinated IT management process. QUT is building a whole-of-asset focus that will enable better priority setting of its infrastructure development and maintenance.

The extent to which other Australian universities could adopt the entire QUT model may depend on their level of centralisation and standardisation of IT infrastructure, as well as their adoption of enterprise systems. However, even elements of the QUT model may bring benefit to other universities, such as the need for an IT vision, the consideration of IT needs against organisational objectives, or the integration of physical and information technology infrastructure planning and management.

For QUT, creating an integrated asset management plan has been part of a broader strategy of reform in high-level IT planning, governance and management. It is important to see the integrated AMP as part of this broader initiative. The changes in IT governance and management are evolutionary, and additional reforms can be expected over the coming months.

## Appendix A. Data Sources for Case Study and Questionnaire

**Table A.1 QUT documentation sources**

<b>Document</b>	<b>Year</b>	<b>Available</b>
2001 Budget Framework	2000	Department of Planning and Resources – QUT access only
Asset Management Plan 2001-2003	2000	<a href="http://www.qut.edu.au/chan/pr/ltd/resource/cap_pln/amplan2001_3.pdf">http://www.qut.edu.au/chan/pr/ltd/resource/cap_pln/amplan2001_3.pdf</a>
Asset Management Plan 2002-2006	2001	<a href="http://www.qut.edu.au/chan/pr/ltd/resource/cap_pln/02amp.pdf">http://www.qut.edu.au/chan/pr/ltd/resource/cap_pln/02amp.pdf</a>
Capital Management Plan 2000-2002	1999	<a href="http://www.qut.edu.au/chan/pr/ltd/resource/cap_pln/00capplan.pdf">http://www.qut.edu.au/chan/pr/ltd/resource/cap_pln/00capplan.pdf</a>
Department of Planning & Resources Plan 2001-2005	2000	Department of Planning and Resources – QUT access only
Division of Information & Academic Services Plan 2001-2005	2000	Department of Planning and Resources – QUT access only
Division of Finance & Resource Planning Plan 2002-2006	2001	Department of Planning and Resources – QUT access only
Division of Information & Academic Services Plan 2002-2006	2001	Department of Planning and Resources – QUT access only
Division of Information & Academic Services Project Management Framework	2000	<a href="http://www.dias.qut.edu.au/resources&amp;reports/Documents/framework%20version%201.doc">http://www.dias.qut.edu.au/resources&amp;reports/Documents/framework%20version%201.doc</a>

Document	Year	Available
Information Technology Strategic Governance Committee Agenda: 15 August 2000 19 October 2000 27 February 2001 8 May 2001 7 August 2001 6 November 2001 5 March 2002 23 April 2002		Previous agendas available from QUT Archives and Records Management Services  Current agendas available: <a href="http://www.secretariat.qut.edu.au/cc/it/">http://www.secretariat.qut.edu.au/cc/it/</a>
Information Technology Strategic Governance Committee Minutes: 15 August 2000 19 October 2000 27 February 2001 8 May 2001 7 August 2001 6 November 2001 5 March 2002		Previous minutes available from QUT Archives and Records Management Services  Current confirmed minutes available: <a href="http://www.secretariat.qut.edu.au/cc/it/">http://www.secretariat.qut.edu.au/cc/it/</a>
Information Technology Strategic Governance Committee Terms of Reference	2001	QUT Manual of Policy and Procedures – QUT access only (See Appendix D)
Internal Audit Report 2002/03, IT Governance – Project Management Review	2002	Department of Internal Audit – Internal access only

<b>Document</b>	<b>Year</b>	<b>Available</b>
IT Portfolio 1999	1999	<a href="http://www.its.qut.edu.au/project_portfolio/ITPortfolio1999.pdf">http://www.its.qut.edu.au/project_portfolio/ITPortfolio1999.pdf</a>
IT Portfolio 2000	2000	Department of Information Technology Services – QUT access only
IT Portfolio 2001	2002	<a href="http://www.its.qut.edu.au/project_portfolio/portfoliodes.shtml">http://www.its.qut.edu.au/project_portfolio/portfoliodes.shtml</a>
IT Portfolio Data Definitions, Structures and Assumptions of the Model	2002	<a href="http://www.its.qut.edu.au/project_portfolio/Data%20Description%20of%20IT%20Portfolio.pdf">http://www.its.qut.edu.au/project_portfolio/Data%20Description%20of%20IT%20Portfolio.pdf</a>
IT Project Registry Framework	2000	<a href="http://www.its.qut.edu.au/project_portfolio/registryframework.doc">http://www.its.qut.edu.au/project_portfolio/registryframework.doc</a>
IT Project Registry Summary Report	2002	<a href="http://www.its.qut.edu.au/project_portfolio/Project%20Registry%20Report4.pdf">http://www.its.qut.edu.au/project_portfolio/Project%20Registry%20Report4.pdf</a>
Position Description and Selection Criteria: Associate Director and Manager, Project Portfolio	1999	Department of Information Technology Services
QUT's Mission, Goals and Key Performance Indicators		<a href="http://www.qut.edu.au/chan/pr/planning/StratPlan/missgoal.pdf">http://www.qut.edu.au/chan/pr/planning/StratPlan/missgoal.pdf</a>
QUT Strategic Plan 2002-2006	2001	<a href="http://www.qut.edu.au/chan/pr/planning/StratPlan/stratplan.htm">http://www.qut.edu.au/chan/pr/planning/StratPlan/stratplan.htm</a>
QUT's Vision: Draft Vision Statement for QUT		<a href="http://www.qut.edu.au/chan/pr/planning/StratPlan/vision2.PDF">http://www.qut.edu.au/chan/pr/planning/StratPlan/vision2.PDF</a>
Report on the Review of the Department of Computing Services (External Consultant Report)	1998	Office of the Pro-Vice-Chancellor (Information & Academic Services) – Internal access only
Resources Plan 1999-2003	1999	Department of Planning and Resources
Resources Plan 2002-2006	2002	<a href="http://www.qut.edu.au/chan/pr/planning/StratPlan/02-06/resources_0206.PDF">http://www.qut.edu.au/chan/pr/planning/StratPlan/02-06/resources_0206.PDF</a>
Strategic Planning and Budgeting Package 2002-2006	2001	Department of Planning and Resources – QUT access only
Strategic Planning Package: Top-Level and Support Function Plans 2002-2006	2000	Department of Planning and Resources – QUT access only
The IT Agenda at QUT: Past, Present and Future. [PowerPoint presentation] T. Cochrane, February 2002	2002	Office of the Pro-Vice-Chancellor (Information & Academic Services) – Internal access only
The IT Agenda at QUT: past, present and future: A position paper. T. Cochrane, April 2002	2002	Office of the Pro-Vice-Chancellor (Information & Academic Services)

**Table A.2 Meetings observed**

<b>Meeting</b>	<b>Date</b>
Information Technology Strategic Governance Committee	7 August 2001
Information Technology Strategic Governance Committee	6 November 2001
Information Technology Strategic Governance Committee	5 March 2002
Information Technology Strategic Governance Committee	23 April 2002

**Table A.3 Survey questionnaire respondents**

<b>Name</b>	<b>Position</b>
Aler, Patricia	Data and Analysis/SMARTA Manager, Planning & Resources
Austen, Gaynor	Director, Library Services
Baumber, Kenneth	Registrar
Cope, Malcolm	Dean, Faculty of Law
Dascoli, Joseph	Associate Director, ITS – Corporate Info Services
Davis, Alison	Manager, Student Support Services, TALSS
Fredline, Sarah	Library Systems Manager
George, Graham	Dean, Faculty of Science
Gibson, Dennis	Vice-Chancellor
Gorham, Ross	Manager, Network Services, ITS
Graham, Alister	Computer Systems Officer, Faculty of Health
Harding, Sandra	Dean, Faculty of Business
Hart, Gail	Director, Teaching & Learning Support Services
Heron, Steve	Client Quality Specialist, ITS
Hessling, Kathy	Corporate Systems Manager, ITS
Holland, Darren	Manager, Desktop Support Services, ITS
Leighton, Terry	Resources Manager
McDonald, Ian	Administrative Systems Coordinator, DAS
Mottram, Paul	Call Centre Manager, ITS
Oloyede, Kunle	Senior Lecturer, Faculty of Built Environment & Engineering (for the Dean, Faculty of Built Environment & Engineering)
Roberts, Geoffrey	Associate Director TALSS and Manager, AV Services
Sinfield, Philip	Technical Services Manager, Faculty of Information Technology
Tasker, Paul	Senior Projects Officer, Corporate Info Systems, ITS
Tesch, Paul	Computer Support Officer, Division of Finance & Resource Planning
Thelander, Neil	Director, Information Technology Services
Tronc, Dearn	Project Leader, Customer Relationship Management, DAS
Young, Carolyn	Associate Director, Library Services

Note: Surveys were distributed to 54 participants within QUT, 31 valid responses were received (64.6% response rate). Four responses were anonymous.

**Table A.4 Interviewees**

<b>Name</b>	<b>Position</b>
Aler, Patricia	Data and Analysis/SMARTA Manager, Planning & Resources
Austen, Gaynor	Director, Library Services
Baumber, Kenneth	Registrar
Cochrane, Tom	Pro-Vice-Chancellor (Information & Academic Services)
Dascoli, Joseph	Associate Director, ITS – Corporate Info Services
Davis, Alison	Manager, Student Support Services, TALSS
Fraser, Warren	Project Portfolio Manager (on leave from July 2001)
Fredline, Sarah	Library Systems Manager
George, Graham	Dean, Faculty of Science
Gibson, Dennis	Vice-Chancellor
Gorham, Ross	Manager, Network Services, ITS
Goss, Halima	Associate Director TALSS and Manager, SMILE
Gough, John	Dean, Faculty of Information Technology
Graham, Alister	Computer Systems Officer, Faculty of Health
Gray, Carmel	Group General Manager of IT & HR, Suncorp Metway
Harper, Wendy	Intranet Services Manager, ITS
Hart, Gail	Director, Teaching & Learning Support Services
Hessling, Kathy	Corporate Systems Manager, ITS
Holland, Darren	Manager, Desktop Support Services, ITS
Keys, Graham	Project Portfolio Manager (Acting)
Leighton, Terry	Resources Manager
McDonald, Ian	Administrative Systems Coordinator, DAS
Mottram, Paul	Call Centre Manager, ITS
Tasker, Paul	Senior Projects Officer, Corporate Info Systems, ITS
Thelander, Neil	Director, Information Technology Services
Tronc, Dearn	Project Leader, Customer Relationship Management, DAS
Williams, Joy	Executive Director, Finance & Resource Planning Director of Postgraduate Research Studies, Division of Research &
Wissler, Rod	Advancement
Young, Carolyn	Associate Director, Library Services

Note: Senior QUT managers, IT project managers and relevant department and section managers were contacted for interview, regardless of whether they had responded to the survey. Some staff were interviewed more than once, where appropriate.

# Appendix B. Cover Sheet and Questionnaire

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**Integration of Information Technology Planning &  
Management with University Planning &  
Management: Questionnaire**

## Cover sheet

### Integration of Information Technology Planning & Management with University Planning & Management: A Case Study of Queensland University of Technology

Robyn Tweedale

Senior Research Assistant

Office of the Pro-Vice-Chancellor (Information & Academic Services)

Phone: 3864 2229 Email: [r.tweedale@qut.edu.au](mailto:r.tweedale@qut.edu.au)

[Date]

Dear \_\_\_\_\_,

I have been employed by the Office of the Pro-Vice-Chancellor (Information & Academic Services) to conduct a case study research project, exploring the integration of information technology planning and management at QUT into the physical Asset Management Plan, and the integration into general university planning and governance. This research is funded by a grant from DETYA, Evaluation and Investigations Programme (EIP) and will be published as a report to the Australian tertiary education community. I am conducting interviews, reviewing documents and observing key decision-making meetings to gather the data in relation to the case study. I would like to gather a small amount of quantitative data, with examples and commentary to add to my research conclusions. I am also currently enrolled in IT60 Master of Information Technology (Research) at QUT, conducting similar research for my Masters thesis, and this data may also be used in this research.

You have been identified as a staff member who is involved in information technology planning, management and/or governance at QUT. The attached questionnaire is being used to gauge the current level of integration of information technology planning with university planning at QUT. The questionnaire is derived from research that has been conducted over many years in the U.S., both within the corporate sector and the tertiary education sector.

*Your participation is voluntary – I would greatly appreciate your insights and input.*

**Please complete the attached questionnaire to provide your perceptions on the level of integration. *It is important that your perceptions are based on the actual level of integration at this point in time.***

**I may also approach you to conduct a short interview (up to 30 minutes) to discuss your perceptions on the integration in more depth, if you are willing to participate.**

Please complete the survey and return in the enclosed envelope.

**CONFIDENTIALITY:**

Confidentiality of the information gathered in this questionnaire and subsequent interviews is *absolutely guaranteed*:

- Any quantitative data will be only presented in tabulated and/or analysed format.
- Any comments or examples will not be attributable to a specific person or group of people.
- Specific evidence provided will only be available to the researcher or advisory team.

If you have any queries regarding the ethical conduct of this research, please contact the University Human Research Ethics Committee (UHREC) Secretary, Mr Gary Allen.

Phone: 3864 2902

Email: [gx.allen@qut.edu.au](mailto:gx.allen@qut.edu.au)

If you have any queries about the conduct of the research or the questionnaire, please contact me, or my research supervisors:

Robyn Tweedale	Researcher	Phone: 3864 2229 Email: <a href="mailto:r.tweedale@qut.edu.au">r.tweedale@qut.edu.au</a>
Guy Gable	Director, ISMRC (IT60 Research Supervisor)	Phone: 3864 1125 Email: <a href="mailto:g.gable@qut.edu.au">g.gable@qut.edu.au</a>
Tom Cochrane	Pro-Vice-Chancellor (IAS) (QUT Supervisor)	Phone: 3864 2560 Email: <a href="mailto:t.cochrane@qut.edu.au">t.cochrane@qut.edu.au</a>

Thank you for your assistance in completing this questionnaire. It is hoped that this case study will benefit QUT and may also influence IT planning and governance across Australian universities.

**ROBYN TWEEDALE**

## Questionnaire

### Integration of Information Technology Planning & Management with University Planning & Management: Questionnaire

#### Queensland University of Technology

##### Definitions:

Information Technology (IT) Planning	The process of identification, within budgetary limitations, of computing equipment, telecommunications, software and systems required by the university staff and students, for both current and future needs. Planning incorporates maintenance as well as innovation and development.
University Planning	The process of identifying needs and requirements within the budgetary limitations of the university, related to academic programmes, administrative functions, capital developments and technical infrastructure. Planning incorporates maintenance as well as innovation and development.
University Strategy	The agreed strategies to achieve university goals and objectives, complying with the university's mission and strategic plans.
Information Technology (IT) Governance	The process of setting strategic directions for information technology and overseeing the development, implementation and management of information technology infrastructure and applications at QUT; ensuring compliance with identified strategies, legal and ethical guidelines, and budgetary constraints.

**PLEASE INDICATE WITH A CHECK MARK (✓) the description that *most closely* fits your perception of the current integration of University Planning and IT Planning at QUT.**

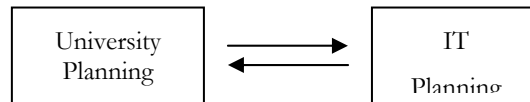


In this type of integration, there is a weak relationship between University Planning (UP) and Information Technology Planning (ITP) as shown by the dotted line above. Generally, there is little significant effort to use information technology (e.g. computers, telecommunications) to support University plans.



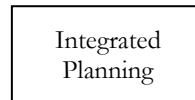
In this type of integration, a sequential relationship exists between University Planning (UP) and Information Technology Planning (ITP). UP provides directions for ITP. The unidirectional arrow flowing from UP to ITP denotes this relationship. ITP primarily focuses on providing support for University plans.

( ) **Reciprocal Integration**



In this type of integration, there is a reciprocal and interdependent relationship between University Planning (UP) and Information Technology Planning (ITP). There are therefore two arrows shown above; one flowing from UP to ITP and the other flowing from ITP to UP. ITP plays a role in supporting and influencing University plans.

( ) **Full Integration**



In this type of integration, there is little distinction between the University Planning (UP) process and the Information Technology Planning (ITP) process. University and IT strategies are developed concurrently in the same integrated planning process.

### Benchmark Variables

For each of the following statements:

- **Please PLACE A CHECK MARK (✓) beside the description that *most closely fits with your perception of the university*.**
- **Please choose ONLY ONE response for each numbered statement.** (Even though more than one response may seem appropriate, please select one that seems *most* appropriate.)
- Please also note that none of the descriptions are inherently “good” or “bad”.
- **Please provide EXAMPLES (wherever possible) that ILLUSTRATE YOUR RESPONSE to each question.**

1. Presently, integration of information technology in other University planning *mainly*:

- ( ) facilitates *and influences* QUT strategy
- ( ) ensures joint development of University and IT strategies
- ( ) facilitates administrative work processes
- ( ) only facilitates University strategy (does not influence)

COMMENTS/EXAMPLES:

2. Information technology at QUT, when viewed in terms of the functions it performs, is:

- ( ) technically oriented and non-strategic for QUT
- ( ) a resource to facilitate QUT strategy
- ( ) critical to the long-term survival of QUT and integral to strategy
- ( ) a resource to both facilitate *and influence* University strategy

COMMENTS/EXAMPLES:

3. The primary role of the Pro-Vice-Chancellor (Information & Academic Services) in relation to information technology planning is:
- an information technology expert who formulates IT strategy to implement University strategy
  - an information technology expert who provides input during University strategy formulation and implementation
  - a functional administrator responsible for "back-room" support
  - a formal and integral member of the senior management team who is involved in many university matters, even those not directly related to IT

COMMENTS/EXAMPLES:

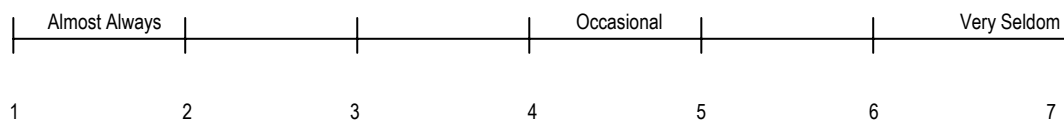
4. The measures at QUT for the performance of information technology functions are most obviously their:
- contribution to QUT strategy implementation
  - long-term impact on the organisation
  - quality of inputs into QUT strategy formulation and implementation
  - operational efficiency and cost minimisation

COMMENTS/EXAMPLES:

5. The development of the information technology applications at QUT is primarily triggered by:
- consideration of QUT goals
  - both consideration of QUT goals and information technology capabilities
  - the need to automate administrative work processes
  - consideration that information technology applications play a critical role in QUT strategy

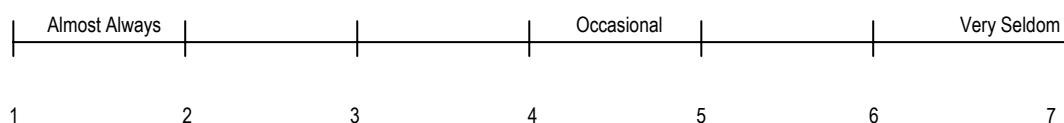
COMMENTS/EXAMPLES:

6. Please indicate the frequency of participation of top QUT management staff (such as the V-C, DV-C, Registrar, etc.) in IT planning and IT governance:



COMMENTS/EXAMPLES:

7. Please indicate the frequency of participation in IT planning of staff using the technologies:



COMMENTS/EXAMPLES:

8. Please indicate the frequency of participation in IT planning of students using the technologies:

Almost Always				Occasional			Very Seldom
1	2	3	4	5	6	7	

COMMENTS/EXAMPLES:

9. Please indicate the frequency of participation of the Pro-Vice-Chancellor (Information & Academic Services) in general and physical planning for QUT:

Almost Always				Occasional			Very Seldom
1	2	3	4	5	6	7	

COMMENTS/EXAMPLES:

10. During IT planning, how frequently is the impact of new technologies assessed?

Almost Always				Occasional			Very Seldom
1	2	3	4	5	6	7	

COMMENTS/EXAMPLES:

11. The IT planning and IT governance system within QUT can be characterised as a smooth-running and efficient system?

Strongly Agree				Agree			Strongly Disagree
1	2	3	4	5	6	7	

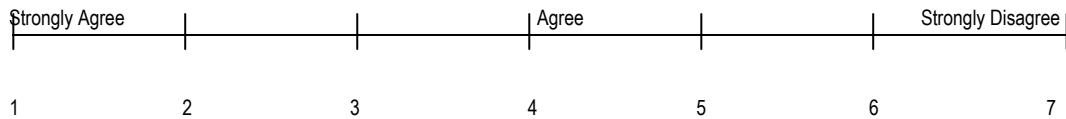
COMMENTS/EXAMPLES:

12. The IT planning and IT governance system within QUT can be characterised as a system that is well informed about how its intervention affects the entire university?

Strongly Agree				Agree			Strongly Disagree
1	2	3	4	5	6	7	

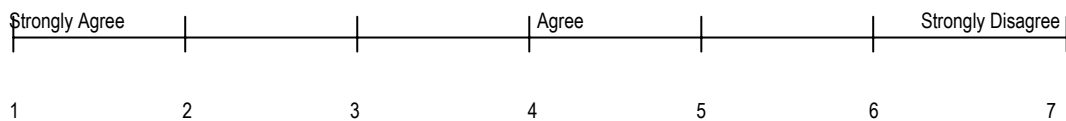
COMMENTS/EXAMPLES:

13. The IT planning and IT governance system within QUT can be characterised as a system that is aware of the implications and assumptions that are being made throughout the planning process?



COMMENTS/EXAMPLES:

14. The IT planning and IT governance system within QUT can be characterised as a system that leads to more improved quality within the university itself?



COMMENTS/EXAMPLES:

**Do you wish to make any additional comments about the level of integration of IT planning and University planning or the effectiveness of the IT planning and IT governance system at QUT?**

**NAME (If you are willing to be interviewed):**

This questionnaire has been derived from previous research conducted in the U.S. in the higher education sector and the corporate sector. The questionnaire is the result of testing and modification from several research studies. The following authors developed the primary measures and inputs for this questionnaire:

King, W. R., & Teo, T. S. H. (1997). Integration between business planning and information systems planning: Validating a stage hypothesis. *Decision Sciences*, 28(2), 279-308.

Lesko, C. J. (1999). *The integration of University and technology planning efforts in the North Carolina Community College system: A four-stage model approach*. Unpublished doctoral dissertation, Walden University.

# Appendix C Detailed Summary of Results from Questionnaire on Integrated IT Planning at QUT

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## Scales of Measurement

### Perceived Level of Integration

Measured on a four-point scale, respondent selects a measure of perceived level of integration of information technology planning with university planning: 1. *Administrative Integration*; 2. *Sequential Integration*; 3. *Reciprocal Integration*; 4. *Full Integration*. Measures are averaged for each group and for total of all respondents.

### Benchmark Measures of Integration

Benchmarks 1-5 are four-point scale measures of integration, where the respondent selects measures of the level of integration of information technology planning with university planning, according to specific benchmarks. The selections on the four-point scale correspond precisely with the four levels of perceived integration. These benchmark measures have been statistically validated by King and Teo (1996). Measures are averaged for each group and for total of all respondents.

Benchmarks 6-10 are seven-point, reversed, Likert-scale measures of integration, where the respondent selects measures of the level of integration of information technology planning with university planning, according to specific benchmarks. The measures rate each benchmark from 1 (Almost Always) to 4 (Occasionally) to 7 (Very Seldom). These benchmark measures have also been statistically validated by King and Teo (1996). Measures are averaged for each group and for total of all respondents.

### Benchmark Measures of Satisfaction

Benchmarks 11-14 are seven-point, reversed, Likert-scale measures, where the respondent selects measures of the level of satisfaction with information technology planning, according to specific benchmarks. The measures rate each benchmark from 1 (Strongly Agree) to 4 (Agree) to 7 (Strongly Disagree). These benchmark measures have also been statistically validated by Teo and King (1997), and again by Lesko (1999), and the correlation of these benchmarks to the measures of integration has also been proven. Measures are averaged for each group and for total of all respondents.

### Respondents

The questionnaire was administered to 54 staff across QUT, from the groups of: *QUT Senior Managers*; *IT Project Managers and Planning Managers*; and *IT Consultative Group*. 31 valid responses were received, a respondent rate of 64.6%. Four responses were anonymous.

**Table C.1 Summary Results by Group of Perceived Level of Integration & Benchmark Measures of Integration**

<b>Measure</b>	<b>QUT Senior Managers</b>	<b>IT Project Managers &amp; Planning Managers</b>	<b>IT Consultative Group</b>	<b>Anonymous Responses</b>	<b>Total All Responses</b>
<b>PERCEIVED LEVEL OF INTEGRATION</b>	2.6	2.3	2.4	2.5	<b>2.4</b>
<b>FOUR-POINT BENCHMARK MEASURES OF INTEGRATION</b>					
<b>Benchmark 1</b>	2.8	2.4	2.6	2.3	<b>2.5</b>
<b>Benchmark 2</b>	3.5	3.2	3.4	3.3	<b>3.3</b>
<b>Benchmark 3</b>	3.9	4	3.2	4	<b>3.8</b>
<b>Benchmark 4</b>	2.5	1.8	1.2	1.8	<b>1.8</b>
<b>Benchmark 5</b>	3.2	2.9	2.2	2.8	<b>2.8</b>
<b>SUMMARY OF BENCHMARKS 1-5</b>	3.2	2.9	2.5	2.8	<b>2.8</b>
<b>SEVEN-POINT, REVERSED LIKERT-SCALE BENCHMARK MEASURES OF INTEGRATION</b>					
<b>Benchmark 6</b>	3.2	2.4	3.9	4.4	<b>3.5</b>
<b>Benchmark 7</b>	3.5	2.7	4.7	3.4	<b>3.6</b>
<b>Benchmark 8</b>	4	3.8	6.1	4.4	<b>4.6</b>
<b>Benchmark 9</b>	2.5	2.9	2.4	3.5	<b>2.8</b>
<b>Benchmark 10</b>	2.7	2.4	3.7	4	<b>3.2</b>
<b>SUMMARY OF BENCHMARKS 6-10</b>	3.2	2.8	4.2	3.9	<b>3.9</b>

**Table C.2 Summary Results by Group of Perceived Level of Satisfaction with IT Planning Benchmarks**

<b>Measure</b>	<b>QUT Senior Managers</b>	<b>IT Project Managers &amp; Planning Managers</b>	<b>IT Consultative Group</b>	<b>Anonymous Responses</b>	<b>Total All Responses</b>
<b>SEVEN-POINT, REVERSED LIKERT-SCALE BENCHMARK MEASURES OF SATISFACTION WITH IT PLANNING</b>					
<b>Benchmark 11</b>	4.2	4.5	4.3	4.4	<b>4.3</b>
<b>Benchmark 12</b>	4.1	3.9	4.5	3.4	<b>4</b>
<b>Benchmark 13</b>	3.8	4.3	4.3	3.1	<b>3.9</b>
<b>Benchmark 14</b>	3	3.6	4.2	3.3	<b>3.5</b>
<b>SUMMARY OF BENCHMARKS 11-14</b>	3.8	4.1	4.3	3.5	<b>3.9</b>

**Table C.3 Statistical Correlation of Benchmarks for Integration and Effectiveness**

	<b>Benchmark 11 - Effectiveness Level</b>					
	1-2 (High)		3-5 (Moderate)		6-7 (Low)	
	<i>No.</i>	%	<i>No.</i>	%	<i>No.</i>	%
<b>Benchmark 1 - Integration Level</b>						
1 – Administrative	0	0%	4	13%	1	3%
2 - Sequential	0	0%	6	19%	1	3%
3 – Reciprocal	1	3%	12	39%	1	3%
4 – Full	0	0%	4	13%	1	3%
<b>Benchmark 2 - Integration Level</b>						
1 – Administrative	0	0%	2	6%	0	0%
2 - Sequential	0	0%	3	10%	1	3%
3 - Reciprocal	0	0%	5	16%	0	0%
4 - Full	1	3%	16	52%	3	10%
<b>Benchmark 3 - Integration Level</b>						
1 - Administrative	0	0%	1	3%	0	0%
2 - Sequential	0	0%	0	0%	0	0%
3 - Reciprocal	1	3%	1	3%	0	0%
4 - Full	0	0%	24	77%	4	13%
<b>Benchmark 4 - Integration Level</b>						
1 - Administrative	1	3%	14	45%	3	10%
2 - Sequential	0	0%	3	10%	1	3%
3 - Reciprocal	0	0%	3	10%	0	0%
4 - Full	0	0%	6	19%	0	0%
<b>Benchmark 5 - Integration Level</b>						
1 - Administrative	0	0%	5	16%	1	3%
2 - Sequential	0	0%	2	6%	0	0%
3 - Reciprocal	1	3%	10	32%	2	6%
4 - Full	0	0%	9	29%	1	3%
<b>Benchmark 6 - Integration Level</b>						
1-2 (High)	0	0%	14	45%	0	0%
3-5 (Moderate)	1	3%	12	39%	2	6%
6-7 (Low)	0	0%	1	3%	1	3%
<b>Benchmark 7 - Integration Level</b>						

1-2 (High)	0	0%	10	32%	2	6%
3-5 (Moderate)	1	3%	15	48%	1	3%
6-7 (Low)	0	0%	2	6%	0	0%
<b>Benchmark 8 - Integration Level</b>						
1-2 (High)	0	0%	3	10%	0	0%
3-5 (Moderate)	1	3%	19	61%	3	10%
6-7 (Low)	0	0%	5	16%	0	0%
<b>Benchmark 9 - Integration Level</b>						
1-2 (High)	1	3%	11	35%	2	6%
3-5 (Moderate)	0	0%	16	52%	1	3%
6-7 (Low)	0	0%	0	0%	0	0%
<b>Benchmark 10 - Integration Level</b>						
1-2 (High)	1	3%	10	32%	2	6%
3-5 (Moderate)	0	0%	14	45%	0	0%
6-7 (Low)	0	0%	3	10%	1	3%
<b>Benchmark 12 - Effectiveness Level</b>						
	1-2 (High)		3-5 (Moderate)		6-7 (Low)	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
<b>Benchmark 1 - Integration Level</b>						
1 - Administrative	0	0%	5	16%	0	0%
2 - Sequential	2	6%	4	13%	1	3%
3 - Reciprocal	3	10%	9	29%	2	6%
4 - Full	0	0%	5	16%	0	0%
<b>Benchmark 2 - Integration Level</b>						
1 - Administrative	0	0%	2	6%	0	0%
2 - Sequential	0	0%	4	13%	0	0%
3 - Reciprocal	1	3%	1	3%	2	6%
4 - Full	4	13%	16	52%	1	3%
<b>Benchmark 3 - Integration Level</b>						
1 - Administrative	0	0%	1	3%	0	0%
2 - Sequential	0	0%	0	0%	0	0%
3 - Reciprocal	0	0%	2	6%	0	0%
4 - Full	5	16%	20	65%	3	10%
<b>Benchmark 4 - Integration Level</b>						
1 - Administrative	3	10%	13	42%	2	6%

2 - Sequential	0	0%	4	13%	0	0%
3 - Reciprocal	0	0%	3	10%	0	0%
4 - Full	2	6%	3	10%	1	3%

**Benchmark 5 - Integration Level**

1 - Administrative	0	0%	6	19%	1	3%
2 - Sequential	1	3%	1	3%	0	0%
3 - Reciprocal	2	6%	10	32%	1	3%
4 - Full	2	6%	7	23%	1	3%

**Benchmark 6 - Integration Level**

1-2 (High)	5	16%	8	26%	1	3%
3-5 (Moderate)	0	0%	15	48%	0	0%
6-7 (Low)	1	3%	0	0%	1	3%

**Benchmark 7 - Integration Level**

1-2 (High)	4	13%	7	23%	1	3%
3-5 (Moderate)	2	6%	15	48%	0	0%
6-7 (Low)	0	0%	1	3%	1	3%

**Benchmark 8 - Integration Level**

1-2 (High)	1	3%	0	0%	0	0%
3-5 (Moderate)	5	16%	20	65%	1	3%
6-7 (Low)	0	0%	3	10%	1	3%

**Benchmark 9 - Integration Level**

1-2 (High)	4	13%	10	32%	1	3%
3-5 (Moderate)	2	6%	13	42%	1	3%
6-7 (Low)	0	0%	0	0%	0	0%

**Benchmark 10 - Integration Level**

1-2 (High)	6	19%	6	19%	1	3%
3-5 (Moderate)	0	0%	14	45%	1	3%
6-7 (Low)	0	0%	3	10%	0	0%

**Benchmark 13 - Effectiveness Level**

1-2 (High)		3-5 (Moderate)		6-7 (Low)	
No.	%	No.	%	No.	%

**Benchmark 1 - Integration Level**

1 - Administrative	0	0%	4	13%	1	3%
2 - Sequential	0	0%	6	19%	1	3%
3 - Reciprocal	2	6%	11	35%	1	3%

4 - Full	1	3%	4	13%	0	0%
<b>Benchmark 2 - Integration Level</b>						
1 - Administrative	0	0%	1	3%	1	3%
2 - Sequential	0	0%	3	10%	1	3%
3 - Reciprocal	0	0%	4	13%	1	3%
4 - Full	3	10%	17	55%	0	0%
<b>Benchmark 3 - Integration Level</b>						
1 - Administrative	0	0%	0	0%	1	3%
2 - Sequential	0	0%	0	0%	0	0%
3 - Reciprocal	0	0%	2	6%	0	0%
4 - Full	3	10%	23	74%	2	6%
<b>Benchmark 4 - Integration Level</b>						
1 - Administrative	1	3%	14	45%	3	10%
2 - Sequential	0	0%	3	10%	0	0%
3 - Reciprocal	0	0%	4	13%	0	0%
4 - Full	2	6%	4	13%	0	0%
<b>Benchmark 5 - Integration Level</b>						
1 - Administrative	0	0%	4	13%	2	6%
2 - Sequential	1	3%	1	3%	0	0%
3 - Reciprocal	1	3%	11	35%	0	0%
4 - Full	1	3%	9	29%	1	3%
<b>Benchmark 6 - Integration Level</b>						
1-2 (High)	3	10%	13	42%	1	3%
3-5 (Moderate)	1	3%	9	29%	2	6%
6-7 (Low)	0	0%	2	6%	0	0%
<b>Benchmark 7 - Integration Level</b>						
1-2 (High)	1	3%	8	26%	1	3%
3-5 (Moderate)	3	10%	15	48%	1	3%
6-7 (Low)	0	0%	1	3%	1	3%
<b>Benchmark 8 - Integration Level</b>						
1-2 (High)	1	3%	1	3%	0	0%
3-5 (Moderate)	2	6%	21	68%	2	6%
6-7 (Low)	1	3%	2	6%	1	3%
<b>Benchmark 9 - Integration Level</b>						
1-2 (High)	2	6%	11	35%	1	3%

3-5 (Moderate)	2	6%	13	42%	2	6%
6-7 (Low)	0	0%	0	0%	0	0%

**Benchmark 10 - Integration Level**

1-2 (High)	2	6%	9	29%	1	3%
3-5 (Moderate)	2	6%	14	45%	0	0%
6-7 (Low)	0	0%	1	3%	2	6%

**Benchmark 14 - Effectiveness Level**

	1-2 (High)		3-5 (Moderate)		6-7 (Low)	
	No.	%	No.	%	No.	%

**Benchmark 1 - Integration Level**

1 - Administrative	0	0%	5	16%	0	0%
2 - Sequential	2	6%	4	13%	1	3%
3 - Reciprocal	2	6%	12	39%	0	0%
4 - Full	4	13%	1	3%	0	0%

**Benchmark 2 - Integration Level**

1 - Administrative	0	0%	1	3%	1	3%
2 - Sequential	0	0%	4	13%	0	0%
3 - Reciprocal	1	3%	4	13%	0	0%
4 - Full	7	23%	13	42%	0	0%

**Benchmark 3 - Integration Level**

1 - Administrative	0	0%	0	0%	1	3%
2 - Sequential	0	0%	0	0%	0	0%
3 - Reciprocal	0	0%	2	6%	0	0%
4 - Full	8	26%	20	65%	0	0%

**Benchmark 4 - Integration Level**

1 - Administrative	3	10%	15	48%	1	3%
2 - Sequential	1	3%	2	6%	0	0%
3 - Reciprocal	2	6%	1	3%	0	0%
4 - Full	2	6%	4	13%	0	0%

**Benchmark 5 - Integration Level**

1 - Administrative	0	0%	5	16%	1	3%
2 - Sequential	1	3%	1	3%	0	0%
3 - Reciprocal	4	13%	9	29%	0	0%
4 - Full	3	10%	7	23%	0	0%

**Benchmark 6 - Integration Level**

1-2 (High)	7	23%	8	26%	0	0%
3-5 (Moderate)	1	3%	12	39%	1	3%
6-7 (Low)	1	3%	1	3%	0	0%

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**Benchmark 7 - Integration Level**

1-2 (High)	4	13%	7	23%	0	0%
3-5 (Moderate)	5	16%	13	42%	0	0%
6-7 (Low)	0	0%	1	3%	1	3%

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**Benchmark 8 - Integration Level**

1-2 (High)	2	6%	0	0%	0	0%
3-5 (Moderate)	6	19%	19	61%	0	0%
6-7 (Low)	1	3%	2	6%	1	3%

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**Benchmark 9 - Integration Level**

1-2 (High)	4	13%	9	29%	0	0%
3-5 (Moderate)	5	16%	12	39%	1	3%
6-7 (Low)	0	0%	0	0%	0	0%

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**Benchmark 10 - Integration Level**

1-2 (High)	7	23%	7	23%	0	0%
3-5 (Moderate)	2	6%	12	39%	0	0%
6-7 (Low)	0	0%	2	6%	1	3%

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# Appendix D. ITSGC Terms of Reference and Membership

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## Information Technology Strategic Governance Committee<sup>10</sup>

### Terms of reference

Information Technology Strategic Governance Committee advises the Vice-Chancellor on information technology matters.

The Committee monitors and reviews the portfolio of QUT information technology investments monitors and reviews University direction and strategic deployment of information technology across all teaching and learning, research, and administrative activities, including infrastructure planning reviews and assesses project management activities underway for the achievement of QUT's goals and objectives monitors and reviews the QUT asset plan monitors and reviews information technology issues as appropriate.

### Membership

Vice-Chancellor *ex officio* as Chairperson

One nominee of the Vice-Chancellor drawn from industry<sup>11</sup>

The dean who is Chair of the Division of Information and Academic Services Advisory Committee *ex officio*

Deputy Vice-Chancellor, or nominee of the Deputy Vice-Chancellor from Teaching and Learning Committee

Pro-Vice-Chancellor (Information and Academic Services) *ex officio*

Executive Director, Finance and Resource Planning *ex officio*

Registrar *ex officio*

A nominee of Vice-Chancellor's Advisory Committee

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<sup>10</sup> Queensland University of Technology Secretariat. (2002) *Information Technology Strategic Governance Committee*. [Online]. <<http://www.secretariat.qut.edu.au/cc/it/>>

<sup>11</sup> Industry here does not necessarily mean the IT industry, as the expertise would also be desirable from business areas.

A nominee of University Council

A nominee of the Registrar is secretary.

### **Tenure and frequency of meeting**

*Ex officio* members remain members for as long as they hold the position relevant to their membership.

Nominated members serve a two-year term.

Information Technology Strategic Governance Committee normally meets four times a year.

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