A study for the JISC into the integration of technology into institutional strategies

December 2008

Undertaken on behalf of the JISC

by

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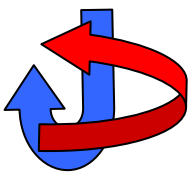
for Duke & Jordan Ltd



1 Executive Summary

This study was commissioned by the JISC in collaboration with the Leadership Foundation for Higher Education (LFHE) to assess current awareness, practice and issues relating to the integration of technology into institutional strategies in UK higher education. The JISC and the LFHE wish to identify actions that they might take to encourage and support higher education leaders and senior managers to engage more with the strategic technology agenda, both within their own institutions and across the sector.

1.1 The research

A representative sample of managers and academics from 28 HEIs across the UK was interviewed. The sample included members of SMT, planning officers and Heads of the IS/IT service and Governors. A selection of individuals in the sector and executives from commercial and public sector organisations was also interviewed.

We noted a discernible difference in perceptions between those who see the institution as a business driven from the top to achieve outcomes in line with its mission in a competitive marketplace and those who see it primarily as a community of scholars.

The core question of the study asks how and why senior leaders do or do not integrate technology into their institutional strategies. We looked at how corporate strategy is developed, shared and implemented in order to identify both where and how a consideration of ICT is brought to bear upon strategy and the success of the process. This uncovered the perspectives of the various roles in the sample.

1.2 Findings

We concluded that managers who combine a deep understanding of technology with senior management experience remain uncommon in the sector. We found that most institutions rely upon collaboration between a number of different individuals with complementary skills to deliver effective insight into the actual and potential contribution of technology to the overall strategic aims of the organisation.

We produced two fundamental models of core strategic process to provide a framework for meaningful description and analysis of the key issues. These we called the integrated and disjoint models. In the *integrated* model, the main strategy development process stimulates and drives a parallel process of development of separate sub-strategies for major functional areas and academic units to support and deliver the institutional strategy. In the *disjoint* model, while the overall strategy informs thinking within the organisation and sets the boundaries, a combination of budgetary autonomy and academic independence allows local strategies to emerge, sometimes in complex ways.

The interviews revealed the disjoint model to be more common, even in institutions which seemed relatively managerial in their language and expectations.

We saw that technology could play a role at three levels in strategic planning: *transformational* when it is used to recast the institution in a different form; as a *strategic enabler* when it is needed to implement the strategic goals set by management; or as an *operational enabler* when its role is to support the core activities of the institution. We found little evidence or consideration of its transformational worth and only some evidence of its use as a strategic enabler. Most common was its use as an operational enabler.

The organisation of roles and responsibilities for the strategic exploitation of technology emerged as an issue of great importance. In particular, the notion of a senior manager with responsibility for technology strategy emerged in discussion around the role of Chief Information Officer (CIO). This has proved successful in the private sector and has been adopted by a number of innovative leaders in the sector both here and abroad. The establishment of such a role on the SMT yields significant benefit, but it is possible that similar levels of benefit might be achieved by effective organisation of information and communications immediately below.

We concluded that generally there are significant shortcomings in the capability of senior management teams in HEIs to identify and exploit the full strategic potential of technology.

1.3 Recommendations

Only a minority of institutions are giving effective consideration to technology as either a strategic or transformational enabler in their strategic planning and by not doing so they can miss opportunities. We make the following recommendations:

Recommendation 1 The Leadership Foundation for Higher Education should ensure that, within its activities, effort is directed to challenging members of Senior Management Teams to consider whether or not their chosen strategy development processes satisfactorily incorporate consideration of the strategic role of technology.

Issues which the Leadership Foundation should address in its activities include:

- the roles of technology: transformational; strategically enabling; operationally enabling
- the fit between strategic practice and organisation and culture of the institution
- the creation of appropriate training and development opportunities in the strategic management of technology for non-technical Governors, leaders and managers, whether this be by extending the scope of current programmes or devising free-standing programmes or publications.

Recommendation 2 The Leadership Foundation for Higher Education should ensure that, within its activities, Chief Executive Officers and members of governing bodies are challenged to consider whether the distribution of membership of Senior Management Teams and governing bodies enable these groups to be sufficiently technology literate**.**

By a technology literate team, we mean one which has at least one member with the understanding of what technology can and cannot deliver and who has the capacity to inform the team on these matters.

Issues which the Leadership Foundation should address include:

- optimal management structures to integrate consideration of technology into corporate strategy, including those where there is expertise on SMT and those where this is not the case
- the nature and effectiveness of the arrangements for governance of the strategy for technology

Recommendation 3 The Leadership Foundation for Higher Education should ensure that, within its activities, effort is directed to assisting the HE sector to develop Chief Information Officers within its own ranks and to develop ICT support staff who are business focused**.**

Issues which the Leadership Foundation should address here include:

- identifying the key functions and responsibilities of a CIO in the strategy for technology
- establishing the training and development requirements of the CIO role
- exploring the viability of activities such as training to meet these needs

Recommendation 4 We recommend the JISC to use its expertise and good offices in collaborating with the Leadership Foundation for Higher Education to deliver recommendations 1, 2 and 3. It should consider whether its current portfolio of activities needs modification better to facilitate such support of the Leadership Foundation**.**

In support of this we note:

- The scope and scale of JISC's activities and events give it an unrivalled understanding of the technologies used in Higher Education and excellent contacts with those involved in its strategic and operational management
- The JISC's current activities place little weight on administrative computing and on the management of technology. Both of these are critical to the success of technology within HE and these areas could usefully be developed within the JISC portfolio through effective collaboration with the LFHE.
- The JISC should consider the extent to which the membership of its committees reflects the needs of HE administrative computing and the management of technology within HE.

Recommendation 5 The JISC should consider providing a future awareness service for Higher Education Chief Executive Officers and Senior Management Teams, which addresses ICT matters for technology non-literate senior managers

In support of this we note that:

- Acquiring the right level of understanding about technology can be difficult
- JISC's TechWatch service is in a position to provide helpful information
- Such information should be suitable for the technologically non literate

Recommendation 6 We recommend that the JISC and the Leadership Foundation for Higher Education work with UCISA to increase the level of external support provided to Heads of ICT departments and to Chief Information Officers, so that they may better address the business issues.

In support of this we note:

- There is clear evidence of a communication gap between ICT support staff and senior managers.
- The leadership of HEI departments can be a lonely occupation. A support network for Heads of ICT service departments which is forward looking could facilitate basic better use of technology
- UCISA's involvement with the sector is excellent. This involvement should be complementary to, rather than competitive with, that of the Leadership Foundation and the JISC.

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We are very grateful to all those who gave their time and knowledge to help us prepare this report.

2 The context

2.1 Collaboration between the JISC and the Leadership Foundation for Higher Education

Earlier this year, the JISC announced collaboration with the Leadership Foundation for Higher Education. This[1] is designed to stimulate awareness of the strategic technology agenda amongst senior leaders and managers in higher education. Higher education institutions are increasingly dependent on technology to support and deliver their core business. OECD scenarios for the future development of higher education nationally and internationally emphasise the growing strategic importance of technology. This collaboration is an important initiative in encouraging and promoting a greater understanding and awareness of the opportunities and challenges and in maximising the strategic benefit for UK higher education. The three key objectives of this collaboration are to:

1. understand current awareness, practice and issues relating to leadership and the integration of technology into institutional strategies within UK higher education;

2. create the conditions in which higher education leaders (particularly at senior levels) are motivated to engage more with the strategic technology agenda within their own institutions and across the higher education sector;

3. create ways of encouraging and developing this motivation and a desire amongst higher education leaders to engage and learn more about strategic technology issues.

The importance of this collaboration was underscored in HEFCE's letter to the JISC setting out the strategic priorities for the JISC for the Academic Year 2008-2009[2]. Under the heading of "Shared Services, Management and Administration – improving the sharing of infrastructure, resources, processes, knowledge and advice and guidance to provide sector-wide efficiencies and reduce administrative burden", the letter says that JISC should look to work in collaboration with the Leadership Foundation in this area where applicable.

2.2 Purpose of the study

There are two principal deliverables from this work:

1. A report addressing
    a) How and why senior leaders do or do not integrate technology into their institutional strategies;
    b) Examples of good practice in such integration;
    c) How senior leaders can be encouraged to develop skills and awareness of the strategic use of technology;
    d) Recommendations for the JISC and the Leadership Foundation to develop their programmes, to identify appropriate further work and to assist them to assess the extent of integration of technology into institutional strategies.

2. Assistance in the development and delivery of a conference in November 2008.

It is intended that the deliverables should:

- Identify the context, drivers and current awareness that senior leaders in higher education have of the inclusion of technology into institutional strategies;
- Ascertain the range of models of current practice implemented across the sector and to provide an assessment of the impact of those models on institutions' approaches to the integration of technology;
- Determine approaches to engaging with senior management teams and individuals to secure personal and institutional development opportunities;
- Make recommendations

[1] http://www.jisc.ac.uk/whatwedo/programmes/programme_jos/project_lfhe.aspx
[2] http://www.jisc.ac.uk/media/documents/aboutus/aboutjisc/jiscfundingadviceletter0809.pdf

- On how consideration of the integration of technologies into institutional strategies can be incorporated into the Leadership Foundation and JISC programmes that are targeted at senior management teams and individuals;
- On potential qualitative and quantitative indicators by which change and success in the integration of technology into institutional strategies can be measured in future;
- For future collaborative work between JISC and the Leadership Foundation for Higher Education.

2.3 Terminology

The language used in this report is largely that of the individuals we interviewed. However, we assured our interviewees of anonymity and we have therefore employed generic forms of some terms used to us in order to retain that. In particular, since posts and committees in institutions have names which are particular to a small number of HEIs, we have elected to use the following terms where appropriate:

Term used	Explanation	Examples
HEI	Higher Education Institution	University, College
CEO	Chief Executive Officer	Vice-Chancellor, Principal, Rector
IS Policy Committee	Information Systems (or Services) committee: The HEI's committee with responsibility for governance of the Information and Communication Technology function	Information Policy Committee, Information Policy and Strategy Committee, Information Systems Committee
Head of ICT	Head of the Information and Communication Technology functional area	Director of Computing Services, Head of Information Systems
SMT	Senior Management Team of the institution	Executive Committee, Vice-Chancellor's Senior Management Team
CIO	Chief Information Officer: the member of senior management who is responsible for ensuring that the organisation's information technology investments and direction of change is aligned with its strategic business objectives (see section 4.3.10)	
CTO	Chief Technology Officer: this person, usually employed within the Information and Communication Technology functional area, is responsible for the selection and implementation of the appropriate technology solutions and service provision to support the needs of the institution (see section 4.3.11)	

We have weighed the use of terms to describe the information and communication technology which underlies this report. Those we interviewed used a variety of terms such as IT, IS/IT, ICT. Though we recognise the advantages in the interests of clarity of avoiding acronyms, we concluded that the use of the phrase "information and communication technology" throughout the report would be unwieldy. We also recognised that none of our interviewees used the term "technology" alone to describe information and communication technology, probably because in a higher education institutional environment, "technology" can have many different aspects and meanings. By and large therefore we have used the term ICT.

3 Our approach

3.1 Our intended interviewees

Our approach has been interview based. We have spoken, either face-to-face or on the phone, to representatives of the following groups:

1. Key stakeholders from the Leadership Foundation, the JISC Executive and JISC committee members;
2. A sample of key players involved in the planning exercise from HEIs across the UK. We aimed at talking to 20 different institutions and to speak to one or two holders of the following roles from each institution:
   a) Member of Governing Body;
   b) Member of the Senior Management Team;
   c) Planning Officer;
   d) Head of the ICT Service Department.

   This approach, which was agreed with the project sponsor at the outset, was taken as an alternative to seeking a set of institutions, each of which would be asked provide all four roles, because it would give us access to a larger number of institutions within the project budget and because of the known difficulty of such a process, which would have entailed considerably more work in each institution (lining up four people, including a governor).
3. Representatives of bodies representing UK HE, such as the Russell Group and AHUA.
4. Some individuals with experience of ICT strategic planning in bodies outside the sector.

We have largely spoken to all those we wished to in the first group.

For the second group, we actually approached 28 institutions, in the expectation that some would decline to be involved and that others would take a lot of chasing. We were successful in achieving our aims, other than to speak to enough governors. Only two institutions actually declined to participate and, in both of these, we were seeking to interview a governor. We did speak to a number of governors but most were also employees of the institution. We only spoke to one governor who was not also an HEI employee.

For the third group, we approached a range of sector bodies but failed to obtain either a consensus or "official" view on these matters: instead, their representatives conveyed to us personal views based on their experience in their current institution.

We sought, for the fourth group, to approach a number of commercial or semi-commercial organisations for interview. Only one - interestingly also a major supplier to the educational sector of software, declined to be involved. However, our timing was probably unfortunate, coinciding as it did with the major discontinuities in the financial markets. Two of the organisations we spoke to were actually headline news at one time or another in the period of our study.

We were also fortunate in that UCISA asked its members to contact us if they wished to have input to the study. A few people contacted us and gave us personal – but institutionally based – responses.

Furthermore, in November, we attended the conference "Building the University of the Future: People and IT in Partnership[3]", sponsored by the Leadership Foundation for Higher Education and by Cardiff University, at which we gave a presentation of our interim findings. This gave us the opportunity to hear the views of a wide range of people: in particular, at a break-out session, the following questions were posed to delegates for discussion:

Why and in what ways is ICT strategically important to HEIs?

a) How do SMTs ensure that their strategies are attainable with available technology?
b) How significant is the transformational capability of technology to institutions when they are developing their strategies?
c) How should institutional strategy development take technology into account?
d) Is there a role in every HEI for someone on the SMT with strategic responsibility for and an understanding of technology?
e) Should the sector itself develop the next generation of technology managers and CIOs?
f) "A Vice Chancellor does not need an understanding of ICT.". Is this essentially true and if so, what does it imply for the management of the institution?
g) "We recommend that all higher education institutions should develop managers who combine a deep understanding of Communications and Information Technology with senior management experience" Dearing Report (1997), Recommendation 42. Is this

[3] http://www.lfhe.ac.uk/evt-crs-prog/itcardiffnov08/

recommendation still valid? What actions would you recommend to LFHE and JISC to increase the number of such managers, or otherwise, to ensure such skills are available to SMTs.

Summaries of the responses were made available to us and we have used these in preparing this report.

3.2 Our interviewees

We aimed to interview representatives from across the sector and across the UK. The following tables show that we were successful in this:

Roles of interviewees by country of origin

	England	NI	Scotland	Wales	Grand Total
Governor	1		1		2
SMT	9	2	1	2	14
Planning Officer	4	1	1		6
Head of ICT	13	1	4	2	20
Other	6	1			7
Grand Total	**33**	**5**	**7**	**4**	**49**

Institutional origin of interviewees by country

	England	NI	Scotland	Wales	Grand Total
Non Educational organisation	2		1		3
Other HE organisation	6	1			7
Non Uni HEI	1	2			3
Post 92 Uni	1		2		3
92 Uni	5			2	7
Pre-92 uni	12	2	3		17
Russell Uni	6		1	2	9
Grand Total	**33**	**5**	**7**	**4**	**49**

Institutions from which interviewees came

	England	NI	Scotland	Wales	Grand Total
Non Uni HEI	1	1			2
Post 92 Uni	1		1		2
92 Uni	5			1	6
Pre-92 uni	6	1	2		9
Russell Uni	4		1	1	6
Grand Total	**17**	**2**	**4**	**2**	**25**

3.3 Our questions

The questions we asked centred on the following:

- How does your institutional strategy development process work? How are conflicts resolved?
- How does ICT currently contribute to delivering your institutional key strategic imperatives in Teaching and Learning, Research, Administration, Other activities?

- How does your institution know where and how ICT can make a significant contribution to institutional strategy? In what way does this differ from Estates or HR input to strategy development?
- How well do you think that your institutional strategy development succeeds in integrating consideration of ICT? How would you improve it?

To everyone we interviewed, we assured anonymity, both personal and institutional. This means that this report should not identify any individual or person.

3.4 Overview

The core question of the study asks how and why senior leaders do or do not integrate technology into their institutional strategies. We sought to answer this by establishing the processes by which corporate strategy is developed, shared and implemented in our sample and identifying the ways in which consideration of technology is brought into the strategy. This also offered some insight into institutional leaders' perspectives on the role of technology within the strategic purpose of the organisation.

In examining this question, we also sought to establish examples of good practice, which we took to be processes and practice which ensure that consideration of ICT is brought into play effectively in the development and delivery of the institution's overall corporate strategy. The fundamental criterion for establishing effectiveness was the judgement of those interviewed. In exemplifying practice, however, we have also considered the organisational logic of practice, i.e. we have not regarded what appears from the outside to be a cheerful jumble of processes as good practice simply because those we interviewed were content that it worked for them within the context of their institution, but have looked for practice which could be replicated elsewhere, with adaptation to accommodate local culture.

In looking at these matters, we were aware – and sometimes reminded by those we spoke with – of Recommendation 42 of the Dearing Report[4]:

> *"We recommend that all higher education institutions should develop managers who combine a deep understanding of Communications and Information Technology with senior management experience"*.

Whilst such managers, which we referred to as Type 42 individuals, are desirable and were to be found in our sample, they remain uncommon. This combination of skills and experience in any one senior manager is largely serendipitous and we were led to consider the ways in which it is achieved in practice within institutions by effective collaboration between different individuals with complementary skills to create a Type 42 organisation, i.e. one that could deliver to senior managers effective insight into the contribution – actual and potential – of ICT to the overall strategic aims and operational goals of the organisation.

4 What we found

4.1 Corporate strategy in Higher Education

The heterogeneity of institutions is reflected through the processes they use for strategy development. The very notion of a formal corporate strategy and accompanying processes, bound closely into the operation and management of the institution, was reported to be relatively new by many institutions in the sample. This is not to suggest that there was previously no strategic vision and drive, but rather that the process did not use the vocabulary or arrangements of commercial management practice.

A clear tension emerges between contrasting perspectives on the institution. At one polar extreme is the managerial view, which sees the institution as a business which is driven, usually from the top, to achieve outcomes in line with its mission in a competitive marketplace. At the other pole is the view of the university as a "community of scholars". In practice, both perspectives find form and force to a

[4] The National Committee of Inquiry into Higher Education, 1997: https://bei.leeds.ac.uk/Partners/NCIHE//

greater or lesser extent within all organisations in individual, departmental and functional expectations and aspirations. Corporate strategy has to absorb both forces in its aims and in the processes by which it works towards agreement.

Not surprisingly, given the size and complexity of higher education institutions and the nature of those who work within them, we did not find any institution in which the Vice Chancellor, or equivalent role set strategy and everyone else fell instantly and obediently into line. Nor did we find anyone who thought this desirable, or practical. Instead, there is a universal model of a draft strategy put together at the top table, which goes out to consultation and comment. This is absorbed into a refined draft for eventual approval by the governing body and subsequent implementation. The particular focus of our study was on how and where consideration of the contribution of ICT entered into the process.

4.2 How strategy – ICT and corporate – is developed

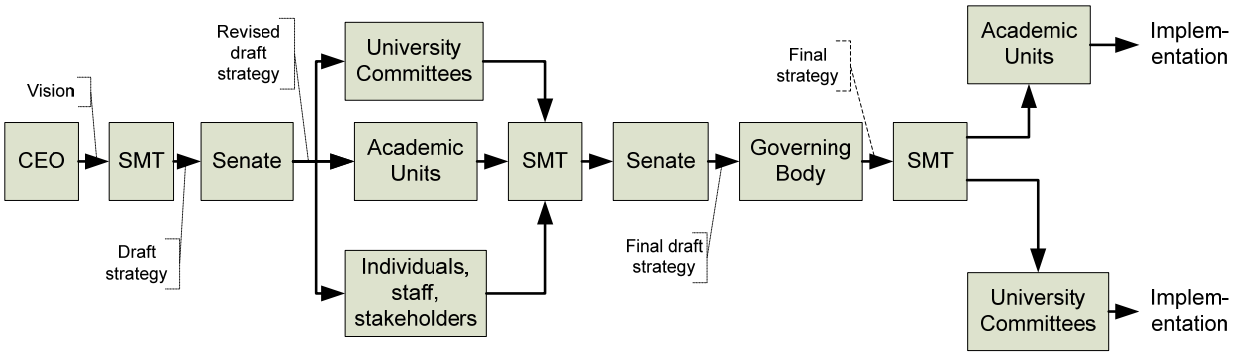
4.2.1 Leadership and the role of the Chief Executive Officer (CEO)

Universities look to the Vice-Chancellor or equivalent for leadership. In the process of strategy development this person is responsible for providing a vision of where the institution should be going, given its current state, future aspirations, the external environment and the institution's core values. The vision may be complex or simple: we learned of one vision which consisted essentially of two targets (turnover and financial surplus) and an overarching aim of expansion, whilst others contained considerable detail.

New CEOs are expected to create a vision and possess a sense of the organisational structures, including the managerial roles and the composition of the senior management team (SMT) that are necessary to deliver it. The view of the CEO is reflected in the position of key ICT staff in the hierarchy and by implication the presence either of a Type 42 manager in the SMT or reliance upon a type 42 capability within the organisation. We found a small number of CEOs who had sufficient understanding of ICT issues to bring it to bear upon their vision and in the initial draft strategy and a further number – again small – who were reported to "…know enough to ask the right questions".

Although investigation of the development of corporate strategy was not, per se, the principal purpose of our study, we nevertheless found that corporate strategy is generally developed as shown in Figure 1 below.

Figure 1 The generic corporate institutional strategy development process



4.2.2 Models of the process

These models have been synthesised from our interviews. Corporate strategy is normally developed top-down. In figure 1 the CEO is shown as providing the vision upon which the institutional strategy is based. As one senior manager told us, this vision should be that of the CEO but has to be based upon the core values of the institution: there is no purpose to be gained in creating a vision which is unattainable.

This is the one point at which the CEO acts largely independently: the CEO does often have the role of maintaining the momentum of strategy development, but after this point of delivering a vision, the CEO normally acts essentially as a member of the SMT. The SMT will then use the vision to develop a draft strategy – often assisted by the institutional Planning Officer. This will go to the Senate (or Academic Board) for agreement before going out to consultation in the committees, academic units and with other, often individual, stakeholders within the HEI. Consultation is a critical element of the process. It serves many purposes. Politically it offers all of the constituencies within the institution the opportunity to be heard. It identifies aspirations, considerations and barriers which must be addressed. It can be highly iterative and involve much discussion between the various parties. This is the typical process through which consideration of ICT first enters the development of strategy in those institutions that do not have Type 42 CEOs or senior managers.

The SMT will then refine the draft and take it to Senate, before going for final approval by the governing body, which has ownership of the final strategy. Once the governing body has put its imprimatur on the strategy, the SMT can authorise its implementation

We found evidence of two broad models in the practice of most institutions of how the development of ICT strategy fits with that of corporate strategy. These are illustrated in Figure 2 and Figure 3 below. We refer to the two models as

a. the integrated model of strategy development
b. the disjoint model

The fundamental differentiator between them is whether

- ICT and other key functional strategies come out of the corporate strategy and have as their over-riding purpose the delivery of corporate strategy,
- or if the functional strategies are developed in a parallel process which takes cognisance of the overarching strategy but has additional independent aspirations and purpose.

An extreme version of the latter would be a wholly bottom up strategic process in which the institution's strategy is the sum of its academic and functional strategies. The principal purpose of the overall strategic vision then becomes to knock off the rough edges and make sure everything fits together. It is important to note that these models arose from our questioning about practice and that there is no suggestion that either be seen as best practice, or self-evidently better than the other *a priori*.

Figure 2 shows one end of the spectrum, the case where ICT development is driven by and coordinated with the institutional strategy development. The figure assumes an IS policy committee, with a steering and oversight role in technology development. When the SMT has prepared its initial draft strategy, it will be shared with the heads of key units, such as ICT, who can then start working on developing a supporting ICT strategy. This development will usually be undertaken with the close cooperation of the policy committee. The ICT strategy thus produced becomes part of the institutional strategy, though almost all of the institutions we interviewed publish and subsequently implement and monitor it as a separate entity under the preferred local title, typically a variation on IT/ICT/IS/Systems strategy.

Figure 2 Corporate strategy development with integrated ICT strategy development

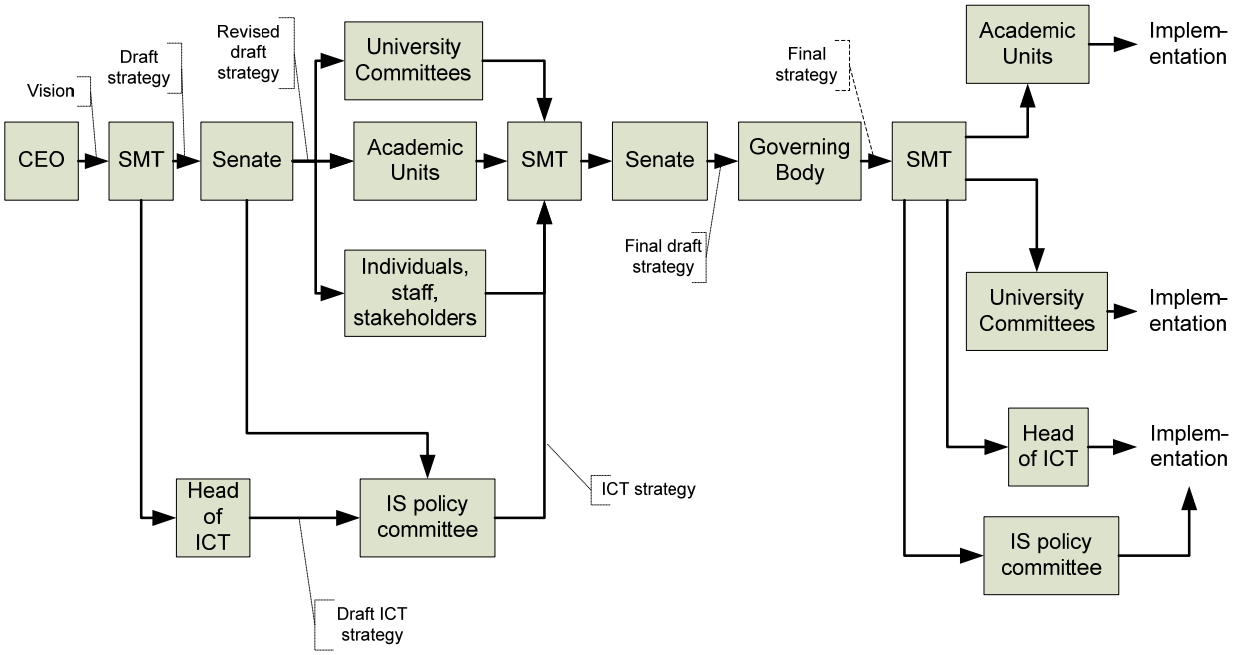
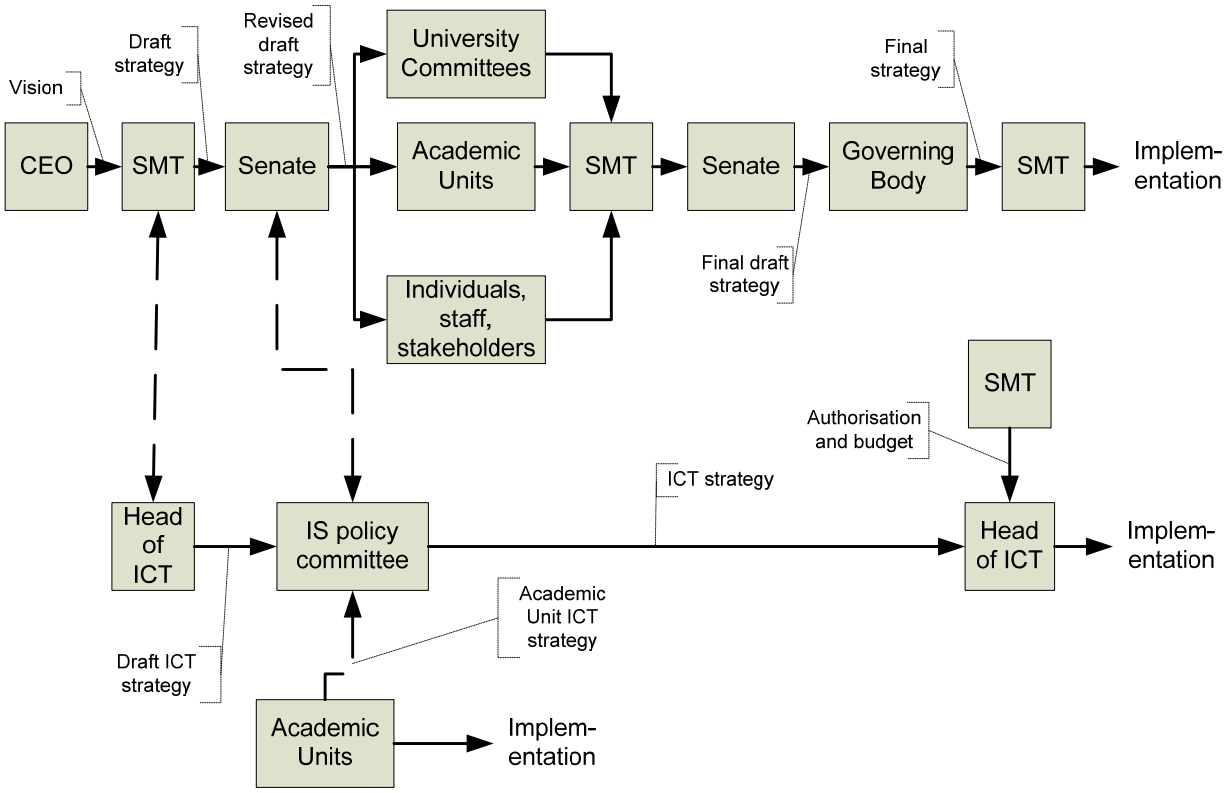


Figure 3 shows the disjoint model, in which the development of the ICT and some other functional strategies are not constrained by a rigid linkage with corporate strategy development. Indeed, we found some examples where the two strategies were developed in entirely different timescales and to a different cycle. This can reflect institutional history or be a response to the natural lifecycle of technology being shorter than the strategic timescale of 5 or even 10 years.

There is no suggestion that ICT strategy development takes place within a vacuum or that it is wholly independent of corporate strategy. The figure shows linkages, for example, between the head of ICT and the SMT and between the ICT policy committee and Senate, which are part of the processes for tying ICT strategy into the needs of the institution, including those enshrined in formal corporate strategy. Figure 3 also shows academic units having their own strategies, including ICT proposals and implementing them separately. These strategies and the right to develop them can be jealously guarded by academics as a measure of their independence and integrity as a "*community of scholars*". They are buttressed and sustained by separate income streams which do not depend upon central approval or largesse. At least one interviewee, who has held posts of national prominence in this field, regards such arrangements as being the only practical way in which the contribution and potential for ICT within universities can be unlocked, given the complexity and specificity of the research, teaching and learning which define the institutions' core purpose.

Authorisation and provision of budget for the implementation of the ICT strategy will be separate from the authorisation and budget provision for the implementation of the corporate strategy. Even where departments hold separate budgets, the principle of top-slicing to support essential central functions is accepted and embedded into practice. This is an important lever in integrating and unifying investments in technology such as VLEs; if departments wish to fund their own they can, but they will also be paying towards the shared facility.

Figure 3 Corporate strategy development with disjoint ICT strategy development



The interviews suggested that the more common variant, even amongst those institutions which seemed relatively managerial in their language and expressed views, was the disjoint model, portrayed in Figure 3. Strategy development for the centrally provided ICT service was closer to the integrated model: however, the relative independence and autonomy of academic units makes overall ICT strategy development much more fragmented. Elements of the disjoint model are common: in one extreme version of this, a collegiate university, the top layer of the model is wholly absent. Even in this extreme, however, there is co-operation and agreement about central ICT provision and sufficient common awareness of external events and opportunities, mediated by central specialists, to avoid coming adrift from technological developments of strategic importance.

Both models appear to work reasonably well in terms of bringing a consideration of technology into the overarching strategy of the institution. Many of the people we spoke with were conscious of the difficulty of operating the disjoint model and wanted to change to a more joined up approach. Many also pointed to moves towards more central direction of strategy, including growing acceptance of the principle of central strategic planning. Nonetheless, they recognised the difficulties inherent in seeking to impose central will upon self financing academic units.

4.3 The key issues

The sections which follow address key issues which emerged during our research.

4.3.1 The nature of the Institutional management style

Viewed from the perspective of the chain of management command, there are two clearly identifiable types of HEI. The first is the federal model, epitomised by the classic collegiate institutions. In a federally managed institution, the Vice-Chancellor's powers as Chief Executive Officer may have to accommodate the influence coming from such as large and successful faculties that have reputations in their own right.

The second model is the unitary institution. Here there is a clear chain of command from the CEO down: those institutions which were earlier under local government control tend to this model.

The nature of the institution's organisation is likely to affect how ICT is incorporated into its corporate strategy. The centre of a highly federal institution has to be adept at handling pressure for independent decision-making, including decisions about ICT, coming from its operational units: it is therefore unlikely to have all ICT planning completely bound in. The CEO and SMT of a unitary institution, on the other hand, have the ability to impose particular solutions or directions upon the institution as a whole and they can dictate the role of technology. Furthermore, the importance attached to ICT in the management of the institution will reflect the way in which the institution sees itself. The more federal institutions may tend to see themselves in part as "communities of scholars", where independence in decision making may be seen as a part of academic freedom. Unitary institutions may well use a quite different language to describe their approach to higher education, often describing themselves as "business driven" or "customer oriented". The language of the latter type of institution lends itself much more readily to a unified approach to involvement with technology.

4.3.2 Strategic planning processes, ICT and adaptability

The institutions we spoke with prepared strategic plans which typically spanned three to five years, although one reported a ten year strategy timeframe. Annual operating plans were derived from the higher-level plans. Some institutions operated minor strategic planning cycles which were used to update previous work. The premise of this approach is that the future can be predicted for some time ahead. Planning is then conducted to exploit strengths and opportunities, to improve positioning and to minimise opportunity cost.

It is clear, however, that the importance of being able to respond effectively to opportunities is increasing and that planning processes need to take this into account. John Voloudakis writing in EDUCAUSE Review says

> *"Having given the subject of strategic planning much thought, many corporations, authors, and academics are moving beyond linear, multiyear planning efforts and are instead focusing on the need for flexibility. The result is the "adaptive enterprise." IBM Corporation refers to "on-demand business." Gartner Inc. describes "the real-time enterprise." Whatever it is called, the essential message is that organizations need to rethink how they plan for the future. They need to focus on their strengths and build capabilities to rapidly adapt to changes in customer demand, market dynamics, shifting technology, and other unforeseen events."*[5]

The case for seeing adaptability as one of the key features of an institution – to become an adaptive organisation - is compelling. While ICT may be seen as part of the problem it is also part of the solution. Although this study did not have the fundamental nature of institutional strategy development and planning processes at its heart – it centred upon the contributions that can be made by ICT – there is a clear sense in which ICT and a knowledge of the use of ICT can be used to enhance institutional planning to realise improved adaptability and agility.

4.3.3 ICT as an enabling or transforming element

Every institution interviewed was using ICT as an *operational enabler*, improving the quality and lowering the cost of many of its processes.

Some institutions, though by no means the majority, saw the potential of using ICT as a *strategic enabler*, as a necessary ingredient in delivering the strategy. This view sees the institution having a vision of itself and a set of strategic goals and then asking how ICT investment can be made to support the achievement of these goals. ICT enters into the strategic debate at a point which allows the vision and the strategy to take it into account. An example of the difference might be a university which sets out with the vision of increasing its student numbers and recognises that accommodation constraints means no more bodies can be brought on site, so ICT is invoked to deliver online learning to some students over the web. The core vision remains that of a physical university, with some additional activity.

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5 http://connect.educause.edu/Library/EDUCAUSE+Review/HittingaMovingTargetITStr/40537?time=1228295234

Beyond this, we found institutions that were either using or aware of the potential of ICT to facilitate radical or transformational change of the institution or of parts of it. We found that very few institutions saw ICT as a *transformational enabler*, showing an awareness of the possibilities for doing business in a completely different way. Those that did, without exception, had Type 42 senior managers or a senior ICT expert as CEO or on the SMT. It is difficult to believe that transformational approaches can succeed without such a senior post on SMT.

Research was seen as a particular area where ICT had been transformational, although we consider that this may not be not widely appreciated. Several universities were clear that ICT had changed the nature of much research (such as use of extremely large data sets or extremely large numerical models) and one noted that major investment in ICT for research could be a research enabler (for example, in High Performance Computing).

4.3.4 Experts vs Type 42 manager

There were very few interviewees amongst senior institutional managers who described or revealed themselves as Type 42 managers, i.e. having significant expertise or understanding of technology, or identified others in the senior posts in this way. The exceptions were largely serendipitous. An awareness of ICT, we were reminded by delegates to the LFHE event in Cardiff, is not typically an essential element of the senior management job description, even where it is desirable. There are some exceptions where history and/ or a specialist focus on technology within the curriculum have led to numbers of senior managers with real insight. In general we found an *expert culture* supporting an *enablement* perspective, in which senior managers set goals and then experts in the IT/ IS areas came up with solutions in collaboration with users. This process was memorably dubbed "collusion" by one interviewee. His view is that in practice, users of ICT expect that "....it will be done to them...." and the IT experts live up to this expectation. This he contrasts with a process of challenge in which users describe their problems and aspirations and IT experts contribute to the discussion in a solution-oriented way. The identification of these two states – collusion and challenge – is a useful statement of the difference between expert culture (collusion) and Type 42 organisation (challenge). It seems probable that there is greater mileage in bringing about a step change in the impact and influence of ICT on corporate strategy by working to move institutions from an expert/ collusion culture to a Type 42/ challenge culture than in hoping for more Type 42 candidates to achieve senior office. The main constraints relate to the arising of senior posts and the capability of candidates. Whilst nothing can be done to alter the rate of turnover of posts, the conditions for a change in capability can be brought about by collaboration between LFHE and JISC to develop suitable programmes of training, updating and support both for those aspiring to senior office and for current incumbents.

4.3.5 Integrated and disjoint ICT strategies

The interviewees largely shared a preference, if not a yearning, for an integrated model of strategy, seeing missed opportunities for increased integration and rationalisation of software and services and bearing the maintenance and interoperability problems of multiple systems. A number came from outside the sector and were bemused by the absence of linear management and reporting hierarchies. One SMT member, recruited from the commercial sector, who joined an institution with both devolved schools and a consensual approach confessed his frustration at the lack of ability to say "I pay you but you won't do what I tell you to do…." This notwithstanding, there is a powerful consensus amongst many in HE that such autonomy is not only desirable, but worth fighting for, even though it seems inefficient and ineffective from a hard-nosed managerial viewpoint.

At the heart of the issue, there is a genuine question about what should be/ must be centrally planned and managed and what should be/ must be left in the hands of individuals, specialists and departments. While it was not in our remit to answer this question, we consider it an issue that may be of interest for further research into the area.

One important point to emerge during the interviews is the idea that there are very few watershed/ seismic changes in ICT that can transform the way that business is done and where a failure to engage would put an institution at a grave market disadvantage. The web has been the most obvious one in recent times, with virtual learning environments (VLEs) a lesser but still significant development.

It is inconceivable that any university could do business without internet connectivity and unlikely they would forego a VLE, intranet or email. These developments are so huge and far reaching that they force their way into the strategic debate regardless of the structures or processes that are in place.

4.3.6 Centralisation vs devolution

Some aspects of infrastructure or process emerge as fundamentally centralised services – most administrative systems for example. Other aspects are approached differently in different places. In the past, a proportion of institutions operated more than one e-mail system. Often arising from good advocacy from the centre, many of these institutions have now consolidated their e-mail into a single centrally provided service. One area where there is a general trend towards a central resource is virtual learning environments (VLEs). Most institutions now have only one and some are actively weaning staff off their own local variants and onto a corporate solution. Customer Relations Management (CRM) systems constitute another area where this seems to be happening. Overall, there is good evidence that institutions are well down the road towards central provision of those services that are needed by the whole institution.

4.3.7 An ICT strategy or integrated into other strategies

Many institutions still seem to separate ICT/IS off into its own corral and herd all of the main elements into an ICT strategy. There does seem to be a wish amongst many to move away from this towards critical functional strategies in which ICT considerations are embedded, but equally there is an acceptance that this is not easy to achieve – not least because the separated ICT commitments then have to be regrouped in terms of finance, infrastructure management and to explore the possibilities for integration. One institution had recently redrafted its ICT strategy in line with the newly developed corporate strategy, but said it was the last time this would be done separately. In future, the corporate strategy would build in, and be built upon considerations of, the contribution of ICT. This institution, however, is rich in Type 42 senior managers. In another case, although the group of second level strategy documents contained mention of ICT, there was an ICT document in the group which was used to collect these references and ensure that the infrastructure was kept under purview.

4.3.8 The make-up of the SMT

Each CEO is likely to see the structure and functional division of their SMT as being every bit as important as the individual membership. It is not within the scope of this report to suggest that any given SMT must have a particular set of job roles and responsibilities with regard to ICT. There is, nonetheless, a case to be made for an individual on the SMT who has oversight of the needs of the ICT user community and of the ICT expertise, capability and capacity within the institution. This role could be conducted successfully by a Type 42 manager in the role of Chief Information Officer, or by an appropriately skilled senior manager without deep ICT expertise who can marshal the components of a Type 42 organisational structure. There are arguments in favour of each approach. CIO posts which include such responsibilities are now found in many US universities and also in the Netherlands, where JISC's partner organisation, the SURF Foundation, has set up a CIO committee which has eight members. In the UK we have identified seven HEIs with a person holding the job title of CIO: however at least two of these were not members of their institutional SMT. We also found there to be significant number of managers in UK HEIs who consider themselves to be CIOs although they have different job titles.

Even were the post of CIO to be considered valuable by UK universities, we acknowledge that presently, HEIs would hold a variety of views as to whether its holder should be at the top table. This notwithstanding, the work reported here suggests that few universities currently fully understand or exploit the transformational possibilities of ICT. It is not clear how institutions would make this transition unless the CIO, or an equivalent, has an influential voice on SMT.

4.3.9 Evolution of senior staff roles with responsibilities for ICT

There is a growing recognition across the commercial, government and educational sectors that the responsibilities relating to ICT in the large organisations have two basic strands: a business strand with emphasis on developing the business and recognising advocating the opportunities offered by ICT and a technology strand responsible for recommending, designing and implementing technology solutions to meet the needs of the organisation. There is a trend towards large or complex organisations possessing a pair of roles, one for each strand.

The first role is that of chief information officer (CIO) and the second is that of chief technology officer (CTO). In a typical HE institution the head of ICT services commonly has a role which is essentially that of CTO, though it will also include some degree of the role of CIO. CIO posts, as we have noted above, are still relatively uncommon in UK universities though the number of these posts is increasing.

4.3.10 The CIO role

In the literature[6,7,8,9,10], the CIO is generally described as the member of senior management who is responsible for ensuring that the organisation's information technology investments and direction of change is aligned with its strategic business objectives. The range of responsibilities associated with the role typically include

- Ensuring information is recognised as a resource and is managed accordingly
- Ensuring proper information governance and security
- Helping the organisation to recognise the potential to exploit ICT at both the enabling and transformational levels
- Building confidence in the ICT function
- Spearheading and facilitating business transformation
- Ensuring that the technology works (in order to maintain confidence)
- Increasing ICT-enabled change capability/capacity

The skills needed by a CIO were summarised by SOCITM[6] as follows

- A business focus
- Ability to 'smell' danger
- Strength in change management
- Strategic thinking
- Ability to exploit ICT potential for business benefit
- Leadership
- Good communications
- Political 'nous'

It can be seen that, if an institution wishes to ensure that it has the capability to recognise and analyse transformational opportunities, the CIO has a key role in providing it.

4.3.11 The CTO role

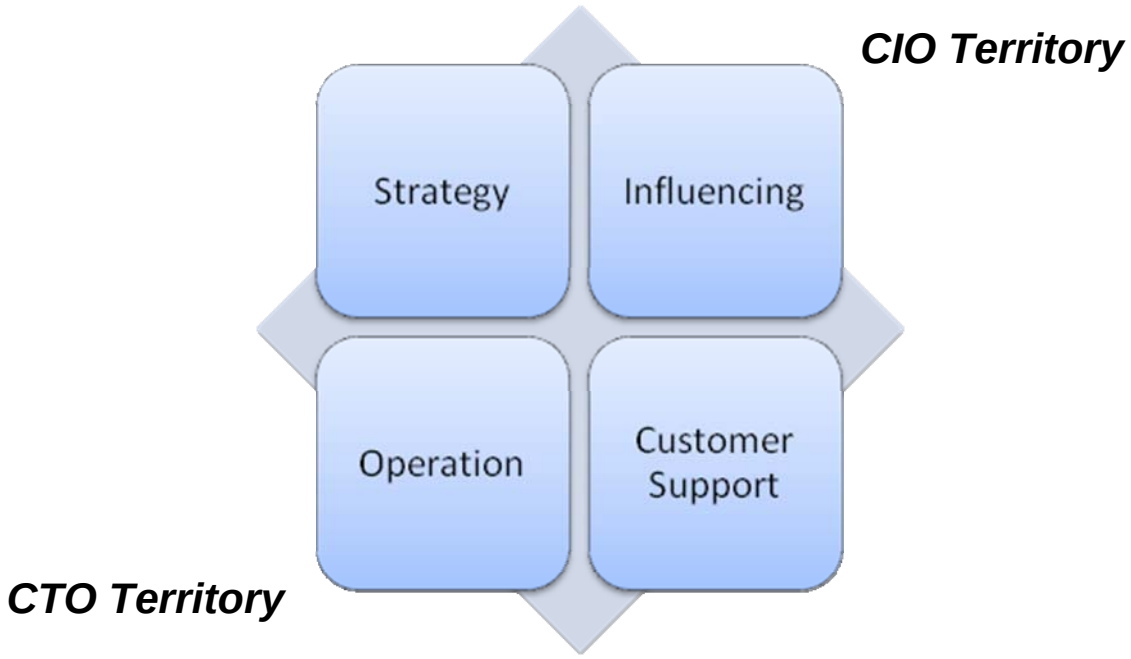
Working closely with the CIO, the CTO is responsible for the selection and implementation of the appropriate technology solutions to support the needs of the institution. The needs these solutions have to meet would be delineated by the CIO role. In this way, the CIO links strategic business objectives with recommended technologies. Importantly, the CTO has oversight of delivery of services and has a detailed understanding of the organisations processes. In their dialogue, the CTO is the technology specialist. The CTO role will place a key emphasis upon a strong background in technology and in comparison with the CIO, rather less upon business activities.

4.3.12 The CIO and CTO roles compared

There is a considerable degree of complementarity between the two posts, as shown in Figure 4 below.

[6] The public sector representational organisation: Society of Information Technology Management, http://www.socitm.gov.uk/NR/rdonlyres/4A24D3F3-6B17-48BD-AB58-60B05293CEA3/0/PresentationtoSocitmSouthNovember2006.ppt
[7] http://www.ppttube.com/presentations/inf_newCIO.ppt
[8] http://hbswk.hbs.edu/archive/4854.html
[9] http://articles.techrepublic.com.com/5100-10878_11-5034729.html
[10] http://www.computerweekly.com/Articles/2008/12/01/233652/cio-role-is-confused-says-survey.htm

Figure 4 CIO/CTO roles model



A key activity for the CIO is working successfully with senior managers, be they at the centre of the University or the heads of faculties and departments. The knowledge gained is fed back into both strategic planning and service development. In this post the balance is very much towards personal, rather than positional authority.

By comparison the key responsibility of the CTO is to keep services and systems running with developments proceeding on time and in budget. Customer support features strongly in this role and while contributions are made to strategy there is a mix of technical and business components where this role contributes. In a traditional HEI the role of the head of ICT tends to the CTO territory.

Both roles would be expected to have a solid background in project management.

4.3.13 Use of senior ICT roles by institutions

Different institutions have substantially different views on the role of the head of ICT. There are moves towards the establishment of the post of Chief Information Officer: we found a small number of institutions which had clearly decided to create such a post. At the same time, we found a number of heads of ICT -- or heads of converged services (library and ICT) -- who perceive themselves to be acting as a CIO.

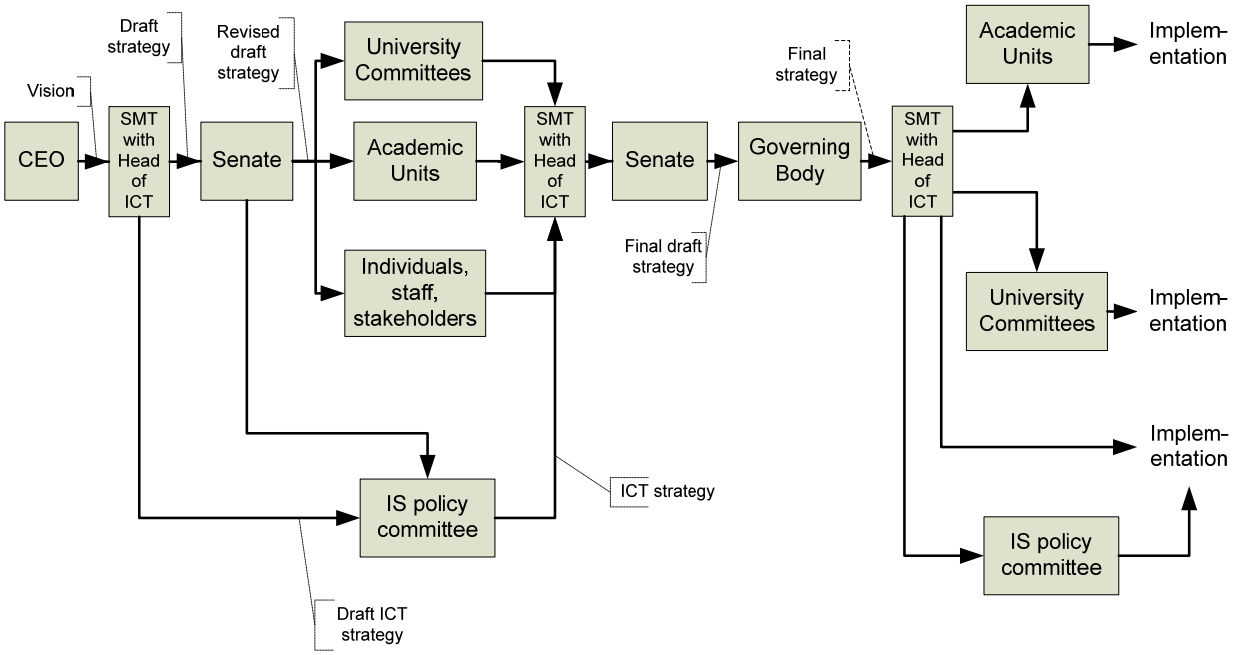
In the minority of institutions where we encountered CIOs, we found them to consider much of their task being to influence the institution: indeed, many of themselves considered themselves to be above all managers of the institutions rather than departmental heads. By dint of their seniority, they are inevitably bound into strategy development. And, to some extent, they have a role in customer support, but as an influencing agent and not at an operational level.

The CTO is responsible for Operation, for customer support insofar as that means assisting the customer to use ICT services effectively, and also for strategy, particularly in the purely technological domain.

In summary, we consider that institutions are making moves, often cautiously, towards the creation of fully functional CIO roles. In many institutions however, the head of ICT post-holder is being asked to embrace increasing amounts of the functionality of a CIO.

We encountered a number of cases where people who see themselves as fulfilling the CIO function are members of the institutional SMT. This should change the way in which ICT strategy development is wrapped into institutional strategy development. It makes the disjoint model shown in Figure 3 almost impossible to perceive, as the Head of ICT is bound tightly into the institutional strategy development process – though we did find evidence of one institution where the Head of ICT is on the SMT and there is close to a disjoint process occurring. One would expect that Figure 2 would be modified to integrate ICT still more closely into the institutional process. This is illustrated in Figure 5.

Figure 5 Impact on strategy development process of Head of ICT being on SMT



This is not a major simplification of Figure 2 but it does demonstrate how the position in the management structure of the Head of ICT can affect how ICT plays a role within the HEI.

4.3.14 The CV of the ICT managers

We found substantial evidence that CIOs and those in a CIO-type role tend largely to be appointed from outside the sector. A considerable number of those in the traditional Head of ICT role are also appointed from outside the sector. This suggests that there is insufficient staff development within HE for staff to prepare them for these roles

4.3.15 Step changes in the role and status of ICT

There was substantial evidence that the status of the Head of ICT is liable to change at a rate higher than is conducive to good morale within ICT service departments. We heard of one person, appointed by one CEO to sort out an ICT situation within the institution and given a prominent role on the SMT. A new CEO arrived and said ”ICT is sorted” and took the person off the key committees they were previously on. Elsewhere, a CIO appointed from within the sector to replace one leaving did not retain the seat on the SMT.

4.3.16 Use of language

A number of interviewees suggested that ICT managers do not speak the same language as the rest of the HEI. They appear not to have the business orientation required by senior mangers and lack the necessary understanding of what the institution requires of them. This is not to say that they are incapable of managing the technology, rather that they are unable to relate use of the technology fully to the business of the institution.

5 Good Practice

5.1 What is good practice

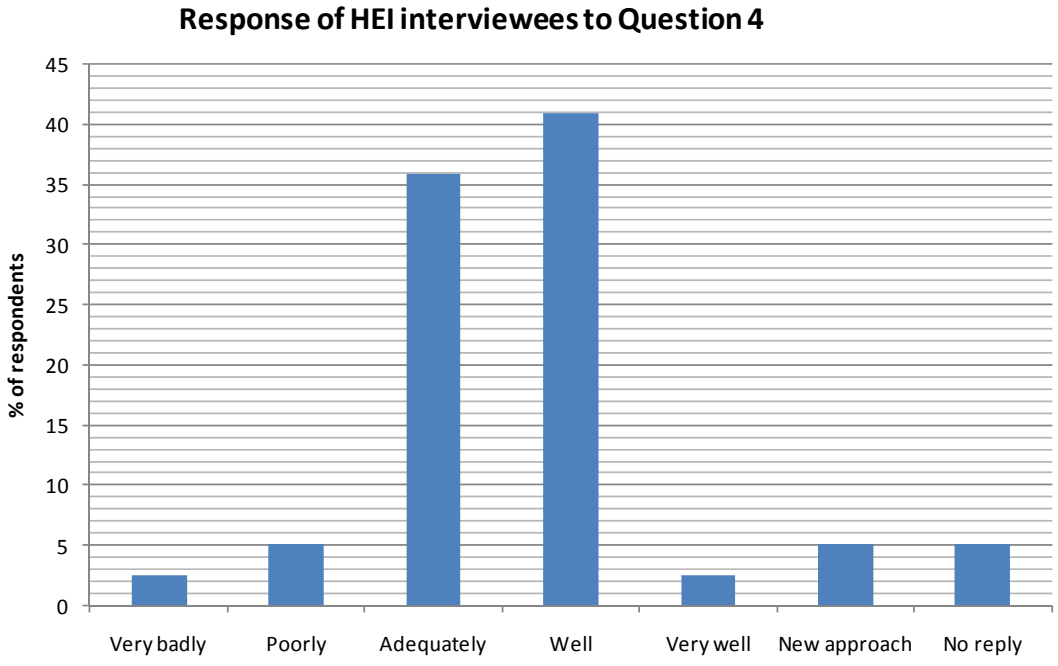
A key part of this work was to identify examples of good practice. The section which follows therefore discusses our perception of good practice for separate parts of the strategy development process. The discussion focuses on the interplay between the development of the corporate strategy and that of the technology strategy.

A working definition of good practice is that it ensures that consideration of ICT finds its way into corporate strategy in a consistent, coherent and timely process that allows it to influence outcomes beneficially. This criterion accepts practice that is enabling as well as practice which is transformational.

None of the institutions claimed to have embedded excellence in their practice, but regarded themselves, on the whole as satisfactory or good and capable of improvement. A small number considered the institution to be less than satisfactory in the way it addresses issues of ICT, often as a result of the preferences of the CEO or an influential teaching and research community wedded to longstanding academic custom and practice. Even these conceded that their main concern was the pace of change and the foot-dragging response of some members of the organisation, rather than the absence of change per se.

We concluded that no one overall process could be said to provide a model for the whole sector. It is clear that one size does not fit all and, indeed, a number of people said this to us. One from a smaller institution suggested that its intimate scale means that consultation can be less formal, and therefore perhaps more genuine, cascading down into sub-strategies and thence into individual plans. This would be harder to achieve in a larger HEI. But smallness does not always mean more effective: one interviewee noted that "The challenge of being a small, single campus institution means we may have been a bit inward looking".

We measured our definition of good practice by asking the interviewees about their success. The figure below shows the answer given by the HEI interviewees to our Question 4, which was "How well do you think that your institutional strategy development succeeds in integrating consideration of ICT? How would you improve it?"



This demonstrates that, while virtually all of those who gave us an answer thought there could be improvement, nearly all felt that their current processes are adequate for the purposes of their institution.

5.1.1 Good practice in the initiation of strategy development

5.1.1.1 Examples of practice

We have presented in Section 7 of this report four examples of institutional practice. These have been put together from the information shared with us at interview and are of necessity anonymous. The interviewees would not claim that their processes constitute best or even good practice across the board and did not promote themselves as exemplars. They were candid about shortcomings and tolerably objective about strengths. In our judgement, nonetheless, they offer real insight into the issues around engaging consideration of technology into strategic thinking and represent, by and large, innovative and enlightening approaches to resolving problems and accommodating constraints. They also recognise the steps that need to be taken to make further progress.

5.1.1.2 The role of technology

We have suggested in section 4.3.3 that technology can have one of three roles within the corporate strategy of an HEI. It can be transformational, it can be a strategic enabler or it can be an operational enabler.

We found little evidence of a wish to treat ICT as transformational, though one university has chosen to base its technology strategy on

- Run the business
- Grow the business
- Transform the business

The term *running the business* means operating the core services. Growing is about getting the necessary extra resources. Transforming is about changing the way they do processes.

Those that see ICT as transformational tend to be comfortable with talking about the “business” of the HEI. They see the potential for technology to deliver competitive advantage, to assist the HEI in improving its position. This was reflected in our interviews with organisations outside the sector, where the use of ICT had levered the organisation, or parts of it, to international status.

Some HEIs seek to use technology to improve their national status, others, as one interviewee put it, to allow the HEI “to compete with the Harvards and Stanfords.” One example of such use was the development of a database, to enable researchers doing similar work in different parts of the HEI to know what was going on elsewhere and combine more effectively. Another institution sees two major strategic issues which the use of technology can assist with: its lack of space and its aim to be a global institution. Technology can be used to alleviate the lack of space and it can be used to reach out to a global customer base. In a very few institutions, we sensed combative competitiveness and a belief in the importance of ICT to coming out on top of the pile.

We found few institutions, however, that see ICT as having anything more than an operationally enabling role. Feedback from the Cardiff conference suggested that the institutions’ focus is on teaching and learning and research, all of which are very "human" aspects of activity.

There is a distinction to be made between the institution as a whole and its components. An interviewee from a non-HE body said that “The strategy process works well when the business leader [i.e. the head of a unit within the whole] is passionate about the use of IT…. [Our] business would close down without IT but strategically what matters to people is keeping things going.” As another HE interviewee said to us “Technology is now such an integral part of the business: you have to have it, you cannot go back and do without it, if only because your competitors have it." Another described their CEO as viewing ICT as a necessary evil.

Interviewees and feedback from the Cardiff conference both identified that technology is a major element of institutional expenditure and is therefore strategic for that reason. It was also suggested that there is a lack of understanding in SMTs generally just how rapid technology becomes

obsolescent. That lack of understanding leads to slow response to resource needs and to resistance to the level of expenditure needed for institutions to remain up-to-date.

5.1.1.3 The disjoint nature of technology strategy development

In the two models we posited, the technology strategy either arises out of the corporate strategy (integrated) or is aggregated from a number of decision-making centres within the institution and aligned, to a greater or lesser extent, with the corporate strategy (see Section 7 for examples). In all instances, the implications of technology for other key strategies and, equally, of other strategies for technology need to be taken into account. Doing this is typically a core component of the iterative process of developing strategies. All of the institutions we interviewed had a separate strategy for technology, albeit under many and varied titles including ICT, IS/IT, Infrastructure and Systems and so on. A number of those who demonstrated a commitment to technology as a strategic issue discussed, or actively planned, the possibility of scrapping such a strategy and incorporating technological considerations directly into the corporate strategy and each of the functional strategies that sit under it. We interviewed one institution which has adopted enterprise architecture – where a unified view of all its business processes, its ICT infrastructure and its needs to integrate and standardise its systems is taken. Because of the global view provided by this approach, it has not produced a technology strategy for some time and has no plans to do so in the near future: the enterprise architecture is part of the corporate strategy and is seen naturally to inform technology developments.

Technology strategy is invariably developed in knowledge of the corporate strategy, though the development cycles of the two may be disparate. Generally, however, the corporate plans are 5 to 7 year ones, while the functional area strategies map onto this for the short term.

One external organisation to which we spoke has concluded that a one year cycle leads to cleverness on the part of divisions in ensuring that they get the budget they want every year. By making the strategy a rolling one, divisions have to think further ahead and each year should essentially be a modification of the previous year.

5.1.1.4 Our view of good practice

Our view of good practice in the initiation of strategy development is that

1. Strategy initiation should be top down.
2. SMTs should thoroughly consider the role of technology in delivering the corporate strategy: should it be transformational, strategically enabling or operationally enabling?

5.1.2 Good practice in the consultation stage of strategy development

In section 4.2.2, we discussed at length our view of the integrated and disjoint models of strategy development. We found the disjoint model predominant. Such a tendency is not restricted to HE. We talked to one large organisation outside the sector where the company board decides its strategic priorities. Each division develops its own strategies within that overall strategy. However, ICT is devolved to the individual divisions: the group IT function is merely responsible for shared services and for the linking infrastructure.

It is however clear that technology has to support the business needs of the institution. Feedback from the Cardiff conference noted that one should not have a technology agenda on its own: the issue is the wider institutional agenda and how technology can support it. As one interviewee said, “Strategy won’t work unless it delivers what the users want as well as what [the institution] wants as an organisation.”

Far reaching consultation is so fundamental to the strategic processes we found in universities that it seems trite to describe it as good practice. In most cases, it is used to create or refine strategy (the what question): it is always used to determine how strategy is to be delivered. The approaches used rely upon both face-to-face methods and upon online technologies such as web-based documents for discussion, publication on intranets, VLEs and the like. The face-to-face methods included one-to-one interviews and meetings of the SMT with academic departments and functional areas. The use of the web appears universal and is clearly good practice with regard to technology because it is confirmation of its place at the heart of institutional communications: the medium is the message. Within this, there are some specific elements of good practice we identified. Most notable was the

creation of the strategy as a web-based hyperlinked document, with no separate paper-based version except a direct print out of the web text, including links. This both stimulated online debate and contribution to the strategy and is a manifestation of commitment to the benefits of technological solutions.

Involvement, which can lead to real buy-in, can be hard to ensure and we heard of frustration at getting individuals involved: “They would rather plough their own furrow”.

The second example of good practice in this area relates to the process of contributing to the strategic debate. This was crystallised in the expression “challenge not collusion”, coined by one person we spoke to. Our interviewee suggested that ICT staff collude with the strategy process by using the decision making process to promote their own preferred solutions. A more satisfactory approach is to engage with users in genuine exploration of the best solution, listening to them and actively challenging them to discuss their needs. A genuinely strategic approach requires this type of challenge and engagement by ICT staff and, critically, a managerial and academic decision-making culture which supports, encourages and enables it. Of course, strategy decisions can and often should meet both goals: they can deliver solutions that meet underlying technology needs - say, to deliver system integration - but simultaneously offer benefits to end users.

The organisational structures and roles discussed above are unlikely to deliver their intended benefits unless they are accompanied by consultation processes which involve challenge. This is not something that can be developed solely for periods of major strategic review, but must be a part of the way in which key technology managers and staff conduct day-to-day business. An important ancillary to this is the information-gathering that enables ICT staff and strategists not only to understand the needs of users, but also to have an understanding of emerging applications, issues and solutions for users, including students. At least one interviewee who described this process in her own institution was insistent that it was the only meaningful way for technology strategy and solutions to arise given the scale, complexity and rate of change of developments.

The extent to which the technology function is consulted in the drafting of the corporate strategy may often be dependent upon the role of the Head of ICT services (see section 5.1.5 below). One interviewee suggested that SMTs look to the Head of ICT services to give guidance without always consulting them about the overall strategy.

An important feature of institutional involvement in the development of the technology strategy is the Policy Group for the area – what we have in this report called the IS Policy Group. Our evidence is that this plays a major part, with the ICT functional area staff, in developing the strategy for technology. In a number of institutions to which we spoke, the functional area strategy is developed by a committee or working party which consists of individuals from across the institution with a chair from an academic area or from another functional area. While those we spoke to were clearly concerned about the impact of this approach, they also seemed to endorse the approach as a good one.

5.1.2.1 Our view of good practice

Our view of good practice in the consultation stage of strategy development is that

1. A comprehensive consultation process is vital to ensuring that appropriate and timely consideration of technology enters into the final corporate strategy. In the terms of our definition of good practice, it is a fundamental underpinning element.
2. Effective consultation is essential to achieve acceptance of the final strategy, particularly where strategy development is disjoint.
3. Use of technology-based media for the consultative processes confirms the significance of technology within the institution.
4. A representative and influential IS Policy Group is vital to institutional buy-in to and ownership of the technology strategy.
5. Consultation on technology strategy should embody a challenge culture.

5.1.3 Good practice in the completion stage of strategy development

Whether or not the strategy development process is bottom up or top down, there are likely to be some conflicts within the institution requiring resolution before the strategy is finalised. Our interviewees were clear that any conflicts arising during the development of the strategy should be resolved by SMT involvement, rather than lower down the chain of command. This ensures that they are seen to have strategic implications, not simply as operational matters or procurement decisions.

An important aspect of the technology strategy is its communicability: one interviewee emphasised its intelligibility to its audiences and another noted their new institutional technology strategy "will be short and comprehensible, concentrating on high-level objectives". Another noted that "In the past we may have failed to make the case properly. We need to use the language of the institution rather than the language of technology".

5.1.3.1 Our view of good practice

Our view of good practice in the completion stage of strategy development is that

1. The technology strategy must be presented so as to be intelligible and comprehensible to its target audience. Effective communication demands the language of the institution rather than the language of technology.

5.1.4 Good practice in governance

5.1.4.1 Governors and technology

The ownership of HEI strategies is vested in the governing bodies, which are generally seen in strategy processes as a critical friend. As we found few governors to interview, we were unable to explore the impact of expertise within governing bodies upon the strategy development process in depth, though we did find some evidence and anecdotal reporting to suggest that few governing bodies are either capable of or willing to make serious comment on the technology component of corporate strategies.

This problem does not extend to other areas: we asked interviewees specifically about the extent to which ICT is treated differently to Estates and HR matters. One CEO said to us that "Governors get interested [in Estates] so it gets discussed but ICT doesn't." If they lack technology literacy, governance bodies are unable to carry out their function as critical friends with sufficient insight and rigour. Many interviewees believe that there must be people on the governing body who can deal with the strategic aspects of technology.

Even where there is such expertise, there may be problems. In section 5.1.2 we noted an example of a university where the draft strategy was published as a hyperlinked web document. Despite the presence of a number of technology literate Governors, the Board still wanted to know why there was no paper document and why, when they got a hard copy, it looked 'odd' because of the hyperlink references.

We found several institutions that involve governing bodies at key stages in the strategy development process. At one, the strategy development is initiated through a discussion phase which starts with an away day of the governors. Following a major consultative exercise and definition of the plan, it returns to the governing body for their final approval.

5.1.4.2 Governance structures

The creation of a rigorous framework for governance was seen by a significant number of people as being a critical element of ensuring that an institution's technology provision meets institutional needs. The principal difficulties in delivering technology services to an HEI relate not to the technical issues but to making the right decisions so that IT is used effectively. It is a people based approach – there needs to be an approach across the university which ensures that everyone uses IT effectively.

A formal governance structure provides one way in which governors can become more involved with institutional ICT: we learned of one HEI where the IS policy committee had two governor members. It is clear that those institutions which have effective IS policy committees have powerful members.

One institution we talked to has recently revamped its Policy Group so that its future membership will include two Pro Vice chancellors, representative deans, the student union president, the head of the department with responsibility for the development of teaching and learning and the academic registrar: interestingly, they are also considering appointing an external adviser. This group will own the ICT strategy and will decide what is to be done and what resources are to be allocated to the elements of the strategy.

5.1.4.3 Our view of good practice

Our view of good practice in governance is that

1. HEIs should seek to ensure the presence of technology literacy on the governing body.
2. Governance structures are central to ensuring that technology developments within an institution meet its needs.

5.1.5 Roles, responsibilities and relationships

5.1.5.1 Technology literacy within the SMT

The Dearing Report recommended the development of managers who combine expertise and understanding of ICT with senior management experience. During our study, the presence of a technology literate person on the SMT has been the subject of much discussion. We found few examples of such managers as CEO and we found that the majority of institutions do not have an SMT member with these skills. In those instances where these skills were present in the SMT, there was evidence that considerations of technology were incorporated into strategy at the earliest possible point. Moreover, there was a commitment to making the appropriate investments and ensuring that they were directed to deliver the expected benefits.

This suggests that this type 42 capability is valuable within the SMT. One interviewee went on to say that technology awareness within the senior management team facilitates proper consideration of technology options. We spoke to one organisation outside the HE sector for which technology has traditionally been a strategic enabler but which is now a transformational enabler. Here the presence of the director of the technology division at the senior management table and the fact of central control of technology spend are seen as critical to the possession of the capability to enable transformational use of technology. Effective communications within the SMT remains fundamental, and it was suggested to us by an interviewee from one large HEI, that successful use of ICT at a strategic level does depend upon a good relationship between the CIO and the CEO.

5.1.5.2 Should there be a CIO?

The creation of an organisation, in which a coherent strategic technology plan is developed, depends for its effectiveness upon the structure of roles and responsibilities. The existence of a CIO, in particular, was either commended by those who had one as having been beneficial in ensuring that a consideration of technology is integrated into the development of strategy, or proposed as a step forward by those who did not have one. This may, to some extent, reflect the background of the interviewees. It was supported warmly by delegates at the LFHE conference. It is worth noting, however, that CIOs are not always appointed as members of SMT by CEOs and in two cases, we discovered that an incoming CEO had moved the CIO off the SMT.

In one non-HE organisation we spoke to, the CIO reports to the senior manager with responsibility for business and commercial activities. Our interviewee considered this does not work well and that dialogue has to exist at the highest level.

Furthermore, there is the issue of the role the head of the ICT function has within the institution as a whole. A CEO said to us that “ICT Directors need to be leaders in the institution.” One of the heads of ICT we spoke to proposed that there needs to be support for ICT directors in institutions where a leadership role is being given to technology.

CIOs do not always survive changes of CEO. An item on the Computerweekly.com website[10], reporting work by Cranfield University and published at the beginning of December 2008, suggests that the role of the CIO is transitory one, changing with the needs of the business. The corollary of this, it says, is that the type of CIO required by an organisation may change as time passes.

The sheer scale and complexity of technological development and the needs of users demands an effective organisational process beneath the CIO/ Head of ICT role that:

1. Represents the technological expertise within the institution
2. Gathers the needs, aspirations and views of users.

5.1.5.3 The CIO as influencer

We have proposed in section 4.3.13 a model of the role of the traditional Head of ICT services and how this overlaps with the roles of a Chief Information Officer, a position relatively new to the sector, and a Chief Technology Officer. We suggested that the CIO's function is in large part about communicating with the SMT and the institution as a whole. One of our technology literate interviewees discussed the advent of the CIO role at length, suggesting that those already within the sector perceived the new CIOs, many of whom came from outside the sector, as threatening. "ICT people have found it much more comfortable to stand on the sidelines, complaining that others don't understand," our interviewee continued "than to get involved in real arguments."

One SMT interviewee said that "ICT directors are not sufficiently imaginative – they tend to be reactive and wait to be asked, often waiting to be asked in their own language. [They] need to understand the language of CEOs." Feedback from Cardiff suggested that the use of the word "ICT" is off-putting, because the real issue is the business processes.

5.1.5.4 The SMT without a CIO

Where there is no technology expertise on the SMT, we found a number of examples where similar results were achieved by a senior manager being given responsibility for technology. The critical task then becomes to marshal, contextualise and filter the internal expertise of the organisation in such a way as to ensure that SMT is informed in a timely manner of the strategic possibilities for technology. In such organisations we often found a CIO or equivalent post reporting in to the SMT member and responsible, amongst other things, for pulling together strategic thinking and identifying gaps in expertise that called for external input.

Whether or not SMTs needs to be aware of the possibilities offered by technology was discussed at the Cardiff conference. It was suggested that "awareness" tends to be reactive and that for an innovative approach, SMTs do need "understanding" rather than just "awareness". Delegates were largely supportive of the principle that most institutions need a CIO or its equivalent but also recognised the possibility of developing technology literacy within the SMT as an alternative as well as a compliment to such an appointment.

In Cardiff there was vigorous discussion about how SMTs and CEOs can best be advised of transformational opportunities offered by technology. The discussion identified a number of ways forward:

1. A close CEO/CIO relationship can enable this.
2. Biannual slots on senior management team meetings at which path finding presentations are made from all parts of the institution.
3. Regular visits from the CEO to departments, enabling departments to highlight opportunities.
4. The identification by the CEO of a group of thought-leaders across the institution who can present advice on a regular basis: this group consists of specialists, part of whose agenda is to think about tomorrow. This model might be described as "experts on tap" if not "experts on top".

The discussion also asserted a need for the CEO to know when to ask for expert advice and to be prepared to seek and to accept expert advice.

5.1.5.5 Our view of good practice

Our view of good practice in establishing clear roles, responsibilities and relationships is that

1. CEOs should seek to ensure the presence of technology literacy on the SMT. Ideally this should include a CIO or equivalent role whose principal function is to oversee and ensure that the strategic needs of the institution are addressed by its ICT.
2. Where it is not possible or appropriate to have a technology literate member of SMT, the institution should ensure that it has a management structure and arrangements in place to

ensure that SMT is informed and advise on the strategic implications and opportunities of technology.

We have used the terms Type 42 (senior) manager when referring to the situation in (1) and Type 42 organisation when referring to the situation in (2). We found both were able to ensure timely and effective information, advice and guidance into the strategic process but, in our judgement the presence of a Type 42 manager on SMT is always likely to be the more effective approach to integrating consideration of technology into corporate strategy.

5.1.6 Horizon scanning

Many institutions had identified gaps in their in-house expertise and employed external consultants in some capacity to fill these. Whilst this particular approach to supplementing internal staff cannot be recommended above any other as effective practice, it is clear that having in place a systematic review of needs that identifies such gaps is good practice. This is more problematical when it concerns broad issues of strategy than when it deals with a single issue question, such as which VLE to buy or the most appropriate application software for a functional department.

Most technology strategies are designed to make the best of new technology as it arrives: what is clearly difficult is identifying those technologies. However, as one interviewee pointed out, "watershed changes are rare". The web and VLEs are obvious examples: no institution could do without them.

Scanning the current technological landscape and near horizon for emerging issues is essential, but hard to organise, though we did identify one institution which specifically cited having a horizon scanning process as part of its planning methodology. This difficulty is particularly evident in the smaller institutions interviewed, who do not have the breadth of staff resource and knowledge to ensure that they can keep up to date and therefore rely upon external sources. Recognising this as a strategic shortcoming, they make use of the services of membership groups and professional bodies. A number mentioned the services offered by Gartner. The services provided by the JISC Regional Support Centres were cited as being of particular importance by smaller universities and colleges, both directly in the advice and guidance role and for the discussion groups and online forums they facilitate.

5.1.6.1 Our view of good practice

Our view of good practice in estimating the impact of technological change is that

1. Institutions should make the best use of horizon scanning services from the JISC as well as from commercial providers.

5.2 Qualitative and quantitative indicators

We were asked to make recommendations on potential qualitative and quantitative indicators by which change and success in the integration of technology into institutional strategies can be measured in future.

We did not expect our interviewees to have such indicators currently in place for this area of operation of the senior management, nor for any other major functional interest or brief and none were reported. Institutions were able to point to issues whose impact upon the work of the management team had increased substantially or decreased substantially, but in all cases these were either:

- Priorities arising, or expected to arise, from topical pressures such as the potential impact upon recruitment of the international financial crisis, changes to regulatory or funding regimes, or an imminent change in senior leadership
- Projects of significant scale, such as a new build or reconstruction of major sites, or a move into a new overseas market

Management time and effort rise and fall with these issues as they move through their lifecycle, declining as they reach maturity or pass into history. Any indicators noted were related to particular events or projects. Managers were content, for example, to keep close track on progress, problems and costs of a major building project, but could not see a value in creating an indicator of the change or success they might be having in integrating a consideration of Estates into strategy. The same view was held of technology. There was no enthusiasm for an indicator measuring, or indicating, the extent or increase in integration of technology into the strategic process. A number of managers,

including one Type 42 CEO, were keen, by contrast to see better project management skills developed for particular instances and a concomitant improvement in the understanding and use of performance measures in that area.

There was scepticism about how generic indicators might be constructed, except at a trivial level such as the proportion of management time devoted to issues of technology and strategy. One suggestion was to look at the level of technological understanding of members of SMT and amongst those in an influencing role reporting directly to SMT. Such an approach, however, requires the identification and description of the skills, qualifications and experience that make up a sufficient understanding in this context, followed by an initial audit to set a benchmark and subsequent updating. We found no-one who thought this effort justifiable, even if it were practicable. Interviewees were more concerned with the questions of increasing the number of Type 42 managers in HEIs, or improving the effectiveness of the Type 42 organisation sitting beneath SMT.

Our recommendations look at the work that JISC and the LFHE can carry out in collaboration to address these matters. We have made no recommendation regarding indicators, but note our judgement that this matter is not an institutional priority and it that should not be pursued by LFHE or JISC at this time.

6 Recommendations

We found that most institutions felt reasonably satisfied with the way the technology was being considered in their strategy development processes. However, our findings are that too few were giving effective consideration of ICT as either a strategic or transformational enabler in their strategic planning and that by not doing so they can miss opportunities. To address this, we make the following recommendations:

Recommendation 1 The Leadership Foundation for Higher Education should ensure that, within its activities, effort is directed to challenging members of Senior Management Teams to consider whether or not their chosen strategy development processes satisfactorily incorporate consideration of the strategic role of technology.

Issues which the Leadership Foundation should address in its activities include:

- the roles of technology: transformational; strategically enabling; operationally enabling
- the fit between strategic practice and organisation and culture of the institution
- the creation of appropriate training and development opportunities in the strategic management of technology for non-technical Governors, leaders and managers, whether this be by extending the scope of current programmes or devising free-standing programmes or publications.

Recommendation 2 The Leadership Foundation for Higher Education should ensure that, within its activities, Chief Executive Officers and members of governing bodies are challenged to consider whether the distribution of membership of Senior Management Teams and governing bodies enable these groups to be sufficiently technology literate.

By a technology literate team, we mean one which has at least one member with the understanding of what technology can and cannot deliver and who has the capacity to inform the team on these matters.

Issues which the Leadership Foundation should address include:

- optimal management structures to integrate consideration of technology into corporate strategy, including those where there is expertise on SMT and those where this is not the case
- the nature and effectiveness of the arrangements for governance of the strategy for technology

Recommendation 3 The Leadership Foundation for Higher Education should ensure that, within its activities, effort is directed to assisting the HE sector to develop Chief Information Officers within its own ranks and to develop ICT support staff who are business focused.

Issues which the Leadership Foundation should address in its activities include:

- identifying the key functions as illustrated in the CIO/ CTO Roles model (Figure 4) and the responsibilities of a CIO in the strategy for technology
- establishing the training and development requirements of the CIO role
- exploring the viability of activities such as training to meet these needs

Recommendation 4 We recommend the JISC to use its expertise and good offices in collaborating with the Leadership Foundation for Higher Education to deliver recommendations 1, 2 and 3. It should consider whether its current portfolio of activities needs modification better to facilitate such support of the Leadership Foundation.

In support of this we note:

- The scope and scale of JISC's activities and events give it an unrivalled understanding of the technologies used in Higher Education and excellent contacts with those involved in its strategic and operational management
- The JISC's current activities place little weight on administrative computing and on the management of technology. Both of these are critical to the success of technology within HE and these areas could usefully be developed within the JISC portfolio through effective collaboration with the LFHE in this matter.
- The JISC should consider the extent to which the membership of its committees reflects the needs of HE administrative computing and the management of technology within HE.

Recommendation 5 The JISC should consider providing a future awareness service for Higher Education Chief Executive Officers and Senior Management Teams, which addresses ICT matters for technology non-literate senior managers

In support of this we note:

- Most institutions spoke of the difficulty of acquiring essential knowledge and understanding about likely future developments in technology when devising strategy. This is a daunting task for any single institution.
- TechWatch, which provides a future awareness service for the technology literate, is a well-received and successful part of JISC's activities.
- Such an observatory should target its output for the technologically non-literate, using the language of HE senior staff rather than of technologists. It should have a scheduled programme and deliverables. There should at the very least be, say, a six monthly bulletin for senior managers.
- The service should enable senior managers to talk about pressing business concerns to their ICT support staff in the confidence that they, the senior managers, understand the human and business elements of concern and understand the principles, if not the detail, of the technological issues.

Recommendation 6 We recommend that the JISC and the Leadership Foundation for Higher Education work with UCISA to increase the level of external support provided to Heads of ICT departments and to Chief Information Officers, so that they may better address the business issues.

In support of this we note:

- There is clear evidence of a communication gap between ICT support staff and senior managers.
- The leadership of HEI departments can be a lonely occupation. A support network which is forward looking could facilitate basic better use of technology
- UCISA's involvement with the sector is excellent. This involvement should be complementary to, rather than competitive with, that of the Leadership Foundation and the JISC.

7 Institutional Examples

7.1 Preamble

The examples presented here illustrate some of the diversity of practice to be found around the basic models of practice. They are based solely upon the information given to us by interviewees. We have provided sufficient detail to convey the key messages, whilst preserving the anonymity of the interviewees and of their institutions. In order to assist in this we have used the generic terms from section 2.3 such as CEO (Chief Executive Officer) rather than actual titles such as VC, Principal or Rector and for their SMT colleagues the term Deputy CEO. We have also used the word School where Faculty might also be used.

7.2 Institution A

7.2.1 The institution: size and management structure

This is a fairly large metropolitan HEI. The SMT includes a Deputy CEO with responsibility for planning who drives the strategy process. Academic Schools have considerable autonomy in budgets and decision-making.

7.2.2 Key roles/ technology influence

There is a history of expertise in technology at the top table in an institution with a strong business and technology focus. The current SMT has considerable insight into and understanding of technology. There is also a policy of attracting high level expertise onto the Governing Body to ensure the currency and relevance of technology courses.

The Deputy CEO (Planning) and a number of other members of the SMT have an excellent understanding of the strategic importance and possibilities of technology, together with a commitment to making appropriate use of it. The institution was one of the first to appoint a CIO, who reports to the SMT through the planning CEO. There is also a senior manager with a commercial brief who has responsibility for oversight of the institution as a business entity. There is more ease with the language of formal strategy development than most of the institutions interviewed elsewhere.

"We spend a lot of time thinking about ICT. We track it closely. It is one of the main area of expenditure because it feeds everything else – the argument is not about whether to spend more, but about where to direct investment."

7.2.3 Strategy process: practice ; constraints

The last two years have seen both a new corporate strategy and a new IS strategy.
Market analysis is followed by SMT discussion to generate a draft corporate strategy. This is published on the intranet for comment, supplemented by staff workshops.

"Strategy is not a tight document that tells you exactly where you will be, but a broad brush document". The revised draft goes to the Executive Committee of School Deans and senior managers and then ultimately to Council for sign off.

The final strategy is written as a five page web document, hyperlinked to further explanation, KPIs, spending and action plans. The web is seen as the prime method of storage and communication with the outside world and is the basis of the contractual relationship with learners.

There has been a "recent overhaul of processes". Each School previously set its own strategy quasi-autonomously, because there was no overall strategy to link into or to frame thinking. Currently there is *direction of travel* for the strategy, but no targets, which are likely to sharpen both the focus of debate with Schools and its urgency.

7.2.4 Developing the technology strategy

A strategic IS/IT working group, including some SMT and external advisors developed a 5 year IS/IT strategic plan to run to 2012. Workshops across the institution garnered buy-in and ideas. The

strategy was commissioned and driven by the technology interests, but led by the Deputy CEO for Planning. The institution works hard to ensure that the decision making group represents all constituencies, academic and administration, to ensure that decisions are not distorted by partisan views.

The strategy identified IS/IT focus areas including staff experience, student experience, efficiency and effectiveness, research, international work programmes. The group recognises that these cannot be run as isolated IS/IT programmes, but should be institution-wide change management programmes and include non-IT aspects.

"*We feel this is the last time we will take this approach, because IS/IT must now become a part of all aspects of the institution*". This is equally true of areas such as Estates "...*but if you deal with everything as a whole have to be able to manage something of this scale.*

There is enterprise and enthusiasm for technology throughout the institution, with classic early adopters pioneering and promoting solutions. This ensures progress and championing, but also a lack of uniformity. This can be a problem if it leads to a patchwork of bespoke systems which are hard to support and to integrate. It has been an important consideration in developing the IS strategy, which has had to accommodate the interests and aspirations of powerful lobby groups.

There is a strong central drive underpinning the strategy, pushing for single institution-wide systems, including a common VLE "...*the key to maintaining competition and ultimately differentiation…. a very important strategic weapon*, *a research repository and an Institution wide CRM system*". A senior business manager regards CRM as "*the nervous system of the Institution. We need a Rolls Royce service from the moment they arrive all the way through. Learners' expectations are very high."*

The institution estimates that 60-70 % of students come via the web and there is a wish to abandon paper and rely wholly on online recruitment. ICT is also used to build and maintain a relationship with alumni, which is a strategic goal.

7.2.5 How well does it work

The strategic process is a variant of the disjoint model, characterised by the influence and contribution of autonomous Schools. It is pulled together and led by a senior management team that has a clear understanding of the significance and potential for technology to change and buttress the developing role of the institution in what it unashamedly describes as *the marketplace.*

The process of developing corporate strategy is regarded as working reasonably well. The use of the intranet as a medium for publication and iteration of drafts was singled out for particular comment. In general, the strategic approach to IS/IT is seen as working effectively to date. SMT's awareness of the growing significance of technology has highlighted the inappropriateness of separate strategic working for IS/IT, however, whilst not losing sight of the problems of scale if it tries to address all of the institution's strategic issues holistically.

The institution is succeeding in its core strategic intention to have common systems for all major applications, both academic and administrative, with a preference for tested market leading products. There is considerable autonomy in the Schools, so this has been achieved in general by negotiation and influence, rather than compulsion. There is a commitment, nonetheless, to overcome problems. A lack of enthusiasm amongst staff for publishing into the institution research repository, for example, was resolved by insisting that if research is not on the repository then it cannot be cited for appraisals, reviews and promotion.

7.2.6 Reasons for success: what they do well

ICT is part of the air and water of the institution.

There is a shared view amongst senior managers and the Schools of the strategic importance of technology across the institution. This is reinforced by a senior management team that is both rich in expertise and understanding and committed to applying it to deriving the strategic vision of the institution, as well as delivering it.

7.2.7 Constraints/ areas for improvement

The critical challenge is to make sure that Schools align their plans with the overall institution strategy. This is a criterion for the allocation to Schools of central funds. A more fundamental issue is the problem of identifying and responding to major changes in technological possibilities and potential.

"*We are trudging up a hill and can't see over the horizon*".

7.3 Institution B

7.3.1 The institution: size and management structure

This medium sized city-based HEI has an international research reputation. The CEO is supported by a Deputy who leads the academic and financial strategies, and five further members of the SMT, one of whom is responsible for the overall direction and coordination of the support services.

7.3.2 Key technology roles/ technology influence

The Head of Information Services, who is a member of the SMT, is the institution's senior responsible person for ICT. This person, who has a long career background in academic information services and libraries, has an extensive portfolio of which information services is only a part. The Head of ICT, whose responsibilities cover academic services and MIS, reports to the Head of Information Services.

There is no CIO role as such.

7.3.3 Strategy process: practice; constraints

The institution has recently developed a new top-level mission and a concise high-level overarching strategy. From this it is presently creating a multi-component second level set of strategies and plans. There is an Information Strategy which stands alongside Education and Research Strategies. These in turn stand alongside an Annual Operating Plan for the institution, School Operating Plans and Support Services Plans. The Information Strategy has two strands, an ICT component which is badged as an IT Strategy, and one covering library and information resources.

The CEO leads the planning process, which is well-described on the institution's web pages. The vision, the top-level strategy and the outline of the components of the second level strategy have had their initial drafts developed initially by the senior management team. The drafts are then fed into the institution's Planning and Resources Committee as well as into some ad hoc groups for comment and refinement via. Each of the five faculties also acts as a locus of planning, with work led by the Deans who would maintain contact with the planning and resources committee. The planning and resources committee coordinates contact with the faculties and the institution services, and then offers the plan for consideration by the institution's Governing Body. Before this the institution used a five-year plan, though in the time since the last of these was drawn up it had evolved a rolling style of updating individual strategy components, with about one revised component appearing each year. The most recent component to be completed in this way is the IT strategy, which was approved earlier this year.

The Governing Body is kept closely informed of both the development of the plan itself and of progress against the plan, receiving updates throughout the year.

At the commencement of the present strategy development cycle the institution agonised about whether or not it should have a strategy component devoted to ICT. It ended up by deciding that doing so was of value, if only because it brought all the technology matters into one place. It was felt that doing this would, for example, facilitate considerations of infrastructure.

7.3.4 Developing the technology strategy

The leading role in developing the IT strategy is taken by the Head of ICT. The development process was highly consultative, including for example, interferes, student surveys and focus groups. A consequence of the highly interactive process used has been that there is now improved recognition in the institution at large that ICT is both important and expensive enough to warrant maintaining a visible ICT component of the overall institutional strategy. The IT strategy covers a five-year period

and starts with its own vision and statements of values and aims, which are expressed from a business viewpoint.

7.3.5 How well does it work

The overall process, by virtue of the influence and utilisation of proposals from the schools and services, can be seen as disjoint. It is probably unlikely that an integrated process could be made to work satisfactorily in an HEI such as this with strong and eminent schools that are, in a very real sense, determining much of their own destiny. It was clear, however, that there was a good binding between the high-level documents, which were often very concise and very clear, and the second level strategies and plans which contained the detail.

The institution considers that the process works well. The considerable amount of consultative activity used in the production of the IT strategy has not only raised the profile of technology within the institution but has also led to better understandings of its value and applicability. The Governing Body contains people with commercial backgrounds who are aware of the importance of managing and governing ICT properly and they consider that they are able to both contribute satisfactorily to the institution's processes and see the results in terms of what the institution is achieving.

7.3.6 Reasons for success: what they do well

The institution appears to have a good sense of how to get its major operating units to pull together. The recent highly consultative exercise to produce the IT strategy has brought into clearer focus the value and applicability of ICT.

7.3.7 Constraints/areas for improvement

It was difficult to discern whether a CIO role would be able to bring more to the SMT than the present arrangements. Because the institutional plan is updated annually and because the Head of ICT is drawn into that process along with the Head of Information Services, it is quite likely that enough of the right quality of engagement can be achieved, though we feel that ensuring this may entail assiduous cooperation by the two roles involved. As the Head of ICT effectively carries out the duties of a Chief Technology Officer it may be beneficial for the institution to consider reprofiling the Head of Information Services role somewhat in order to give it a visible CIO capability.

The rolling approach used for development of the strands of the second level strategy and planning, while it does give each area a turn in the limelight, could have as a weakness the fact that improvements made in one area may not realise benefits in another area until several years have elapsed: for example if the teaching and learning area were to undergo a major update several years after the IT strategy was overhauled, the realisation of benefits could be significantly impacted.

7.4 Institution C

7.4.1 The institution: size and management structure

This is a moderately large multi-site HEI offering a wide spectrum of degree and professional qualifications in academic and vocational areas. It has grown over time through merger to incorporate a number of previously independent colleges and institutions. The institution operates a devolved structure, in which individual faculties have considerable financially autonomy.

7.4.2 Key technology roles/ technology influence

There is no-one with particular expertise in technology on the SMT. One member of the SMT has responsibility for information services as well as other areas. The institution's Planning Officer also has an understanding and commitment to effective use of technology.

7.4.3 Strategy process: practice ; constraints

The institution has a 10 year corporate strategy timeline, but includes short and medium term goals. The first draft arises from an initial consultation with leaders within the institution and key figures. This is put out to consultation amongst stakeholders including staff and students. A copy of the current

draft has been made available on the institution's web site, with a facility for comment. The final draft strategy goes for approval to the Governing Body which is responsible for determining the overall mission and key objectives of the institution and its core strategies. This should then shape the lower level functional strategies, including the ICT strategy. These are influenced by the corporate strategy, but each functional strategy has its own lifecycle and timescale. There is as yet no pressure within the institution to start from scratch with each sub-strategy to reflect the new overarching strategy.

7.4.4 Developing the technology strategy

The technology strategy is continually renewing. The current draft corporate strategy will be an important driver of the latest iteration of the ICT strategy, which serendipitously is due for update and renewal. The Information Process and Systems Strategy is a business process driven initiative, originally developed for main corporate administrative processes, but extended to encompass all central ICT, including a Virtual Learning Environment. It is essentially a governance strategy, creating a framework which oversees developments and investment in technology with a view to delivering strategic goals. It includes consideration of finance, effectiveness and oversight of performance. A gate-keeping component requires IT development proposals to be presented as a business case for assessment by an IT Systems Executive group. This is headed by a Deputy CEO and decides whether the proposal goes ahead, based on its strategic fit and financial acceptability. It does not currently oversee all technology initiatives, however, as the main academic units have a significant degree of financial autonomy. This notwithstanding, initiatives such as the VLE and a research repository are dealt with centrally. A school could initiate any technology related project without seeking approval. Such separate development can occur within Schools brought into the institution through merger which continue to run their preferred systems. The extent of this should not be overstated. Top slicing of funding works against too much independence because the Schools end up paying twice: once for their own systems and secondly through their top-sliced contribution to the central.

There is an expert advisor culture, in which internal expertise is called upon to respond to proposals, rather than to generate strategic thinking and investment. Those interviewed believed that a more proactive approach could be achieved by appointment of a CIO or equivalent role. The existing governance framework arrangements seek to replicate this but are, by definition, reactive.

There is sense in which the ICT strategy arises from immediate and near horizon issues rather than being tightly tied to the overall institutional strategy. The two are essentially parallel processes "*We could build in a mechanical process which tied them together. The machinery of ICT strategy is now mature enough to do this. Links with the main strategy are largely passive –they take cognisance and fit in rather than drive or be driven by the overall strategy"*. Governance is the mechanism by which the strategies are integrated.

There is strategic alignment through the Executive group. They have little problem in coming up with a strategic vision for technology and its contribution, but do struggle to stick to it. Widespread consultation about technology strategy identifies areas that of strategic and operational benefit to the institution which need technology to drive them. Co-operation and commitment by Schools to creating the strategy does not necessarily ensure support in achieving it, when senior figures get diverted by more pressing priorities. This can lead to "… *pragmatic IT solutions and emerging issues which are sufficiently pressing or vigorous to force themselves into existence.*"

The development of technology "*tends to be either operationally essential or efficiency improvements rather than strategic or blue sky – not really visionary stuff."*

7.4.5 How well does it work

The strategic process is disjoint in at least two senses. The autonomy of Schools means that they have considerable independent influence and authority. There is, moreover, a loose relationship between the overarching corporate strategy and the sub-strategies that should support it. At an institution-wide level this works well for a institution that has grown considerably in size and has an enviable record in terms of key indicators such as recruitment, academic success, graduate employment and research record. It has not delivered an effective process for the development of a coherent and deliverable organisation-wide strategy for technology. Even in this area, however, there are some significant strategic investments and assets developed and managed centrally. Managers

believe that "*We have systems and process which are robust and make sense on paper and have a model of governance which is not weak*."

7.4.6 Reasons for success: what they do well

The institution has responded creatively to the organisational realities of a complex federal structure. The governance model of managing technology developments is an effective approach to managing technology within its brief. It does not cover all investments, however.

7.4.7 Constraints/ areas for improvement

The institution's auditors have recommended that it move to an institution-wide strategic IT process. The principle constraint on this is the autonomy of the schools, which is such that, ".. *they cannot be coerced into a wholly centrally controlled strategy*", but measures exist to align their aspirations and plans with overall strategy.

Managers and staff, "… *are excited by the prospect of development in technology – they know it is an exciting area but do not go from this to actually engaging with and driving change. There is no Master Champion who can step outside of the process and drive a stimulating vision. The current processes are workmanlike, rather than motivating.*"

The lack of a CIO or equivalent, with the direct support of the CEO, means there is no senior figure to articulate and pursue a strategic vision for technology. The creation of such a post would reveal a commitment by the CEO and SMT to employing technology as a strategic fundamental, rather than an operational enabler, which it appears to be at present.

7.5 Institution D

7.5.1 The institution: size and management structure

The institution is a small HEI with a professional and vocational focus. The SMT team is small in number and sees its main role as being to deliver the strategy.

7.5.2 Key technology roles/ technology influence

The CEO regards himself as "… *one of a rare breed of Dearing Type 42 managers* ", i.e. a manager who combines an understanding of communications and information technology with experience of senior management. He recruited a Deputy with an understanding of technology issues to strengthen the top team in this area. In the context of a relatively small management team, this provides a significant platform for identifying and exploring the possibilities and potential of technology

7.5.3 Strategy process: practice; constraints

The institution regards its strategic policy making process as rigorous. The senior management team, proactively led by the CEO lays out the main framework of strategic aspiration and goals. This goes out to discussion and consultation through the structure of committees and to key individuals, whose views are taken into account in the final version. The strategy is sub-divided into a series of major sub-strategies, each owned by a named member of the SMT. The sub-groups consider how they will deliver their set of strategic goals, considering infrastructure, tools and other resource requirements. The owner reports back to the full management team and fights their corner for resources. The key determinant of success in the view of the CEO is join-up:

1. Between the top team and delivery units
2. Between separate areas of the strategy.

The process is integrated, as described by the models of strategic process used in this report. The vision is that of the CEO, illuminated and refined by SMT and converted into a overarching corporate strategy. This then shapes the context and content of supporting strategies and drives resource allocation and prioritises actions.

7.5.4 Developing the technology strategy

The institution recognises technology and a key strategic enabler. It recognises that many strategic goals simply cannot be achieved without it. Examples cited include the expansion of student numbers, particularly overseas and develop the research profile, which has led to partnership working with small but geographically widespread group of peer institutions.

The strategy for IS/IT is one of the sub-strategies underpinning the corporate strategy. The influence of technology upon strategic thinking enters at the outset: it is part of the CEO's vision and woven into the first draft of strategy. The technology strategy, therefore, is focussed on delivering the corporate strategy rather than developing an independent set of notions.

7.5.5 How well does it work

The CEO considers that the approach, based upon strong central direction and technological expertise at the top table, has been successful in ensuring that technology enters into strategic thinking.

7.5.6 Reasons for success: what they do well

There is not only expertise at the top table, but also a highly proactive commitment to making sure it is put to good use. Strategic join-up is achieved by an SMT with a shared collective vision and determination to deliver. The size of the institution and the common purpose of the SMT and management team support an integrated approach to strategy development in which the contribution of technology can be identified, resourced and delivered.

The institution's narrow range of specialist vocational programmes, including teacher training, means there is a common interest in developments in their professional specialisms that makes it easier to get shared agreement on technology and its impact,

7.5.7 Constraints/ areas for improvement

Major challenge: taking a long term view when resources are scarce and today's issues are pressing. The CEO leads from the top on this, funding an Innovation Unit for example, that three years ago was seen as the "CEO's folly", but is now recognised to be both successful and necessary.

Even with the expertise at the highest levels, the CEO is aware that there is," … *too much to keep track of and its hard to find what will really make a difference*" The particular importance to smaller institutions of the JISC Regional Support Centres (RSCs) was mentioned in terms of flagging up and filtering major developments and products was noted.